



BANCO CENTRAL DO BRASIL

CIRCULAR 3,647, MARCH 4 2013

Establishes the minimum requirements for use of the advanced approach based on internal models for the calculation of the operational risk component (RWA_{OAMA}) of the Risk-Weighted Assets (RWA), as mentioned in Resolution 4,193, 2013.

The Board of the Central Bank of Brazil, in an extraordinary session held on March 1, 2013, based on the provisions of arts. 9, 10, item IX, and 11, item VII, of Law 4,595 of December 31, 1964 and of arts. 3, paragraph 2, and paragraph 15 of Resolution 4,193 of March 1, 2013,

DECIDED:

TITLE I PRELIMINARY PROVISIONS

CHAPTER I SCOPE OF APPLICATION

Article 1. The use of the Advanced Measurement Approach (AMA) based on internal models for the semi-annual calculation of the operational risk component (RWA_{OAMA}) of the risk-weighted assets (RWA), replacing the calculation of the operational risk component under the standardized approach (RWA_{OPAD}), as mentioned in Resolution 4,193 of March 1, 2013 is allowed to the following institutions:

I – universal banks, savings banks, commercial banks, with the exception of cooperative banks that are not members of a conglomerate and the Banco Nacional de Desenvolvimento Econômico e Social (BNDES), and [\(As amended from January 1, 2014 by Circular 3,676 of October 31, 2013\)](#)

II – entities that belong a conglomerate under the terms of the Accounting Plan for Financial Institutions (Cosif), comprising at least one of the institutions mentioned in item I. [\(As amended from January 1, 2014 by Circular 3,676 of October 31, 2013\)](#)

CHAPTER II GENERAL PROVISIONS

Article 2. The use of an AMA model is dependent on a prior authorization from the Central Bank of Brazil.

Paragraph 1. The authorization mentioned in the heading can be canceled at the discretion of the Central Bank of Brazil, in case the minimum requirements set forth in this Circular are no longer met or the calculated values do not accurately reflect the operational risk faced by the institution.



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Paragraph 2. The institution which uses an AMA model must demonstrate that it meets the minimum requirements set forth in this Circular, and must timely inform the Central Bank of Brazil if they are no longer met.

Paragraph 3. Relevant changes in the AMA model and its systems are subject to a prior authorization from the Central Bank of Brazil.

Article 3. Once the authorization mentioned in Art. 2 is granted:

I – the respective AMA model must necessarily be used to calculate the value of the component of RWA relating to operational risk; and

II – the return to the calculation of the component RWA_{OPAD} as established in Circular 3,640 of 2013 requires a prior authorization from the Central Bank of Brazil.

Sole paragraph. At the discretion of the Central Bank of Brazil, the institution may be required to allocate capital for operational risk in an amount equivalent to the one calculated using the Basic Indicator Approach, as defined in Circular 3,640 of 2013, due to a circumstantial need to correct or improve its AMA model. (Included from January 1, 2014 by Circular 3,676 of October 31, 2013.)

Article 4. The calculation of the component RWA_{OAMA} must use the following formula:

$$RWA_{OAMA} = \max \{ [OPR_{AMA} / F + RWA_{OAMA(Parcial)}], (S_O \times RWA_{OPAD}) \}$$
, in which (As amended from January 1, 2014 by Circular 3,676 of October 31, 2013)

I – F = factor established in art. 4 of Resolution 4,193 of 2013; and

II – OPR_{AMA} = value of the component of the operational risk calculated by the AMA mode;

III – RWA_{OPAD} = component relative to the calculation of required capital for operational risk using a standardized approach, in the form established by Circular 3,640 of March 4, 2013; (Included from January 1, 2014 by Circular 3,676 of October 31, 2013)

IV - $RWA_{OAMA(Parcial)}$ = value of the RWA component relative to operational risk calculated by a conglomerate that uses partially a AMA, according to provisions of art. 72; and (Included from January 1, 2014 by Circular 3,676 of October 31, 2013)

V - S_O = factor of parallel calculation for the AMA model. (Included from January 1, 2014 by Circular 3,676 of October 31, 2013)

Sole paragraph. The value of the factor of parallel calculation for the AMA model is equal to:

I - 0,90 (ninety hundredths), during the first year of use of the AMA model, as counted from the date of authorization for its use; and

II - 0,80 (eighty hundredths), from the second year of use of the AMA model, as counted from the date of authorization for its use.

(Sole paragraph included from January 1, 2014 by Circular 3,676 of October 31, 2013.)

Article 5. The operational risk data base must comprise all information relevant to the AMA model used by the institution and for the management of operational risk, including values of operational losses, as well as other operational risk data, such as near losses, operational profits, opportunity costs and lost revenue.

Paragraph 1. Information relative to internal operational loss data must be included in the operational risk data base, as well as external data on operational loss, scenario analysis and indicators of business environment and internal controls.

Paragraph 2. Operational losses are the quantifiable value associated with failures, deficiencies or inadequate internal processes, people and systems or external events.

Paragraph 3. Operational losses defined in paragraph 2 include losses associated with inadequacy or deficiencies in contracts entered into by the institution, penalties arising from non-compliance with legal provisions, as well as compensation for damages to third parties arising from activities of the institution.

Article 6. The institution must adopt a consistent, timely and comprehensive process to collect relevant data to the operational risk data base on a continuous basis.

Article 7. The set of operational losses, either occurred or simulated, must comprise the calculation basis of the model for obtaining the value of the RWA_{OAMA} component.

