Republic of Panama
Superintendency of Banks

RULE N°. 6-2019
(dated 28 May 2019)

"Whereby Rule 3-2018, which provides capital requirements for financial instruments registered in the trading book, is amended"

THE BOARD OF DIRECTORS
in use of its legal powers and,

WHEREAS:

Due to the issuance of Decree Law 2 dated 22 February 2008, the Executive Branch re-edited Decree Law 9 dated 26 February 1998 and all its amendments as a consolidated text, and this text was approved by means of Executive Decree 52 dated 30 April 2008, hereinafter referred to as the Banking Law;

Pursuant to the provisions of paragraphs 1 and 2 of Article 5 of the Banking Law, safeguarding the soundness and efficiency of the banking system and strengthening and fostering favorable conditions for the development of the Republic of Panama as an international financial center are objectives of the Superintendency of Banks;

Pursuant to paragraphs 3 and 5 of Article 11 of the Banking Law, approving general criteria for the classification of assets at risk, rules for the provision of reserves against risks and establishing the administrative interpretation and scope of the legal provisions and regulations on banking matters are technical duties of the Board of Directors;

According to paragraph 10 of Article 11 of the Banking Law, issuing the technical standards required for compliance with the Law is one of the technical duties of the Board of Directors;

According to the provisions of Article 72 of the Banking Law, in determining the capital adequacy ratio provided for in the Law, the Superintendency may take into account and evaluate other risks in determining the need for capital funds for an appropriate risk management, including market risks, operating risks and country risks;

Rule 3-2018 dated 30 January 2018 establishes the capital requirements for financial instruments registered in the trading book;

Article 19 of Rule 3-2018 establishes the enactment of the Rule as well as the deadline for the submittal of the first report to the Superintendency;

The Technical Appendix of Rule 3-2018 provides the methodology for calculating capital requirements for financial instruments registered in the trading book;

During its working sessions, the Board of Directors determined it necessary and advisable to amend some articles of Rule 3-2018 in order to include and broaden aspects on the scope of application, definitions and enactment, and to detail certain calculations of the Technical Appendix.

RESOLVES:

ARTICLE 1. Article 1 of Rule 3-2018 shall read:

> **"ARTICLE 1. RANGE AND SCOPE OF APPLICATION.** The provisions of this Rule are applicable to reporting entities indicated in Article 1 of the Rule on Capital Adequacy issued by the Superintendency.

However, only the aspects related to the market risk covered in Chapter I and II herein are applicable to branch offices of general license banks.

International license banks whose host supervisor is the Superintendency must establish an appropriate market risk management in their internal mechanism, subject to Superintendency review. However, the Superintendent may require local management comply with the market risk requirements established herein when he deems it advisable."

ARTICLE 2. Article 2 of Rule 3-2018 shall read:

"ARTICLE 2. TRADING BOOK. The financial entity trading book is composed of those financial instruments a bank holds for one or more of the following purposes:

1. Closing a short-term position with profits, whether through its purchase or sale, considering the original position of the financial instrument;

2. Profiting from short-term price movements;

3. Locking in arbitrage profits;

4. Hedging risks that arise from instruments meeting the above criteria

Furthermore, the trading book shall include the financial instruments the Superintendency of Banks may determine based on their special characteristics and whose economic basis responds to the above criteria, regardless of the financial instrument rating according to International Financial Reporting Standards (IFRS).

In general, the trading book includes any financial instrument that fits into any of the following categories:

1. Instruments held as accounting trading assets or liabilities under IFRS (such that they would be assessed daily at market value and the value variance reflected in the profit and loss account);

2. Instruments resulting from market-making activities;

3. Instruments resulting from underwriting commitments;

4. Equity investment in a fund, except when the daily market price is not available for determining the fund's value;

5. Exchange-Listed equities;

6. Short positions, including short positions in Treasury Notes;

7. Derivative contracts, except those used in hedging and not carried in the trading book, whose contracts are adequately documented and that contain proof of effective coverage, not necessarily based on the accounting standards but on the economic financial point of view.

   This implies that, for an assessment of their utility, one should consider the similarity between the characteristics of the derivative and the hedged instruments, as well as how the actual variations of the reasonable values (or flows) are settled throughout the period of coverage.

8. Financial instruments that include derivatives, whether explicit or implicit, that are part of the banking book and whose underlying [value] is related to variable profit risk or credit risk. It is understood that these instruments must be taken into consideration for calculating the market risk capital requirements.

Trading book positions must be duly documented and cannot be moved to other books without the Superintendency of Banks' authorization.

For a financial instrument to be registered in the trading book, its market value must be available on a daily basis or, when appropriate, valued from models that use the maximum

amount of information from the markets and are sensitive to the underlying factors determining the fair value of the instrument.

