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30 October 2014

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# Mapping of the Economist Intelligence Unit Ltd 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 to determine the ‘mapping’<sup>1</sup> of the credit assessments of the Economist Intelligence Unit Ltd (EIU).
2. The methodology applied to produce the mapping is a combination of the provisions laid down in Article 136(2) Regulation (EU) No 575/2013 (Capital Requirements Regulation – CRR) and those proposed in the Consultation paper on draft Implementing Technical Standards on the mapping of ECAIs’ credit assessments under Article 136(1) and (3) of Regulation (EU) No 575/2013 published on 5 February 2014 (draft ITS).
3. 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 objective of allowing investors to easily compare all credit ratings that exist with regard to a specific rated entity nor should be understood as a comparison of the rating methodologies of EIU with those of other ECAIs. This mapping should however be interpreted as the correspondence of the rating categories of the EIU with a regulatory scale which has been defined for prudential purposes. This implies that an appropriate degree of prudence may have been applied wherever not sufficient evidence has been found with regard to the degree of risk underlying the credit assessments.
4. The resulting mapping tables have been specified in Annex III of the addendum to the draft ITS published today. Figure 1 below shows the result for the only ratings scale of the EIU, the Sovereign rating band scale, together with a summary of the main reasons behind the mapping proposal for each rating category.

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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).

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Figure 1: Mapping of EIU's Sovereign rating band scale

Credit assessment	Credit quality step	Main reason
AAA	1	The quantitative factors are representative of the final CQS.
AA	1	
A	2	The quantitative factors are representative of the final CQS. The mapping has been reinforced by the expected downgrade probability of A-rated items.
BBB	3	The quantitative factors are representative of the final CQS. The mapping has been reinforced by the expected downgrade probability of BBB-rated items.
BB	4	The quantitative factors are representative of the final CQS.
B	5	The quantitative factors are representative of the final CQS.
CCC	6	The quantitative factors are representative of CQS 5. The internal PD estimate of EIU suggests that CQS 6 should be proposed.
CC	6	The quantitative factors as well as meaning and relative position of the rating category the factors are representative of the final CQS.
C	6	The meaning and relative position of the rating category is representative of the final CQS.
D	6	The meaning and relative position of the rating category is representative of the final CQS.

## 2. Introduction

5. This report describes the mapping exercise carried out by the Joint Committee (JC) to determine the 'mapping' of the credit assessments of the European Intelligence Unit Ltd (EIU).
6. EIU is a credit rating agency that has been registered with ESMA in 3 June 2013 and therefore meets the conditions to be an eligible credit assessment institution (ECAI)<sup>2</sup>. EIU is an independent business within The Economist Group that provides unsolicited ratings of 128 worldwide sovereigns through its Country Risk Service.
7. The methodology applied to produce the mapping is a combination of the provisions laid down in Article 136(2) CRR and those proposed in the Consultation paper on draft Implementing Technical Standards on the mapping of ECAIs' credit assessments under Article 136(1) and (3) of Regulation (EU) No 575/2013 published on 5 February 2014 (draft ITS). Two sources of information have been used. On the one hand, since EIU has not reported rating information to CEREP by the time this analysis has been made, a database with the relevant historical rating information has been directly requested to the ECAI. On the other hand, due to the scarcity of default data typically expected from EIU's rated population, the credit assessments produced by a group of benchmark ECAIs has been used to infer the long run default rates of EIU's credit assessments and to compare EIU's point in time rating methodology with the rating methodology of other benchmark ECAIs
8. 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 objective of allowing investors to easily compare all credit ratings that exist with regard to a specific rated entity nor should be understood as a comparison of the rating methodologies of EIU with those of other ECAIs. This mapping should however be interpreted as the correspondence of the rating categories of EIU with a regulatory scale which has been defined for prudential purposes. This implies that an appropriate degree of prudence may have been applied wherever not sufficient evidence has been found with regard to the degree of risk underlying the credit assessments.
9. Section 3 describes the relevant ratings scales of EIU for the purpose of the mapping. Section 4 contains the methodology applied to derive the mapping of EIU's ratings scale. The mapping table is shown in Appendix 4 of this document and have been specified in Annex III of the addendum to the draft ITS published today.

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<sup>2</sup> It is important to note that the mapping does not contain any assessment of the registration process of EIU carried out by ESMA.

### 3. EIU credit ratings and rating scales

10. EIU produces one type of credit ratings, **Country credit risk ratings**, which may be used by institutions for the calculation of risk weights under the Standardised Approach (SA)<sup>3</sup>, as shown in Column 2 of Figure 2 in Appendix 1.
11. A country credit risk rating is defined as an objective assessment of the risks facing institutions lending money, financing trade or conducting other types of business that expose them to cross-border credit or financial risk. Therefore, they are opinions on the willingness and capacity of governments to honour their obligations whether in local or foreign currency. The model provides "point-in-time" rather than "through-the-cycle" ratings.
12. EIU assigns these credit ratings to the **Sovereign rating band scale** as illustrated in column 3 of Figure 2 in Appendix 1. Therefore, a specific mapping has been prepared for this rating scale. The specification of Sovereign rating band scale is described in Figure 3 of Appendix 1.
13. The rating categories, letter grades and descriptive characteristics of the Sovereign rating band scale are similar to those of the large international ECAs. However, they are not necessarily comparable due to the following:
- EIU ratings are point-in-time as opposed to the through-the-cycle ratings of the large international rating agencies.
  - EIU ratings relate solely to the probability of default and do not explicitly seek to take account of a loss given default.
  - EIU rating methodology is mostly model-determined, as opposed to the mostly judgment-determined ratings of five benchmark ECA's. Furthermore, the model contains numerous variables, which makes it harder to achieve the very low scores required to qualify for an AAA rating in EIU system than it is in the judgment-determined system of the large international rating agencies.
14. The differences between EIU ratings and those of the three international ECAs are further explained in Appendix 2.
15. The mapping of the Sovereign rating band scale is explained in Section 4 and it has been derived in accordance with the quantitative factors, qualitative factors and benchmarks specified in the draft ITS.

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<sup>3</sup> As explained in recital 2 draft 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.

## 4. Mapping of EIU Sovereign rating band scale

16. The mapping of the Sovereign rating band 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. Figure 20 in Appendix 4 illustrates the outcome of each stage.

17. In the first stage, the quantitative factors referred to in Article 1 draft ITS 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 Article 15(2) draft ITS.
- The *time evolution of the long run default rates* of a rating category have been compared with the benchmarks specified in Article 15(2) draft ITS, and more specifically with their upper bounds, which represent the maximum value allowed for the long run default rate within a CQS.

