

MODELING METHODOLOGY

Author

Pierre-Etienne Chabanel
Managing Director,
Regulatory & Compliance Solutions

Contact Us

For further information, please contact our
customer service team:

Americas	+1.212.553.1653
Europe	+44.20.7772.5454
Asia-Pacific	+85.2.2916.1121
Japan	+81.3.5408.4100

Capital Requirements for Banks' Equity Investments in Funds

Summary

In December 2013, the Basel Committee on Banking Supervision released the final policy framework for the capital treatment of banks' equity investments in funds that are held in the banking book¹. The final policy framework will apply to investments in all types of funds and to all banks, irrespective of whether the banks apply the Basel framework's standardized approach or an internal ratings-based (IRB) approach for credit risk. The final framework will be applicable as of January 1, 2017.

The final policy framework, which follows the consultative document published in July 2013, will replace the existing treatment of such exposures under the Basel II capital adequacy framework. It will put in place a more internationally consistent and risk-sensitive capital treatment, reflecting both the risk of the fund's underlying investments and its leverage. It will also help to address risks associated with banks' interactions with shadow banking entities.

The final policy framework provides three approaches with varying degrees of risk sensitivity for capitalizing a bank's equity investments in funds. The most granular (risk-sensitive), look-through approach requires a bank to risk weight the fund's underlying exposures as if they were held directly by the bank. The least granular (most conservative), fall-back approach requires deduction (1,250% risk-weight) to account for insufficient transparency of a fund's investment activities. The framework also allows the partial use of the look-through approach and application of partial use provisions² for banks with approval to use IRB approach for capitalizing credit risk. Unlike the existing framework, which did not account for the underlying leverage of a fund, the new framework would require the average risk-weight of the fund to be adjusted upward by its leverage for a given equity investment. A summary of the changes among the existing framework, proposed framework, and the final framework is available in the appendix.

The final policy framework for the measurement and control of large exposures³ released by BCBS in April 2014 is also in-line with this framework, requiring the banks to look-through into the fund's composition for concentration risk analysis and reporting.

1 BCBS final standard on 'capital requirements for banks' equity investments in funds' ([link](#))

2 Paragraphs 256 to 262 of Basel II capital adequacy framework ([link](#))

3 BCBS final standard on 'measuring and controlling large exposures' ([link](#))

CONTENTS

1	SCOPE AND TIMELINE	3
2	CAPITALIZATION APPROACHES.....	3
	2.1 Look-through Approach.....	4
	2.2 Mandate-based Approach.....	4
	2.3 Fall-back Approach.....	4
3	RWA CALCULATIONS.....	4
4	TREATMENT OF FUNDS THAT INVEST IN OTHER FUNDS	6
	APPENDIX A: SUMMARY OF CHANGES AMONG EXISTING, PROPOSED, AND FINAL FRAMEWORK.....	7
	APPENDIX B: ILLUSTRATIONS.....	8
	REFERENCES.....	13

1 Scope and Timeline

The final framework will be applicable to a bank's equity investments in all types of funds that are held in the banking book, irrespective of which approach (Standardized or Internal Ratings-Based) the bank applies for capitalizing credit risk. The Basel committee will adopt a consistent approach in the fundamental review of the trading book⁴, currently underway.

The following investments will be excluded from the framework:

- » Equity holdings made under legislated programs to promote specified sectors may be exempted, at the national supervisor's discretion⁵
- » Equity holdings in entities whose debt obligations attract a 0% risk-weight under the standardized approach to credit risk, maybe exempted at the national supervisor's discretion⁶
- » Certain direct and indirect investments in financial institutions deducted under the Basel III framework⁷

The final framework will go into effect on January 1, 2017, and will replace the existing treatment of such exposures in the Basel II capital adequacy framework⁸.

