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# Amended Draft Mapping of Moody's Investors Service credit assessments under the Standardised Approach

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## 1. Executive summary

1. This report describes the mapping exercise carried out by the Joint Committee (JC) to propose an amended 'mapping'<sup>1</sup> report of the credit assessments of Moody's Investors Service (Moody's), with respect to the version published on 11 November 2015. The resulting mapping tables have remained unchanged with respect to the afore-mentioned version.
2. The methodology applied to produce the mapping is the one specified in the Commission Implementing Regulation (EU) 2016/1799 of 7 October 2016 (the Implementing Regulation)<sup>2</sup> laying down implementing technical standards with regard to the mapping of credit assessments of external credit assessment institutions for credit risk in accordance with Articles 136(1) and 136(3) of Regulation (EU) No 575/2013 of the European Parliament and of the Council (Capital Requirements Regulation – CRR). This Implementing Regulation employs a combination of the provisions laid down in Article 136(2) of the CRR.
3. The information base used to produce this mapping report reflects additional quantitative information collected after the submission of the draft Implementing Technical Standards by the JC to the European Commission. Regarding qualitative developments, the qualitative factors described in the Implementing Regulation remain unchanged while a number of new credit rating types are reported and the bond fund rating scale is requested to be removed, as this credit assessment type is not considered as a valid credit rating under the Regulation (EC) No 1060/2009 (Credit Rating Agencies Regulation - CRA).
4. The mapping neither constitutes the one which ESMA shall report on in accordance with Article 21(4b) of Regulation (EC) No 1060/2009 (Credit Rating Agencies Regulation - CRA) with the

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<sup>1</sup> According to Article 136(1), the 'mapping' is the correspondence between the credit assessments of and ECAI and the credit quality steps set out in Regulation (EU) No 575/2013 (Capital Requirements Regulation – CRR).

<sup>2</sup> OJ L 275, 12.10.2016, p. 3-18

objective of allowing investors to easily compare all credit ratings that exist with regard to a specific rated entity<sup>3</sup> nor should be understood as a comparison of the rating methodologies of Moody's with those of other ECAs. This mapping should however be interpreted as the correspondence of the rating categories of Moody's with a regulatory scale which has been defined for prudential purposes.

5. As described in Recital 12 of the Implementing Regulation, it is necessary to avoid causing undue material disadvantage on those ECAs which, due to their more recent entrance in the market, present limited quantitative information, with the view to balancing prudential with market concerns. Updates to the mapping should be made wherever this becomes necessary to reflect quantitative information collected after the entry into force of the Implementing Regulation
6. The resulting mapping tables have been specified in Annex III of the revised draft ITS on the mapping of ECAs' credit assessments under Article 136(1) and (3) of Regulation (EU) No 575/2013. Figure 1 below shows the result for the main ratings scale of Moody's, the Global long-term ratings scale.

Figure 1: Mapping of Moody's Global long-term ratings scale

Credit assessment	Credit quality step
Aaa	1
Aa	1
A	2
Baa	3
Ba	4
B	5
Caa	6
Ca	6
C	6

<sup>3</sup> In this regard, please consider [https://www.esma.europa.eu/sites/default/files/library/esma\\_2015-1473\\_report\\_on\\_the\\_possibility\\_of\\_establishing\\_one\\_or\\_more\\_mapping.pdf](https://www.esma.europa.eu/sites/default/files/library/esma_2015-1473_report_on_the_possibility_of_establishing_one_or_more_mapping.pdf).

## 2. Introduction

7. This report describes the mapping exercise carried out by the Joint Committee (JC) to propose an amended 'mapping' report of the credit assessments of Moody's Investors Service (Moody's), with respect to the version published on 11 November 2015.
5. Moody's is a credit rating agency that has been registered with ESMA since 31 October 2011 and therefore meets the conditions to be an eligible credit assessment institution (ECAI)<sup>4</sup>. Further, registration of new entities of Moody's took place in November 2014 and August 2018 maintaining the same scope and methodology for credit assessments. Moody's is a provider of credit ratings, research, and risk analysis. The firm's ratings and analysis track debt covering more than 120 countries, 11,000 corporate issuers, 17,000 public finance issuers, and 59,000 structured finance obligations.
8. The methodology applied to produce the mapping is the one specified in the Implementing Regulation. This Implementing Regulation employs a combination of the provisions laid down in Article 136(2) of the CRR. The information base used to produce this mapping report reflects additional quantitative information collected after the submission of the draft Implementing Technical Standards by the JC to the European Commission. Regarding qualitative developments, the qualitative factors described in the Implementing Regulation remain unchanged while a number of new credit rating types are reported and the bond fund rating scale is requested to be removed. The quantitative information is drawn from data available in the ESMA's central repository (CEREP<sup>5</sup>) based on the credit rating information submitted by the ECAIs as part of their reporting obligations.
6. The following sections describe the rationale underlying the mapping exercise carried out by the JC. Section 3 describes the relevant ratings scales of Moody's for the mapping. Section 4 contains the methodology applied to derive the mapping of Moody's main ratings scale whereas Sections 5 and 6 refer to the mapping of its remaining relevant ratings scales. The mapping tables are shown in Appendix 4 of this document and have been specified in Annex III of the revised draft ITS on the mapping of ECAIs' credit assessments under Article 136(1) and (3) of Regulation (EU) No 575/2013.

