Pillar 1

I. Tier Capital Supply

Introduction

This guidance explains how banks can comply with the Tier Capital Supply Standard. It must be read in conjunction with the Capital Regulation and Standards for Capital Adequacy of Banks in the UAE. Guidance regarding Minimum Capital Requirement and Capital buffer as stated in the document have to be followed by all banks for the purpose of regulatory compliance.

1. To help and ensure a consistent and transparent implementation of Capital supply standards, Central Bank will review and update this guidance document periodically.

2. The guidance document has structured into six main sections

1. Scope of Application
2. Eligible capital
3. Regulatory adjustments
4. Threshold deductions
5. Significant investment in commercial entities
6. Frequently Asked Questions

1. Scope of Application

3. "Financial activities" do not include insurance activities and "financial entities" do not include insurance entities.

4. Examples of the types of activities that financial entities might be involved in include financial leasing, issuing credit cards, portfolio management, investment advisory, custodial and safekeeping services and other similar activities that are ancillary to the business of banking

<u>Treatment of investment in Insurance Entities</u>

5. Insurance subsidiaries are to be deconsolidated for regulatory capital purposes (i.e. all equity, assets, liabilities and third-party capital investments in such insurance entities are to be removed from the bank's balance sheet) and the book value of the investment in the subsidiary is to be included in the aggregate investments.

6. Investments in the capital of insurance entities where the bank owns more than 10% of the insurance entity's common share capital will be subject to the "Threshold deductions" treatment. Amounts below the threshold that are not deducted are to be risk weighted at 250 %.

(*Investments in insurance entities wherein ownership is greater than 10% will also include insurance subsidiaries*)

2. Eligible capital

Accumulated other comprehensive income and other disclosed reserve

7. For unrealized fair value reserves relating to financial instruments to be included in CET1 capital banks and their auditor must only recognize such gains or losses that are prudently valued and independently verifiable (e.g. by reference to market prices). Prior prudent valuations, and the independent verification thereof, are mandatory.

8. The amount of cumulative unrealized losses arising from the changes in fair value of financial instruments, including loans/financing and receivables, classified as “available-for-sale” shall be fully deducted in the calculation of CET1 Capital.

9. Revaluation reserves or cumulative unrealized gains shall be added to CET 1 with a haircut of 55%.

10. The amount of cumulative unrealized gains arising from the changes in the fair value or revaluation of bank’s own premises and real estate investment are not allowed to be included as part of Asset Revaluation reserve for regulatory purposes.

11. IFRS9 will be implemented during 2018. Banks that are impacted significantly from the implementation of IFRS9 may approach the Central Bank to apply for a transition period for the IFRS9 impact. Such applications will be analysed and considered on a case-by-case basis.

Retained Earnings

12. The amount reported under accumulated retained earnings (5.1.4.1) should be as per the audited financial statement at year end and should remain the same for the entire financial year.

13. Current financial year’s/quarter’s profits can only be taken into account after they are properly audited/ reviewed by the external auditors of the bank. Current financial years /quarter’s loss if incurred have to be deducted from the capital.

14. Dividend expected/ proposed for the financial year should be reported under 5.1.4.3 and will be deducted from Retained Earnings/ (Loss) (5.1.4). Expected dividend applies only for Q4 until dividend is actually paid.

15. The dividend deduction must be updated based on each of the following events, if the amount changes, after Annual General meeting, or the approval from the Central Ban, or the release of the Financial Statements by the auditors.

16. Other adjustments to the Retained Earnings includes

a. Prudential filter: Partial addback of ECL in accordance with the Regulation Regarding Accounting Provisions and Capital Requirements - Transitional Arrangements should be reported under 5.1.4.4 IFRS transitional arrangement.

b. CBUAE Regulatory deductions:

i. Amount exceeding Large Exposure threshold: Any amount that is in violation of Large Exposure regulation of notice 300/2013 shall be deducted from the capital. Any amount deducted from CET1 under 5.1.4.5 of the BRF 95 due to a Large Exposure violation of notice no.226/2018 may be excluded for the calculation of risk weighted assets. However, amounts that are not deducted must be included in risk weighted assets. Furthermore, any counterparty credit risk (under CR2a) associated with such exposure must remain included in the calculation of risk weighted asset.

ii. Loans to directors: The circular 83/2019 on Corporate Governance regulations for Banks, under the article (6) "Transaction with Related parties" requires if the transaction with the related parties are not provided on arm's length basis, then on general or case by case basis, deduct such exposure from capital. The deduction should be reported under 5.1.4.5 of the BRF 95.

Capital Buffers - Countercyclical Buffer

17. The buffer for internationally active banks will be a weighted average of the buffers deployed across all the jurisdictions to which it has credit exposures. The buffer that will apply to each bank will reflect the geographic composition of its portfolio of credit exposures. When considering the jurisdiction to which a private sector credit exposure relates, banks should use, where possible, an ultimate risk basis; i.e. it should use the country where the guarantor of the exposure resides, not where the exposure has been booked.

18. Banks will have to look at the geographic location of their private sector credit exposures (including non-bank financial sector exposures) and calculate their countercyclical capital buffer requirement as a weighted average of the buffers that are being applied in jurisdictions to which they have an exposure. Credit exposures in this case include all private sector credit exposures that attract a credit risk capital charge or the risk weighted equivalent trading book capital charges for specific risk and securitisation.

19. The weighting applied to the buffer in place in each jurisdiction will be the bank's total credit risk charge that relates to private sector credit exposures in that jurisdiction, divided by the bank's total credit risk charge that relates to private sector credit exposures across all jurisdictions. Banks must determine whether the ultimate counterparty is a private sector exposure, as well as the location of the "ultimate risk", to the extent possible.

20. The charge for the relevant portfolio should be allocated to the geographic regions of the constituents of the portfolio by calculating the proportion of the portfolio's total credit exposure arising from credit exposure to counterparties in each geographic region.

Please refer to Question 15 of the FAQs below for further guidance and examples of countercyclical buffers.

3. Regulatory adjustments

Goodwill and Other Intangibles

21. Intangible assets typically do not generate any cash flows and hence their value, when a bank is in need of immediate additional capital to absorb losses, is uncertain. For this reason, all intangible assets are deducted from CET1 (5.1.8.1).

22. From regulatory perspective, goodwill and intangible assets have the same meaning as under IFRS.

23. Capitalized software costs that is not “integral to hardware” is to be treated as an intangible asset and software that is “integral to hardware” is to be treated as property, plant and equipment (i.e. as a fixed asset).

24. The amount of intangible assets to be deducted should be net of any associated deferred tax liability (DTL) that would be extinguished if the asset became impaired or derecognised under the applicable accounting standards.

25. Goodwill and intangible assets that are deducted from CET1, they are excluded from the calculation of RWA for credit risk exposure value.

Deferred Tax Assets

26. Deferred tax assets (DTAs) typically arise when a bank:

- suffers a net loss in a financial year and is permitted to carry forward this loss to offset future profits when calculating its tax bill (net losses carried forward)
- has to reduce the value of an asset on the balance sheet, but this 'loss in value' is not recognised by the tax authorities until a future period (temporary timing difference)

27. DTAs arising from net losses carried forward have to be deducted in full from a bank's CET1 (5.1.8.2). This recognises that their value can only be derived through the existence of future taxable income. On the other hand, a DTA relying on future profitability and arising from temporary timing differences is subject to the 'threshold deduction rule' (5.1.9.2).

4. Threshold Deduction

28. The purpose of calculating the threshold is to limit the significant investments in the common shares of unconsolidated financial institutions (banks, insurance and other financial entities) and deferred tax assets (arising from temporary differences) to 15% of the CET1 after all deduction (Deduction includes regulatory deductions and the amount of significant investments in the common shares of unconsolidated financial institutions and deferred tax assets in full).

29. Therefore, significant investments in the common shares of unconsolidated financial institutions and deferred tax assets may receive limited recognition of 10% CET1 individually (CET after regulatory adjustment outlined in section 3 of the Tier Capital Supply Standard).

30. The amount that is recognised will receive risk weight of 250% and the remaining amount will be deducted. See Appendix 5 for example.

5. Significant investment in commercial entities

31. For purposes of this section, 'significant investments' in a commercial entity is defined as any investment in the capital instruments of a commercial entity by a bank which is equivalent to or more than 10% of CET 1 of the bank (after application of regulatory and threshold deduction). See Appendix 3 for an example.

6. Frequently Asked Questions

Question 1: When will the Standards, Guidance and Template with regards to Solo reporting be issued by the Central Bank?
The Central Bank will issue all related material regarding Solo reporting during 2020. Formal communication will be issued in advance.

Question 2: What is meant by the book value of an investment?
The book value of an investment shall be in accordance with the applicable accounting framework (IFRS). This valuation must be accepted by an external auditor.

Question 3: Are capital shortfalls of non-consolidated insurance companies to be deducted from CET1?
Yes, any capital shortfall on a company has to be deducted.

Question 4: If the Bank meets minimum CET1 ratios can the excess CET1 also be counted to meet AT1 and Total CAR?
Yes.

Question 5: Please clarify whether minority interest related to any other regulated financial entity (which is not a bank) should be included or not.
Only minority interest of the subsidiary that are subject to the same minimum prudential standards and level of supervision as a bank be eligible for inclusion in the capital.

Question 6: Is the bank able to include the profit & loss in the year-end CAR calculation before the issuance of the audited financial statements?
Bank may include interim profit/ yearend profit in CET1 capital only if reviewed or audited by external auditors. Furthermore, the expected dividend should be deducted in Q4.

Question 7: Is subordinated Debt currently considered Tier 2 as per Basel III, hence no amortization is required?
Grandfathering rule plus amortization in last 5 years - refer to *Standards for Capital Adequacy of banks in UAE, Tier Capital Supply Standard- paragraph 27 (iv)(b)* . Reference should also be made to the Tier Capital Instruments Standards.

Question 8: Do dividends need to be deducted from CET1 after the proposal from the Board or after Central Bank approval or after approval from shareholders at the Annual General Meeting?
Please refer to Question 6

Question 9: How do you treat goodwill and intangible assets arising on an insurance subsidiary? Should it be considered since the standards mentions insurance subsidiaries are to be completely deconsolidated and hence there will be no goodwill?

Goodwill and other intangible must be deducted in the calculation of CET1. In particular deduction is also applied to any goodwill included in the valuation of significant investments in the capital of banking, financial and insurance entities that are outside the scope of consolidation.

Question 10: Subsidiaries which are used for providing manpower services at cost, should these be classified as commercial entities or financial entities?

A non-financial sector entity is an entity that is not:

a) a financial sector entity; or
b) a direct extension of banking; or
c) ancillary to banking; or
d) leasing, factoring, the management of unit trusts, the management of data processing services or any other similar services"

Question 11: Obtain an understanding to the timeline by when the Central Bank may advise specific Banks of specific countercyclical buffers?

The underlying process for the implementation of countercyclical buffers will be set and communicated during 2018.

Question 12: Criterion 4 for Additional Tier 1 capital. Can the Central Bank give additional guidance on what will be considered to be an incentive to redeem?

The following list provides some examples of what would be considered to be an incentive to redeem:

A call option combined with an increase in the credit spread of the instrument if the call is not exercised.

A call option combined with a requirement or an investor option to convert the instrument into shares if the call is not exercised.

A call option combined with a change in reference rate where the credit spread over the second reference rate is greater than the initial payment rate less the swap rate (ie the fixed rate paid to the call date to receive the second reference rate). For example, if the initial reference rate is 0.9%, the credit spread over the initial reference rate is 2% (ie the initial payment rate is 2.9%), and the swap rate to the call date is 1.2%, a credit spread over the second reference rate greater than 1.7% (2.9-1.2%) would be considered an incentive to redeem.

Conversion from a fixed rate to a floating rate (or vice versa) in combination with a call option without any increase in credit spread will not in itself be viewed as an incentive to redeem. However, as required by criteria 5, the bank must not do anything that creates an expectation that the call will be exercised.

The above is not an exhaustive list of what is considered an incentive to redeem and so banks should seek guidance from Central Bank on specific features and instruments. Banks must not expect Central Bank to approve the exercise of a call option for the purpose of satisfying investor expectations that a call will be exercised.

Question 13: Criteria 4 and 5 for Additional Tier 1 capital. An instrument is structured with a first call date after 5 years but thereafter is callable quarterly at every interest payment due date (subject to supervisory approval). The instrument does not have a step-up. Does instrument meet criteria 4 and 5 in terms of being perpetual with no incentive to redeem?

Criterion 5 allows an instrument to be called by an issuer after a minimum period of 5 years. It does not preclude calling at times after that date or preclude multiple dates on which a call may be exercised. However, the specification of multiple dates upon which a call might be exercised must not be used to create an expectation that the instrument will be redeemed at the first call date, as this is prohibited by criterion.

Question 14: Can an option to call the instrument after five years but prior to the start of the amortisation period viewed as an incentive to redeem?

No, it can't be viewed as an incentive to redeem.

Question 15: With regards to countercyclical buffer, what are "private sector credit exposures"? What does "geographic location" mean? How should the geographic location of exposures on the banking book and the trading book be identified? What is the difference between (the jurisdiction of) "ultimate risk" and (the jurisdiction of) "immediate counterparty" exposures?

"Private sector credit exposures" refers to exposures to private sector counterparties which attract a credit risk capital charge in the banking book, and the risk weighted equivalent trading book capital charges for specific risk, the incremental risk charge, and securitisation. Interbank exposures and exposures to the public sector are excluded, but non-bank financial sector exposures are included. The geographic location of a bank's private sector credit exposures is determined by the location of the counterparties that make up the capital charge, irrespective of the bank's own physical location or its country of incorporation. The location is identified according to the concept of "ultimate risk". The geographic location identifies the jurisdiction that has announced countercyclical capital buffer add-on rate is to be applied by the bank to the corresponding credit exposure, appropriately weighted

The concepts of "ultimate risk" and "immediate risk" are those used by the BIS' International Banking Statistics. The jurisdiction of "immediate counterparty" refers to the jurisdiction of residence of immediate counterparties, while the jurisdiction of "ultimate risk" is where the final risk lies. For the purpose of the countercyclical capital buffer, banks should use, where possible, exposures on an "ultimate risk" basis.

For example, a bank could face the situation where the exposures to a borrower is in one jurisdiction (country A), and the risk mitigant (e.g. guarantee) is in another jurisdiction (country B). In this case, the "immediate counterparty" is in country A, but the "ultimate risk" is in country B. This means that if the bank has a debt claim on an investment vehicle, the ultimate risk exposure should be allocated to the jurisdiction where the vehicle (or if applicable, its parent/guarantor) resides. If the bank has an equity claim, the ultimate risk exposure should be allocated proportionately to the jurisdictions where the ultimate risk exposures of the vehicle resides.

Appendix

Appendix 1: Banking, Securities, insurance and other financial entities - Significant investment (ownership in the entity more than 10%)

Significant investment (ownership in the entity more than 10%)					
Entity	Entity activity	Investment Classification	Listed/ Unlisted	Bank's ownership in the entity (% of Holding)	Investment Amount
A	Banking	Banking Book	Listed	40%	60
B	Insurance	Banking Book	Listed	18%	35
C	Securities	Banking Book	Unlisted	16%	28
D	Banking	Trading Book	Listed	11%	18
a. Total significant investment (Banking, Securities, insurance and other financial entities)					141
b. Bank's CET1 (after applying all the regulatory deduction except section 3.9 and 3.10 of the Tier Capital Supply Standard)					1000
c. Limit (10 % of bank's CET1)					100
d. Amount to be deducted from bank's CET1					41
e. Amount not deducted to considered for aggregate threshold deduction					100

The remaining amount of 100 is to be distributed amongst the investments on a pro rata / proportionate basis and risk weighted at 250% (assuming no threshold deduction apply).The total of 250 RWA (100 *250%) will be distributed as follows.

Entity	Investment Classification	Investment Amount	as a % of all such investment	Calculation of amount not deducted to be risk weighted	Risk weight	RWA	Section
A	Banking Book	60	42%	43 (100 x 43%)	250%	106.38	Credit Risk
B	Banking Book	35	25%	25 (100 x 25%)	250%	62.06	Credit Risk
C	Banking Book	28	20%	20 (100 x 20%)	250%	49.65	Credit Risk
D	Trading Book	18	13%	13 (100 x 13%)	Equity Risk - Market risk section		
		141	100%	100			

Appendix 2: Banking, Securities, insurance and other financial entities - Investment with ownership not more than 10%

Investment (ownership not more than 10%)					
Entity	Entity activity	Investment Classification	Listed/ Unlisted	Bank's ownership in the entity (% of Holding)	Investment Amount
E	Banking	Banking Book	Listed	10%	50
F	Banking	Trading Book	Listed	3%	11
G	Securities	Banking Book	Unlisted	8%	40
H	Insurance	Banking Book	Listed	2%	9
a.Total investment (Banking, Securities, insurance and other financial entities)					110
b. Bank's CET1 (after applying all the regulatory deduction except section 3.9 and 3.10 of the Tier Capital Supply Standards)					1000
c. Limit (10% of bank's CET1)					100
d. Amount to be deducted from bank's CET1 (a-c)					10
e. Amount not deducted to be risk weighted (Remaining amount) (a-d)					100

The remaining amount of 75 is to be distributed amongst the investments on a pro rata / proportionate basis and risk weighted as stated below

Entity	Investment Classification	Investment Amount	as a % of all such investment	Calculation of amount not deducted to be risk weighted	Listed/ Unlisted	Risk weight	RWA	Section
E	Banking Book	50	45.5%	45.50 (100 x 45.5 %)	Listed	100%	34.50	Credit Risk
F	Trading Book	11	10.0%	10 (100 x 10.00%)	Listed	Equity Risk - Market risk section		
G	Banking Book	40	36.4%	36.4 (100 x 36.4%)	Unlisted	150%	40.50	Credit Risk
H	Banking Book	9	8.2%	8.2 (100 x 8.2%)	Listed	100%	6.00	Credit Risk
		110	**100%**	**100**				

Appendix 3: Significant investments in commercial entities.

Individual Investment Limit Check and its treatment	
Bank's CET1 (after applying all the regulatory and threshold deduction)	1000
Individual Limit (10% of bank's CET1D)	100

Step 1: Individual Limit check

Significant investments in commercial entities								
Entity	Entity activity	Investment Classification	Listed/ Unlisted	Investment Amount	Amount as a % of bank's CET1	Significant Investment	Amount to RW at 952%	Remaining amount
I	Commercial	Banking Book	Listed	140	14%	Yes	40	100
J	Commercial	Banking Book	Listed	120	12%	Yes	20	100
K	Commercial	Banking Book	Unlisted	110	11%	Yes	10	100
L	Commercial	Banking Book	Listed	115	12%	Yes	15	100
M	Commercial	Banking Book	Listed	75	8%	No		75
N	Commercial	Banking Book	Listed	45	5%	No		45
O	Commercial	Banking Book	Listed	50	5%	No		50
				655			85	570

Risk weighting at 952% on account of 10% threshold on individual basis is 85.

Step 2: Aggregate Limit check

Aggregate of remaining amount of investments after 10% deduction (entity I,J,K,L,M,N & O)	570
Aggregate Limit (25% of bank's CET1)	250
The amount to be risk-weighted at 952% based on the 25% threshold on aggregate basis	250
Remaining amount of investments to be risk-weighted under the applicable risk weighting rules (100% RW for listed and 150% unlisted)	320

Total amount to be risk weighted at 952%: 335 (85 + 250)

Appendix 4: Minority interest illustrative example

This Appendix illustrates the treatment of minority interest and other capital issued out of subsidiaries to third parties, which is set out in section 2.7 of the *Tier Capital Supply Standard* (Paragraph 35 to 41).

A banking group consists of two legal entities that are both banks. Bank P is the parent, Bank S is the subsidiary, and their unconsolidated balance sheets are set out below

Bank P Balance sheet	**Amount (AED)**	**Bank S Balance sheet**	**Amount (AED)**
Assets		**Assets**	
Loan to customers	100	Loan to customers	150
Investment in CET 1 of Bank S	7		
Investment in AT1 of Bank S	4		
Investment in T2 of Bank S	2		
Total Assets	**113**	**Total Assets**	**150**
Liabilities and Equities		**Liabilities and Equities**	
Depositors	70	Depositors	127
Common Equity (CET1)	26	Common Equity (CET1)	10
Additional Tier1 (AT1)	7	Additional Tier1 (AT1)	5
Tier 2	10	Tier 2	8
Total Liabilities and Equities	**113**	**Total Liabilities and Equities**	**150**

The balance sheet of Bank P shows that in addition to its loans to customers, it owns 70% of the common shares of Bank S, 80% of the Additional Tier 1 of Bank S and 25% of the Tier 2 capital of Bank S. The ownership of the capital of Bank S is therefore as follows:

Capital issued by Bank S			
	Amount Issued to Parent	**Amount Issued to third party**	**Total**
Common Equity (CET1)	7	3	10
Additional Tier1 (AT1)	4	1	5
Tier 1	11	4	15
Tier 2	2	6	8
Total Capital (TC)	13	10	23

The consolidated balance sheet of the banking group is set out below:

Consolidated Balance sheet of Bank P	
Assets	**Amount (AED)**
Loan to customers	250
Total Assets	250
Liabilities and Equities	
Depositors	197
Common Equity (CET1)	26
Additional Tier1 (AT1)	7
Tier 2	10
Minority Interest	
Common Equity (CET1)	3
Additional Tier1 (AT1)	1
Tier 2	6
Liabilities and Equities	**250**

For illustrative purposes, Bank S is assumed to have risk-weighted assets of 100. In this example, the minimum capital requirements of Bank S and the subsidiary's contribution to the consolidated requirements are the same since Bank S does not have any loans to Bank P. This means that it is subject to the following minimum plus capital conservation buffer requirements and has the following surplus capital:

Minimum and surplus capital of Bank S		
Capital	Minimum plus Capital conservation Buffer	Surplus
CET1	(7% + 2.5%) of 100 = 9.5	0.50 (10- 9.5)
T1	(8.5%+ 2.5%) of 100 = 11	4.00 (10+5-11)
TC	(10.5% +2.5%) of 100 = 13	10 (10+5+8 -13)

The following table illustrates how to calculate the amount of capital issued by Bank S to include in consolidated capital, following the calculation procedure set out in paragraphs 35 to 41 of the Tier Capital Supply Standards.

Bank S: amount of capital issued to third parties included in the consolidated capital.					
Capital	Total Amount Issued (A)	Total Amount Issued to third party (B)	Surplus (C)	Surplus attributable to third parties (i.e. amount excluded from consolidated capital) (D) = (C) * (B/A)	Amount Included in the consolidated capital (E) = (B)-(D)
CET1	10	3	0.5	0.15	2.85
T1	15	4	4	1.07	2.93
TC	23	10	10	4.35	5.65

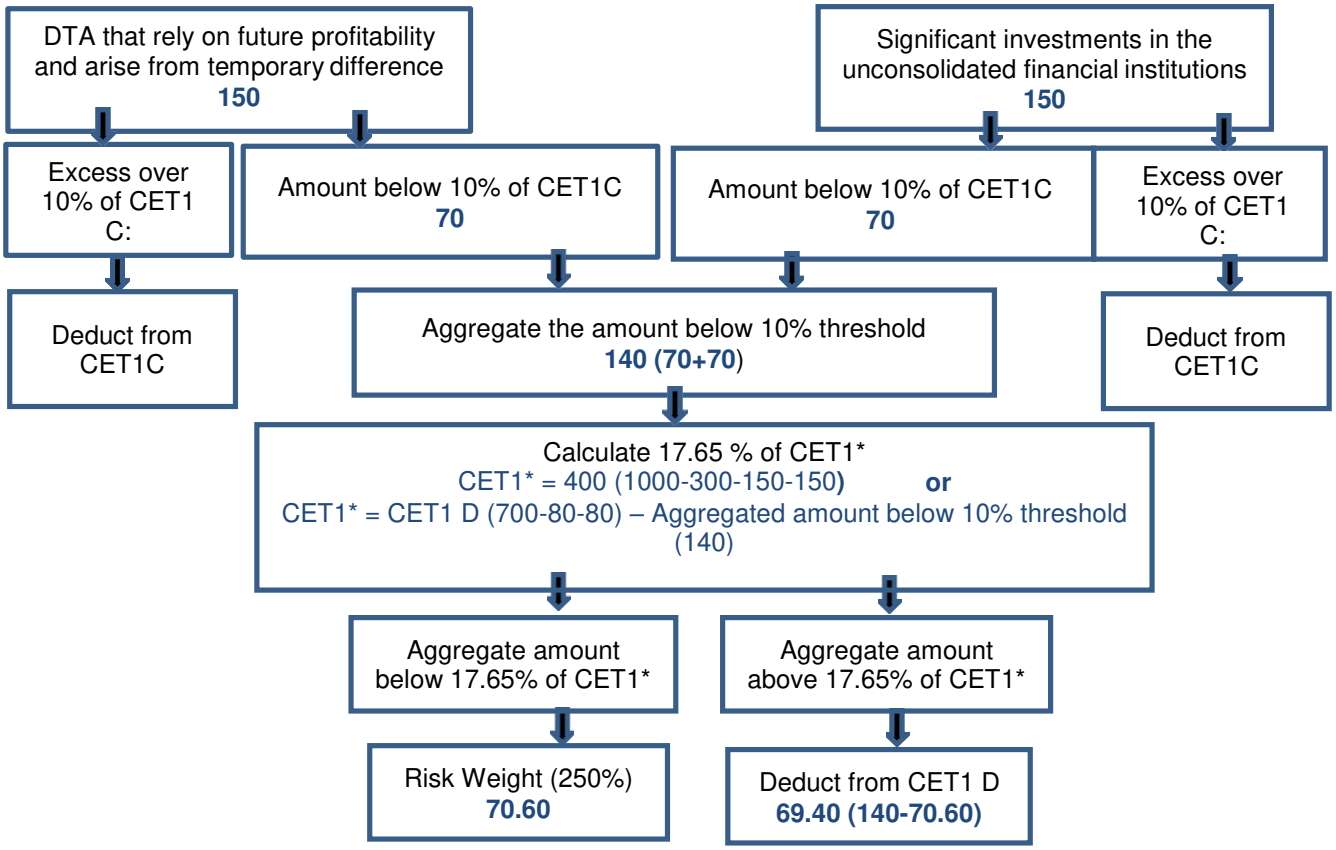
The following table summarizes the components of capital for the consolidated group based on the amounts calculated in the table above. Additional Tier 1 is calculated as the difference between Common Equity Tier 1 and Tier 1 and Tier 2 is the difference between Total Capital and Tier 1.

Bank S: amount of capital issued to third parties included in the consolidated capital.			
Capital	Total amount issued by Parent (all of which is to be included in consolidated capital)	Amount issued by subsidiaries to third parties to be included in the consolidated capital	Total amount of capital issued by parent and subsidiary to be included in the consolidated capital
CET1	26	2.85	28.85
AT1	7	0.08	7.08
T1	33	2.93	35.93
T2	10	2.72	12.72
TC	43	5.65	48.65

Appendix 5: Threshold Deduction

This Appendix is meant to clarify the reporting of threshold deduction and calculation of the 10% limit on significant investments in the common shares of unconsolidated financial institutions (banks, insurance and other financial entities); and the 10% limit on deferred tax assets arising from temporary differences.

CET1 Capital (prior to regulatory deductions)	1000
Regulatory deductions:	300
Total CET1 after the regulatory adjustments above (CET1C)	700
Total amount of significant investments in the common share of banking, financial and insurance entities	150
Total amount of Deferred tax assets arising from temporary differences	150



*This is a "hypothetical" amount of CET1 that is used only for the purpose of determining the deduction of above two items for the aggregate limit. Amount of CET1 = Total CET1 (prior to deduction) – All the deduction except the threshold deduction (i.e. all deduction outlined in para 44 to 68 of the Tier Capital Supply Standards) minus the total amount of both DTA that rely on future profitability and arise from temporary difference and significant investments in the unconsolidated financial institutions.

Appendix 6: Effective Countercyclical Buffer

Assume a bank has the following capital ratios

Capital Base	Minimum Capital Requirements	Bank's Capital Ratio
Common Equity Tier 1 Capital Ratio	7.00%	9.50%
Tier 1 Capital Ratio	8.50%	0.00%
Tier 2 Capital Ratio	2.00%	4.00%
Total Capital Ratio	10.50%	13.50%

From the above table, the bank has fulfilled all minimum capital requirements. In addition, the bank has to meet the additional capital buffers:

Capital Conservation Buffer (CCB)	2.50%
Countercyclical Buffer	0.00%
D- SIB	1.00%
Aggregated Buffer requirement (effective CCB)	**3.50%**

The table below shows the adjusted quartiles accordingly:

Freely available CET 1 Ratio	**Minimum Capital Conservation Ratios** (expressed as a percentage of earnings)
Within 1st quartile of buffer: **0.0 % - 0.875%**	100 %
Within 2nd quartile of buffer: **> 0.875% - 1.75%**	80 %
Within 3rd quartile of buffer: **> 1.75% - 2.625%**	60 %
Within 4th quartile of buffer: **> 2.625% - 3.5%**	40 %
Above top of the buffer: **> 3.5%**	0 %

As the bank does not have Additional Tier 1, the bank has to use 8.5% of its available CET1 to fulfill the minimum Tier 1 requirement of 8.5%. Only the proportion of CET1 that is not allocated to fulfill the minimum capital requirements is freely available to fulfill the buffer requirement. For this bank, 1% CET1 is freely available, because the bank already used 8.5% of its CET1 to fulfill the Tier 1 ratio. (9.5% available CET1 - 8.5% CET1 required to fulfill the Tier 1 minimum requirement of 8.5%).

Impact: The bank breaches the effective CCB with 1% freely available CET1. Capital conservation is required by at least 80% of the bank's earnings. Distributions to shareholders is limited to maximal 20% of the bank's earnings (Central Bank approval of dividends still required).

II. Tier Capital Instruments

I. Introduction

1. This guidance explains how banks should comply with the Tier Capital Instruments Standard. It must be read in conjunction with the Capital Regulation and Standards for Capital Adequacy of Banks in the UAE. It also ensures that banks issue robust and simple Tier capital instruments.

2. A bank needs to take into consideration the below points when issuing capital publicly or privately:

a. The Central Bank expects that issuers will formulate the terms and conditions so that they are not complex, but as simple and as clear as possible.
b. Prudential clauses of importance from a prudential point of view should not be written in italics. They should also not be worded in a way that makes it unclear whether they do actually apply (e.g. 'it is expected that', 'if required by the regulation', etc.). Terms and conditions must be worded clearly.
c. The wording used must be in accordance with that in the Capital Standards/ Guidance.
d. The text should avoid making references to 'as determined by the bank' or to regulatory reporting dates. All requirements must be fulfilled at any time.
e. It is not desirable to specify the reference to say 'under applicable law' or 'if required by the applicable banking rules' when it is clear that legal requirements come directly from the Central Bank, Capital Regulation, Standards or as Guidance.
f. A detailed list may easily create the impression that the list maybe exhaustive. The bank has to clearly note when a list is not exhaustive.

Distributable Items:
3. The definition of distributable items may change when the Central Bank introduces the solo level concept.

Subordination:
4. Additional Tier 1 instruments will rank below Tier 2 instruments by virtue of subordination. The instrument should not be subject to set-off or netting arrangements that would undermine the instrument's capacity to absorb losses.

Redemption Notices:
5. Where a notice has not been revoked as of the relevant date, it follows that a payment is due to the holder. Any non-payment thereafter may trigger an enforcement event. Any notice for redemption should become void and null as soon as the Central Bank declares that a PONV trigger event has occurred.

Call of Instruments:

a. **Optional Call**:
The Central Bank does not prohibit the issuer to call the instrument at its option but only after a period of 5 years.

b. **Regulatory Call**:
The Central Bank does not prohibit the issuer to call the instrument in case of a capital event so that they become or, as appropriate, remain, qualified regulatory capital. However, the amount in case of a capital event can be the outstanding amount or the amount that qualifies as regulatory capital, if some amount of the instrument is held by the issuer or whose purchase is funded by the issuer, save where such non-qualification is only as a result of any applicable limitation on the amount of such capital.

c. **Tax Call**:
The Central Bank does not prohibit the issuer to call the instruments in case of a tax event. A tax event may occur at any time on or after the issue date. A tax event can occur as a result of a change in the applicable tax treatment of the instrument.

Note that both the optional call and the tax call require the Central Bank's approval.

Changes of Terms and conditions:

a. Insignificant Changes to Terms and Conditions (Variation):

The issuer may vary the terms and conditions of the instrument subject to the condition of redemption in the Tier capital instrument Standard. Variation of the terms and conditions of the instrument can occur on optional call regulatory call, or tax call. Changes must be legally enforceable.

b. Significant Changes to Terms and Conditions:

Significant changes to the terms and conditions of the instrument will require the approval of the holders. Every instrument that undergoes significant changes needs to meet all requirements of the Tier Capital Instruments Standard.

Every instrument with changed terms and conditions need to be re-approved by the Central Bank by applying Stage 2 of the Approval Process in Appendix B of the Tier Capital Instruments Standard (Stage 1 of the Approval Process can be omitted in this case).

Coupon Payments:

6. No provision should link a change in payments to contractual, statutory or other obligations, as payments are fully discretionary. Payments should also not be linked to payments on other Additional Tier 1 instruments.

Dividend and Redemption Restrictions:

7. Dividend stopper arrangements that prevent for example dividend payments on common shares are not prohibited by the Central Bank. Furthermore, dividend stopper arrangements that prevent dividend payments on other Additional Tier 1 instruments are not prohibited by Central Bank. However, stoppers must not impede the full discretion that bank must have at all times to cancel distributions/payments on the instrument, nor must they act in a way that could hinder the recapitalization of the bank. For example, it would not be permitted for a stopper on an Additional Tier 1 instrument to:

i. attempt to stop payment on another instrument where the payments on this other instrument were not also fully discretionary;
ii. prevent distributions to shareholders for a period that extends beyond the point in time that dividends/coupons on the instrument are resumed;
iii. impede the normal operation of the bank or any restructuring activity (including acquisitions/disposals).

8. A dividend stopper may act to prohibit actions that are equivalent to the payment of

dividend, such as the bank undertaking discretionary share buybacks. The dividend stopper will remain until one coupon following the dividend stopper date has been made in full or an amount equal to the same has been duly set aside or provided for in full for the benefit of the holders of the instrument.

Maximum Distributable Amount (MDA):
To further clarify the MDA's calculation, below is an example of the calculation:

Bank Capital Holdings	**14.0%**
Bank Capital Requirements	**%**
CET1	7.0%
AT1	1.5%
Tier 2	2.0%
Pillar 2	0.0%
Capital Conservation Buffer	2.5%
Countercyclical Buffer	0.000%
D-SIB Buffer	1.5%
Total	14.5%
Combined Buffer	4.0%
Quartile of Buffer	1.0%
Bank Capital Gap	**0.5%**

Quartile 1		Quartile 2		Quartile 3		Quartile 4	
0.0	1.0%	1.0%	2.0%	2.0%	3.0%	3.0%	4.0%

The bank first will need to fulfill all minimum requirements. As the bank only has CET1 capital available, it needs to use CET1 capital to fulfill all minimum capital requirements (10.5%=7%+1.5%+2%). After fulfilling the minimum capital requirements, the bank has still 3.5% (=14.0%-10.5%) CET1 capital available to fulfill the combined buffer requirements of 4%. Hence, the Bank's capital gap is 0.5%.

From the table above 3.5% means that the bank is in the fourth of the buffer requirements. Therefore, the MDA is restricted to 60% of the bank's earnings, which means the bank may distribute no other restrictions and limitations considered, up to 60% of the earnings in the form of dividend, Additional Tier 1 payments, and variable remuneration.

Note that items considered to be distributions include dividends and share buybacks, discretionary payments on other Tier 1 capital instruments and discretionary bonus payments to staff. Payments that do not result in a depletion of CET1, which may for example include certain scrip dividends, are not considered distributions.

Note also that earnings are defined as distributable profits calculated prior to the deduction of elements subject to the restriction on distributions. Earnings are calculated after the tax, which would have been reported had none of the distributable items been paid. As such, any tax impact of making, such distributions are reversed out. Where a bank does not have positive earnings and has a CET1 ratio less than 9.5%, it would be restricted from making positive net distributions.

Gross-up Clauses:

Gross-up clauses for Additional Tier 1:

9. Gross up clauses are acceptable only if:

i. It is activated by decision of the local tax authority of the issuer and not the investor,
ii. The increased payments do not exceed distributable items,
iii. The gross-up is in relation to the dividend and not the principal.

Gross up Clauses for Tier 2:

10. The second condition related to distributable items is not relevant for Tier 2 instruments, as Tier 2 coupons are not restricted by the amount of available distributable items. Therefore, Tier 2 gross-up clauses can be considered as acceptable if they are activated by a decision of the local tax authority of the issuer, and if they relate to dividend and not on principal. The other two conditions on gross-up clauses are, however, activation is still required by a local tax authority of the issuer and not the investor, and the gross-up is in relation to the dividend payments only not principal.

Point of Non-Viability (PONV):

11. The issuance of any new shares as a result of the Point of Non-Viability must occur prior to any public sector injection of capital so that the capital provided by the public sector is not diluted.

Further guidance on grandfathering:

12. If a Tier 2 instrument eligible for grandfathering begins its final five-year amortisation period prior to 1st January 2018, the base for grandfathering in this case must take into account the amortised amount, not the full nominal amount. As for the rate, if a Tier 2 instrument eligible for grandfathering begins its final amortisation period on 1st January 2018, then individual instruments will continue to be amortised at a rate of 20% per year while the grandfathering cap will be reduced at a rate of 10% per year. Note that each tranche needs to be treated as a separate tranche.

Amortisation of Tier 2 instruments:

13. During the last 5 years of the eligibility before maturity, the eligibility of Tier 2 instruments is written down by 20% per year, i.e. the eligible amount is calculated by multiplying:

i. The nominal amount of the instruments on the first day of the final five year period of their contractual maturity divided by the number of calendar days in that period;
ii. The number of remaining calendar days until the contractual maturity of the instruments.