2 Capitalization Approaches

The final framework provides three approaches for capitalizing equity investments in funds: look-through approach (LTA), mandate-based approach (MBA), and fall-back approach (FBA). LTA is the most granular approach and FBA the least granular, requiring deduction (1,250% risk weight). A combination of the three approaches (LTA, MBA, and FBA) can also be used, provided the bank meets the specific conditions laid out for the respective approaches.

To account for the leverage risk associated with the fund, the framework requires the average risk-weight for a given equity investment in the fund to be adjusted upward by the fund's leverage (subject to a cap of 1,250%), using this formula:

$$RWA_{\text{investment}} = \text{Average } RW_{\text{fund}} \times \text{Leverage} \times \text{Equity Investment} = RWA_{\text{fund}} \times \text{percentage of shares}$$

Where,

- » $RWA_{\text{investment}}$ = Risk-weighted assets (RWAs) for the investment in the fund
- » RWA_{fund} = RWA for the fund exposures
- » $\text{Average } RW_{\text{fund}} = RWA_{\text{fund}} / \text{Total assets of the fund} = \text{Average risk-weight of the fund exposures}$
- » $\text{Leverage} = \text{Total assets of the fund} / \text{Total equity of the fund}$
- » $\text{Equity Investment} = \text{Total equity of the fund} \times \text{Percentage of shares}$

⁴ Basel committee's second consultative paper on the fundamental review of capital requirements for the trading book is available at www.bis.org/publ/bcbs265.htm

⁵ Paragraphs 356 and 357 of Basel II capital adequacy framework ([link](#))

⁶ Paragraphs 356 and 357 of Basel II capital adequacy framework ([link](#))

⁷ Paragraphs 78 to 89 of the Basel III framework ([link](#))

⁸ Refer appendix A for the existing treatment under Basel II capital adequacy framework

2.1 Look-through Approach

The LTA requires a bank to risk weight the fund's underlying exposures as if they were held directly by the bank. Banks must use this approach when:

- » The fund's frequency of financial reporting is the same as, or more frequent than, that of the bank's and the granularity of the financial information is sufficient to calculate the corresponding risk-weights
- » The fund's underlying exposures are verified by an independent third party, such as the depository or the custodian bank, or, where applicable, the management company

2.2 Mandate-based Approach

The MBA provides an extra layer of risk sensitivity that can be used when banks do not meet the conditions for applying the LTA. Banks employing the MBA assign risk-weights based on the information contained in a fund's mandate, or in the relevant national legislation governing such investment funds. Information may also be drawn from other disclosures of the fund. When applying the MBA, the maximum financial leverage permitted in the fund's mandate or in the national regulation governing the fund should be considered for calculating the RWAs.

2.3 Fall-back Approach

When the LTA and MBA are not feasible, the FBA will be applied. The FBA requires the bank's equity investment in the fund to be risk-weighted at 1,250%.

3 RWA calculations

RWA_{fund} will be the sum of the following three components:

- » $RWA_{on-balance}$ = RWA for fund's on-balance-sheet exposures (i.e. fund's assets)
- » $RWA_{underlying}$ = RWA for underlying exposures from fund's derivative/off-balance-sheet exposures
- » RWA_{CCR} = RWA for counterparty credit risk (CCR) from fund's derivative exposures

Under the look-through approach:

- » If the bank relies on third-party calculations for determining the risk-weights, the applicable risk-weight would be 1.2 times the rate that would be applicable if the exposures were held directly by the bank.
- » Banks using the IRB approach may use the standardized approach for credit risk when applying risk-weights to the underlying components of funds, if the bank is permitted under partial-use provisions⁹, or when IRB calculation is not feasible. An exception is that the simple risk-weight method¹⁰ must be used for equity exposures and ratings-based approach¹¹ for securitization positions

⁹ Paragraphs 256 to 262 of Basel II capital adequacy framework ([link](#))

¹⁰ Paragraphs 344 of Basel II capital adequacy framework ([link](#))

¹¹ Paragraphs 611 to 618 of Basel II capital adequacy framework ([link](#))