The degree of liquidity of an instrument is a highly relevant factor for its classification in the trading book."

ARTICLE 3. Article 4 of Rule 3-2018 shall read:

"ARTICLE 4. MARKET RISK MANAGEMENT. Banks must update fair value daily for all trading book instruments.

Banks must have clearly defined policies, procedures and documented practices for determining which instruments to include in or to exclude from the trading book for purposes of calculating their regulatory capital.

A bank's internal control functions must analyze the instruments both in and out of the trading book to assess whether these instruments are being properly classified initially.

Compliance with the policies and procedures must be fully documented and subject to periodic internal audit and the results must be available for supervisory review.

Financial instruments in the trading book must be subject to clearly defined policies and procedures approved by the board of directors. These policies and procedures must address, as a minimum, the issues listed below:

1. The activities the bank considers trading or hedging of included instruments and that, therefore, are in its trading portfolio for regulatory capital purposes;

2. The trading strategy (including the expected holding horizon and potential reactions if this limit is exceeded) for each book or instrument in the trading book;

3. Setting limits and continuously evaluating their adequacy;

4. The process for keeping the board of directors and top management informed as part of the entity's holistic risk management process;

5. In the case of financial instruments in the trading book valued by a model, the bank must, as a minimum:

    a. Identify the relevant risks for the instruments in the trading book;

    b. Have valuation methodologies that must be explicitly described in the relevant valuation manuals, so that the valuations can be replicated following the manual's instructions. In particular, provide a detailed description of the databases used and, in general, the sources of information, the assumptions and the estimation methods, as appropriate, of the parameters necessary to use the model;

    c. Determine in which way the risks of method-valued financial instruments can be easily covered or the position in the financial instrument can be rapidly liquidated."

ARTICLE 4. Article 16-A is added to Rule 3-2018:

"ARTICLE 16-A. SUBMITTAL OF CERTIFICATION. In the event the banks do not have investment portfolios to which this Rule will be applicable, they must submit a certification to the Superintendency, issued by the board of directors, verifying that after the review made by the Risk unit and based on the criteria provided herein, the bank does not have instruments within its trading portfolios for which the capital requirement must be applied in accordance with the provisions of Chapter III. However, banks recognize that management aspects contained in Chapters I and II are applicable.

Additionally, the certification must assert that should instruments to which the capital requirements are applicable according to the provisions of the Rule be included in the investment portfolio, the board of directors of the bank has ensured that the bank has the

appropriate systems necessary to support the new operations and necessary technical capacity within the different functional areas.

This certification must be submitted at the end of every fiscal year."

ARTICLE 5. Article 19 of Rule 3-2018 shall read:

"ARTICLE 19. ENACTMENT. This Rule shall enter into force on 1 December 2019, beginning with the quarter closing on 31 December 2019 and having a deadline for reporting to the Superintendency of 31 January 2020."

ARTICLE 6. The Technical Appendix of Rule 3-2018 shall read:

TECHNICAL APPENDIX

The following instruments are considered in this rule:

- Bonds
- Securitizations
- Shares
- Forwards
- Swaps
- Options

For any instrument other than those mentioned above, the entity must consult the Superintendency of Banks on the methodology for calculating the capital requirement.

I. Capital requirement for interest risk on bonds

I.1. Risk-free interest rate

1. The entity must have a zero-coupon risk-free bond yield curve for each currency. This curve must be the same one used by the entity for the valuation of the financial instruments;

2. The entity must have a credit differential curve for each issuer, consistent with the valuation of each financial instrument;

3. The bond's market value or, if appropriate, its fair value must be available;

4. The instrument must be deconstructed into both zero-coupon bonds and independent liquidity flows during the residual term of the bond until maturity. The sum of current zero-coupon bond values in which the financial instrument was deconstructed must match the market price or, if need be, the bond's fair value;

5. Only the fixed liquidity flow of the financial instrument, as shown below, will be considered for the calculation of the capital requirements for interest risk. This implies that for floating coupon instruments, only that portion of the flow corresponding to the defined fixed spread over the reference rate will be considered;

6. The value of each current zero-coupon bond will be assigned to one of the vertices described below. The vertices are 0.25, 0.5, 1, 2, 3, 4, 5, 10, 15, 20, and 30 years.

7. If the time frame of the zero-coupon bond does not match any vertex, the cash flow will be placed inversely proportional to the distance between the dates of the two nearest vertices.

If F_t is the liquidity flow placed in the residual term t, and T_i and T_{i+1} are the anterior and posterior vertex of t.

