

## Completion Instructions

### **Return of Capital Adequacy Ratio Part V - Risk-weighted Amount for Operational Risk Form MA(BS)3(V)**

#### Introduction

1. Form MA(BS)3(V) should be completed by each authorized institution incorporated in Hong Kong to calculate *operational risk*, based on the approach to calculation as specified by or agreed with the Monetary Authority (MA) under Part 9 of the Banking (Capital) Rules. Reporting institutions should use the *basic indicator approach (BIA approach)* to calculate their *risk-weighted amount for operational risk*, unless they have the prior approval of the MA to use the *standardized (operational risk) approach (STO approach)*, *alternative standardized approach (ASA approach)* or other methods. Where an institution has been approved to use a calculation method other than the BIA approach, STO approach or ASA approach, it should report its risk-weighted amount for operational risk in a manner as agreed with the MA.
2. This Form and its completion instructions should be read in conjunction with the Rules and relevant supervisory policy/guidance on the revised capital adequacy framework.

#### Section A: Definitions and Clarification

3. Under the BIA approach, STO approach or ASA approach, the reporting institution's risk-weighted amount for operational risk is calculated based on its average *gross income* or loans and advances of the *last 3 years*. If an institution has been in operation for 18 months or more but less than 3 *years*, it should treat any partial year of operation of 6 months or more as a full year, and any partial year of operation of less than 6 months as zero for the purposes of calculating the last 3 years arithmetic mean of its gross income and/or loans and advances in the *standardized business lines* of retail banking and commercial banking<sup>1</sup>.
4. If any partial year is counted as a full year, the gross income of that partial year should be annualized and taken as the gross income of that year. As for the applicable loans and advances under the ASA approach, the arithmetic mean of the amount of loans and advances outstanding at the end of each full *calendar quarter* within that partial year should be taken as the loans and advances for that year. If any partial year is treated as zero, the gross income and loans advances in the standardized business lines of retail banking and commercial banking for that partial year should be taken as zero.

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<sup>1</sup> Please refer to sections 324 and 325 of the Rules for the meaning of "loans and advances in the standardized business line of commercial banking" and "loans and advances in the standardized business line of retail banking".

5. An illustration of calculating the gross income and loans and advances in the standardized business lines of retail banking and commercial banking for partial and full year of operation is shown at Annex V-A.
6. Examples on reporting of operational risk under different approaches are shown at Annex V-B.

## **Section B: Calculation and Reporting of Risk-weighted Amount**

7. The following paragraphs explain how to report the gross income/loans and advances, *capital charges* and risk-weighted amount under the BIA approach, STO approach or ASA approach.

### **B.1 BIA Approach**

8. The capital charge for operational risk under the BIA approach should be calculated using the following formula:

$$K_{BIA} = [\sum(GI_{1...n} \times \alpha)] / n$$

Where:

$K_{BIA}$  = capital charge for operational risk calculated under the BIA approach;

GI = gross income, where positive, of the last 3 years;

$\alpha$  = 15%; and

n = number of the last 3 years for which gross income is positive.

Any gross income for a year that is negative or zero should be excluded from both the numerator (GI) and the denominator (n) of the above formula.

9. Reporting institutions using the BIA approach should report items 1, 4 and 5 of this Form.

<u>Item</u>	<u>Nature of item</u>
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- |    |   |
|----|---|
| 1. | Report the gross income and capital charges for each of the last 3 years ending on the reporting <i>calendar quarter end date</i> . |
|----|---|

- (a) Gross income for the last 3 years is calculated by:

- **First year**: aggregating the gross income recognized by the institution in the calendar quarter ending on the reporting calendar quarter end date and in each of the 3 immediately preceding calendar quarters;
- **Second year**: aggregating the gross income recognized by the institution in the year immediately preceding the first year; and

- ***Third year***: aggregating the gross income recognized by the institution in the year immediately preceding the second year.

(b) Capital charge is calculated by multiplying the gross income in each of the first year, second year and third year, where positive, (as calculated under (a) above) by a capital charge factor of 15%.