Sole paragraph. The losses mentioned in the heading may stem from internal data on operational loss, external data on operational loss, scenario analysis and indicators of business environment and internal controls.

Article 8. The criteria used to identify and treat the information forming the basis of calculation must observe policies and procedures previously specified by the institution which uses an AMA model.

Article 9. The institution must consider adjusting the data when the effects of inflation or deflation are relevant.

Article 10. The AMA model must include a clear and consistent internal definition for operational loss events related to credit risk for the purposes of calculating the value of the RWA_{OAMA} component and the management of operational risk.

Article 11. The calculation basis for operational risk must comprise operational losses related to:

I – market risk, and

II – credit risk whose cause is clearly identified as operational risk.



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Paragraph 1. The credit risk-related operational losses which do not fit on item II of the heading and whose value is relevant must be considered in the scenario analysis, if they have not been considered in the internal operational losses data base.

Paragraph 2. The information on credit risk-related operational losses, whether or not have been considered in the calculation basis for operational risk, must be included in the operational risk data base for the purposes of risk management.

TITLE II MODEL COMPONENTS

CHAPTER I MINIMAL ELEMENTS

Article 12. The AMA model used must comprise at least the following elements:

- I – internal data on operational losses;
- II – external data on operational losses;
- III – indicators on business environment and internal controls, and
- IV – scenario analysis.

CHAPTER II OPERATIONAL LOSS INTERNAL DATA

Section I Of the General Requirements

Article 13. The internal operational losses database must:

- I – reflect the risk profile and risk management practices of the institution;
- II – cover a minimum period of five years, and
- III – be structured so as to allow at least the internal classification of losses and their association, under consistent criteria, with operational risk events as defined in Resolution 3,380 of June 29, 2006 and the business lines defined in Circular 3,640 of 2013.
- IV – contain the operational risk events recognized as an expense.

Paragraph 1. The process of collecting and storing internal data on operational losses must be continuous, so that the discarding of data included in the base is not allowed.

Paragraph 2. The revision of information entered in the data base is allowed, provided that it relates to situations envisaged in the policy of treating such element in the AMA model, which must establish restrictive correction criteria according to specified and exceptional conditions, with regard to the continuous relevance of internal data on losses to the AMA model. [\(As amended from January 1, 2014 by Circular 3,676 of October 31, 2013.\)](#)



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Paragraph 3. The correction mentioned in paragraph 2 must be duly justified and documented in a case by case basis, while maintaining the original information.

Paragraph 4. With regard the provision in item IV of the heading, other forms of losses may be considered and their treatment must be specific, based on consistent criteria.

Article 14. The internal database on operational losses must comprise at least, for each operational risk event:

I – the National Register of Legal Entities (CNPJ) number of the entity in which the losses occurred, or, in its absence, any other code used by the institution;

II – the business unit in which the loss occurred;

III – the dates of occurrence, of discovery and of register in accounting relative to the loss;

IV – the description of operational losses deemed relevant, under consistent and verifiable criteria;

V – the identification of the cause of the losses deemed relevant, under consistent and verifiable criteria;

VI – the gross amount of the losses and the amount recovered, regardless of the time elapsed between the occurrence of the loss and its recovery;

VII – the amount of the loss recovered by insurance, and

VIII – the sources of information on the loss.

Article 15. The date used for the purpose of calculating the value of the RWA_{OAMA} component and computing the minimum period of five years, chosen among the dates of occurrence, the date of discovery and the date of register in accounting must be such that events with a material impact on the AMA model used are not disregarded.

Article 16. Losses associated with more than one business unit must be allocated to their respective units under consistent criteria.

Article 17. In the case of multiple operational losses related to the same operational risk event, both the event and its associated losses must be identified and grouped according to consistent and verifiable criteria, in order to enable the use of information in the AMA model used.

Sole paragraph. Operational losses that do not share common cause must not be grouped, even if the values involved are not significant.

Section II Limits for Registration of Operational Losses



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Article 18. The use of one or more limits for recording operational losses is allowed, but the following factors, at least must, be considered:

I – the decision-making ability, based on the data collected, relative to the management of operational risk;

II – sufficiency of data for statistical modeling, and

III – the ability to calculate expected losses for each risk category according to the granularity defined in Art. 51.

Paragraph 1. The absence of material impact of capping in the calculation of the RWA_{OAMA} component must be demonstrated.

Paragraph 2. Internal operational losses, including those with values below the established limit, must be reconciled with their accounting information.

Section III Lack of Recognition of Expenses

Article 19. Expenses related to operational risk events not recognized in their period of competence and that are subsequently deemed incurred, must be registered as an operational loss, composed of the original amount, fines, charges and other accrued amounts.

Sole paragraph. In cases where the expense has been recognized on an accrual basis, the original amount and any charges relative to the process of updating using the legal rate must not be considered as an operational loss for the purposes of calculating the value of the RWA_{OAMA} component.

Section IV Legal Risks

Article 20. The allowance for legal risks must be registered in the database of operational losses, as well as any additions or partial reversals related to the same loss.

Paragraph 1. The date of the accounting register of the original provision must remain as a reference of the loss, even when there is either an update of the provision or its partial reversal.

Paragraph 2. When a provision for contingencies is not mandatory, including cases of total reversal, the possibility of occurrence of a loss must be analyzed from the perspective of another element of the AMA model, such as scenario analysis.