Then the amount F_t is distributed in F_i and F_{i+1} as follows:

$$F_i = \frac{T_{i+1} - t}{T_{i+1} - T_i} \; x \; F_t \qquad F_{i+1} = \frac{t - T_i}{T_{i+1} - T_i} \; x \; F_t$$

8. The *Delta* sensitivity for the risk-free interest rate for the current value CV_i in the vertex T_i is defined as follows:

$$SLR_i^k = \frac{CV_i^k(z_i + 0.0001, d_i) - \; CV_i^k \; (z_i, d_i)}{0.0001}$$

SLR_i^k is the *Delta* sensitivity of the instrument k in vertex i when the zero-coupon interest rate z_i corresponding to that vertex is displaced one basis point (0.0001 = 0.01%) while maintaining the credit differential constant.

$CV_i^k(z_i, d_i)$ i is the liquidity flow of the current value of instrument k in function T_i in risk-free interest rate z_i and credit differential d_i , which can be null in any particular case.

9. All sensitivities of the financial instruments are added to the vertex T_i, in total M, of the trading book. They can be positive or negative, and result in the net risk-free sensitivity of vertex T_i

$$SLRN_i = \sum_{k=1}^{M} SLR_i^k$$

10. The capital requirement for the above added magnitude is determined according to vertex T_i by multiplying the $SLRN_i$ magnitude by the weight defined in Table 1 below:

Table 1. Risk weight according to Vertex

Vertex	0.25	0.50	1	2	3	4
Risk weight	2.40%	2.40%	2.25%	1.88%	1.73%	1.62%
Vertex	5	10	15	20	30	
Risk weight	1.50%	1.50%	1.505	1.50%	1.50%	

The capital requirement for net exposure in vertex T_i is:

$$KLR_i = SLRN_1 \; x \; p_i$$

where ρ_i is given in Table 1 above.

11. Correlations. There is a correlation between sensitivities KLR_i and KLR_j assigned to vertices T_i and T_j .

The correlation ratio is defined by:

$$\rho_{ij} = Max \left[\exp\left(- \theta \; \frac{|T_j - T_i|}{Min\,(T_i, T_j)} \right); 0.4 \right]$$

θ = 3% is a parameter the Superintendency may change according to market conditions.

12. The risk-free interest rate capital requirement for financial instruments denominated in currency *b* is obtained by:

$$K_b = \sqrt{\sum_{i=1}^{V} KLR_i^2 + 2\sum_{i>j}^{V} \rho_{ij}\ x\ KLR_i\ x\ KLR_j}$$

Where V is the number of vertices.

13. For bonds denominated in various currencies, the same calculation will be made using the currency zero-coupon risk-free yield curve. All sensitivities obtained are expressed in USD, using the outright exchange rate for each currency.

14. Let $K_a, K_b, K_c, \ldots, K_n$ be the regulatory capital amounts obtained for each currency, all expressed in the functional currency, i.e. Balboas. The capital requirement is defined as follows:

$$K = \sqrt{\sum_{b=1}^{n} K_b^2 + 2\ \text{x}\sum_{b<c}^{n} \gamma_{bc}\ \text{x}\ S_b\ \text{x}\ S_c}$$

with $S_b = \sum KLR_i$ for currency *b* and $S_c = \sum KLR_i$ for currency *c*

In the particular case in which the expression $\sum_{b=1}^{n} K_b^2 + \sum_{b}^{n}\sum_{b\neq c}^{n} \gamma_{bc}\ x\ S_b\ x\ S_c$ is a negative number, the following formula will be used:

$$K = \sqrt{\sum_{b=1}^{n} K_b^2 + 2\ \text{x}\sum_{b<c}^{n} \gamma_{bc}\ \text{x}\ R_b\ \text{x}\ R_c}$$

where $R_b = Max(Min(S_b, K_b), -K_b)$
$R_b = Max(Min(S_c, K_c), -K_c)$

In all cases, $\gamma_{bc} = 0.5$

15. Correlation scenarios. Three values must be calculated to obtain the capital requirements depending on three correlation scenarios. The scenarios are defined as follows:

Scenario 1. Correlation parameters ρ_{ij} and γ_{bc} are multiplied by 1.25 with a 100% limit.

Scenario 2. Correlation parameters ρ_{ij} and γ_{bc} maintain original values.

Scenario 3. Correlation parameters ρ_{ij} and γ_{bc} are multiplied by 0.75.

16. The risk-free interest rate capital requirement is determined by the highest amount obtained from the three scenarios.

I.2. Credit risk yield differential

17. There are three modalities:

a) Non-securitizations;

b) Securitizations in the trading book with correlations;

c) Other securitizations

a) Non-securitizations

18. The vertices are 0.25, 0.5, 1, 2, 3, 4, 5, 10, 15, 20, and 30 years.

19. The *Delta* sensitivity is calculated for the yield differential of each current value CV_i assigned to vertex T_i as shown:

$$SDR_i^k = \frac{CV_i^k(z_i, d_i + 0.0001) - CV_i^k(z_i, d_i)}{0.0001}$$

SDR_i^k is the sensitivity of instrument k in vertex i when the yield differential d_i that corresponds to that vertex is displaced one basis point (0.0001 = 0.01%), while maintaining the zero-coupon risk-free interest rate constant. $CV_i^k\ (z_i, d_i)$ is the current liquid flow value of instrument k in vertex T_i, as a function of risk-free interest rate z_i and credit differential d_i.

