EUROPEAN CENTRAL BANK

BANKING SUPERVISION

ECB Guide on materiality assessment (EGMA)

Materiality assessment for IMM and A-CVA model extensions and changes

September 2017

Contents

1 Introduction

The Capital Requirements Regulation (CRR)[1] requires model approval by the competent authority for material model extensions and changes to credit, operational and market risk internal models. Regulatory technical standards (RTS) have been adopted by the European Commission for the materiality assessment of model extensions and changes to the internal ratings-based approach (IRB approach) for credit risk; the advanced measurement approach (AMA) for operational risk and the internal models approach (IMA) for market risk (see Chapter 2.1). Based on these RTS, model extensions and changes to internal models are categorised as material extensions and changes that require prior approval from the competent authority or as extensions and changes that are not material and require either ex ante notification or ex post notification.

For counterparty credit risk (CCR) for both the internal model method (IMM) and the advanced method for credit valuation adjustment risk (A-CVA), the adoption of similar RTS is not mandated by the current text of the CRR. However, it should be borne in mind that the European Banking Authority (EBA) may regulate this field by adopting guidelines on the basis of Article 16 of the EBA Regulation[2] or RTS based on any future EU legislation.

Under the CRR, credit institutions can use the internal model method (IMM) and the advanced method for credit valuation adjustment risk (A-CVA) for the purposes of calculating capital requirements for counterparty credit risk (CCR). These internal models focus on over-the-counter derivative contracts and securities financing transactions (SFTs). These exposures are calculated differently from a traditional loan, where the exposure is, to a large extent, fixed. The output of these internal models is one input factor in the calculation of an institution's Pillar 1 capital requirements.

This document introduces the European Central Bank (ECB) Guide on materiality assessment (EGMA) for IMM and A-CVA model extensions and changes. The EGMA is adopted in the context of the ongoing review of the permissions to use internal approaches and indicates how the ECB intends to interpret the existing legal framework. The EGMA provides assistance to significant institutions in their self-assessment of the materiality of changes and extensions to IMM and A-CVA models under the applicable legal framework. The Guide is an integrated document intended to be applied in its entirety. Applying only individual elements is likely to distort the coherence of the assessment process and should be avoided insofar as possible.

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[1] Regulation (EU) No 575/2013 of the European Parliament and of the Council of 26 June 2013 on prudential requirements for credit institutions and investment firms and amending Regulation (EU) No 648/2012.

[2] Regulation (EU) No 1093/2010 of the European Parliament and of the Council of 24 November 2010 establishing a European Supervisory Authority (European Banking Authority), amending Decision No 716/2009/EC and repealing Commission Decision 2009/78/EC.

The EGMA is not intended by the ECB to have legal effect and nothing within its wording and context or its substance should be construed otherwise. The EGMA merely proposes a course of action to be followed by the institutions concerned within the applicable legal framework. The EGMA is not intended to replace, overrule or affect in any other way applicable EU and national law.

The remainder of this document is organised as follows: Chapter 2 presents the building blocks of the EGMA; Chapter 3 presents the rationale behind the EGMA; Chapter 4 presents a graphical overview of the EGMA; and, finally, Chapter 5 contains the Guide itself.

2 Components of the EGMA

2.1 Building blocks

The EGMA is based on, and refers (insofar as possible) to, the applicable legal framework. The building blocks are:

1. The CRR, in particular:

   (a) Article 162(2)(i) – the institution's requirement to obtain the approval of the competent authority in order to be allowed to set M equal to 1.

   (b) Article 383(5)(c) – the ECB's right to reassess the multiplication factor in the A-CVA.

2. Commission Delegated Regulation (EU) No 529/2014 of 12 March 2014 supplementing Regulation (EU) No 575/2013 of the European Parliament and of the Council with regard to regulatory technical standards for assessing the materiality of extensions and changes of the Internal Ratings Based Approach and the Advanced Measurement Approach (RTS on IRB).

3. Commission Delegated Regulation (EU) 2015/942 of 4 March 2015 amending Delegated Regulation (EU) No 529/2014 supplementing Regulation (EU) No 575/2013 of the European Parliament and of the Council as regards regulatory technical standards for assessing the materiality of extensions and changes of internal approaches when calculating own funds requirements for market risk (RTS on IMA).

2.2 EGMA – parts

The EGMA consists of three parts (a general part, an IMM part and an A-CVA part).

EGMA – general part

The general provisions of the EGMA consist of Sections 1, 2, 3 and 8 (see Chapter 5).

In order to ensure consistency, the structure of the general provisions of the EGMA is similar to that of the RTS on IRB and the RTS on IMA.

Section 1 of the EGMA defines the scope of the EGMA. For the IMM, all extensions and changes are considered. For the A-CVA, the general provisions of the EGMA refer to three categories:

1. building block 1(b) above in Chapter 2.1 for all A-CVA extensions and changes;

2. the IMM part of the EGMA for A-CVA extensions and changes that coincide with IMM extensions and changes;

3. the RTS on IMA for A-CVA extensions and changes that coincide with IMA extensions and changes.

Category 1 and category 2 cover all possible A-CVA extensions, because all extensions to the A-CVA coincide with extensions to either the IMM or the internal models approach (IMA).[3] Therefore, the EGMA does not define materiality assessment criteria for A-CVA extensions. However, category 2 and category 3 do not cover all A-CVA changes, as not all changes to the A-CVA coincide with changes to the IMM or the IMA. The A-CVA changes that are not covered by the RTS on IMA and the IMM part of the EGMA are called **A-CVA-specific changes**. A-CVA-specific changes are possible in relation to the following:

- the A-CVA stress period selection methodology;
- the selection of market-implied loss given default (LGD);
- changes to the (proxy) spread methodology.

The A-CVA part of the EGMA defines materiality assessment criteria for A-CVA-specific changes.

EGMA – IMM part

The IMM part of the EGMA consists of Section 4, Section 5 and Annex I of the EGMA and covers all IMM extensions and changes.

The structure of the IMM part of the EGMA is based on the structure of the RTS on IRB.

EGMA – A-CVA part

The A-CVA part of the EGMA consists of Section 6, Section 7 and Annex II of the EGMA and covers A-CVA-specific changes.