Section V Demerger, merger, acquisition or incorporation

Article 21. In the case of spin-offs, mergers, takeovers and acquisitions of financial institutions, the treatment to be given to the internal database on operational loss must be analyzed and justified, and the database of each institution involved in the process must be analyzed individually.



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Paragraph 1. The use of the database by the resulting institutions must consider occasional changes from the situation prior to the demerger, merger, acquisition or incorporation, taking into account the products, services, activities, processes and systems of each resulting institution.

Paragraph 2. The new institutions must evaluate the need for the deployment of data losses prior to demerger, merger, acquisition or incorporation that are deemed relevant for the management process and the measurement of operational risk of each resulting institution.

Section VI Near Loss

Article 22. The AMA model must include an internal definition for near loss events.

Article 23. Information on near losses deemed relevant to the management of operational risk must be collected and analyzed.

Sole paragraph. The inclusion of information on near misses in the database of the AMA model is allowed.

Section VII Collection, Treatment and Documentation

Article 24. The comprehensiveness, consistency, integrity and reliability of the collecting process of information in the internal database of operational losses must be demonstrated.

Article 25. The data used in the calculation of the value of the RWA_{OAMA} component as well as the documentation of occasional corrections or the reclassification of operational losses should be stored in such a form as to allow the verification of the adequacy of the calculation.

CHAPTER III EXTERNAL DATA ON OPERATIONAL LOSSES

Article 26. The AMA model must include external data on operational losses, considering at least the following objectives:

- I – aggregate information on external losses which are severe and plausible;
- II – complement internal records of operational losses, reducing possible data shortage;
- III – add information to the process of scenario analysis in order to help a prospective evaluation of the institution's degree of exposure to operational risk, and
- IV – contribute to the assessment, measurement and monitoring of operational risk exposure and to calculating the value of the RWA_{OAMA} component.

Paragraph 1. External data refer to information on operational losses derived from sources external the institution, obtained from public sources and private consortia data, among others.



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Paragraph 2. External data used must be comprehensive, relevant, accurate and compatible with the risk profile of the institution.

Article 27. The external data on operational losses must cover when available:

I – information on the amount of losses incurred;

II – information on recoveries of losses incurred;

III – identification of the operational risk event to which losses are associated;

IV – causes and circumstances involving the loss;

V – lines of business in which the losses were verified;

VI – dates of occurrence, discovery and accounting entry; and

VII – information that points to the relevance of losses in assessment of the operational risk exposure of the institution.

Article 28. A robust and systematic process must be established for identification, collection, evaluation and incorporation of external data on operational losses to the AMA model being used.

Sole paragraph. The procedure mentioned in the heading must determine the cases in which external data must be used, the criteria for selection of these data as well as the methodology for their incorporation.

Article 29. The methodology for incorporating external data to the AMA model must:

I – ensure that the data is consistent with the classification of operational losses of the institution, and

II – prescribe scaling, filtering and adoption of qualitative data adjustments aiming at their adequacy, when possible, to the size, location and the risk profile of the institution, in order to minimize any subjectivity or bias of information sources and of collection process.

Paragraph 1. Scaling consists in a systematic and statistically-based process of adjustment of the amount of losses from external events to the risk profile and to the activities of the institution.

Paragraph 2. Filtering consists in the selection of relevant data based on criteria defined by the institution.

Article 30. The process and methodology applied to external data must be adequately documented and verifiable.

Article 31. The conditions and practices for use of external data must be submitted to independent review, at least annually.

CHAPTER IV
INDICATORS

Article 32. The AMA must incorporate indicators of the business environment of the institution, as well as indicators of internal controls, aiming to:

- I – reflect the quality of the institution's controls and operations environment;
- II – contribute to the assessment of capital requirements and the management of operational risk;
- III – add a prospective assessments of the operational risk, and
- IV – recognize an improvement and a deterioration of internal controls and the business environment when assessing the capital requirement for operational risk.

Paragraph 1. The business environment indicators refer to the risk inherent to the institution's activities and the characteristics of the market in which it operates.

Paragraph 2. The indicators of internal controls refer to the processes related to the prevention and mitigation of operational risk.

Paragraph 3. The indicators must be measurable and the measurement methodologies must be verifiable.

Article 33. The indicators used in the AMA model must meet at least the following requirements:

- I – the choice of each indicator and its weight must be justified and based on its relevance and ability to estimate the exposure to operational risk, and
- II – the frequency with which monitoring information provided by the indicators is conducted must reflect the risks involved, the constancy and the nature of changes in the operational environment and in internal controls.

Article 34. The process of monitoring the information provided by the monitoring indicators must provide relevant and periodic information to the senior management and to the board, when such an instance is in place, so as to contribute to the review of the tolerance for operational risk and occasional adjustments in the institution's controls.

Article 35. Documentation on the use of indicators must adequately demonstrate:

- I – the criteria for their definition and choice;
- II – the relation between indicators and the processes of operational risk management and the impact on the value of the RWA_{OAMA} component; and
- III – the sensitivity of the estimates of operational risk exposure to changes in the indicators.



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Article 36. The indicators must be reviewed at least annually.

Sole paragraph. In reviewing the information provided by indicators as prescribed in the heading, internal data on operational losses and external data on relevant operational losses must be considered.