<sup>4</sup> It is important to note that the mapping does not contain any assessment of the registration process of Moody's carried out by ESMA.

<sup>5</sup> <https://cerp.esma.europa.eu/cerp-web/>

### 3. Moody's credit ratings and rating scales

7. Moody's produces a variety of credit ratings. Column 2 of Figure 2 in Appendix 1 shows the relevant credit ratings that may be used by institutions for the calculation of risk weights under the Standardised Approach (SA)<sup>6</sup>:

- **Long-term issuer ratings**, defined as opinions of the ability of entities to honour senior unsecured financial counterparty obligations and contracts. As such, issuer ratings incorporate any external support that is expected to apply to all current and future issuance of senior unsecured financial obligations and contracts, such as explicit support stemming from a guarantee of all senior unsecured financial obligations and contracts, and/or implicit support for issuers subject to joint default analysis (e.g. banks and government-related issuers). Issuer ratings do not incorporate support arrangements, such as guarantees, that apply only to specific (but not to all) senior unsecured financial obligations and contracts.
- **Short-term issuer ratings**, defined as the long-term issuer ratings, with the only difference that they refer to obligations with an original maturity of thirteen months or less.
- **Long-term obligation ratings**, defined as long-term ratings assigned to long-term financial obligations with an original maturity of one year or more and reflect both on the likelihood of a default on contractually promised payments and the expected financial loss suffered in the event of default.
- **Short-term obligation ratings**, defined as Long-term obligation ratings described above, with the only difference that they refer to obligations with an original maturity of thirteen months or less.
- **Insurance financial strength ratings**, defined as opinions of the ability of insurance companies to pay punctually senior policyholder claims and obligations and also reflect the expected financial loss suffered in the event of default. Specific obligations are considered unrated unless they are individually rated because the standing of a particular insurance obligation would depend on an assessment of its relative standing under those laws governing both the obligation and the insurance company.
- **Bank Deposit Ratings**, defined as opinions of a bank's ability to repay punctually its foreign and/or domestic currency deposit obligations and also reflect the expected financial loss of the default. Bank Deposit Ratings do not apply to deposits that are subject to a public or private insurance scheme; rather, the ratings apply to the most junior class of uninsured deposits, but they may in some cases incorporate the possibility that official support might in certain cases extend to the most junior class of uninsured as well as preferred and insured deposits.

<sup>6</sup> As explained in recital 4 of the ITS, Article 4(1) CRA allows the use of the credit assessments for the determination of the risk-weighted exposure amounts as specified in Article 113(1) CRR as long as they meet the definition of credit rating in Article 3(1)(a) CRA.

- **Clearing Counterparty Ratings**, defined as Moody's opinion of a Central Counterparty Clearing House's (CCP) ability to meet the timely clearing and settlement of clearing obligations by the CCP as well as the expected financial loss in the event the obligation is not fulfilled. A CCR can be assigned at a CCP legal entity or clearing service level to the extent a legal entity operates multiple clearing services.
- **Corporate Family Ratings**, defined as long-term ratings that reflect the relative likelihood of a default on a corporate family's debt and debt-like obligations and the expected financial loss suffered in the event of default. A CFR is assigned to a corporate family as if it had a single class of debt and a single consolidated legal entity structure. CFRs are generally employed for speculative grade obligors, but may also be assigned to investment grade obligors. The CFR normally applies to all affiliates under the management control of the entity to which it is assigned. For financial institutions or other complex entities, CFRs may also be assigned to an association or group where the group may not exercise full management control, but where strong intra-group support and cohesion among individual group members may warrant a rating for the group or association. A CFR does not reference an obligation or class of debt and thus does not reflect priority of claim.
- **Credit Default Swap Ratings**, which measure the risk associated with the obligations that a credit protection provider has with respect to credit events under the terms of the transaction. The ratings do not address potential losses resulting from an early termination of the transaction, nor any market risk associated with the transaction.
- **Enhanced Ratings**, which only pertain to US municipal securities. Enhanced ratings are assigned to obligations that benefit from third-party credit or liquidity support, including state aid intercept programs. They primarily reflect the credit quality of the support provider, and, in some cases reflect the credit quality of the underlying obligation. Enhanced ratings do not incorporate support based on insurance provided by financial guarantors.
- **Insured Ratings**, defined as Moody's assessment of a particular obligation's credit quality given the credit enhancement provided by a financial guarantor. Moody's insured ratings apply a credit substitution methodology, whereby the debt rating matches the higher of (i) the guarantor's financial strength rating and (ii) any published underlying or enhanced rating on the security.
- **Medium-Term Note Program Ratings**. Moody's assigns provisional ratings to medium-term note (MTN) programs and definitive ratings to the individual debt securities issued from them (referred to as drawdowns or notes). MTN program ratings are intended to reflect the ratings likely to be assigned to drawdowns issued from the program with the specified priority of claim (e.g. senior or subordinated). To capture the contingent nature of a program rating, Moody's assigns provisional ratings to MTN programs. A provisional rating is denoted by a (P) in front of the rating and is defined elsewhere in this document. The rating assigned to a drawdown from a rated MTN or bank/ deposit note program is definitive in nature, and may differ from the program rating if the drawdown is exposed to

additional credit risks besides the issuer's default, such as links to the defaults of other issuers, or has other structural features that warrant a different rating. In some circumstances, no rating may be assigned to a drawdown.