18. In a second stage, the qualitative factors proposed in Article 8 draft ITS 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

#### 4.1.1. Calculation of the long run default rates

19. The long run default rate cannot be calculated based on the default behaviour of the items rated by EIU because such items do not belong to the 'Corporate' type of rating, as specified in point (a) of Article 2 draft ITS.

20. However, a sufficient number of items assigned a different measure of creditworthiness is available, namely the credit ratings assigned by a group of benchmark ECAIs to EIU's rated population (benchmark ratings)<sup>4</sup>. Thus, in accordance with point (a) of Article 6(1) draft ITS, the long-run default rates of all EIU's rating categories have been calculated as the weighted average of the long run default rate benchmarks associated with the related categories of the benchmark ratings.

21. Figure 6 contains the relationship observed between EIU and Benchmark ratings during the period 2006 – 2013 (i.e. 8 years). Given that the rating methodologies of EIU and the benchmark ECAIs are very different (Point-in-time vs. Through-the-cycle), the calculation of the long run default rate would be biased unless the relationship between EIU and benchmark ratings was measured over a complete economic cycle (i.e. 10 years). Therefore, it has been necessary to estimate the relationship between the two types of ratings for the period 2004h1

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<sup>4</sup> Appendix 2 describes the relationship between EIU and benchmark ratings over a common sample of rated items.

– 2006h1 in order to have a complete 10-year economic cycle. For simplicity reasons, and because it was a period of significant economic stability, the relationship observed in 2006h2 has been assumed also for the preceding periods.

22. The result of the calculation of the long run default rates for each rating category is shown in Figure 9 and Figure 10 of Appendix 3<sup>5</sup>.

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

23. As illustrated in the second column of Figure 20 in Appendix 4, the rating categories of the Sovereign rating band scale of EIU have been initially allocated to each CQS based on the comparison of the long run default rates (see Figure 10 in Appendix 3) and the long run default rate benchmark intervals established in Article 15(2) draft ITS.

24. In the case of EIU rating categories A and BBB, the long run default rate is very close to the lower bound of the proposed CQS (2 and 3 respectively). Therefore, this proposal should be particularly reinforced by the qualitative factors.

#### 4.1.3. Reviewed mapping based on the time evolution of the long run default rate

25. As shown in Figure 11 to Figure 18 in Appendix 3, the time evolution of the long run default rates of rating categories AAA to CC have been compared with the upper bound benchmark values specified established in Article 15(2) draft ITS, which represents the maximum value allowed for the long run default rate within a CQS<sup>6</sup>.

26. The objective is to assess, for each rating category, whether the observed long 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. However, it should be noted that any result should be taken with caution because the default rates are not based on the own default behaviour of EIU ratings.

27. The result of this comparison can be found in the third column of Figure 20 in Appendix 4:

- **AAA to CCC:** no long run default rate has breached the upper bound benchmark values. In all cases except CCC the long run default rates are well below their corresponding upper bound, meaning that the proposed mapping is adequate. Therefore, the initial mapping based on the long run default rate is confirmed at this stage.
- **CC:** The long run average default rate calculated in the previous section (23.29%) is very close to the upper bound of CQS 5 (26.50%). Therefore, it is not surprising that the long

<sup>5</sup> In the case of C and D, the long run default rates have not been calculated because there are no rated items in these categories.

<sup>6</sup> For C and D rating category, there were no credit ratings and therefore no calculation of the long run default rate has been made. Moreover, in the case of rating category D, the review of the long run default rate would not be necessary since it can be mapped to CQS6 based on its meaning and relative positions (see qualitative factor).

run default rate measured at each individual point in time has breached this upper bound in 2010 and 2012. Although not conclusive, this result may suggest that CQS 6 is the appropriate mapping. This however has to be confirmed by qualitative factors.

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

28. The qualitative factors specified in Article 8 draft ITS 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 regarding the default behavior is less clear, as it is the case of A, BBB, CC, C and D rating categories.

29. The **definition of default** applied by EIU is not used for the calculation of the quantitative factors. Therefore it is not relevant for the analysis and no specific adjustment has been proposed based on this factor.

30. Regarding **the meaning and relative position of the credit assessments**, this factor is not helpful due to the differences explained in section 2 between the international rating scale (that serves as basis for Annex II draft ITS) and EIU Sovereign rating band scale.

31. However, since the meaning of CC, C and D rating categories makes reference to a likely default status of some obligations, it can be assumed on the basis of this qualitative factor that all 3 rating categories should be mapped to CQS 6.

32. Regarding the **time horizon**, it plays a very important role in the mapping of EIU since the CRA uses a 12-month time horizon when assigning its country ratings, compared to 3-year time horizon used for mapping purposes. Therefore, the transitions matrices in Figure 7 and Figure 8 should be analysed to identify a potential worsening of the credit quality of any rating category over the 3-year time horizon (which is the relevant one for mapping purposes):

- In the case of rating categories A and BBB, for which the mapping proposal based on the quantitative factors was less clear, the transition matrix in Figure 8 of Appendix 2 shows a significant expected downgrade probability after three years (58.3% and 43% respectively)<sup>7</sup>. Therefore, despite the low values of the long run default rate, the mapping proposal to CQS 2 and 3 is confirmed. In the case of CCC and CC, the probability of having the same rating after 3 years is very high (76.5% and 80% respectively) and therefore no adjustment is proposed.

33. Finally, an **estimate of the long run default rate** associated with each rating category was provided by the EIU to be considered in the mapping of the rating scale. The EIU recognizes the difficulty in providing statistically significant estimate of the default rate underlying its rating categories: *'A problem in conducting analysis of sovereign defaults is the scarcity of default events, both in absolute terms and in relative terms'*. However, EIU has built internal

<sup>7</sup> The probability of an upgrade is calculated as the sum of probabilities to be downgraded to any category below A and BBB respectively.

estimates of 12-month default probabilities during the back-testing of the rating model with data from the January 1997 - December 2005 period. The results are presented in Figure 19. In light of these results, the mapping proposal of the CCC category should be modified and changed to CQS 6.