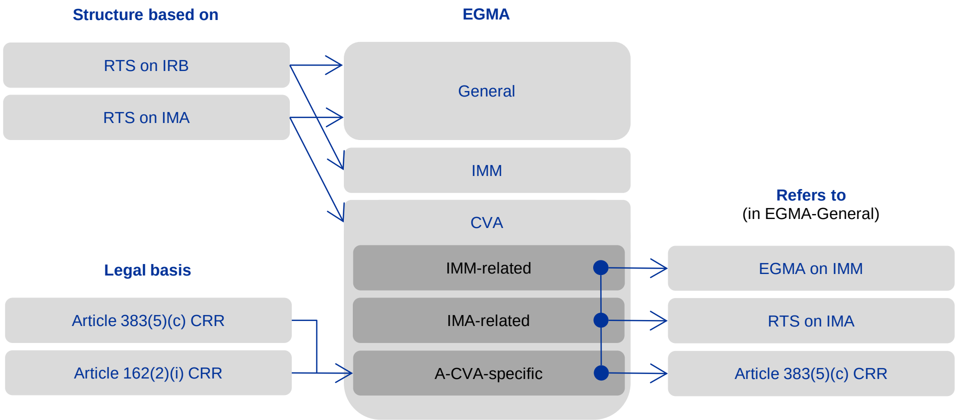
The structure of the A-CVA part of the EGMA is based on the structure of the RTS on IMA.

The legal basis of the A-CVA part of the EGMA consists of building blocks 3(a) and 3(b) (referred to in Chapter 2.1).

[3] Note that, subject to the approval of the competent authority, institutions are allowed to calculate the A-CVA capital requirement for a limited number of smaller portfolios that are not affected by IMM extensions or changes on the basis of the IMA and the method set out in Part Three, Title II, Chapter 6, Sections 3 to 5 of the CRR.

Figure 1

Overview



3 Rationale

The CRR requires model approval by the competent authority for material model extensions and changes to credit, operational and market risk internal models. Article 143, Article 312 and Article 363 CRR mandate the EBA to develop RTS, to be adopted by the European Commission. The current text of CRR does not mandate similar RTS for the internal model method (IMM) or for the advanced method for credit valuation adjustment risk (A-CVA). The ECB therefore considered that it would be helpful to provide the institutions under its direct supervision with guidance on how to assess the materiality of extensions and changes to internal models for counterparty credit risk and credit valuation adjustment risk. Existing RTS for other risk categories mandated in the CRR serve by analogy as a basis for the Guide.

This chapter discusses differences between the EGMA structure and the structure of the RTS on IRB and of the RTS on IMA and the reasoning behind them. It further discusses how IMM changes and A-CVA-specific changes will be assessed. The chapter does not record the rationale for those parts of the EGMA that have been taken over from the existing RTS: for this rationale, the reader is referred to the existing RTS (see the links in Chapter 2.1).

3.1 Model maintenance

This refers to Section 1(2) of the EGMA.

Scope of the EGMA

The permission of competent authorities for the use of IMM relates to the methods, processes, controls, data collection and IT systems. Therefore, this Guide does not cover elements such as ongoing alignment of the models to the calculation data-set used, correction of errors or minor adjustments (necessary for the day-to-day maintenance of the IMM and A-CVA), which occur within the already approved methods, processes, controls, data collection and IT systems.

3.2 Extensions and changes that need to be investigated

This refers to Section 2(1) and (3) of the EGMA.

EGMA classification

Within the RTS on IRB and the RTS on IMA, the materiality of extensions and changes to the IRB approach and IMA approach is subject to a self-assessment by the relevant institution, which also determines the classification of an extension or change as either "material" or "not material".

Within the EGMA, the materiality of extensions and changes to the IMM approach and the A-CVA is subject to a self-assessment by the relevant institution which is supplemented by an investigation by the ECB of the extension or change. The self-assessment, which is the first step in the process, can lead to two classifications: "extensions and changes that need to be investigated" or "not material extensions and changes".

The extensions and changes categorised as "not material" are notified to the ECB and implemented in accordance with Section 2(3).

The extension and changes categorised as needing to be investigated are subject to an ECB internal model investigation, which allows the ECB to finally classify them as either "material" or "not material". Prior to receiving the ECB conclusion on the classification, the institutions cannot implement the extension or change that needs to be investigated. When the extension or change is classified as material, the institution receives a decision from the ECB. When the extension or change is classified as not material, the institution receives the ECB's view regarding its implementation.

Rationale for the introduction of the classification process

The ECB is of the opinion that the materiality assessment of a subset of extensions and changes to the IMM approach and the A-CVA approach requires an investigation by the ECB to supplement the pre-defined qualitative and quantitative assessment criteria that are recorded in the EGMA.

The ECB internal model investigation provides additional information concerning the materiality of an extension or change. In certain cases, this approach also avoids the triggering of a formal ECB decision process for changes that the investigation establishes as not material.

3.3 Backstops for the material classification

This refers to Section 2(2) of the EGMA.

EGMA materiality assessment

The ECB will perform an internal model investigation on extensions and changes that need to be investigated. The following extensions and changes will always be classified as material (backstop):

1. extensions to the IMM approach that need to be investigated;

2. changes to the IMM approach or to the A-CVA approach that reduce the institution’s overall RWA by at least 1% (this backstop was introduced owing to the relatively high quantitative impact); and;

3. extensions and changes that – based on the outcome of the ECB's internal model investigation – are submitted to the ECB decision-making bodies with the proposal to reject them (as these extensions and changes are by definition material).

3.4 Quantitative assessments

3.4.1 IMM extensions and changes that need to be investigated

This refers to Section 4(1) of the EGMA.

EGMA quantitative assessment

A change of at least 5% in the RWA of the full CCR portfolio needs to be investigated.[4]

IRB equivalent

Extensions and changes to the IRB approach that have a below-indicated quantitative impact are material, based on the RTS on IRB:

1. a decrease of 1.5% or more in the RWA of the full credit risk portfolio;

2. a decrease of 15% or more in the RWA within the range of application of the rating system.

Rationale for the difference

First, the IMM quantitative threshold is defined only for the full CCR portfolio of the institution, while the RTS on IRB defines the IRB quantitative threshold for the full credit risk portfolio of the institution. The full credit risk portfolio also includes a subset of CCR-related transactions, since exposure values resulting from the CCR are also subject to the calculation of RWA for credit risk. Within the ECB, the internal models for credit risk and the CCR are treated as different model types. Therefore, the threshold has been set for the full CCR portfolio of the institution and not for the whole credit risk portfolio.

[4] Note that the RWA figures for CVA risk are not included.

Second, the quantitative thresholds have been increased, because:

1. IMM portfolios are less granular than IRB portfolios;
2. IMM model extensions and changes usually affect the whole CCR portfolio via the use of netting sets including different asset classes and/or transaction types, while IRB model extensions and changes might only affect one exposure class in the whole IRB portfolio.