**4. Capital charge for operational risk**

This is calculated by aggregating the capital charges for the last 3 years (as reported under item 1) and obtaining the arithmetic mean of the aggregate capital charge by dividing that aggregate figure by the number of the last 3 years in which the gross income is positive.

**5. Risk-weighted amount for operational risk**

This is calculated by multiplying the capital charge for operational risk under the BIA approach (as reported under item 4) by 12.5.

**B.2 STO Approach**

10. The capital charge for operational risk under the STO approach should be calculated using the following formula<sup>2</sup>:

$$K_{STO} = \{ \sum_{years 1-3} \max [\sum(GI_{1-8} \times \beta_{1-8}), 0] \} / 3$$

Where:

- $K_{STO}$  = capital charge for operational risk calculated under the STO approach;
- $GI_{1-8}$  = gross income for each of the standardized business lines for each of the last 3 years; and
- $\beta_{1-8}$  = capital charge factor applicable to each of the standardized business lines (as set out in the instructions for items 2.1a to 2.1h under paragraph 11).

11. Reporting institutions using the STO approach should report items 2, 4 and 5 of this Form.

<u>Item</u>	<u>Nature of item</u>
2.1a to 2.1h	Report the gross income and capital charges for each of the 8 standardized business lines (under items a to h) for each of the last 3 years ending on the reporting calendar quarter end date.

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<sup>2</sup> If the reporting institution has business activities that could not be mapped into any of the 8 standardized business lines and are reported under the unclassified business line, the gross income of these activities should also be included in the above formula in calculating the capital charge for operational risk. See instructions under item 2.1i for details.

- (a) Gross income for each of the 8 standardized business lines for the last 3 years is calculated by:
- First year: aggregating the gross income recognized by the institution in respect of each of the 8 standardized business lines in the calendar quarter ending on the reporting calendar quarter end date and the gross income recognized by the institution in respect of each of the 8 standardized business lines in each of the 3 immediately preceding calendar quarters;
  - Second year: aggregating the gross income recognized by the institution in respect of each of the 8 standardized business lines in the year immediately preceding the first year; and
  - Third year: aggregating the gross income recognized by the institution in respect of each of the 8 standardized business lines in the year immediately preceding the second year.
- (b) The capital charge for each of the 8 standardized business lines is calculated by multiplying the gross income of each standardized business line in each of the first year, second year and third year (as calculated under (a) above) by the capital charge factor applicable to that standardized business line set out below:

<u>Standardized business line</u>	<u>Capital charge factor</u>
Corporate finance	18%
Trading and sales	18%
Retail banking	12%
Commercial banking	15%
Payment and settlement	18%
Agency services	15%
Asset management	12%
Retail brokerage	12%

*2.1i*

If none of the mapping principles set out in sections 2(c)(i), (ii) and (iii) of Schedule 4 of the Rules enables the reporting institution to map gross income in respect of a particular business activity into a particular standardized business line, the institution can map it under the unclassified business line.

Report the gross income of the unclassified business line for the last 3 years using the same method as set out in (a) above. The capital charge is calculated by multiplying the gross income of this business line in each of the first year, second year and third year by a capital charge factor of 18%.

2.2 Report the total capital charges for each of the last 3 years by adding together the capital charges calculated under items 2.1a to 2.1h and 2.1i above for each of the last 3 years. In any given year of the last 3 years, the reporting institution may offset a positive capital charge for any standardized or the unclassified business line in the given year with a negative capital charge for any other standardized or the unclassified business line in that given year. However, it shall not offset positive or negative capital charges for the standardized or the unclassified business line between any of the last 3 years.

4. **Capital charge for operational risk**

This is calculated by aggregating the capital charges for the last 3 years (as reported under item 2.2) and obtaining the arithmetic mean of the aggregate capital charge by dividing that aggregate figure by 3. If the aggregate capital charge for all the standardized and the unclassified business lines in any given year is negative, it should be assigned a zero value and that given year should still be counted in the denominator when calculating the last 3 years arithmetic mean.