## Appendix 1: Credit ratings and rating scales

Figure 2: The EIU'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	Country risk credit rating	Sovereign rating band scale

Source: EIU

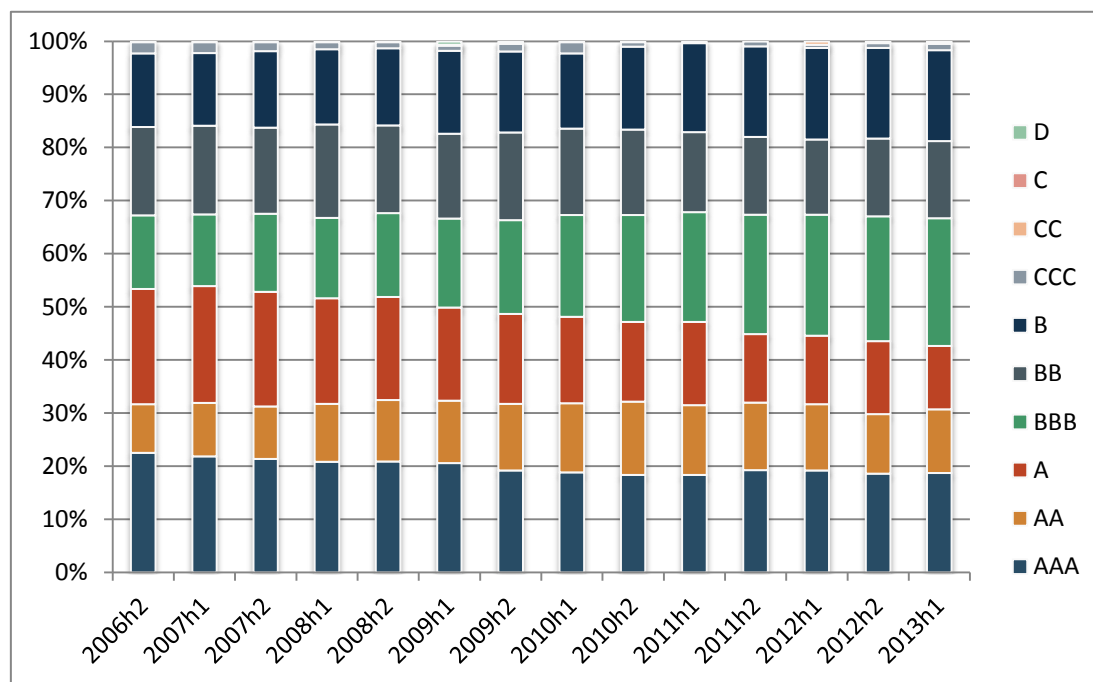
Figure 3: Sovereign rating band scale

Credit assessment	Meaning of the credit assessment
AAA	Capacity and commitment to honour obligations not in question under any foreseeable circumstances.
AA	Capacity and commitment to honour obligations not in question.
A	Capacity and commitment to honour obligations strong.
BBB	Capacity and commitment to honour obligations currently but somewhat susceptible to changes in economic climate.
BB	Capacity and commitment to honour obligations currently but susceptible to changes in economic climate.
B	Capacity and commitment to honour obligations currently but very susceptible to changes in economic climate.
CCC	Questionable capacity and commitment to honour obligations. Patchy payment record.
CC	Somewhat weak capacity and commitment to honour obligations. Patchy payment record. Likely to be in default on some obligations.
C	Weak capacity and commitment to honour obligations. Patchy payment record. Likely to be in default on significant amount of obligations.
D	Very weak capacity and commitment to honour obligations. Poor payment record. Currently in default on significant amount of obligations.

Source: EIU

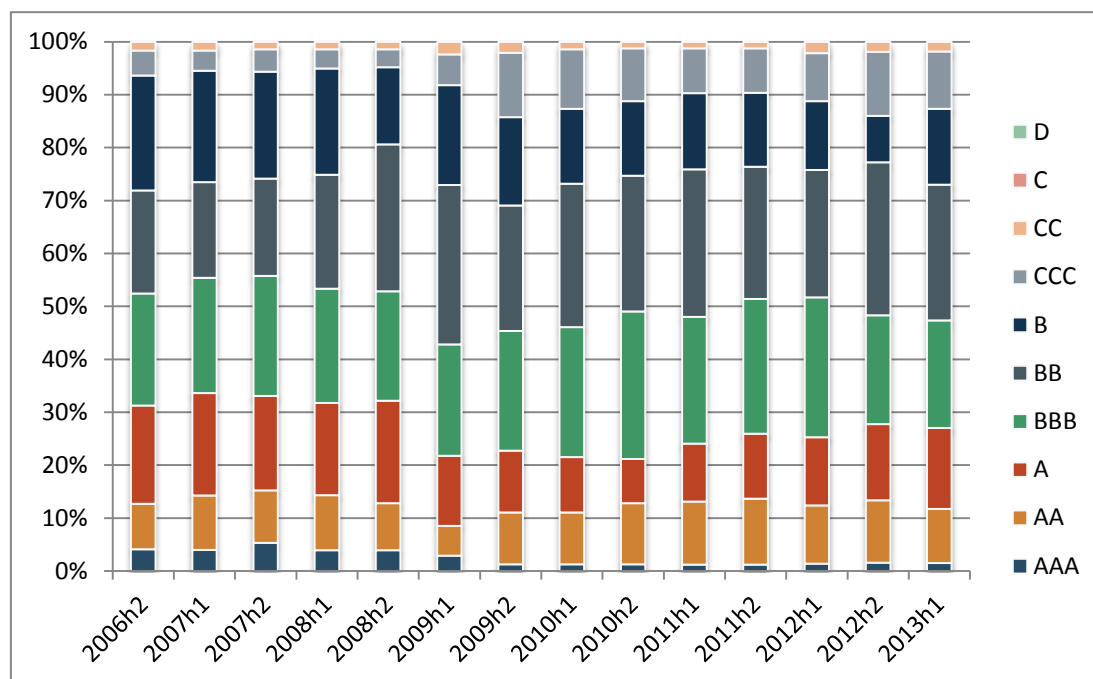
## Appendix 2: Relationship between EIU and Benchmark ratings

Figure 4: Distribution of Benchmark ratings



Source: Joint Committee analysis based on CEREP and EIU data

Figure 5: Distribution of EIU ratings



Source: Joint Committee analysis based on CEREP and EIU data

As shown in Figure 4 and Figure 5, EIU ratings were generally more conservative than those of the main rating agencies (denominated ‘benchmark’ ratings) before the onset of the crisis. Around 45% of sovereigns rated by EIU were in the same rating band as those assigned by the main rating agencies, 45% of EIU ratings were one band lower, 5% two bands lower and 5% one band higher.