Documents required to be submitted for the application to issue new Tier Capital Instruments

1. **The CN-01 form** should be completed, filled and signed by the bank's Chief Executive Officer (CEO), Chief Financial Officer (CFO), Head of Internal Audit, Head of Compliance and Head of Risk.
2. **Full terms and conditions,** together with the risk factors relating to the instrument.
   i. Instruments of Islamic banks issued through an SPV must also provide the contract between the bank and the SPV
3. **Shareholder Approval:**
   i. Tier capital instruments require shareholder approval.
   ii. The approval shall relate to an issuance of the specific planned Tier capital instrument (Additional Tier 1 or subordinated Tier 2). Moreover, the approval should clearly mention that the instrument is subordinated; coupon payments may not be paid under certain circumstances, and contains a Point of Non-Viability (PONV) condition.
4. **Legal opinion letters:**
   i. Legal Opinion of an independent appropriately qualified and experienced lawyer that the terms and conditions are compliant with the requirements detailed in the Capital Regulations, Standards and Guidance.
   ii. Legal opinion of an independent appropriately qualified and experienced lawyer that the obligations contained in terms and conditions will constitute legal, valid, binding and enforceable obligations.
   iii. Legal opinion of an independent appropriately qualified and experienced lawyer that the Self-Assessment of the issuing bank meets the Conditions and the Capital Regulations
5. **Capital planning and forecast:**

The Business as Usual (BAU) case should be formulated, such as:

a) Amount of assumed issuance and the expected issuance date (e.g. Q1 2018).
b) Capital structure: % in CET1, AT1, Tier 2 and deductions (using Basel 3 capital components)
c) Five (5) year forecast of the Balance sheet, Profit & loss P&L, Risk Weighted Assets RWA.
d) Amortization of Tier Capital Issuances: Subordinated Tier 2 in the last 5 years prior to maturity and AT1 Instruments, if they fall under a grandfathering rule, for example, 10% per year.
e) Key assumptions and analysis (e.g. on balance growth, asset structure, conversation factors CCF for off balance, operational and market risk, total assets growth, of which businesses that will be the main driver for such growth) and CRWA (i.e. on balance sheet exposure in different industry) in numerical as well as qualitative aspect.

6. **Stress Testing Scenarios:**

The Stress Testing should be submitted in form of a presentation including the underlying data in Excel sheet.

Two Scenarios should be provided as part of the presentation:

a) Top 2 customers defaulting (point in time analysis permitted: End of Year): Definition of top 2 customers; name of top 2 customers; exposure (including on and off balance exposures); what type of eligible collateral and value of collateral, with two sub-scenarios:
   i. With average provisioning level of similar assets, and
   ii. 75% provisioning level
b) Central Bank's Macro-Economic Stress Test
   - Assumptions and results of the latest Macroeconomic stress tests performed by the Central Bank.

7. **Non-Funding Notice:** Neither the bank nor a related party over which the bank exercises control or significant influence can have purchased the instrument, nor can the bank directly or indirectly have funded the purchase of the instrument.

Private Placements

- Offer letter is required for private placements, including risk factors and the bank's financial and risk situation.
- **Market Conformity Analysis**: The bank has to provide evidence on why the pricing of the instrument conforms to the market rate.

II. Frequently Asked Questions (FAQ)

Question 1: The last bullet point mentions "Liability accounted instruments must set the loss absorption trigger at a level of 7.625%." Is it Central Bank decision to have this trigger set at 7.625%? Are any triggers likely to be set for equity accounted instruments?
It is Central Bank's decision for the trigger level. However, the trigger level derives directly from Basel. Minimum capital requirement plus 0.625%. Note, that the consultation documents do not consult on a trigger for equity accounted AT1. However, in particular in conjunction with the development of a recovery/ resolution regulation, the introduction of a trigger level may also be discussed again, as pointed out in the presentation that was circulated with the Tier capital instrument documents.

Question 2: Point of Non-Viability mentions that "A Point of Non-Viability means that the Regulator has determined that the issuer has or will become, Non-Viable without: (a) a Write-down; or (b) a public injection of capital (or equivalent support).". We need clarification as to whether the PONV will be determined by the regulator or the issuer. Also, please advise under what circumstance will partial Write-down be permitted. The regulator determines whether the bank is non-viable or not. Partial write-down will be permitted only for exceptional cases. Explicit examples will not be provided to prevent any expectation.

Question 3: Appendix A: Application Process 1.4: It is mentioned that "Stress Testing with a stress scenario of top 2 customers are defaulting". Since many UAE banks have concentrations in this area, what loss rate needs to be applied in this stress scenario?
Current status quo is two sub scenarios: 75% loss rate and average loss rate of the bank for such customers.

III. Credit Risk

I. Introduction

1. This section provides the guidance for the computation of Credit Risk Weighted Assets (CRWAs) under the Standardised Approach (SA). This guidance should be read in conjunction with the Central Bank's Standard on Credit Risk.

2. A bank must apply risk weights to its on-balance-sheet and off-balance-sheet items using the risk- weighted assets approach. Risk weights are based on credit ratings or fixed risk weights and are broadly aligned with the likelihood of obligor or counterparty default.

3. A bank may use the ratings determined by an External Credit Assessment Institution (ECAI) for credit ratings. In general, banks should only use solicited ratings from recognised ECAIs for the purposes of calculating capital requirement under the SA. However, in exceptional cases, the bank may use unsolicited ratings with the Central Bank approval.

4. Note that all exposures subject to the SA should be risk weighted net of specific allowances and interest in suspense. The guidance must be read in conjunction with Securitisation, Equity Investments in Funds, Counterparty Credit Risk and Credit Valuation Guidance.

5. The guidance set out in this section applies to all exposures in the banking book. Exposures in the trading book should be captured as part of a bank's market risk capital calculations.

II. Clarification and Guiding Principles

A. Claims on Sovereigns

6. **UAE Sovereigns**: The UAE Sovereign asset class consists of exposures to Federal Government and Emirates governments.

7. Federal Government includes all the UAE Federal entities and Central Bank of the UAE (Central Bank). Banks have transition period of 7 years from the date of implementation for exposures to Federal Government that receive a 0% RW, if such exposures are denominated in AED or USD and funded in AED or USD. However, any claim on UAE Federal Government in foreign currency other than USD should be risk weighted according to the published credit risk rating of UAE Federal Government. In the absence of solicited rating for UAE Federal Government, unsolicited ratings are permissible for assigning risk weights for UAE Federal Government exposures.

8. Emirates Governments' exposures include exposures to the Ruler and the Crown Prince of each emirate acting in the capacity as ruler and crown prince, as well as exposures to the ministries, municipalities and other Emirates government departments. Banks have transition period of 7 years from the date of implementation for exposures to Emirates Governments that receive a 0% RW, if such exposures are denominated in AED or USD and funded in AED or USD. Any claim on Emirates governments in a foreign currency other than USD should be risk weighted according to the rating of the Emirate Government.

9. **GCC Sovereigns**: If the regulators in GCC exercise their discretion to permit banks in their jurisdiction to allocate a lower risk weight to claims on that jurisdiction's sovereign,

denominated in the domestic currency of that jurisdiction and funded in that currency, the same, lower risk weight may be allocated to such claims (e.g. 0% assigned to the Government of Saudi Arabia if the exposure is denominated and funded in SAR). This is limited only to GCC sovereign exposures and this lower risk weight may be extended to the risk weighting of collateral and guarantees (refer to section on credit risk mitigation).

10. All other exposures to sovereigns should be risk weighted according to the sovereign rating even if the national supervisory authority adopts preferential risk weights.

B. Claims on Public Sector Entities (PSEs)

Non-Commercial PSEs

11. Non-Commercial PSEs include administrative bodies responsible to the UAE Federal Government, to the Emirates Governments, or to local authorities and other non-commercial undertakings owned by the Federal governments, Emirates Governments or local authorities. These non-commercial PSEs do not have specific revenue- raising powers or specific institutional arrangements the effect of which is to reduce their risks of default. The risk of non-commercial PSE exposures is not equivalent to the risk of sovereign exposures and hence the treatment of claims on sovereigns cannot be applied to non-commercial PSE. However, in exceptional cases, a Non-Commercial PSE may receive the same treatment as its sovereign, if the entity has proven formal arrangements in place to the effect that there is no distinction between the risk of the entity and the risk of its sovereign. The Central Bank's GRE List would reflect this accordingly.

12. If the UAE borrower satisfies the criteria in paragraph 13, the risk weight shall be the same as that for claims on banks. However, the preferential treatment for short-term claims on banks may not be applied. In particular, unrated non-commercial PSE qualify for 50% risk weight. The criteria are based on the principle that non-commercial PSEs qualify for lower risk weights because they have significantly lower risk than a commercial company does. In addition, banks are specifically required to ensure compliance with other aspects of the banking regulations when lending to these entities, for example, but not limited to, the Central Bank large exposure regulations.

13. The alternative criteria listed are to be applied in determining whether an entity qualifies for treatment as a non-commercial PSE. The Central Bank provides a list (so-called GRE List) to all the banks in the UAE which includes non-commercial PSEs.

i. Direct government (Federal or Emirate) ownership >50% directly or through a qualifying PSE that itself is majority owned by government.
ii. An entity whose complete activities are functions of a government.
iii. Its services are of public benefit including when services are sold directly to the public (e.g. electricity and water). The service provided should be of substantial public benefit and the entity should have a monopolistic nature and there should be a significant likelihood that the government would not let the entity go bankrupt.
iv. Not listed on any stock exchange.
v. Provides internal services to parent or sister companies only, and the parent company is itself a non-commercial PSE.
vi. The function of the company is of a non-commercial nature and does not operate in a competitive market.

vii. Does not operate overseas.

14. In the case of a UAE sovereign guarantee given to a non-commercial PSE, with the Central Bank approval, the guarantee may be treated as eligible credit risk mitigation (CRM) to reduce the exposure provided the bank ensures compliance with the entire minimum regulatory requirements and operational requirements stated in the credit risk standard.

Government Related Entities (GRE)

15. These are commercial undertakings that are fully owned or more than 50% in ownership by Federal governments, or by Emirates governments. As these entities function as a corporate in the competitive markets even though the government is the major shareholder, Central Bank requires such exposures to be classified under GRE and get the same treatment of claims on corporate with the appropriate risk weights based on the credit rating of the entity.

16. All banks must comply with the latest version of the GRE list for classification and risk weighting of entities. Banks that have information that would lead to the addition (or removal) of an entity to (or from) the GRE list must submit such information to the Central Bank. All banks must comply with the GRE list unless any addition or removal of entities is reflected in the GRE list.

17. Banks Internal audit/compliance department should perform regular reviews to ensure the PSE and GRE classification complies with the Central Bank GRE list.

C. Claims on multilateral development banks (MDBs)

18. Exposures to MDBs shall in general be treated similar to claim on banks, but without using the preferential treatment for short term claims. However, highly rated MDBs, which meet certain criteria specified below, are eligible for a preferential 0% risk weight.

i. Very high quality long-term issuer ratings, i.e. a majority of an MDB's external assessments must be AAA;
ii. Shareholder structure is comprised of a significant proportion of sovereigns with long-term issuer credit assessments of AA- or better, or the majority of the MDB's fund-raising is in the form of paid-in equity/capital and there is little or no leverage;
iii. Strong shareholder support demonstrated by the amount of paid-in capital contributed by the shareholders; the amount of further capital the MDBs have the right to call, if required, to repay their liabilities; and continued capital contributions and new pledges from sovereign shareholders;
iv. Adequate level of capital and liquidity (a case-by-case approach is necessary in order to assess whether each MDB's capital and liquidity are adequate), and
v. Strict statutory lending requirements and conservative financial policies, which would include among other conditions a structured approval process, internal creditworthiness and risk concentration limits (per country, sector, and individual exposure and credit category), large exposures approval by the board or a committee of the board, fixed repayment schedules, effective monitoring of use of proceeds, status review process, and rigorous assessment of risk and provisioning to loan loss reserve.

19. MDBs currently eligible for 0% risk weight are the World Bank Group comprised of the International Bank for Reconstruction and Development, the International Finance Corporation, the Multilateral Investment Guarantee Agency and the International Development Association, the Asian Development Bank, the African Development Bank, the European Bank for Reconstruction and Development, the Inter-American Development Bank, the European Investment Bank, the European Investment Fund, the Nordic Investment Bank, the Caribbean Development Bank, the Islamic Development Bank, the Council of Europe Development Bank, the International Finance Facility for Immunisation and the Asian Infrastructure Investment Bank. The list of MDBs is by the Basel Committee on Banking Supervision (BCBS) and can be found on the website www.bis.org. All banks are required to refer to and comply with the BCBS list. Whilst the BCBS evaluates the eligibility of the entities on a case-by-case basis, the Central Bank has no role in the assessment and decision of entities being eligible for 0% risk weight.

D. Claims on Banks

20. The types of claims that fall under this asset class are claims not limited to those due from banks, nostro accounts, certificates of deposit (CD) issued by banks, and repurchase agreements (repos). A risk weight of 50% (long term) and 20% (short term) is applied to claims on unrated banks. However, this treatment is subject to the provision that no claim on an unrated bank may receive a risk weight lower than that applied to claims on its sovereign of incorporation.

21. Exposure to intra-group of the bank have to be risk weighted according to the external rating of the counterparty entity (e.g. exposures to the head office shall receive the risk weight according to the rating of the head office).

E. Claims on Securities Firms

In addition to providing loans to other banks in the interbank market, banks provide loans to securities firms. The securities firms use these loans to fund the purchase of securities. Exposures to these securities firms shall be treated as claims on banks if these firms are subject to prudential standards and a level of supervision that is equivalent to those applicable to banks. Such supervision must include at least both capital and liquidity requirements. Exposures to all other securities firms that are not treated as claims on banks will be treated as exposures to corporates.

F. Claims on Corporates

22. For the purposes of calculating capital requirements, exposures to corporates include, but are not limited to, exposures (loans, bonds, receivables, etc.) to incorporated entities, associations, partnerships, proprietorships, trusts, funds and other entities with similar characteristics, except those which qualify for one of the other exposure classes. The corporate exposure class does not include exposures to individuals.

23. Claims on corporates may be risk- weighted based on the entity's external credit rating assessment. The Central Bank may increase the standard risk weight for unrated claims where it judges that a higher risk weight is warranted by the overall default experience. As part of the supervisory review process, the Central Bank may also consider whether the credit quality of corporate claims held by banks warrants a risk weight higher than 100%.

G. Claims included in the Regulatory Retail Portfolios

To qualify for a 75% risk weight in the regulatory retail portfolio, claims must meet the four

criteria stated in the Credit Risk Standard (orientation criterion, product criterion, granularity criterion and value criterion). All other retail claims should be risk weighted at 100%. For granularity criterion and value criterion, the aggregated exposure means gross amount (i.e. not taking any credit risk mitigation into account) of all forms of retail exposures, excluding residential real estate exposures. In case of off-balance sheet items, the gross amount will be calculated after applying credit conversion factors. In addition, "to one counterparty" means one or several entities that may be considered as a single beneficiary (e.g. in the case of a small business that is affiliated to another small business, the limit would apply to the bank's aggregated exposure on both businesses).

24. Claims secured by residential property and past due retail loans are to be excluded from the overall regulatory retail portfolio for risk weighting purposes. These are addressed separately in the asset classes for residential property or commercial real estate.

H. Claims Secured by Residential Property

25. Claims secured by residential property are defined as loans secured by residential property that is either self-occupied or rented out. The property must be fully mortgaged in favor of the bank.

26. The Loan-to-Value (LTV) ratio is the outstanding loan exposure divided by the value of the property. The value of the property will be maintained at the value at origination unless the Central Bank requires banks to revise the property value downward. The value must be adjusted if an extraordinary, idiosyncratic event occurs resulting in a permanent reduction of the property value. Such adjustment must be notified to the Central Bank. If the value has been adjusted downwards, a subsequent upwards adjustment can be made but not to a higher value than the value at origination.

27. A 35% risk weighting shall apply to eligible residential claims if the LTV ratio is less than 85% and the exposure is less than AED 10 million. When the loan amount exceeds AED 10 million and the LTV is below 85%, the loan amount up to AED 10 million will receive 35% risk weight and the remaining amount above AED 10 million receives 100% risk weight.

28. A risk weight of 75% may be applied by banks that do not hold information regarding LTVs for individual exposures

29. For residential exposures that meet the criteria for regulatory retail claims and have an LTV greater than 85%, the 75% risk weight must be applied to the whole loan, i.e. the loan should not be split.

30. The risk-weights in this asset class may be applied to a limit of four individual properties made to a single individual customer that are owner- occupied or rented out by a retail borrower. Any additional exposure to a customer with loans for four individual properties shall be classified as a claim on a commercial property and risk weighted with 100%.

I. Claims secured by Commercial Real Estate

31. Commercial real estate is defined as a loan granted by a bank to a customer specifically for the purpose of buying or constructing commercial property including residential towers and mixed use towers.

J. Past Due Loans

32. Risk weights of past due loans depend on the degree of provision coverage on the claim. For any past due loan, 100% Credit Conversion Factor (CCF) should be applied for the off-

balance sheet component to calculate the credit risk-weighted assets. Any exposure that is past due for more than 90 days should be reported under this asset class, net of specific provisions (including partial write-offs). This differs from the IFRS 9 classification as the past due asset includes any loans more than 90 days past due.

K. Higher-risk categories

33. Higher risk weights may be applied to assets that reflect higher risks. A bank may decide to apply a risk weight of 150% or higher.

L. Other Assets

34. Assets in this class include any other form of exposure that does not fit into the specific exposure classes. The standard risk weight for all other assets will be 100%, with the exception of the following exposures:

a) 0% risk weight applied to:
   i. cash owned and held at the bank or in transit;
   ii. Gold bullion held at the bank or held in another bank on an allocated basis, to the extent the gold bullion assets are backed by gold bullion liabilities;
   iii. All the deductions from capital according to the Tier capital supply of Standards of Capital Adequacy in the UAE, for reconciliation between the regulatory return and the audited/reviewed financial statement.

b) 20% risk weight:
   i. Cash items in the process of collection.

c) 100% risk weight:
   i. Investments in the capital of banking, financial and insurance entities to which a credit risk standardised approach applies, unless they are deducted from regulatory capital according to section 3.9 of Tier capital supply of Standards Capital Adequacy in the UAE. (listed entity)
   ii. Investments in commercial entities below the materiality thresholds according to section 5 of Tier capital supply of Standards of Capital Adequacy in the UAE (listed);
   iii. Premises, plant and equipment and other fixed assets,
   iv. Prepaid expenses such as property taxes and utilities,
   v. All other assets

d) 150% risk weight:
   i. The amount of investments in the capital of banking, financial and insurance entities to which a credit risk standardised approach applies unless they are deducted from regulatory capital deduction according to section 3.9 of Tier capital supply of Standards of Capital Adequacy in the UAE (unlisted entity);
   ii. Investments in commercial entities below the materiality thresholds according to section 5 of Tier capital supply of Standards of Capital Adequacy in the UAE (unlisted entity).

e) 250% risk weight:

i. Investments in the capital of banking, financial and insurance entities to which a credit risk standardised approach, applies unless they are deducted from regulatory capital according to the threshold deduction described in section 3.10 of Tier capital supply of Standards of Capital Adequacy in the UAE.

ii. Deferred tax assets (DTAs) which depend on future profitability and arise from temporary differences unless they are not deducted under threshold deductions described in section 4 of Tier capital supply of Standards of Capital Adequacy in the UAE.

f) 1250% risk weight:

i. Investments in commercial entities in excess of the materiality thresholds must be risk-weighted at 1/ (Minimum capital requirement) (i.e. 1250%).

M. Off-Balance Sheet Items: Credit Conversion Factors

35. Under the standardised approach, off-balance sheet items are converted into credit exposure equivalents with Credit Conversion Factors (CCFs). CCFs approximate the potential amount of the off-balance sheet facility that would have been drawn down by the client by the time of its default. The credit equivalent amount is treated in a manner similar to an on-balance sheet instrument and is assigned the risk weight appropriate to the counterparty. The categories of off-balance sheet and its appropriate CCFs are outlined in the standard.

Calculating credit equivalent amounts for off-balance sheet item:

(Principal amount – provision amount) * CCF = Credit equivalent amount.

Bank guarantees

36. There are two types of bank guarantees viz. financial guarantees (direct credit substitutes); and performance guarantees (transaction-related contingent items).

37. Financial guarantees essentially carry the same credit risk as a direct extension of credit i.e. the risk of loss is directly linked to the creditworthiness of the counterparty against whom a potential claim is acquired, and therefore attracts a CCF of 100%.

38. Performance guarantees are essentially transaction-related contingencies that involve an irrevocable undertaking to pay a third party in the event the counterparty fails to fulfil or perform a contractual non-financial obligation. In such transactions, the risk of loss depends on the event which need not necessarily be related to the creditworthiness of the counterparty involved. Performance guarantees attract a CCF of 50%.

Commitments

39. The credit conversion factor applied to a commitment is dependent on its maturity. Banks should use original maturity to report these instruments.

40. Longer maturity commitments are considered to be of higher risk because there is a longer period between credit reviews and less opportunity to withdraw the commitment if the credit quality of the customer deteriorates. Commitments with an original maturity up to one year and commitments with an original maturity over one year will receive a CCF of 20% and 50%, respectively.

41. However, any commitments that are unconditionally cancellable at any time by the bank without prior notice, or that effectively provide for automatic cancellation due to deterioration in a borrower's creditworthiness, will receive a 0% CCF. This requires that banks conduct formal reviews of the facilities regularly and this provides the opportunity to take note of any perceived

deterioration in credit quality and thereby cancellability by the bank.

42. For exposures that give rise to counterparty credit risk, the exposure amount to be used in the determination of RWA is to be calculated according to the standardised approach for Counterparty Credit Risk (SA-CCR).

N. Credit Risk Mitigation (CRM)

43. Only eligible collateral, guarantees, credit derivatives, and netting under legally enforceable bilateral agreements (such as ISDAs) are eligible for CRM purposes. For example, a commitment to provide collateral or a guarantee is not recognised as an eligible CRM technique for capital adequacy purposes until the commitment to do so is actually fulfilled.

44. No additional CRM will be recognised for capital adequacy purposes on exposures where the risk weight is mapped from a rating specific to a debt security where that rating already reflects CRM. For example, if the rating has already taken into account a guarantee pledged by the parent or sovereign entity, then the guarantee shall not be considered again for credit risk mitigation purposes.

45. Banks should ensure that all minimum legal and the operational requirements set out in the Standard are fulfilled.

CRM treatment by substitution of risk weights

46. The method of substitution of risk weight is applicable for the recognition of the guarantees and credit derivatives as CRM techniques under both the simple approach and the comprehensive approach. Under this method, an exposure is divided into two portions: the portion covered by credit protection and the remaining uncovered portion.

47. For guarantees and credit derivatives, the value of credit protection to be recorded is the nominal value. However, where the credit protection is denominated in a currency different from that of the underlying obligation, the covered portion should be reduced by a standard supervisory haircut defined in the Credit Risk Standard for the currency mismatch.

48. For eligible collateral, the value of credit protection to be recorded is its market value, subject to a minimum revaluation frequency of 6 months for performing assets, and 3 months for past due assets (if this is not achieved then no value can be recognised). Where the collateral includes cash deposits, certificates of deposit, cash funded credit-linked notes, or other comparable instruments, which are held at a third-party bank in a non-custodial arrangement and unconditionally and irrevocably pledged or assigned to the bank, the collateral will be allocated the same risk weight as that of the third party bank.

Simple Approach

49. Under simple approach, the eligible collateral must be pledged for at least the life of the exposure, i.e. maturity mismatch is not allowed.

50. Where a bank has collateral in the form of shares and uses the simple approach, a 100% risk weight is applied for listed shares and 150% risk weight for unlisted shares.

Comprehensive Approach

51. Under the comprehensive approach, the collateral adjusted value is deducted from the risk exposure (before assigning the risk weight). Standard supervisory haircuts as defined in the

Credit Risk Standard are applied to the collateral because collateral is subject to risk, which could reduce the realisation value of the collateral when liquidated.

52. If the exposure and collateral are held in different currencies, the bank must adjust downwards the volatility- adjusted collateral amount to take into account possible future fluctuations in exchange rates.

53. There is no distinction for applying supervisory haircuts between main index equities and equities listed at a recognised exchange. A 25% haircut applies to all equities.

Capital Add-on under Pillar 2

54. While the use of CRM techniques reduces or transfers credit risk, it gives rise to other risks that need to be adequately controlled and managed. Banks should take all appropriate steps to ensure the effectiveness of the CRM and to address related risks. Where these risks are not adequately controlled, the Central Bank may impose additional capital charges or take other supervisory actions as outlined in Pillar 2 Standard.

III. Shari'ah Implementation

55. Banks that conduct all or part of their activities in accordance with the provisions of Shari'ah laws and have exposure to risks similar to those mentioned in the Credit Risk Standard, shall, for the purpose of maintaining an appropriate level of capital, calculate the relevant risk weighted asset in line with these guidelines. This must be done in a manner compliant with the Shari'ah laws.

56. This is applicable until relevant standards and/or guidelines in respect of these transactions are issued specifically for banks offering Islamic financial services.

IV. Frequently asked questions (FAQ)

During the industry consultation the Central Bank received a number of questions related to the Credit Risk Standard and Guidance. To ensure consistent implementation of the Credit Risk Standard in the UAE, the main questions are addressed hereunder.

Claims on Sovereigns

Question 1: What does the 7-year transition for USD exposure to the Federal Government and Emirates Government mean for banks?

During the 7-year transition period, banks are required to have a forward looking plan on USD exposures to Federal and Emirate governments. Banks shall monitor and manage the impact of the change in risk weights of exposures in USD on the bank's capital position. Exposures in USD as well as the banks' capital plans will be monitored by the Central Bank.

Question 2: What is the appropriate risk weight for exposures to other GCC sovereigns?

A 0% risk weight is applied to GCC Sovereign exposures denominated and funded in the domestic currency of their country. However, exposures in non-domestic currencies (including USD) shall be risk weighted according to the rating of sovereigns.

Question 3: Does the Central Bank allow banks to apply unsolicited ratings in the same

way as solicited ratings?
Bank should use ratings determined by an eligible External Credit Assessment Institution (ECAIs). Only solicited ratings are allowed to be used. The Central Bank only allows unsolicited ratings from an eligible ECAI for the UAE federal government. All other exposures shall be risk weighted using solicited ratings.

Claims on Non-Commercial Public Sector Enterprises

Question 4: Can the bank include claims on a GCC PSE denominated in their local currency under claims of Non-Commercial PSEs?
No, the preferential risk weights for Non-Commercial PSEs are only granted for UAE entities.

Question 5: Do all the seven criteria stated in the credit risk guidance have to be met or any of the criterion can be met to classify an entity as non-commercial PSE? In addition, does the bank just follow the so-called GRE list or shall the bank apply the criteria to classify entities as non-commercial PSE?
To classify entities as Non-commercial PSE, the Central Bank will consider in its approval process all seven criteria and in principle all seven criteria must be satisfied. A bank may approach the Central Bank, if the bank thinks that certain entities satisfy the criteria for a Non-commercial PSE that can be added to the GRE list. If banks have information that would lead to changes to of the GRE List, banks should inform the Central Bank accordingly.

Question 6: The guidance requires that the bank's internal audit/ compliance departments perform regular reviews to ensure the PSE and GRE classification complies with the Central Bank's GRE list. What is the expected frequency of such a review?
The frequency of internal audit/compliance should be commensurate with the bank's size, the nature and risks of bank's operations and the complexity of the bank.

Claims on Multilateral Development Banks (MDBs)

Question 7: Does an MDB need to satisfy all of the stated criteria or any one of the criteria to apply a 0% risk-weight?
Exposures to MDBs may receive a risk weight of 0% if they fulfill all five criteria. However, the Central Bank does not decide whether an MDB satisfies the criteria or not. The Basel Committee on Banking Supervision (BCBS) evaluates each MDB's eligibility for inclusion in the list of 0% RW on a case-by-case basis.

Claims on Banks

Question 8: For claims on an unrated bank, can the bank apply the preferential rating as per risk weight table for short-term exposures?
A risk weight of 50% for long term exposures and 20% for short term exposures are applied to claims on unrated banks. However, no claim on an unrated bank may receive a risk weight lower than the risk weight applied to claims on its sovereign of incorporation, irrespectively of the exposure being short-term or long-term.

Claims on Corporates

Question 9: Should loans to High Net Worth Individuals (HNIs) be reported under claims in regulatory retail portfolio or claims on corporate?

No, HNI classification should be aligned with the BRF explanatory note and should be reported under claims on corporate.

Question 10: What is the treatment for SMEs and in which asset class are SME exposures reported?
Answer: Banks have to follow BRF explanatory note 6.21 for the definition of SME. Exposures classified as SME according to BRF explanatory note, are for capital adequacy reporting purposes classified as "Retail SME" and "corporate SME". SME exposures fulfilling all of four retail criteria as stated in Section III G of the Credit Risk Standard are reported under "claims on retail". SME that do not fulfill the retail criteria are treated under claims on corporates as per Section III F of the Credit Risk Standard.

Claims secured by Residential Property

Question 11: Does the bank have to assign 100% RW for customers with more than 4 properties?
Yes, if a customer has more than 4 properties, a bank has to report all properties of that customer as claims on commercial properties and the risk weight of the properties shall be 100%.

Question 12: Can the bank apply a preferential RW of 35% for properties under construction?
No, the preferential risk weight of 35% applies only to completed properties, as under construction, residential properties incur higher risks than buying completed properties.

Claims Secured by Commercial Real Estate

Question 13: Do loans with a collateral of a completed commercial property, irrespective of their purpose, fall under Claims secured by Commercial Real Estate?
No, this asset class is for exposures specifically for the purpose of buying/ constructing commercial property, i.e. real estate loans.

Higher-risk Categories

Question 14: What type of exposure would fall under higher risk categories? What is the appropriate RW for higher risk categories?
Almost all the exposures that receive 150% risk weight are reported under the respective asset class. The Central Bank will apply a 150% or higher risk weight, reflecting the higher risks associated with assets that require separate disclosure. For example, but not limited to, real estate acquired in settlement of debt and not liquidated within the statutory period shall be reported under the higher risk asset class with a 150% RW.

Other Assets

Question 15: The Credit Risk Standard states in section 5, that equity investment in commercial entities that are below the thresholds shall be risk weighted at 150% if the entity is unlisted. However, if the banking group has full control over the commercial subsidiary, can a lower risk weight be applied?
A 150% risk weight reflects the additional risk the commercial subsidiary underpins on unlisted equity (absence of regulatory requirement, illiquidity, etc.) exposures than listed equity exposures.

Issuer and Issuance Rating

Question 16: What will be the treatment of a rated entity (e.g. corporate) that issues a bond?
The bank must classify the bond based on the entity classification (Claim on Corporate) and assign risk weight based on the rating of the entity.

Question 17: What will be the treatment of a rated entity (e.g. corporate) that issues a bond with a guarantee by the sovereign specific to the issuance and the bond gets a higher rating than the entity itself?
Classify the bond based on the entity classification (Claim on Corporate) and assign risk weight based on the rating of the bond.

Question 18: What will be the treatment of a rated entity (e.g. corporate) that issues a bond with a lower rating than entity?
Classify the bond based on the entity classification (Claim on Corporate) and assign risk weight based on the rating of the bond.

Question 19: What will be the treatment if an unrated entity (e.g. corporate) that issues a bond (unrated), but the bond has the guarantee from sovereign, specific and direct guarantee?
Classify the bond based on the entity classification (Claim on Corporate) and assign the risk weight based on the bond rating (unrated). The guarantee should be used for credit risk mitigation by substituting the risk weight of the bond using the claims on sovereign mapping table (e.g. AAA - 0% risk weight).

Question 20: What will be the treatment if an unrated entity (e.g. corporate) that issues a bond with a guarantee given by the sovereign to the entity (and not the bond)?
Classify the bond based on the entity classification (Claim on Corporate) and assign the risk weight related to the unrated entity. The guarantee should be used for credit risk mitigation by substituting the risk weight of the bond using the claims on corporate mapping table (e.g. AAA - 20% risk weight).

Off Balance-sheet Items

Question 22: The Credit Risk Standards states that, "Any commitments that are unconditionally cancellable at any time by the bank without prior notice, or that effectively provide for automatic cancellation due to deterioration in a borrower's creditworthiness must be converted into credit exposure equivalents using CCF of 0%". For using CCF of 0%, please provide explanation on being cancellable at any time without prior notice.
Majority of the unconditionally cancellable commitments are subject to certain contractual conditions, which in practice may not render them as unconditionally cancelled and thereby do not qualify them for 0% CCF, implying that all the off-balance sheet items bear a risk to the bank. Bank shall conduct a formal review of the commitments at regular intervals to ensure that commitments can be cancelled from a legal and practical perspective.

Credit Risk Mitigation

Question 23: Is an approval required from the Central Bank to switch between the simple

and comprehensive approach for Credit Risk Mitigation techniques? For a bank that

applies the comprehensive approach, is an approval required to go back to the simple approach?

A bank that intends to apply the comprehensive approach requires prior approval from the Central Bank. Once approved and if the bank wishes to go back to simple approach, a bank requires the Central Bank's approval again to go to the simple approach.

V. Appendix: Computation of Exposures with Credit Risk Mitigation Effects

Bank A repos out cash of AED 1000 to a corporate with an external rating of AA. The corporate provides collateral in the form of debt securities issued by a bank with an external rating of AA. The debt securities have a remaining maturity of 7 years and a market value of AED 990.

Minimum holding period for various products		
Transaction type	Minimum holding period	Condition
Repo-style transaction	5 Business days	Daily remargining
Other capital market transactions	10 Business days	Daily remargining
Secured lending	20 Business days	Daily revaluation

The haircut for the transaction with other than 10 business days minimum holding period, as indicated above, will have to be adjusted by scaling up or down the haircut for 10 business days as per the formula given below:

$$H = HM\sqrt{\frac{NR + (TM - 1)}{TM}}$$

Variables	**Details of the Variables**	**Supervisory haircuts**	**Scaling factor**	**Adjusted haircuts**
He	Haircut appropriate to the underlying exposure	Exposure in the form of cash, supervisory haircut 0%	0	Not applicable
Hc	Haircut appropriate to the Collateral	Debt securities issued by a bank supervisory haircut 8%	0.71	Supervisory haircut (8%)* Scaling factor (0.71)= 6%
Hfx	Haircut appropriate for Currency Mismatch	No Currency Mismatch	0	Not applicable

The exposure amount after risk mitigation is calculated as follows:

Variables	**E*= max {0, [E x (1 + He) – C x (1 – Hc – Hfx)]}**	**Value**
E*	Net credit exposure (i.e. exposure value after CRM)	69.4
E	Principal Amount, which is net of specific provisions, if any For off-balance sheet, it is the credit equivalent amount	1000
He	Haircut appropriate to the underlying exposure (cash)	0
C	Value of the collateral before CRM	990
Hc	Haircut appropriate to the Collateral	6%
Hfx	Haircut appropriate for Currency Mismatch	0

Risk weighted asset for the exposure = (69.40 * 50% (AA)) = 34.70

*(Exposure * Risk weight)*

IV. Counterparty Credit Risk

I. Introduction

1. In March 2014, the Basel Committee on Banking Supervision (BCBS) published a new approach for measurement of counterparty credit risk exposure associated with OTC derivatives, exchange-traded derivatives, and long settlement transactions, the standardised approach for CCR (SA-CCR). The approach in the Central Bank's Standards for CCR closely follows the SA-CCR as developed by the BCBS in all material areas of substance.

2. The BCBS developed the SA-CCR to replace the two previous non-internal model methods, the Current Exposure Method (CEM) and the Standardized Method (SM). The SA-CCR was designed to be more risk sensitive than CEM and SM. It accurately recognizes the effects of collateralization and recognizes a benefit from over-collateralization. It also provides incentives for centralized clearing of derivative transactions.

3. As is the case with the CEM, under the SA-CCR the exposure at default (EAD) is calculated as the sum of two components: (i) replacement cost (RC), which reflects the current value of the exposure adjusted for the effects of net collateral including thresholds, minimum transfer amounts, and independent amounts; and (ii) potential future exposure (PFE), which reflects the potential increase in exposure until the closure or replacement of the transactions. The PFE portion consists of a multiplier that accounts for over-collateralization, and an aggregate add-on derived from the summation of add-ons for each asset class (interest rate, foreign exchange, credit, equity, and commodity), which in turn are calculated at the hedging set level.

II. Clarifications

A. Replacement Cost

4. Note that in mathematical terms, replacement cost for un-margined transactions is calculated as:

$$RC = \max(V - C; 0)$$

where RC is replacement cost, V is the total current market value of all derivative contracts in the netting set combined, and C is the net value of collateral for the netting set, after application of relevant haircuts. (In the CCR Standards, the quantity V-C is referred to as the Net Current Value, or NCV.)

5. For margined transactions, the calculation becomes:

$$RC = \max(V - C; TH + MTA - NICA; 0)$$

where TH is the threshold level of variation that would require a transfer of collateral, MTA is the minimum transfer amount of the collateral, and NICA is the Net Independent Collateral Amount equal to the difference between the value of any independent collateral posted by a counterparty and any independent collateral posted by the bank for that counterparty, excluding any collateral that the bank has posted to a segregated, bankruptcy remote account.

6. When determining the RC component of a netting set, the netting contract must not contain any clause which, in the event of default of a counterparty, permits a non-defaulting counterparty to make limited payments only, or no payments at all, to the estate of the defaulting party, even if the defaulting party is a net creditor.

B. Netting

7. The Standards requires that a bank should apply netting only when it can satisfy the Central Bank that netting is appropriate, according to the specific requirements established in the Standards. Banks should recognize that this requirement would likely be difficult to meet in the case of trades conducted in jurisdictions lacking clear legal recognition of netting, which at present is the case in the UAE.

8. If netting is not recognized, then netting sets still should be used for the calculation. However, since each netting set must contain only trades that can be netted, each netting set is likely to consist of a single transaction. The calculations of EAD can still be performed, although they simplify considerably.

9. Note that there may be more than one netting set for a given counterparty. In that case, the CCR calculations should be performed for each netting set individually. The individual netting set calculations can be aggregated to the counterparty level for reporting or other purposes.