BASEL CAPITALIZATION APPROACH FOR CREDIT RISK	RWA COMPONENT	LOOK-THROUGH APPROACH	MANDATE-BASED APPROACH
Standardized Approach	$RWA_{on-balance}$	Balance sheet exposures are risk-weighted as per the standardized approach	Balance sheet exposures are risk-weighted as per the standardized approach. It assumes that the underlying portfolios are invested to the maximum extent allowed under the fund's mandate, in the assets attracting the highest capital requirements and then progressively in the other assets that imply lower capital requirements
	$RWA_{underlying}$	Whenever the underlying risk of a derivative exposure or an off-balance-sheet item receives a risk weighting treatment under Pillar 1, the underlying exposure is assumed to be directly held by bank and risk-weights are applied as per the standardized approach	Whenever the underlying risk of a derivative exposure or an off-balance sheet item receives a risk weighting treatment under Pillar 1, the notional amount of the derivative position or of the off-balance sheet exposure is risk-weighted as per the standardized approach » If the notional amount is unknown, maximum notional amount of derivatives allowed under the mandate will be used
	RWA_{CCR}	CCR exposure associated with the fund's derivative transactions is calculated using the current exposure method (CEM) (to be replaced by Standardized Approach for Counterparty Credit Risk (SA-CCR)) ¹² and is risk-weighted as per the standardized approach For credit valuation adjustment (CVA) charge ¹³ , CCR exposure will be scaled by a factor of 1.5.	CCR exposure associated with the fund's derivative transactions is calculated using the CEM (to be replaced by SA-CCR) and is risk-weighted as per the standardized approach. When applying CEM: » if the replacement cost is unknown, notional amount will be used as proxy » if the add-on factor is unknown, a maximum factor of 15% will be applied For CVA charge, CCR exposure will be scaled by a factor of 1.5

¹² Basel Committee has now replaced CEM with the SA-CCR for measuring CCR exposure. SA-CCR should become applicable for this framework as well, going forward. The Committee's final standard is available at www.bis.org/publ/bcbs279.htm

¹³ CVA charge would not be applicable for (i) transactions with a central counterparty (CCP) and (ii) securities financing transactions (SFTs), unless the bank's national supervisor determines that the bank's CVA loss exposure arising from SFTs are material

BASEL CAPITALIZATION APPROACH FOR CREDIT RISK	RWA COMPONENT	LOOK-THROUGH APPROACH	MANDATE-BASED APPROACH
IRB Approach	$RWA_{on-balance}$	IRB risk components (PD, where applicable LGD & EAD) are calculated for fund's underlying exposures	Standardized approach risk-weights to be applied with the exception that simple risk-weight method be used for equity exposures and ratings-based approach for securitization positions
	$RWA_{underlying}$	IRB risk components (PD, where applicable LGD & EAD) are calculated for any underlying exposures arising from the fund's derivatives activities or off-balance-sheet items (whenever the underlying risk receives a risk-weighting treatment under Pillar 1) assuming it to be directly held by bank	
	RWA_{CCR}	IRB risk components will be calculated for CCR exposure associated with the fund's derivative transactions. For CVA charge, CCR exposure will be scaled by a factor of 1.5	

4 Treatment of funds that invest in other funds

When the LTA or MBA is used to determine the capital requirements for an equity investment in a fund that has investment in another fund, the risk-weight for the investment in the other fund can be determined using any of the three approaches. For example, a bank that has invested in fund A, which has in turn invested in another fund B, which uses the LTA or MBA to determine the capital requirements for investment in fund A, can use any approach (LTA, MBA, or FBA) to determine the risk-weight to be applied to fund A's investment in fund B. However, for all subsequent layers (fund B's investment in fund C, and so on), the LTA can only be used if the previous layer used the LTA, otherwise the FBA will be used.