- **Underlying Ratings**, defined as an underlying rating is Moody's assessment of a particular obligation's credit quality absent any insurance or wrap from a financial guarantor or other credit enhancement. For US municipal securities, the underlying rating will reflect the underlying issue's standalone credit quality absent any credit support provided by a state credit enhancement program.
8. Moody's assigns these credit ratings to different rating scales as illustrated in column 3 of Figure 2 in Appendix 1. Therefore, a specific mapping has been prepared for the following rating scales:
- **Global long-term rating scale.** The specification of this rating scale is described in Figure 3 of Annex 1.
  - **Global short-term rating scale.** The specification of this rating scale is described in Figure 4 of Annex 1.
9. The mapping of the Global long-term rating scale is explained in Section 4 and it has been derived in accordance with the quantitative factors, qualitative factors and benchmarks specified in the Implementing Regulation.
10. The mapping of the Global short-term rating scale is explained in Section 5 and it has been indirectly derived from the mapping of the Global long-term rating scale and the internal relationship established by Moody's between these two scales, as specified in Article 13 of the Implementing Regulation. This internal relationship is shown in Figure 5 of Appendix 1.

## 4. Mapping of Moody's Global long-term rating scale

11. The mapping of the Global long-term rating scale has consisted of two differentiated stages where the quantitative and qualitative factors as well as the benchmarks specified in Article 136(2) CRR have been taken into account.
12. In the first stage, the quantitative factors referred to in Article 1 of the Implementing Regulation have been taken into account to differentiate between the levels of risk of each rating category:
- The *long run default rate* of a rating category has been used to arrive at an initial mapping proposal by comparing its value with the benchmark specified in point (a) of Article 14 of the Implementing Regulation.
  - The *short run default rates* of a rating category have been compared with the benchmarks specified in point (b) of Article 14 of the Implementing Regulation, which represent the maximum expected deviation of a default rate from its long-term value within a CQS.

13. In a second stage, the qualitative factors proposed in Article 7 of the Implementing Regulation have been considered to challenge the result of the previous stage, especially in those ratings categories where less default data has been available.

#### 4.1. Initial mapping based on the quantitative factors

14. This mapping report reflects additional quantitative information collected after the submission of the draft ITS by the JC to the Commission.

##### 4.1.1. Calculation of the short-run and long-run default rates

9. The short run and long run default rates of each rating category have been calculated with the pools of items rated from 1 January 2000 to 1 July 2015, based on the information contained in CEREP and according to the provisions laid down in the Implementing Regulation. As in the original mapping report:

- For Aaa and Aa rating categories, the number of credit ratings cannot be considered to be sufficient for the calculation of the short run and long run default rates specified in Articles 3 – 5 of the Implementing Regulation. Therefore the allocation of the CQS has been made in accordance with Article 6 of the Implementing Regulation, as shown in Figure 13 of Appendix 3. In these cases, the long run default rate benchmark associated with the equivalent category in the international rating scale is a key qualitative factor that has been used for the mapping proposal.
- For the remaining rating categories, the number of credit ratings can be considered to be sufficient and therefore the calculation has followed the rules established in Articles 3 to 5 of the Implementing Regulation. The result of the calculation of the short run and long run default rates for each rating category is shown in Figure 6 to Figure 8 of Appendix 3.

15. Withdrawn ratings have been weighted by 50% as indicated in Article 4(3) of the Implementing Regulation.

16. The default definition applied by Moody's, described in Appendix 2, has been used for the calculation of default rates.

##### 4.1.2. Mapping proposal based on the long run default rate

17. Rating categories A, Baa, Ba and B have been initially allocated to each CQS based on the comparison of the long run default rates (see Figure 8 in Appendix 3) and the long run default rate benchmark intervals established in point (a) of Article 14 of the Implementing Regulation. As illustrated in the second column of Figure 14 in Appendix 4, rating categories A, Baa, Ba and B remain allocated to CQS 2, 3, 4 and 5 based on the comparison of the long run default rate

18. In the case of rating categories Aaa and Aa, where the number of credit ratings cannot be considered to be sufficient, this comparison has been made according to Article 6 of the Implementing Regulation. The analysis for the 2006h1 – 2010h2 data cohort suggests CQS 2,



given the 17 defaults observed in these categories. However, the analysis of the 2001h1 – 2005h2 period reveals that no defaults were observed during those years and suggest a mapping to CQS 1. When considering the additional data collected since the original mapping was produced, the number of rated items is equal or larger than the respective minimum required number of observed items given the number of defaulted items in the rating category. This reinforces the existing mapping.

#### 4.1.3. Reviewed mapping based on the short run default rates

19. As shown in Figure 9 to Figure 12 in Appendix 3, the short run default rates of rating categories A to B have been compared with the short run default rate benchmark values established in point (b) of Article 14 of the Implementing Regulation <sup>7</sup>.

20. The objective is to assess, for each rating category, whether the short-run default rates have deviated from their corresponding benchmark values and whether any observed deviation has been caused by a weakening of the assessment standards. Therefore short run default rates experienced within a rating category have been confronted with the short run benchmarks “monitoring” and “trigger” levels specified in Annex I of the Implementing Regulation: to perform this analysis confidence intervals for the short run default rates have been calculated. The result of this comparison can be found in the third column of Figure 14 in Appendix 4.

21. The additional short-run default rates available after the mapping was produced do not breach neither the monitoring nor the trigger level.