C. PFE Multiplier

10. For the multiplier of the PFE component, when the collateral held is less than the net market value of the derivative contracts ("under-collateralization"), the current replacement cost is positive and the multiplier is equal to one (i.e. the PFE component is equal to the full value of the aggregate add-on). Where the collateral held is greater than the net market value of the derivative contracts ("over-collateralization"), the current replacement cost is zero and the multiplier is less than one (i.e. the PFE component is less than the full value of the aggregate add-on).

D. Supervisory Duration

11. The Supervisory Duration calculation required in the Standards is in effect the present value of a continuous-time annuity of unit nominal value, discounted at a rate of 5%. The implied annuity is received between dates S and E (the start date and the end date, respectively), and the present value is taken to the current date.

12. For interest rate and credit derivatives, the supervisory measure of duration depends on each transaction's start date S and end date E. The following Table presents example transactions and illustrates the values of S and E, expressed in years, which would be associated with each transaction, together with the maturity M of the transaction.

Instrument	*M*	*S*	*E*
Interest rate or credit default swap maturing in 10 years	10	0	10
10-year interest rate swap, forward starting in 3 years	13	3	13
Forward rate agreement for time period starting in 125 days and ending in one year	1	0.5	1
Cash-settled European swaption referencing 5-year interest rate swap with exercise date in 125 days	0.5	0.5	5.5
Physically-settled European swaption referencing 5-year interest rate swap with exercise date in 125 days	5.5	0.5	5.5
Interest rate cap or floor specified for semi-annual interest with maturity 6 years	6	0	6
Option on a 5-year maturity bond, with the last possible exercise date in 1 year	1	1	5
3-month Eurodollar futures maturing in 1 year	1	1	1.25
Futures on 20-year bond maturing in 2 years	2	2	22
6-month option on 2-year futures on a 20-year bond	2	2	22

13. Note there is a distinction between the period spanned by the underlying transaction and the remaining maturity of the derivative contract. For example, a European interest rate swaption with expiry of 1 year and the term of the underlying swap of 5 years has S=1 year and E=6 years. An interest rate swap, or an index CDS, maturing in 10 years has S=0 years and E=10 years. The parameters S and E are only used for interest rate derivatives and credit-related derivatives.

E. Aggregation of Maturity Category Effective Notional Amounts

14. The Standards allows banks to choose between two options for aggregating the effective notional amounts that are calculated for each maturity category for interest rate derivatives. The primary formula is the following:

$$\sqrt{D1^2 + D2^2 + D3^2 + 1.4 \times (D1 \times D2) + 1.4 \times (D2 \times D3) + 0.6 \times (D1 \times D3)}$$

15. In this formula, D1 is the effective notional amount for maturity category 1, D2 is the effective notional amount for maturity category 2, and D3 is the effective notional amount for maturity category 3. As defined in the Standards, maturity category 1 is less than one year, maturity category 2 is one to five years, and maturity category 3 is more than five years.

16. As an alternative, the bank may choose to combine the effective notional values as the simple sum of the absolute values of D1, D2, and D3 within a hedging set, which has the effect of ignoring potential diversification benefits. That is, as an alternative to the calculation above, the bank may calculate:

$$|D1| + |D2| + |D3|$$

This alternative is a simpler calculation, but is more conservative in the sense that it always produces a larger result. To see this, note that the two calculations would give identical results only if the values 1.4 and 0.6 in the first formula are replaced with the value 2.0. Since the actual coefficient values are smaller than 2.0, the first formula gives a smaller result than the second formula. Choosing the second formula is equivalent to choosing to use the first formula with the

1.4 and 0.6 values replaced by 2.0, increasing measured CCR exposure and therefore minimum required capital.

F. Maturity Factor

17. Note that the Standards requires the use of a standard 250-day trading or business year for the calculation of the maturity factor and the MPOR. The view of the Central Bank is that a single, standardised definition of one year for this purpose will enhance comparability across banks and over time. However, the BCBS has indicated that the number of business days used for the purpose of determining the maturity factor be calculated appropriately for each transaction, taking into account the market conventions of the relevant jurisdiction. If a bank believes that use of a different definition of one year is appropriate, or would significantly reduce its compliance burden, the bank may discuss the matter with bank supervisors.

G. Delta Adjustment

18. Supervisory delta adjustments reflect the fact that the notional value of a transaction is not by itself a good indication of the associated risk. In particular, exposure to future market movements depends on the direction of the transaction and any non-linearity in the structure.

19. With respect to direction, a derivative may be long exposure to the underlying risk factor (price, rate, volatility, etc.), in which case the value of the derivative will move in the same direction as the underlying – gaining value with increases, losing value with decreases – and the delta is positive to reflect this relationship. The alternative is that a derivative may be short exposure to the underlying risk factor, in which case the value of the derivative moves opposite to the underlying – losing value with increases, and gaining value with decreases – and thus the delta is negative.

20. The non-linearity effects are prominent with transactions that involve contingent payoffs or option-like elements. Options and CDOs are notable examples. For such derivative transactions, the impact of a change in the price of the underlying instrument is not linear or one-for-one. For example, with an option on a foreign currency, when the exchange rate changes by a given amount, the change in the value of the derivative – the option contract – will almost always be less than the change in the exchange rate. Moreover, the amount by which the change is less than one-for-one will vary depending on a number of factors, including the current exchange rate relative to the exercise price of the option, the time remaining to expiration of the option, and the current volatility of the exchange rate. Without an adjustment for that difference, the notional amounts alone would be misleading indications of the potential for counterparty credit risk.

21. The supervisory delta adjustments for all derivatives are presented in the table below, which is repeated from the CCR Standards. These adjustments are defined at the trade level, and are applied to the adjusted notional amounts to reflect the direction of the transaction and its non-linearity.

22. Note that the supervisory delta adjustments for the various option transactions are closely related to the delta from the widely used Black-Scholes model of option prices, although the risk-free interest rate – which would ordinarily appear in this expression – is not included. In general, banks should use a forward price or rate, ideally reflecting any interim cash flows on the underlying instrument, as P in the supervisory delta calculation.

23. The expression for the supervisory delta adjustment for CDOs is based on attachment and detachment points for any tranche of the CDO. The precise specification (including the values of the embedded constants of 14 and 15) is the result of an empirical exercise conducted by the Basel Committee on Banking Supervision to identify a relatively simple functional form that would provide a sufficiently close fit to CDO sensitivities as reported by a set of globally active banks.

Supervisory Delta Adjustments

Type of Derivative Transaction	Supervisory Delta Adjustment
Purchased Call Option	F
Purchased Put Option	F-1
Sold Call Option	-F
Sold Put Option	1-F
Purchased CDO Tranche (Long Protection)	G
Sold CDO Tranche (Short Protection)	-G
Any Other Derivative Type, Long in the Primary Risk Factor	+1
Any Other Derivative Type, Short in the Primary Risk Factor	-1

Definitions

For options:

$$F = \Phi\left(\frac{\ln(P/K) + 0.5 \times \sigma^2 T}{\sigma\sqrt{T}}\right)$$

In this expression, P is the current forward value of the underlying price or rate, K is the exercise or strike price of the option, T is the time to the latest contractual exercise date of the option, σ is the appropriate supervisory volatility from Table 2, and Φ is the standard normal cumulative density function. A supervisory volatility of 50% should be used on swaptions for all currencies.

For CDO tranches:

$$G = \frac{15}{(1 + 14A)(1 + 14D)}$$

In this expression, A is the attachment point of the CDO tranche and D is the detachment point of the CDO tranche.

H. Complex Derivatives

24. The Standards requires that complex trades with more than one risk driver (e.g. multi-asset or hybrid derivatives) must be allocated to more than one asset class when the material risk drivers span more than one asset class. The full amount of the trade must be included in the PFE calculation for each of the relevant asset classes. Asset-class allocation of complex derivatives is a point of national discretion in the Basel framework, and the Central Bank believes that requiring banks to identify such trades and allocate them accordingly places appropriate responsibility on banks that choose to engage in such trades.

25. Examples of derivatives that reference the basis between two risk factors and are denominated in a single currency (basis transactions) include three-month Libor versus six-month Libor, three-month Libor versus three-month T-Bill, one-month Libor versus OIS rate, or Brent Crude oil versus Henry Hub gas. These examples are provided as illustrations, and do not represent an exhaustive list.

26. Hedging sets for derivatives that reference the volatility of a risk factor (volatility transactions) must follow the same hedging set construction outlined in the Standards for derivatives in that asset class; for example, all equity volatility transactions form a single hedging set. Examples of volatility transactions include variance and volatility swaps, or options on realized or implied volatility.

I. Unrated Reference Assets

27. The supervisory factor for credit derivatives depends on the credit rating of the underlying reference asset. The Basel framework does not provide a specific treatment of unrated reference assets. The Central Bank believes that credit derivatives on unrated reference entities are likely to be rare. However, for the sake of completeness, the Standards requires that any such credit derivatives be treated in a manner that is broadly consistent with the treatment of unrated entities in other aspects of the risk-based capital framework, through use of a Supervisory Factor corresponding to BBB or BB ratings as described in the Standards.

28. For an entity for which a credit rating is not available, a bank should use the Supervisory Factor corresponding to BBB. However, where the exposure is associated with an elevated risk of default, the bank should use the Supervisory Factor for BB. In this context, “elevated risk of default” should also be understood to include instances in which it is difficult or impossible to assess adequately whether the exposure has high risk of loss due to default by the obligor. A bank trading credit derivatives referencing unrated entities should conduct their own analysis to examine this risk.

J. Commodity Derivatives

29. Note that the Standards defines the term “commodity type” for purposes of calculation of exposure for CCR. A commodity type is defined as a set of commodities with broadly similar risk drivers, such that the prices or volatilities of commodities of the same commodity type may reasonably be expected to move with similar direction and timing and to bear predictable relationships to one another. For example, a commodity type such as coal might include several types of coal, and a commodity type such as oil might include oil of different grades from different sources. The prices of commodities of a given type may not move precisely in lock step, but they are likely to move in the same direction at roughly the same time, due to their dependence on common forces in commodity markets. Long and short trades within a single commodity type can be fully offset.

30. For commodity derivatives, defining individual commodity types is operationally difficult. In fact, it is generally not possible to fully specify all relevant distinctions between commodity types, and as a result, a single commodity type is likely to include individual commodities that in practice differ to some extent in the dynamic behaviour they exhibit. As a result, not all basis risk is likely to be captured. Nonetheless, banks should attempt to minimize unrecognized basis risk through sound definitions of commodity types.

31. The Standards requires a bank to establish appropriate governance processes for the creation and maintenance of the list of defined commodity types used by the bank for CCR calculations, with clear definitions and independent internal review or validation processes to ensure that commodities grouped as a single type are in fact similar. A bank can only use the specifically defined commodity types it has established through its adequately controlled internal processes.

32. Trades within the same commodity hedging set (Energy, Metals, Agriculture, and Other) enjoy partial offsetting through the use of correlation values established in the Standards, with correlation values varying by asset subclass. More specifically, partial offsetting applies only to the systematic component, not the issuer-specific or idiosyncratic component. Note that Electricity is a sub-class of the Commodity asset class, but is itself part of the broader Energy hedging set, rather than constituting a distinct hedging set.

K. Single-Name and Index Derivatives

33. For credit derivatives, there is one credit reference entity for each reference debt instrument that underlies a single-name transaction allocated to the credit risk category. Single-name transactions should be assigned to the same credit reference entity only where the underlying reference debt instrument of those transactions is issued by the same issuer.

34. The approach for establishing the reference entity for equity derivatives should correspond to the general approach for credit derivatives.

35. For credit derivatives with indices as the underlying instrument, there should be one reference entity for each group of reference debt instruments or single-name credit derivatives that underlie a multi-name transaction. Multi-name transactions should be assigned to the same credit reference entity only where the group of underlying reference debt instruments or single-name credit derivatives of those transactions has the same constituents. The determination of whether an index is investment grade or speculative grade should be based on the credit quality of the majority of its individual constituents.

36. Again, the approach for equity index derivatives should follow the general approach for credit index derivatives.

L. Special Cases of Margin Agreements

37. When multiple margin agreements apply to a single netting set, the netting set should be broken down into sub-netting sets that align with the respective margin agreement for calculating both RC and PFE.

38. When a single margin agreement applies to multiple netting sets, RC at any given time is determined by the sum of two terms. The first term is equal to the un-margined current exposure of the bank to the counterparty aggregated across all netting sets within the margin agreement reduced by the positive current net collateral (i.e. collateral is subtracted only when the bank is a

net receiver of collateral). The second term is non-zero only when the bank is a net poster of collateral: it is equal to the current net posted collateral (if there is any) reduced by the un-margined current exposure of the counterparty to the bank aggregated across all netting sets within the margin agreement. Net collateral available to the bank should include both VM and NICA. Mathematically, RC for the entire margin agreement is:

$$RC_{MA} = max\left(0\,;\sum_{NS\in MA}\max(0;V_{NS}) - \max(0;C_{MA})\right) + max\left(0\,;\sum_{NS\in MA}\min(0;V_{NS}) - \min(0;C_{MA})\right)$$

where the summation NS ∈ MA is across the netting sets covered by the margin agreement (hence the notation), V_{NS} is the current mark-to-market value of the netting set NS and C_{MA} is the cash equivalent value of all currently available collateral under the margin agreement.

39. An alternative description of this calculation is as follows:

Step 1: Compute the net value, positive or negative, of each netting set. These calculated values correspond to the terms V_{NS} in the expression above.

Step 2: Sum the values of all netting sets with positive value, to get Total Positive Value (TPV). This corresponds to the term in the expression above:

$$TPV = \sum_{NS\in MA}\max(V_{NS};0)$$

Step 3: Sum the values of all of netting sets with negative value, to get Total Negative Value (TNV). This corresponds to the term in the expression above:

$$TNV = \sum_{NS\in MA}\min(V_{NS};0)$$

Step 4: Calculate the net current cash value of collateral, including NICA and VM. This corresponds to the term C_{MA} in the expression above. If the bank is net holder of collateral, then C_{MA} is positive; it is the net value held (NVH). If the bank is a net provider of collateral, then C_{MA} is negative, and its absolute value is the net value provided (NVP). Note that either NVH>0 and NVP=0, or NVP>0 and NVH=0.

One of the following cases then applies:

Step 5a: If NVH>0 (so NVP=0), then **RC = TPV – NVH,** but with a minimum of zero – that is, **RC cannot be negative**.

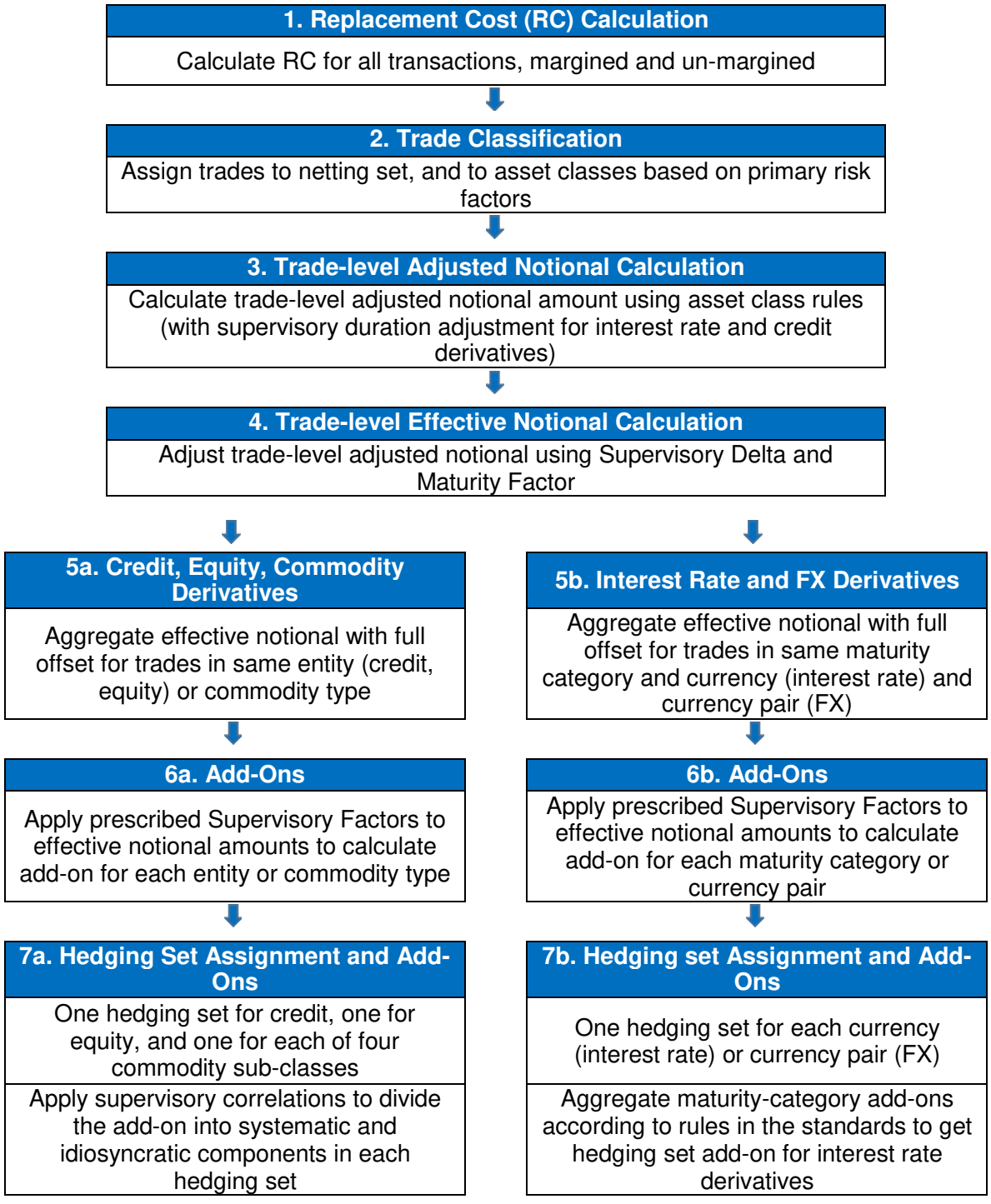
or

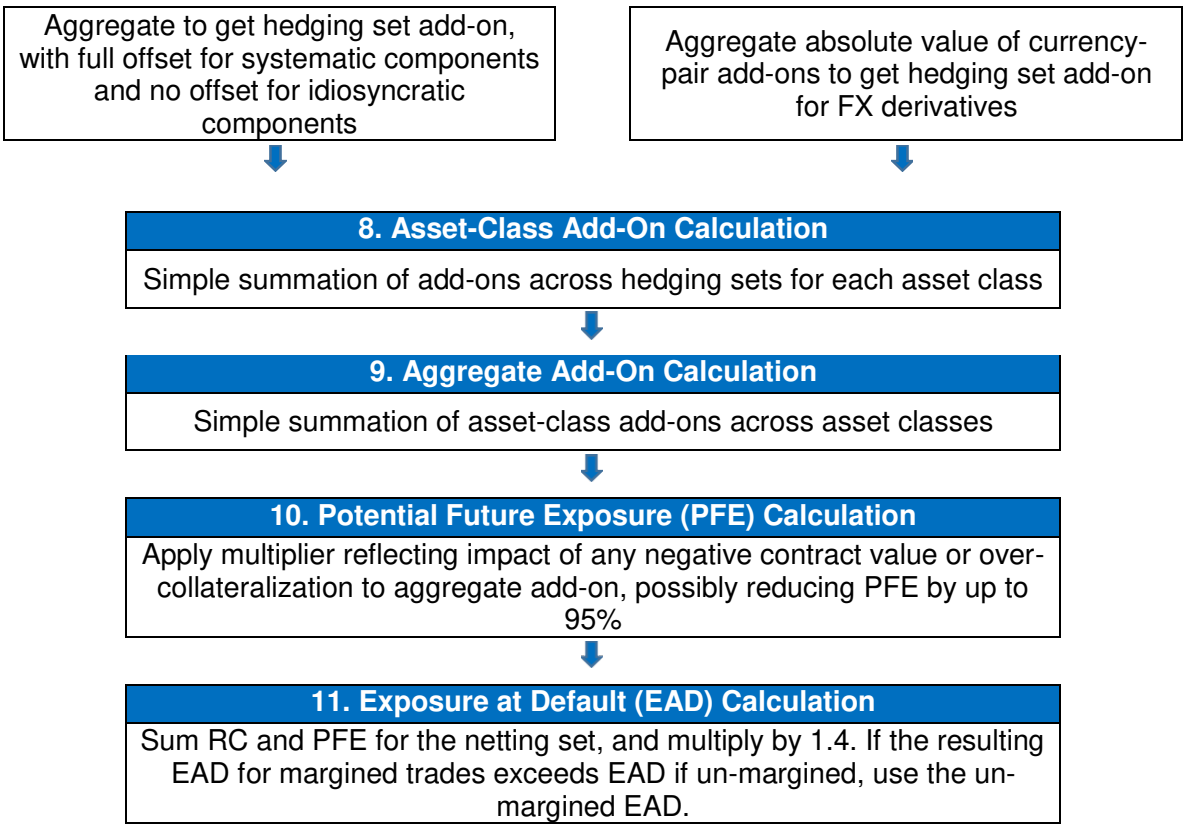
Step 5b: If NVH=0 (so NVP>0), then **RC = TPV + NVP – TNV**, but with a minimum of TPV – that is, **RC cannot be less than TPV**.

40. To calculate PFE when a single margin agreement applies to multiple netting sets, netting set level un-margined PFEs should be calculated and aggregated, i.e. PFE should be calculated as the sum of all the individual netting sets considered as if they were not subject to any form of margin agreement.

III. Summary of the EAD Calculation Process

The following diagram provides a visual summary of the CCR calculation of EAD for derivatives, based on replacement cost and potential future exposure.




Aggregate to get hedging set add-on, with full offset for systematic components and no offset for idiosyncratic components
Aggregate absolute value of currency-pair add-ons to get hedging set add-on for FX derivatives
8. Asset-Class Add-On Calculation
Simple summation of add-ons across hedging sets for each asset class
9. Aggregate Add-On Calculation
Simple summation of asset-class add-ons across asset classes
10. Potential Future Exposure (PFE) Calculation
Apply multiplier reflecting impact of any negative contract value or over-collateralization to aggregate add-on, possibly reducing PFE by up to 95%
11. Exposure at Default (EAD) Calculation
Sum RC and PFE for the netting set, and multiply by 1.4. If the resulting EAD for margined trades exceeds EAD if un-margined, use the un-margined EAD.

IV. Frequently Asked Questions

A. Netting

Question A1: Does a bank need written approval for each netting agreement it has in place, or will the Central Bank provide a list of pre-approved jurisdictions or counterparties?
The bank should establish an internal process that considers the factors identified in the Standards. That process should be subject to internal review and challenge per the Standards. The Central Bank will review the identification of netting sets as part of the supervisory process, and notify the bank of any determinations that netting is not appropriate. The Central Bank will not provide a list of pre-approved jurisdictions or counterparties.

Question A2: Do amendments to existing netting agreements require approval from the Central Bank?
Amendments that do not raise new questions about the validity of netting need not be raised to the Central Bank for consideration.

Question A3: What if netting is not valid? Can netting sets still be used for the calculation?
If the requirements of the Standards for recognition of netting are not satisfied, then each transaction is its own netting set – a netting set consisting of a single transaction – and many of the calculations are much simpler.

Question A4: Is use of the standard ISDA agreement sufficient to apply netting?
No, use of the standard ISDA agreement is not in itself sufficient to demonstrate that netting is valid and legally enforceable in the relevant jurisdictions under the requirements of the Standards.

Question A5: Can we treat trades with a UAE counterparty (UAE Bank or Foreign Bank operating in the UAE) having a signed ISDA / CSA as a netting set even though the UAE is not a netting jurisdiction?
No, as noted above, use of the standard ISDA agreement is not in itself sufficient to demonstrate that netting is valid and legally enforceable in the relevant jurisdictions under the requirements of the Standards, and is not a replacement for a determination regarding the legal enforceability of netting.

Question A6: If there is no netting agreement of any sort in place, what would the treatment be for trades with negative mark to market? Will they be included or excluded from the exposure calculation?
Trades with negative value have RC=0, but still have counterparty credit risk, which will be reflected in the calculation of the PFE component of exposure.

B. Collateral

Question B1: What haircuts should be applied to collateral for the calculations of exposure net of collateral?
Banks should apply the standard supervisory haircuts from the capital framework.

Question B2: If a counterparty places initial cash margin against a derivatives facility, but has no signed ISDA / CSA in place, can this cash margin be considered as collateral for Replacement Cost calculations?
Yes, provided the arrangement allows the bank to retain the cash in the event of a default by the counterparty.

Question B3: Can collateral received under a CSA be considered as part of the RC calculation in absence of a netting agreement?

Yes. Note that in the absence of netting, the netting set would consist of a single trade and any collateral corresponding to that trade.

C. Classification of Trades

Question C1: For a currency swap involving principal and interest exchange, since there is exchange rate risk in addition to interest rate risk, do we need to assign the notional to both the currency and interest rate classes?
Yes, derivatives with exposure to more than one primary risk factor should be allocated to all relevant asset classes for the PFE calculation, so this transaction should be included in its full amount in both the Foreign Exchange hedging set and the Interest Rate hedging set.

Question C2: In a cross-currency swap with principal exchange at the beginning and at the end, and with fixed-rate to fixed-rate interest exchange so that there is no interest rate risk, should this trade be included only in the foreign currency category?
Yes, it should be treated as FX exposure.

Question C3: Is there any prescribed PFE treatment for a derivative such as a weather derivative?
Derivatives with "unusual" underlying such as weather or mortality are included in the "Other" hedging set within the Commodity asset class.

Question C4: Can trades with gold as the underlying asset be treated as currency derivatives?
No. Although gold often has been grouped with foreign exchange historically, for the CCR Standards it is to be treated as a metal within the commodity asset class.

D. Supervisory Delta Adjustment

Question D1: What is the Supervisory Delta for FX Swaps and FX Forwards?
These are linear contracts, so the Supervisory Delta is either +1 (for long positions) or -1 (for short positions).

Question D2: The Standards states that the Supervisory Delta for a short position (one that is not an option or CDO) should be -1. However, if netting is not permitted, should the Supervisory Delta be set to +1 for all the short (as well as the long) positions?
In principle, the Supervisory Delta should be -1 if the position is short. However, in the case of a single-trade netting set, there is no possibility of offsetting, so the sign of the Supervisory Delta does not affect the calculation.

Question D3: In the case of an option strategy such as a straddle or strangle involving more than one type of option (e.g. a long call and a long put), which Supervisory Delta should be used?
In the case of positions that involve combinations of options, the position should be decomposed into its simpler option components, appropriate Supervisory Deltas determined for each component, and the weighted average Supervisory Delta applied to the position as a whole.

Question D4: In the case of an option strategy involving multiple options with only one leg having a possibility of exercise, can we consider this structure as a "short" position if we are net receiver of the premium and a "long" position if we are net payer of premium?
As noted above, in the case of positions that involve combinations of options, the position should be decomposed into its simpler option components, appropriate Supervisory Deltas determined for each component, and the weighted average Supervisory Delta applied to the position as a

whole. In this case, some of the Supervisory Deltas would be positive, and some would be negative. The sign of the overall Supervisory Delta would depend on the relative size of the positions, and the associated magnitude (in absolute value) of the deltas.

Question D5: Should the same set of Supervisory Deltas be used in the case of path dependent options such as barrier options, or other complex options? For such products, the simple option delta formula may not be appropriate.
Banks should apply the standardised formulas for the CCR calculations, including the Supervisory Delta adjustment for all options. Note that use of a single, simplified formula for the Supervisory Delta for options is a feature of the Standardised Approach. Like all standardised approaches, the SA-CCR involves numerous trade-offs between precision and simplicity. Many other aspects of the Standardised Approach use approximations, such as the assumption that a single correlation should be used for all commodity derivatives, or the use of a single volatility for all FX options. Banks should certainly use more analytically appropriate deltas for internal purposes such as valuation and risk management.

E. Hedging Sets

Question E1: Can different floating rates within the same base currency be included in single hedging set?
Yes, for interest rate derivatives, all rates within one base currency should be included in a single hedging set.

Question E2: Is it possible to determine a hedging set in the absence of a netting set?
Yes, without a netting set, the hedging set would consist of a single transaction, and the add-on would be simply the effective notional amount of that one transaction.

F. Maturity and Supervisory Duration

Question F1: For Supervisory Duration, should S and E be based on original maturity or residual maturity?
Calculation of S and E should be computed relative to the current date, not the date at which the trade was initiated; hence, they are most similar to residual maturity.

Question F2: When calculating the remaining maturity in business days, should we follow the business calendar given in the master agreement, or the business calendar within the jurisdiction in which the bank is operating?
The Basel Committee has provided guidance that the number of business days used for the purpose of determining the maturity factor must be calculated appropriately for each transaction, taking into account the market conventions of the relevant jurisdiction. The Central Bank follows this approach as well.

Question F3: What is the maturity factor if the remaining maturity is greater than 250 business days?
In that case, the maturity factor for the CCR calculations is equal to 1.0.

Question F4: What would be the maturity of a derivative with multiple exchanges of notional over a period of time?
The maturity date is the date of the final exchange or payment under the contract.

Question F5: What is the Maturity Factor for deals such as callable range accruals where the call date is less than 1 year, but the deal maturity is more than 1 year?
Since the deal maturity is more than one year, the Maturity Factor would be equal to 1.0.

G. Other

Question G1: For certain capital calculations in the past, exchange rate contracts with an original maturity of 14 calendar days or less were excluded from certain capital requirements. Is that applicable for the CCR Standards?
No, all in-scope exchange rate contracts must be included, regardless of original or remaining maturity.

Question G2: A single hedging set might include derivatives on underlying rates, prices, or entities that span different Basel categories (e.g. corporates, financials, sovereigns); do these need to be calculated separately in order to compute and report RWA in the format required by the reporting template?
No, the risk-weight, and the category for reporting in the Central Bank's template, depends on the nature of the counterparty, not the nature of the underlying reference asset. The counterparty for any netting set will fall into one and only one category for risk weighting and for reporting.

Question G3: For a variable notional swap, how should the average notional be calculated?
Use the time-weighted average notional in the CCR calculations.

Question G4: Should the current spot rate be used to compute adjusted notional?
Yes, the current spot rate should be used.

Question G5: Bank ask in case of calculating discounted counterparty exposure is a double count and will inflate CVA Capital charge given SA-CCR EAD already factors in maturity adjustment while computing adjusted notional which is product of trade notional & supervisory duration?
The use of the discount factor in the CVA capital charge does not result in double counting. While there is superficial similarity between the supervisory duration (SD) adjustment in SA-CCR and the discount factor (DF) in CVA, they are actually capturing different aspects of risk exposure. The use of SD in SA-CCR adjusts the notional amount of the derivatives to reflect its sensitivity to changes in interest rates, since longer-term derivatives are more sensitive to rate changes than are shorter-term derivatives. In contrast, the use of DF in the CVA calculation reflects the fact that a bank is exposed to CVA risk not only during the first year of a derivative contract, but over the life of the contract; the DF term recognizes the present value of the exposure over the life of the contract. Thus, these two factors, although they have similar functional forms and therefore appear somewhat similar, are not in fact duplicative.

V. Illustrations of EAD Calculations

A. Illustration 1

Consider a netting set with three interest rates derivatives: two fixed versus floating interest rate swaps and one purchased physically settled European swaption. The table below summarizes the relevant contractual terms of the three derivatives. All notional amounts and market values in the table are given in USD. We also know that this netting set is not subject to a margin agreement and there is no exchange of collateral (independent amount/initial margin) at inception.

Trade #	Nature	Residual maturity	Base currency	Notional (thousands)	Pay Leg (*)	Receive Leg (*)	Market value (thousands)
1	Interest rate swap	10 years	USD	10,000	Fixed	Floating	30
2	Interest rate swap	4 years	USD	10,000	Floating	Fixed	-20
3	European swaption	1 into 10 years	EUR	5,000	Floating	Fixed	50

(*) For the swaption, the legs are those of the underlying swap.

The EAD for un-margined netting sets is given by:

$$EAD = 1.4 * (RC + PFE)$$

1. Replacement Cost Calculation

The replacement cost is calculated at the netting set level as a simple algebraic sum (floored at zero) of the derivatives' market values at the reference date. Thus, using the market values indicated in the table (expressed in thousands):

$$RC = \max \{V - C; 0\} = \max \{30 - 20 + 50; 0\} = 60$$

Since V-C is positive (equal to V of 60,000), the value of the multiplier is 1, as explained in the Standards.

2. Potential Future Exposure Calculation

All the transactions in the netting set belong to the interest rate asset class. So the Add-on for interest rate class must be calculated as well as the multiplier since

$$\text{PFE} = \text{multiplier} \times \text{Add-on}_{agg}$$

For the calculation of the interest rate add-on, the three trades must be assigned to a hedging set (based on the currency) and to a maturity category (based on the end date of the transaction). In this example, the netting set is comprised of two hedging sets, since the trades refer to interest rates denominated in two different currencies (USD and EUR). Within hedging set "USD", Trade 1 falls into the third maturity category (>5 years) and Trade 2 falls into the second maturity category (1-5 years). Trade 3 falls into the third maturity category (>5 years) of hedging set "EUR".

S and E represent the start date and end date, respectively, of the time period referenced by the interest rate transactions.

Trade #	Hedging set	Time bucket	Notional (thousands)	S	E
1	USD	3	10,000	0	10
2	USD	2	10,000	0	4
3	EUR	3	5,000	1	11

The following table illustrates the steps typically followed for the add-on calculation:

Steps	Activities
1. Calculate Effective Notional	Calculate supervisory duration Calculate trade-level adjusted notional as trade notional (in domestic currency) × supervisory duration Effective notional for each maturity category = Σ(trade-level adjusted notional × supervisory delta × maturity factor), with full offsetting for each of the three maturity categories, in each hedging set (that is, same currency)
2. Apply Supervisory Factors	Add-on for each maturity category in a hedging set (that is, same currency) = Effective Notional Amount for maturity category × interest rate supervisory factor
3. Apply Supervisory Correlations	Add-on for each hedging set = Σ(Add-ons for maturity categories), aggregating across maturity categories for a hedging set. One hedging set for each currency.
4. Aggregate	Simple summation of the add-ons for the different hedging sets

Calculate Effective Notional Amount

The adjusted notional of each trade is calculated by multiplying the notional amount by the calculated supervisory duration SD as defined in the Standards.

d = Trade Notional × SD = Trade Notional × (exp(-0.05×S) – exp(-0.05 × E)) / 0.05

Trade	Notional Amount	Time Bucket	S	E	Supervisory Duration SD	Adjusted Notional d
Trade 1	10,000,000	3	0	10	7.869386806	78,693,868.06
Trade 2	10,000,000	2	0	4	3.625384938	36,253,849.38
Trade 3	5,000,000	3	1	11	7.485592282	37,427,961.41

Calculate Maturity Category Effective Notional

A supervisory delta is assigned to each trade in accordance with the Standards. In particular:

- Trade 1 is long in the primary risk factor (the reference floating rate) and is not an option so the supervisory delta is equal to 1.
- Trade 2 is short in the primary risk factor and is not an option; thus, the supervisory delta is equal to -1.
- Trade 3 is an option to enter into an interest rate swap that is short in the primary risk factor and therefore is treated as a purchased put option. As such, the supervisory delta is determined by applying the relevant formula using 50% as the supervisory option volatility and 1 (year) as the option exercise date. Assume that the underlying price (the appropriate forward swap rate) is 6% and the strike price (the swaption's fixed rate) is 5%.

The trade-level supervisory delta is therefore:

Trade	Delta	Instrument Type
Trade 1	1	linear, long (forward and swap)
Trade 2	-1	linear, short (forward and swap)
Trade 3	$-\Phi\left(-\frac{\ln\left(\frac{0.06}{0.05}\right)+0.5*(0.5)^2*1}{0.5*\sqrt{1}}\right)=-0.27$	purchased put option

The Maturity Factor MF is 1 for all the trades since they are un-margined and have remaining maturities in excess of one year.

Based on the maturity categories, the Effective Notional D for the USE and EUR hedging sets at the level of the maturity categories are as shown in the table below:

Hedging Set	Time Bucket	Adjusted Notional	Supervisory Delta	Maturity Factor	Maturity category-level Effective Notional D
HS 1 (USD)	3	78,693,868	1	1	78,693,868
	2	36,253,849	-1	1	-36,253,849
HS 2 (EUR)	3	37,427,961	-0.27	1	-10,105,550

In particular:

Hedging set USD, time bucket 3: D = 1 * 78,693,868 * 1 = 78,693,868

Hedging set USD, time bucket 2: D = -1 * 36,253,849 * 1 = -36,253,849

Hedging set EUR, time bucket 3: D = -0.27 * 37,427,961 * 1 = -10,105,550

Apply Supervisory Factor

The add-on must be calculated for each hedging set.

For the USD hedging set there is partial offset between the two USD trades:

$$\text{Effective notional}^{(IR)}_{USD} = [D2^2 + D3^2 + 1.4 \times D2 \times D3]^{1/2}$$

$$= [(-36{,}253{,}849)^2 + 78{,}693{,}868^2 + 1.4 \times (-36{,}253{,}849) \times 78{,}693{,}868]^{1/2}$$

$$= 59{,}269{,}963$$

For the Hedging set EUR there is only one trade (and one maturity category):

$$\text{Effective notional}^{(IR)}_{EUR} = 10{,}105{,}550$$

In summary:

Hedging set	**Time Bucket**	**Maturity category-level Effective Notional $D_{j,k}$**	**Hedging Set level Effective Notional $D_{j,k}$ (IR)**
HS 1 (USD)	3	78,693,868	59,269,963 (Partial offset)
	2	-36,253,849	
HS 2 (EUR)	3	-10,105,550	10,105,549.58

Aggregation of the calculated add-ons across different hedging sets:

Effective Notional$^{(IR)}$ = 59,269,963 + 10,105,550 = 69,375,513	(No offset between hedging sets)

The asset class is interest rates; thus the applicable Supervisory factor is 0.50%. As a result:

$$\text{Add-on} = SF \times \text{Effective Notional} = 0.005 \times 69{,}375{,}513 = 346{,}878$$

Supervisory Correlation Parameters

Correlation is not applicable to the interest rate asset class, and there is no other asset class in the netting set in this example.