Therefore, if the IRB thresholds were used for the IMM assessment, it is very likely that all model extensions and changes would be identified as extensions and changes that need to be investigated. This would be unnecessarily burdensome for all the parties involved.

Third, additional thresholds have been introduced that, in addition to reductions in RWA, also identify increases in RWA as extensions and changes that need to be investigated. These thresholds have been introduced for the following three reasons.

1. Model extensions and changes that increase the IMM RWA could result in a significant reduction in the capital charge of the A-CVA (for example, because of a reduction in the expected exposure (EE) profile after the one-year horizon, even if the shorter than one-year exposures increase).
2. The IRB consists of distinct exposure classes. In contrast, the IMM consists of different asset classes (e.g. interest rate and foreign exchange), which can be affected differently by a single model extension or change. Model extensions and changes that increase the overall IMM RWA could reduce the IMM RWA for a specific, currently smaller asset class, which may, however, become larger in the future, requiring the ECB's attention as well. Therefore, it is necessary to also add a threshold for increases in RWA.
3. In order to ensure continued understanding of the institution's model extensions and changes, the materiality of extensions and changes that result in an increase in the IMM RWA above the defined threshold is also investigated.

Fourth, the quantitative threshold is only defined for the full CCR portfolio, i.e. there is no separate threshold for the IMM range of application. There are two arguments for why an additional quantitative threshold for the IMM range of application is unnecessary:

1. Within the Single Supervisory Mechanism (SSM), institutions cover at least 50% of their CCR RWA by the IMM.
2. Assuming the extension or change is made in a subsidiary of the institution, the impact of an IRB model extension or change can be small at the consolidated level, but large at the subsidiary level. Note that the scope of application of some IRB models might be limited to a subsidiary. Therefore, the RTS on IRB requires a quantitative threshold for the range of application of the rating system. By contrast, the IMM model used for a subsidiary is the same as the IMM model applied at the consolidated level.

Rationale for defining the threshold on RWA

The thresholds are defined on the level of RWA of the portfolio concerned. Alternatively, the thresholds could have been defined on exposures (e.g. effective expected positive exposure, EEPE). However, the latter is not risk weighted, i.e. changes to identical levels of exposure would contribute the same amount to the materiality assessment regardless of whether they relate to a legal agreement with a low probability of default (PD) and a low LGD or a legal agreement with a high PD and a high LGD. In addition, by definition, EEPE ignores exposure profiles after the one-year horizon, whereas the full EE profiles are included in the RWA via the maturity adjustment.[5] Altogether, the RWA are considered to be the most appropriate risk measure to define the materiality thresholds.

3.4.2 IMM extensions and changes that are not material and are notified ex ante

This refers to Section 5 of the EGMA.

EGMA quantitative assessment

No quantitative assessment is needed.

IRB equivalent

A decrease of 5% or more in the RWA within the range of application of the rating system.

Rationale for the difference

The RTS on IRB only specifies a quantitative threshold for the range of application of the rating system, but, as already discussed, there is no such threshold in the case of the IMM. Thus, a quantitative assessment of the IMM range of application is unnecessary.

3.4.3 A-CVA changes that need to be investigated

This refers to Section 6(1) of the EGMA.

The quantitative assessment for the A-CVA is in line with the quantitative assessment for the IMA as defined in the RTS on IMA.

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5 This holds provided that M is not equal to 1 in accordance with Article 162(2)(i) of the CRR.

3.4.4 Measure to be kept constant during impact analyses

This refers to Section 4(4) and Section 6(5).

EGMA quantitative assessment

Measures[6] that are not affected by the A-CVA or IMM extension or change under consideration are expected to be kept constant during the quantitative impact analyses. For example, when calculating the impact of a change to an institution's IMM approach on the RWA, the PD and LGD measures are expected to be kept constant. Moreover, when calculating the impact on the full A-CVA capital charge – caused by a change to the institutions proxy-spread methodology – the methodology to derive the market implied LGD is expected to be unchanged.

Rationale

In order to obtain a representative quantitative impact assessment, measures that are not related to the considered extension or change to either the A-CVA or the IMM approach, are expected to be kept constant.

3.5 Observation period for the IMM quantitative materiality assessment

This refers to Section 4(3) of the EGMA.

EGMA observation period

The EGMA introduces an observation period for the IMM quantitative assessment criteria.

Rationale for the introduction of an EGMA observation period

The RTS on IRB requires only a single observation for the quantitative assessment criteria. However, IMM RWA are more volatile than IRB RWA. Therefore, the EGMA introduces an observation period in order to obtain a representative quantitative impact figure. IMM RWA are more volatile than IRB RWA because:

1. IMM exposure can fluctuate as a result of changes in market data;
2. IMM exposure can fluctuate as a result of ongoing trading/hedging activities.

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6 Please note that, in this context, a measure is referred to as a quantitative parameter value that affects the capital requirement.

The observation period for the IMM quantitative materiality assessment is the same as the observation period for the quantitative materiality assessment of the A-CVA, which is discussed in Chapter 3.7 below.

3.6 Constraints for A-CVA changes that need to be investigated

This refers to Section 6(1) of the EGMA.

Constraints on classifying A-CVA changes as material

The CRR requires institutions to implement an A-CVA model if they have obtained approvals for both the institution’s IMA model (specific risk for debt instruments in accordance with Article 363(1) of the CRR) and its IMM model. Therefore, no separate initial approval is required for an A-CVA model implementation. Consequently, changes that only affect the A-CVA do not require prior approval and thus cannot be classified material. Hence, the ECB will not investigate the materiality of changes that only affect the A-CVA approach.

A subset of changes to the A-CVA approach affect not only the A-CVA approach, but also the M equal to 1 approval in accordance with Article 162(2)(i) of the CRR. The ECB will investigate the materiality of such changes to the A-CVA if these changes breach the materiality threshold defined in Section 6 of the EGMA.

A-CVA model changes in the case of M=1 permission[7]

The materiality needs to be investigated only in the case of A-CVA-specific changes which both breach the material threshold and affect the institution’s permission to set M=1.

Rationale for the ECB’s interpretation

Article 162(2)(i) of the CRR requires institutions to demonstrate to the ECB that migration risk is appropriately addressed in the institution’s A-CVA model – i.e. in the institution’s (proxy) spread methodology – in order to set M=1. Thus Article 162(2)(i) of the CRR requires institutions to obtain ECB approval before being allowed to set M equal to 1. In addition, the ECB considers that, in order for Article 162(2)(i) of the CRR to be fully effective, institutions having approval to set M=1 should also request approval when material changes are made to the institutions (proxy) spread methodology if these changes are within the scope of the M=1 approval.