Figure 6: Observed relationship between EIU and Benchmark ratings. 8-year average (2006 - 2013)

Rating Benchmark	AAA	AA	A	BBB	BB	B	CCC	CC	C	D
<b>Rating EIU</b>										
<b>AAA</b>	202	0	0	0	0	0	0	0	0	0
<b>AA</b>	715	123	13	0	0	0	0	0	0	0
<b>A</b>	327	466	376	24	0	0	0	0	0	0
<b>BBB</b>	201	366	790	535	25	0	0	0	0	0
<b>BB</b>	0	19	237	818	767	202	0	0	0	0
<b>B</b>	0	0	34	226	450	586	23	0	0	4
<b>CCC</b>	0	0	0	11	112	470	56	1	0	5
<b>CC</b>	0	0	0	0	6	88	29	6	4	4
<b>C</b>	0	0	0	0	0	0	0	0	0	0
<b>D</b>	0	0	0	0	0	0	0	0	0	0

Source: Joint Committee analysis based on CEREP and EIU data

Figure 6 shows the ratings assigned by EIU and the benchmark ECAs to a common set of countries (108 in total) since EIU started operating (2006). It should be noted that each of the 108 countries rated by EIU during this period might appear in the table as many times as it has been rated by any of the benchmark ECAs. For example, if country X has only been rated by EIU and S&P at a specific date, this will give rise to only 1 observation at that specific date. However, if it has been rated by EIU, S&P, Moody's and Fitch, there will be 3 different observations, each one reflecting the comparison of EIU's rating with the benchmark rating.

Since most cells in the upper triangle are equal to zero it can be concluded that EIU has been more conservative than the benchmark ECAs during the observed period. For example, no country rate AAA by EIU has been rated worse by the benchmark. However, most AAA countries according to the benchmark ECAs have received a more conservative rating by EIU.

Figure 7: Transition matrix for Benchmark ratings

3-year transition matrices, 5-year average (2006 - 2013)

Rating end period	AAA	AA	A	BBB	BB	B	CCC-D
Rating start period							
AAA	89.6	7.5	0.4	2.2	0.4	0.0	0.0
AA	2.6	76.9	9.1	6.6	3.9	0.5	0.3
A	0.0	13.3	66.5	15.1	2.7	0.2	2.0
BBB	0.0	0.0	3.7	85.4	9.3	1.3	0.3
BB	0.0	0.0	0.0	25.6	61.1	12.4	1.0
B	0.0	0.0	0.0	0.0	12.2	85.2	2.4
CCC-C	0.0	0.0	0.0	0.0	0.0	64.1	35.9

Source: Joint Committee analysis based on CEREP data. Only items rated both at the beginning and at the end of the time horizon have been considered in the calculation.

Figure 8: Transition matrix for EIU ratings

3-year transition matrices, 5-year average (2006 - 2013)

Rating end period	AAA	AA	A	BBB	BB	B	CCC	CC	C	D
Rating start period										
AAA	45.6	54.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
AA	0.0	58.4	36.0	5.6	0.0	0.0	0.0	0.0	0.0	0.0
A	0.0	6.3	43.0	40.4	8.7	1.6	0.0	0.0	0.0	0.0
BBB	0.0	0.0	10.7	58.3	25.3	5.1	0.0	0.5	0.0	0.0
BB	0.0	0.0	2.6	13.8	56.8	18.4	8.0	0.5	0.0	0.0
B	0.0	0.0	0.0	0.0	33.6	43.5	22.8	0.0	0.0	0.0
CCC	0.0	0.0	0.0	0.0	0.0	16.1	76.5	3.1	0.0	0.0
CC	0.0	0.0	0.0	0.0	0.0	16.1	20.0	80.0	0.0	0.0
C	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Source: Joint Committee analysis based on EIU data. Only items rated both at the beginning and at the end of the time horizon have been considered in the calculation.

The difference in the time horizon considered by EIU and the benchmark ECAs in the assignment of ratings can be easily observed in the transition matrices above. Whereas the benchmark ECAs have traditionally assessed their clients over a long-term horizon (i.e. through-the-cycle ratings), EIU assesses country risk over the next 12 months. Furthermore, EIU ratings rely to a larger extent on the automatic result of its underlying model, in contrast to the judgment-determined system of the benchmark ECAs. As a result of these methodological differences, the transition probabilities of the ratings produced by EIU are significantly larger than those of the benchmark ECAs.

## Appendix 3: Default rates of each rating category

Figure 9: Calculation of the long run default rate 20012h2

Rating Benchmark	AAA	AA	A	BBB	BB	B	CCC-CC	Weighted average long run benchmark (%)
<i>Long-run benchmark (%)</i>	<i>0.10</i>	<i>0.10</i>	<i>0.25</i>	<i>1.00</i>	<i>7.50</i>	<i>20.00</i>	<i>34.00</i>	
<b>Rating EIU</b>								
<b>AAA</b>	10							0.10
<b>AA</b>	55	12						0.10
<b>A</b>	38	26	26	10				0.23
<b>BBB</b>	21	37	31	44				0.43
<b>BB</b>		4	22	71	51	20		5.12
<b>B</b>				27	31	34	2	10.72
<b>CCC</b>				3	12	51	5	18.07
<b>CC</b>						8	6	24.67

Source: Joint Committee calculations based on CEREP and EIU data

Figure 9 shows the ratings assigned by EIU and the benchmark ECAs to a common set of countries during the first half of 2013. It should be noted that each of the 108 countries rated by Feri at this date might appear in the table as many times as it has been rated by any of the benchmark ECAs. For example, if country X has only been rated by EIU and S&P, there will only be 1 observation. However, if it has been rated by EIU, S&P, Moody's and Fitch, there will be 3 different observations, each one reflecting the comparison of EIU's rating with the benchmark rating.

As per point (a) in Article 6(1) draft ITS, the long run default rate of each rating category of EIU has been calculated as a weighted average of the (mid-value) long run default rate benchmarks that are associated with the benchmark ratings. For example, the long run default rate of EIU's A category is equal to 0.10% weighted by the number of external ratings that are associated with that value, i.e. AAA (38) and AA (26) plus 0.25% weighted by the number of external ratings that are associated with that value, i.e. A (26) plus 1.00% weighted by the number of external ratings that are associated with that value, i.e. BBB (10). The long run default rate estimates in the last column of Figure 9 correspond to the values in date 01/01/2013 in Figure 10.