Add-on Aggregation

For this netting set, the interest rate add-on is also the aggregate add-on because there are no trades assigned to other asset classes. Thus, the aggregate add-on = 346,878

Multiplier

The multiplier is given by:

$$\text{multiplier} = \min \{ 1; \text{Floor}+(1-\text{Floor}) \times \exp [(V-C) /(2 \times(1-\text{Floor})\times \text{Add-on}_{agg})] \}$$
$$= \min \{1; 0.05 + 0.95 \times \exp [60{,}000 / (2 \times 0.95 \times 346{,}878]\}$$
$$=1$$

Final Calculation of PFE

In this case the multiplier is equal to one, so the PFE is the same as the aggregate Add-On:

$$\text{PFE} = \text{multiplier} \times \text{Add-on}_{agg} = 1 \times 346{,}878 = 346{,}878$$

3. EAD Calculation

The exposure EAD to be risk weighted for counterparty credit risk capital requirements purposes is therefore

$$EAD = 1.4 * (RC + PFE) = 1.4 \text{ x } (60{,}000 + 346{,}878) = 569{,}629$$

B. Illustration 2

Consider a netting set with three credit derivatives: one long single-name CDS written on Firm A (rated AA), one short single-name CDS written on Firm B (rated BBB), and one long CDS index (investment grade). All notional amounts and market values are denominated in USD. This netting set is not subject to a margin agreement and there is no exchange of collateral (independent amount/initial margin) at inception. The table below summarizes the relevant contractual terms of the three derivatives.

Trade #	Nature	Reference entity / index name	Rating reference entity	Residual maturity	Base currency	Notional (thousands)	Position	Market value (thousands)
1	Single-name CDS	Firm A	AA	3 years	USD	10,000	Protection Buyer	20
2	Single-name CDS	Firm B	BBB	6 years	EUR	10,000	Protection Seller	-40
3	CDS index	CD X.IG	Investment grade	5 years	USD	10,000	Protection buyer	0

According to the Standards, the EAD for un-margined netting sets is given by:

$$EAD = 1.4 * (RC + PFE)$$

1. Replacement Cost Calculation

The replacement cost is calculated at the netting set level as a simple algebraic sum (floored at zero) of the derivatives' market values at the reference date. Thus, using the market values indicated in the table (expressed in thousands):

$$RC = \max\{V - C; 0\} = \max\{20 - 40 + 0; 0\} = 0$$

Since V-C is negative (i.e. -20,000), the multiplier will be activated (i.e. it will be less than 1). Before calculating its value, the aggregate add-on needs to be determined.

2. Potential Future Exposure Calculation

The following table illustrates the steps typically followed for the add-on calculation:

Steps	Activities
1. Calculate Effective Notional	Calculate supervisory duration Calculate trade-level adjusted notional = trade notional (in domestic currency) × supervisory duration Calculate trade-level effective notional amount = trade-level adjusted notional × supervisory delta × maturity factor Calculate effective notional amount for each entity by summing the trade-level effective notional amounts for all trades referencing the same entity (either a single entity or an index) with full offsetting
2. Apply Supervisory Factors	Add-on for each entity in a hedging set = Entity-level Effective Notional Amount × Supervisory Factor, which depends on entity's credit rating (or investment/speculative for index entities)
3. Apply Supervisory Correlations	Entity-level add-ons are divided into systematic and idiosyncratic components weighted by the correlation factor
4. Aggregate	Aggregation of entity-level add-ons with full offsetting in the systematic component and no offsetting in the idiosyncratic component

Effective Notional Amount

The adjusted notional of each trade is calculated by multiplying the notional amount with the calculated supervisory duration SD specified in the Standards.

d= Trade Notional × SD = Trade Notional × {exp(-0.05×S) – exp(-0.05 × E)} / 0.05

Trade	Notional Amount	S	E	Supervisory Duration SD	Adjusted Notional d
Trade 1	10,000,000	0	3	2.785840471	27,858,405
Trade 2	10,000,000	0	6	5.183635586	51,836,356
Trade 3	10,000,000	0	5	4.423984339	44,239,843

The appropriate supervisory delta must be assigned to each trade: in particular, since Trade 1 and Trade 3 are long in the primary risk factor (CDS spread), their delta is 1; in contrast, the supervisory delta for Trade 2 is -1.

Trade	Delta	Instrument Type
Trade 1	1	linear, long (forward and swap)
Trade 2	-1	linear, short (forward and swap)
Trade 3	1	linear, long (forward and swap)

Thus, the entity-level effective notional is equal to the adjusted notional times the supervisory delta times the maturity factor (where the maturity factor is 1 for all three derivatives).

$$\text{Effective Notional}_k = \sum_{i \in} d_i \times \delta_i \times MF_i$$

Trade	Adjusted Notional	Supervisory Delta	Maturity Factor	Entity Level Effective Notional
Trade 1	27,858,405	1	1	27,858,405
Trade 2	51,836,356	-1	1	-51,836,356
Trade 3	44,239,843	1	1	44,239,843

Supervisory Factor

The add-on must now be calculated for each entity. Note that all derivatives refer to different entities (single names/indices). A supervisory factor is assigned to each single-name entity based on the rating of the reference entity, as specified in Table 1 in the relevant Standards. This means assigning a supervisory factor of 0.38% for AA-rated firms (Trade 1) and 0.54% for BBB-rated firms (for Trade 2). For CDS indices (Trade 3), the supervisory factor is assigned according to whether the index is investment or speculative grade; in this example, its value is 0.38% since the index is investment grade.

Asset Class	Subclass	ρ	SF
Credit, Single Name	AA	50%	0.38%
Credit, Single Name	BBB	50%	0.54%
Credit, Index	IG	80%	0.38%

Thus, the entity level add-ons are as follows:

$$\text{Add-on(Entity)} = \text{SF} \times \text{Effective Notional}$$

Trade	Effective Notional	Supervisory factor SF	Add-on (Entity)
Trade 1	27,858,405	0.38%	105,862
Trade 2	-51,836,356	0.54%	-279,916
Trade 3	44,239,843	0.38%	168,111

Supervisory Correlation Parameters

The add-on calculation separates the entity level add-ons into systematic and idiosyncratic components, which are combined through weighting by the correlation factor. The correlation parameter ρ is equal to 0.5 for the single-name entities (Trade 1-Firm A and Trade 2-Firm B) and 0.8 for the index (Trade 3-CDX.IG) in accordance with the requirements of the Standards.

$$\text{Add-on}^{(\text{Credit})} = [\,[\,\sum_k \rho_k^{\,CR} \times \text{Add-on (Entity}_k)\,]^2 + \sum_k (1 - (\rho_k^{\,CR})^2) \times (\text{Add-on (Entity}_k))^2\,]^{1/2}$$

Trade	ρ	Add-on(Entity$_k$)	$\rho \times$ Add-on(Entity$_k$)	$(1-\rho^2)$	$(1-\rho^2) \times (\text{Add-on(Entity}_k))^2$
Trade 1	50%	105,862	52,931	0.75	8,405,062,425
Trade 2	50%	-279,916	-139,958	0.75	58,764,860,350
Trade 3	80%	168,111	134,489	0.36	10,174,120,000
	Systematic Component		**47,462**	Idiosyncratic Component	**77,344,042,776**
			Full offsetting		**No offsetting**

Add-on Aggregation

For this netting set, the interest rate add-on is also the aggregate add-on because there are no trades assigned to other asset classes. Thus, the aggregate add-on = 346,878

Aggregation of entity-level add-ons with full offsetting in the systematic component and no offsetting benefit in the idiosyncratic component.

Systematic Component	47,462
Idiosyncratic Component	77,344,042,776

Thus,

$$\text{Add-on} = [\,(47{,}462)^2 + 77{,}344{,}042{,}776\,]^{1/2} = 282{,}129$$

Multiplier

The multiplier is given by

$$\text{multiplier} = \min\{1; \text{Floor}+(1-\text{Floor}) \times \exp[(V-C)/(2\times(1-\text{Floor})\times \text{Add-on}_{agg})]\}$$
$$= \min\{1; 0.05 + 0.95 \times \exp[-20{,}000 / (2 \times 0.95 \times 282{,}129)]\}$$
$$= 0.96521$$

Final Calculation of PFE

$$PFE = \text{multiplier} \times \text{Add-on}_{agg} = 0.96521 \times 282{,}129 = 272{,}313$$

3. EAD Calculation

The exposure that would be risk-weighted for the purpose of counterparty credit risk capital requirements is therefore:

$$EAD = 1.4 * (RC + PFE) = 1.4 \text{ x } (0 + 272{,}313) = 381{,}238$$

C. Illustration 3

Consider a netting set with three commodity forward contracts. All notional amounts and market values are denominated in USD. This netting set is not subject to a margin agreement and there is no exchange of collateral (independent amount/initial margin) at inception. The table below summarizes the relevant contractual terms of the three commodity derivatives.

Trade #	Nature	Underlying	Position	Direction	Residual maturity	Notional (thousands)	Market value (thousands)
1	Forward	(WTI) Crude Oil	Protection Buyer	Long	9 months	10,000	-50
2	Forward	(Brent) Crude Oil	Protection Seller	Short	2 years	20,000	-30
3	Forward	Silver	Protection Buyer	Long	5 years	10,000	100

1. Replacement Cost Calculation

The replacement cost is calculated at the netting set level as a simple algebraic sum (floored at zero) of the derivatives' market values at the reference date, provided that value is positive. Thus, using the market values indicated in the table (expressed in thousands):

$$RC = \max\{V - C; 0\} = \max\{100 - 30 - 50; 0\} = 20$$

The replacement cost is positive and there is no exchange of collateral (so the bank has not received excess collateral), which means the multiplier will be equal to 1.

2. Potential Future Exposure Calculation

The following table illustrates the steps typically followed for the add-on calculation, for each of the four commodity hedging sets with non-zero exposure:

Steps	Activities
1. Calculate Effective Notional	Calculate trade-level adjusted notional = current price × number of units referenced by derivative Calculate trade-level effective notional amount = trade-level adjusted notional × supervisory delta × maturity factor Calculate effective notional for each commodity-type = Σ(trade-level effective notional) for trades referencing the same commodity type, with full offsetting in commodity type
2. Apply Supervisory Factors	Add-on for each commodity type in a hedging set = Commodity-type Effective Notional Amount × Supervisory Factor
3. Apply Supervisory Correlations	Commodity-type add-ons are divided into systematic and idiosyncratic components weighted by the correlation factor
4. Aggregate	Aggregation of commodity-type add-ons with full offsetting in the systematic component and no offsetting in the idiosyncratic component Simple summation of absolute values of add-ons across the four hedging sets

Effective Notional Amount

Trade-level Adjusted Notional calculation for each commodity derivative trade:

$$d_i^{(COM)} = \text{current price per unit} \times \text{number of units in the trade}$$

Trade	Current price per unit (unit is barrel for oil; ounces for silver)	Number of units in the trade	Adjusted Notional
Trade 1	100	100 barrels	10,000
Trade 2	100	200 barrels	20,000
Trade 3	20	500 ounces	10,000

The appropriate supervisory delta must be assigned to each trade:

Trade	Delta	Instrument Type
Trade 1	1	linear, long (forward & swap)
Trade 2	-1	linear, short (forward & swap)
Trade 3	1	linear, long (forward & swap)

Since the remaining maturity of Trade 1 is less than a year, at nine months (approximately 187 business days), and the trade is un-margined, its maturity factor is scaled down by the square root of 187/250 in accordance with the requirements of the Standards. On the other hand, the maturity factor is 1 for Trade 2 and for Trade 3, since the remaining maturity of those two trades is greater than one year and they are un-margined.

The trade-level effective notional is equal to the adjusted notional times the supervisory delta times the maturity factor. The basic difference between the WTI and Brent forward contracts effectively is ignored since they belong to the same commodity type, namely "Crude Oil" within the "Energy" hedging set, thus allowing for full offsetting. (In contrast, if one of the two forward contracts were on a different commodity type within the "Energy" hedging set, such as natural gas, with the other on crude oil, then only partial offsetting would have been allowed between the two trades.) Therefore, Trade 1 and Trade 2 can be aggregated into a single effective notional, taking into account each trade's supervisory delta and maturity factor.

$$\text{Effective Notional}_{\text{Type}k}^{(\text{Com})} = \sum_{i \,\epsilon\, \boldsymbol{Type}k} \delta_i \times d_i^{(\text{Com})} \times MF_i^{(\text{type})}$$

Hedging Set	Commodity Type	Trade	Adjusted Notional	Supervisory Delta	Maturity Factor	Effective Notional
Energy	Crude Oil	Trade 1	10,000	1	$\sqrt{\frac{187}{250}} = 0.865$	10,000 x 1 x 0.865 + 20,000x(−1)x 1 = − 11,350 (full off-setting within the 'Crude Oil' commodity type)
Energy	Crude Oil	Trade 2	20,000	-1	1	
Metals	Silver	Trade 3	10,000	1	1	10,000

Supervisory Factor

For each commodity-type in a hedging set, the effective notional amount must be multiplied by the correct Supervisory Factor (SF). As described in the Standards, the Supervisory Factor for

both the Crude Oil commodity type in the Energy hedging set and the Silver commodity type in the Metals hedging set is SF=18%.

Thus, the add-on by hedging set and commodity type is as follows:

$$\text{Add-on}(\text{Type}_k^j) = SF_{\text{Type}k}^{(Com)} \times \text{Effective Notional}_{\text{Type}k}^{(Com)}$$

Hedging Set	Commodity Type	Effective Notional	Supervisory Factor SF	Add-on by HS and Commodity type
Energy	Crude Oil	-11,350	18%	-2,043
Metals	Silver	10,000	18%	1,800

Supervisory Correlation Parameters

The commodity-type add-ons in a hedging set are decomposed into systematic and idiosyncratic components. The commodity subclass correlations parameters are as stated in the Standards, in this case 40% for commodities.

Thus, the hedging set level add-ons are calculated for each commodity hedging set:

$$\text{Add-on}^{(COM)} = [(\Sigma_k \rho_j^{(COM)} \times \text{Add-on}(\text{Type}_k^j))^2 + \Sigma_k (1 - (\rho_j^{(COM)})^2) \times (\text{Add-on}(\text{Type}_k^j))^2]^{1/2}$$

Hedging Set	Commodity Type	ρ	Add-on(Type$_k$)	Systematic Component ($\rho \times$ Add-on(Type$_k$))^2	$(1-\rho^2)$	Idiosyncratic Component $(1-\rho^2) \times$ (Add-on(Type$_k$))^2	Add-on$_j$ (Only one commodity type in each HS)
Energy	**Crude Oil**	**40%**	**-2,043**	$(-817)^2$	**0.84**	$0.84 \times (-2,043)^2$	**2,043**
Metals	**Silver**	**40%**	**1,800**	$(720)^2$	**0.84**	$0.84 \times (1,800)^2$	**1,800**

However, in this example, since only one commodity type within the "Energy" hedging set is populated (i.e. all other commodity types within that hedging set have a zero add-on), the resulting add-on for the hedging set is the same as the add-on for the commodity type. This calculation shows that when there is only one commodity type within a commodity hedging set, the hedging-set add-on is equal to the absolute value of the commodity-type add-on. (The same comment applies to the commodity type "Silver" in the "Metals" hedging set.)

Add-on Aggregation

Aggregation of commodity-type add-ons uses full offsetting in the systematic component and no offsetting benefit in the idiosyncratic component in each hedging set. As noted earlier, in this example there is only one commodity type per hedging set, which means no offsetting benefits. Computing the simple summation of absolute values of add-ons for the hedging sets:

$$\text{Add-on} = \Sigma_j \text{Add-on}_j$$

$$\text{Add-On} = 2,043 + 1,800 = 3,843$$

Multiplier

The multiplier is given by

$$\text{multiplier} = \min\{1; \text{Floor} + (1-\text{Floor}) \times \exp[(V-C)/(2 \times (1-\text{Floor}) \times \text{Add-on}_{agg})]\}$$
$$= \min\{1; 0.05 + 0.95 \times \exp[20 / (2 \times 0.95 \times 3{,}843)]\}$$
$$= 1, \text{ since V-C is positive.}$$

Final Calculation of PFE

$$\text{PFE} = \text{multiplier} \times \text{Add-on}_{agg} = 1 \times 3{,}843 = 3{,}843$$

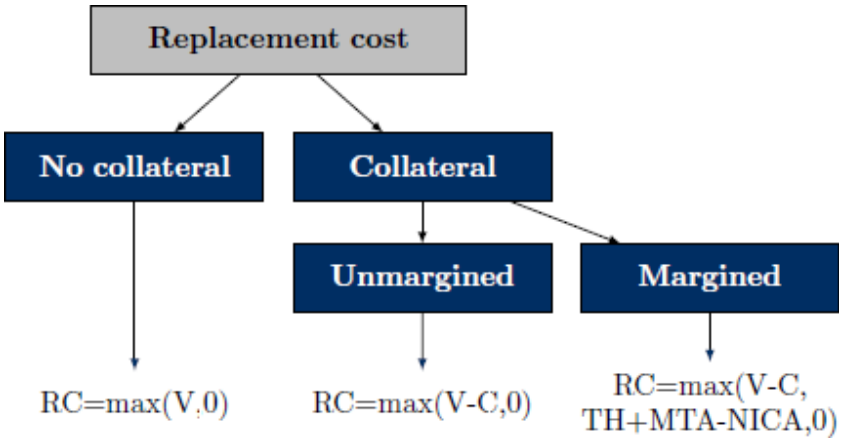
3. EAD Calculation

The exposure EAD to be risk weighted for counterparty credit risk capital requirements purposes is therefore

$$EAD = 1.4 * (RC + PFE) = 1.4 \times (20 + 3{,}843) = 5{,}408$$

VI. Illustrations of Replacement Cost Calculations with Margining

Calculation of Replacement Cost (RC) depends whether or not a trade is collateralized, as illustrated below and in the summary table.



Transaction Characteristics	Replacement Cost (RC)
No collateral	Value of the derivative transactions in the netting set, if that value is positive (else RC=0)
Collateralized, no margin	Value of the derivative transactions in the netting set minus the value of the collateral after applicable haircuts, if positive (else RC=0)
Collateralized and margined	Same as the no margin case, unless TH+MTA-NICA (see definitions below) is greater than the resulting RC

- TH = positive threshold before the counterparty must send collateral to the bank
- MTA = minimum transfer amount applicable to the counterparty
- NICA = net independent collateral amount other than variation margin (unsegregated or segregated) posted to the bank, minus the unsegregated collateral posted by the bank. The quantity TH + MTA – NICA represents the largest net exposure, including all collateral held or posted under the margin agreement that would not trigger a collateral call.

A. Illustration 1: Margined Transaction

A bank has AED80 million in trades with a counterparty. The bank currently has met all past variation margin (VM) calls, so the value of trades with the counterparty is offset by cumulative VM in the form of cash collateral received. Furthermore, an “Independent Amount” (IA) of AED 10 million was agreed in favour of the bank, and none in favour of its counterparty. This leads to a

credit support amount of AED 90 million (80 million plus 10 million), which is assumed to have been fully received as of the reporting date. There is a small "Minimum Transfer Amount" (MTA) of AED1 million, and a "Threshold" (TH) of zero.

In this example, the V-C term in the replacement cost (RC) formula is zero, since the value of the trades is more than offset by collateral received; AED80 million – AED90 million = -10 million. The term (TH + MTA - NICA) is -9 million (0 TH + 1 million MTA - 10 million of NICA held). Using the replacing cost formula:

$$RC = MAX \{(V-C), (TH+MTA-NICA), 0\}$$

$$= MAX\{(80-90),(0+1-10),0\}$$

$$= MAX\{-10,-9,0\} = 0$$

Because both V-C and TH+MTA-NICA are negative, the replacement cost is zero. This occurs because of the large amount of collateral posted by the bank's counterparty.

B. Illustration 2: Initial Margin

A bank, in its capacity as clearing member of a CCP, has posted VM to the CCP in an amount equal to the value of the trades it has with the CCP. The bank has posted AED10 million in cash as initial margin, and the initial margin is held in such a manner as to be bankruptcy-remote from the CCP. Assume that the value of trades with the CCP are -50 million, and the bank has posted AED50 million in VM to the CCP. Also assume that MTA and TH are both zero under the terms of clearing at the CCP.

In this case, the V-C term is zero, since the already posted VM offsets the negative value of V. The TH+MTA-NICA term is also zero, since MTA and TH both equal zero, and the initial margin held by the CCP is bankruptcy remote and thus does not affect NICA. Thus:

$$RC = MAX \{(V-C), (TH+MTA-NICA), 0\}$$

$$= MAX\{(-50-(-50)), (0+0-0), 0\}$$

$$= MAX\{0,0,0\} = 0$$

Therefore, the replacement cost RC is zero.

C. Illustration 3: Initial Margin Not Bankruptcy Remote

Consider the same case as in Illustration 2, except that the initial margin posted to the CCP is not bankruptcy remote. Since this now counts as part of the collateral C, the value of V-C is AED10 million. The value of the TH+MTA-NICA term is AED10 million due to the negative NICA of -10 million. In this case:

$$RC = MAX \{(V-C), (TH+MTA-NICA), 0\}$$

$$= MAX\{(-50-(-50)-(-10)), (0+0-(-10)), 0\}$$

$$= MAX\{10,10,0\} = 10$$

The RC is now AED10 million, representing the initial margin posted to the CCP that would be lost if the CCP were to default.

D. Illustration 4: Maintenance Margin Agreement

Some margin agreements specify that a counterparty must maintain a level of collateral that is a fixed percentage of the mark-to-market (MtM) of the transactions in the netting set. For this type of margining agreement, the Independent Collateral Amount (ICA) is the percentage of MtM that the counterparty must maintain above the net MtM of the transactions covered by the margin agreement. For example, suppose the agreement states that a counterparty must maintain a collateral balance of at least 140% of the MtM of its transactions. Further suppose for purposes of this illustration that there is no TH and no MTA, and that the MTM of the derivative transactions is 50. The counterparty posts 80 in cash collateral. ICA in this case is the amount that the counterparty is required to post above the MTM (140%x50 – 50 = 20). Since MtM minus the collateral is negative (50-80 = -30), and MTA+TH-NICA also is negative (0+0-20 = -20), the replacement cost RC is zero. In terms of the replacement cost formula:

RC = MAX {(V-C), (TH+MTA-NICA), 0}

= MAX{(50-80), (0+0-20), 0}

= MAX{-30,-20,0} = 0

V. Credit Valuation Adjustment (CVA)

I. Introduction

1. A credit valuation adjustment (CVA) is an adjustment to the fair value of a derivative instrument to account for counterparty credit risk. CVA is commonly viewed as the cost of counterparty credit risk. For any given position with a counterparty, this cost depends on the market's perception of the riskiness of the counterparty, as reflected for example in counterparty credit spreads, as well as on the market value of the exposure, which typically depends on underlying market factors.

2. During the financial crisis, banks suffered significant losses due to counterparty risk exposure on over-the-counter (OTC) derivatives. Various analyses have concluded that the majority of these losses came not from counterparty defaults but from fair value adjustments on derivatives. The value of outstanding derivative assets was written down as it became apparent that counterparties had become less likely to meet their obligations. These types of credit-related losses, reflected in changes in CVA, are now widely recognized as a source of risk for banks involved in derivatives activity.

3. Under the Basel II market risk framework, firms were required to hold capital against the variability in the market value of their derivatives in the trading book, but there was no requirement to capitalize against variability in CVA. Counterparty credit risk capital under Basel II was based on the credit risk framework, and designed to provide protection against default and migration risk rather than the potential losses that can arise through variations in CVA.

4. To address this gap in the prudential capital framework, the Basel Committee on Banking Supervision (BCBS) introduced the CVA capital charge as part of Basel III in December 2010. The purpose of the Basel III CVA capital charge is to ensure that bank capital provides adequate protection against the risks of future changes in CVA.

5. In line with the requirements of Basel III, UAE banks are required to calculate risk-weighted assets (RWA) for CVA risk under one of two approaches. Banks must use either:

- A standardised approach, described in the Standards and closely based on the standardised approach to CVA risk capital developed by the BCBS; or
- A simple alternative approach, under which a bank with an aggregate notional amount of non-centrally cleared derivatives less than or equal to 400 billion AED may calculate RWA for CVA by setting it equal to the bank's counterparty credit risk (CCR) RWA.

6. The Central Bank is fully aware of the BCBS view that CVA risk cannot be modelled by banks in a robust and prudent manner at this time. Accordingly, the Central Bank has determined that CVA approaches that rely on banks' internal CVA models, or that use inputs derived from those models, are not appropriate for use in regulatory capital calculations by UAE banks.

II. Clarifications

A. Scope

7. The CVA standards covers all of a bank's non-centrally cleared derivative exposures. In the context of the CVA standards, derivatives are instruments whose value is based upon the price or value associated with an underlying reference entity. In general, derivatives exhibit the following abstract characteristics:

- The transactions generate a current exposure or market value.
- The transactions have an associated random future market value based on market variables.
- The transactions have contractual terms that provide for an exchange of payments or an exchange of a financial instrument (including commodities) against payment.
- The transactions are undertaken with an identified counterparty.

8. Other common characteristics of derivative transactions may include the following:

- Collateral may be used to mitigate risk exposure, and may be inherent in the nature of some transactions.
- Netting may be used to mitigate risk or to simplify operational aspects of the transaction.
- Positions are frequently valued (most commonly on a daily basis), with the value dependent on market variables or their changes.
- Margin payments may be employed, with margin held in various forms, and with re-margining agreements that allow for the adjustment of margin either daily or at some other established frequency.

9. In addition, the Central Bank has used national discretion to include securities financing transactions (SFTs) – transactions such as repurchase agreements, reverse repurchase agreements, security lending and borrowing, and margin lending transactions – within the scope of the CVA calculation. However, as the Standards note, if the Central Bank determines that SFT exposures at any individual bank are not a material source of CVA risk, the Central Bank may direct the bank to exclude SFTs from CVA capital calculations.

10. Consistent with the BCBS framework, all derivative transactions for which a central counterparty is the direct counterparty are excluded from the CVA capital calculation. Banks must calculate RWA for those centrally cleared transactions as specified in the Central Bank's CCR Standards.

B. CVA Overview

11. The Central Bank's approach to minimum required capital for CVA risk is based closely on the standardised approach to CVA risk capital described in *Basel III: A global regulatory framework for more resilient banks and banking systems* (BCBS 189, December 2010, rev June 2011). A few elements also draw on clarifications and other information provided in BCBS publications responding to Frequently Asked Questions, or clarifications contained in *Basel III: Finalising post-crisis reforms* published by the BCBS in December 2017.

12. Regulatory CVA may differ from the CVA calculated under IFRS or other accounting standards. In particular, regulatory CVA excludes any consideration of the effect of changes in a bank's own credit risk as perceived by the market. This means that regulatory CVA calculations do not consider so-called debit valuation adjustments, or DVA.

C. Hedging

13. The calculation allows banks to recognize the risk mitigating benefits of certain eligible CVA hedges. The Standards allows only certain types of instruments to serve as eligible hedges for CVA, specifically an index credit default swap (CDS), or a single-name CDS, single-name contingent CDS, or equivalent hedging instrument that directly references the counterparty being hedged. An option on an eligible CDS (that is, a swaption on such a CDS) can be eligible, provided the swaption does not contain a "knock out" clause that terminates the swaption in the case of a credit event. Eligible hedges that are included in the CVA capital charge are removed from the bank's market risk capital calculation.

14. Other types of instruments must not be reflected as hedges within the calculation of the CVA capital charge, even if the bank views them as mitigating counterparty credit risk. For example, tranched or nth-to-default CDS instruments are not eligible CVA hedges. These instead must be treated as any other similar instrument in the bank's portfolio for regulatory capital purposes.

15. In addition to the restrictions regarding the types of instruments that a bank may recognize as CVA hedges, only transactions entered into explicitly for the purpose of hedging the counterparty credit spread component of CVA risk can be eligible hedges. This means, for example, that a bank might have a single-name CDS referencing an OTC counterparty in its portfolio, and yet that CDS would not be eligible to offset the single-name CVA exposure within the CVA calculation if that CDS was not originated or acquired as part of the bank's process to manage CVA risk for that particular counterparty.

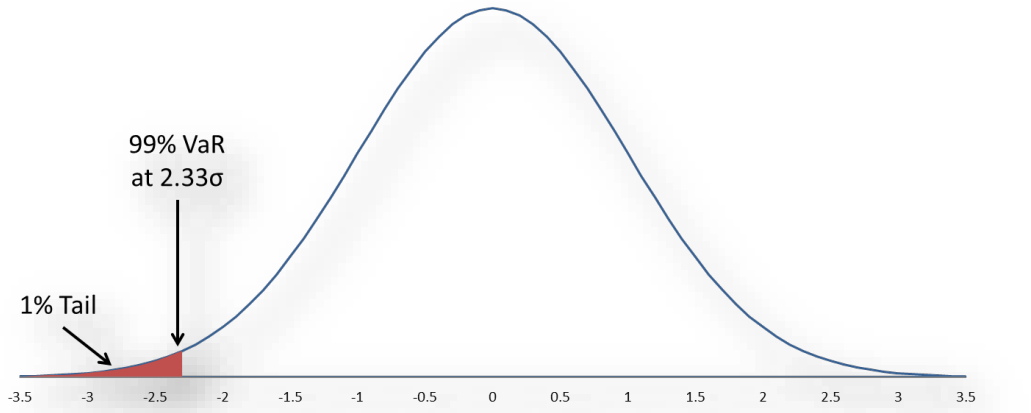
16. To clearly demonstrate intent to manage CVA risk, the bank should have a documented CVA risk management process or program, so that any CVA hedging transaction is demonstrably consistent with the design and operation of that program, was entered into with the intent to mitigate the counterparty credit spread component of CVA risk, and continues to be managed by the bank in a manner consistent with that intent. The Central Bank expects that any bank wishing to recognize the benefits of hedges in CVA capital calculations will maintain policies and procedures to govern this process. If the Central Bank concludes that a bank's CVA hedging policies and procedures are inadequate, the Central Bank may limit the bank's ability to recognize hedges in CVA capital calculations.

17. Another key principle for CVA hedging is that risk mitigation should transfer risk to third parties external to the bank. Some banks use internal transactions to transfer risk between different desks or business units within the bank as part of a broader risk management program, with these transactions typically subject to some type of internal transfer pricing mechanism. Such transactions are permissible and can be a valid component of the management of CVA risk within a bank, but the risk ultimately should be transferred out of the bank, which generally requires a corresponding external transaction to reduce CVA risk.

D. CVA Capital Concept

18. The standardised approach for calculation of CVA capital is a form of a value-at-risk calculation, an approach commonly used to set capital requirements. Changes in CVA can be viewed as following some distribution, such as the normal distribution illustrated in Figure 2. Conceptually, the general approach to CVA capital is to estimate a level of CVA losses that should be expected to be exceeded no more than a given percentage of the time. The CVA capital calculation reflects a value-at-risk calculation with a one-year, 99% confidence level for CVA risk. Assuming a normal distribution (or equivalently, a log-normal distribution for the underlying risk factors), losses can be expected to be within 2.33 standard deviations of the mean 99% of the time. That concept is illustrated in Figure 2, where the 1% negative tail of the distribution has been highlighted (in this case, σ is the standard deviation).

Figure 2



19. Accordingly, the general form of the CVA capital calculation depends on the standard deviation of CVA losses:

$$\text{CVA capital} = 2.33 \times standard\ deviation\ of\ changes\ in\ CVA$$

$$= 2.33 \times \sqrt{variance\ of\ changes\ in\ CVA}$$

The normality assumption, together with a desired 99% confidence level, is the reason for the inclusion of a 2.33 multiplication factor in the CVA capital formula. Other elements of the CVA capital calculation reflect a theoretical approximation of the variance of changes in CVA.

E. CVA Capital Formula

20. In the BCBS publication of Basel III, banks using the standardised approach to calculate CVA capital are to use the following formula:

$$K = 2.33 \cdot \sqrt{h} \cdot \sqrt{\left(\sum_i 0.5 \cdot w_i \cdot \left(M_i \cdot EAD_i^{total} - M_i^{hedge} B_i \right) - \sum_{ind} w_{ind} \cdot M_{ind} \cdot B_{ind} \right)^2 + \sum_i 0.75 \cdot w_i^2 \cdot \left(M_i \cdot EAD_i^{total} - M_i^{hedge} B_i \right)^2}$$

21. The Central Bank's CVA calculation, while based directly on the BCBS formula and producing the same result, uses different (generally simpler) notation. The nature of, and motivation for, the main notational differences are explained in this section.

22. A minor difference in notation is the omission of the multiplicative term "$\sqrt{h}$" from the BCBS formulation. This term was included by the BCBS to allow the CVA capital calculation to be adjusted to an appropriate prudential horizon. However, in the ultimate calibration of the CVA calculation the horizon *h* was established at one year, and hence *h*=1. Since the square root of 1 is also 1, and the term is a multiplicative factor, it has no impact on the resulting capital. Some other jurisdictions have recognized this fact, and have omitted the $\sqrt{h}$ from the CVA calculation for simplicity in their published capital regulations. The Central Bank has followed this approach.

23. Another difference between the BCBS notation and the presentation of the formula in the Standards is the concept of "single-name exposure" or SNE. Under the Standards, a bank calculates SNE for each counterparty as:

$$SNE_i = EAD_i^{Total} \times DF_i - H_i \times DF_H$$

In this calculation, EAD^{Total} is the bank's total exposure to counterparty "i" across all derivatives netting sets plus the counterparty exposure measure arising from SFTs with that counterparty, and H_i is the total notional of eligible single-name CVA hedges for that counterparty. (The symbol H is used in place of B in the BCBS formula, an appropriate adjustment of notation since it reflects hedge instruments. DF is a supervisory discount factor, described further below.) In effect, the discounted value of the individual counterparty exposure is offset by the discounted value of eligible single-name CVA hedges for that counterparty. The Central Bank regards SNE as a useful concept, because it reflects single-name exposure net of hedges. Its use also simplifies presentation of the CVA capital formulas.

24. The form of the supervisory discount factor DF in the Standards differs somewhat from the corresponding BCBS notation. Specifically, DF is defined in the CVA Standards as:

$$DF = \frac{(1 - e^{-0.05M})}{0.05}$$

This form of DF is in effect the continuous-time present value of an M-period annuity of one AED discounted at a rate of 5%.

25. In contrast, the BCBS formula includes the maturity term M directly in the denominator of the supervisory discount factor, as follows:

$$\frac{(1 - e^{-0.05M})}{0.05 \times M}$$

However, the BCBS formula for CVA capital also multiplies by M as part of the CVA capital calculation. As a result of that multiplication, the M in the denominator of the discount factor is cancelled out, making the overall result the same as that provided by DF in the Standards. The formulation in the BCBS text was designed to accommodate the fact that banks using internal models incorporate discounting into the calculation of counterparty exposure, and those banks are required to set the BCBS supervisory discount factor to one, while retaining the multiplication by M. However, since internal-model approaches are not used for regulatory capital purposes in the UAE, this flexibility is not needed, and the simpler version of the calculation has been specified in the Standards. If for operational or other reasons a bank finds using the Basel formulation of the discount factor more convenient, its use is acceptable, provided the bank also multiplies the resulting discount factor by M.

26. If the bank uses single-name hedging only, the bank aggregates SNE across counterparties to calculate CVA capital using the following formula:

$$K = 2.33 \sqrt{\left(\sum_i 0.5\, W_i\, SNE_i\right)^2 + \sum_i 0.75\, (W_i\, SNE_i)^2}$$

where K is CVA capital, and Wi is the risk weight applicable to counterparty "i" taken from the risk- weight table in the Standards.

27. An important insight is that CVA risk has both a systematic component and an idiosyncratic component. The systematic component reflects the fact that credit risks of different counterparties tend to be at least somewhat correlated with one another and move in concert, due to a degree of dependence on the same general economic or market factors. This kind of common risk potentially can be hedged, but cannot be reduced through diversification across counterparties. The non-systematic, or idiosyncratic, component of CVA risk arises from factors that affectcredit spreads but are specific to an individual counterparty. In contrast to the systematic risk, the idiosyncratic part of CVA risk can be reduced through diversification, as well as through hedging. If a CVA portfolio is diversified to include many counterparties, it is not very likely that they would all suffer idiosyncratic credit deterioration at the same time, so overall risk is reduced; gains on some may offset losses on others.

28. The CVA capital calculation recognizes the difference between these two kinds of risk, and treats them differently in the calculation. The first term in the square root in the capital calculation reflects the systematic component of CVA variance:

$$\left(\sum_i 0.5\, W_i\, SNE_i\right)^2$$

The exposures are weighted and summed before squaring. Holding risk weights constant, spreading a given amount of exposure across more counterparties has no effect on this sum; although there will be more individual terms in the summation, the sum will be the same, and thus

there are no gains from diversification. The second term in the square root reflects the idiosyncratic CVA risk:

$$\sum_i 0.75\ (W_i\ SNE_i)^2$$

Here, because the weighted exposures are squared *before* summing, spreading a given amount of exposure across more counterparties reduces the total, reflecting the beneficial, risk-reducing effects of diversifying the idiosyncratic component of counterparty credit risk.

29. An alternative arrangement of the CVA capital calculation may provide additional intuition:

$$K = 2.33\sqrt{0.25\left(\sum_i W_i\, SNE_i\right)^2 + 0.75\sum_i (W_i\, SNE_i)^2}$$

This form, which separates the factor of 0.5 from the rest of the systematic portion before it is raised to the second power, highlights the fact that the CVA calculation can be viewed as effectively a weighted average of two components, a systematic component with a weight of 25%, and an idiosyncratic component with a weight of 75%. The 25% weight on the idiosyncratic component is the theoretically correct weight if counterparties have a common systematic correlation with the broader market of 50%. Note that this form is simply a mathematical restatement of the capital calculation, yielding an identical answer for the stated case (that is, single-name hedging only, no index hedges).