CHAPTER V SCENARIO ANALYSIS

Item 37. The AMA must incorporate a scenario analysis, aiming at least to:

I – estimate the exposure of the institution to rare and high-severity, albeit plausible, events of operational risk;

II – provide information on potential operational risks of the institution, generating plausible estimates of severe losses, including the impact of a simultaneous occurrence of multiple events of operational risk;

III – incorporate the effect of business decisions in the treatment of operational risk, providing a forward-looking analysis; and

IV - contribute to the calculation of the RWA_{OAMA} component.

Article 38. Scenario analysis employed in the AMA model must consider, at least:

I – external data on operational losses;

II – knowledge of business managers and risk managers;

III – internal data on operational losses, and

IV – indicators on business environment and internal control of the institution.

Article 39. Scenario analysis employed in the AMA must prescribe, at least:

I – a systematic and clearly documented process of selection criteria of data used in developing the scenarios estimates;

II – an adequate representation of the business areas and the operational risk management area;

III – a clear documentation of the reasonableness of scenarios used, underscoring their assumptions, their construction and their results;

IV – robust and independent reviews that critically analyze the process of scenario generation, and

V – an adequate documentation of responsiveness to changes in the internal and external environments,.



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Sole paragraph. The scenarios developed must be comprehensive and cover material sources of operational risk of the institution.

Article 40. The process of generating scenarios must include:

- I – assumptions based, whenever possible, on empirical evidence;
- II – use of relevant and available data on operational losses, internal and external; and
- III – criteria that justify the level of detail and the amount of scenarios developed, duly documented.

Sole paragraph. The subjectivity inherent to scenario generation must not prevent the comprehensiveness of the respective process.

Article 41. The scenarios must be reviewed at least annually in order to reflect adequately and continuously the operational risk profile of the institution.

Sole paragraph. The review must include a comparative assessment of the results of the scenarios with the actual history of effective losses, when available.

TITLE III REQUIREMENTS

CHAPTER I QUALITATIVE REQUIREMENTS

Article 42. The AMA model must incorporate an operational risk measuring system integrated into the operational risk management framework established in Resolution 3,380 of 2006.

Sole paragraph. The institution must demonstrate that the integration prescribed in the heading is effective, in particular with regard to policies, procedures, processes, controls, measurement systems and governance.

Article 43. The structure of operational risk management of institutions using an AMA must:

- I – provide timely and reliable information for the proper functioning of the AMA model, in order to generate robust, consistent and verifiable estimates;
- II – ensure that policies, processes and procedures for the management of operational risk are consistently implemented and used; and
- III – clearly define the roles and responsibilities of positions, functions and areas involved in the management of operational risk.

Sole paragraph. Those responsible for areas that generate operational risk must understand the structure of operational risk management, be actively involved in its implementation and contribute to its improvement.



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Article 44. The senior management and the board, when such an instance is in place, must:

- I – define, approve and revise the tolerance levels of the institution's operational risk;
- II – evaluate periodic reports on operational risk; and
- III – ensure that the operational risk is appropriately managed.

Sole paragraph. The definition of tolerance levels for operational risk mentioned in item I of the heading must:

- I – cover the relevant risks, considering strategic directives; and
- II – include a detailing on how the senior management and the board, if present, monitor and manage adherence to the defined tolerance levels.

Article 45. The institution using an AMA model must hire enough technically qualified personnel, both in the areas of operational risk management, internal audit and information technology as any others involved in the development, validation, evaluation and use of the AMA model.

Article 46. The institution must ensure compliance with internal policies, with levels of tolerance for operational risk, with controls and with procedures related to the structure of operational risk management.

Sole paragraph. Corrective action must be prescribed for the treatment of cases of non-compliance with the provisions of the heading.

Article 47. The AMA model must incorporate a regular reporting process on operational risk to those responsible for areas where operational risk is generated and to the board of directors.

Paragraph 1. The information prescribed in the heading must include at least the results of the AMA model, information about internal and external losses and warning indicators of losses related to potential operational risks.

Paragraph 2. Decision-making powers must be defined in order to enable the adoption of appropriate measures deriving from the information mentioned in the heading.

CHAPTER II QUANTITATIVE REQUIREMENTS

Section I General Orientations

Article 48. The AMA model must allow for the calculation of the semi-annual value of the RWA_{OAMA} component, for an aggregate distribution of losses with a confidence level of 99.9% (ninety-nine point nine tenths percent) and holding period of a year.

Article 49. The calculation of the value of the RWA_{OAMA} component must cover operational losses expected and unexpected.



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Article 50. Expected operational losses are subject to deduction from the calculated value of the RWA_{OAMA} component, observed that:

I – accounting provisions or reserves for contingencies cannot be used to offset expected operational losses;

II – the following requirements apply for the compensation of expected operational losses:

a) compensation is highly predictable and stable;

b) the value of compensation results from an estimation process which is conceptually sound, implemented with integrity and consistently applied;

c) compensation is part of the operational routine of the institution and is used in business management, regularly considered in budgeting and in the pricing of related products and services;

d) compensation is subject to a verification of its reasonableness by the institution, through comparison with loss history; and

e) compensation is available to cover expected operational losses with a reasonable degree of certainty in a one-year horizon; and

III – evidence must be offered that a negative impact on Capital Base will be offset by an equivalent positive impact in the following period or that losses will not occur.

Paragraph 1. The maximum compensation for operational losses is limited to the expected median value of the historical distribution of the effective losses in the minimum period required for the database internal operational losses.

Paragraph 2. The value of the RWA_{OAMA} component must be sufficient to cover the cost of the provision to be made in the following period.