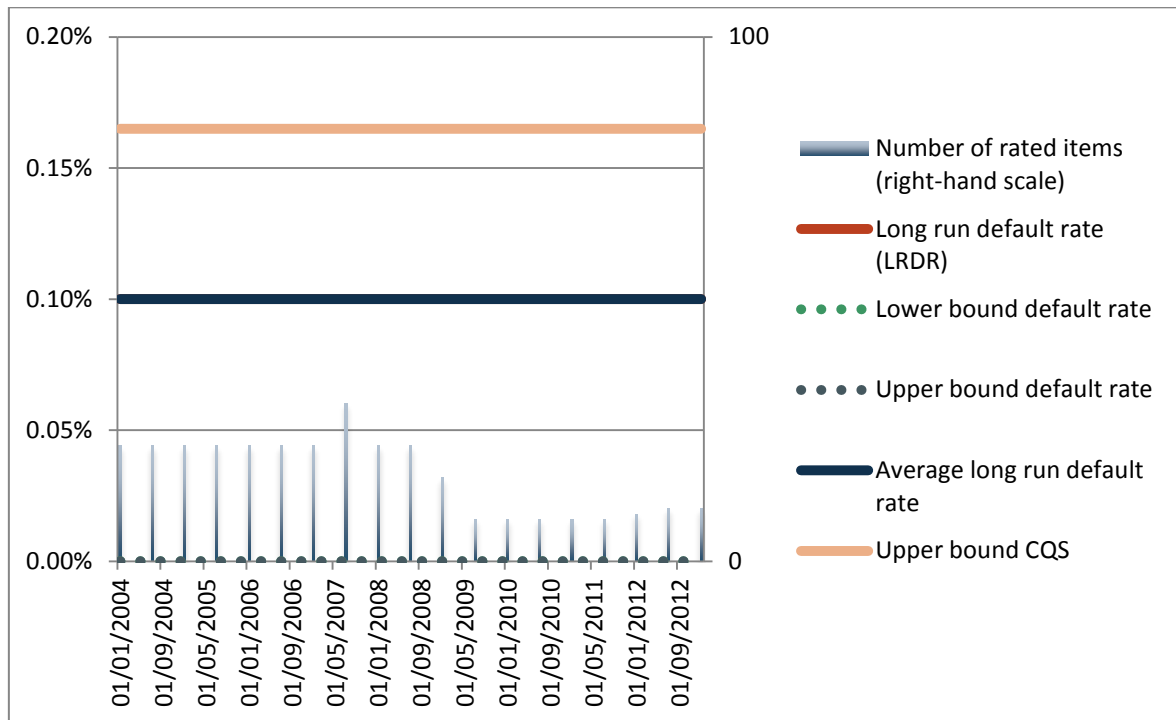
Figure 10: Evolution of long-run default rates

Date	AAA	AA	A	BBB	BB	B	CCC	CC	C	D
01/01/2004	0.10	0.10	0.18	0.78	5.38	12.95	24.54	21.72	n.a.	n.a.
01/07/2004	0.10	0.10	0.18	0.78	5.38	12.95	24.54	21.72	n.a.	n.a.
01/01/2005	0.10	0.10	0.18	0.78	5.38	12.95	24.54	21.72	n.a.	n.a.
01/07/2005	0.10	0.10	0.18	0.78	5.38	12.95	24.54	21.72	n.a.	n.a.
01/01/2006	0.10	0.10	0.18	0.78	5.38	12.95	24.54	21.72	n.a.	n.a.
01/07/2006	0.10	0.10	0.18	0.78	5.38	12.95	24.54	21.72	n.a.	n.a.
01/01/2007	0.10	0.11	0.17	0.89	6.23	13.76	22.74	21.72	n.a.	n.a.
01/07/2007	0.10	0.11	0.17	0.78	6.49	13.67	23.04	20.19	n.a.	n.a.
01/01/2008	0.10	0.11	0.16	0.76	5.92	14.32	20.85	20.19	n.a.	n.a.
01/07/2008	0.10	0.11	0.17	0.71	7.88	14.19	22.29	20.19	n.a.	n.a.
01/01/2009	0.10	0.10	0.13	0.46	4.93	13.12	19.36	25.50	n.a.	n.a.
01/07/2009	0.10	0.10	0.12	0.32	2.57	10.87	17.39	26.46	n.a.	n.a.
01/01/2010	0.10	0.10	0.13	0.27	4.13	10.55	18.07	32.44	n.a.	n.a.
01/07/2010	0.10	0.10	0.13	0.31	4.95	10.23	18.75	20.00	n.a.	n.a.
01/01/2011	0.10	0.10	0.14	0.33	5.25	10.90	18.24	20.00	n.a.	n.a.
01/07/2011	0.10	0.10	0.16	0.45	5.44	13.36	17.10	20.00	n.a.	n.a.
01/01/2012	0.10	0.10	0.14	0.51	5.69	10.37	19.42	26.00	n.a.	n.a.
01/07/2012	0.10	0.10	0.23	0.42	5.10	12.03	17.27	27.00	n.a.	n.a.
01/01/2013	0.10	0.10	0.23	0.43	5.12	10.72	18.07	24.67	n.a.	n.a.
<b>Weighted Average</b>	<b>0.10</b>	<b>0.10</b>	<b>0.17</b>	<b>0.57</b>	<b>5.31</b>	<b>12.50</b>	<b>19.75</b>	<b>23.29</b>	<b>n.a.</b>	<b>n.a.</b>

Note: estimated values are marked in grey

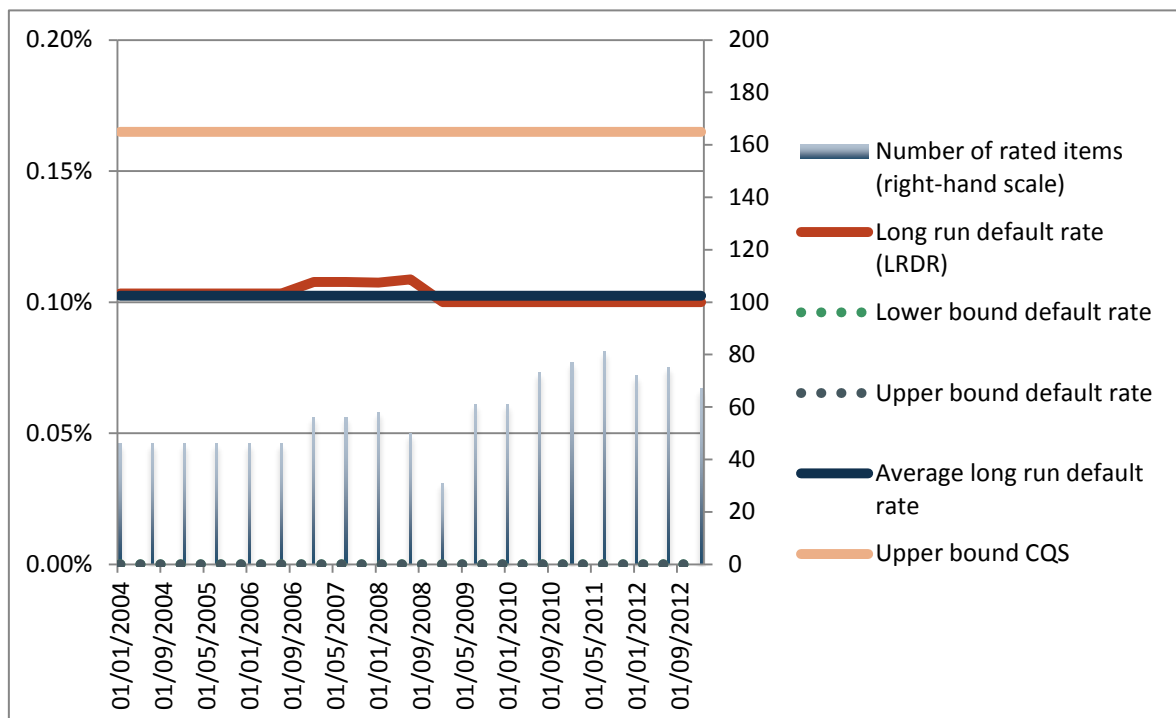
Source: Joint Committee calculations based on CEREP data and EIU data