30. The portfolio-level calculation of CVA risk also recognizes that index hedges may reduce systematic CVA risk. The calculation including index hedges is:

$$K = 2.33\sqrt{\left(\sum_i 0.5\, W_i\, SNE_i - \sum_{ind} W_{ind}\ H_{ind}\, DF_{ind}\right)^2 + \sum_i 0.75\, (W_i\, SNE_i)^2}$$

where H_{ind} is the notional of an eligible purchased index hedge instrument that is used to hedge CVA risk, $DF_{ind} = \frac{\left(1-e^{-0.05Mind}\right)}{0.05}$ is the applicable supervisory discount factor, and M_{ind} is the maturity of the index hedge. Note that the effect of the index hedge appears only in the systematic component of CVA risk within the square root. Also, note that there is no correlation-related coefficient associated with the index hedges, analogous to the 0.5 or 0.75 coefficients for the single-name exposure terms. This reflects the fact that an index CDS closely tracks the market, with a correlation expected to be near perfect. The correct coefficient on the index hedge terms in the model would be approximately 1.0, which is the reason for their omission.

31. The Standards also includes a version of the formula that more closely resembles the full formula used in the BCBS framework:

$$K = 2.33\sqrt{\left(\sum_i 0.5\, W_i\left(EAD_i^{Total} \times DF_i - H_i \times DF_H\right) - \sum_{ind} W_{ind}\ H_{ind}\, DF_{ind}\right)^2 + \sum_i 0.75\, \left(W_i\left(EAD_i^{Total} \times DF_i - H_i \times DF_H\right)\right)^2}$$

In this form, the intermediate calculation of SNE is not used. However, the results of the calculation are exactly the same as those produced by the formulation using SNE.

F. Maturity Calculation

32. When computing the maturity M for a netting set, banks are required to use a weighted average, with notional values as the weights. For example, suppose a netting set with a particular counterparty includes two exposures, a 2-year swap with a notional amount of 200, and a 3-year swap with a notional amount of 400. The total notional value of the netting set is therefore 200+400=600. The weighted average maturity would be calculated as:

$$M = 2 \times \left(\frac{200}{600}\right) + 3 \times \left(\frac{400}{600}\right) = 2.67$$

G. Risk Weights

33. Derivatives exposures and CVA hedges enter the CVA capital calculation with associated risk weights that depend on the credit rating of the bank's counterparties for the covered exposures, or on the credit rating of the underlying entity for hedge instruments. In the case of unrated counterparties or entities, banks should follow the approach applied by the Central Bank for credit derivatives that reference unrated entities in the CCR Standards, treating them as BBB rated unless the counterparty or entity has an elevated risk of default, in which case they should be treated as BB rated.

34. The CVA Standards follows the BCBS framework in specifying an array of risk weights that align with an external rating scale that is most similar to the one used by Standard and Poor's. Use of this rating scale for purposes of the CVA Standards should not be viewed as an endorsement of that or any other external rating agency. Banks may use other ratings, and should map those ratings to the scale included in the Standards using the historical default experience for the various rating grades as published by the relevant external rating agencies.

H. Risk-Weighted Assets

35. The formula developed by the BCBS to determine CVA capital reflects a calibration based on the 8% minimum capital ratio applied in the Basel capital framework. To calculate a corresponding RWA amount, the Standards requires banks to multiply the calculated CVA capital by a factor of 12.5, which is the reciprocal of 8%. That is, 1/(0.08) = 12.5. This multiplication is appropriate even if the Central Bank applies a higher minimum capital requirement to the resulting RWA, because the purpose of the multiplication by 12.5 is to reverse the calibration implicitly used by the BCBS to produce a capital number in the original formulation.

I. Threshold for the Simple Alternative

36. As part of the finalization of Basel III, the BCBS introduced a materiality threshold, and provided an option for any bank whose aggregate notional amount of non-centrally cleared derivatives is less than or equal to 100 billion euro to choose to set its CVA capital equal to 100% of its capital for counterparty credit risk.

37. To implement this option in the UAE, the Central Bank has established a materiality threshold of 400 billion AED. Banks with an aggregate notional amount of covered transactions less than or equal to 400 billion AED may choose to set CVA RWA equal to the bank's RWA for counterparty credit risk as calculated under the Central Bank's CCR Standards. The Central Bank has determined that this threshold is appropriate for the UAE, and is comparable to the 100 Billion Euro threshold included in Basel.

38. If a bank chooses this CDS, it must be applied to all of the bank's covered transactions, as required under the BCBS framework. In addition, a bank adopting this simple approach may not recognize the risk-reducing effects of CVA hedges.

39. The Central Bank may prohibit a bank from using this simple alternative if the Central bank determines that CVA risk resulting from the bank's derivative positions and SFTs materially contributes to the bank's overall risk, and therefore warrants a more sophisticated approach.

III. Frequently Asked Questions

Question 1: **Are all transactions with Central Counterparties excluded from the CVA capital calculation?**
No, only transactions for which the direct counterparty is a qualifying CCP (QCCP) are excluded. Note that under the CCR Standard, the bank must have a determination of non-objection from the Central Bank with regard to any specific QCCP.

Question 2: **Should debit valuation adjustment (DVA) be netted from CVA for the capital calculation?**
No, DVA cannot be taken into account to reduce regulatory CVA for the capital calculation.

Question 3: **What types of transactions can qualify as CVA hedges?**
A CVA hedge can be any financial instrument or contract that refers specifically to the counterparty by name, and whose value increases when the credit quality of the counterparty being hedged deteriorates. However, the Standards does not permit "nth-to-default" credit derivatives (index or basket credit derivatives in which payment is made only on the event of the "nth" default by a reference entity in the basket, rather than the first default) to be used as CVA hedges.

Question 4: **If a CDS serves as an eligible CVA hedge for one counterparty, does it also create counterparty exposure to the counterparty for the CDS?**
Yes, a CDS or other hedging instrument used for CVA hedging also can create counterparty exposure, and in that case requires capital to cover the associated risks presented by that counterparty, including CVA. For example, if a bank has CVA exposure to counterparty A, and hedges that exposure by purchasing a credit default swap from counterparty B, the CVA charge for exposure to counterparty A may be reduced, but the bank now likely is exposed to CVA risk on counterparty B.

Question 5: **For calculating the weighted average maturity, should we use the original deal notional values, or the effective notional values per the CCR standards?**
Either approach is acceptable, provided the bank is consistent in its selected approach.

Question 6: **If there is no valid netting set with a counterparty, how should average maturity be calculated?**
Average maturity is calculated at the netting set level, for each netting set with each counterparty. If netting is not valid, then the "netting set" consists of a single transaction, which will have its own maturity per the contractual terms of the transaction. Without valid netting, there may be as many "netting sets" for a counterparty as there are derivative transactions with that counterparty.

Question 7: **To compute weighted average maturity, we have conservatively treated each trade as a stand-alone netting set. Is this conservative treatment acceptable?**
Yes, this treatment is acceptable.

Question 8: **When calculating average maturity for a netting set, should we consider each asset class separately?**
Maturity calculations for CVA must be calculated for each netting set, reflecting all covered transactions within a given netting set, regardless of asset class.

Question 9: **If an entity has ratings from multiple rating agencies, which one should be**

used to determine the risk weight for CVA capital?
If there are ratings from two different rating agencies that map to different risk weights, the higher risk weight should be applied. If there are ratings from three or more rating agencies that map to different risk weights, the two ratings that correspond to the lowest risk weights should be referred to. If these two ratings give rise to the same risk weight, that risk weight should be applied. If the two are different, the higher of the two risk weights should be applied.

Question 10: **If a counterparty is within a legal organizational structure that includes multiple entities with different ratings, which rating should be used for the CVA capital calculation?**
The bank should use the rating for the entity that is actually obligated as a counterparty to the bank under the terms of the transactions within the applicable netting set.

Question 11: **Is there any special CVA treatment for counterparties that have a zero risk weight for credit risk under the risk-based capital standards?**
No, they are treated like all other counterparties (other than CCPs). Note that CVA risk is different from the more general type of credit risk treated under the risk-based standards. The risk weights in the CVA standards are intended to reflect credit spread risk, and generally differ from the risk weights used for other capital requirements. For all counterparties, apply the CVA risk weight that corresponds to the rating of the entity, or if unrated, apply the approach specified for unrated counterparties.

Question 12: **We prefer to map unrated counterparties to CCC as a conservative treatment; is that acceptable, or must they be mapped to BBB?**
The bank is free to apply a more conservative treatment to unrated counterparties, and should do so if it considers the more conservative treatment to be appropriate. However, the bank should be consistent in its approach, and should not apply this process in a way that might reduce exposure for the CVA calculation relative to the treatment stated in the standards.

Question 13: **Should all SFT exposures be considered in scope for the CVA calculation, or only those that create gross SFT assets per the leverage ratio exposure measure? Will SFT exposures be classified separately for the computation of Credit RWAs in CAR computation?**
All SFTs should be reflected in the CVA calculation, whether or not they create non-zero gross SFT asset values for the leverage ratio.
Credit risk capital for SFT exposures is addressed as part of the general credit risk standards for risk-based capital adequacy requirements.

Question 14: **When determining exposure for SFTs, are haircuts to be applied to the fair value of the securities?**
No, haircuts should not be applied – use the fair value without haircuts.

Question 15: **Can the weighted average maturity for SFT exposures be based on the exposure amounts?**
Yes, that approach is acceptable, provided it is applied consistently.

Question 16: **Can we consider Global Master Repo Agreements signed with banks in the UAE as qualifying master netting agreements (MNA) for SFT exposure computation?**
Banks should apply the requirements for valid netting agreements as stated in the Central Bank's *Standards for Counterparty Credit Risk* to determine whether netting is valid in any particular case, rather than using broad categorical criteria.

Question 17: **Will the Central Bank establish a specific quantitative materiality threshold to determine whether SFTs are in scope for CVA capital?**
The Central Bank does not intend to establish a specific threshold, but instead will determine the materiality of CVA risk from SFTs on a case-by-case basis, taking into account all relevant factors that may affect the CVA risk posed by SFTs at each bank.

Question 18: **The CVA guidelines require computation of single-name exposure (SNE), while the CCR Standards is based on hedging sets; different names may be included in the same hedging set. Does this create an inconsistency?**
It does not. Note that the single "name" for CVA capital is the derivatives or SFT counterparty. It does not depend on any underlying reference names for credit derivatives or other transactions with a given counterparty. Suppose for example that a bank has two credit derivatives that depend on the performance of Company A and Company B (that is, those are the underlying reference names for the credit derivatives), and that the bank's counterparty for both credit derivatives is another bank, Bank C. Under the CCR standards, assuming that the netting requirements are met, the two credit derivatives would be in a single hedging set within a netting set with Bank C. For calculation of CVA capital, the SNE would reflect the bank's CCR exposure to the single "name" that is Bank C; neither the names nor the ratings of Company A or Company B enter the CVA calculation directly. The CVA risk-weight for the bank's CVA capital calculation would depend on the credit rating of Bank C, not the ratings of either Company A or Company B.

Question 19: **Should we multiply the sum of replacement cost and potential future exposure by the same 1.4 scaling factor used in the SA-CCR standards issued by Central Bank?**
Yes, that is correct; the same multiplicative scaling factor of 1.4 should be used for the CVA calculation as well.

Question 20: **Can banks used the Basic Approach for CVA (BA-CVA) recently published by the Basel Committee on Banking Supervision in December 2017?**
Not at this time. The Central Bank may consider the BA-CVA at a later date.

Question 21: Bank ask in case of calculating discounted counterparty exposure is a double count and will inflate CVA Capital charge given SA-CCR EAD already factors in maturity adjustment while computing adjusted notional which is product of trade notional & supervisory duration?
The use of the discount factor in the CVA capital charge does not result in double counting. While there is superficial similarity between the supervisory duration (SD) adjustment in SA-CCR and the discount factor (DF) in CVA, they are actually capturing different aspects of risk exposure. The use of SD in SA-CCR adjusts the notional amount of the derivatives to reflect its sensitivity to changes in interest rates, since longer-term derivatives are more sensitive to rate changes than are shorter-term derivatives. In contrast, the use of DF in the CVA calculation reflects the fact that a bank is exposed to CVA risk not only during the first year of a derivative contract, but over the life of the contract; the DF term recognizes the present value of the exposure over the life of the contract. Thus, these two factors, although they have similar functional forms and therefore appear somewhat similar, are not in fact duplicative.

Question 22: Further elaboration on "equivalent hedging instrument that directly references the counterparty being hedged"?
This could be any instrument or contract that refers specifically to the counterparty by name, and whose value increases when the credit quality of the counterparty being hedged deteriorates.

However, it does not include "nth-to-default" credit derivatives.

Question 23: What if a Bank hold a CVA liability in our books, charged to P&L, once we

have the additional capital requirement on CVA, will this liability be netted off against the CVA capital requirement, or an add back to the capital for this P&L charge will be incorporated?
Incurred CVA losses should be used to reduce EAD.

IV. Examples

A. CVA capital and RWA with no hedging

For this example, a bank has only two derivatives counterparties, Galaxy Financial with a AA credit rating, and Solar Systems with a BB credit rating. The bank computes counterparty credit risk (CCR) exposure as 800 for Galaxy, and 200 for Solar, following the requirements of the CCR Standards. The bank uses the standardised approach rather than the simple alternative to compute CVA capital and RWA.

The bank calculates the weighted average maturity for exposures to Galaxy at 3 years, and for Solar 1 year. In this example, the bank has no eligible hedges for CVA risk for either counterparty.

Example: Derivatives Portfolio for the Bank

#	Counterparty Name	Credit Rating	CCR Exposure	Maturity
1	Galaxy Financial	AA	800	3 years
2	Solar Systems	BB	200	1 year

The bank must compute the supervisory discount factor, DF_i, for each of the two counterparties. Using the formula in the Standards, the calculations are:

$$DF_1 = \frac{(1 - e^{-.05\times 3})}{.05} = 2.786$$

$$DF_2 = \frac{(1 - e^{-.05\times 1})}{.05} = 0.975$$

Using these supervisory discount factors, the bank calculates single-name exposure for each counterparty, taking into account the fact that there are no eligible CVA hedges:

$$SNE_1 = EAD_1^{Total} \times DF_1 = 800 \times 2.786 = 2229$$

$$SNE_2 = EAD_2^{Total} \times DF_2 = 200 \times 0.975 = 195$$

The bank must also determine the appropriate risk weights for each of these single-name exposures. Because Galaxy is rated AA, the appropriate risk weight is 0.7% from Table 1 of the Standards. Solar is rated BB, so the corresponding risk weight is 2.0%. That is, W_1=0.007, and W_2=0.02.

The bank's calculation of CVA capital must use the formula in the Standards:

$$K = 2.33\sqrt{\left(\sum_i 0.5\, W_i\, SNE_i\right)^2 + \sum_i 0.75\, (W_i\, SNE_i)^2}$$

Substituting in the relevant values for Galaxy and Solar, the calculation is:

$$K = 2.33\sqrt{(0.5 \times W_1 \times SNE_1 + 0.5 \times W_2 \times SNE_2)^2 + 0.75 \times (W_1 \times SNE_1)^2 + 0.75 \times (W_2 \times SNE_2)^2}$$

$$= 2.33\sqrt{(0.5 \times 0.007 \times 2229 + 0.5 \times 0.02 \times 195)^2 + 0.75 \times (0.007 \times 2229)^2 + 0.75 \times (0.02 \times 195)^2}$$

$$= 2.33\sqrt{(7.80 + 1.95)^2 + 0.75 \times (15.60)^2 + 0.75 \times (3.90)^2}$$

$$= 2.33\sqrt{95.06 + 182.52 + 11.41} = 2.33\sqrt{288.99} = 39.61$$

In the final step, the bank must compute RWA for CVA using the multiplicative factor of 12.5 as required in the Standards:

CVA RWA = K × 12.5 = 39.61 × 12.5 = 495.16

B. CVA capital and RWA with a single-name hedge

The bank from the previous example has the same portfolio, but in this example enters into a CDS with a third party that provides protection on Galaxy Financial, to protect against a potential increase in credit spreads that would reduce the fair value of transactions with Galaxy if Galaxy's credit quality deteriorates. The notional value of the CDS is 400, with a maturity of 2 years. Thus, the calculation must now take into account the impact of an eligible single-name CVA hedge, with $H_1 = 400$ and $M_h = 2$.

The bank must compute the supervisory discount factor for the CVA hedge:

$$DF_H = \frac{(1 - e^{-.05 \times 2})}{.05} = 1.903$$

The presence of the CVA hedge for Galaxy changes. Galaxy's SNE calculation:

$$SNE_1 = \left(EAD_1^{Total} \times DF_1\right) - (H_1 \times DF_H)$$

$$= (800 \times 2.786) - (400 \times 1.903) = 2228.7 - 761.3 \approx 1467$$

The remainder of the computations proceed as before, with the new value for SNE_1:

$$K = 2.33\sqrt{(0.5 \times W_1 \times SNE_1 + 0.5 \times W_2 \times SNE_2)^2 + 0.75 \times (W_1 \times SNE_1)^2 + 0.75 \times (W_2 \times SNE_2)^2}$$

$$= 2.33\sqrt{(0.5 \times 0.007 \times 1467 + 0.5 \times 0.02 \times 195)^2 + 0.75 \times (0.007 \times 1467)^2 + 0.75 \times (0.02 \times 195)^2}$$

$$= 2.33\sqrt{(5.13 + 1.95)^2 + 0.75 \times (10.27)^2 + 0.75 \times (3.90)^2}$$

$$= 2.33\sqrt{50.13 + 79.10 + 11.41} = 2.33\sqrt{140.64} = 27.63$$

In the final step, the bank computes RWA for CVA using the multiplicative factor of 12.5 as required in the Standards:

CVA RWA = K × 12.5 = 27.63 × 12.5 = 345.38

This example illustrates the impact of CVA risk mitigation, as the presence of the eligible CVA hedge reduces CVA capital and RWA compared to the previous example with no hedging.

C. CVA capital and RWA with an index hedge

The bank from the previous example has the same portfolio, including the single-name hedge of Galaxy Financial, but now enters into an index CDS that provides credit spread protection against a basket of twenty named entities. The notional value of the index CDS is 300, with a maturity of 1.5 years. The bank's calculation of CVA capital now takes into account the impact of an eligible index hedge, which reduces systematic CVA risk. The relevant form of the calculation from the Standard is:

$$K = 2.33\sqrt{\left(\sum_i 0.5\, W_i\, SNE_i - \sum_{ind} W_{ind}\ H_{ind}\, DF_{ind}\right)^2 + \sum_i 0.75\, (W_i\, SNE_i)^2}$$

Because the bank has only one index hedge, the summation for index hedges inside the calculation has only a single (Wind Hind DFind) term. As stated above, the notional value of the hedge is Hind=300. The bank needs to calculate the appropriate supervisory discount factor for the index CDS, based on the maturity Mind=1.5 years:

$$DF_{ind} = \frac{(1 - e^{-.05\times 1.5})}{.05} = 1.445$$

To determine the risk weight, the bank must determine the credit rating for each of the twenty reference names in the index basket, the corresponding risk weight for each rating (from Table 1 in the Standard), and the weighted average of those risk weights using the relative notional values of the component names for the weights. Suppose that through this process of analysis, the bank determines that the weighted average is 1.2% (slightly worse than BBB). As a result, Wind=0.012.

The impact of risk mitigation from the index CDS enters the calculation through the term:

$$W_{ind}H_{ind}DF_{ind} = 0.012 \times 300 \times 1.445 = 5.20$$

The bank can now calculate CVA capital, taking into account the impact of the index hedge that mitigates systematic risk. Many of the relevant values are unchanged from the previous example, but there is the addition of the index hedge effect on systematic CVA risk:

$$K = 2.33\sqrt{(0.5 \times W_1 \times SNE_1 + 0.5 \times W_2 \times SNE_2 - \boldsymbol{W_{ind}H_{ind}DF_{ind}})^2 + 0.75 \times (W_1 \times SNE_1)^2 + 0.75 \times (W_2 \times SNE_2)^2}$$

$$= 2.33\sqrt{(0.5 \times 0.007 \times 1467 + 0.5 \times 0.02 \times 195 - \boldsymbol{0.012 \times 300 \times 1.445})^2 + 0.75 \times (0.007 \times 1467)^2 + 0.75 \times (0.02 \times 195)^2}$$

$$= 2.33\sqrt{(5.13 + 1.95 - \boldsymbol{5.20})^2 + 0.75 \times (10.27)^2 + 0.75 \times (3.90)^2}$$

$$= 2.33\sqrt{3.53 + 79.10 + 11.41} = 2.33\sqrt{94.04} = 22.59$$

As before, the bank computes RWA for CVA using the multiplicative factor of 12.5 as required in the Standard:

CVA RWA = K × 12.5 = 22.59 × 12.5 = 282.38

VI. Equity Investments in Funds

I. Introduction

1. In December 2013, the Basel Committee on Banking Supervision (BCBS) published a revised framework for calculating the capital requirements for banks' equity investments in funds held in the banking book. This followed a BCBS review of the risk-based capital requirements for banks' exposures to funds, undertaken as part of the work of the Financial Stability Board (FSB) to strengthen the oversight and regulation of shadow banking. The BCBS review was undertaken to clarify the existing treatment of such exposures in the Basel II capital adequacy framework and to achieve a more internationally consistent and risk-sensitive capital treatment for banks' investments in the equity of funds, reflecting both the risk of the fund's underlying investments and its leverage.

2. Following the approach developed by the BCBS in *Capital requirements for banks' equity investments in funds,* (BCBS 266, published December 2013), the Central Bank Standards for minimum required capital for banks' equity investments in funds relies on a hierarchy of three successive approaches to risk weighting of fund assets, with varying degrees of risk sensitivity and conservatism:

- The "look-through approach" (LTA): The LTA is the most granular approach. Subject to meeting the conditions set out for its use, banks employing the LTA must apply the risk weight of the fund's underlying exposures as if the exposures were held directly by the bank;

- The "mandate-based approach" (MBA): The MBA provides a degree of risk sensitivity, and can be used when banks do not meet the conditions for applying the LTA. Banks employing the MBA assign risk weights on the basis of the information contained in a fund's mandate or in relevant regulations, national legislation, or other similar rules under which the fund is required to operate; and

- The "fall-back approach" (FBA): When neither of the above approaches is feasible, the FBA must be used. The FBA applies a 1250 percent risk weight to a bank's equity investment in the fund.

To ensure that banks have appropriate incentives to enhance the risk management of their exposures, the degree of conservatism increases with each successive approach.

3. The capital framework for banks' equity investments in funds also incorporates a leverage adjustment to the risk-weighted assets derived from the above approaches to appropriately reflect a fund's leverage.

II. Clarifications

A. Scope

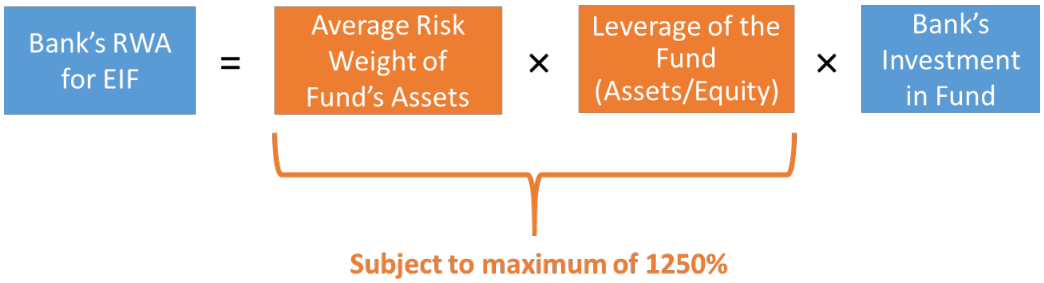
4. The Standards covers banks' equity investments held in the banking book. Note that equity positions within the trading book are covered by the market risk capital requirements that apply to trading book positions.

5. The Central Bank has chosen not to use the national discretion provided within the BCBS framework to exclude from the standard equity positions in entities whose debt obligations qualify for a zero risk weight. The Central Bank also has chosen not to use the national discretion provided within the BCBS framework to exclude from the scope of the standard equity investments made under identified official programs that support specified sectors of the economy

B. General Design of the Capital Requirement

6. At a high level, the framework is designed such that the risk-weight for a bank's equity investment in a fund depends on the average risk weight that would be applicable to the assets of the fund, and on the extent of use of leverage by the fund. The approach to the average risk weight for any fund will reflect one or more of the three approaches described briefly above (and described more fully in the Standards).

7. The illustration below gives a general overview of how the average risk weight and leverage are combined, subject to a cap of 1250%, and then applied to the bank's equity investment in the funds.



8. For example, if the average risk weight of the assets held by the fund is 80%, and the fund is financed through half debt and half equity, then the ratio of assets to equity would be 2.0 and the risk weight applied to a bank's investment in the fund would be:

80% x 2.0 = 160%

If instead the same fund is financed 90% by debt, then the ratio of assets to equity would be 10, and the risk weight applied to the bank's investment in the fund would be 800% (80% x 10).

9. Another way to view the capital requirement for equity investments in funds is that a bank generally must count a proportional amount of the risk-weighted assets (RWA) of the fund as the bank's own RWA for capital purposes, in proportion to the bank's share of the equity of the fund. Ignoring the 1250% limit for simplicity, the RWA calculation can be written as:

$$RWA_{Bank} = \left(\frac{RWA_{fund}}{Assets_{fund}}\right) \times \left(\frac{Assets_{fund}}{Equity_{fund}}\right) \times Bank's\ Equity\ Investment$$

$$= \left(\frac{RWA_{fund}}{\cancel{Assets_{fund}}}\right) \times \left(\frac{\cancel{Assets_{fund}}}{Equity_{fund}}\right) \times Bank's\ Equity\ Investment$$

$$= RWA_{fund} \times \left(\frac{Bank's\ Equity\ Investment}{Equity_{fund}}\right)$$

$$= RWA_{fund} \times Bank's\ Share\ of\ Fund\ Equity$$

The rearrangement of the terms in the equation highlights that the bank's RWA from the EIF is the bank's proportional share of the fund's RWA – if the bank holds a 5% share of the equity in the fund, then the bank's RWA is 5% of the total RWA of the fund. This is a logical treatment – if a bank effectively owns 5% of a fund, the bank must hold capital as if it owns 5% of the fund's risk-weighted assets.

C. Look-Through Approach

10. The LTA requires a bank to assign the same risk weights to the underlying exposures of a fund as would be assigned if the bank held the exposures directly. The information used for to determine the risk weights must meet the requirements stated in the Standards, including sufficiency, frequency, and third party review. However, that information is not required to be derived from sources that are subject to an external audit.

11. RWA and assets of investment funds should, to the extent possible, be evaluated using the same accounting standards the bank would apply if the assets were held directly. However, where this is not possible due to constraints on available information, the evaluation can be based on the accounting standards applied by the investment fund, provided the treatment of the numerator (RWA) and the denominator (total unweighted assets) is consistent.

12. If a bank relies on third-party calculations for determining the underlying risk weights of the exposures of the fund, the risk weights should be increased by a factor of 1.2 times to compensate for the fact that the bank cannot be certain about the accuracy of third-party information. For instance, any exposure that is ordinarily subject to a 20% risk weight under the risk-based capital standards would be weighted at 24% (1.2×20%) when the look-through is performed by a third party.

D. Mandate-Based Approach

13. Under the MBA, banks may use the information contained in a fund's mandate, or in the rules or regulations governing such investment funds in the relevant jurisdiction. Information used for this purpose is not strictly limited to a fund's mandate or to national regulations or other requirements that govern such funds. For example, a bank could obtain information from the fund's prospectus or from other disclosures of the fund.

14. To ensure that all underlying risks are taken into account (including CCR) and that the MBA renders capital requirements no less than the LTA, the Standards requires that risk-weighted assets for funds' exposures be calculated as the sum of three items:

- On-balance-sheet exposures;
- Off-balance-sheet exposures including notional value of derivatives exposures; and
- CCR exposure for derivatives.

15. As with the LTA, for purposes of the MBA the RWA and assets of investment funds should, to the extent possible, be evaluated using the same accounting standards the bank would apply if the assets were held directly. However, where this is not possible due to constraints on available information, the evaluation can be based on the accounting standards applied by the investment fund, provided the treatment of the numerator (RWA) and the denominator (total unweighted assets) is consistent.

16. In general, the MBA aims to take a conservative approach by calculating the highest risk-weighted assets the fund could achieve under the terms of its mandate or governing laws and regulations. Under the MBA, the bank should assume that the fund's assets are first invested to the maximum extent allowable in assets that would attract the highest risk weight, and then to the maximum extent allowable in the next riskiest type of asset, and so on until all of the fund's balance sheet assets have been assigned to a risk-weight category. If more than one risk weight could be applied to a given exposure, the bank must use the maximum applicable risk weight. For example, if the mandate does not place restrictions on the rating quality of the fund's investments in corporate bonds, the bank should apply a risk weight of 150% to the fund's corporate bond positions.

17. For derivatives, when the replacement cost is unknown, the Standards takes a conservative approach by setting replacement cost equal to the notional amount of the derivatives contracts. When the notional amount of a fund's derivative exposure is unknown, the approach again is conservative: the bank should use the maximum notional amount of derivatives allowed under the fund's mandate. When the PFE for derivatives is unknown, the PFE add-on should be set at 15% of the notional value. Thus, if the replacement cost and PFE add-on both are unknown, a total multiplication factor of 1.15 must be applied to the notional amount to reflect the CCR exposure.

18. Instead of determining a CVA charge associated with the fund's derivative exposures, the Standards allows banks to multiply the CCR exposure by a factor of 1.5 before applying the risk weight associated with the counterparty. However, a bank is not required to apply the 1.5 factor for situations in which the CVA capital charge would not otherwise be applicable. Notably, this includes derivative transactions for which the direct counterparty is a qualifying central counterparty.

E. Leverage Adjustment

19. A leverage adjustment is applied to the average risk weight of the fund under either the LTA or the MBA. A similar leverage adjustment is not necessary for the FBA, because the risk weight of 1250% applied under the FBA to equity investments in funds is fixed at that maximum value.

20. When determining the leverage adjustment under the MBA, banks are required to make conservative assumptions using information from the fund's mandate. Specifically, the Standards requires that banks assume the fund will use financial leverage up to the maximum amount permitted under the fund's mandate, or up to the maximum permitted under the regulations governing that fund. This maximum may be significantly greater than the actual leverage for the fund at any point in time.

III. Frequently Asked Questions

Question 1: BCBS 266 states "Equity holdings in entities whose debt obligations qualify for a zero risk weight can be excluded from the LTA, MBA and FBA approaches (including those publicly sponsored entities where a zero risk weight can be applied), at the discretion of the national supervisor." Are such equity holdings excluded under the Central Bank's Standards?
No, the Central Bank of the UAE has chosen not to adopt this point of national discretion. Bank investments in such funds are subject to the requirements of the Standards.

Question 2: If a bank makes a "seed capital investment" in a fund that is out of scope of consolidation, and is considered a significant investment in the common shares of a banking, financial, or insurance entity, is it within scope as an equity investment in a fund?
If the investment is one that the bank would be required to deduct from capital, then the investment is not in scope for this Standards.

Question 3: If a bank makes a "seed capital investment" in a fund, and that fund is managed by a Fund Manager hired by the bank, is the investment considered to be a direct investment in the fund, or indirect?
Assuming that the fund in question is not consolidated into the bank under accounting rules for financial reporting, such an investment is considered a direct investment under the Standards.

Question 4: Under the Standards, what methodology should a bank use to compute counterparty credit risk exposure for funds in which the bank has an equity investment?
The Standards states that banks must risk weight all exposures as if the bank held those exposures directly. Thus, the risk weights and the exposure amounts for counterparty credit risk should be determined using the standards that would apply to the bank. For banks in the UAE, the applicable standards for counterparty credit risk is the Central Bank's Standards for Counterparty Credit Risk Capital, which reflects the Standardised Approach to Counterparty Credit Risk (SA-CCR).

Question 5: If a bank relies on a third-party information provider for information used to calculate the leverage adjustment for a fund, does the 1.2 multiplication factor apply?
No, as the Standards states, the factor of 1.2 applies when the bank relies on a third party for the risk weights of the underlying exposures. This is a conservative adjustment to recognize the uncertainty associated with such information about risk weights. It does not apply to the leverage ratio calculation.

Question 6: The FBA applies a risk weight of 1250%, which is significantly higher than the current risk weights of 100% or 150% that apply to equity investments in funds under previous capital requirements. Should this risk weight be lower?

The risk weight of 1250% is aligned with international capital standards as developed by the Basel Committee, and is being adopted by the Central Bank under this Standards. Considering the higher minimum capital requirements in the UAE (10.5% vs 8%), the final risk weight is capped at 952%.

Question 7: What happens when the bank has mandated intermediaries to invest in fixed income? Would this investment be included or excluded in the calculation of Equity Investments?

Banks having mandated Intermediaries have to go through same framework approach. This means that if the bank has information for these intermediaries, the bank may use the LTA approach. If the bank does not have information, then it has to use the MBA or FBA approach.

Question 8: The EIF standards allows for partial use of approaches for reporting EIF and the RWA calculations from each applied approach are summed, and then divided by total fund assets to compute "Avg RWfund". Should the leverage of the fund be proportioned according to use of approach?

No, the leverage ratio is a single number that applies to the entire fund. When a bank uses more than one approach to determine the risk weight (that is, LTA, MBA, and/or FBA), the bank should report the amounts on separate lines in the reporting template.

IV. Example Calculations

A. Example of calculation of risk-weighted assets using the LTA

21. Consider a fund that aims to replicate an equity index using a strategy based on forward contracts. Assume the fund holds short-term forward contracts for this purpose with a notional amount of 100 that are cleared through a qualifying central counterparty. Further, assume that the fund's financial position can be represented by the following T-account balance sheet:

Assets		**Liabilities and Equity**	
Cash	20	Notes payable	5
Government bonds (AAA)	30		
Variation margin receivable on forward contracts	50	Equity	95
	100		100

Finally, assume that the bank's equity investment in the fund comprises 20% of the shares of the fund, and therefore is 20% × 95 = 19.

Using the LTA, the fund's balance sheet exposures of 100 are risk weighted according to the risk weights that would be applied to these assets by the bank. For cash, the risk weight is 0%; for the government bonds, the risk weight is also 0%. The margin receivable is an exposure to a qualifying CCP, which has 2% risk weight. The underlying risk weight for equity exposures (100%) is applied to the notional amount of the forward contracts.

Assume that the bank is able to determine that the amount of the CCR exposure to the CCP is 10, which then receives the 2% risk weight for exposures to a qualifying CCP. Note that there is no CVA charge because the forward contracts are cleared through the qualifying CCP.

The total RWA for the fund is:

$$20\times0\% + 30\times0\% + 50\times2\% + 100\times100\% + 10\times2\% = 101.2$$

Given the total assets of the fund of 100, the average risk-weight for the fund is:

$$\text{Avg } RW_{fund} = 101.2 / 100 = 101.2\%$$

With fund assets of 100 and fund equity of 95, leverage is calculated as the assets-to-equity ratio, or 100/95≈1.05. Therefore, the risk-weight for the bank's equity investment in the fund is:

$$\text{Risk Weight} = 101.2\% \times (100/95) = 106.5\%$$

Applying this risk weight to the bank's equity investment in the fund of 19, the bank's RWA on the position for the purpose of calculating minimum required capital is 106.5% × 19 = 20.24.

B. Example of calculation of risk-weighted assets using the MBA

22. Consider a fund with current balance-sheet assets of 100, and assume that the bank is unable to apply the LTA due to a lack of adequate information. Suppose that the fund's mandate states that the fund's investment objective is to replicate an equity index. In addition to being

permitted to invest in equities directly as assets and to hold cash balances, the mandate allows the fund to take long positions in equity index futures up to a maximum notional amount equivalent to 80% of the fund's balance sheet. Since this means that with 100 in assets the fund could have futures with a notional value of 80, the total on-balance-sheet and off-balance-sheet exposures of the fund could reach 180.

Suppose that the fund's mandate also places a restriction on leverage, allowing the fund to issue debt up to a maximum of 10% of the total value of the fund's assets. This debt constraint implies that with 100 in assets, the fund's maximum financial leverage would be at a mixture of 10 debt and 90 equity, for a maximum assets-to-equity ratio of 100/90≈1.11.

Finally, assume that the value of the bank's investment in the fund is 20.

For the computation of RWA, the on-balance-sheet assets are assumed to be invested to the maximum extent possible in the riskiest type of asset permitted under the mandate. The mandate allows either cash (which has a zero risk weight) or equities, so the full 100 is assumed to be in equities, with a 100% risk weight.

Next, the fund is assumed to enter into derivatives contracts to the maximum extent allowable under its mandate – stated as 80% of total assets – implying a maximum derivatives notional of 80. This amount receives the risk weight associated with the underlying of the derivatives position, which in this example is 100% for publicly traded equity holdings.

The calculation of RWA must include an amount for the counterparty credit risk associated with derivatives. If the bank cannot determine the replacement cost associated with the futures contracts, then the replacement cost must be approximated by the maximum notional amount of 80. If the PFE is similarly indeterminate, an additional 15% of the notional amount must be added for PFE. Thus, the CCR exposure is 1.4 x (80×1.15) = 129. Assuming the futures contracts clear through a qualifying CCP, a risk weight of 2% applies to the CCR exposure, and no CVA charge is assessed for the CCP.

The total RWA for the fund is the sum of the components for on-balance-sheet assets, off-balance-sheet exposures, and CCR:

$$100\times100\% + 80\times100\% + 129\times2\% = 182.58$$

Given the total assets of the fund of 100, the average risk-weight for the fund is:

$$\text{Avg } RW_{fund} = 182.58 / 100 = 182.58\%$$

As noted above, the fund's maximum leverage is approximately 1.11 at an assets-to-equity ratio of 100/90. Therefore, the risk-weight for the bank's equity investment in the fund is:

$$\text{Risk Weight} = 182.58\% \times (100/90) = 202.87\%$$

Applying this risk weight of 202.87% to the bank's equity investment in the fund of 20, the bank's RWA on the position for the purpose of calculating minimum required capital is 202.87% × 20 = 40.57.

VII. Securitisation

I. Introduction

1. In December 2014, the Basel Committee on Banking Supervision (BCBS) published a revised framework for calculating bank capital requirements for securitisation exposures, with further revisions in July 2016. The revised securitisation framework aimed to address a number of shortcomings in the Basel II securitisation framework and to strengthen the capital standards for securitisation exposures held in the banking book. The Central Bank's *Standards on Required Capital for Securitisation Exposures* is based closely on the BCBS framework.