[7] M is the maturity parameter referred to in Article 162 of the CRR and used in the IRB risk weight formula as defined in Article 153(1) of the CRR.

3.7 Observation period for the A-CVA quantitative materiality assessment

This refers to Section 6(4) of the EGMA.

EGMA observation period

The observation period for the A-CVA qualitative materiality assessment criteria introduces a fall-back observation period of three consecutive weekly or of two consecutive monthly observations.

Rationale for the introduction of an EGMA observation period

The fall-back approach is introduced for institutions that are not able to update their A-CVA calculation on a daily basis.

Article 383(5)(d) of the CRR requires institutions to perform at least a monthly A-CVA capital charge calculation. In addition, the regulatory reporting frequency is quarterly.[8] Altogether, institutions should be able to perform impact analyses based on the monthly fall-back approach. The length of the observation period increases when the observation frequency becomes monthly. This increased period is necessary to ensure that the quantitative materiality assessment still results in a representative quantitative impact figure.

3.8 Qualitative assessments

3.8.1 IMM extensions

This refers to Annex I, Part I of the EGMA.

EGMA – IMM extensions

The IMM part of the EGMA introduces different qualitative materiality assessment criteria for IMM extensions than those found in the RTS on IRB.

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8 See Article 5(a)(1) of the EBA's implementing technical standards on supervisory reporting (Commission Implementing Regulation (EU) No 680/2014).

Rationale for introduction

The qualitative assessment criteria for IMM model extensions cannot be taken from IRB models, as there is no overlap in the range of application. Therefore, the EGMA contains IMM-specific qualitative assessment criteria.

3.8.2 IMM and A-CVA changes

This refers to Annex I, Part II of the EGMA for the IMM and Annex II for the A-CVA.

IMM and A-CVA qualitative materiality assessment criteria are, by definition, specific to the IMM and the A-CVA.

3.9 Changes "significantly" affecting an assessment criterion

This refers to Section 6(1), Section 8(2)(c) and the Annexes of the EGMA (both for extensions and changes that need to be investigated and not material extensions and changes needing ex ante notification).

There is a trade-off between a principle-based approach and an all-embracing approach.

The advantage of a principle-based approach is that the EGMA does not have to list and classify all possible future extensions and changes in advance. The disadvantage of the principle-based approach is that, for an extension or change, it is not unambiguously clear how to classify the extension or change. The advantages and disadvantages of an all-embracing approach are the opposite of those for a principle-based approach.

The EGMA implemented a principle-based approach for a subset of assessment criteria, because it is not possible to list all future extensions and changes in an exhaustive way. The principle-based approach uses the term "significant" to further describe changes in Section 6(1), Section 8 and the Annexes.

An example of an assessment criterion that uses the term "significant" is found in Annex I, Part II, Section 1, item 2, in which the methodology for the forecasting of the risk factor distribution is defined as an assessment criterion. If the change to the forecasting of the risk factor distribution is significant, such as changing the stochastic model of interest rate curves from a log-normally distributed process to a normally distributed process, the materiality of that change needs to be investigated.

3.10 Classification examples

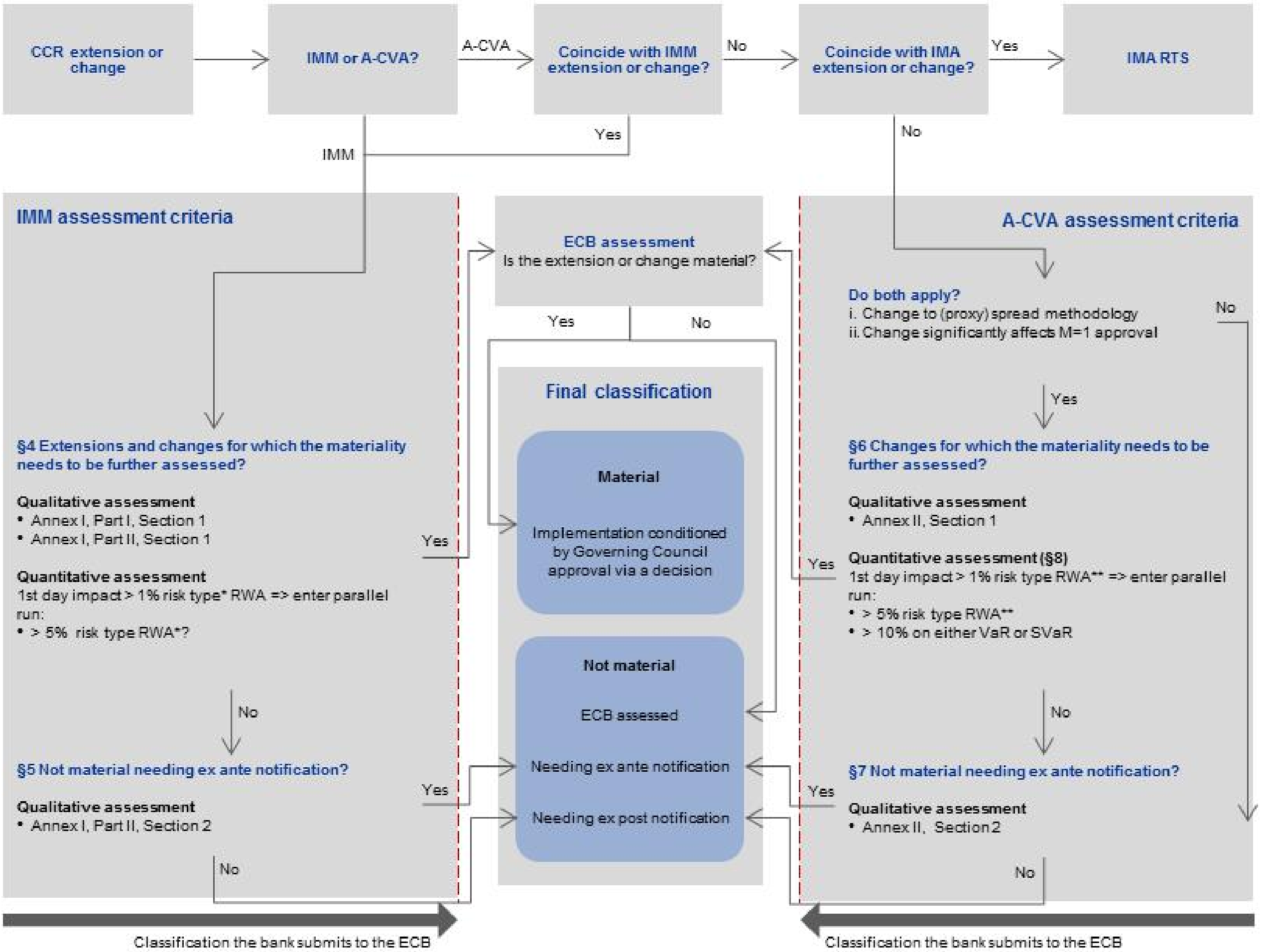
This section presents the classification of some illustrative examples of model changes[9] to the IMM. The aim of this section is to increase the understanding of the concept “model maintenance” and “significant”.