Appendix A: Summary of Changes Among Existing, Proposed, and Final Framework

	FINAL FRAMEWORK (DEC 2013)	PROPOSED FRAMEWORK (JUL 2013)	EXISTING BASEL II FRAMEWORK
Standardized Approach Banks	<ul style="list-style-type: none"> » Provides three approaches – LTA, MBA and FBA – for capitalizing equity investments in funds, with LTA being the most granular approach and FBA the least granular approach, requiring deduction (1,250% risk-weight). » Requires calculation of RWAs for on-balance-sheet assets, underlying risks of derivative exposures or off-balance-sheet item and CCR under both LTA and MBA (based on fund's mandate) » Accounts for CVA charge by scaling the CCR exposure by 1.5 » When using LTA, if the bank relied on third-party calculations for determining the risk-weights, then the risk-weights would be 1.2 times the weights that would be applicable if the exposure was held directly by the bank 	<ul style="list-style-type: none"> » Provided three approaches – LTA, MBA and FBA – for capitalizing equity investments in funds, with LTA being the most granular approach and FBA the least granular approach, requiring deduction (1,250% risk-weight). » Required calculation of RWAs for on-balance-sheet assets, underlying risks of derivative exposures or off-balance-sheet item and CCR under both LTA and MBA (based on fund's mandate) » Did not consider the CVA charge » When using LTA, if the bank relied on third-party calculations for determining the risk-weights, then the risk-weights would be one risk-weight notch higher than what would be applicable if the exposure was held directly by the bank 	<ul style="list-style-type: none"> » No explicit criteria » Equity investments in funds classified as claims on "other assets" that receive a 100% risk-weight¹⁴ » National supervisors can decide to apply a risk-weight of 150% or higher, reflecting the risks associated with some other assets (for example, venture capital or private equity exposures)
Advanced Approach Banks	<ul style="list-style-type: none"> » When using LTA, IRB risk components (PD, where applicable LGD & EAD) are calculated for fund's underlying exposures. Underlying risk of an off-balance-sheet item or a derivative exposure and associated CCR exposure (including relevant CVA charge) to be considered » When using MBA or when the bank is permitted under partial use provisions or when IRB calculation is not feasible, standardized approach risk-weights to be applied with the exception that simple risk-weight method be used for equity exposures and ratings-based approach for securitization positions 	<ul style="list-style-type: none"> » When using LTA, IRB risk components (PD, where applicable LGD & EAD) to be calculated for fund's underlying exposures. Underlying risk of an off-balance-sheet item or a derivative exposure and associated CCR exposure (no adjustment for CVA charge) had to be considered » When using MBA or when the bank is permitted under partial use provisions or when IRB calculation is not feasible, standardized approach risk-weights to be applied with the exception that simple risk-weight method be used for equity exposures and ratings-based approach for securitization positions 	<ul style="list-style-type: none"> » Investments had to be risk-weighted using either the treatment applicable to most of a fund's underlying holdings or the "look-through approach," where the fund's underlying components are considered to be separate and distinct investments¹⁵ » When only the investment mandate of the fund was known, relevant risk-weight had to be applied, assuming that the fund has invested, to the maximum extent allowed, in the asset class attracting the highest capital requirement, and then, for the other asset classes, in descending order of the risk-weight applied
Leverage Adjustment	<ul style="list-style-type: none"> » Provides a single option wherein average risk-weight is adjusted upward by the fund's leverage (cap of 1,250%) 	<ul style="list-style-type: none"> » Provided two approaches, one where leverage adjustment was done to the average risk-weight of fund (1,250% cap) and the other, more conservative, where adjustment was to the total risk-weighted assets of the fund 	<ul style="list-style-type: none"> » Did not adjust for the leverage of the fund

¹⁴ Paragraphs 80 and 81 of Basel II capital adequacy framework ([link](#))

¹⁵ Paragraphs 360 and 361 of Basel II capital adequacy framework ([link](#))

