



ANNEX TO THE EBA OPINION EBA-OP-2017-17

REPORT ON THE USE OF THE 180 DAYS PAST
DUE CRITERION

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EBA

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Abbreviations

A-IRB	Advanced internal ratings-based approach
CA	Competent Authority
CET1	Common Equity Tier 1
COREP	Common Reporting standards (Commission Implementing Regulation (EU) No 680/2014 of 16 April 2014 laying down implementing technical standards with regard to supervisory reporting of institutions according to Regulation (EU) No 575/2013 of the European Parliament and of the Council (Text with EEA relevance)
CRA	Credit risk adjustment
CRE	Commercial real estate
CRR	Capital Requirements Regulation
DoD	Definition of Default
EAD	Exposure at default
EL	Expected Loss
EL_{BE}	Expected loss best estimate
GL	Guidelines
IFRS	International Financial Reporting Standard
IRB	Internal ratings-based approach
PD	Probability of default
PSE	Public sector entity
QIS	Quantitative Impact Study
REA	Risk-weighted exposure amounts

RRE	Residential real estate
RTS	Regulatory technical standards
RW	Risk weight
SA	Standardised Approach
SIs	Significant Institutions
SME	Small and medium-sized enterprises

1. Executive summary

1. The EBA is mandated in Article 506 Capital Requirements Regulation (CRR) to report to the European Commission, by 31 December 2017, on how replacing 90 days with 180 days past due (DPD) in Article 178 (1) CRR impacts risk-weighted exposure amounts (REA) and the appropriateness of the continued application of that provision after 31 December 2019.
2. The EBA issued a short data request to these institutions, to assess the current application of the 180 DPD criterion in terms of REA and exposure at default (EAD), its current and expected parameter estimates, i.e. probability of default (PD), LGD (loss given default), LGD in-default, expected loss best estimate (EL_{BE}), under the hypothetical scenario of a removal of the 180 DPD criterion, and the current and expected credit risk adjustments and internal ratings-based approach (IRB) shortfall or excess. Based on this information, only a number of institutions in the UK and an institution in France make use of the 180 DPD exemption for material exposures.
3. Given that currently only a limited number of institutions still make use of the 180 DPD criterion, it is fair to say that use of the 180 DPD criterion is rare in the EU. Several jurisdictions where the 180 DPD criterion was allowed in the past have already returned to the 90 DPD criterion. The single supervisory mechanism (SSM) issued a regulation (for its significant institutions (SIs)) and Guidelines (GL) (for its less significant institutions (LSIs)), allowing only the 90 DPD criterion.
4. Analysis of the data submitted by institutions that still make use of the 180 DPD criterion show that a removal of the 180 DPD criterion would lead to an increase in REA in two thirds of the institutions using the provision. The average expected relative change in REA is 1.61%. The increases in REA can be explained mostly by the fact that the increase in PD has a greater (upward) effect than the decrease in LGD has on reducing the REA.
5. A decrease in the capital ratio can be observed in several institutions. The average expected decrease is 0.37 percentage points with significant variation across institutions. For all institutions, however, there is a sufficiently large buffer above the minimum required capital ratio of 8% (Article 92(1)(c) CRR).
6. This report shows that the 180 DPD criterion is a source of undue REA variability. Furthermore, it should also be kept in mind that the International Financial Reporting Standard (IFRS) 9 rules will enter into force at the end of 2018. In IFRS 9, there is a rebuttable 90 DPD assumption, which may lead institutions to introduce the change to the 90 DPD criterion for regulatory purposes.
7. The EBA recommends disallowing the continued application of the 180 DPD criterion after 31 December 2019. This recommendation is based on the wide applicability of the 90 DPD criterion in the EU, the undue REA variability caused by the 180 DPD criterion and the forthcoming changes in the accounting framework. It is acknowledged, however, that this recommendation may have a material capital impact on some institutions that currently use

the 180 DPD criterion, and it is proposed that an appropriate transitional period would be justified, as well as individual supervisory plans should be developed to manage the process.