20. Risk factors taken into consideration for the capital requirements calculation are: i) issuer; ii) rating; iii) sector; and iv) vertex.

21. The *Delta* sensitivities calculated in paragraph 19 should be assigned to a bucket, from 1 to 16, according to the Table 2 below:

Table 2. Yield Buckets

Investment Grade (IG)	
N.°	Sectors
1	Sovereigns including central banks and multilateral development banks
2	Public Administration, Local government, Public sector non-financial entities
3	Financials, including public sector financial entities
4	Raw materials, energy, industrials, agriculture, manufacturing, mining and quarrying
5	Consumer goods and services, transportation and storage, service sector support activities
6	Technology, telecommunications
7	Healthcare, utilities, professional and technical activities
8	Covered bonds
High yield (HY) and non-rated (NR)	
	Sectors
9	Sovereigns including central banks and multilateral development banks
10	Public Administration, Local government, Public sector non-financial entities
11	Financials, including public sector financial entities
12	Raw materials, energy, industrials, agriculture, manufacturing, mining and quarrying
13	Consumer goods and services, transportation and storage, service support activities
14	Technology, telecommunications
15	Healthcare, utilities, professional and technical activities
16	Other sectors

22. The risk-weighted sensitivity $KDR_{ij} = SDR_{ij} x\ \rho$ is defined by means of the result of each *Delta* sensitivity i that belongs to a specific bucket j, multiplied by the weight ρ_j in Table 3 for bucket $j, j = 1, 2, \ldots, 16$.

23. Risk weights for buckets 1 to 16 are:

Table 3. Risk weight by yield

Bucket number	Risk weight
1	0.5%
2	1.0%
3	5.0%
4	3.0%
5	3.0%
6	2.0%
7	1.5%
8	4.0%
9	3.0%
10	4.0%
11	12.0%
12	7.0%
13	8.5%
14	5.5%
15	5.0%
16	12.0%

24. Correlations. The correlation parameter between two risk-weighted sensitivities k and l, taking into consideration the issuer, vertex and the same bucket j, is determined as follows:

$$\rho_{kl} = \rho_{kl}^{issuer}\ x\ \rho_{kl}^{basis}$$

$$\rho_{kl}^{name} = \begin{cases} 1\ if\ k\ and\ l\ issuers\ match \\ 0.35\ otherwise \end{cases}$$

$$\rho_{kl}^{basis} = \begin{cases} 1\ if\ k\ and\ l\ bases\ match \\ 0.65\ otherwise \end{cases}$$

25. There is an exception to the above criteria for the “Other sectors” bucket. The capital requirement within the “Other sectors” bucket is the simple addition of the absolute values of the net weighted *Delta* sensitivities allocated to this bucket:

$$K_{b\ (other\ bucket)} = \sum_i |KDR_i|$$

The capital requirement resulting from the “other sectors” bucket will be added to the capital level for all types of risk buckets.

26. Capital requirement K_h within each bucket h is determined as follows:

$$K_h = \sqrt{\sum_{i=1}^{n_h} KDR_{ih}^2 + 2\ x \sum_{i<j}^{n_h} \rho_{ij}\ x\ KDR_{ih}\ x\ KDR_{jh}}$$

Given bucket h containing risk-weighted sensitivities n_h, $\sum_{i=1}^{n_h} KDR_{ih}^2$ is the sum of the squares of the risk-weighted *Delta* sensitivities allocated to bucket h.

$\sum_{i<j}^{n_h} \rho_{ij} \times KDR_{ih} \times KDR_{jh}$ is the sum of all correlation parameter products multiplied by the risk-weighted sensitivities of buckets other than h.

27. The correlation ratio between the capital requirements of two different buckets is defined using the rating and sector factors.