Appendix B: Illustrations

ILLUSTRATION	CAPITALIZATION APPROACH	LINK
Illustration 1a	LTA (using CEM for determining CCR exposure)	Illustration 1a
Illustration 1b	LTA (using SA-CCR for determining CCR exposure)	Illustration 1b
Illustration 2a	MBA (using CEM for determining CCR exposure)	Illustration 2a
Illustration 2b	MBA (using SA-CCR for determining CCR exposure)	Illustration 2b

Illustration 1a: LTA (using CEM for CCR exposure)

BANK'S INVESTMENT IN THE FUND
Bank owns 20% of the shares of the fund that replicates an equity index
Bank uses the Standardized Approach for credit risk when calculating its capital requirements

BALANCE SHEET OF THE FUND#			
SOURCES		ASSETS	
Notes Payable	\$5	Cash	\$20
Equity Shares	\$95	Government Bonds (AAA Rated)	\$30
		Variation margin receivable – forward contracts	\$50

Fund holds short term (< 1 year) forward contracts that are cleared through a qualifying CCP (with a notional amount of \$100)

$$RWA_{investment} = Avg. RW_{fund} \times Leverage \times Equity Investment = 1.0112 \times 1.05 \times 19 = \$20.17$$

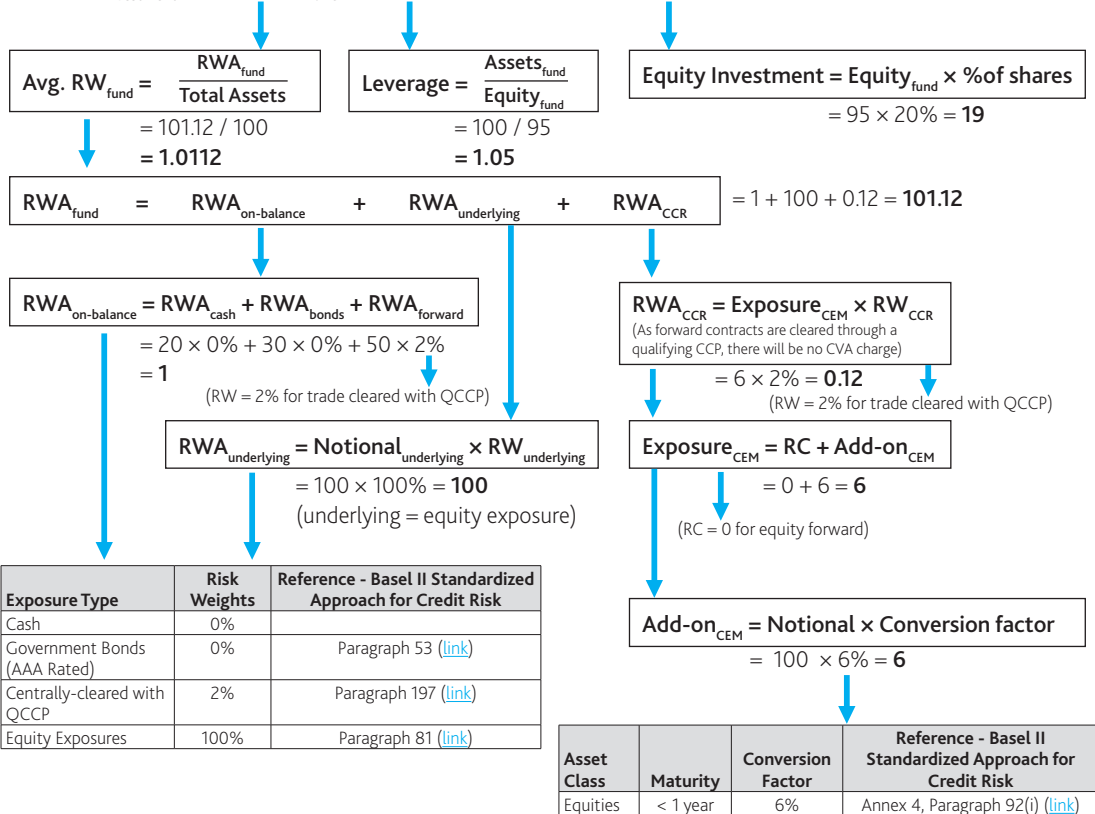


Illustration 1b: LTA (using SA-CCR for CCR exposure)