Figure 11: Long-run estimated and observed default rates of AAA rating category



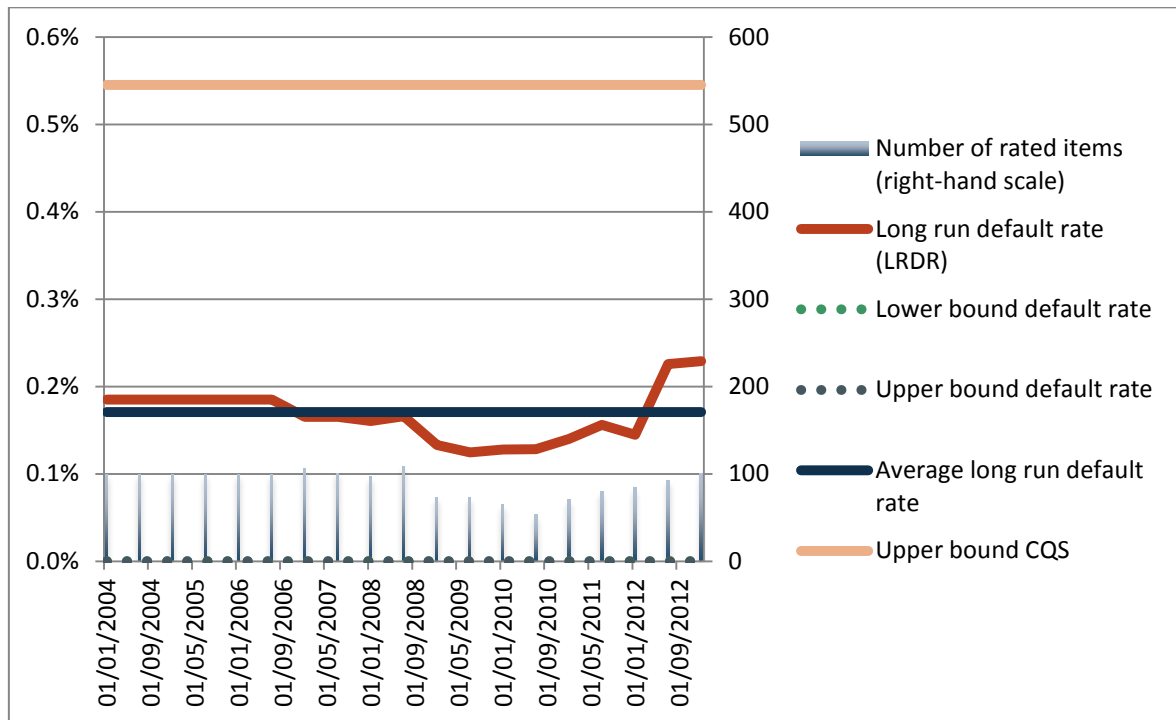
Source: Joint Committee calculations based on CERP and EIU data

Figure 12: Long-run estimated and observed default rates of AA rating category



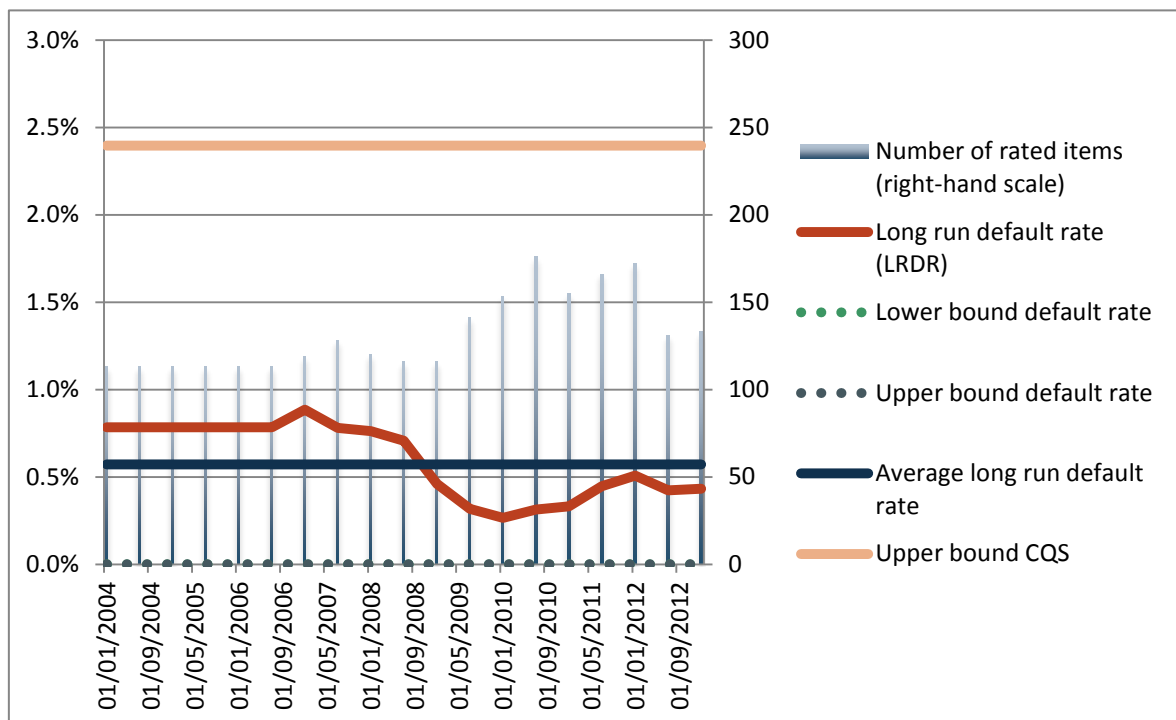
Source: Joint Committee calculations based on CERP and EIU data