Note that the sample classification in the table below is only based on the qualitative assessment criteria specified in the Guide. The final classification of the listed changes may differ owing to the quantitative assessment criteria, i.e. a change may then be classified as “need to be investigated”, even though it would be classified as “not material” under the purely qualitative criteria.

Model change	EGMA reference	EGMA classification
(Quarterly) re-calibration of the model parameters of the forecasting risk factor distribution.	N.a.	N.a. This is considered model maintenance.
Using a specific credit spread curve instead of a proxy spread curve due to availability of new market data.	N.a.	N.a. This is considered model maintenance.
Adding a commodity/energy future risk factor to an internal model that already includes a simulation approach for commodity/energy risk factors.	N.a.	N.a. This is considered model maintenance.
Modification of the granularity of a given risk factor (e.g. more tenors in interest rate curves).	N.a.	N.a. This is considered model maintenance.
Changes in the manner how the initial margin (IM) is taken into account.	Annex I, Part II, Section 1, Item 1	Such changes need to be investigated when the IM is included in the model for the first time.
	Annex I, Part II, Section 2, Item 1	Consequent changes would in principle be not material needing ex ante notification (e.g. if only the way in which the IM is captured in the IMM is changed).
Adding a new type of risk factor (e.g. the implied volatility of interest rate products) while keeping the set of products in scope of the IMM unchanged.	Annex I, Part II, Section 1, Item 2	Change that needs to be investigated.
Changing the stochastic model of interest rate curves from a log-normally distributed process to a normally distributed process.	Annex I, Part II, Section 1, Item 2	Change that needs to be investigated.
Modification of the data source used for model calibration.	Annex I, Part II, Section 2, Item 7	Not material change which is subject to ex ante notification if the model is switching from one external data provider to another for a significant part of the market data.

9 Note that model extensions can never be treated as model maintenance.

4 Overview of the materiality assessment process



* CRR Part Three, Title II, Chapter 6 for derivative transactions and SFTs included in the IMM, and Part Three, Title II, Chapter 4 for standardised SFTs.
** Full CVA capital charge.

5 ECB Guide on materiality assessment of extensions and changes to the internal model method and the advanced method for credit valuation adjustment risk

The EGMA is not intended by the ECB to have legal effect and nothing within its wording and context or its substance should be construed otherwise. The EGMA merely proposes a course of action to be followed by the institutions concerned within the applicable legal framework. The EGMA is not intended to replace, overrule or affect in any other way applicable EU and national law. The Guide is an integrated document intended to be applied in its entirety. Applying only individual elements is likely to distort the coherence of the assessment process and should be avoided insofar as possible.

Section 1: Subject matter

1. The ECB Guide on materiality assessment (EGMA) lays down indicative criteria which have been adopted by the ECB for assessing the materiality of extensions and changes to the internal model method (IMM) in accordance with Article 162[10] and Articles 283 to 294 of Regulation (EU) No 575/2013 (CRR) and the advanced method for the measurement of credit valuation adjustment risk (A-CVA) in accordance with Articles 381 to 383 and Article 386 of the CRR.

2. The EGMA does not apply to ongoing alignment of the IMM and the A-CVA to the calculation data-set used, correction of errors or minor adjustments necessary for the day-to-day maintenance of the internal model approaches, which occur within the limit of the already approved methods, processes, controls, data collection and IT systems.

3. With regard to the IMM, the EGMA defines – in Section 4, Section 5 and in Annex I – materiality assessment criteria for all model extensions and changes.

4. With regard to the A-CVA, the EGMA either refers to existing regulation and the IMM part of the EGMA or defines materiality assessment criteria. This is done as follows:

   (a) **All A-CVA extensions and changes**
   Pursuant to Article 383(5)(c) of the CRR, the competent authority may

[10] Article 162 is only considered for paragraph 2(i).

reassess the A-CVA multiplication factor if deemed necessary. The EGMA refers here to this discretion for all A-CVA extensions and changes.

(b) **A-CVA extensions**

For all A-CVA extensions, the EGMA refers to the RTS on IMA (Regulation (EU) No 2015/942), which amend the RTS on IRB (Regulation (EU) No 529/2014), and to the IMM part of the EGMA on model extensions.

(c) **A-CVA changes**

The EGMA recognises three types of A-CVA change. The three types of change and the approach taken in defining materiality assessment criteria for the changes in these groups are set out below:

(i) A-CVA changes that coincide with an IMM model change. For these model changes, the EGMA refers to the IMM part of the EGMA on model changes.

(ii) A-CVA changes that coincide with an IMA model change (Part Three, Title II, Chapter 5 of the CRR). For these model changes, the EGMA refers to the RTS on IMA (Regulation (EU) No 2015/942), which amend the RTS on IRB (Regulation (EU) No 529/2014).

(iii) A-CVA-specific model changes that do not coincide with either IMM or IMA model changes. Section 6, Section 7 and Annex II define materiality assessment criteria for A-CVA-specific model changes. As a minimum, the following changes are regarded as A-CVA-specific model changes:

- changes to the spread and proxy methodology in accordance with Articles 383(1) and 383(7) of the CRR respectively, if not resulting from an IMA model change;
- changes to the selection of the market-implied loss given default in accordance with Article 383(7) of the CRR, if not resulting from an IMA or IRB model change;
- changes to the A-CVA stress period selection methodology in accordance with Article 383(5)(b) of the CRR, if not resulting from a change in the IMM stress period.

Section 2: Categories of extensions and changes

1. Institutions[11] classify extensions and changes for IMM and changes for A-CVA under the following categories:

[11] For the purpose of EGMA, the term "institution" refers only to (a) parent institutions of a group, or (b) to individual institutions not belonging to a group subject to consolidated capital requirements, or whose parent institution is outside the SSM.

(a) extensions and changes that need to be investigated by the ECB;

(b) other extensions and changes that are notified to the ECB.

2. For extensions and changes that need to be investigated by the ECB in accordance with Section 2(1)(a), the final classification is obtained from the ECB as follows:

(a) material extensions and changes that need approval; or

(b) not material extensions and changes.