Section II Granularity

Article 51. The AMA model used must be adequately granular, by means of the definition of risk categories used in the measurement of operational risk, according to the nature and complexity of the operations of the institution and the extent of its exposure to operational risk, subject to the following criteria:

I – group in the same category, the operational risk events related to the same generating factors duly proven through the history of losses and other business characteristics; and

II – assess the sufficiency of data for modeling purposes in each risk category.

Paragraph 1. Granularity refers to the degree of segregation and detailing of the measurement of operational risk factors in terms of their generating factors.



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Paragraph 2. Risk category corresponds to the set of losses that, because linked to a common generating risk factor, may be grouped for modeling purposes.

Paragraph 3. In defining the granularity of calculation of the value of the RWA_{OAMA} component the generating risk factors must be properly considered, especially those related to events of low frequency and high severity.

Paragraph 4. There must be an assessment of the impact of the number of categories of operational risk used on other aspects of the AMA model, such as diversification, correlation and dependency, and allocation of capital.

Paragraph 5. The granularity adopted must be based on consistent and verifiable criteria through appropriate qualitative and quantitative methods.

Paragraph 6. There must be in place a demonstration of the impact of the choice of granularity on the estimate of the value of the RWA_{OAMA} component.

Section III Combination of Model Elements

Article 52. The approach defined so as to incorporate the elements mentioned in art. 12 to AMA model must:

- I – consider the degree of trust and confidence in the results of each element;
- II – be appropriate for the measurement of operational risk of the defined risk categories;
- III – be understandable and transparent, including for those responsible for the areas in which operational risk is generated, and
- IV – be properly documented and verifiable.

Article 53. The institution that uses an AMA model is assigned the responsibility to demonstrate that:

- I – the methodology used to incorporate the elements mentioned in art. 12 is sufficient to ensure its proper use on loss estimates associated with events of low frequency and high severity, and
- II – the impact of each of the elements in the value of the RWA_{OAMA} component is properly understood.

Section IV Distribution Premises

Article 54. The AMA model must:

- I – use distributions appropriate for the risk profile of the defined categories of operational risk and incorporate the risk of high severity events;



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II – allow the assessment of the statistical conditions of homogeneity, independence, stationariness y and sufficiency of statistical data in each defined category of operational risk; and

III – follow a clearly specified, documented and verifiable process to select, update and revise the probability distributions and the estimates of parameters used, including at least:

a) an evaluation of the fitness of the distribution to loss data, mainly through quantitative tests that are more sensitive to the assessment of the fitness to high severity loss data;

b) the demonstration that a comprehensive set of alternative distributions was considered and that the distributions selected are the most appropriate to represent the data profile and the operational risks in each category of operational risk;

c) a regular checking of the assumptions of the distributions used, as well as justifications of any changes, and

d) the use of techniques to determine the selection of aggregate loss distributions to ensure adequate levels of stability and accuracy in the measurement of operational risk.

Section V Correlation and Dependency

Article 55. The values of the risk measurement in each operational risk category must be added for purposes of calculating the value of the RWA_{OAMA} component.

Sole paragraph. The use of dependency metrics between operational risk categories is subject to the following requirements:

I – the premises for dependency must be conservative and supported by a combination of empirical evidence and expert judgment;

II – estimation procedures must be solid, robust, implemented with integrity and adequate to address uncertainties in estimates, and

III – operational risk events, especially of low frequency and high severity must be adequately considered.

Article 56. The AMA model used must ensure the suitability of its dependency metrics by using appropriate quantitative and qualitative techniques, comprising at least:

I – sensitivity analysis of the calculated value of the RWA_{OAMA} component considering the distributions used and a comprehensive set of levels and alternative dependency structures, and

II – stress tests that demonstrate the validity of dependency metrics calculated under extreme conditions.

Sole paragraph. The adequacy of procedures used in the calculation of measures of dependency must be demonstrated, especially in the case of a significant variation in the value of the RWA_{OAMA} component.



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Section VI Gross or Net Losses

Article 57. The choice of use in the AMA model of values of gross operational loss or operational loss net of recoveries, except those arising from insurance, must be justified, considering the temporal profile of the institution's recoveries.

Paragraph 1. For situations where recovery involves high values and takes place after a considerable delay, the AMA model must employ the values of gross losses.

Paragraph 2. The AMA model must not employ values of net operational losses recovered by insurance.

Section VII Model Risk

Article 58. The AMA model must include a detailed description of the methodology for estimation, control and mitigation of uncertainties inherent to the model, in particular in relation to exposure to operational risk events of low frequency and high severity.

Section VIII Sensitivity Analysis

Article 59. The AMA model must include a comprehensive and robust sensitivity analysis.

Sole paragraph. The AMA model must include an analysis of impacts on its results due to changes in, at least:

- I – the choices of methodologies and distributions;
- II – the assumptions and parameters of the distributions chosen; and
- III – information in the data base.

Article 60. Sensitivity analyses must be regularly performed and documented and their findings reported to the senior management and to the board of directors, when such an instance is in place.