Figure 13: Long-run estimated and observed default rates of A rating category



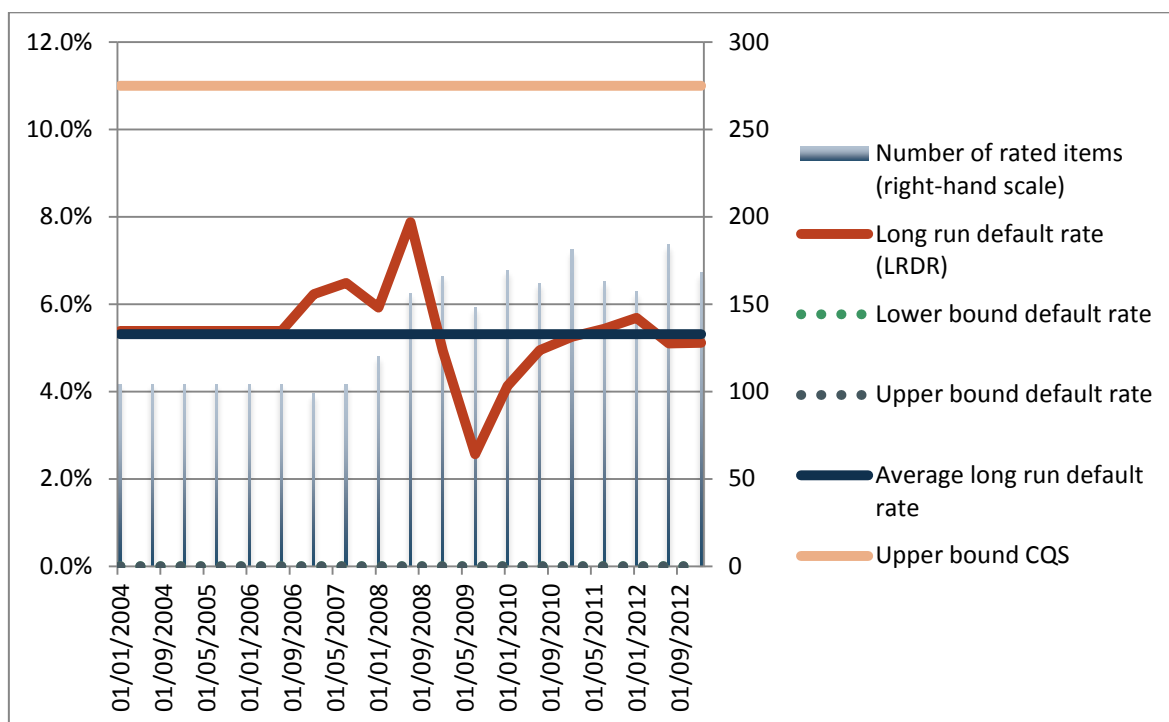
Source: Joint Committee calculations based on CEREP and EIU data

Figure 14: Long-run estimated and observed default rates of BBB rating category



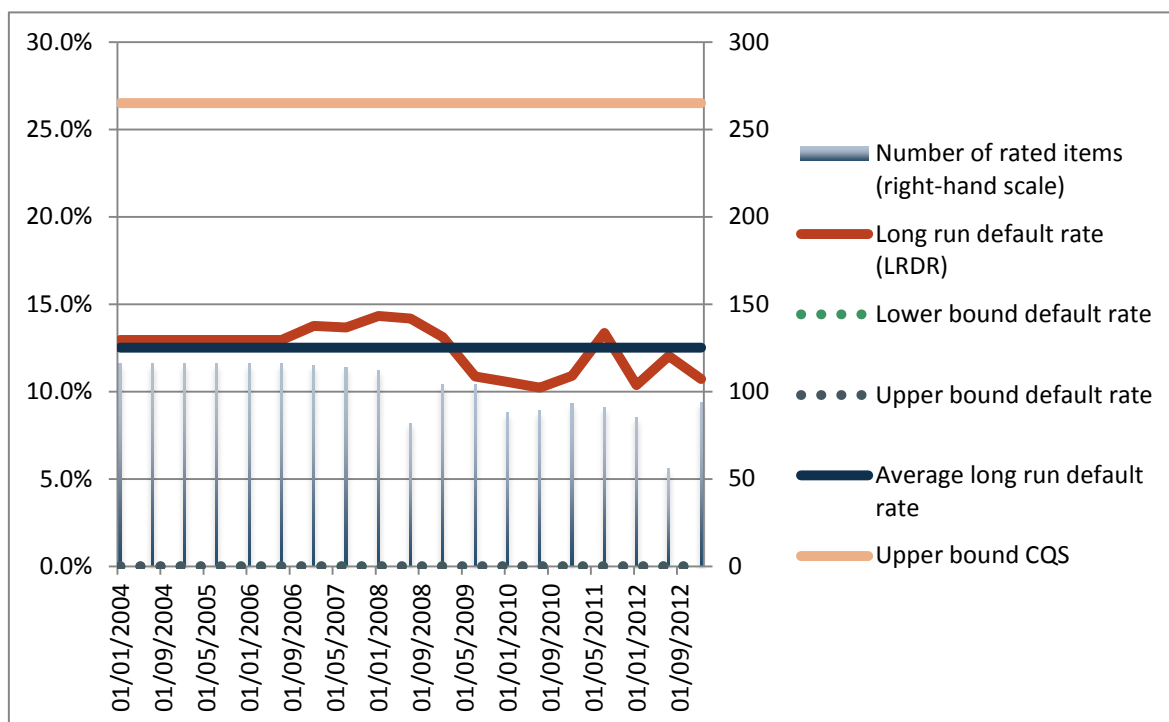
Source: Joint Committee calculations based on CEREP and EIU data