BANK'S INVESTMENT IN THE FUND
Bank owns 20% of the shares of the fund that replicates an equity index
Bank uses the Standardized Approach for credit risk when calculating its capital requirements

BALANCE SHEET OF THE FUND#			
SOURCES		ASSETS	
Notes Payable	\$5	Cash	\$20
Equity Shares	\$95	Government Bonds (AAA Rated)	\$30
		Variation margin receivable – forward contracts	\$50

Fund holds short term (< 1 year) forward contracts that are cleared through a qualifying CCP (with a notional amount of \$100)

$$RWA_{investment} = Avg. RW_{fund} \times Leverage \times Equity Investment = 1.01896 \times 1.05 \times 19 = \$20.33$$

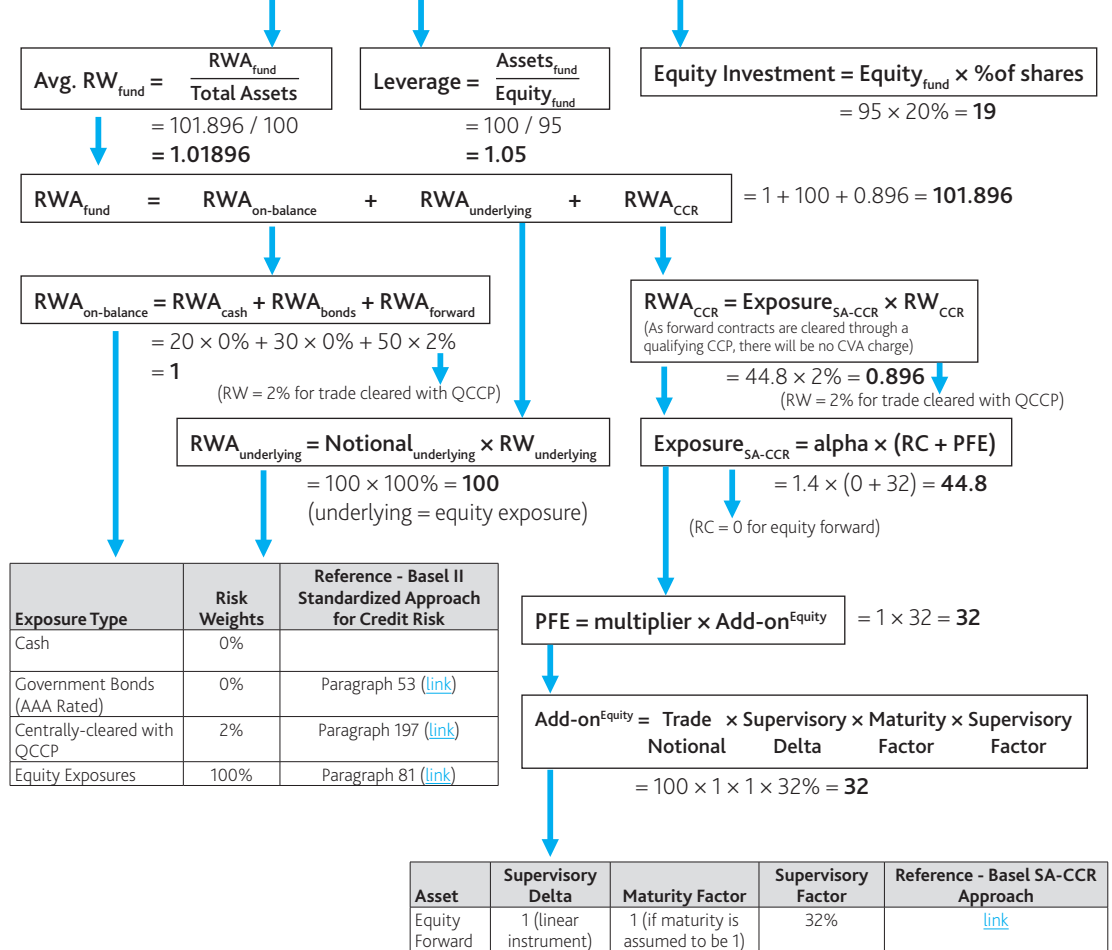


Illustration 2a: MBA (using CEM for CCR exposure)