#### 4.2. Final mapping after review of the qualitative factors

22. The qualitative factors specified in Article 7 of the Implementing Regulation have been used to challenge the mapping proposed by the default rate calculation. Qualitative factors acquire more importance in the rating categories where quantitative evidence is not sufficient to test the default behavior<sup>8</sup>, as it is the case of Aaa and Aa rating categories.

23. Moody’s has not registered any change in the quantitative factors since the draft Implementing Technical Standards submitted by the JC to the Commission. Therefore the qualitative considerations remain unchanged with respect to the original mapping report, which means that the meaning and relative position of the credit assessments is the only qualitative factor that suggests an adjustment of the mapping proposal resulting from the quantitative factors. In particular, the meaning and relative position of rating categories Aaa and Aa are in line with CQS 1.

## 5. Mapping of Moody’s Global short-term rating scale

<sup>7</sup> For Aaa and Aa rating categories, the number of credit ratings cannot be considered to be sufficient and therefore no calculation of the short run default rate has been made. In the case of rating categories Caa-C, the review of the short run default rates is not necessary since they have been mapped to CQS6.

<sup>8</sup> The default behavior of a rating category is considered to be properly tested if the quantitative factors for that rating category are calculated under Articles 3 – 5 ITS.



24. Moody's also produces short-term credit ratings and assigns them to the Global short-term rating scale (see Figure 4 in Appendix 1). Given that the default information referred to these rating categories cannot be comparable with the 3-year time horizon that characterizes the benchmarks established in the Implementing Regulation, the internal relationship established by Moody's between these two rating scales (described in Figure 5 of Appendix 1) has been used to derive the mapping of the Global short-term rating scale. This should ensure the consistency of the mappings proposed for Moody's.

25. More specifically, as each short-term rating can be associated with a range of long-term ratings, the CQS assigned to the short-term credit rating category has been determined based on the most frequent CQS assigned to the related long-term credit rating categories. In case of draw, the most conservative CQS has been considered. If the most frequent step is identified as CQS 5 or 6, CQS 4 is allocated, as the risk weights assigned to CQS 4 to 6 are all equal to 150% according to Article 131 CRR.

26. The result is shown in Figure 15 of Appendix 4:

- **P-1.** This rating category indicates a *superior* ability to repay short-term debt obligations. It is internally mapped to long-term categories Aaa to A3, which are mapped to CQS 1 and 2, but mostly to CQS 1. Therefore, CQS 1 is the proposed mapping.
- **P-2.** This rating category indicates a *strong* ability to repay short-term debt obligations. It is internally mapped to long-term categories A3 to Baa2, which are mapped to CQS 2 and 3, but mostly to CQS 2. Therefore, CQS 2 is the proposed mapping.
- **P-3.** This rating category indicates an *acceptable* ability to repay short-term debt obligations. It is internally mapped to long-term categories Baa2 and Baa3, which are mapped to CQS 3. Therefore, CQS 3 is the proposed mapping.
- **NP.** This rating category indicates a below average ability to repay short-term debt obligations. It is internally mapped to long-term categories Baa3 and C, which are mapped to CQS 4 to 6. Since the risk weights assigned to CQS 4 to 6 are all equal to 150% according to Article 131 CRR, the mapping proposed for the NP rating category is CQS 4.

## Appendix 1: Credit ratings and rating scales

Figure 2: Moody's relevant credit ratings and rating scales

SA exposure classes	Name of credit rating	Credit rating scale
<b>Long-term ratings</b>		
Central governments / Central banks	Long-term issuer rating	Global long-term rating scale
	Long-term obligation rating	Global long-term rating scale
	Insured Ratings	Global long-term rating scale
Regional and local governments and PSEs	Long-term issuer rating	Global long-term rating scale
	Long-term obligation rating	Global long-term rating scale
	Enhanced Ratings	Global long-term rating scale
	Insured Ratings	Global long-term rating scale
	Underlying Ratings	Global long-term rating scale
Institutions	Long-term issuer rating	Global long-term rating scale
	Long-term obligation rating	Global long-term rating scale
	Bank Deposit Ratings	Global long-term rating scale
	Medium-term Note Program Ratings	Global long-term rating scale
Corporates	Long-term issuer rating	Global long-term rating scale

SA exposure classes	Name of credit rating	Credit rating scale
	Long-term obligation rating	Global long-term rating scale
	Insurance Financial Strength Rating	Global long-term rating scale
	Bank Deposit Ratings	Global long-term rating scale
	Clearing Counterparty Ratings	Global long-term rating scale
	Corporate Family Ratings	Global long-term rating scale
	Credit Default Swaps Ratings	Global long-term rating scale
	Medium-term Note Program Ratings	Global long-term rating scale
Covered bonds	Long-term obligation rating	Global long-term rating scale
<b>Short-term ratings</b>		
Central governments / Central banks	Short-term issuer rating	Global short-term rating scale
	Short-term obligation rating	Global short-term rating scale
Regional and local governments and PSEs	Short-term issuer rating	Global short-term rating scale
	Short-term obligation rating	Global short-term rating scale
Institutions	Short-term issuer rating	Global short-term rating scale
	Short-term obligation rating	Global short-term rating scale
	Bank Deposit Ratings	Global short-term rating scale

SA exposure classes	Name of credit rating	Credit rating scale
Corporates	Short-term issuer rating	Global short-term rating scale
	Short-term obligation rating	Global short-term rating scale
	Insurance Financial Strength Rating	Global long-term rating scale