The correlation parameter γ_{bc} is determined as follows:

$$\gamma_{bc} = \gamma_{bc}^{\ rating} \times \gamma_{bc}^{\ sector}$$

$$\gamma_{bc}^{\ rating} = \begin{cases} 1 \ if \ buckets \ b \ and \ c \ have \ the \ same \ rating \ (IG \ or \ HY \ / \ NR) \\ otherwise, 0.50 \end{cases}$$

$$\gamma_{bc}^{\ sector} = \begin{cases} 1 \ if \ buckets \ b \ and \ c \ are \ from \ the \ same \ sector \\ otherwise, as \ determined \ from \ Table \ 4 \end{cases}$$

Table 4. Correlation between sectors

	1/9	2/10	3/11	4/12	5/13	6/14	7/15	8
1/9		0.75	0.10	0.20	0.25	0.20	0.15	0.10
2/10			0.05	0.15	0.20	0.15	0.10	0.10
3/11				0.05	0.15	0.20	0.05	0.20
4/12					0.20	0.25	0.05	0.05
5/13						0.25	0.05	0.15
6/14							0.05	0.20
7/15								0.05
8								

28. Taking into account the rating and sector factors, the capital requirement is determined as follows:

$$K = \sqrt{\sum_{b=1}^{15} K_b^2 + 2 \text{ x } \sum_{b<c}^{15} \gamma_{bc} \ \text{ x } S_b \text{ x } S_c} + K_{b\ (other\ bucket)}$$

with $S_b = \sum KDR_{ib}$ for bucket *b* and $S_c = \sum KDR_{ic}$ for bucket *c*.

In the particular case in which the expression $\sum_{b=1}^{15} K_b^2 + 2 \text{ x } \sum_{b<c}^{15} \gamma_{bc} \ \text{ x } S_b \text{ x } S_c$ is a negative number, the following formula will be used:

$$K = \sqrt{\sum_{b=1}^{15} K_b^2 + 2 \text{ x } \sum_{b<c}^{15} \gamma_{bc} \ \text{ x } R_b \text{ x } R_c} + K_{b\ (other\ bucket)}$$

Where $R_b = \text{Max}(\text{Min}(S_b, K_b), -K_b)$ $R_c = \text{Max}(\text{Min}(S_c, K_c), -K_c)$

29. Correlation scenarios. Three values must be calculated to obtain the capital requirements depending on three correlation scenarios. The scenarios are defined as follows:

Scenario 1. Correlation parameters ρ_{ij} and γ_{bc} are multiplied by 1.25 with a 100% limit.

Scenario 2. Correlation parameters ρ_{ij} and γ_{bc} maintain the original values.

Scenario 3. Correlation parameters ρ_{ij} and γ_{bc} are multiplied by 0.75.

30. The capital requirement for yield difference risk is determined by the highest amount obtained from the three scenarios.

b) Securitizations in the trading portfolio with correlations

31. Sensitivities for each instrument should be calculated (at the risk-free interest rate and yield differential) according to the underlying interest rate determining its value or, if need be, considering the instrument's valuation model.

32. The vertices are 0.25, 0.5, 1, 2, 3, 4, 5, 10, 15, 20, and 30 years.

33. An instrument belongs to the "Securitizations in the trading portfolio with correlations" if it satisfies the following criteria:

(a) The instrument is not a re-securitization position;

(b) The instrument is traded on a market in which there are independent purchase and sale offers such that the daily price can be determined;

(c) The instrument is not connected with an underlying retail, residential mortgage or commercial mortgage exposure.

34. The risk buckets for the Securitizations in the trading portfolio with correlations are the same as those defined in Table 2.

35. The risk weights are defined in Table 5.

Table 5. Risk weight of the Securitizations in the Trading Portfolio with Correlation

Bucket number	Risk weight
1	4.0%
2	4.0%
3	8.0%
4	5.0%
5	4.0%
6	3.0%
7	2.0%
8	60%
9	13.0%
10	13.0%
11	16.0%
12	10.0%
13	12.0%
14	12.0%
15	12.0%
16	13.0%

36. The correlations ρ_{kl} and γ_{bc} are the same as defined in paragraphs 24 and 27.

The capital requirement within each risk bucket will be calculated by using the same procedure defined in paragraph 26, except for the “other sectors” bucket (bucket 16 of table 5), for which the exception in paragraph 25 will be applicable.

The total capital requirement for the correlation trading portfolio (excluding the “other sectors” bucket) will be estimated according to the procedure defined in paragraphs 28, 29 and 30.

c) Other securitizations

37. Securitization instruments that are not classified in the above portfolio, will be allocated to one of the following 25 buckets:

Table 6. Securitizations

Preferential Investment Grade (IG)	
N.°	Sectors
1	RMBS – Prime
2	RMBS – Mid-prime
3	RMBS – Sub-prime
4	CMBS
5	ABS – Student loans
6	ABS – Credit cards
7	ABS – Auto
8	CLO trading portfolio without correlations
Non-Preferential Investment Grade (IG)	
	Sectors
9	RMBS – Prime
10	RMBS – Mid-prime
11	RMBS – Sub-prime
12	CMBS
13	ABS – Student loans
14	ABS – Credit cards
15	ABS – Auto
16	CLO trading portfolio without correlations
	High yield (HY) & non-rated (NR)
	Sectors
17	RMBS – Prime
18	RMBS – Mid-prime
19	RMBS – Sub-prime
20	CMBS
21	ABS – Student loans
22	ABS – Credit cards
23	ABS – Auto
24	CLO trading portfolio without correlations
25	Other sectors

38. The risk weights for the buckets 1 to 8 (Preferential Investment Grade) are provided in Table 7.

Table 7. Risk weight for the buckets 1 to 8

Bucket number	**Risk weight**
1	0.9%
2	1.5%
3	2.0%
4	2.0%
5	0.8%
6	1.2%
7	1.2%
8	1.4%

39. The risk weight for buckets 9 to 16 (Non-preferential Investment Grade) are the result of the risk weight of Table 7 multiplied by 1.25.