Figure 15: Long-run estimated and observed default rates of BB rating category



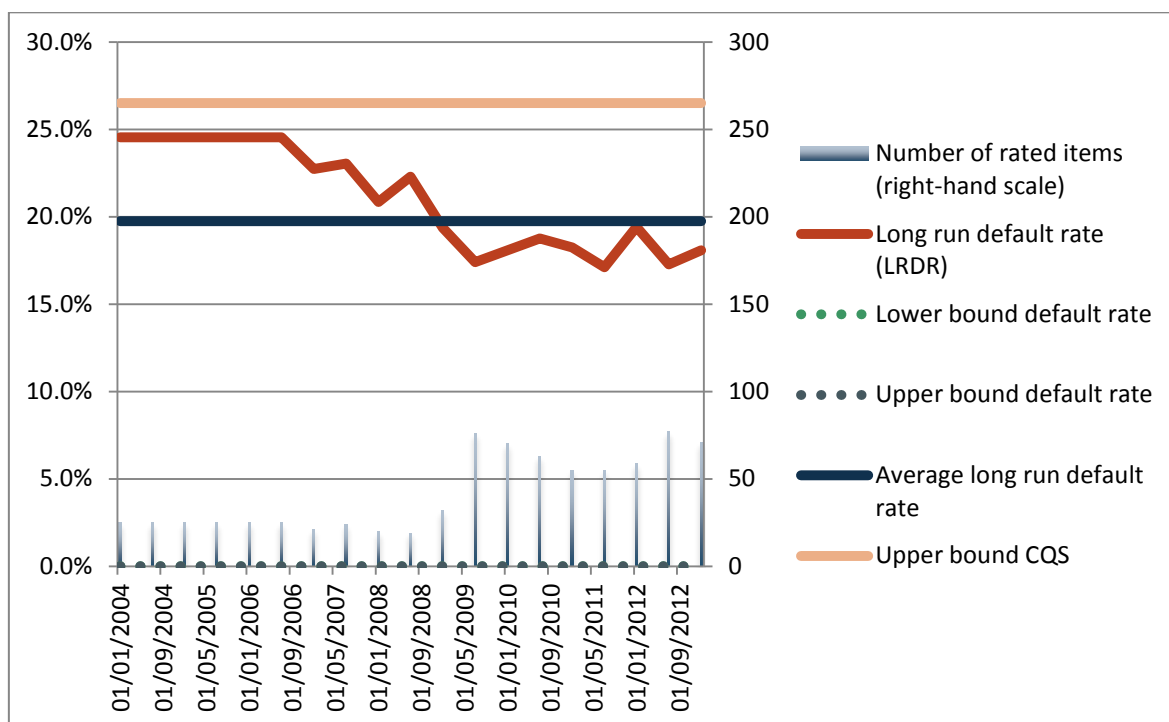
Source: Joint Committee calculations based on CEREP and EIU data

Figure 16: Long-run estimated and observed default rates of B rating category



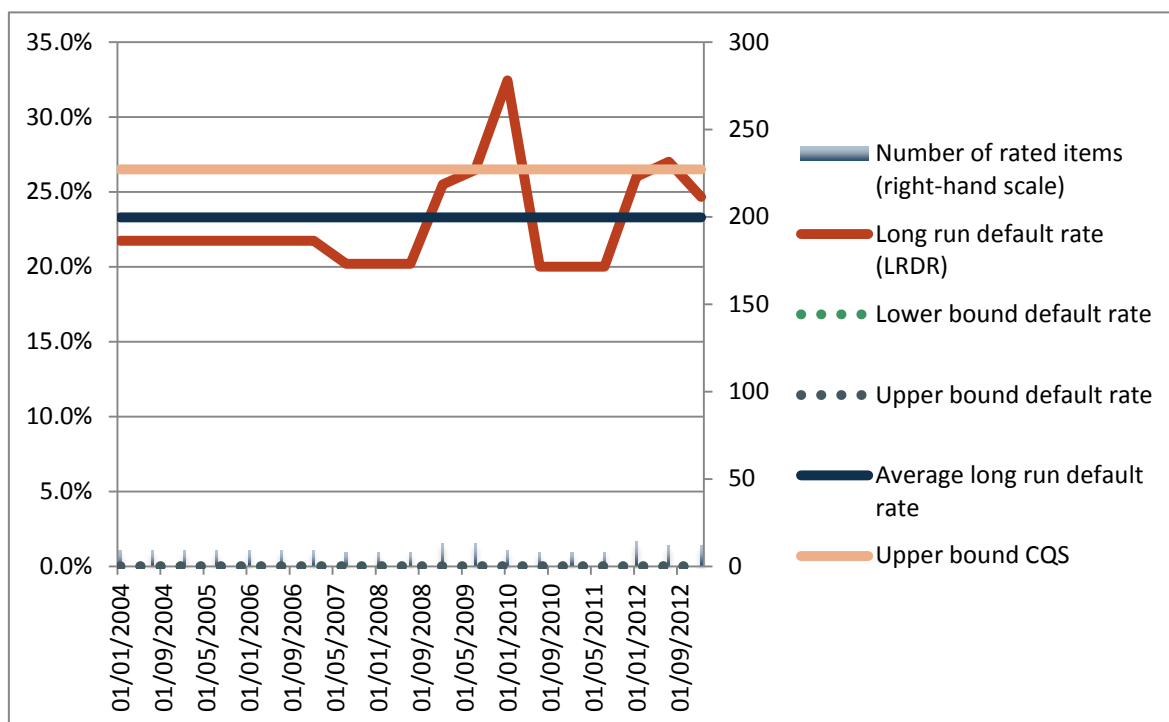
Source: Joint Committee calculations based on CEREP and EIU data

Figure 17: Long-run estimated and observed default rates of CCC rating category



Source: Joint Committee calculations based on CEREP and EIU data

Figure 18: Long-run estimated and observed default rates of CC rating category



Source: Joint Committee calculations based on CEREP and EIU data

Figure 19: Internal estimates of 12-month default probabilities, January 1997 - December 2005

Rating	AAA	AA	A	BBB	BB	B	CCC	CC	C	D
PD (%)	0.0	0.0	0.0	0.0	1.4	13.9	59.0	90.0	100.0	n.a.

Source: EIU

## Appendix 4: Mappings of each rating scale

Figure 20: Mapping of EIU Sovereign rating band scale Long-term issuer credit ratings scale

Credit assessment	Initial mapping <i>based on LR</i> <i>DR</i> (CQS)	Review <i>based on</i> <i>evolution of</i> <i>LR DR</i> (CQS)	Final review <i>based on</i> <i>qualitative</i> <i>factors</i> (CQS)	Main reason for the mapping
AAA	1	1	1	The quantitative factors are representative of the final CQS.
AA	1	1	1	
A	2	2	2	The quantitative factors are representative of the final CQS. The mapping has been reinforced by the expected downgrade probability of A-rated items.
BBB	3	3	3	The quantitative factors are representative of the final CQS. The mapping has been reinforced by the expected downgrade probability of BBB-rated items.
BB	4	4	4	The quantitative factors are representative of the final CQS.
B	5	5	5	The quantitative factors are representative of the final CQS.
CCC	5	5	6	The quantitative factors are representative of CQS 5. The internal PD estimate of EIU suggests that CQS 6 should be proposed.
CC	5	6	6	The quantitative factors as well as meaning and relative position of the rating category the factors are representative of the final CQS.

Credit assessment	Initial mapping <i>based on LR DR</i> (CQS)	Review <i>based on evolution of LR DR</i> (CQS)	Final review <i>based on qualitative factors</i> (CQS)	Main reason for the mapping
<b>C</b>	n.a.	n.a.	<b>6</b>	The meaning and relative position of the rating category is representative of the final CQS.
<b>D</b>	n.a.	n.a.	<b>6</b>	The meaning and relative position of the rating category is representative of the final CQS.