5. **Risk-weighted amount for operational risk**

This is calculated by multiplying the capital charge for operational risk under the STO approach (as reported under item 4) by 12.5.

**B.3 ASA Approach**

12. The methodology to calculate the capital charge under the ASA approach is the same as the STO approach except for 2 standardized business lines – retail banking and commercial banking. For these 2 standardized business lines, loans and advances, when multiplied by a fixed factor of 0.035, replace gross income in calculating the capital charge for operational risk.

13. The capital charge for operational risk in the standardized business line of retail (or commercial) banking for each year should be calculated using the following formula:

$$K_{RB} = LA_{RB} \times 0.035 \times \beta_{RB}$$

Where:

$K_{RB}$  = capital charge for the standardized business line of retail (or commercial) banking;

$LA_{RB}$  = loans and advances in the standardized business line of retail (or commercial) banking for each year; and

$\beta_{RB}$  = capital charge factor for the standardized business line of retail (or commercial) banking.

14. Reporting institutions using the ASA approach should report items 3, 4 and 5 of this Form. In reporting item 3, the reporting institution can report either item 3.1 or 3.3 and item 3.2 or 3.4, depending on whether the institution wishes to treat its

standardized business lines of retail banking and commercial banking as 2 separate business lines or one business line and the remaining 6 standardized and the unclassified business lines as separate business lines or one business line. Once the reporting institution has chosen the reporting methodology it should not change that reporting methodology unless it has the prior approval of the MA.

<u>Item</u>	<u>Nature of item</u>
<i>3.1a and 3.1b</i>	<p>Report the loans and advances and capital charges for the standardized business lines of retail banking and commercial banking for each of the last 3 years ending on the reporting calendar quarter end date.</p> <p>(a) The loans and advances in the standardized business lines of retail (or commercial) banking for the last 3 years is calculated by:</p> <ul style="list-style-type: none"><li>• <u>First year</u>: taking the arithmetic mean of the amount of loans and advances as at the reporting calendar quarter end date and as at each of the 3 immediately preceding calendar quarter end dates;</li><li>• <u>Second year</u>: taking the arithmetic mean of the amount of loans and advances as at each of the 4 calendar quarter end dates immediately preceding the first year; and</li><li>• <u>Third year</u>: taking the arithmetic mean of the amount of loans and advances as at each of the 4 calendar quarter end dates immediately preceding the second year.</li></ul> <p>(b) The capital charge for the standardized business line of retail (or commercial) banking is calculated by multiplying the loans and advances of the business line in each of the first year, second year and third year (as calculated under (a) above) by 0.035 and then by a capital charge factor of 12% (or 15%).</p>
<i>3.1c</i>	<p>Report the subtotal of capital charges for the standardized business lines of retail banking and commercial banking for each of the last 3 years by adding together the capital charges reported under items <i>3.1a</i> and <i>3.1b</i> for each of the last 3 years.</p>
<i>3.2a to 3.2f</i>	<p>Report the gross income and capital charge for each of the 6 standardized business lines (under items <i>a</i> to <i>f</i>) for each of the last 3 years ending on the reporting calendar quarter end date, using the same method as that for the STO approach (as set out in the instructions for items <i>2.1a</i> to <i>2.1h</i> under paragraph 11).</p>
<i>3.2g</i>	<p>Report the gross income and capital charge for the unclassified business line using the same method as that for the STO approach (as set out in the instructions for item <i>2.1i</i> under paragraph 11).</p>