Source: Moody's

Figure 3: Global long-term rating scale

Credit assessment	Meaning of the credit assessment
Aaa	Obligations rated Aaa are judged to be of the highest quality, subject to the lowest level of credit risk.
Aa	Obligations rated Aa are judged to be of high quality and are subject to very low credit risk.
A	Obligations rated A are judged to be upper-medium grade and are subject to low credit risk.
Baa	Obligations rated Baa are judged to be medium-grade and subject to moderate credit risk and as such may possess certain speculative characteristics.
Ba	Obligations rated Ba are judged to be speculative and are subject to substantial credit risk.
B	Obligations rated B are considered speculative and are subject to high credit risk.
Caa	Obligations rated Caa are judged to be speculative of poor standing and are subject to very high credit risk.
Ca	Obligations rated Ca are highly speculative and are likely in, or very near, default, with some prospect of recovery of principal and interest.
C	Obligations rated C are the lowest rated and are typically in default, with little prospect for recovery of principal or interest.

Source: Moody's

Figure 4: Global short-term rating scale

Credit assessment	Meaning of the credit assessment
P – 1	Issuers (or supporting institutions) rated Prime-1 have a superior ability to repay short-term debt obligations.
P – 2	Issuers (or supporting institutions) rated Prime-2 have a strong ability to repay short-term debt obligations.
P – 3	Issuers (or supporting institutions) rated Prime-3 have an acceptable ability to repay short-term obligations.
NP	Issuers (or supporting institutions) rated Not Prime do not fall within any of the Prime rating categories.

Source: Moody's

Figure 5: Internal relationship between Moody's Global long-term and short-term rating scales

Long-term issuer credit ratings scale	Short-term issuer credit ratings scale
Aaa	P-1
Aa1	
Aa2	
Aa3	
A1	
A2	P-2
A3	
Baa1	P-3
Baa2	
Baa3	
Ba1	NP
Ba2	
Ba3	
B1	
B2	
B3	
Caa1	
Caa2	
Caa3	
Ca	
C	

Source: Moody's



## Appendix 2: Definition of default

Moody's definition of default is applicable only to debt or debt-like obligations. Four events constitute a debt default under Moody's definition:

- a missed or delayed disbursement of a contractually obligated interest or principal payment (excluding missed payments cured within a contractually allowed grace period), as defined in credit agreements and indentures;
- a bankruptcy filing or legal receivership by the debt issuer or obligor that will likely cause a miss or delay in future contractually-obligated debt service payments;
- a distressed exchange whereby 1) an obligor offers creditors a new or restructured debt, or a new package of securities, cash or assets that amount to a diminished financial obligation relative to the original obligation and 2) the exchange has the effect of allowing the obligor to avoid a bankruptcy or payment default in the future; or d) a change in the payment terms of a credit agreement or indenture imposed by the sovereign that results in a diminished financial obligation, such as a forced currency re-denomination (imposed by the debtor, himself, or his sovereign) or a forced change in some other aspect of the original promise, such as indexation or maturity.

Moody's definition of default does not include so-called "technical defaults", such as maximum leverage or minimum debt coverage violations, unless the obligor fails to cure the violation and fails to honour the resulting debt acceleration which may be required. Also excluded are payments owed on long-term debt obligations which are missed due to purely technical or administrative errors which are 1) not related to the ability or willingness to make the payments and 2) are cured in very short order (typically, 1-2 business days).

Moody's also maintains a definition for "impairment" that includes all events constituting a default as well as a downgrade to Ca or C.

Source: Moody's

## Appendix 3: Default rates of each rating category

Figure 6: Number of rated items, with relevant weights<sup>9</sup>

Date	Aaa	Aa	A	Baa	Ba	B	Caa-C
01/01/2000	94.5	553.5	1,027.0	871.5	404.0	892.0	292.0
01/07/2000	92.0	577.0	1,060.0	886.5	388.0	873.5	277.5
01/01/2001	88.0	583.5	1,078.5	897.5	368.0	837.5	288.5
01/07/2001	93.5	570.0	1,090.0	945.0	378.5	751.0	302.5
01/01/2002	100.5	575.5	1,083.0	991.0	396.5	626.5	324.5
01/07/2002	104.5	551.0	1,064.0	1,027.0	405.0	616.5	306.5
01/01/2003	99.0	524.0	1,064.5	974.0	373.5	510.5	271.5
01/07/2003	101.5	507.5	1,049.5	1,000.5	354.5	542.5	256.0
01/01/2004	115.0	493.5	1,051.5	1,006.5	359.5	552.0	225.0
01/07/2004	110.5	499.5	1,035.5	1,023.0	372.0	579.5	236.0
01/01/2005	110.0	502.0	1,086.5	1,038.5	362.5	537.0	263.0
01/07/2005	106.5	523.5	1,088.0	1035.0	368.0	533.5	268.0
01/01/2006	108.0	529.5	1,114.5	1050.5	339.5	360.5	127.0
01/07/2006	109.5	562.5	1,107.5	1031.0	376.0	352.0	128.0
01/01/2007	117.5	568.5	1,140.5	1033.0	347.5	370.0	126.5
01/07/2007	157.0	637.0	1,089.0	1030.5	359.0	387.5	138.5
01/01/2008	135.0	575.5	1,056.0	1021.0	354.5	367.5	151.5
01/07/2008	116.0	577.0	1,062.5	1032.0	349.0	357.0	159.0
01/01/2009	113.0	530.5	1,069.5	1025.0	333.5	323.0	200.0
01/07/2009	76.0	478.5	1,037.5	1067.5	341.5	296.0	216.5
01/01/2010	70.0	448.5	1,032.0	1130.0	346.0	327.5	191.5
01/07/2010	69.0	422.0	1,033.5	1167.0	370.5	361.5	175.5
01/01/2011	54.0	357.0	943.0	1175.5	379.5	413.0	175.0
01/07/2011	53.0	355.5	930.5	1222.5	423.5	449.5	173.0
01/01/2012	52.0	299.5	954.0	1247.0	451.5	443.0	185.0
01/07/2012	38.0	241.0	934.0	1354.5	432.0	464.0	197.5
01/01/2013	31.5	241.5	915.5	1435.5	417.0	480.5	225.5