2. A central feature of the revised framework is a hierarchy of approaches to risk-weighted asset calculations. The BCBS framework includes approaches based on internal credit risk ratings of banks. These approaches have not been included in the Central Bank's Standards, as internal ratings-based approaches are not deemed appropriate for use in capital calculations at this time by banks in the UAE.

3. Consequently, the hierarchy of approaches within the Central Bank's Standards begins with the revised External Ratings-Based Approach (SEC-ERBA), and below that in the hierarchy the revised Standardised Approach (SEC-SA). For resecuritisations, the hierarchy excludes the SEC-ERBA, and instead begins with the SEC-SA. If neither the SEC-ERBA nor the SEC-SA can be applied for a particular securitisation exposure, a maximum risk weight of 1250% must be used for the exposure.

4. Calculations under both the SEC-ERBA and the SEC-SA depend to some degree on a measure of "tranche thickness." The thickness of a tranche is determined by the size of the tranche relative to the entire securitisation transaction. In general, for a given attachment point, a thinner tranche is riskier than a thicker tranche, and therefore warrants a higher risk weight for risk-based capital adequacy purposes. While credit rating agencies capture some aspects of the risk related to tranche thickness in their external ratings, analysis performed by the BCBS suggested that capital requirements for a given rating of a mezzanine tranche should differ significantly based on tranche thickness, and this is reflected in the Standards.

5. Under the SEC-ERBA, risk weights also are adjusted to reflect tranche maturity. The BCBS incorporated a maturity adjustment to reflect unexpected losses appropriately in the capital calculations. External ratings used for SEC-ERBA typically reflect expected credit loss rates, and the BCBS concluded through analysis during the development process that the mapping between these expected losses and unexpected losses (the quantity that capital is intended to cover) depends on maturity.

II. Clarifications

1. Securitisation

6. The Standards defines a securitisation as a contractual structure under which the cash flow from an underlying pool of exposures is used to service claims with at least two different stratified risk positions or tranches reflecting different degrees of credit risk. The creation of

distinct tranches is the key feature of securitisation; similar structures that merely "pass through" the cash flows to the claims without modification are not considered securitisations.

7. For securitisation exposures, payments to the investors depend upon the performance of the specified underlying exposures, as opposed to being derived from an obligation of the entity originating those exposures. The stratified/tranched structures that characterize securitisations differ from ordinary senior/subordinated debt instruments in that junior securitisation tranches can absorb losses without interrupting contractual payments to more senior tranches, whereas subordination in a senior/subordinated debt structure is a matter of priority of rights to the proceeds of a liquidation.

8. In some cases, transactions that have some of the features of securitisations should not be treated as such for capital purposes. For example, transactions involving cash flows from real estate (e.g., in the form of rents) may be considered specialized lending exposures. Banks should consult with Central Bank when there is uncertainty about whether a given transaction should be considered a securitisation.

2. Senior Securitisation exposures

9. A securitisation exposure is considered a senior exposure if it is effectively backed or secured by a first claim on the entire amount of the assets in the underlying securitised pool.

10. While this generally includes only the most senior position within a securitisation tranche, in some instances there may be other claims that, in a technical sense, may be more senior in the waterfall (e.g., a swap claim) but may be disregarded for the purpose of determining which positions are treated as senior.

11. If a senior tranche is retranched or partially hedged (i.e., not on a pro rata basis), only the new senior part would be treated as senior for capital purposes.

12. In some cases, several senior tranches of different maturities may share pro rata in loss allocation. In that case, the seniority of these tranches is unaffected – they all are considered to be senior – since they all benefit from the same level of credit enhancement. (Note that in this case, the material effects of differing tranche maturities are captured by maturity adjustments to the risk weights assigned to the securitisation exposures, per the Standards.)

13. In a traditional securitisation where all tranches above the first-loss piece are rated, the most highly rated position should be treated as a senior tranche. When there are several tranches that share the same rating, only the most senior tranche in the cash flow waterfall should be treated as senior (unless the only difference among them is the effective maturity). In addition, when the different ratings of several senior tranches only result from a difference in maturity, all of these tranches should be treated as senior.

14. In a typical synthetic securitisation, an unrated tranche can be treated as a senior tranche provided that all of the conditions for inferring a rating from a lower tranche that meets the definition of a senior tranche are fulfilled.

15. Usually, a liquidity facility supporting an ABCP program would not be the most senior position within the program; instead, the commercial paper issued by the program, which benefits from the liquidity support, typically would be the most senior position. However, when a liquidity facility that is sized to cover all of the outstanding commercial paper and other senior debt supported by the pool is structured so that no cash flows from the underlying pool can be

transferred to other creditors until any liquidity draws are repaid in full, the liquidity facility can be treated as a senior exposure. Otherwise, if these conditions are not satisfied, or if for other reasons the liquidity facility constitutes a mezzanine position in economic substance rather than a senior position in the underlying pool, the liquidity facility should be treated as a non-senior exposure.

3. Operational requirements for the recognition of risk transference

16. The Standards requires that banks obtain a legal opinion to confirm true sale to demonstrate that the transferor does not maintain effective or indirect control over the transferred exposures and that the exposures are legally isolated from the transferor in such a way (e.g., through the sale of assets or through sub-participation) that the exposures are put beyond the reach of the transferor and its creditors, even in bankruptcy or receivership. However, that legal opinion need not be limited to legal advice from qualified external legal counsel; it may be in the form of written advice from in-house lawyers.

17. For synthetic securitisations, risk transference through instruments such as credit derivatives may be recognized only if the instruments used to transfer credit risk do not contain terms or conditions that limit the amount of credit risk transferred. Examples of terms or conditions that would violate this requirement include the following:

(a) Clauses that materially limit the credit protection or credit risk transference, such as an early amortization provision in a securitisation of revolving credit facilities that effectively subordinates the bank's interest, significant materiality thresholds below which credit protection is deemed not to be triggered even if a credit event occurs, or clauses that allow for the termination of the protection due to deterioration in the credit quality of the underlying exposures.

(b) Clauses that require the originating bank to alter the underlying exposures to improve the pool's average credit quality.

(c) Clauses that increase the bank's cost of credit protection in response to deterioration in the pool's quality.

(d) Clauses that increase the yield payable to parties other than the originating bank, such as investors and third-party providers of credit enhancements, in response to a deterioration in the credit quality of the reference pool.

(e) Clauses that provide for increases in a retained first-loss position or credit enhancement provided by the originating bank after the transaction's inception.

4. Due diligence

18. The Standards requires banks to have a thorough understanding of all structural features of a securitisation transaction that would materially affect the performance of the bank's exposures to the transaction. Common structural features that are particularly relevant include those related to the payment waterfall incorporated in the structure, which is the description of the order of payment for the securitisation, under which higher-tier tranches receive principal and interest first, before lower-tier tranches are paid. Credit enhancements and liquidity enhancements also are important structural features; these may take the form of cash advance facilities, letters of credit, guarantees, or credit derivatives, among others. Effective due diligence also should consider unusual or unique aspects of a particular securitisation structure, such as the specific nature of the conditions that would constitute default under the structure.

5. Treatment of Securitisation exposures

1. Risk weights for off-balance-sheet exposures

19. The Standards requires that banks apply a 100% CCF to any securitisation-related off-balance-sheet exposures that are not credit risk mitigants. One example of such an off-balance-sheet exposure that may arise with securitisations is a commitment for servicer cash advances, under which a servicer enters into a contract to advance cash to ensure an uninterrupted flow of payments to investors. The BCBS securitisation framework provides national discretion to permit the undrawn portion of servicer cash advances that are unconditionally cancellable without prior notice to receive the CCF for unconditionally cancellable. The Central Bank has chosen not to adopt this discretionary treatment, and instead requires a 100% CCF for all off-balance-sheet exposures, including undrawn servicer cash advances.

2. Adjustment of risk-weights for overlapping exposures

20. Banks may adjust risk weights for overlapping exposures. An exposure A overlaps another exposure B if in all circumstances the bank can avoid any loss on exposure B by fulfilling its obligations with respect to exposure A. For example, if a bank holds notes as an investor but provides full credit support to those notes, its full credit support obligation precludes any loss from its exposure to the notes. If a bank can verify that fulfilling its obligations with respect to exposure A will preclude a loss from its exposure to B under any circumstance, the bank does not need to calculate risk-weighted assets for its exposure B.

21. To demonstrate an overlap, a bank may, for the purposes of calculating capital requirements, split or expand its exposures. That is, *splitting* exposures into portions that overlap with another exposure held by the bank and other portions that do not overlap, or *expanding* exposures by assuming for capital purposes that obligations with respect to one of the overlapping exposures are larger than those established contractually. The latter could be done, for instance, by expanding either the assumed extent of the obligation, or the trigger events to exercise the facility. A bank may also recognize overlap between exposures in the trading book and securitisation exposures in the banking book, provided that the bank is able to calculate and compare the capital charges for the relevant exposures.

3. External Ratings-Based Approach (SEC-ERBA)

22. To be eligible for use in the securitisation framework, the external credit assessment must take into account and reflect the entire amount of credit risk exposure the bank has with regard to all payments owed to it. For example, if a bank is owed both principal and interest, the assessment must fully take into account and reflect the credit risk associated with timely repayment of both principal and interest.

23. A bank is not permitted to use any external credit assessment for risk-weighting purposes where the assessment is at least partly based on unfunded support provided by the bank itself. For example, if a bank buys ABCP where it provides an unfunded securitisation exposure extended to the ABCP program (e.g., liquidity facility or credit enhancement), and that exposure plays a role in determining the credit assessment on the ABCP, the bank must treat the ABCP as if it were not rated. The bank also must hold capital against the liquidity facility and/or credit enhancement as a securitisation exposure.

24. External credit assessments used for the SEC-ERBA must be from an eligible external credit assessment institution (ECAI) as recognized by the Central Bank in accordance with the Central Bank standards on rating agency recognition. However, the securitisation Standards additionally requires that the credit assessment, procedures, methodologies, assumptions and the key elements underlying the assessments must be publicly available, on a non-selective basis and free of charge. Consequently, ratings that are made available only to the parties to a transaction do not satisfy this requirement. Where the eligible credit assessment is not publicly available free of charge, the ECAI should provide an adequate justification, within its own publicly available code of conduct, in accordance with the "comply or explain" nature of the International Organization of Securities Commissions' Code of Conduct Fundamentals for Credit Rating Agencies.

25. Under the Standards, a bank may infer a rating for an unrated position from an externally rated "reference exposure" for purposes of the SEC-ERBA provided that the reference securitisation exposure ranks pari passu or is subordinate in all respects to the unrated securitisation exposure. Credit enhancements, if any, must be taken into account when assessing the relative subordination of the unrated exposure and the reference securitisation exposure. For example, if the reference securitisation exposure benefits from any third-party guarantees or other credit enhancements that are not available to the unrated exposure, then the latter may not be assigned an inferred rating based on the reference securitisation exposure.

4. Standardised Approach (SEC-SA)

26. The supervisory formula used for the calculations within the SEC-SA has been calibrated by the BCBS to generate required capital under an assumed minimum 8% risk-based capital ratio. As a result, the appropriate conversion to risk-weighted assets for the SEC-SA generally requires multiplication of the computed capital ratio by a factor of 12.5 (the reciprocal of 8%) to produce the risk weight used within broader calculations of risk-based capital adequacy. This multiplication by 12.5 is reflected in the requirements as articulated in the Central Bank's Securitisation Standards.

27. If the underlying pool of exposures receives a risk weight of 1250%, then paragraph 5 of the Introduction of the *Standards for Capital Adequacy of banks in the UAE* is applicable.

28. When applying the supervisory formula for the SEC-SA to structures involving an SPE, all of the SPE's exposures related to the securitisation are to be treated as exposures in the pool. In particular, in the case of swaps other than credit derivatives, the exposure should include the positive current market value times the risk weight of the swap provider. However, under the Standards, a bank can exclude the exposures of the SPE from the pool for capital calculation purposes if the bank can demonstrate that the risk does not affect its particular securitisation exposure or that the risk is immaterial, for example because it has been mitigated. Certain market practices may eliminate or at least significantly reduce the potential risk from a default of a swap provider. Examples of such features could be:

- cash collateralization of the market value in combination with an agreement of prompt additional payments in case of an increase of the market value of the swap; or
- minimum credit quality of the swap provider with the obligation to post collateral or present an alternative swap provider without any costs for the SPE in the event of a credit deterioration on the part of the original swap provider.

If the bank is able to demonstrate that the risk is mitigated in this way, and that the exposures do not contribute materially to the risks faced by the bank as a holder of the securitisation exposure, the bank may exclude these exposures from the K_{SA} calculation.

6. Treatment of credit risk mitigation for securitisation exposures

1. Tranched protection

29. In the case of tranched credit protection, the original securitisation tranche should be decomposed into protected and unprotected sub-tranches. However, this decomposition is a theoretical construction, and should not be viewed as creating a new securitisation transaction. Similarly, the resulting sub- tranches should not be considered resecuritisations solely due to the presence of the credit protection.

30. For a bank using the SEC-ERBA for the original securitisation exposure, the bank should use the risk weight of the original securitisation for the sub-tranche of highest priority. Note that the term “sub-tranche of highest priority” only describes the relative priority of the decomposed tranche. The calculation of the risk weight of each sub-tranche is independent from the question of whether the sub-tranche is protected (i.e., risk is taken by the protection provider) or is unprotected (i.e., risk is taken by the protection buyer).

2. Maturity mismatches

31. For synthetic securitisations, maturity mismatches may arise when protection is bought on securitised assets (when, for example, a bank uses credit derivatives to transfer part or all of the credit risk of a specific pool of assets to third parties). When the credit derivatives unwind, the transaction will terminate. This implies that the effective maturity of all the tranches of the synthetic securitisation may differ from that of the underlying exposures.

7. Simple, Transparent, and Comparable Criteria

32. In general, to qualify for treatment as simple, transparent, and comparable (STC), a securitisation must meet all of the criteria specified in the Standards, including the Appendix to the Standards. The criteria include a requirement that the aggregated value of all exposures to a single obligor as of the acquisition date not exceed 2% of the aggregated outstanding exposure value of all exposures in the securitisation. However, the BCBS has permitted flexibility for jurisdictions with structurally concentrated corporate loan markets. In those cases, for corporate exposures only, the applicable maximum concentration threshold for STC treatment can be increased to 3%. This increase is subject to ex ante supervisory approval, and banks with such exposures should consult with the Central Bank regarding STC treatment. In addition, the seller or sponsor of such a pool must retain subordinated positions that provide loss-absorbing credit enhancement covering at least the first 10% of losses. These credit-enhancing positions retained by the sellers or sponsor are not eligible for STC capital treatment.

III. Example Calculations

A. Standardised Approach

33. Consider a bank applying the SEC-SA to a securitisation exposure for which the underlying pool of assets has a required capital ratio of 9% under the standardised approach to credit risk. Suppose that the delinquency rate is unknown for 1% of the exposures in the underlying pool, but for the remaining 99% of the pool the delinquency rate is known to be 6%. The bank holds an investment of 100 million in a tranche that has an attachment point of 5% and a detachment point of 25%. Finally, assume that the pool does not itself contain any securitisation exposures, so the exposure is not a resecuritisation.

34. In this example, K_{SA} is given at 9%. To adjust for the known delinquency rate on the pooled assets, the bank computes an adjusted capital ratio:

$$(1 - W) \times K_{SA} + (W \times 0.5) = 0.94 \times 0.09 + 0.06 \times 0.5 = 0.1146$$

35. This calculated capital ratio must be further adjusted for the fact that the delinquency rate is unknown for a small portion (1%) of the underlying asset pool:

$$K_A = 0.99 \times 0.1146 + 0.01 = 0.1235$$

36. Next, the bank applies the supervisory formula to calculate the capital required per unit of securitisation exposure, using the values of the attachment point A, the detachment point D, the calculated value of K_A, and the appropriate value of the supervisory parameter ρ, and noting that $D>K_A$:

$$K = \frac{e^{a \times U} - e^{a \times L}}{a \times (U - L)}$$

Where:

$$\mathrm{a} = \frac{-1}{\rho \times \mathrm{K_A}} = \frac{-1}{1 \times 0.1234} = -8.100$$

$$\mathrm{U} = \mathrm{D} - \mathrm{K_A} = 0.25 - 0.1235 = 0.1265$$

$$\mathrm{L} = \max[(\mathrm{A} - \mathrm{K_A}), 0] = \max[(0.05 - 0.1235), 0] = 0$$

Note that because this is not a resecuritisation exposure, the appropriate value of the supervisory calibration parameter rho is 1 (ρ=1).

37. Substituting the values of a, U, and L into the supervisory formula gives:

$$K = \frac{\mathrm{e}^{-8.1 \times 0.1265} - \mathrm{e}^{-8.1 \times 0}}{-8.1 \times (0.1265 - 0)} = \frac{0.3586 - 1}{-8.1 \times 0.1265} = 0.6260$$

38. This tranche represents a case in which the attachment point A is less than K_A but the detachment point D is greater than K_A. Thus, according to the Standards, the risk weight for the bank's exposure is calculated as a weighted average of 12.5 and 12.5×K:

$$\mathrm{RW} = \left(\frac{\mathrm{K_A} - \mathrm{A}}{\mathrm{D} - \mathrm{A}}\right) \times 12.5 + \left(\frac{\mathrm{D} - \mathrm{K_A}}{\mathrm{D} - \mathrm{A}}\right) \times 12.5 \times \mathrm{K}$$

$$= \left(\frac{0.1235 - 0.05}{0.2}\right) \times 12.5 + \left(\frac{0.25 - 0.1235}{0.2}\right) \times 12.5 \times 0.6260 = 9.54, \text{or } 954\%$$

39. With a tranche risk weight of 954%, the bank's risk-weighted asset amount for this securitisation would be 954% of the 100 million investment, or 954 million. If, for example, the bank chose to apply a capital ratio of 13% to this exposure, then the bank's required capital would be 13% of 954 million, or approximately 85 million, on the investment of 100 million in this securitisation tranche.

B. External Ratings-Based Approach

40. Consider a non-senior securitisation tranche that has been assigned a rating by one of the eligible rating agencies corresponding to a rating of BB+. Suppose that the tranche has an attachment point A of 5%, a detachment point D of 30%, and effective tranche maturity of $M_T = 2$ years.

- From the look-up table for SEC-ERBA, a non-senior securitisation exposure rated BB+ with one-year maturity has a risk weight of 470%; the risk weight for a five-year maturity is 580%.
- The tranche maturity of 2 years is one-quarter of the way between one year and five years, so the relevant maturity-adjusted risk weight based on linear interpolation is one quarter of the way between 470% and 580%, or 497.5%.
- Because this is a non-senior tranche, it must also be adjusted for tranche thickness, which is the difference between D=30% and A=5%, a difference of 25%. The interpolated risk weight from the table should be multiplied by a factor of 1-(D-A)=0.75, which exceeds the floor of 50% and therefore should be used by the bank in the calculation (0.75 x 497.5%).
- The resulting tranche risk weight is 373%.

41. Banks using the SEC-ERBA for securitisation exposures may prefer to incorporate the main features of the ERBA look-up tables into formal calculations of risk weights, including the relevant adjustments for tranche maturity and tranche thickness. In that case, each pair of 1-year and 5-year risk weights can be viewed as coefficients for a formulaic calculation of the risk weight for a tranche of given maturity M_T, and in the case of non-senior tranches, thickness D-A.

42. For example, for a non-senior tranche rated BB+ with M_T between one year and five years, the tranche risk weight RW_T can be computed with a single formula as:

$$RW_T = max[0.5\,, 1 - (D - A)] \times \left(4.7 + \left(\frac{M_T - 1}{4}\right) \times (5.8 - 4.7)\right)$$

where the coefficients 4.7 and 5.8 correspond to the relevant values from the look-up table of 470% for one-year maturity and 580% for five-year maturity. Substituting in the values for A, D, and M_T from the example above:

$$RW_T = max[0.5\,, 1 - (30\% - 5\%)] \times \left(4.7 + \left(\frac{2 - 1}{4}\right) \times (1.1)\right) = 0.75 \times 4.975 = 3.73, \text{or } 373\%$$

43. Senior tranches are not adjusted for thickness; hence, the calculation of the tranche risk weight RW_T for a senior BB+ rated tranche would be computed as:

$$RW_T = 1.4 + \left(\frac{M_T - 1}{4}\right) \times (1.6 - 1.4) = 1.4 + 0.25 \times 0.2 = 1.45, \text{or } 145\%$$

where again the coefficients 1.4 and 1.6 correspond to the relevant values from the senior tranche columns of the look-up table, specifically 140% for 1-year maturity and 160% for 5-year maturity.

VIII. Market Risk

I. Introduction and scope

1. This section supports the Market risk standards in clarifying the calculation of the market risk capital requirement.

2. The capital charges for interest rate related instruments and equities will apply to the trading book. The capital charges for foreign exchange risk and for commodities risk will apply to banks' total currency and commodity positions (i.e. entire book).

3. Capital requirements for market risk apply on a consolidated basis. Note that the capital required for general and specific market risk under these Standards is in addition to, not in place of, any capital required under other Central Bank Standards. Banks should follow the requirements of all other applicable Central Bank standards to determine overall capital adequacy requirements.

II. Identifying Market Risk Drivers

4. For a particular instrument, the risk drivers that influence the market prices of that instrument must be identified. In a portfolio, the correlations between instruments also influence the risk profile of the entire portfolio (i.e. Banking and Trading book).

5. The market price of an asset incorporates virtually all known information concerning that asset. In practice; however, it is very difficult to clearly separate the main sources that influence an instrument's market price and risk level.

As a simplification, the following are generally recognised as the main market risk drivers:

A. Interest Rate Risk

6. Interest rate risk is the potential for losses in on- or off-balance sheet positions from adverse changes in interest rates. Instruments covered by the standardised approach for interest rate risk include all fixed rate and floating rate related instruments, such as debt securities, swaps, forwards and futures.

7. The standardised approach provides a framework for measuring interest rate risk. It takes into account the maturity or duration of the positions, basis risk, and certain correlations among risk factors.

8. Duration is a measure of the average maturity of a debt instrument's cash flows from both coupons and principal repayment. It is expressed in years and allows debt instruments with different coupons and maturities to be compared. Based on the duration, the sensitivity of a fixed income security's price with respect to a small change in its yield can be determined.

9. When hedging positions, basis risk is a key risk for the hedged position and needs to be managed and closely monitored.

Typically, two distinct components of market risk are recognised:

1. General Market Risk

10. General market risk refers to changes in market prices resulting from general market behavior.

For example, in the case of an equity position, general market risk can arise from a change in a stock market index. In the case of a fixed income instrument, general market risk is driven by a change in the yield curve.

The capital charge for general market risk is designed to capture the risk of loss arising from adverse changes in market interest rates.

There are two steps for calculating the general market risk capital charge:

Step 1: Map each interest rate position to a time band

Interest rate positions have different price sensitivities to interest rate shifts depending on their residual maturity. Interest rate shifts are changes in the yield curve. Each interest rate position is mapped to a time band.

There are two methods for mapping interest rate positions:

a) Maturity method

This Method maps each position to a maturity ladder based on the residual maturity of each position.

Fixed weightings are used to adjust the positions for sensitivity to the changes in interest rates as per the relevant table under the standard.

Time Bands for the Maturity Method

- Fixed income instruments with low coupons have higher sensitivity to changes in the yield curve than fixed income instruments with high coupons, all other things being equal.
- Fixed income instruments with long maturities have higher sensitivity to changes in the yield curve than fixed income instruments with short maturities, all other things being equal.

This is why the maturity method uses a finer grid of time bands for low coupon instruments (less than 3%) with long maturities.

Fixed and Floating Rate Instruments

Fixed rate instruments are mapped according to the residual term to maturity. Floating rate instruments are allocated according to the residual term to the next repricing date.

b) Duration method

11. This method maps each position according to its duration to a duration ladder. Duration is a measure of the average maturity of a debt instrument's cash flows from both coupons and principal repayment. It is expressed in years and allows debt instruments with different coupons and maturities to be compared. The duration method allows banks the necessary capability to calculate price sensitivity based on an instruments' duration (with the supervisory consent).

Step 2: Calculate the capital charge

The capital charge is the sum of four components calculated from amounts in each time band:

- A charge on the net short or long position in the whole trading book:
- A vertical disallowance charge:

It is a charge, which is levied on the matched position in each time band. This charges accounts for basis risk and gap risk, which can arise because each time band includes different instruments with different maturities. Gap risk, or interest mismatch risk, is the risk of losses due to interest rate changes that arise when the periods over which assets and liabilities are priced, differs. This charge is levied on the matched position in each time band at:

- 10% if the bank uses the maturity method
- 5% of the bank uses the duration method

The matched position is the smaller absolute value of the long and short positions. For example: if you have a long position of 1,200 and a short position of 700, the matched position is 700 (the net open position is long 500).

- A horizontal disallowance charge:

It is a charge against correlation among the different time bands. It is allowed for correlation to offset positions across different time bands.
There are three rounds of horizontal disallowance:

- **Round 1** levies a charge on the matched position in each zone. The charge is:
    - 40% for zone 1
    - 30% for zone 2 and zone 3
- **Round 2** levies a charge of 40% on the matched positions between adjacent zones. The adjacent zones are:
    - Zone 1 and zone 2
    - Zone 2 and zone 3
- **Round 3** levies a charge of 100% on the matched position between zone 1 and zone 3.
- Where applicable, a net charge for positions in options.

2. Specific Risk

12. Specific risk refers to changes in market prices specific to an instrument owing to factors related to the issuer of that instrument.

13. Specific risk does not affect foreign exchange- and commodities-related instruments. This is because changes in FX rates and commodities prices are dependent on general market movements.

14. The charge for specific risk protects against price movements in a security owing to factors related to the individual issuer, that is, price moves that are not initiated by the general market.

a) Offsetting

15. When specific risk is measured, offsetting between positions is restricted.

- Offsetting is only permitted for matched positions in an identical issue.
- Offsetting is not allowed between different issues, even if the issuer is the same. This is because differences in coupon rates, liquidity, call features, and so on, mean that prices may diverge in the short run.

b) Specific Risk – Capital Charge

16. Under the standardised approach, market risk exposures are categorised according to external credit assessments (ratings) and based on those assessments a capital charge is assigned. This broad methodology for calculating the specific risk capital charge was not changed by Basel 2.5.

17. The capital charges assigned to those external credit assessments are similar to the credit risk charges under the standardised approach to credit risk.

Categorisation of Securities

18. Consistent with other sections, a lower specific risk charge can be applied to government paper denominated in the domestic currency and funded by the bank in the same currency. The national discretion is limited to GCC Sovereigns. This use of national discretion aligns the Market Risk Standards with the similar treatment under the credit risk standards. The Market Risk Standard is also aligned to the Credit Risk Standard when it comes to the transition period permitted for USD funded and denominated exposures of the individual Emirates.

Qualifying includes securities issued by public sector entities and multilateral development banks, plus other securities that are rated with investment grades by two rating agencies. Unrated securities can also be included, subject to supervisory approval (such as securities deemed to be of comparable investment quality).

Other securities comprise of securities that do not meet the definition of government or the definition of qualifying securities. This category receives the same risk charge as non-investment grade borrowers under the standardised approach to credit risk. However, it is recognised that for some high yielding debt instruments, an 8% specific risk charge may underestimate the specific risk.

Calculating the Capital Requirement for Market and Credit Risk

19. The standards contain different processes for calculating the capital requirement for market and credit risk. For credit risk, assets are first risk weighted (by multiplying them by a risk weight) and then a capital requirement is applied. In contrast, for market risk, exposures are simply multiplied by a specific risk capital charge. For an exposure with a given external credit assessment (rating), the specific risk capital charge is the same as the capital requirement calculated under the standardised approach for credit risk.

Specific Risk – Capital Charge for Positions Covered Under the Securitisation Framework

20. Following the 2009 enhancements to the BCF, the specific risk of securitisation positions held in the trading book are generally calculated in the same way as securitisation positions in the banking book.

21. Specific risk – the capital charges for positions covered under the standardised approach for securitisation exposures.

22. The default position for unrated securitisations can be thought of as a capital charge of 100 percent (that is, equivalent to a risk weight of 1250 percent where the capital charge is 8 percent).

23. Where the specific risk capital charge for an exposure is 100% such that capital is held for the full value of the exposure, it may be excluded from the calculation of the capital charge for general market risk. For further details, please refer to the securitisation framework.

Treatment of Interest Rate Derivatives

24. The interest rate risk measurement system should include all interest rate derivatives and off-balance sheet instruments assigned to the trading book that are sensitive to changes in interest rates.

25. The derivatives are converted into positions in the relevant underlying. These positions are subject to the general market risk charges and, where applicable, the specific risk charges for interest rate risk. The amounts reported should be the market value of the principal amount of the underlying or notional underlying.

26. For instruments where the apparent notional amount differs from the effective notional amount, banks will use the effective notional amount.

Interest rate derivatives include:

- forward rate agreements (FRAs)
- other forward contracts
- bond futures
- interest rate swaps
- cross currency swaps
- forward foreign exchange positions
- interest rate options

Refer to the examples below in this section for numerical illustrations

B. Equity Risk

27. Market risk can be influenced by changes in equity prices, that is, equity risk.

28. Equity risk is the risk that movement in equity prices will have a negative effect on the value of equity positions. The capital charge for equity risk is the sum of the charges for general and specific market risk.

29. The Central Bank sets out a minimum capital standard to cover the risk of equity positions held in the trading book. It applies to long and short positions in all instruments that exhibit behavior similar to equities, with the exception of non-convertible preference shares, which fall under interest rate risk requirements.

1. Capital Charges for Equity Risk

30. To calculate the minimum capital charge for equity risk, you must calculate two separate charges:

- A **general market risk** charge of 8% is applied to the net overall position.
- A **specific risk** charge of 8% is applied to the gross equity position. After offsetting long and short positions in the same issue, a bank's gross equity position is the sum of the absolute values of all long equity positions and all short equity positions.

31. Since banks may hold equities in different national markets, separate calculations for general and specific risk must be carried out for each of these markets.

Offsetting

Long and short positions in the same issue can be fully offset, resulting in a single net long or short position.

2. Treatment of Equity Derivatives

32. Equity derivatives and off-balance-sheet positions that are affected by changes in equity prices should be included in the measurement system, with the exception of certain options positions. This includes futures and swaps on both individual equities and on stock indices.

33. Positions in these equity derivatives should be converted into notional positions in the relevant underlying stock or portfolio of stocks. For example, stock index futures should be reported as the marked-to-market value of the notional underlying equity portfolio. A stock index future is an agreement to buy or sell a standard quantity of a specific stock index, on a recognised exchange, at a price agreed between two parties, and with delivery to be executed on a standardised future settlement date. As it is obviously not feasible to deliver an actual stock index, stock index futures contracts are settled by cash, calculated with reference to the difference between the purchase price and the level of the index at settlement.

34. An equity swap is an agreement between two counterparties to swap the returns on a stock or a stock index for a stream of payments based on some other form of asset return. Often, one payment leg is determined by a stock index with the second leg determined by a fixed or floating rate of interest. Alternatively, the second leg may be determined by some other stock index (often referred to as a relative performance swap).

35. Equity swaps should be treated as two notional positions. For example, in an equity swap where a bank is receiving an amount based on the change in value of one stock index and paying an amount based on a different index, the bank is regarded as having a long position in the former index and a short position in the latter index.

36. In addition to the general market risk requirement, a further capital charge of 2% will be applied to the net long or short position in index contracts on a diversified portfolio of equities, to cover factors such as execution risk. As the standard stated.

Refer to the examples below in this section for numerical illustrations

C. Foreign Exchange Rates

37. Market risk can be influenced by changes in foreign exchange rates, that is, foreign exchange risk.

38. Foreign exchange risk is the risk that the value of foreign exchange positions may be adversely affected by movements in currency exchange rates. Foreign exchange positions or exposures incur only general market risk. The capital charge for foreign exchange risk also include a charge for positions in gold. For purposes of market risk capital requirements, the Central Bank takes into account the stable relationship between the AED and the US dollar, with the result that no capital is charged for open positions in USD. Foreign currency is any currency other than the bank's reporting currency.

39. Two steps are required to calculate the overall net open position:

Step 1: Determine the Exposure in Each Currency

The first step is to calculate the bank's open position, long or short in each currency.

The open position in each currency is the sum of:

- the net spot FX position (Includes also all asset items less all liability items, including accrued interest, denominated in the currency)
- the net forward FX position (Because forward FX rates reflect interest rate differentials, forward positions are normally valued at current spot exchange rates. The net forward position in an exposure should consist of all amounts to be received less all amounts to be paid under forward FX transactions, including currency futures and the principal on currency swaps not included in the spot position. For banks that base their management accounting on the net present values (NPVs), the NPV of each position should be used; discounted using current interest rates and valued at current spot rates)
- guarantees and similar instruments that are certain to be called and are likely to be irrecoverable.
- net future income and expenses not yet accrued but already fully hedged
- any other item representing a profit or loss in foreign currencies
- the net delta-based equivalent of the total book of foreign currency options

Step 2: Determine the Overall Net Open Position across FX Exposures

The second step in calculating the capital requirement for FX risk is to measure the risk in the bank's portfolio of foreign currency and gold positions.

You can determine the overall net open position of the portfolio by first converting the exposure in each foreign currency into the reporting currency at the spot rates. Then, calculate the overall net position by summing the following:

- the greater of the sum of the net short positions or the sum of the net long positions (excluding the net open position in the US dollar

- Take the larger of the two sums, from the step above, and add the absolute value of the net position (short or long) in gold.

The capital charge for foreign exchange market risk is 8% of the position resulting from the

calculation above.

Foreign Exchange (FX) Exceptions

40. The Central Bank of UAE may allow banks to exclude certain FX positions from the capital charges calculation. Banks have to comply with both the requirement of para 70 of the Market Risk section of the standards.

41. Items that are deducted from a bank's capital when calculating its capital base, such as investments in non-consolidated subsidiaries, or other long-term participations denominated in foreign currencies, which are reported in the published accounts at historic cost, do not need to be included as foreign currency exposures for the foreign exchange risk calculation.

42. Banks with negligible business in foreign currencies and with no FX positions taken for their own account may exclude their FX positions if they meet both of the following requirements:

- their FX business (the greater of the sum of their gross long positions and the sum of their gross short positions) does not exceed 100% of total capital (Tier 1 + Tier 2)
- their overall net open position does not exceed 2% of its total capital

D. Commodity Risk

43. Market risk can be influenced by changes in commodity prices, that is, commodity risk. Commodity risk is the risk that on- or off-balance sheet positions will be adversely affected by movements in commodity prices.

44. A commodity is defined as a physical product that can be traded on a secondary market, for example, agricultural products, minerals and precious metals. Gold; however, is covered under the framework for foreign exchange.

45. Price risk in commodities is often more complex and volatile than price risk associated with currencies and interest rates. One reason for this is that commodity prices are influenced by natural events such as floods and droughts. Changes in supply and demand also have more dramatic effects on price and volatility, and commodity markets often lack liquidity.

46. Commodity risk only has a general market risk component because commodity prices are not influenced by specific risk.

47. Banks using portfolio strategies involving forward and derivative contracts on commodities are exposed to a variety of additional risks, such as:

- Basis risk. the risk of changes in the cost of carry for forward positions and options. Cost of carry is a margin and refers to the net effect of borrowing funds for a certain period of time and investing them in a financial instrument or commodity for the same period of time. If the interest earned on the instrument or commodity is greater than the cost of borrowing, then the cost of carry is positive. The cost of carry can also be negative if the cost of borrowing is greater than the interest earned.
- Forward gap risk. This is the risk wherein forward prices may change for reasons other than a change in interest rates.

48. It is important to note that these risks could well exceed the risk associated with changes in spot prices of commodities.

1. Treatment of Commodities

Offsetting

49. When measuring risk in commodities, offsetting between positions is restricted.

- Offsetting is allowed between long and short positions in exactly the same commodity to calculate open positions.
- In general, offsetting is not allowed between positions in different commodities. However, the Central Bank may permit offset between different sub-categories of the same commodity, for example, different categories of crude oil, if:
  - they are deliverable against each other
  - they are close substitutes for each other, with a minimum correlation of 0.9 between price movements over a period of at least one year

Correlations

50. Banks using correlations between commodities to offset commodity positions must have obtained prior approval from the Central bank of UAE.

2. Calculating the Capital Charge

51. Two alternative approaches for calculating the capital charge for commodities are set out by the standardised measurement method:

a) Simplified Approach

52. Under the simplified approach, banks must express each commodity position, spot plus forward, in terms of the standard unit of measurement (barrels, kilos, grams, and so on).

The capital charge is the sum of two charges:

- 15% of the net position in each commodity. All commodity derivatives and off-balance sheet positions affected by changes in commodity prices should be included.
- 3% of the bank's gross commodity positions, that is, the sum of the net long plus net short positions in each commodity, calculated using the current spot price. This charge addresses basis risk, interest rate risk and forward gap risk.

b) Maturity Ladder Approach

53. There are seven steps involved in calculating the capital charge for commodities using the maturity ladder approach. A separate maturity ladder must be used for each commodity.

The maturity ladder approach	
Step 1	Express each commodity position in terms of the standard unit of measurement, and value in the reporting currency at the current spot price
Step 2	Slot each position into a time band in the maturity ladder according to remaining maturity
Step 3	Apply a capital charge of 1.5% to the sum of the matched long and short positions in each time band to capture spread risk. Instead of applying the 1.5% spread risk charge to the sum of matched long and short positions in each time band, some countries apply a 3% spread risk charge to the matched position.
Step 4	Apply a capital charge of 0.6% to the residual net position carried forward to the next relevant time band, multiplied by the number of time bands it is carried.
Step 5	Repeat step 3 and step 4 for each time band.

Step 6	Apply a capital charge of 15% to the overall long or short net open position.
Step 7	Derive the total capital charge by summing the charges for spread risk, for positions carried forward and for the overall net open position.

3. Treatment of Commodity Derivatives

54. All commodity derivatives and off-balance sheet positions affected by changes in commodity prices should be included in the commodities risk measurement framework. This includes commodity futures, commodity swaps, and options where the "delta plus" method is used.