Section IX Risk Transfer

Article 61. The AMA model may consider the recognition of an effective transfer of operational risk by means of insurance, limited to 20% (twenty percent) of the value of the RWAOAMA component calculated without such reconnaissance. [\(As amended from January 1, 2014 by Circular 3,676 of October 31, 2013\)](#)

Paragraph 1. The request for the reconnaissance mentioned in the heading must be accompanied by documentation that demonstrates the effectiveness of the risk transfer mechanisms employed. [\(As amended from January 1, 2014 by Circular 3,676 of October 31, 2013\)](#)



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Paragraph 2. The institution is assigned the task of demonstrating the extent to which the risk transfer mechanisms mitigate its exposure to operational risk. [\(As amended from January 1, 2014 by Circular 3,676 of October 31, 2013\)](#)

Article 62. The recognition of an effective transfer of operational risk through insurance is conditioned to the following requirements:

I – the insurance contract:

a) must have a minimum original maturity of one year and a minimum remaining maturity of ninety days;

b) must prescribe a prior notice of at least ninety days in the event of a cancellation by the insurer;

c) must not prescribe exclusions or limitations associated with the occurrence of any action by the Central Bank of Brazil or, in case of liquidation of the institution, that preclude the recovery of operational losses; and

d) must be mapped in risk categories;

II – the calculation of the transfer of risk must reflect the insurance coverage in a transparent and verifiable way, limited to the participation of the insured loss in determining the value of the RWA_{OAMA} component; and

III – the insurer must not be a member of the same conglomerate of the institution that transfers the operational risk, except when a full transfer of risk to a non-consolidated entity is proven, provided that the criteria established in this article are met; [\(As amended from January 1, 2014 by Circular 3,676 of October 31, 2013\)](#)

IV – the insurer must be financially sound, solvent and highly creditworthy. [\(Included from January 1, 2014 by Circular 3,676 of October 31, 2013\)](#)

Paragraph 1. A policy of the use of insurance in order to transfer the operational risk must be established.

Paragraph 2. A robust process to secure the proper integration of systems for measuring and managing operational risk must be established.

Article 63. Adjustment factors that proportionally reduce the value of the operational risk transfer must be used in the following cases:

I – insurance contracts with a remaining maturity or a term of prior notice for cancellation by the insurer of less than one year, considering the lower of the two terms;

II – uncertainty of payment by the insurer; and

III – occurrence of mismatches in the coverage of insurance contracts.



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Section X General Requirements

Article 64. The institution must ensure that its capital for operational risk is compatible with the degree of risk to which it is exposed.

Paragraph 1. The rationality and robustness of methodologies and assumptions chosen must be demonstrated through sufficient research and analysis to support these choices.

Paragraph 2. The impact of changes in the operational risk profile of the institution must be periodically assessed.

Article 65. The predictability of the AMA model used must be assessed through comparison between its results and the operational losses actually incurred.

CHAPTER III USE TEST

Article 66. The data model used in the AMA model and its results must be employed in the daily processes of operational risk management of the institution, including the administration of the main business lines.

Article 67. The system of the operational risk measurement of institutions that use a AMA model must:

- I – allocate capital for operational risk in the major business lines of the institution; and
- II – be regularly updated, reflecting at least:
 - a) the evolution in techniques for managing and measuring operational risk;
 - b) changes in the risk profile or in internal controls; and
 - c) corrections of deficiencies found.

Sole paragraph. The allocation of capital mentioned in item I of the heading does not exempt the institution of improving policies, management practices and controls of operational risk.

CHAPTER IV VALIDATION PROCESSES

Article 68. The use of an AMA model is conditioned to the performance of a validation of the model, in order to assess their suitability to the risk profile, scope and consistency.

Paragraph 1. The assessment mentioned in the heading comprises a critical analysis of the following aspects, at least:

- I – capacity of the operational risk management structure to capture all relevant exposures to operational risk associated with the activities of the institution;



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II - methodologies, assumptions, premises and theoretical foundations used in the model;

III – comprehensiveness, consistency, integrity and reliability of data in the database of operational risk and in the basis of calculation;

IV – adequacy of granularity in the calculation of the RWA_{OAMA} component;

V – suitability of employment of the elements mentioned in art. 12;

VI – adequacy of the predictive capacity of the AMA model as mentioned in art. 65;

VII – adequacy of estimates of distribution parameters and measures of dependency among categories of operational risk;

VIII – adequacy of the methodology used for measuring and explaining possible compensation of expected losses;

IX – adequacy of the methodology related to the measurement of transfer of operational risk;

X – assessment of the potential impact of new products on the operational risk of the institution;

XI – adequacy of internal controls related to the model;

XII – compatibility of calculations performed by information technology systems and of operational logic with the assumptions and methodologies used;

XIII – adequacy of the technological infrastructure and operation of information technology systems used in the model, including testing, approvals and certifications;

XIV – integrity, comprehensiveness and consistency of the model documentation, and

XV – content and scope of periodic reports on risk measurement.

Paragraph 2. The institution is solely responsible for the validation process and must demonstrate to the Central Bank of Brazil the adequacy and the adherence of the model used to its own risk profile.

Paragraph 3. The validation process must be conducted at least every three years and, in particular, whenever there is a material change in systems, in the model, in the operational risk profile of the institution or in the semi-annual value of the RWA_{OAMA} component.

Paragraph 4. The validation process must be independent from the process of operational risk management and from the development of systems for measurement of operational risk, of methodologies and use of their results.

Paragraph 5. The validation process must be conducted by technically qualified personnel and must be submitted to an appropriate structure of incentives, in order to ensure:



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I – a critical and effective analysis, and

II – the absence of pressure from external and internal agents to the institution which may benefit of specific outcomes resulting from the validation process.