- 3.2h Report the subtotal of the capital charges for the 6 standardized and the unclassified business lines under items 3.2a to 3.2g for each of the last 3 years. The reporting institution may, in any given year of the last 3 years, offset a positive capital charge for any of these standardized or the unclassified business line in the given year with a negative capital charge for any other standardized or the unclassified business line in the given year. However, it shall not offset positive or negative capital charges for the standardized or the unclassified business line between any of the last 3 years.
- 3.3 Treat the standardized business lines of retail banking and commercial banking as one business line and report the loans and advances and capital charges for these business lines in one lump sum for each of the last 3 years ending on the reporting calendar quarter end date.
- (a) The aggregate loans and advances in the standardized business lines of retail banking and commercial banking for the last 3 years are calculated using the same method as set out for items 3.1a and 3.1b above.
  - (b) The aggregate capital charge for the standardized business lines of retail banking and commercial banking is calculated by multiplying the loans and advances of these 2 business lines in each year (as calculated under (a) above) by 0.035 and then by a capital charge factor of 15%.
- 3.4 Treat the 6 standardized and the unclassified business lines (as referred to under items 3.2a to 3.2g) as one business line and report the gross income and capital charge for these business lines in one lump sum for each of the last 3 years ending on the reporting calendar quarter end date.
- (a) The aggregate gross income for the 6 standardized and the unclassified business lines is calculated by using the same method as set out for items 3.2a to 3.2f and 3.2g above.
  - (b) The aggregate capital charge for the 6 standardized and the unclassified business lines is calculated by multiplying the aggregate gross income of these business lines in each year (as calculated under (a) above) by a capital charge factor of 18%.
- 3.5 Report the total capital charges for each of the last 3 years by adding together the capital charges for the standardized business lines of retail banking and commercial banking (item 3.1c or 3.3) and the capital charges for the remaining 6 standardized and the unclassified business lines (item 3.2h or 3.4) for each of the last 3 years. If the aggregate capital charge for the remaining 6 standardized and the unclassified business lines in a given year of the last 3 years is

negative, it should be assigned a zero value and should not be used to offset the capital charges for the standardized business lines of retail banking and/or commercial banking.

4. **Capital charge for operational risk**

This is calculated by aggregating the capital charges for the last 3 years (as reported under item 3.5) and obtaining the arithmetic mean of the aggregate capital charge by dividing that aggregate figure by 3.

5. **Risk-weighted amount for operational risk**

This is calculated by multiplying the capital charge for operational risk under the ASA approach (as reported under item 4) by 12.5.

Hong Kong Monetary Authority  
March 2007

## An illustration of calculating the gross income and loans and advances in the standardized business lines of retail banking and commercial banking for partial and full year of operation

REPORTING POSITION: 31 MARCH 2007

Proxy for operational risk exposures	First Year	Second Year	Third Year	Number of years in operation
<b>Reporting institution in operation for 3 years or more</b>				
Gross income	sum of gross income for the quarters ended on 31.03.07, 31.12.06, 30.09.06 and 30.06.06	sum of gross income for the quarters ended on 31.03.06, 31.12.05, 30.09.05 and 30.06.05	sum of gross income for the quarters ended on 31.03.05, 31.12.04, 30.09.04 and 30.06.04	3
Loans and advances in the standardized business line of retail/commercial banking	arithmetic mean of the amount outstanding as at 31.03.07, 31.12.06, 30.09.06 and 30.06.06	arithmetic mean of the amount outstanding as at 31.03.06, 31.12.05, 30.09.05 and 30.06.05	arithmetic mean of the amount outstanding as at 31.03.05, 31.12.04, 30.09.04 and 30.06.04	3
<b>Reporting institution in operation for 2½ years or more but less than 3 years</b>				
Gross income	same as above	same as above	annualize the gross income of the partial year	3
Loans and advances in the standardized business line of retail/commercial banking	same as above	same as above	<u>≥ 6 months but &lt; 9 months</u> arithmetic mean of the amount outstanding as at 31.03.05 and 31.12.04  <u>≥ 9 months but &lt; 12 months</u> arithmetic mean of the amount outstanding as at 31.03.05, 31.12.04 and 30.09.04	3
<b>Reporting institution in operation for 2 years or more but less than 2½ years</b>				
Gross income	same as above	same as above	zero	2
Loans and advances in the standardized business line of retail/commercial banking	same as above	same as above	zero	2
<b>Reporting institution in operation for 1½ years or more but less than 2 years</b>				
Gross income	same as above	annualize the gross income of the partial year	N.A. (Reporting institution not yet in operation)	2
Loans and advances in the standardized business line of retail/commercial banking	same as above	<u>≥ 6 months but &lt; 9 months</u> arithmetic mean of the amount outstanding as at 31.03.06 and 31.12.05  <u>≥ 9 months but &lt; 12 months</u> arithmetic mean of the amount outstanding as at 31.03.06, 31.12.05 and 30.09.05	N.A. (Reporting institution not yet in operation)	2