Source: Joint Committee calculations based on CERP data

<sup>9</sup> Withdrawn ratings have been weighted by 50% as indicated in Article 4(3) of the ITS.

Figure 7: Number of defaulted rated items

Date	Aaa	Aa	A	Baa	Ba	B	Caa-C
01/01/2000	0	0	4	17	21	212	123
01/07/2000	0	0	7	20	24	221	109
01/01/2001	0	0	8	19	20	209	118
01/07/2001	0	0	5	20	15	152	122
01/01/2002	0	0	3	16	15	76	130
01/07/2002	0	0	0	9	15	47	101
01/01/2003	0	0	0	2	8	34	87
01/07/2003	0	0	0	2	5	23	62
01/01/2004	0	0	0	2	5	21	41
01/07/2004	0	0	0	2	2	26	32
01/01/2005	0	0	0	2	3	14	29
01/07/2005	0	0	0	2	4	14	30
01/01/2006	0	0	10	3	6	23	22
01/07/2006	0	0	12	5	18	37	38
01/01/2007	0	0	14	14	22	60	45
01/07/2007	0	3	15	16	24	62	51
01/01/2008	0	5	15	15	28	67	61
01/07/2008	0	3	18	16	23	71	66
01/01/2009	0	3	8	15	10	43	87
01/07/2009	0	2	7	5	5	22	57
01/01/2010	0	0	10	2	2	17	32
01/07/2010	0	1	9	2	6	15	33
01/01/2011	0	1	5	6	7	12	28
01/07/2011	0	1	1	6	6	17	27
01/01/2012	0	0	1	4	7	19	30
01/07/2012	0	0	1	3	4	29	30
01/01/2013	0	0	1	3	7	37	36

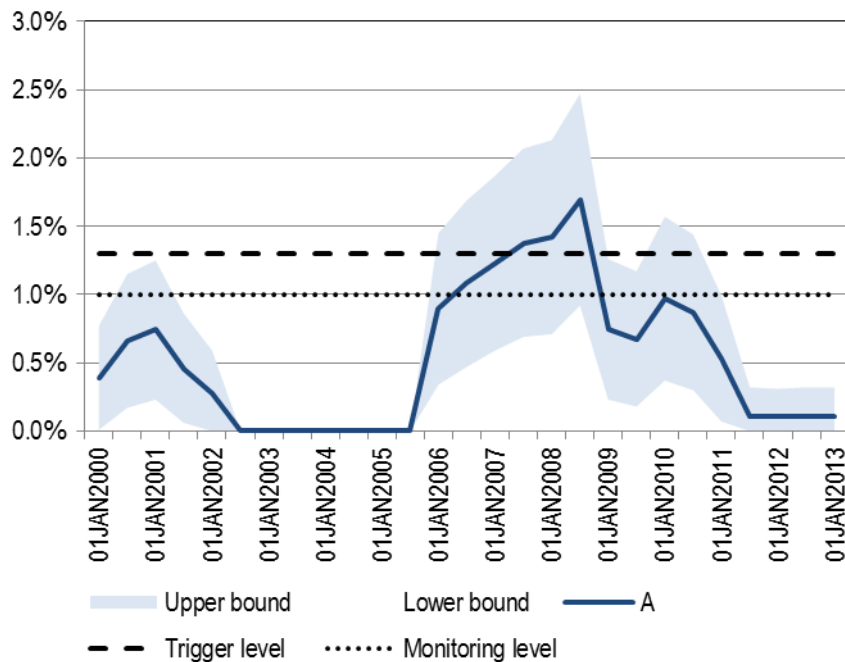
Source: Joint Committee calculations based on CERP data