40. The risk weights for buckets 17 to 24 (High yield and non-rated) are the result of the risk weight of Table 7 multiplied by 1.75.

41. The risk weight for bucket 25 is set at 3.5%.

42. Correlations between sensitivities within the same bucket are determined as follows:

$$\rho_{kl} = \rho_{kl}^{tranche} \, x \, \rho_{kl}^{vertex}$$

$$\rho_{kl}^{tranche} = \begin{cases} 1 \; if \; k \; and \; l \; tranches \; match \\ 0.40 \; otherwise \end{cases}$$

$$\rho_{kl}^{vertex} = \begin{cases} 1 \; if \; k \; and \; l \; vertex \; match \\ 0.80 \; otherwise \end{cases}$$

43. There is an exception to the above criterion for the “Other sector” bucket. The “other sector” bucket capital requirement is the simple sum of the absolute values of the net weighted sensitivities allocated to this bucket:

$$K_{b \; (other \; bucket)} = \sum_{i} |KDR_i|$$

This capital will be added to the level of capital for all risk classes.

44. The correlation parameter γ_{bc} for the aggregation of capital between buckets is set as 0%.

45. The capital requirement for the “Other Securitizations” portfolio is obtained by first calculating the capital requirement for each bucket — with the exception of the “Other sector” bucket — using a formula similar to the one in paragraph 26.

Afterwards, the capital is added to all buckets by adding the square root of the sum of the squares of the capital requirements for each bucket to, in its case, the capital requirement for the “other sector” bucket, i.e.:

$$K = \sqrt{\sum_{j=1}^{24} K_j^2} + K_{b \; (other \; bucket)}$$

II. Equity risk

46. The exposure of an equity risk position is equal to its market value.

47. Each exposure must be assigned to one of the following buckets in Table 8.

Table 8. Equity risk buckets

Bucket	Risk indicator	Weight
1	I < 1.25%	22%
2	1.25% ≤ I < 2.00%	36%
3	2.00% ≤ I < 2.75%	52%
4	2.75% ≤ I 3.50%	69%
5	3.50% ≤ I	80%

The risk indicator is defined by the typical profitability deviation of the stock calculated using the market prices of the last 30 days.

$$I = \sqrt{\frac{\sum_{t=1}^{30}(R_t - \bar{R})^2}{30}} \qquad R_t = \frac{P_t - P_{t-1}}{P_{t-1}} \qquad \bar{R} = \frac{\sum_{t=1}^{30} R_t}{30}$$

P_t is the market price for the stock calculated on the day.

48. The capital requirement for each position is calculated by multiplying the risk exposure by the weight according to the assigned bucket.

$$K_i = E_i \times p_i$$

Where E_i is the absolute value of the net exposure for i share.

49. The capital requirement for the equity risk is calculated using to the following formula:

$$K = \sqrt{\sum_{i=1}^{n} K_i^2 + 2 \times \sum_{i<j}^{n} \rho \times K_i \times K_j}$$

The correlation ratio takes the value 0.40 for the correlation between long positions and between short positions and -0.40 for the correlation between long and short positions.

50. Liquidity correction. If in the indicator calculations for the last 30 days there are more than six days where there was no market price, the exposure will be placed in the next lower bucket with a weight limit of 80%.

III. Foreign exchange risk

51. The sensitivity of a financial instrument whose value depends on a particular foreign exchange is calculated as follows:

$$SFX = \frac{V_i(1.01 \times FX) - V_i(FX)}{0.01}$$

$V_i(FX)$ is the market value of the financial instrument expressed as a function of the outright value of the FX foreign exchange.

$V_i(1.01 \times FX)$ is the value of the financial instrument when the foreign exchange is increased by 1%.

52. The capital requirement by type of foreign exchange risk for the i instrument is obtained by multiplying the sensitivity by 30%.