## Examples on reporting of operational risk under different approaches

## Reporting institution's gross income and loans and advances for the last 3 years as at 31 March 2007

Business lines	First Year	Second Year	Third Year
	HK\$'000	HK\$'000	HK\$'000
<b>Gross income (Note 1)</b>			
1. Corporate finance	1,500	1,200	-500
2. Trading and sales	1,000	900	300
3. Retail banking	1,200	1,000	-1,000
4. Commercial banking	2,000	1,300	700
5. Payment and settlement	900	-500	-1,300
6. Agency services	1,100	-200	500
7. Asset management	700	500	100
8. Retail brokerage	300	600	200
<b>Total</b>	<b>8,700</b>	<b>4,800</b>	<b>-1,000</b>
<b>Loans and advances (Note 2)</b>			
1. Retail banking	25,000	15,000	10,000
2. Commercial banking	14,000	18,000	20,000
<b>Total</b>	<b>39,000</b>	<b>33,000</b>	<b>30,000</b>
Note 1 - Gross income of the first year = sum of gross income for Q1/07, Q4/06, Q3/06 & Q2/06 Gross income of the second year = sum of gross income for Q1/06, Q4/05, Q3/05 & Q2/05 Gross income of the third year = sum of gross income for Q1/05, Q4/04, Q3/04 & Q2/04			
Note 2 - Loans and advances of the first year = arithmetic mean of the amount outstanding as at Q1/07, Q4/06, Q3/06 & Q2/06 Loans and advances of the second year = arithmetic mean of the amount outstanding as at Q1/06, Q4/05, Q3/05 & Q2/05 Loans and advances of the third year = arithmetic mean of the amount outstanding as at Q1/05, Q4/04, Q3/04 & Q2/04			

## RETURN REPORTING

## BIA APPROACH

Item	Nature of item	Capital Charge Factor %	Gross Income/Loans & Advances HK\$'000			Capital Charges HK\$'000		
			First year	Second Year	Third Year	First year	Second Year	Third Year
1.	<b>BIA Approach</b>	15	8,700	4,800	-1,000	1,305	720	0
4.	<b>Capital charge for operational risk</b>					(1,305 + 720)/2		<b>1,013</b>
5.	<b>RISK-WEIGHTED AMOUNT FOR OPERATIONAL RISK</b>					1,013 x 12.5		<b>12,663</b>

## STO APPROACH

Item	Nature of item	Capital Charge Factor %	Gross Income/Loans & Advances HK\$'000			Capital Charges HK\$'000		
			First year	Second Year	Third Year	First year	Second Year	Third Year
2.	<b>STO Approach</b>							
2.1	a. Corporate finance	18	1,500	1,200	-500	270	216	-90
	b. Trading and sales	18	1,000	900	300	180	162	54
	c. Retail banking	12	1,200	1,000	-1,000	144	120	-120
	d. Commercial banking	15	2,000	1,300	700	300	195	105
	e. Payment and settlement	18	900	-500	-1,300	162	-90	-234
	f. Agency services	15	1,100	-200	500	165	-30	75
	g. Asset management	12	700	500	100	84	60	12
	h. Retail brokerage	12	300	600	200	36	72	24
	i. Unclassified	18	0	0	0	0	0	0
2.2	<b>TOTAL</b>					<b>1,341</b>	<b>705</b>	<b>-174</b>
4.	<b>Capital charge for operational risk</b>					(1,341+705+0)/3		<b>682</b>
5.	<b>RISK-WEIGHTED AMOUNT FOR OPERATIONAL RISK</b>					682 x 12.5		<b>8,525</b>