Paragraph 6. The validation process must include information technology systems acquired from third parties that have a significant impact on the AMA model.

Article 69. The validation process must be properly documented and its results submitted to the senior management and to the board, when such an instance is in place.

Sole paragraph. Changes in validation methods and in information used, with respect to both databases and sampling intervals used must be clearly documented and justified.

Article 70. The financial institution that uses an AMA model must implement a structure responsible for the validation process.

Sole paragraph. An executive staff must be appointed as responsible for the validation process.

CHAPTER V INTERNAL AUDIT EVALUATION

Article 71. The institution's operational risk management process must be submitted to an evaluation by the internal audit at least annually, covering at least:

I – the effectiveness of the validation process mentioned in articles. 68 to 70;

II – a verification of the implementation of validation processes in cases of relevant changes in the model or in the risk profile of the institution, according to art. 68, paragraph 3;

III – the organization of the structure for operational risk management;

IV – integration of the operational risk measurement system to the daily risk management activities;

V – integrity of sensitivity analyses and effective use of their results in performance verification and in the improvement of systems for measuring operational risk;

VI – compliance with policies and strategies for risk management, including the fulfillment of tolerance level to operational risk and related procedures;

VII – sufficiency and technical qualification of personnel in the areas of operational risk management and information technology, as well as any others involved in the development, validation and use of the AMA model;

VIII – integrity and adequacy of management information systems;

IX – involvement of senior staff in the process of operational risk management;



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X – timeliness and quality of information provided to the board; and

XI – degree of compliance with the requirements established in this Circular.

Paragraph 1. The process of assessment by the internal audit must be conducted by technically trained personnel in an independent manner.

Paragraph 2. The evaluation of the provisions of items I, II and VII of the heading must be performed independently of the validation process mentioned in arts. 68 to 70. [\(As amended from January 1, 2014 by Circular 3,676 of October 31, 2013\)](#)

TITLE IV ADDITIONAL PROVISIONS

CHAPTER I PARTIAL USE

Article 72. Conditioned to a previous authorization by the Central Bank of Brazil, the calculation of the component of RWA for operational risk by an institution that uses an AMA model can be realized in the form established in Circular 3,640 of 2013, in the following cases:

I – exposure to operational risk by institutions not relevant in the conglomerate; and [\(As amended from January 1, 2014 by Circular 3,676 of October 31, 2013\)](#)

II – exposure to operational risk by entities in the conglomerate that are deemed similar to financial institutions. [\(As amended from January 1, 2014 by Circular 3,676 of October 31, 2013\)](#)

Article 73. [\(Revoked from January 1, 2014 by Circular 3,676 of October 31, 2013\)](#)

CHAPTER II THE TRANSITION PERIOD

Article 74. [\(Revoked from January 1, 2014 by Circular 3,676 of October 31, 2013\)](#)

CHAPTER III DOCUMENTATION

Article 75. Proper and updated documentation must be maintained on all relevant aspects of the AMA model used, including at least:

I – policies and strategies adopted;

II – definition of roles and responsibilities of executive positions, functions and areas of those involved in the management of operational risk;

III – internal controls;

IV – operational routines;

V – rationality of all assumptions, premises and specifications used in the AMA model;



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VI – theoretical fundamentals, analytical methods and theories relevant to calculations;

VII – details of parameters and assumptions used in the AMA model, including the justification of its use and the process used to validate the assumptions;

VIII – details of explicit or implicit dependency structures used in the AMA model, including evidence to support their use;

IX – details of the proposed methodology to measure and explain any compensation for expected losses;

X – details of the methodology related to the use of insurance for risk mitigation;

XI – reports on the results of sensitivity analysis, including assumptions and methodologies used;

XII – evaluation reports, including from internal audit, on independent audit and on validation processes;

XIII – management reports that provide a subsidy for the decision-making process of senior management and the board, when such an instance is in place; and

XIV – history of changes made to the AMA model used, including in the process of validation.

Sole paragraph. The documentation mentioned in the heading must be comprehensive and detailed, in a form sufficient to ensure that the AMA model used is transparent and subject to an independent revision.

CHAPTER IV DISCLOSURE OF INFORMATION

Article 76. From the granting of the authorization mentioned in art. 2 onwards, the following information must be disclosed in a public report:

I – at least quarterly on March 31, June 30, September 30 and December 31:

a) value of the RWA_{OAMA} component of the institution, and

b) the value of the RWA_{OPAD} component of the institution, calculated according to Circular 3,640 of 2013, for exposures to operational risk to which the provisions of art. 72 apply; and

II – at least annually:

a) characteristics of the model, including a brief description of the distributions of probability selected, of the granularity of the model, of the measures of dependency, if used, and of any deductions occasionally deriving from expected operational losses and from risk transfer mechanisms;



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b) indication of the institutions in the conglomerate for which the option of a partial use of the model, according to art. 72, is exercised; [\(As amended from January 1, 2014 by Circular 3,676 of October 31, 2013\)](#)

c) description of the process of sensitivity analysis mentioned in articles. 59 and 60; and

d) description of the governance structure related to the management and measurement of operational risk.

Paragraph 1. The information must be updated within a maximum of ninety days after the period to which it refers.

Paragraph 2. The information mentioned in the heading must include any relevant changes in the model since the last disclosure.

Article 77. The information referred to in art. 76 must be available in one location, of public access and easy reference, preferably in the site of the institution on the internet.