The final classification depends on the outcome of the ECB's investigation. However, the following cases are always classified as material;

(c) extensions to the IMM approach that need to be investigated;

(d) extensions and changes to the IMM approach or changes to the A-CVA approach that reduce the institution’s overall RWA by at least 1%;

(e) extensions and changes that – based on the outcome of the ECB's internal model investigation – are submitted to the ECB’s decision-making bodies with the proposal to reject them.

Prior to implementing the extension or change, the institution waits for the ECB:

- to approve the extension or change after an internal model investigation (in accordance with Article 9 of the SSM Regulation[12]) and decision phase (in this case, the ECB considers the extension or change material); or
- to notify the institution that the extension or change is considered not material. This notification may present the ECB's view regarding the submitted extension or change.

3. Institutions classify the extensions and changes referred to in Section 2(1)(b)above as:

(a) not material extensions and changes that are notified before their implementation (“ex ante”);

(b) not material extensions and changes that are notified after their implementation (“ex post”).

[12] Council Regulation (EU) No 1024/2013 of 15 October 2013 conferring specific tasks on the European Central Bank concerning policies relating to the prudential supervision of credit institutions.

Section 3: Principles governing the classification of extensions and changes

1. The classification of extensions and changes in the IMM approach is carried out in accordance with this section and Sections 4 and 5.

   The classification of changes in the A-CVA is carried out in accordance with this section and Sections 6 and 7.

2. Where institutions calculate the quantitative impact of any extension or change , they apply the following methodology:

   (a) for the purpose of the assessment of the quantitative impact, institutions use the most recent data available;

   (b) where a precise assessment of the quantitative impact is not feasible, institutions instead perform an assessment of the impact based on a representative sample or other reliable inference methodologies;

   (c) for changes having no direct quantitative impact, such as organisational changes, internal process changes or risk management process changes, no quantitative impact is calculated, as laid down in Section 4 for the IMM approach or Section 6 for A-CVA approach.

3. One extension or change may not be split into several changes or extensions of potentially lower materiality.

4. Several different extensions or changes may not be merged into one change or extension of a potentially lower materiality.

5. In case of doubt, institutions assign extensions and changes in their self-assessment to the category with the highest relevant materiality.

6. The institution can request that an extension or change which needs to be investigated obtains "material" as a final classification. The ECB will take this request into consideration; however, it is not binding on the ECB.

7. The ECB informs the institution of the final classification (material or not material) of extensions and changes that need to be investigated.

8. When the ECB has approved a material extension or change, institutions calculate the own funds requirements based on the approved extension or change from the date specified in the new approval. Failure to implement an extension or change within the deadline specified in the ECB's notification of approval creates the need for further action by both the ECB and the institution.

9. When the ECB, after it has investigated the extension or change, notifies the institution that an extension or change is considered not material, the institution calculates the own funds requirements based on the extension or change from the date specified in the notification. Any failure to implement an extension or

change within the deadline specified in the ECB's notification creates the need for further action by both the ECB and the institution.

10. Where an extension or change is classified as requiring prior notification to the ECB and where, subsequent to the notification, institutions decide not to implement the extension or change, institutions notify the ECB of this decision without undue delay.

Section 4: Extensions and changes to the IMM approach that need to be investigated

1. Extensions[13] and changes to the IMM approach are submitted to the ECB in order to investigate materiality if they fulfil any of the following conditions:

   (a) they fall under any of the extensions described in Annex I, Part I, Section 1;

   (b) they fall under any changes described in Annex I, Part II, Section 1;

   (c) they result in a change:

      (i) in absolute value of 1% or more, computed for the first business day of the testing of the impact of the extension, in the institution’s overall risk-weighted exposure amounts for the CCR (in accordance with Part Three, Title II, Chapter 6 and Chapter 4 (limited to SFTs) of the CRR); **and**

      (ii) in absolute value of 5% or more in the institution’s overall risk-weighted exposure amounts for the CCR.

2. For the purposes of Section 4(1)(c) above, and in accordance with Section 3(2), the impact of any extension or change is the ratio defined below:

   (a) in the numerator, the difference in the risk-weighted exposure amounts for the CCR computed before and after the extension or change;

   (b) in the denominator, the overall risk-weighted exposure amounts for the CCR computed before the extension or change.

3. For the purposes of Section 4(1)(c)(ii) above, the ratio referred to in Section 4(2) is calculated for whichever of the following periods (a) or (b) is the shortest, using the highest absolute value assessed over the selected period:

   (a) 15 consecutive business days starting from the first business day of the testing of the impact of the extension or change, provided that daily IMM calculation is possible. The latter implies daily updates of the EE profiles.

[13] Note that, in accordance with Section 2 of the EGMA, extensions falling in Section 4 will be classified as material after an internal model investigation.

Where institutions are not able to calculate new risk exposures on a daily basis, institutions can use as a fall-back three consecutive weekly observations.

Where institutions are not able to calculate new risk exposures on a daily or weekly basis, institutions can use as a fall-back two consecutive monthly observations.

Institutions demonstrate that the selected observation days are representative for their portfolio if the observation frequency is not daily.

(b) Until the calculation of the ratio referred to in Section 4(2) results in an impact equal to or greater than the percentage referred to in Section 4(1)(c)(ii).

4. For the purposes of Section 4(1)(c), the determination of the ratio referred to in Section 4(2) respectively relates, where possible, only to the impact of the extension or change to the IMM model. If measures that are not IMM measures are changed in the impact analyses, the ECB is notified and institutions explain why the measures that are not IMM measures are not kept constant.

Section 5: Extensions and changes to the IMM approach considered not material

Extensions and changes not falling under Section 4 are classified as not material and are notified to the ECB at least two weeks before their implementation if they are described in Annex I, Part II, Section 2.

All other extensions and changes are notified to the ECB after their implementation on at least an annual basis.

Section 6: Changes to the A-CVA approach that need to be investigated[14]

1. Changes to the A-CVA method are submitted to the ECB in order to investigate the materiality if they fulfil any of the following conditions:

   (a) where the institution was granted permission to set M equal to 1 in accordance with Article 162(2)(i) of the CRR, they affect the modelling of CVA risk for counterparties in a significant way as regards this permission; **and either**

   (b) they fall under any of the changes described in Annex II, Section 1; **or**

[14] This section defines materiality assessment criteria for those A-CVA changes that meet the conditions specified in Section 1(4)(c)(iii) of the EGMA.