**ASA APPROACH**
**Method (i)**

Item	Nature of item	Capital Charge Factor %	Gross Income/Loans & Advances HK\$'000			Capital Charges HK\$'000		
			First year	Second Year	Third Year	First year	Second Year	Third Year
3.1	a. Retail banking	12	25,000	15,000	10,000	105	63	42
	b. Commercial banking	15	14,000	18,000	20,000	74	95	105
	c. SUBTOTAL					179	158	147
3.2	a. Corporate finance	18	1,500	1,200	-500	270	216	-90
	b. Trading and sales	18	1,000	900	300	180	162	54
	c. Payment and settlement	18	900	-500	-1,300	162	-90	-234
	d. Agency services	15	1,100	-200	500	165	-30	75
	e. Asset management	12	700	500	100	84	60	12
	f. Retail brokerage	12	300	600	200	36	72	24
	g. Unclassified	18	0	0	0	0	0	0
	h. SUBTOTAL					897	390	-159
3.5	TOTAL					1,076	548	147
<b>4.</b>	<b>Capital charge for operational risk</b>					(1,076+548+147)/3		
<b>5.</b>	<b>RISK-WEIGHTED AMOUNT FOR OPERATIONAL RISK</b>					590 x 12.5		

**Method (ii)**

Item	Nature of item	Capital Charge Factor %	Gross Income/Loans & Advances HK\$'000			Capital Charges HK\$'000		
			First year	Second Year	Third Year	First year	Second Year	Third Year
3.1	a. Retail banking	12	25,000	15,000	10,000	105	63	42
	b. Commercial banking	15	14,000	18,000	20,000	74	95	105
	c. SUBTOTAL					179	158	147
3.4	3.2a to 3.2g as one business line	18	5,500	2,500	-700	990	450	-126
3.5	TOTAL					1,169	608	147
<b>4.</b>	<b>Capital charge for operational risk</b>					(1,169+608+147)/3		
<b>5.</b>	<b>RISK-WEIGHTED AMOUNT FOR OPERATIONAL RISK</b>					641 x 12.5		

**Method (iii)**

Item	Nature of item	Capital Charge Factor %	Gross Income/Loans & Advances HK\$'000			Capital Charges HK\$'000		
			First year	Second Year	Third Year	First year	Second Year	Third Year
3.2	a. Corporate finance	18	1,500	1,200	-500	270	216	-90
	b. Trading and sales	18	1,000	900	300	180	162	54
	c. Payment and settlement	18	900	-500	-1,300	162	-90	-234
	d. Agency services	15	1,100	-200	500	165	-30	75
	e. Asset management	12	700	500	100	84	60	12
	f. Retail brokerage	12	300	600	200	36	72	24
	g. Unclassified	18	0	0	0	0	0	0
	h. SUBTOTAL					897	390	-159
3.3	3.1a & 3.1b as one business line	15	39,000	33,000	30,000	205	173	158
3.5	TOTAL					1,102	563	158
<b>4.</b>	<b>Capital charge for operational risk</b>					(1,102+563+158)/3		
<b>5.</b>	<b>RISK-WEIGHTED AMOUNT FOR OPERATIONAL RISK</b>					608 x 12.5		

Method (iv)

Item	Nature of item	Capital Charge Factor %	Gross Income/Loans & Advances HK\$'000			Capital Charges HK\$'000		
			First year	Second Year	Third Year	First year	Second Year	Third Year
3.3	3.1a & 3.1b as one business line	15	39,000	33,000	30,000	205	173	158
3.4	3.2a to 3.2g as one business line	18	5,500	2,500	-700	990	450	-126
3.5	TOTAL					<b>1,195</b>	<b>623</b>	<b>158</b>
<b>4.</b>	<b>Capital charge for operational risk</b>					(1,195+623+158)/3		<b>659</b>
<b>5.</b>	<b>RISK-WEIGHTED AMOUNT FOR OPERATIONAL RISK</b>					659 x 12.5		<b>8,238</b>