BANK'S INVESTMENT IN THE FUND
Bank owns 20% of the shares of the fund
Bank uses the Standardized Approach for credit risk when calculating its capital requirements

FUND CHARACTERISTICS
Fund with assets of \$100 where it is stated in the mandate that the fund replicates an equity index.
In addition to being permitted to invest its assets in either cash or equities, the mandate allows the fund to take long positions in equity index futures up to a maximum nominal amount equivalent to the size of the fund's balance sheet (\$100).
Maximum financial leverage of 1.1 applies according to the mandate.

$$RWA_{investment} = Avg. RW_{fund} \times Leverage \times Equity Investment = 2.023 \times 1.1 \times 18.18 = \$40.456$$

$$Avg. RW_{fund} = \frac{RWA_{fund}}{Total Assets} = \frac{202.3}{100} = 2.023$$

$$Leverage = \frac{Assets_{fund}}{Equity_{fund}} = 1.1 \text{ (Maximum financial leverage)}$$

$$Equity Investment = Equity_{fund} \times \%of shares = (100/1.1) \times 20\% = 18.18$$

$$RWA_{fund} = RWA_{on-balance} + RWA_{underlying} + RWA_{CCR} = 100 + 100 + 2.3 = 202.3$$

$$RWA_{on-balance} = Exposure_{on-balance} \times RW_{equity} = 100 \times 100\% = 100$$

(Since the fund replicates equity index on-balance sheet exposures will be risk weighted according to the risk weights applied for equity exposures)

$$RWA_{underlying} = Exposure_{underlying} \times RW_{underlying} = 100 \times 100\% = 100$$

(The fund is assumed to exhaust its limit on derivative positions which would be risk-weighted based on the underlying – publicly traded equity holdings)

$$RWA_{CCR} = Exposure_{CEM} \times RW_{CCR} = 115 \times 2\% = 2.3$$

(As forward contracts are cleared through a qualifying CCP, there will be no CVA charge)
(RW = 2% for trade cleared with QCCP)

$$Exposure_{CEM} = RC + Add-on_{CEM} = 100 + 15 = 115$$

(RC = unknown = maximum notional amount = 100)

Exposure Type	Risk Weights	Reference - Basel II Standardized Approach for Credit Risk
Centrally-cleared with QCCP	2%	Paragraph 197 (link)
Equity Exposures	100%	Paragraph 81 (link)