(c) they result in:

(i) a change in absolute value of 1% or more, computed for the first business day of the testing of the impact of the change, in one of the relevant risk numbers referred to in Article 383(5)(a) or 383(5)(b) of the CRR and associated with the scope of application of the A-CVA method to which the risk number refers; **and either**

(ii) a change of 5% or more in the full CVA capital charge, i.e. the sum of the risk numbers referred to in Articles 383(5)(a) and 383(5)(b) of the CRR multiplied by the implemented multiplication factor of Article 383(5)(c) of the CRR and the own funds requirements in accordance with Articles 384 and 385 of the CRR; **or**

(iii) a change of 10% or more in at least one of the relevant risk numbers referred to in Article 383(5)(a) or 383(5)(b) of the CRR and associated with the scope of application of the A-CVA method to which the risk number refers.

2. For the purposes of Section 6(1)(c)(i) and Section 6(1)(c)(iii), and in accordance with Section 3(2), the impact of any change is the value of the ratio defined below (for Section 6(1)(c)(iii), the ratio is the highest absolute value assessed over the period referred to in Section 6(4)):

(a) in the numerator, the difference in the risk number referred to in Article 383(5)(a) or 383(5)(b) of the CRR computed before and after the change;

(b) in the denominator, the risk number referred to, respectively, in Article 383(5)(a) or 383(5)(b) of the CRR computed before the change.

3. For the purposes of Section 6(1)(c)(ii), and in accordance with Section 3(2), the impact of any change is the highest absolute value of the ratio defined below, assessed over the period referred to in Section 6(4):

(a) in the numerator, the difference in the full CVA capital charge (i.e. the difference between the sum of the risk numbers referred to in Articles 383(5)(a) and 383(5)(b) of the CRR, multiplied by the implemented multiplication factor of Article 383(5)(c) and the own funds requirements in accordance with Articles 384 and 385 of the CRR) computed before and after the change;

(b) in the denominator, the full CVA capital charge (i.e. the sum of the risk numbers referred to in Articles 383(5)(a) and 383(5)(b) of the CRR multiplied by the implemented multiplication factor of Article 383(5)(c) and the own funds requirements in accordance with Articles 384 and 385 of the CRR) computed before the change.

4. For the purposes of Section 6(1)(c)(ii) and Section 6(1)(c)(iii), the ratios referred to in Sections 6(2) and (3) are calculated for whichever of periods (a) or (b) is the shortest:

(a) 15 consecutive business days starting from the first business day of the testing of the impact of the change, provided that daily A-CVA calculation is possible. The latter implies daily updates for the (proxy) credit spreads and at least weekly updating of the EE profiles.

Where institutions are not able to calculate new risk exposures on a daily basis, institutions can use as a fall-back three consecutive weekly observations.

Where institutions are not able to calculate new risk exposures on a daily or weekly basis, institutions can use as a fall-back two consecutive monthly observations.

Institutions demonstrate that the selected observation days are representative of their portfolio if the observation frequency is not daily.

(b) Until the calculation of either of the ratios referred to in Section 6(2) and Section 6(3) results in an impact equal to or greater than the percentages referred to in Section 6(1(c)(ii) or Section 6(1(c)(iii) respectively.

5. For the purposes of Section 6(1)(c)(ii) and Section 6(1)(c)(iii), the determination of the ratios referred to in Section 6(2) and Section 6(3) relates, where possible, only to the impact of the change to the A-CVA model. If measures that are not A-CVA measures are changed in the impact analysis, the ECB is notified and institutions explain why the measures that are not A-CVA measures are not kept constant.

Section 7: Changes to the A-CVA approach considered not material[15]

Changes to the A-CVA approach not falling under Section 6 are classified as not material and are notified in the following manner:

1. Changes that meet the conditions set out in Section 6(1)(b) or Section 6(1)(c), but do not meet the condition set out in Section 6(1)(a), are classified as not material and notified to the ECB two weeks before their planned implementation.

2. Changes which are described in Annex II, Section 2 are notified to the ECB two weeks before their planned implementation.

3. All other changes are notified to the ECB after implementation on at least an annual basis.

[15] This section defines materiality assessment criteria for those A-CVA changes that meet the conditions specified in Section 1(4)(c)(iii).

Section 8: Documentation of extensions and changes

1. For extensions and changes to the IMM approach or to the A-CVA that need to be investigated, institutions are expected to submit the following documentation:

   (a) description of the extension or change, its rationale and objective;

   (b) the intended implementation date;

   (c) scope affected by the model extension or change, with volume characteristics;

   (d) relevant technical and process document(s), such as documentation on:

      (i) calibration of the risk drivers;

      (ii) pricing of the transactions;

      (iii) collateral modelling;

      (iv) netting and margining;

      (v) back-testing;

      (vi) stress testing;

      (vii) wrong-way risk;

   (e) reports on the institution's independent review or validation;

   (f) confirmation that the extension or change has been approved through the institution's approval processes by the competent bodies and the date of approval;

   (g) where applicable, documentation of the quantitative impact of the change or extension on the risk-weighted exposure amounts or the own funds requirements.[16] This documentation should include:

      (i) the quantitative impact on the minimum capital requirement for CVA risk if the considered extension or change is to the IMM[17];

      (ii) where applicable, an explanation of the representative sample or reliable inference methodology in accordance of Section 2(2)(b);

      (iii) the quantitative impact on all levels for which the institutions applies the model.

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16 Please note that the ECB can ask for further quantitative impact figures during the investigation of extensions and changes that need to be investigated.

17 Although beyond the scope of this guide, institutions are expected to report the impact on the CVA risk minimum capital requirements when extending or changing their approved method for calculating their own funds requirements for the specific risk of debt instruments in accordance with Article 363(1) of the CRR.

2. For extensions and changes classified as not material, institutions submit, together with the notification:

   (a) the documentation referred to in Section 8(1)(a), (b), (c), (f), and (g);

   (b) the intended implementation date in the case of notification before implementation; otherwise the date of implementation;

   (c) evidence supporting the institution's assessment in cases where the institution argues that the considered extension or change does not significantly affect the relevant assessment criterion (Section 6(1)(a) and the Annexes).