E. Options

Treatment of Options

55. There is a section of the market risk framework devoted to the treatment of options.

The market risk charge for options can be calculated using one of the following methods:

- the simplified approach
- an intermediate approach: the delta-plus method

56. The more significant a bank's trading activities, the more sophisticated the approach it should use. The following table shows which methods a bank can use:

	Simplified approach	Intermediate approach
		Delta- plus method
Bank uses purchased options only	√	√
Bank writes options	x	√

57. Banks that solely use purchased options are free to use the simplified approach, whereas banks that also write options are expected to use the intermediate approach. If a bank has option positions, but all of those written options are hedged by perfectly matched long positions in exactly the same options, no capital is required for market risk on those options. However, banks need to report the hedged options in the respective sheet.

a) Simplified Approach

58. Option positions and their associated underlying (cash or forward) are 'carved out' from other risk types in the standardised approach. They are subject to separately calculated capital charges that incorporate both general market risk and specific risk. These charges are then added to the capital charges for the relevant risk categories: interest rate risk, equities risk, foreign exchange risk or commodities risk.

59. In some cases, such as foreign exchange, it may be unclear which side is the "underlying security." In such cases, the asset that would be received if the option were exercised should be considered as the underlying. In addition, the nominal value should be used for items where the market value of the underlying instrument could be zero, such as caps and floors, swaptions, or similar instruments.

60. The capital charges under the simplified approach are as follows:

Simplified approach : capital charges	
Position	Treatment
Hedged positions: long cash position in the underlying instrument and long put or short cash position in the underlying instrument and long call	The capital charge is the market value of the underlying security multiplied by the sum of specific and general market risk charges for the underlying, less the amount the option is in-the-money (if any) bounded at zero.
Outright option positions: long call or long put	The capital charge is the lesser of: • The market value of the underlying security multiplied by the sum of specific and general market risk charges for the underlying • The market value of the option

b) Intermediate Approach

61. The procedure for general market risk is explained below. The specific risk capital charges are determined separately by multiplying the delta-equivalent of each option by the specific risk charges for each risk category.

The delta-plus method

62. The delta-plus method uses the sensitivity parameters or Greek letters associated with options to measure their market risk and capital requirements.

63. Options should be included in market risk calculations for each type of risk as a delta-weighted position equal to the market value of the underlying multiplied by the delta.

64. The delta-equivalent position of each option becomes part of the standardised approach, with the delta-equivalent amount subject to the applicable market risk capital charges. Separate capital charges are then applied to the gamma and Vega risks of the option positions.

Greek Letters: Five coefficients are used to help explain how option values behave in relation to changes in market parameters (price of the underlying asset, the strike price, the volatility of the underlying, the time to maturity and the risk-free interest rate). These are represented by the Greek letters delta, gamma, Vega, theta and rho, and are referred to as the 'option Greeks'.

- Delta (Δ) measures the rate of change in the value of an option with respect to a change in the price of the underlying asset.
- Gamma (Γ) measures the rate of change in the delta of an option with respect to a change in the price of the underlying asset.
- Vega (Λ) measures the rate of change in an option price with respect to a change in market volatility for the underlying asset price.

III. Shari'ah Implementation:

65. Bank that conduct all or part of their activities in accordance with the provisions of Shari'ah and have exposure to risks similar to those mentioned in the Market Risk Standard, shall, for the purpose of maintaining an appropriate level of capital, calculate the relevant risk weighted asset (RWA) in line with these guidelines. This must be done in a manner compliant to the Shari'ah.

66. This is applicable until relevant standards and/or guidelines in respect of these transactions are issued specifically for banks offering Islamic financial services.

IV. Frequently Asked Questions

Question 1: Are issues rated AA- or better by Supranational issuers qualify for 0% specific risk charge? For such issues, the Country of Risk = SNAT as classification in Bloomberg would be considered as Supranational
No, there is no specification to supranational and thereby low risk charge.

Question 2: Please clarify whether futures or options on ETFs and volatility indices such as VIX are treated as equity index instrument.
Yes, it will be part of equity and reported under equity derivative. Please refer to the Market risk section of the standards for further guidance.

Question 3: Under the treatment of interest rate derivatives for general market risk, in reference to table 3, credit derivatives have not been listed. Kindly advise if these products are excluded from the capital requirement stipulated under general market risk.
Credit derivatives (including CDS and TRS) are subject to the general market risk treatment for interest rate risk if the instrument involves periodic payments of interest. Credit derivatives are subject to specific risk capital as described in paragraphs 26 and 27 of the Market Risk section of the Standards. Note that Table 3 in the text covers only interest rate derivatives, and therefore credit derivatives should not be included. Credit derivatives must be analysed whether they are subject to the general market risk treatment for interest rate risk. For example, Credit Default Swaps are usually not subject to general interest rate risk, whereas Total Return Swaps and credit linked notes are usually subject to general market risk. Please note, that the analysis to which risk types a specific instrument type is exposed, must be provided to the Central Bank upon request.

Question 4: Clarity is needed on what constitutes trading book. For example, Investment Grade bonds classified as AFS, however with no active trading and a holding period of almost till maturity (e.g. callable, decision to sell closer to maturity) does this need to be banking book? Similarly, HTM under this description can be either trading or banking book.
The Market Risk Standard as published does not change the definition of trading book. The requirements of BCBS 128 paragraphs 685 to 689 have been applied in the text of the Standards. Please refer to the Market Risk Regulation under Notice 3018/2018 for the full definition of trading book.

Question 5: For Qualifying category, if the issuer of the security is a rated corporate by any one of rated agencies i.e. Moody's, S&P, Fitch with investment grade. Should it be included under Qualifying Category?

Yes, this will fall under qualifying category as long as it rated investment grade by at least two credit rating agencies.

Question 6: Should general criteria for all investment grade securities other than Government Issuers be taken under the category of Qualifying?
Yes, these instruments will be classified as qualifying provided in paragraphs 16-19.

Question 7: As per the Standards, "the separate legs of cross-currency swaps or forward foreign exchange deals are to be treated as notional positions in the relevant instruments and included in the appropriate calculation for each currency". Under which method these are required to be included in MR-3 i.e Maturity method or Duration method.
General risk can be computed using Maturity and Duration approach. Paragraph 41 on "Allowable offsetting of matched positions" of the market risk standard applies to both approaches and depends on what approach the bank uses for reporting.

Question 8: If the options are hedged, do we need to input the numbers in the template.
If it is fully micro hedged, then Net Forward Purchase (Sales) & Delta weighted positions for Options will be zero. Refer to VII Appendix: Prudent Valuation Guidance as part of Market risk standard.

Question 9: Banks have the possibility to include the repo transactions in the trading book for regulatory capital calculation even though they are accounted in the banking book?
Term trading-related repo-style transactions that meet the requirements for trading-book treatment may be included in the bank's trading book for regulatory capital purposes even if a bank accounts for those transactions in the banking book. If the bank does so, all such repo-style transactions must be included in the trading book, and both legs of such transactions, either cash or securities, must be included in the trading book. Regardless of where they are booked, all repo-style transactions are subject to a credit risk capital requirement under the Central Bank's Standards for Credit Risk Capital. The secured part of the exposure is risk weighted based on the credit rating/type of the issuer the security serving as collateral, and the unsecured part is risk weighted based on the credit rating/type (bank-sovereign-corporate) of the counterparty. In addition, how/where the reporting should be under which risk type (e.g. interest rate risk (Specific and/or General), FX, Equity, etc.) depends on the nature of the cash placement (one 'leg') and that of the security/collateral (other 'leg'). The two legs are reportable to the relevant market risk type. For example, if the cash placement is floating rate and denominated in foreign currency it would be reported under FX. In regards to position risk (interest rate and equity risk types), it would be under General risk.

Question 10: How do we treat the capital charge when an exposure in the Banking book is hedged via a derivative in the trading book?
As long as the position got an open leg under one of the two books (i.e. Banking or trading), applicable capital charge should be taken in place. When a bank hedges a banking book credit risk exposure using a credit derivative booked in its trading book (i.e. using an internal hedge), the banking book exposure is not deemed to be hedged for capital purposes unless the bank purchases from an eligible third party protection provider a credit derivative meeting the requirements in the Central Bank's Standards for Credit Risk. Where such third party protection is purchased and is recognised as a hedge of a banking book exposure for regulatory capital purposes, neither the internal nor external credit derivative hedge would be included in the trading book for regulatory capital purposes.

Question 11: BCBS standards provides banks two options to include large swap books in the maturity or duration ladder (Convert the payments into their present values or to calculate the sensitivity of the net present value). It would be useful to clarify which methods are acceptable.
Currently both methods are acceptable but to move forward with sensitivity or NPV approach, the bank shall seek Central Bank approval by providing all relevant documents.

Question 12: How to treat Multilateral Development Banks (MDBs), PSEs and GREs that qualify 0% risk weight as per Credit Risk Section of the Standards for the "Qualifying" criteria of Specific Risk?
All MDBs are considered "qualifying" for this purpose and will receive a RW of 0%.
PSE that meets the conditions to be treated like a sovereign for credit risk can be considered "government" for specific risk.
Commercial GREs that are treated as corporates for credit risk should also be treated as corporates for market risk, for consistency.

Question 13: Can the securities issued by local government be reported under government? If yes, what capital charge will be applied?
Only if they qualify for treatment as "sovereign" under the credit risk framework, a 0% can be applied.

Question 14: What is meant by 'broadly' in paragraphs 23 and 24 of the Market Risk Standard. Any threshold for the size of the movement e.g. a negative correlation of more than 0.6?
No, there is no specific threshold. "Broadly" in this context means "with close approximation," to allow for minor deviations from perfect correlation. The bank should have a sensible policy to ensure that objective, which should be subject to supervisory review.

Question 15: What is meant by "long term participation"? What is included in it?
Long-term participations could take a number of forms, but a typical example would be investments accounted at historical cost (and in this context, denominated in a foreign currency). Paragraph 65 edited for clear understanding.

Question 16: Do the banks have to meet certain criteria to apply duration or maturity approach or is the choice of method fully within the bank's discretion?
Maturity approach shall be the initial approach to be used. In case the bank requires to apply Duration approach, then banks will have to seek Central Bank consent to switch between the approaches.

Question 17: Under Specific interest rate risk, what will be the treatment for the debt securities that are denominated and funded in domestic currency or foreign currency?
The preferential treatment/national discretion will be applicable to GCC sovereign's papers denominated and funded in local currency. In addition, exposures to the Federal Government and Emirates Government receive 0% risk weight, if such exposures are denominated and funded in AED or USD for a transition period of 7 years from the date of implementation of this Standard. After the transition period, 0% risk weights are only applied to exposures that are denominated and funded in AED. Elsewise (if denominated and funded in foreign currency and if the debt security is not GCC sovereign paper) rating and residual maturity shall be applied.

Question 18: Interest Rate Risk: How are derivatives treated from a market risk and credit risk perspective that a foreign branch has with its head office and other branches of the

group? Are all the derivative transactions under the umbrella of the group, can such derivatives be excluded from the capital charge?

- Exemption is not eligible; all derivatives are to be included under credit and market risk.
- If the branch and the head office both have the same ISDA contract, netting and collateral will not be eligible. However, if the ISDA contract contains only the deals from the branch, then netting and collateral would be eligible.
- From Market risk perspective, if the bank's transactions are fully hedged, i.e. certain derivatives with UAE customers are fully hedged back to back with the head office, then the bank can offset for example the general and specific interest rate risks (based on paragraphs 41 to 45). However, counterparty credit risk is still to be considered.

Question 19: Treatment of Options: Do banks have to meet certain criteria to apply the simplified approach or the delta plus method? Or is the choice of method fully within bank's discretion?

As per Para 82 (Standard), two alternative approaches apply to options. Banks that only purchase options (rather than written options) can choose to use a simplified approach. Unless all written option positions (under the simplified approach) are hedged by perfectly matched long positions in exactly the same options, in which case no capital charge for market risk is required. Banks with more complex option positions that also write options must use the delta-plus approach rather than the simplified approach.

Question 20: Specific Interest Rate Risk: When the securities are not externally credit rated, does the Central Bank have a list of specific treatment for issuers/ issues that are unrated?

The Central Bank does not have a discretionary list of customers that do receive a special treatment if an external rating is not available.

- The standard is exhaustive for all special treatments. For example: UAE and GCC sovereign exposure that are funded and denominated in the domestic currency receive 0% RW (independent of the external rating of that sovereign)

- Exposures to the Federal Government and Emirates Government receive 0% risk weight, if such exposures are denominated and funded in AED or USD for a transition period of 7 years from the date of implementation of this Standard. After the transition period, 0% risk weights are only applied to exposures that are denominated and funded in AED.

Question 21: If a bank has exposure in equity investments in the trading book, how will this exposure be treated under Market risk?

Risk-weighted assets for equity exposures arising from bank investments in funds that are held in the trading book are subject to the market risk capital rules. Equity investments in funds will be allocated to the trading book if the bank is able to “look through” to the fund’s underlying assets (i.e. determine capital requirements based on the underlying positions held by the fund), or where the bank has access both to daily price quotes and to the information contained in the mandate of the fund. The reporting is based on the underlying positions held by the fund; it could be covered under different areas of the market risk (e.g. FX, IRR and equity risk).

Question 22: As per paragraph 21 of the Market Risk Standard, it is mentioned that a securitisation exposure subject to a risk weight of 1250% under the Central Bank requirements (and therefore to a 100% specific risk charge under this Standard) may be excluded from the calculation of capital for general market risk. Should the cap for the

UAE be 1250% or 952% as mentioned in paragraph 5 of the Introduction of the standards?
Yes, the RW has to be capped at 952% as mentioned in the introduction of the standards.

V. Examples

Note that capital charges calculated in all examples below still need to be converted into risk-weighted assets via Section IV in the Market Risk Standards.

A. Interest rate risk

1. Calculating the General Market risk charge

Calculate the general market risk capital charge for XYZ bank's interest rate positions using the maturity method.
Long position in a qualifying bond: Market value AED 13.33m. Residual maturity 8 years & coupon 8%
Long position in a government bond: Market value AED 75m. Residual maturity 2 months & coupon 7%
Interest rate swap: Notional value AED 150m. Residual life of swap 8 years & bank receives floating rate interest and pays fixed. Next interest fixing after 9 months

Long position in interest rate government bond future: Contract size AED 50mn.
The treatment of interest rate future positions assume a bank is exposed to a long position in a 6-month interest rate future bought today and settled in two months' time. The long position in interest rates needs to be slotted into the 6-12 months' time band because the maturity of the long position is considered to be eight months. This is because the position is taken on today and will be settled in two months with a maturity of six months.

Delivery date after 6 months & remaining maturity of the CTD government security 3.5 years.
Cheapest to deliver CTD refers to the underlying instrument that result in the greatest profit or the least loss when delivered in satisfaction of futures contracts.

Calculating the general market risk capital charge comprises two main steps and a number of sub-steps.

Step 1: Map each interest rate position
We are using the maturity method to map the positions. None of the bank's positions have a coupon of less than 3%, so we will use a ladder of 13 time bands. Each position is mapped to the appropriate time band according to its residual maturity.

Step 2: calculate the total capital charge

Overall net open position

	Zone 1 (months)				Zone 2 (years)			Zone 3 (years)					
Time band	0-1	1-3	3-6	6-12	1-2	2-3	3-4	4-5	5-7	7-10	10-15	15-20	>20
Weighted position (AED m)		+0.15	-0.2	+1.05			+1.125			-5.625 +0.5			

The net open position is the sum of all the positions across all the time bands. The net open position is AED 3m short, which leads to a capital charge at 100% of AED 3,000,000.

Calculation:
+75*0.2%=+0.15
-50*0.4%=-0.2
+150*0.7%=+1.05
+50*2.25%=+1.125
-150*3.75%=-5.625
+13.33*3.75%=+0.5

Vertical disallowance
The long position of AED 0.5m is offset against the short position of AED 5.625m as per the marked area. The matched position is AED 0.5m and the net open position is AED -5.125m. This leads to a capital charge of 10% of AED 0.5m, or AED 50,000

	Zone 1 (months)				Zone 2 (years)			Zone 3 (years)					
Time band	0-1	1-3	3-6	6-12	1-2	2-3	3-4	4-5	5-7	7-10	10-15	15-20	>20
Weighted position (AED m)		+0.15	-0.2	+1.05			+1.125			-5.625 +0.5			
Vertical disallowance										-5.125			

Calculation
Matched position = 0.5
Net open position = -5.625+0.5= -5.125

Horizontal disallowance
The third part of the capital charge is a charge for the horizontal disallowance. There are three rounds of horizontal offsetting.

In round 1, the horizontal disallowance within each zone is calculated. In this example, charge applies to zone 1 only because it is the only zone with a long and a short position. (With more than one position). The short position, -0.2 is offset against the total long position, +1.2. The matched position is 0.2 and the net open position is +1.
The capital charge for the horizontal disallowance within zone 1 is 40% of AED 0.2m, or AED 80,000

In round 2, calculate the horizontal disallowance between adjacent zones, i.e., between:
Zone 1 and zone 2
Zone 2 and zone 3

In this example, zone 1 and zone 2 both contain long positions, so there is no matched position and therefore no offsetting between these zones. The long position of 1.125 in zone 2 is offset against the short position of -5.125 in zone 3. The matched position is 1.125 and the net open position is -4. The capital charge for the horizontal disallowance between zones 2 and 3 is 40% of AED 1.125m= AED 450,000.

In round 3, we calculate the horizontal disallowance between zones 1 and 3.

In this example, the long position of 1 in zone 1 is offset against the short position of -4 in zone 3. The matched position is 1 and the net open position is -3. The capital charge for the horizontal disallowance between zones 1 and 3 is 100% of AED 1m = AED 1m.
After the three rounds of horizontal offsetting, the total charge for the horizontal disallowance is AED 80,000 + AED 450,000 + AED 1,000,000 = AED 1,530,000

Having completed the horizontal and vertical offsetting, the remaining overall net open position is AED 3m, which is equivalent to the overall net open position we calculated across all time bands when we calculated the first part of the capital charge.

	Zone 1 (months)				Zone 2 (years)			Zone 3 (years)						
Time band	0-1	1-3	3-6	6-12	1-2	2-3	3-4	4-5	5-7	7-10	10-15	15-20	>20
Weighted position (AED m)		+0.15	-0.2	+1.05			+1.125			-5.625			+0.5
Vertical disallowance										-5.125			
Horizontal disallowance Round 1	+1												
Horizontal disallowance Round 2								-4					
Horizontal disallowance Round 3								-3					

We have now calculated the total capital charge for general market risk for this example.

Capital charge		AED	
1	A charge for the net open position	3,000,000	
2	A charge for the vertical disallowance	50,000	
3	A charge for horizontal disallowance		
	Round 1: Charge for the horizontal disallowance within each zone	80,000	
	Round 2: Charge for the horizontal disallowance between adjacent zones	450,000	
	Round 3: Charge for the horizontal disallowance between zones 1 and 3	1,000,000	1,530,000
	net charge for positions in options		0
	Total capital charge		4,580,000

2. Specific Market Risk – Example

Relate to the same example as above.
Given that, the government bonds are AAA-rated and that the qualifying bond is BBB-rated.
The interest rate swap does not incur a specific risk charge. The AAA-rate government bonds incur a 0% specific risk charge. The qualifying bond has a residual maturity of 8 years and is BBB-rated, so if has a specific risk charge of 1.6%
The capital charge is 1.6% of AED 13.33m, or AED 213,280.

B. Equity Risk – Calculating the Capital Charge

Bank XYZ has the following positions in its equity portfolio for a particular national market.

Company	Position	No. of shares	Market price (AED)	Market value (AED)
A Corp.	Long	10,000	35	350,000
B Corp.	Short	20,000	25	500,000
C Corp.	Short	5,000	50	250,000
D Corp.	Long	15,000	20	300,000
E Corp.	Short	2,000	60	120,000

To calculate the general market risk charge, we must first determine the overall net open position. The sum of the net long positions is AED 650,000 and the sum of the net short positions is AED 870,000. The overall net open position is short AED 220,000.
The capital charge for general market risk is 8% of AED 220,000, or AED 17,600.
Next, we must work out the specific risk charge.
The capital charge for specific risk is 8% of AED 1,520,000 or AED 121,600.
That lead to, overall capital charge for this portfolio is AED 17,600 + AED 121,000, or AED 139,200.

C. FX Risk – calculating the capital charge

Below is an example of calculating the capital charge for FX risk.
A bank has the following positions that have been converted at spot rates into its reporting currency, United Arab dirhams (AED).

Currency	JPY	EUR	GBP	AUD	USD	Gold
Net position (AEDm)	+50	+100	+150	-20	-180	-35

The higher of the sum of the net long and net short currency positions is AED 300m.
The capital charge is therefore calculated as 8% of AED 300m, plus the net position in gold (AED 35m):
Capital charge = 8% of AED 335m = AED 26.8m
Another example;
A bank has the following positions that have been converted at spot rates into its reporting currency (AED)

Currency	EUR	JPY	GBP	AUD	SGD
Net position (AEDm)	+150	-100	+75	-30	-15

The sum of the net long positions is AED 225m and the sum of the net short positions is -AED 145m. The capital charge is calculated as 8% of the higher of these two positions, so the charge is 8% of AED 225m, or AED 18m.

D. Commodity risk

1. Simplified approach

XYZ bank is exposed to a number of positions in the same commodity. The bank's reporting currency is AED. The following positions are held in EUR:

Position	Standard units (kg)	Maturity
Long	128	4 months
Short	-160	5 months
Long	96	13 months
Short	-96	4 years

Firstly, calculate the current value for these positons in the reporting currency.
The following is the current situation:

Current spot price of the commodity per unit (kg) in local currency	5.00	EUR per kg
Current EUR/AED FX spot rate	4.25	1 EUR = 4.25 AED

Further calculation to the position after conversion to local reporting bank's currency

Position	Standard units (kg)	Spot price	Value (EUR)	FX spot rate 1 EUR = 4.25 AED	Value (AED)	Maturity
Long	128	5.00	640	4.25	2,720	4 months
Short	-160	5.00	-800	4.25	-3,400	5 months
Long	96	5.00	480	4.25	2,040	13 months
Short	-96	5.00	-480	4.25	-2,040	4 years

640*4.25=2,720
-800*4.25=-3,400
480*4.25=2,040
-480*4.25=-2,040

Calculate the capital charge, first a capital charge of 15% of the overall net open position in the commodity is required.

The overall net position is the sum of the long and short positions:
AED 2,720 – AED 3,400 + AED 2,040 – AED 2,040 = - AED 680
The overall net positon is short AED 680. This leads to a capital charge of AED 102 (680 * 15%)
Next, a capital charge of 3% of the bank's gross positon in the commodity is required.
The gross position is the sum of the absolute values of the long and short positions:
AED 2,720 + AED 3,400 + AED 2,040 + AED 2,040 = AED 10,200

XYZ bank's gross position is AED 10,200. This leads to a capital charge of AED 306 (10,200 * 3%).
Now, sum the charges to find the total capital charge for this commodity. The charge for the overall net open position is AED 102, and the charge for the bank's gross position in the commodity is AED 306.
Therefore, XYZ bank's total market risk capital charge for positions held in this commodity is AED 102 + AED 306, or AED 408.

2. Maturity ladder approach

Recall that XYZ bank is exposed to a number of positions in the same commodity. The bank's reporting currency is AED. The following positions are held in EUR:

Position	Standard units (kg)	Maturity
Long	128	4 months
Short	-160	5 months
Long	96	13 months
Short	-96	4 years

Step 1:
First express each commodity position in terms of the standard unit of measurement, and value in the reporting currency at the current spot price.
The following is the current situation:

Current spot price of the commodity per unit (kg) in local currency	5.00	EUR per kg
Current EUR/AED FX spot rate	4.25	1 EUR = 4.25 AED

This is done the same way as for the simplified approach.

Position	Standard units (kg)	Spot price	Value (EUR)	FX spot rate 1 EUR = 4.25 AED	Value (AED)	Maturity
Long	128	5.00	640	4.25	2,720	4 months
Short	-160	5.00	-800	4.25	-3,400	5 months
Long	96	5.00	480	4.25	2,040	13 months
Short	-96	5.00	-480	4.25	-2,040	4 years

Step 2:
Slot each position into a time band in the maturity ladder according to its remaining maturity. Physical stocks should be allocated to the first time band.

Maturity ladder		
Time bands	**Positions (AED)**	
	Long	**Short**
0-1 months		
1-3 months		
3-6 months	2,720	-3,400
6-12 months		
1-2 years	2,040	
2-3 years		
Over 3 years		-2,040

Step 3:
Apply a capital charge: of 1.5% to the sum of the matched long and short positions in each time band to capture spread risk.

Maturity ladder			**Matched position**	**Capital charge for spread risk rate = 1.5%**
Time bands	**Positions (AED)**			
	Long	**Short**		
0-1 months				
1-3 months				

3-6 months	2,720	-3,400	2,720	81.6*
6-12 months				
1-2 years	2,040			
2-3 years				
Over 3 years		-2,040		

*start with the 3-6 months' time band.

Multiply the sum of the ling and short matched positions by the spread rate 1.5%, to calculate the capital charge: (AED 2,720 + AED 2,720) * 1.5% = AED 81.6

Step 4:

Apply a capital charge of 0.6% to the residual net position carried forward to the next relevant time band, multiplied by the number of time bands it is carried forward.

The maturity ladder approach allows for netting between unmatched long and short positions across time bands. The residual net position in a time band can be carried forward to the next relevant time band, thus offsetting exposures in time bands further out. Because this is imprecise, resulting in an "imperfect hedge"; a capital charge is required.

The residual net position in the 3-6 months' band is short AED 680. This net position is carried forward two time bands to offset exposures in the next relevant time band, the 1-2 years' band.

Maturity ladder			**Matched position**	**Net position**	**Capital charge for spread risk rate = 1.5%**	**Capital charge for positions carried forward rate = 0.6%**
Time bands	**Positions (AED)**					
	Long	**Short**				
0-1 months						
1-3 months						
3-6 months	2,720	-3,400	2,720	-680 (3400-2720)	81.6	8.16*
6-12 months						
1-2 years	2,040	-680				
2-3 years						
Over 3 years		-2,040				

*The capital charge is calculated as follows: AED 680 * 2 * 0.6% = AED 8.16

Step 5:

Repeat step 3 and step 4 for each time band.

When determining the matched position in each time band, take into account the residual net position carried forward.

Maturity ladder			Matched position	Net position	Capital charge for spread risk rate = 1.5%	Capital charge for positions carried forward rate = 0.6%
Time bands	Positions (AED)					
	Long	Short				
0-1 months						
1-3 months						
3-6 months	2,720	-3,400	2,720	-680 (3400-2720)	81.6	8.16
6-12 months						
1-2 years	2,040	-680	680	1,360	20.4*	16.32**
2-3 years						
Over 3 years	1,360	-2,040	1,360	- 680	40.8***	

*(680+680)*1.5% = AED 20.4
**(1,360*2*0.6%) = AED 16.32
***(1,360+1360) *1.5% = AED 40.8

Step 6:
Apply a capital charge of 15% to the overall long or short net open position.
The net position in the final time band is subject to a capital charge of 15% as to say 680 * 15% = AED 102

Step 7:
Derive the total capital charge by summing the charges for spread risk, for positions carried forward and for the overall net open position.

Capital charges	AED
Charge for spread risk	142.8
Charge for the positions carried forward	24.48
Charge for the overall net position	102
Total capital charge	269.28

In this example, the capital charge calculated using the maturity ladder approach; AED 269.28 is significantly lower than that calculated using the simplified approach, AED 408.

E. Options

Simplified approach

A bank holds 100 shares currently valued at USD 10, and also holds an equivalent number of put options with a strike price of USD 11 (each option entitles the bank to sell one share).
Since these are equity options, they are subject to the capital charges for general market risk and specific risk according to the standardised framework for equity risk. The capital charge is levied

at 8% for general market risk and 8% for specific risk, giving a summed charge of 16%.

Market value of 100 shares = USD 1,000

First, multiply the market value by the sum of general market risk and specific risk charges.
USD 1,000 x 16% = USD 160
Then, calculate the amount the option is in-the-money.
(USD 11 - USD 10) x 100 = USD 100

The capital charge is the general market risk and specific risk charge less the amount the option is in-the-money.
USD 160 - USD 100 = USD 60

A similar methodology applies for options whose underlying is a foreign currency, an interest rate related instrument or a commodity.

Another example for simplified approach
A bank holds 500 shares currently valued at USD 25.50 and holds an equivalent number of put options with a strike price of USD 26.25 (each option entitles the bank to sell one share).

The capital charge is calculated as follows:
Market value of 500 shares = USD 12,750
USD 12,750 x 16% (that is, 8% specific plus 8% general market risk) = USD 2,040

The amount the option is in-the-money = (USD 26.25 - USD 25.50) x 500 = USD 375.
This gives a capital charge of USD 2,040 - USD 375 = **USD 1,665**

IX. Operational Risk

I. Introduction and Scope

1. This section of the guidance supports the Operational Risk Standard in clarifying the calculation of the Operational risk capital requirement.

2. Operational risk has existed since banks have been in business. However, it is only in recent decades that the management of operational risk (including measurement techniques) has evolved into a distinct discipline, long after this was the case for both credit risk and market risk.

3. In this same period, the significance of operational risk in banks became widely recognised. This development was influenced by numerous high-profile operational risk events and related losses, along with such factors as banks' greater reliance on technology and increased use of outsourcing, the growing sophistication of cyber threats, and the pace of change in the financial services sector.

II. Clarification

4. Operational risk includes legal and compliance risk but excludes strategic and reputational risk. The exclusion of strategic and reputational risk is because they relate more to indirect losses, the definition, measurement and quantification of which would give rise to significant complexities.

5. The operational risk capital charge represents the amount of capital that a bank should maintain as a cushion against losses arising from operational risk.

6. The operational risk capital charge is first calculated using the appropriate approach under Basel III. It is then converted into a risk-weighted asset equivalent by multiplying the charge by 12.5 and adding the result to the total risk-weighted assets for credit risk.

III. Approaches

7. The calculation of the operational risk capital charge is covered under the Standards for Capital Adequacy of banks in the UAE.

8. The approaches represent a continuum of increasing sophistication and risk sensitivity. The charge is to be calculated using one of the following two approaches:

a. Basic Indicator Approach (BIA)

9. The Basic Indicator Approach (BIA) is a simple approach for calculating the capital charge for operational risk. It can be used by banks that are not internationally active, as well as by banks that are internationally active but may not yet have risk management systems in place for using the more advanced approaches for measuring operational risk.

10. While the approach is available for all banks as a 'point of entry', irrespective of their level of sophistication, Central Bank expects internationally active banks and banks with significant operational risk to discontinue indefinitely with the Basic Indicator Approach.

The Basic Indicator Approach Components

11. The operational risk capital charge under the BIA is based on two components:

1. **The exposure indicator**, represented by the Gross Income (GI) of a bank as a whole.
2. **The fixed factor, alpha (α)**, set by the Basel Committee.

The formula for calculating the capital charge for operational risk under the BIA is as follows:

$$K_{BIA} = [\sum(GI_{1..n} \times \alpha)]/n$$

Where:

K_{BIA} = The capital charge under the BIA;
GI = Annual gross income, where positive, over the previous three years;
n = Number of the previous three years for which gross income is positive; and
α =15%, relating the industry wide level of required capital to the industry wide level of the indicator.

1. Gross Income of the Bank

12. Gross income is a broad indicator that serves as a proxy for the likely exposure of a bank to operational risk. It is the total of net interest income plus net non-interest income of a bank as a whole. Net interest income is defined as interest income of a bank (for example, from loans and advances) minus the interest expenses (for example, interest paid on deposits). Net non-interest income is defined as fees and commissions earned minus the non-interest expenses (that is, fees and commissions paid) and other income.

13. Gross income used in the calculation of the capital charge for operational risk should be:

- Gross of any provisions, for example, for unpaid interest. This is because such amounts should have normally formed part of a bank's income but have been set aside for likely credit losses.
- Gross of operating expenses, including fees paid to outsourcing service providers. This is because outsourcing of activities does not fully transfer operational risk to the service provider. Outsourcing is the strategic use of outside resources to perform business functions that are traditionally managed by internal staff. Outsourcing offers the advantage of access to specialised and experienced personnel that may not be available internally, and enables banks to concentrate on their core business and reduce costs.

14. Only sustainable, renewable and recurrent sources of income are to be used as the basis for calculating the operational risk capital charge. Banks should perform a reconciliation between the gross income reported on the capital adequacy return and the audited financial statements. This information should be available to the Central Bank upon request. As such, gross income should exclude:

- **realised profits/losses** from the sale of securities classified as 'held to maturity' and 'available for sale', which typically constitute items of the banking book under certain accounting standards. The intention is to hold such securities for some time or up to their full term and not for trading purposes. Their sale does not represent sustainable income from normal business.
- Held to maturity securities are those that the bank intends to hold indefinitely or until the security reaches its maturity. Available for sale securities includes securities that are neither held for trading purposes nor intended to be held till maturity. These are securities that the bank intends to hold in the short or medium term, but may ultimately sell. Banking book relates

to positions that are held to maturity with no trading intent associated with them. Most loans and advances are included in the banking book as they are intended to be held until maturity. At times, there may also be liquid positions assigned to the banking book if they are intended to be held over a longer term or to maturity.

- **Extraordinary or irregular items** as well as income derived from insurance claims. Again, these items are to be excluded, as they are not sustainable sources of income for a bank.

15. Banks sometimes outsource certain activities, such as processing and maintaining data on loan collection services to external service providers. Alternatively, banks may act as service providers to other banks. This results in the payment or receipt of a fee for the outsourced service.

16. Basel provides the following guidance for the treatment of outsourcing fees paid or received, while calculating the gross income for the purpose of calculating the operational risk capital charge:

- Outsourcing fees paid by a bank to a service provider do not reduce the gross income of the bank.
- Outsourcing fees received by a bank for providing outsourcing services are included in the definition of gross income.

2. Alpha

17. Alpha is a fixed factor, set by the Basel Committee. It serves as a proxy for the industry-wide relationship between operational risk loss experience of a bank and the aggregate level of the operational risk exposure as reflected in its gross income.

Treatment of Negative Gross Income

18. The operational risk capital charge under the BIA is assumed that a bank has positive gross income for all of the previous three years. However, some banks may have negative gross income for some year(s), for example, resulting from poor financial performance. Figures for any year in which annual gross income is negative or zero shall be excluded from both the numerator and denominator when calculating the gross income average.

19. On this basis, the figures presented in the 3 years' calculations should reconcile (or be reconcilable) with the bank's audited financial statements.

b. Standardised Approach (SA)

20. The Standardised Approach (SA) represents a refinement along the continuum of approaches for calculating the operational risk capital charge. While this approach also relies on fixed factors as a percentage of gross income, it allows banks to use up to eight such factors, called betas, depending upon their business lines.

21. The calculation of the operational risk charge under this approach is more risk sensitive than the BIA.

The Standardised Approach Capital Charge

22. Under the Standardised Approach (SA), the operational risk capital charge is based on the operational risk capital charges for individual business lines in a bank. The formula for calculating the operational risk capital charge under the SA is as follows:

$$K_{TSA} = \{ \sum_{years\ 1-3} \max [\sum (GI_{1-8} \times \beta_{1-8}), 0] \} / 3$$

Where:

K_{TSA} = the capital charge under the Standardised Approach

GI_{1-8} = the annual gross income in a given year, as defined in the Basic Indicator Approach (BIA), for each of the eight business lines

β_{1-8} = a fixed percentage, set by the committee, relating the level of required capital to the level of the gross income for each of the eight business lines

The Standardised Approach Components

23. The Standardised Approach identifies two main components to be used in calculating the operational risk capital charge:

1. Gross Income of Eight Business Lines

24. Eight business lines are recommended for use by the Basel Committee in calculating the operational risk charge under the SA. These business lines are considered as being representative of the various kinds of businesses undertaken by banks. The identified business lines briefed below are:

1. Corporate finance: banking arrangements and facilities provided to large commercial enterprises, multinational companies, non-bank financial institutions, government departments etc.
2. Trading and sales: treasury operations, buying and selling of securities, currencies and commodities for proprietary and client accounts.
3. Retail banking: financing arrangements for private individuals, retail clients and small businesses such as personal loans, credit cards, auto loans, etc. as well as other facilities such as trust and estates and investment advice.
4. Commercial banking: financing arrangements for commercial enterprises, including project finance, real estate, trade finance, factoring, leasing, guarantees, bills of exchange etc.
5. Payment and settlement: activities relating to payments and collections, interbank funds transfer, clearing and settlement.
6. Agency services: acting as issuing and paying agents for corporate clients, providing custodial services etc.
7. Asset management: managing funds of clients on a pooled, segregated, retail, institutional, open or closed basis under a mandate.
8. Retail brokerage: broking services provided to customers that are retail investors rather than institutional investors.

25. Under the SA, the gross income is calculated for each of the eight business lines. It serves as a proxy for the likely scale of exposure of that business line of the bank to operational risk. Since all income has to be allocated to a business line, the sum of the gross income of the eight business lines should equal the gross income for the bank as a whole

26. Just like in the Basic Indicator Approach, gross income for SA comprises net interest income plus net non-interest income as defined in the Operational Risk section of the Standards re Capital Adequacy.

2. Beta

27. Beta serves as a proxy for the industry-wide relationship between the operational risk loss experience and the level of operational risk exposure as reflected in the gross income for a business line. It is representative of the amount of loss that can be incurred by a bank given that level of exposure (represented by gross income) in a business line.

28. The beta factors for the eight business lines as set by the Basel Committee are as follows:

Beta	Business line	Beta factor
β_1	Corporate finance	18%
β_2	Trading and sales	18%
β_3	Retail banking	12%
β_4	Commercial banking	15%
β_5	Payment and settlement	18%
β_6	Agency services	15%
β_7	Asset management	12%
β_8	Retail brokerage	12%

29. The beta factors have been set within a range of 12-18% depending upon the degree of operational risk perceived in a business line. Thus, a 12% beta factor for retail banking indicates that, in general, the operational risk in retail banking is lower than the operational risk in commercial banking. The latter, which has a beta of 15%, carries a lower operational risk than, for example, payment and settlement, which carries a beta factor of 18%.