Figure 8: Short-run and long-run observed default rates

Date	A	Baa	Ba	B	Caa-C
01/01/2000	0.4%	2.0%	5.2%	23.8%	42.1%
01/07/2000	0.7%	2.3%	6.2%	25.3%	39.3%
01/01/2001	0.7%	2.1%	5.4%	25.0%	40.9%
01/07/2001	0.5%	2.1%	4.0%	20.2%	40.3%
01/01/2002	0.3%	1.6%	3.8%	12.1%	40.1%
01/07/2002	0.0%	0.9%	3.7%	7.6%	33.0%
01/01/2003	0.0%	0.2%	2.1%	6.7%	32.0%
01/07/2003	0.0%	0.2%	1.4%	4.2%	24.2%
01/01/2004	0.0%	0.2%	1.4%	3.8%	18.2%
01/07/2004	0.0%	0.2%	0.5%	4.5%	13.6%
01/01/2005	0.0%	0.2%	0.8%	2.6%	11.0%
01/07/2005	0.0%	0.2%	1.1%	2.6%	11.2%
01/01/2006	0.9%	0.3%	1.8%	6.4%	17.3%
01/07/2006	1.1%	0.5%	4.8%	10.5%	29.7%
01/01/2007	1.2%	1.4%	6.3%	16.2%	35.6%
01/07/2007	1.4%	1.6%	6.7%	16.0%	36.8%
01/01/2008	1.4%	1.5%	7.9%	18.2%	40.3%
01/07/2008	1.7%	1.6%	6.6%	19.9%	41.5%
01/01/2009	0.7%	1.5%	3.0%	13.3%	43.5%
01/07/2009	0.7%	0.5%	1.5%	7.4%	26.3%
01/01/2010	1.0%	0.2%	0.6%	5.2%	16.7%
01/07/2010	0.9%	0.2%	1.6%	4.1%	18.8%
01/01/2011	0.5%	0.5%	1.8%	2.9%	16.0%
01/07/2011	0.1%	0.5%	1.4%	3.8%	15.6%
01/01/2012	0.1%	0.3%	1.6%	4.3%	16.2%
01/07/2012	0.1%	0.2%	0.9%	6.3%	15.2%
01/01/2013	0.1%	0.2%	1.7%	7.7%	16.0%
Weighted average	<b>0.5%</b>	<b>0.8%</b>	<b>3.1%</b>	<b>11.6%</b>	<b>27.7%</b>

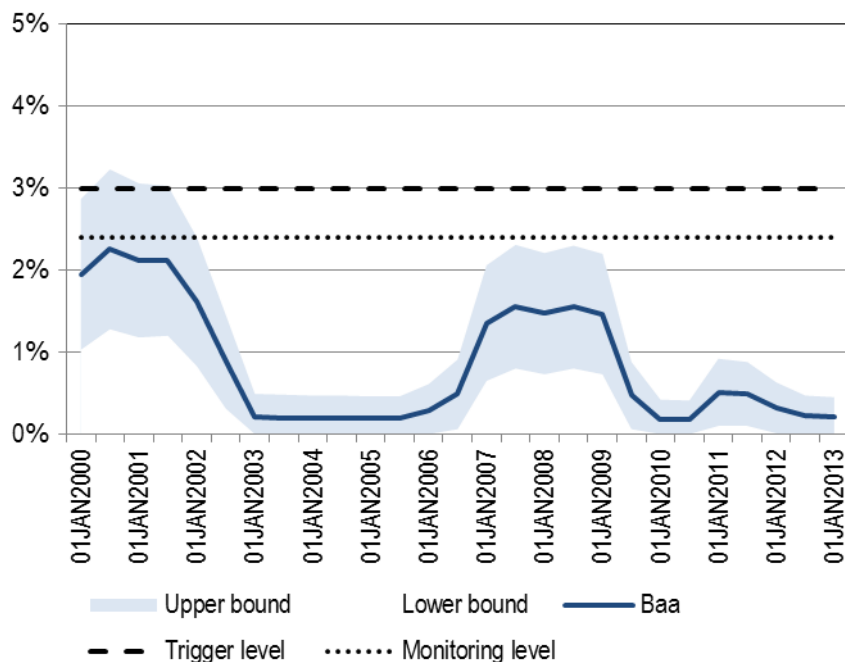
Source: Joint Committee calculations based on CERE data

Figure 9: Short-run and long-run observed default rates of A rating category



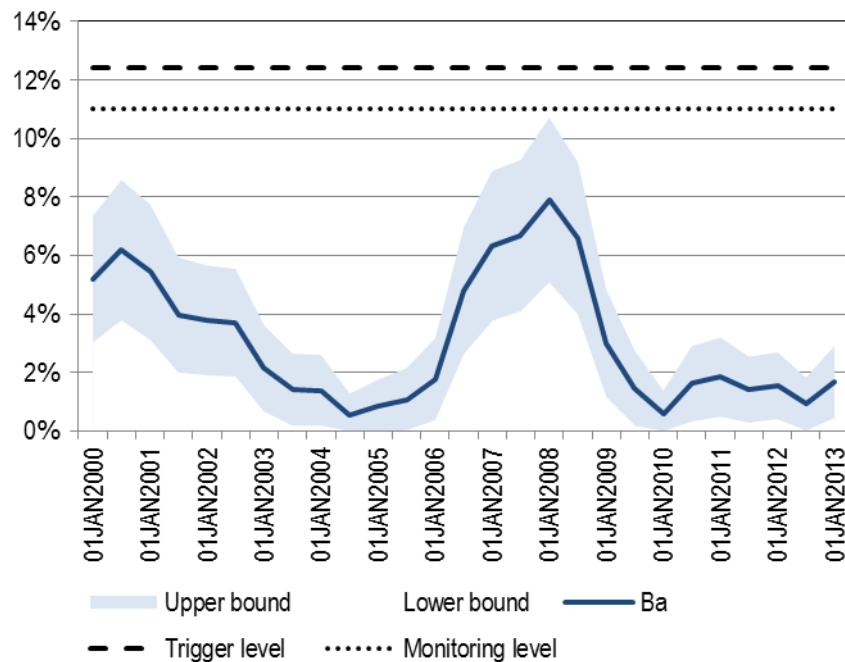
Source: Joint Committee calculations based on CERP data