The capital requirement for all positions in certain currency d is the absolute value of the sum of all capital requirements for the long positions less the sum of the capital requirements for the short positions, i.e.:

$$K_d = \left| \sum_{i=1}^{n} K_{il} - \sum_{i=1}^{m} K_{ic} \right|$$

Where:

K_{il} is the capital requirement for each i long position

K_{ic} is the capital requirement for each i short position

The correlation coefficient between currencies are assumed to be equal to 0%. Therefore, the capital requirement added to all currencies is obtained by the square root of the sum of the squares of the capital requirement for each currency.

$$K = \sqrt{\sum_{d=1}^{n} K_d^2}$$

IV. Forwards on bonds, interest rates, stock and currencies

53. The *Delta* sensitivity for forwards on bonds is determined as follows:

$$SD = S \times N \times F \times FD$$

S is the sensitivity or modified duration.
N is the nominal value of the contract
F is the forward price of the bond (not the value of the forward contract).
FD is the discount factor calculated from the zero-coupon bond risk-free interest rate for the residual term to the final maturity.

54. The capital requirement is determined by multiplying each *Delta* sensitivity by the risk weight matching that of the vertex closest to the residual term of the underlying bond.

55. The capital requirement added to the forwards on bonds is the absolute value of the sum of the capital requirements for the buying positions less the sum of the capital requirements for selling positions. It does not recognize a decrease in capital requirements due to correlations.

$$K = \left| \sum_{i=1}^{n} K_{il} - \sum_{i=1}^{m} K_{ic} \right|$$

56. The *Delta* sensitivity of derivative contracts relative to interest rates (FRA) is determined as follows:

$$SD = N \times \Delta T \times FD$$

N is the nominal value of the contract.
ΔT is the underlying term for the interest rate agreed to in the contract.
FD is the discount factor calculated with the zero-coupon bond risk-free interest rate for the residual term to the final maturity.

57. The capital requirement is determined by multiplying each *Delta* sensitivity by the risk weight established for the risk-free interest rate of the vertex closest to the residual term of the contract.

The capital requirement added to the FRA forwards portfolio is the absolute value of the sum of capital requirements for the buying positions less the sum of the capital requirements for the selling positions. It does not recognize a decrease in capital requirements due to correlations.

$$K = \left| \sum_{i=1}^{n} K_{il} - \sum_{i=1}^{m} K_{ic} \right|$$

58. The *Delta* sensitivity of forward contracts on stocks is determined as follows:

$$SD = N \times F \times FD$$

N is the nominal value of the contract.
F is the forward price of the stock (not the value of the forward contract)
FD is the discount factor calculated with the zero-coupon bond risk-free interest rate for the residual term to the final maturity.

59. The capital requirement is determined by multiplying the *Delta* sensitivity by the risk weight established for the underlying stock.

$$K_f = SD_f \text{ x } P_f$$

60. To add forwards on the same underlying stock, the net position must be determined based on the buying and selling positions.

$$K_i = \left| \sum_{f=1}^{n} K_{fl} - \sum_{f=1}^{m} K_{fc} \right|$$

Where:
K_{fl} is the capital requirement for each i forward long position

K_{fc} is the capital requirement for each i forward short position

61. The addition of the capital to the forwards on stocks should consider long and short net positions and apply the correlation ratios determined in paragraph 49. The correlation for liquidity established in paragraph 50, when necessary, should be applied.

62. The *Delta* sensitivity for forwards on currencies are determined as follows:

$$\text{SD} = \text{N} \times \text{F} \times \text{FD}$$

N is the nominal value of the contract.
F is the type of forward exchange on the currency (not the value of the forward contract).
FD is the discount factor calculated with the zero-coupon bond risk-free interest rate for the residual term to the final maturity.

63. The capital requirement is determined by multiplying the *Delt*a sensitivity by the risk weight determined for the underlying currency.

64. To add forward contracts on the same underlying currency, the net position must be determined based on the buying and selling positions.

$$K_d = \left| \sum_{i=1}^{n} K_{il} - \sum_{i=1}^{m} K_{lc} \right|$$

65. The correlation ratio between currencies is set at 0%. Therefore, the capital requirement added to all currencies is obtained by the square root of the sum of the squares of the capital requirement for each currency.

$$K = \sqrt{\sum_{d=1}^{n} K_d^2}$$

V. Swaps contracts

66. For interest swap contracts, the current value of each fixed liquidity flow will be calculated as follows:

a. Interest rate swaps in United States Dollars:

For an interest swap contract, the current value of the liquidity flow will be assigned to the fixed rate of each of the following vertices: 0.25, 0.50, 1, 2, 3, 4, 5, 10, 15, 20, and 30 years. This assignment will be made as defined in paragraph 7.

For the swap variable rate, the same flow assignment procedure will be made, only considering the relevant defined fixed spread on the reference rate.

The sensitivities of each vertex will be determined as in paragraph 8.

b. Interest rate swaps in a currency other than the United States Dollar:

The same procedure established in subparagraph (a) will be applied, taking into consideration that for the estimation of the Delta sensitivities the free-interest rate curve of the swap currency will be used.

c. Currency swaps:

The provisions of subparagraph (a) will be applicable, separately for each swap rate because they are in different currencies.