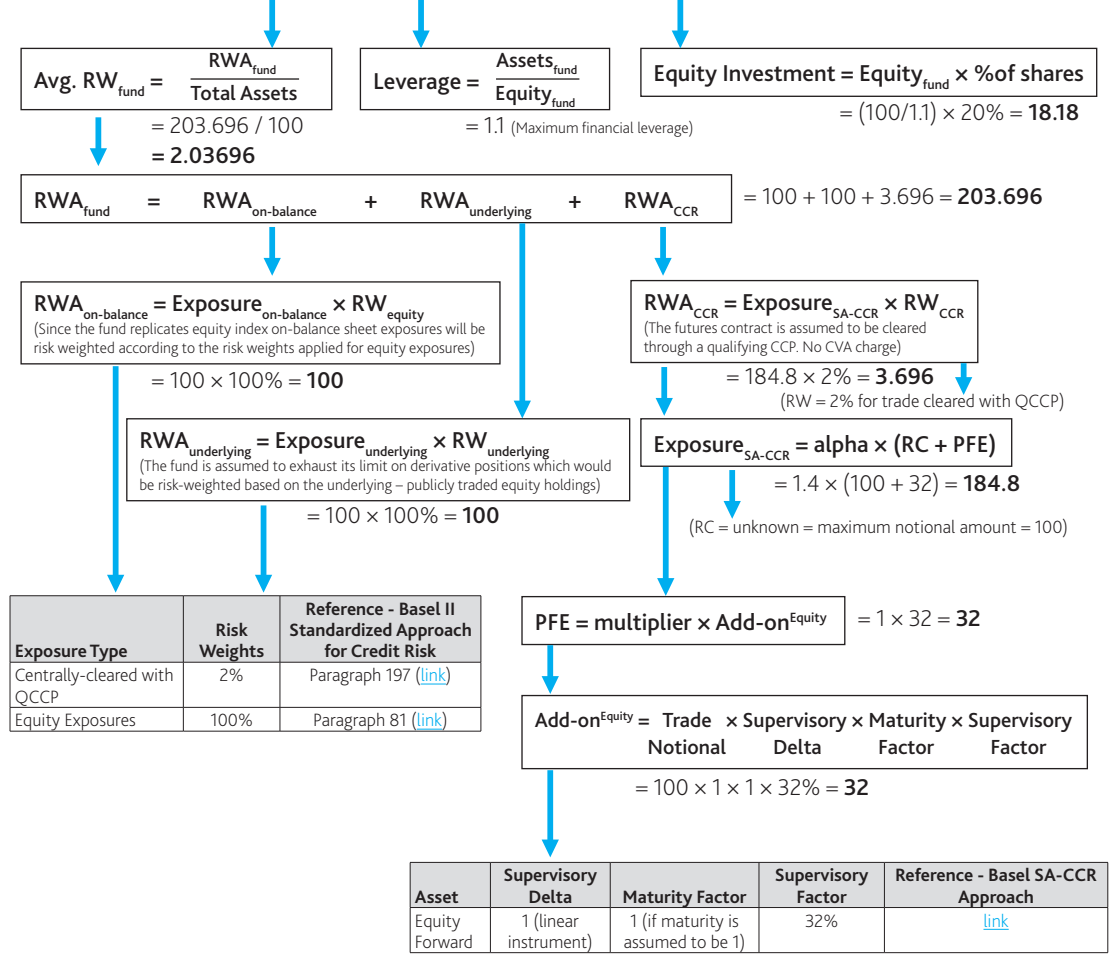
$$Add-on_{CEM} = Notional \times Conversion factor = 100 \times 15\% = 15$$

(Add-on factor = unknown = maximum factor of 15%)

Illustration 2b: MBA (using SA-CCR for CCR exposure)

BANK'S INVESTMENT IN THE FUND	FUND CHARACTERISTICS
Bank owns 20% of the shares of the fund	Fund with assets of \$100 where it is stated in the mandate that the fund replicates an equity index.
Bank uses the Standardized Approach for credit risk when calculating its capital requirements	In addition to being permitted to invest its assets in either cash or equities, the mandate allows the fund to take long positions in equity index futures up to a maximum nominal amount equivalent to the size of the fund's balance sheet (\$100). Maximum financial leverage of 1.1 applies according to the mandate.

$$RWA_{investment} = Avg. RW_{fund} \times Leverage \times Equity Investment = 2.03696 \times 1.1 \times 18.18 = \$40.735$$



References

1. Basel Committee on Banking Supervision, March 2014, "The Standardized Approach for Measuring Counterparty Credit Risk Exposures" – Final Framework ([link](#))
2. Basel Committee on Banking Supervision, December 2013, "Capital Requirements for Bank's Equity Investments in Funds" – Final Framework ([link](#))
3. Basel Committee on Banking Supervision, July 2013, "Capital Requirements for Bank's Equity Investments in Funds" – Consultative Document ([link](#))
4. Basel Committee on Banking Supervision, June 2006, "International Convergence of Capital Measurement and Capital Standards" – Final Framework ([link](#))

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