6 Annexes

6.1 Extensions and changes to the IMM approach

Part I: Extensions to the IMM

Section 1: Extensions that need to be investigated[18]

1. Extending the range of application of the IMM to:[19]

   (a) exposures in additional business areas that are of the same type of transaction, but:

      (i) introduce the inclusion of new management processes as regards policies, processes and systems in accordance with Article 286 of the CRR; or

      (ii) influence the fulfilment of use test requirements in accordance with Article 289 of the CRR;

   (b) exposures of an additional type of transaction, unless the additional type of transaction falls within the approved range of application of the IMM. The latter holds if the following three conditions are met:

      (i) the risk drivers (i.e. underlying market data) are already part of the confirmed IMM with regard to their stochastic modelling and calibration;

      (ii) the pricing functions belong to pricing libraries confirmed for use inside the IMM, including compliance with all the requirements provided for in Articles 293 and 294 of the CRR (in particular, Article 294(1)(e) thereof);

      (iii) the management processes as regards policies, processes and systems in accordance with Article 286 of the CRR and the use test requirements in accordance with Article 289 of the CRR are consistent;

   (c) new legal agreement types with regard to netting and margining if they require new or other modelling compared with existing agreement types.[20]

[18] Note that, in accordance with Section 2 of the EGMA, these extensions will be classified as material after an internal model investigation.

[19] Note that, in accordance with Article 283(1) of the CRR, institutions require approval for new transaction types.

2. Any permanently reversed extension, such as in cases where institutions aim to apply one of the standardised methods to netting sets, asset classes or types of transaction for which they have approval to use IMM.[21] A reversed extension includes both a fully and a partially reversed extension.

Part II: Changes to the IMM

Section 1: Changes that need to be investigated

1. Significant changes in the way the model captures the effect of existing margining agreements for calculating margined exposure in accordance with Article 285(1) of the CRR (including changes owing to moving from approach (a) to (b) in order to include margining effects in expected exposures in accordance with Article 285(1) of the CRR).

2. Significant changes in the methodology for forecasting risk factor distributions, including changes in the specification of forecasting distributions for market value changes of the netting set, the modelling of dependency structures (e.g. correlations) and the calibration method used to calibrate the parameters of the underlying stochastic processes.

3. Significant changes in the validation methodology and/or processes in accordance with Articles 292(6)(a) and (b) and 294(1) of the CRR which lead to changes in the way the institution assesses the integrity of the IMM.

Section 2: Changes that are considered as not material (ex ante notification)

1. Changes – that are not significant – in the way the model captures the effect of existing margining agreements for calculating margined exposure in accordance with Article 285(1) of the CRR (which also captures changes owing to moving from approach (a) to (b) in order to include margining effects in expected exposures in accordance with Article 285(1) of the CRR).

2. Changes – that are not significant – in the methodology for forecasting risk factor distributions, including changes in the specification of forecasting distributions for market value changes of the netting set, the modelling of dependency structures (e.g. correlations) and the calibration method used to calibrate the parameters of the underlying stochastic processes.

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[20] New legal agreement types are legal agreements for which institutions cannot prove that the additional agreement type falls within the approved range of application of the IMM.

[21] Note that, in accordance with Article 283(5) of the CRR, institutions require approval from the ECB in order to revert from the IMM to any of the methods set out in Part Three, Title II, Chapter 6, Sections 3 to 5 of the CRR, including partial reversion.

3. Changes – that are not significant – in the validation methodology and/or processes in accordance with Articles 292(6)(a) and (b) and 294(1) of the CRR that lead to changes in the way the institution assesses the integrity of the IMM.
4. Changes in the implementation of the margin period of risk (MPOR) (i.e. changes in the methodology used to determine whether collateral is considered illiquid or changes in the setting of the MPOR itself) in accordance with Article 285(2) to (5) of the CRR.
5. Changes in the methodology used to model collateral in accordance with Article 285(6) of the CRR and to model own volatility adjustments to the value of eligible collateral in accordance with Article 285(7) of the CRR.
6. Changes in the method used to determine the stress period in accordance with Article 292(2) of the CRR.
7. Significant changes in the management processes of the CCR in accordance with Article 286 of the CRR, including significant changes to:
   (a) the limit-setting framework and reporting framework which influence significantly the institution’s respective decision-making processes;
   (b) the IT systems affecting the calculation procedure of the internal model;
   (c) the use of vendor models, if not already specifically captured by Section 1.
8. Significant changes in the regular stress test framework that reduce the frequency and/or the severity of the implemented stress tests in accordance with Article 290 of the CRR.
9. Changes in the methodology used to determine all positions with general wrong-way risk and specific wrong-way risk in accordance with Article 291 of the CRR.
10. Changes in how scenarios of market risk factors are translated into scenarios of the portfolio value, such as changes in the instrument valuation models used to calculate sensitivities to risk factors or to revalue positions when calculating risk numbers, which includes changes from analytical to simulation-based pricing models, or changes inside or between Taylor approximation and full revaluation.

6.2 Changes to the A-CVA approach

Section 1: Changes that need to be investigated

1. Changes in the methodology used to determine the proxy spreads in accordance with Article 383(7)(a) of the CRR and Regulation (EU) No 526/2014. Changes in the methodology do not include adjustments necessary for the day-to-day maintenance of the A-CVA approach, such as

adjustments to mappings of counterparties or adjustments to the granularity of credit spread curves owing to availability of market data or the composition of A-CVA portfolios.

2. Changes in the methodology of determining market-implied LGD in accordance with Article 383(7)(a) of the CRR and Regulation (EU) No 526/2014. Changes in the methodology do not include adjustments that are necessary for the day-to-day maintenance of the A-CVA approach, such as changing implied LGD owing to market data availability.

Section 2: Changes that are considered as not material (ex ante notification)

1. Changes in the methodology used to determine the period of stress for the credit spread parameter in accordance with Article 383(5)(b) of the CRR.

2. Significant changes in the management processes of CVA risk related to policies, processes and systems to the extent that they are not covered by changes in accordance with the RTS on IMA (Regulation (EU) No 2015/942), which amend the RTS on IRB (Regulation (EU) No 529/2014), including significant changes to:

   (a) the limit-setting framework and reporting framework which influence significantly the institution's respective decision-making processes;

   (b) the IT systems affecting the calculation process of the internal model.

Abbreviations

A-CVA	Advanced method for credit valuation adjustment risk
AMA	advanced measurement approach
CCR	counterparty credit risk
CRR	Capital Requirements Regulation
CVA	credit valuation adjustment
EBA	European Banking Authority
EE	expected exposure
EEPE	effective expected positive exposure
EGMA	ECB Guide on materiality assessment
IM	initial margin
IMA	internal models approach
IMM	internal model method
IRB	internal ratings-based
LGD	loss given default
M	Maturity
MPOR	margin period of risk
PD	probability of default
RTS	regulatory technical standards
RWA	risk-weighted assets
SFT	securities financing transaction as defined in Article 3(11) of Regulation (EU) 2365/2015
SSM	Single Supervisory Mechanism

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