Treatment of Negative Gross Income from Business lines

30. Some banks may have negative gross income for some years in some business lines. This will result in a negative capital charge for the business line for that year. If the gross income and the resulting capital charge of a specific business line is negative, the aggregate of the capital charges across business lines for that year could still be positive, so long as the gross income from other business lines is positive.

31. The following guidance applies for treatment of negative capital charges under the Standardised Approach:

- In any given year, negative charges in business lines may offset positive capital charges in other business lines without any limit.
- If the total capital charge, after offsetting negative and positive capital charges of business lines, is negative for a given year, then the numerator for that year will be set to zero.
- If negative gross income distorts the operational risk capital charge calculated under the SA, the Central Bank will consider appropriate supervisory action under Pillar 2.

Calculating the Operational risk capital charge under the Standardised Approach (SA)

The calculation of the capital charge for operational risk under the SA follows the following steps:

Step 1: Calculate the capital charge for each business line using its gross income and applicable beta factor in year 1.
If the gross income from a business line is negative, the capital charge for that business line in year 1 will be negative.
Step 2: Sum the eight capital charges of business lines for Year 1.
In a year, negative capital charges in some business lines may offset positive capital charges for other business lines without any limit.
Steps 3 and 4: Follow steps 1 and 2 for the other two years.
Step 5: Calculate the 3-year average of the aggregated capital charges. Where the aggregate capital charge across all business lines in a given year is negative, then the input to the numerator for that year will be zero. The denominator will remain 3, representing the three years included in the calculation.

Central Bank supports the use of the Beta given in the Standards re Capital Adequacy as well as here in this guidance above as the basis for the capital calculations under SA.

c. Alternative Standardised Approach (ASA) Capital Charge

32. The Alternative Standardised Approach provides a **different exposure indicator** for two of the eight business lines, retail banking and commercial banking. These activities essentially comprise traditional banking business and still represent the main business of banks in several jurisdictions.

Calculation of Operational Risk Capital Charge under Alternative Standardised Approach (ASA)

33. Using the ASA, the operational risk capital charge for retail banking and commercial banking will be based on the following formulas:

$$K_{RB} = \beta_{RB} \times m \times LA_{RB}$$

Where:

K_{rb} = is the capital charge for retail banking
m = 0.035
β_{rb} = is the beta factor for retail banking (12%)
LA_{rb} = is the total outstanding retail loans and advances (non-risk weighted and gross of provisions), averaged over the past three years

$$K_{CB} = \beta_{CB} \times m \times LA_{CB}$$

Where:

K_{CB} = is the capital charge for commercial banking
m = 0.035
β_{CB}= is the beta factor for commercial banking (15%)
LA_{CB} = is the total outstanding commercial loans and advances (non-risk weighted and gross of provisions), averaged over the past three years

For the other six business lines, the calculation of the operational risk capital charge will be based on the gross income and beta factor of that business line, as prescribed under the SA.

Further Options under the Alternative Standardised Approach (ASA)

34. Further options are available at under the ASA for calculating the operational risk capital charge to address problems in disaggregation of the exposure indicator among business lines by banks. However, the greater the disaggregation, the better will be the alignment of the capital charge with a bank's operational risk profile.

35. Available options relate to using loans and advances in commercial and retail banking business lines and gross income in the other six business lines as the exposure indicators with different beta factor combinations:

- Option 1 – using a common beta factor of 15% for commercial loans and retail loans, and the SA beta factors for the other six business lines
- Option 2 – using the SA beta factors of 15% and 12%, respectively, for commercial loans and retail loans and a common beta factor of 18% for the other six business lines
- Option 3 – using a common beta of 15% for commercial loans and retail loans and a common beta factor of 18% for the other six business lines

For further details, kindly refer to the Appendix below.

IV. Shari'ah Implementation

36. Banks that conduct all or part of their activities in accordance with the provisions of Shari'ah law and have exposure to risks similar to those mentioned in the Operational Risk Standard, shall, for the purpose of maintaining an appropriate level of capital, calculate the relevant risk weighted asset in line with these guidelines. This must be done in a manner compliant to the Shari'ah law.

37. This is applicable until relevant standards and/or guidelines in respect of these transactions are issued specifically for banks offering Islamic financial services.

V. Frequently Asked Questions

A. Basic Indicator Approach

Question 1: If a bank incurs a negative gross income in any of the previous three years, will it be taken into account under the Basic Indicator Approach (BIA)?

The basis for working out the capital charge for operational risk under the BIA is three-year average of positive gross income. If the gross income for any of the previous three years is negative or zero, the figures for that year will be excluded from both the numerator and the denominator when calculating the capital charge. The negative gross income will not be added to the numerator and the denominator will exclude the year in which the income is negative.

As mentioned under the Basic Indicator Approach, if negative gross income distorts a bank's Pillar 1 capital charge under the Standardised Approach, supervisors will consider appropriate supervisory action under Pillar 2.

Question 2: Can the Central Bank detail or provide examples of the extraordinary or irregular items under the definition of Gross income. Does this cover the bank selling off certain part of its business?

An extraordinary or irregular item consists of gains or losses included on a bank's P&L statement (usually reported separately as these items are not predictors of future performance) from events that are unusual and infrequent in nature. Such items are the result of unforeseen and atypical events that are outside the normal course of the core banking business (i.e. outside the types of income described in paragraph 13 of the Operational Risk section of *Standards re Capital Adequacy in the UAE*). For example, income derived from non-core banking business; income from discontinued operations; extraordinary income (e.g. from the sale of certain part a banking business).

B. Standardised Approach

Question 3: Define business Segments under 'Retail Brokerage' and 'Asset Management'?

- Retail Brokerage - Examples of activities:
  Execution and full service, such as:
  i. Reception and transmission of orders in relation to one or more financial instruments
  ii. Execution of orders on behalf of clients

- Asset Management- Examples of activities:
  i. Portfolio management
  ii. Managing of Investments funds, including: pooled funds, segregated funds, retail funds, institutional funds, closed funds, open funds, private equity funds

Question 4: What is the objective mapping criteria for mapping ancillary business function that supports more than one business line?

Such objective mapping criteria depends on the business and ancillary business mix of a bank. These criteria are not preset by the Central Bank. A bank should establish internally such criteria, reflecting its internal organisation, and these should be subject to independent review as per point (ix) of paragraph 12 of the Operational Risk section of *Standards re Capital Adequacy in the UAE*. The allocation can be done pro-rata based on the chosen criteria.

Examples of objective criteria include:

1. number of full-time equivalent members of staff,
2. time sheet man-hours,
3. number of clients or transactions originated from each business line,
4. volume of business originated from each business line.

Question 5: Business Segments/ functions that are to be mapped to 'Payment and Settlement' can be clearly articulated, as currently Level 2 defines the business segment as 'External Clients'

There is no fixed definition of external clients but all clients that the bank deals with externally with regards to Payment and Settlements need to be incorporated in this business line.

C. Alternative Standardised Approach

Question 6: What exposure indicator is used in the ASA approach?
In the ASA, gross income is replaced by the credit volume in terms of outstanding loans and advances (L&A) multiplied by a factor m (fixed at 0.035), as the exposure indicator for retail and commercial banking business lines. The loans and advances are non-risk weighted and gross of provisions.

Question 7: Why is the volume-based indicator alternative provided?
This volume-based indicator is provided to avoid large differences in the operational risk requirement caused by differences in income margins across banks and jurisdictions in these business lines. Gross income is not an appropriate exposure indicator of the extent of operational risk in retail and commercial lending.

Question 8: Can a bank choose to adopt ASA on its own?
No, the Central Bank must be satisfied that the alternative approach provides an improved basis for calculating the capital charge for operational risk in the bank. Reverting to the SA after adopting ASA is only possible with the approval of the Central Bank.

Question 9: What comprises Commercial Loans and Advances?
Under the ASA, commercial loans and advances will include outstanding amounts (non-risk weighted and gross of provisions) averaged over the past three years, from the following credit portfolios:

Commercial loans included for ASA	Definitions
Corporates	Loans to a corporation, partnership or proprietorship firm
Sovereigns	Loans to sovereigns and their central banks, certain public sector enterprises and multilateral development banks
Banks	Loans to other banks and regulated securities firms
Specialised lending	Loans for project finance, object finance, commodities finance, income producing real estate and commercial real estate
Small and medium enterprises treated as corporates	Loans to small and medium enterprises belonging to a group with annual gross turnover that exceeds AED 250 million
Purchased corporate receivables	Bank finance against amounts due to corporates from third parties for goods and/or services provided by them.
Book value of securities held in the banking book	The value at which securities have been purchased rather than their market value. Securities that are held in the banking book are intended to be held until maturity. There is no intent of trading in these securities.

Question 10: What comprises Retail Loans?
For the purpose of the ASA, retail loans will include total outstanding amounts (non-risk weighted

and gross of provisions) averaged over the past three years in the following credit portfolios:

Retail loans included for ASA	Definitions
Retail	Exposures to individuals, residential mortgage loans etc.
SMEs treated as retail	Loans extended to small and medium businesses and managed as retail exposures by the bank.
Purchased retail receivables	Bank finance against amounts due to bank's retail clients from third parties for goods and/or services provided by them

Question 11: What is the threshold to decide a large diversified bank in terms of assets book size/composition or any other indicators?
Currently, there is no such threshold. The Central Bank will perform an assessment for each bank applying to qualify for ASA. The qualifying criteria provided in paragraph 28 of the Operational Risk section of *Standards re Capital Adequacy in the UAE*, especially the first one (90% income from retail/commercial banking) are stringent. The Central Bank will review whether the bank meets the 90% standard to determine whether an additional size cut-off is appropriate.

Question 12: Retail or commercial banking activities shall account for at least 90% of its income. Please clarify whether this needs to be seen in the current year or an average of all the 3 years based on which the Operational Risk capital is being computed
Testing the 90% rule across a period of three consecutive years will be more appropriate.

Question 13: "The bank's operational risk management processes and assessment system shall be subject to validation and regular independent review". Can we get clarification on the difference between the validation and the review, and what are the scope and responsible party for each?
Validation of models and tables must be performed by the internal auditor or by the external auditor.

Question 14: In terms of the "regular reporting", is an official ORM meeting required? For example, Operational Risk Business/ Country / Group Committee meetings?
It is up to the bank how it conveys the regular reports to the senior management and the board of directors, but the evidence of these reports were submitted needs to be documented for example senior management signatures on the reports.

Question 15: Is operational risk capital charge revision a quarterly activity going forward or it remains as a yearly activity at the end of the year?
Will it be more adequate if we use current years' gross income to compute operational risk rather last year's audited numbers only.
If the quarterly income is audited, the bank should use the quarterly data, which means the same quarter in the previous two years needs to be taken into consideration or else, the yearly audited data needs to be incorporated
The standards state only audited numbers need to be used and as such, if the current year's income is audited, it can be used as part of the computation

Question 16: Elaboration of definition and scope of Operational Risk should be helpful. For example, whether Operational Risk includes other risk types such as Fraud Risk,

Business Continuity Risk etc.
The definition and scope of Operational risk is sufficiently elaborated in the Operational Risk Standard of the Capital Adequacy Standards of Banks in the UAE and the Operational Risk Guidance. If operational risks were not sufficiently covered under Pillar I, then the uncovered risk should be part of the Pillar 2 ICAAP calculation.

Question 17: As per the definition of gross income, "income derived from insurance" is to be excluded from the income while computing Operational RWA.
We would request clarification if this also refers to bancassurance i.e. Bank's commission income earned on insurance products that are sold on behalf of insurance companies."
Any income which the bank earns out of the bancassurace should be treated as income derived from insurance.

VI. Examples

A. Basic Indicator Approach

The Basic Indicator Approach (BIA) is a simple approach for calculating the capital charge for operational risk. It can be used by banks that are not internationally active, as well as by banks that are internationally active but may not as yet have risk management systems in place for using the more advanced approaches for measuring operational risk. Below is an example of ABC bank and how the Operational risk capital charge is calculated on Basic Indicator Approach

1- Calculating gross income through the table shows part of the income statement of ABC bank for 2003.

Income statement of ABC bank for 2003	
Operating income	
Interest income	150
Interest expenses	110
Provisions made	20
Net interest income after provisions	20
Fees and commissions received	80
Fees and commissions paid including fees paid for outsourcing	50 12
Other income From disposal of subsidiaries From disposal of available for sale Investments	 10 8 0
Net non-interest income	48
Total operating income	68

The net interest income to be used in gross income for calculating the operational risk capital charge after provisions. Normally banks reduce this amount to arrive at the operating income, however, in the calculation of capital charge for operational risk, net interest income is gross of provisions.

In this example, net interest income is interest income minus interest expenses.

150 – 110 = 40

While for calculating net non-interest income for calculating operational risk capital charge, in this example:

Net non-interest income is fees and commissions received (80) minus fees and commissions paid, adjusted for outsourcing fees paid (50 – 12 = 38). Therefore, the amount will be 42.

2- Calculating operational risk capital charge under BIA

The following table shows how to calculate the operational risk capital charge under the BIA.

Year	Gross income of the bank
2002	120
2003	20
2004	250
Total positive GI for 3 years	390 (120+20+250)
Three year average of positive Gross Income	130 (390/3)
Alpha	15%
Operational risk capital requirement under BIA	19.5 ((390*15%)/3 or 130*15%

3- Treatment of Negative Gross Income

Below is the calculation of the operational risk capital charge when the bank has negative gross income for a year.

	Amount
Gross income year 1	-120
Gross income year 2	20
Gross income year 3	250
Total of positive gross income	270
Number of years with positive gross income	2
Average of positive annual gross income for the last three years	135 (270/2)
Alpha	15%
Operational risk capital requirement	20.25 (135*15%)

Since negative gross income leads to exclusion of data points for that year from both the numerator and the denominator of the BIA operational risk formula, it could at times result in some distortions. For example, a bank that has negative gross income for one of three years might end up with a higher operational risk capital charge than if it were to have positive gross income for that year, even if it was a small amount. To ensure that such distortions do not occur, the supervisor should review and consider appropriate actions under Pillar 2.

B. Standardised Approach

1- Below is small example indicated which to include and exclude in the gross income:

Included	**Excluded**
Provisions	Profits/losses from sale of securities
Operating expenses	Extraordinary/ irregular items

Gross income for each business line should:

- Be gross of any provisions (for example, for unpaid interest).
- Be gross of operating expenses, including fees paid to outsourcing service providers.
- Exclude realised profits/losses from the sale of securities in the banking book.
- Exclude extraordinary or irregular items as well as income derived from insurance claims.

2- The following table shows how to calculate the capital charge for operational risk using the Standardised Approach:

Business line	Beta factor	Gross income			Capital requirement			
		Year 1	Year 2	Year 3	Year 1	Year 2*	Year 3	Average
Corporate finance	18%	250	300	200	45	54	36	
Trading and sales	18%	100	-70	-80	18	-12.6	-14.4	
Retail banking	12%	500	200	-300	60	24	-36	
Commercial banking	15%	400	300	400	60	45	60	
Payment and settlement	18%	300	350	300	54	63	54	
Agency services	15%	75	50	45	11.25	7.5	6.75	
Asset management	12%	50	-100	-20	6	-12	-2.4	
Retail brokerage	12%	150	100	80	18	12	9.6	
Total Gross Income		1,825	1,130	625				
Aggregate Capital Requirement**					272.25	180.9	113.55	189***

*Gross Income x Beta factor
**Sum of eight capital charges for the year – remember within a year negative capital charges can offset positive charges among business lines
***Three-year average capital charge

3- Another example to illustrate the negative Gross income:

Business line	Beta factor	Gross income			Capital requirement			
		Year 1	Year 2	Year 3	Year 1	Year 2	Year 3	Average
Corporate finance	18%	250	-300	200	45	54	36	
Trading and sales	18%	100	-70	-80	18	-12.6	-14.4	
Retail banking	12%	500	200	-300	60	24	-36	
Commercial banking	15%	400	-300	400	60	45	60	
Payment and settlement	18%	300	350	300	54	63	54	
Agency services	15%	75	50	45	11.25	7.5	6.75	

Asset management	12%	50	-100	-20	6	-12	-2.4	
Retail brokerage	12%	150	100	80	18	12	9.6	
Total Gross Income		1,825	-70	625				
Aggregate Capital Requirement					272.25	0*	113.55	129**

*Total capital charge against all business lines for year 2 is negative (-17.1), so the numerator for year 2 is set to zero

**Capital charge averaged for three years, with the numerator for year 2 set to zero

C. Alternative Standardised Approach

The following table shows how to calculate the capital charge for operational risk using the Alternative Standardised Approach.

Business line	Beta factor	Exposure Indicator*			Capital requirement**			
		Year 1	Year 2	Year 3	Year 1	Year 2	Year 3	Average
Corporate finance	18%	250	300	200	45	54	36	
Trading and sales	18%	100	-70	-80	18	-12.6	-14.4	
Retail banking	12%	700***	875***	945***	84	105	113.4	
Commercial banking	15%	875***	910***	980***	131.25	136.5	147	
Payment and settlement	18%	300	350	300	54	63	54	
Agency services	15%	75	50	45	11.25	7.5	6.75	
Asset management	12%	50	-100	-20	6	-12	-2.4	
Retail brokerage	12%	150	100	80	18	12	9.6	
Total Gross Income		2,500	2,415	2,450				
Aggregate Capital Requirement					367.5	353.4#	349.95	356.95##

*Gross income/loans & advances ^{x} m

**Exposure indicator (GI or LA ^{x} m) ^{x}β

***Outstanding loans and advances ^{x} m (0.035)

Sum of eight capital charges for the year

Three year average capital charge

VII. Appendix

Further Options under the ASA – Option 1

Under the ASA Option 1, banks may aggregate retail and commercial banking using a common beta of 15%, instead of 12% and 15%, respectively, as prescribed under the Standardised Approach (SA). For the other six business lines, the relevant beta factors as prescribed under the SA are used. The exposure indicator remains the volume of loans and advances for commercial and retail banking and gross income for the other six business lines.

Further Options under the ASA – Option 2

Under Option 2, banks may maintain the SA beta factors of 12% and 15% for retail and commercial banking and aggregate the other six business lines with a beta factor of 18%. The volume of loans and advances is used as the exposure indicator for commercial and retail banking. Gross income is used for the other six business lines. Banks undertaking predominantly traditional banking activities, such as retail and commercial banking, and unable to segregate their gross income according to business lines may find it useful to adopt this option.

Further Options under the ASA – Option 3

Under Option 3, banks may aggregate retail and commercial banking with a beta factor of 15% and the other six business lines with a beta factor of 18%. The volume of loans and advances is used as the exposure indicator for retail banking and commercial banking. Gross income is used for the other six business lines.

X. External Credit Assessment Institutions

I. Introduction and Scope

1. Banks are required to use external ratings to determine risk weights for certain types of exposures. However, only external ratings provided by External Credit Assessment Institutions (ECAIs) that have been recognized as eligible for that purpose by the Central Bank may be used. This Guidance describes the specific requirements for the recognition of eligible ECAIs, together with certain other aspects of the use of ratings within the Central Bank's capital adequacy framework. Note that additional requirements related to the use of ratings in capital requirements for securitisation are provided in the Central Bank's *Standards on Required Capital for Securitisation Exposures*.

2. The Guidance is based closely on requirements of the framework for capital adequacy developed by the Basel Committee on Banking Supervision (BCBS), specifically the requirements articulated by the BCBS in *International Convergence of Capital Measurement and Capital Standards: A Revised Framework* (comprehensive version June 2006), and the revisions from *Basel III: A global regulatory framework for more resilient banks and banking systems*, December 2010 (rev June 2011).

II. Eligibility Criteria

3. ECAIs may be considered eligible for recognition if they meet the criteria articulated in this section. The Central Bank also takes into account the criteria and conditions provided in the *IOSCO Code of Conduct Fundamentals for Credit Rating Agencies* (IOSCO CRA Code) when determining ECAI eligibility.

4. The Central Bank's eligibility determination for each ECAI applies only with respect to the types of claims for which the eligibility criteria have been met by that ECAI.

A. Objectivity

5. ECAI's should have a methodology for assigning credit ratings that is rigorous and systematic, and is subject to validation based on historical experience. Ratings assessments should be based on methodologies combining qualitative and quantitative approaches. Moreover, assessments must be subject to ongoing review and responsive to changes in financial condition. To establish that an ECAI fulfils this primary component of eligibility criteria, it must demonstrate that it meets the following minimum standards:

(i) The ECAI has established rating definitions, criteria, and methodologies, and apply them consistently;

(ii) The ECAI should have a robust procedure of rating assignment based on published information, market data, interviews with management, and/or other sources of information that provide a sound basis for purposes of assigning the ratings;

(iii) When assigning risk ratings, the ECAI should take into account all major features of credit quality that are relevant under the ECAI's applicable methodology, and should ensure that the ratings are assigned taking into account all risk factors of the rated entity or issue relevant under the ECAI's applicable methodology;

(iv) The ECAI should demonstrate that rating methodologies are subject to quantitative back testing. For this purpose, the ECAI should calculate and publish default studies, recovery studies, rating transition matrices, or other analyses as relevant to the ECAI's rating methodology. The analysis should reflect a definition of default that is consistent with international standards, subject to possible adjustments to take into account local practices or institutional or market conditions;

(v) The rating methodology for each market segment, including rigorous back testing, must have been established for at least one year and preferably three years;

(vi) All rating decisions should be made based on the ECAI's established criteria and methodologies, subject to documented variations approved in accordance with the ECAI's procedures;

(vii) The ECAI should have a mechanism to review its procedures and methodologies to adapt them to a potentially changing environment; and

(viii) The ECAI should maintain adequate systems and internal records to support its assigned ratings.

B. Independence

6. The ECAI should be free from any economic or external political pressures that may influence its credit ratings. In particular, an ECAI should not delay or refrain from taking a rating action based on its potential effect (economic, political or otherwise). The independence of an ECAI shall be assessed on the basis of the following five parameters:

(i) **Ownership:** The ownership structure should not be such that it could jeopardize the objectivity of the rating process. For example, the owners should not hold 10 percent or more of the equity of any entity rated by the ECAI.

(ii) **Organizational Structure and Corporate Governance:** The ECAI should demonstrate that its organizational structure minimizes the scope for external influences to influence the rating process inappropriately. The ECAI should have in place effective corporate governance that safeguards the independence of its credit ratings, promotes integrity, and ensures that internal disagreements over ratings are resolved in ways that do not compromise the overall effectiveness of the rating process.

(iii) **Financial Resources:** The ECAI must demonstrate that its business is financially viable and is able to sustain any commercial pressure that might be exerted by external entities, including the entities being rated. The ECAI's financial position should not depend significantly on the provision of other services to the rated entities.

(iv) **External Conflict of Interest:** The credit rating process of the ECAI should have the ability to withstand external pressures. The ECAI should demonstrate that it is free from any type of external conflicts of interest, or that conflicts of interest are disclosed and managed.

(v) **Separation:** An ECAI should separate its rating business operationally, legally, and if practicable, physically from its other business operations that may present a conflict of interest, such as advisory services.

C. International Access and Transparency

7. The individual ratings, the key elements underlying the ratings, and whether the issuer participated in the rating process should be information that is publicly available on a non-selective basis.

8. In order to promote transparency and enable stakeholders to make decisions about the appropriateness of its credit rating methods, an ECAI should disclose sufficient information (e.g., rating definition, methods of arriving at the rating, rating process, time horizon of the rating, and the surveillance and review procedure) to facilitate such decisions. The ECAI's general procedures, methodologies, and assumptions for arriving at ratings should be publicly available.

D. Disclosure

9. A rating should be disclosed as soon as practicably possible after issuance. When disclosing a rating, the information should be clearly worded, and should indicate the nature of the rating and relevant limitations, while providing appropriate warning to users of the potential danger of unduly relying on the rating to make investment or other decisions.

10. To promote transparency and market discipline, an ECAI should demonstrate that it provides access to information that enables stakeholders to make decisions about the appropriateness of ratings for the intended use or uses. At a minimum, the ECAI is expected to make public the following information:

- Code of conduct;
- Definition of default;
- The time horizons reflected in ratings;
- Rating definitions;
- Rating methods;
- Actual default rates experienced in each rating category;
- Rating transition matrices;
- Whether particular ratings are solicited or unsolicited;
- The date of last review and update of ratings;
- The general nature of compensation arrangements with rated entities; and
- Any actual or potential conflicts of interest.

11. At a minimum, the following conflict-of-interest situations and their influence on the ECAI's credit rating methodologies or credit rating actions must be disclosed:

(i) The ECAI is being paid to issue a credit rating by a rated entity or by the obligor, originator, underwriter, or arranger of a rated obligation;

(ii) The ECAI is being paid by subscribers with a financial interest that could be affected by a credit rating action of the ECAI;

(iii) The ECAI is being paid by rated entities, obligors, originators, underwriters, arrangers, or subscribers for services other than issuing credit ratings or providing access to the ECAI's credit ratings;

(iv) The ECAI is providing a preliminary indication or similar indication of credit quality to an entity, obligor, originator, underwriter, or arranger prior to being hired to determine the final credit rating for the entity, obligor, originator, underwriter, or arranger; and

(v) The ECAI has a direct or indirect ownership interest in a rated entity or obligor, or a rated entity or obligor has a direct or indirect ownership interest in the ECAI.

12. An ECAI should disclose the general nature of its compensation arrangements with rated entities, obligors, lead underwriters, or arrangers. When the ECAI receives compensation unrelated to its credit rating services from a party such as a rated entity, obligor, originator, lead underwriter, or arranger, the ECAI should disclose such compensation as a percentage of the total annual compensation received from that party in the relevant credit rating report or elsewhere, as appropriate. An ECAI should disclose in the relevant credit rating report or elsewhere, as appropriate, if it receives 10% or more of its annual revenue from a single party (e.g., a rated entity, obligor, originator, lead underwriter, arranger, or subscriber, or any of their affiliates).

E. Resources

13. ECAI should possess sufficient human and technical resources to produce high quality credit ratings. Evidence of resource sufficiency includes:

(i) Technical expertise of the people should be sufficient to conduct the analysis to support the assignment of ratings, and to maintain contact with senior and operational levels within the entities that are rated. In particular, ECAIs should assign analysts with appropriate knowledge and experience to assess the creditworthiness of the type of entity or obligation being rated; and

(ii) With respect to technical resources, an ECAI is expected to apply quantitative techniques and models that can appropriately process and analyze the quantities of data required to support the rating process.

F. Credibility

14. The ECAI must demonstrate that it enjoys credibility in the markets in which it operates. Such credibility is gauged on the basis of:

(i) The extent to which it meets the resources requirements stated above;

(ii) The extent to which independent parties (investors, insurers etc.) rely on the ECAI's risk ratings; and

(iii) The existence of internal procedures to prevent misuse of confidential information.

G. No Abuse of Unsolicited Ratings

15. The Central Bank may request the ECAI to demonstrate that it has not used unsolicited ratings to put pressure on entities to obtain solicited ratings. If the Central Bank becomes aware of an ECAI using unsolicited ratings to put pressure on entities to obtain solicited ratings, the Central Bank may consider whether it is appropriate to revoke the recognition of the ECAI as eligible for capital adequacy purposes.

H. Cooperation with the Supervisor

16. Eligible ECAIs should notify the Central Bank of significant changes to methodologies, and should provide the Central Bank with sufficient access to external ratings and other relevant data to support initial and ongoing determination of eligibility.

I. Code of Conduct and Regulation

17. The ECAI must adopt and adhere to a code of conduct that is consistent with the IOSCO CRA Code. The ECAI must be subject to effective supervision on an ongoing basis by a competent regulatory authority that has adopted a regulatory regime consistent with the IOSCO CRA Code, and that incorporates a registration system for ECAIs.

III. Recognition of ECAIs

18. The Central Bank's standards for capital adequacy include mappings that identify risk weights for various types of exposures using a scale that corresponds most closely to the rating system used by Standard & Poor's. This is done for purposes of exposition and for consistency with the BCBS framework. However, banks should not interpret use of this scale as a Central Bank endorsement of any particular rating agency. Banks may select among all eligible rating agencies as appropriate for purposes of determining risk weights.

19. On the basis of information assessed by the Central Bank, the following entities currently meet the criteria for eligible ECAIs described in this Guidance:

(i) Standard & Poor's Ratings Services;

(ii) Moody's Investors Service;

(iii) Fitch Ratings; and

(iv) Capital Intelligence.

20. The Central Bank has concluded that banks can use the ratings of any of the above ECAIs. Banks should be aware that the Central Bank regularly reassesses the extent to which any ECAI meets the criteria stated in this Guidance. Banks must take steps to confirm that any ratings used in capital adequacy calculations are obtained from ECAIs that continue to be viewed as eligible by the Central Bank. Additional entities may be approved as eligible ECAIs in due course.

21. Based on available information regarding the rating processes of these ECAIs, the Central Bank has established the correspondence shown in Table 1 between the long-term rating scales of the various ECAIs. However, if a bank determines that a different mapping is more appropriate, the bank should use that alternative mapping, provided the results are at least as conservative as using the mapping below.

Table 1: Long-Term Rating Correspondence

S & P	Fitch	Moody's	Capital Intelligence
AAA to AA-	AAA to AA-	Aaa to Aa3	AAA to AA-
A+ to A-	A+ to A-	A1 to A3	A+ to A-
BBB+ to BBB-	BBB+ to BBB-	Baa1 to Baa3	BBB+ to BBB-
BB+ to BB-	BB+ to BB-	Ba1 to Ba3	BB+ to BB-
B+ to B-	B+ to B-	B1 to B3	B+ to B-
Below B-	Below B-	Below B3	Below B-
Unrated	Unrated	Unrated	Unrated

22. For certain aspects of capital adequacy calculations, short-term ratings are used. Based on available information regarding the rating processes of these ECAIs, the Central Bank has established the correspondence shown in Table 2 between the short-term rating scales of the eligible ECAIs. However, as with the long-term ratings, if a bank determines that a different mapping is more appropriate, the bank should use that alternative mapping, provided the results are at least as conservative as using the mapping below.

Table 2: Short-Term Rating Correspondence

S & P	Fitch	Moody's	Capital Intelligence
A-1+, A-1	F1+, F1	P-1	A1+, A1
A-2	F2	P-2	A2
A-3	F3	P-3	A3
Below A-3	Below F3	Not prime	Below A3

IV. Bank Use of Ratings

A. Bank Use of ECAI Ratings

23. For the purpose of applying ECAI ratings to derive risk-weights for exposures, banks should apply the following process:

(i) Identify an ECAI (the "nominated ECAI") whose assigned ratings the bank intends to use to derive risk weights for some type of exposure that is subject to an external ratings-based approach under Central Bank standards;

(ii) Confirm that the nominated ECAIs can provide reasonable coverage of the bank's exposures in terms of the types of counterparties and the geographical regions covered;

(iii) Document the selection of the ECAI and the analysis demonstrating that the ratings of ECAI are appropriate for the specific use;

(iv) Notify the Central Bank of the nominated ECAI and of the intended application of the ratings of that ECAI to the bank's external ratings-based calculations; and

(v) Use the ratings of the ECAI within external ratings-based calculations consistently.

24. Banks must use the chosen ECAIs and their ratings consistently for each type of claim for which the ECAI and its ratings are approved, and must seek the consent of the Central Bank on any subsequent changes to the application of those ratings. Banks may not "cherry-pick" the ratings provided by different ECAIs, and must maintain records of which ECAIs they use for various purposes within capital adequacy calculations. Banks may not use unsolicited ratings that may be provided by any ECAI.

25. When banks use external ratings to assign risk weight to securitisation exposures under the Central Bank's *Standards on Capital for Securitisation Exposures*, additional operational requirements apply to the ratings and the ECAI that is the source of the ratings.

B. Multiple Ratings

26. If there is only one rating by a nominated ECAI for a particular claim, that rating should be used to determine the risk weight of the exposure.

27. If there are two ratings by nominated ECAIs that map to different risk weights, the higher risk weight must be applied.

28. If there are three or more ratings with different risk weights, the ratings corresponding to the two lowest risk weights should be referred to. If these give rise to the same risk weight, that risk weight should be applied. If different, the higher risk weight should be applied.

C. Other Considerations in the Use of Ratings

29. External ratings for one entity within a corporate group cannot be used to risk weight other entities within the same group.

30. A bank must treat a relevant exposure or the person to whom the bank has a relevant exposure as "unrated" for risk weighting purposes if that exposure or that person does not have a rating assigned to it by the ECAI otherwise used by the bank.

31. Where a bank is applying external ratings to an exposure that corresponds to a particular issue with an issue-specific rating, the risk weight of the claim must be based on this issue-specific rating. In other cases, the following requirements apply:

(i) In circumstances where the borrower has a specific rating for an issued debt claim, but the bank's exposure does not relate to this particular rated claim, a high-quality credit rating (that is, one that maps to a risk weight lower than the risk weight that would apply to an unrated claim) on that specific issue may only be applied to the bank's un-assessed exposure if the exposure ranks pari passu with or senior to the rated issue in all respects. If not, the credit rating cannot be used, and the un-assessed claim exposure should receive the risk weight for unrated claims.

(ii) In circumstances where the borrower has an issuer rating, this rating typically applies to senior unsecured claims on that issuer. Consequently, only senior claims on that issuer will benefit from a high-quality issuer rating if one exists. Other un-assessed claims of a highly assessed issuer will be treated as unrated. If either the issuer, or a particular issue from that issuer, has a low-quality rating (that is, one that would

map to a risk weight equal to or higher than would apply to an unrated exposure), then a bank with an unrated exposure to the same counterparty that ranks pari passu with or is subordinated to senior unsecured (in the case of an issuer rating) or to the specific issue (in the case of an issue-specific rating) should risk-weight that exposure using the low-quality rating.

32. Where a bank intends to rely on an issuer or an issue-specific rating, the rating must take into account and reflect the entire amount of credit risk exposure a bank has with regard to all amounts owed to it.

33. Where exposures are risk-weighted based on the rating of an equivalent exposure to that borrower, foreign currency ratings should be used for exposures in foreign currency. If there is a separate domestic currency rating, it should be used only to risk-weight exposures denominated in the domestic currency.

34. In order to avoid double counting of credit enhancement factors, no supervisory recognition of credit risk mitigation techniques will be taken into account if the credit enhancement is already reflected in the rating of a specific issue.

V. Ongoing Review

35. The Central Bank determines on an ongoing basis whether an ECAI meets the criteria for recognition according to this Guidance. In this regard, the Central Bank conducts periodic reviews of each recognized ECAI. Any changes to the list of approved ECAIs or to the established correspondence between their ratings will be publicly disclosed by the Central Bank in a timely manner.

VI. Requests for Recognition of ECAIs

36. The Central Bank may consider additional ECAIs as eligible for use within capital adequacy standards. These additional ECAIs may be identified for consideration by the Central Bank, or may be identified by banks or by the ECAIs themselves. The Central Bank will evaluate potential additional ECAIs against the eligibility requirements in this Guidance, under procedures established by the Central Bank.

37. Banks that identify potential additional ECAIs for consideration by the Central Bank must provide information about the ECAI that would allow an appropriate evaluation by the Central Bank according to this Guidance. The banks should identify the types of claims to which the ECAIs ratings might be applied, as well as the geographies covered, and explain the need for, or value of, recognizing the ECAI as eligible. Banks should provide a preliminary evaluation, subject to Central Bank review, of how the ECAI meets all of the eligibility criteria described above in this Guidance.

38. ECAIs may also request recognition from the Central Bank. In such cases, the ECAI must provide detailed information that would allow a complete evaluation by the Central Bank under this Guidance. The ECAI should provide evidence, subject to Central Bank review, that the ECAI meets all of the eligibility criteria described above in this Guidance, including full compliance with the IOSCO CRA Code.

VII. Frequently Asked Questions

Question 1: What is meant by "international standards" in connection with the definition of default?
The most widely accepted international standards for assessing the capital adequacy of banks, i.e. the Basel framework, incorporate specific definitions of default for wholesale and retail credit. ECAI definitions of default should broadly reflect those definitions, although they need not precisely duplicate the Basel definitions.

Question 2: Can definitions of default be adjusted to take into account local practices or institutional or market conditions?
Yes, as the Guidance notes, certain adjustments for local conditions may be appropriate, particularly to account for default conditions that should be interpreted as demonstrating that a borrower is "unlikely to pay." As the BCBS has noted in guidance to banks, some flexibility in the definition of default is appropriate to reflect the particular circumstances of each jurisdiction.

Question 3: Must the quantitative back testing of ratings outcomes incorporate an analysis of recovery rates in all cases?
No, the quantitative analysis conducted should be tailored as appropriate to demonstrate the performance of the actual rating methodology applied by the ECAI. Specifics of the analysis may differ depending on the methodology; for example, if the rating methodology solely reflects default probabilities rather than loss rates, then recovery studies may not be relevant.

Question 4: Can unsolicited ratings be used for bank capital calculations?
No, the Central Bank of the UAE has determined that unsolicited ratings do not provide an appropriate basis for capital calculations by banks in the UAE.

Question 5: Does the recognition of certain rating agencies by the Central Bank imply an endorsement of those ECAIs?
No, recognition reflects only a determination that an ECAI and its ratings meet the requirements to be used for regulatory capital calculations as articulated in Central Bank standards and regulations.

Question 6: Does the requirement that rating methodologies be established for at least one year preclude new rating methodologies from being introduced?
No, this requirement does not preclude the development and implementation of new rating methods by an ECAI. However, use of ratings for capital adequacy calculations (as opposed to other uses of ratings) requires a demonstration of the reliability of the ratings. Demonstration of reliability takes time; one year of experience is the minimum requirement, and longer periods of observation, perhaps operating in parallel with previous rating methodologies, are preferable.

Question 7: Do ratings correspond to specific risk weights for capital, and if so where is that correspondence found?
Yes, the purpose of recognition of ECAIs and the alignment of their ratings as specified in the Guidance is to facilitate the use of these ratings for risk-weight assignments in regulatory capital adequacy calculations. Please consult the relevant Standards (such as the Standards on Credit Risk) for risk weights corresponding to each rating category.

VIII. List of Abbreviations

BCBS: Basel Committee on Banking Supervision
ECAI: External Credit Assessment Institution
IOSCO: International Organization of Securities Commissions