The flow sensitivities will be calculated based on the risk-free interest rate applicable to the currency in which each swap rate is denominated.

67. The risk-free interest rate capital requirement for all currency flows denominated in a certain currency will be calculated based on the methodology established in paragraphs 9, 10, 11 and 12.

68. The total capital requirement added by the swap risk-free interest rate will be ascertained under paragraph 14.

69. If the swap is denominated in a currency other than the United States Dollar and for currency swaps, in addition to the risk-free interest rate defined in paragraphs 66 to 68, the currency risk capital requirement will be calculated as defined as follows:

a. Interest rate swaps in a currency other than the United States Dollar:

The exchange risk sensitivity will be calculated considering the exposure is the swap's market value in the foreign currency and applying the provisions of paragraph 51.

The swap exchange risk capital requirement is obtained by multiplying the sensitivity by 30%.

b. Currency swaps:

The exchange risk capital requirement is established only for rates denominated in currencies other than the United States Dollar.

The exposure comes from the fair value of the flow current relevant to the foreign currency rate and by estimating the sensitivity according to the provisions of paragraph 51.

The resulting sensitivity is multiplied by 30% to obtain the exchange risk capital requirement.

70. For a currency swap, the capital requirements must be determined according to the provisions of paragraph 52.

VI. Options

71. The calculation of capital requirements for options will be made by grouping the options maintained in the trading portfolio according to the different underlying assets. For each underlying asset, the options whose risk is linked to increases in the value of the underlying asset and the options whose risk is linked to decreases in the value of the underlying asset will be grouped together. The capital required for each group of options of the same underlying asset will be the absolute value of the difference in capital required for each of the above groups.

$$K_u = \left| \sum_{i=1}^{n} K_{is} - \sum_{i=1}^{m} K_{ib} \right|$$

Where:
K_u is the capital requirement for all options with the same underlying *u*.

K_{is} is the capital requirement for option i with a risk related to the upward trend of the underlying *u*.

K_{ib} is the capital requirement for option i with a risk related to the downward trend of the underlying *u*.

72. Capital requirements for options on stock, currencies and bonds. The capital requirement for each option will be calculated as the absolute value of the difference between the value of the option calculated with the current value of the underlying asset and the value of the option using the critical value of the underlying asset. However, if that absolute value is greater than the current value of the option, the capital requirement will be the current value of the option. This means that S being the current value of the underlying asset and S' being the value of the underlying asset calculated under the risk methodology determined according to the type of financial instrument. f being the price of the option based on the underlying asset, S being the current value of the underlying asset and S' being the critical value of the underlying asset, capital requirement K is defined as follows:

$$K = \text{Min}\left(\left|f(S') - f(S)\right|, f(S)\right)$$

The critical value of the underlying asset is reached when the loss of value of the underlying asset equals the capital required to maintain a position in the underlying asset.

73. Capital requirements for interest rate options. The capital requirements for interest rate options (caps, floors and similar) will be calculated by the absolute value of the difference in the value of the option calculated with the zero-coupon risk-free interest rate curve and the value of the option calculated with the new curve resulting from displacing the original curve by adding or deducting the values defined in the table below from the original curve. However, if that absolute value is greater than the value of the option, the capital requirement will be the value of the option.

Vertices					
0.25	0.50	1	2	3	4
Rate variation					
0.09%	0.09%	0.09%	0.07%	0.07%	0.06%
Vertices					
5	10	15	20	30	
Rate variation					
0.06%	0.06%	0.06%	0.06%	0.06%	

The capital requirement is calculated by means of the following expression:

$$K = \text{Min}\left(\left|f(z + \Delta z) - f(z)\right|, f(z)\right)$$

where z represents the vector of current interest rates, f(z) is the current value of the option, and $f(z+\Delta z)$ is the value of the option adding or deducting the values in the table above from the current interest rate.

74. The capital requirement for the options portfolio will be obtained by the sum of the equity calculated for each type of options. Net calculations are only permitted for options on the same underlying asset. Diversification benefits are not acceptable, as there are residual risks not taken into account — especially *vega* risk.

$$K = \sum_{t=1}^{m} \sum_{u=1}^{n} K_{tu}$$

Where:
K_{tu} is the capital requirement for *t* type options on certain underlying *u*.

t is the type of options (t = shares, currencies, bonds, interest rates).”

ARTICLE 7. ENACTMENT. This Rule shall enter into force on 1 December 2019 as part of the Rule amended.

Given in the city of Panama on the twenty-eighth (28th) day of May, two thousand nineteen (2019).

FOR COMMUNICATION, PUBLICATION AND ENFORCEMENT.

THE CHAIRMAN, **THE SECRETARY AD-HOC,**

Luis Alberto La Rocca Arturo Gerbaud