Figure 10: Short-run and long-run observed default rates of Baa rating category



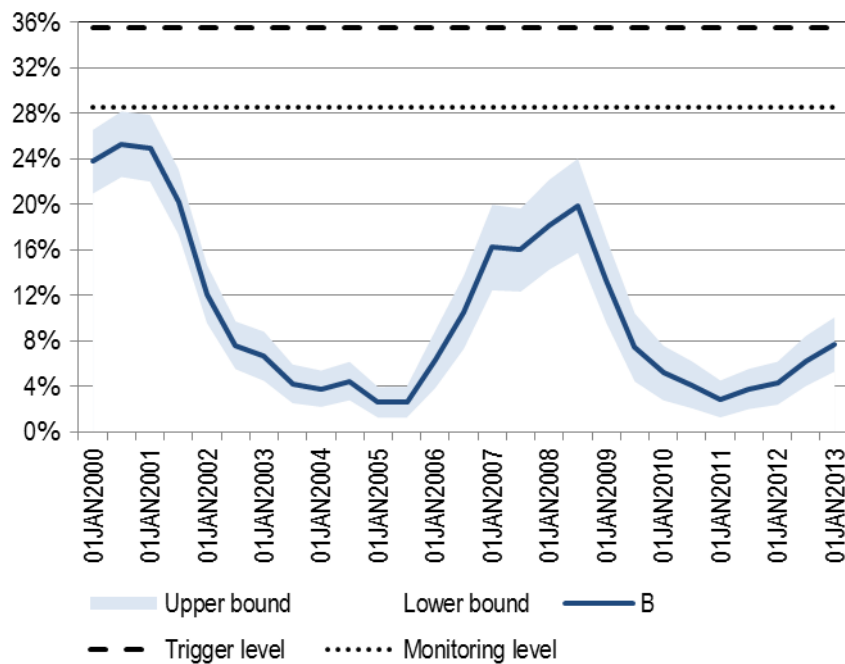
Source: Joint Committee calculations based on CERP data

Figure 11: Short-run and long-run observed default rates of Ba rating category



Source: Joint Committee calculations based on CERP data

Figure 12: Short-run and long-run observed default rates of B rating category



Source: Joint Committee calculations based on CERP data

Figure 13: Mapping proposal for rating categories with a non-sufficient number of credit ratings

2001-2005	Aaa/Aa
CQS of equivalent international rating category	CQS 1
N. observed defaulted items	0
Minimum N. rated items	0
Observed N. rated items	6359
<b>Mapping proposal</b>	<b>CQS 1</b>
2006-2010	Aaa/Aa
CQS of equivalent international rating category	CQS 1
N. observed defaulted items	17
Minimum N. rated items	n.a.
Observed N. rated items	6401
<b>Mapping proposal</b>	<b>CQS 2</b>
2011-2013	Aaa/Aa
CQS of equivalent international rating category	CQS 1
N. observed defaulted items	2
Minimum N. rated items	1038
Observed N. rated items	1723
<b>Mapping proposal</b>	<b>CQS 1</b>

Source: Joint Committee calculations based on CEREP data



## Appendix 4: Mappings of each rating scale

Figure 14: Mapping of Moody's Global long-term rating scale

Credit assessment	Initial mapping based on LR DR (CQS)	Review based on SR DR (CQS)	Final review based on qualitative factors (CQS)	Main reason for the mapping
<b>Aaa</b>	1/2	n.a.	<b>1</b>	Quantitative evidence is not clear. The meaning, relative position and time horizon of the rating category are representative of the final CQS.
<b>Aa</b>	1/2	n.a.	<b>1</b>	
<b>A</b>	2	2	<b>2</b>	The quantitative factors are representative of the final CQS. Some rated items have been removed from the pool because they were not considered representative.
<b>Baa</b>	3	3	<b>3</b>	The quantitative factors are representative of the final CQS.
<b>Ba</b>	4	4	<b>4</b>	The quantitative factors are representative of the final CQS.
<b>B</b>	5	5	<b>5</b>	The quantitative factors are representative of the final CQS.
<b>Caa</b>	6	6	<b>6</b>	The quantitative factors are representative of the final CQS.
<b>Ca</b>	6	6	<b>6</b>	The quantitative factors are representative of the final CQS.
<b>C</b>	6	6	<b>6</b>	The quantitative factors are representative of the final CQS.

Figure 15: Mapping of Moody's Global short-term rating scale

Credit assessment	Corresponding Global long-term rating scale assessment (established by Moody's)	Range of CQS of corresponding Global rating scale	Final review based on qualitative factors (CQS)	Main reason for the mapping
P-1	Aaa/A3	1 – 2	1	The final CQS has been determined based on the most frequent step associated with the corresponding long-term credit rating category.
P-2	A3/Baa2	2 – 3	2	The final CQS has been determined based on the most frequent step associated with the corresponding long-term credit rating category.
P-3	Baa2/Baa3	3	3	The final CQS has been determined based on the most frequent step associated with the corresponding long-term credit rating category. As there is a draw between CQS 2 and 3, the most conservative CQS has been considered.
NP	Ba1/C	4 – 6	4	The final CQS has been determined based on the most frequent step associated with the corresponding long-term credit rating category. The risk weights assigned to CQS 4 to 6 are all 150%, therefore CQS 4.