Paragraph 1. The availability mentioned in the heading applies to information relative to the current year and at least the past five years.

Paragraph 2. The information regarding the past five years must be accompanied by benchmarking and by a relevant explanation for occurred variations.

Article 78. The institution authorized to use an AMA model must disclose additional information it deems relevant, in order to ensure appropriate transparency in the management and measurement of operational risk.

Sole paragraph. The Central Bank of Brazil may determine the disclosure of additional information to the one prescribed in this Circular in relation to the use of an AMA model.

Article 79. The information mentioned in articles 76 to 78 must available together with:

I – those relative to the structure of risk management, in accordance with the provisions of Resolutions 3,380 of 2006, 3,464 of 2007 and 3,721 of 2009; and

II – those mentioned in Circular 3,477 of 2009.

Article 80. The director appointed pursuant to art. 8 of Resolution 3,380 of 2006 must be responsible for the information mentioned in articles 76 to 80.

TITLE V REGISTRATION

CHAPTER I REQUIREMENTS FOR REGISTRATION

Article 81. Upon the request for authorization prescribed in art. 2 the institution must demonstrate:



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I – utilization for a minimum period of one year, of the AMA model for management and measurement of operational risk, and

II – comprehensiveness of the internal database on operational losses for the minimum of five years.

Sole paragraph. Exceptionally, the minimum period for the database on internal operational losses may be of:

I – three years, for authorization requests made from October 1, 2013 to September 30, 2014; and [\(As amended from January 1, 2014 by Circular 3,676 of October 31, 2013\)](#)

II – four years, for authorization requests made from October 1, 2014 to September 30, 2015. [\(As amended from January 1, 2014 by Circular 3,676 of October 31, 2013\)](#)

Article 82. Material changes in the risk profile of the institution must be reported to the Central Bank of Brazil, including a previous report on relevant changes to the AMA model, including the validation process, as well as those changes that cause a significant impact on the calculation of the semi-annual value of the RWA_{OAMA} component of the institution.

Sole paragraph. The provisions in the heading apply also to changes that are not individually significant, but are significant on an aggregate level.

Article 83. The Central Bank of Brazil may authorize a plan for adequacy to requirements that are occasionally not met in full, provided that noncompliance does not jeopardize the AMA model or the operational risk management of the institution.

Article 84. The levels of relevance in data changes, as well as other significant changes in the development and operation of the AMA model must be defined by the institution under consistent and verifiable criteria, properly documented and subject to a review by the Central Bank of Brazil.

Article 85. From the granting of the authorization mentioned in art. 2 onwards, the institution must make available to the Central Bank of Brazil, for a period of five years, the information concerning this Circular.

CHAPTER II REQUEST FOR AUTHORIZATION

Article 86. The institutions candidates for use of an AMA model must request an authorization to the Central Bank of Brazil, through an application signed by the Chief Executive Officer and the director appointed according to art. 8 of Resolution 3,380 of 2006.

Sole paragraph. The application mentioned in the heading must be accompanied by the following documentation:

I – statements attesting:



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a) awareness that, once the use of AMA model is authorized, the approaches established in Circular 3,640 of 2013 may no longer be used to calculate the value of the RWA component relative to operational risk, except in the cases prescribed in this Circular;

b) compliance with the minimum requirements established in this Circular and awareness that the lack of compliance in punctual aspects does not jeopardize the AMA model and the operational risk management;

c) previous use, for a minimum period of one year, of the AMA model for management and internal estimation of the value of the RWA_{OAMA} component; and

d) accuracy and integrity of the information submitted;

II – a report prepared according to the document "Information on the AMA Model", to be released by the Central Bank of Brazil;

III – adequacy plan, containing schedule, arrangements and responsibilities aiming at full compliance with the specific aspects mentioned in item I, line "b"; and

IV – internal audit opinion containing conclusions on the assessment provided for in art. 71.

Article 87. Requests for permission to use the AMA must be submitted to a process of selection and prioritization.

Sole paragraph. The process of selection and prioritization mentioned in the heading must take into account the following criteria:

I – completeness and compliance of the documents mentioned in art. 86 with the requirements of this Circular; (As amended from January 1, 2014 by Circular 3,676 of October 31, 2013)

II – track record of the institution in the Central Bank of Brazil regarding their risk assessments and controls, the economic-financial soundness, transparency in the relationship with the Central Bank of Brazil and in disclosure of information, compliance with regulation and timely responsiveness to requirements; (As amended from January 1, 2014 by Circular 3,676 of October 31, 2013)

III – the degree of development of the structure for management of operational risk and of the AMA model;

IV - relative participation of the institution's RWA_{OAMA} component in the aggregate RWA of the National Financial System;

V – relative participation of the RWA_{OAMA} component in RWA of the institution;

VI – the amount of the institution's assets; and

VII – the date of the request for authorization.



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Article 88. During the analysis of the request for use of the AMA model, the institution must:

I – promptly provide any additional information;

II – inform, as established by the Central Bank of Brazil, the semi-annual value of the component RWA_{OAMA} ; and

III – enable access to personnel, documents and systems involved in the development and use of the AMA model that is the object of the request.

Article 89. The use of the AMA for calculating the value of the component of RWA relative to the operational risk must only occur after the date specified in the permit.

Article 90. This Circular enters into force on October 1, 2013.

Luiz Awazu Pereira da Silva
Financial System Regulation Director

Anthero de Moraes Meirelles
Director of Supervision