2. Introduction

8. The EBA is mandated in Article 506 CRR to report to the European Commission, by 31 December 2017, on how replacing 90 days with 180 days past due (DPD) in Article 178(1) CRR affects risk-weighted exposure amounts and the appropriateness of the continued application of that provision after 31 December 2019.
9. This report is related to the work on the definition of default (DoD), in particular the recent regulatory technical standards (RTS) on materiality threshold and the Guidelines (GL) on DoD. Article 178(1) CRR specifies that a default shall be considered to have occurred when either or both:
 - a) the institution considers that the obligor is unlikely to pay;
 - b) the obligor is more than 90 DPD on any material credit obligation to the institution, the parent undertaking or any of its subsidiaries.
10. Further, in Article 178(1)(b) CRR, national discretion to replace the 90 DPD criterion with 180 DPD is specified:

‘Competent authorities may replace the 90 days with 180 days for exposures secured by residential or small and medium-sized enterprises (SME) commercial real estate in the retail exposure class, as well as exposures to public sector entities. The 180 days shall not apply for the purposes of Article 127.’
11. Article 178(1)(b) CRR further specifies that this national discretion is limited to the following exposure classes:
 - residential real estate (RRE) in the retail exposure class;
 - SME commercial real estate (CRE) in the retail exposure class;
 - public sector entities (PSEs).
12. Since Article 178(1) CRR excludes exposures in default under the Standardised Approach (SA) from the application of 180 DPD at national discretion, the scope of this report will focus only on the IRB approach.
13. The European Central Bank (ECB) published a regulation, applicable since 31 December 2016, on the exercise of options and discretions¹, which specifies that credit institutions shall apply the ‘more than 90 DPD’ standard. This regulation, however, applies only to credit institutions which are classified as significant institutions (SIs). For the less significant institutions (LSIs), the

¹ Regulation (EU) 2016/445 of the European Central Bank of 14 March 2016 on the exercise of options and discretions (https://www.bankingsupervision.europa.eu/ecb/legal/pdf/oj_jol_2016_078_r_0011_en_txt.pdf).

ECB published guidelines² in April 2017 on the exercise of options and discretions available in Union law by national competent authorities (CAs) in relation to less significant institutions. Article 4 specifies that CAs should require less significant institutions to apply the ‘more than 90 days past due’ standard for the categories of exposures specified in Article 178(1)(b) CRR.

14. In line with the Regulation for assessing the materiality of extensions and changes of the IRB approach³, any changes in the definition of default in accordance with Article 178 CRR are considered material and require CAs’ approval, in which case institutions should submit documentation on the quantitative impact of the change on the risk-weighted exposure amounts or own funds requirements⁴.

3. Summary of practices

15. A stock take among CAs has been conducted to enquire about the use of the 180 DPD exemption. Based on this, we know that the 180 DPD criterion has never been used in the following Member States: AT, BG, CZ, CY, DE, EE, DK, ES, FI, HR, HU, IE, LT, LU, LV, MT, NL, PL, RO, SE, SI and SK.
16. In Ireland, the CA allowed the use of the 180 DPD exemption only in a ‘passive’ sense, meaning that the CA allowed institutions to choose (at consolidated level) to apply 90 days or the specific number of days set by the local CA, for exposures to counterparties located in other Member States.
17. In Portugal, the 180 DPD criterion was allowed by Banco de Portugal Notice (‘Aviso 5/2007’), Paragraph 45, Part IV, which entered into force on 27 April 2007. However, none of the institutions in Portugal made use of the exemption, which is also why it was abolished at the start of the entry into force of the CRR. When the 180 DPD criterion was allowed, it was only for exposures to PSEs and its use was voluntary.
18. In the Member States discussed below, the 180 DPD criterion either was used in the past or is currently still being applied. Sub-section 3.6 describes the regulation and the GL which have been issued by the SSM, essentially prescribing the 90 DPD criterion for all SIs and LSIs.

² Guideline (EU) 2017/697 of the European Central Bank of 4 April 2017 on the exercise of options and discretions available in Union law by national competent authorities in relation to less significant institutions (ECB/2017/9) (http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=uriserv:OJ.L_.2017.101.01.0156.01.ENG).

³ Commission Delegated Regulation (EU) No 529/2014 for assessing the materiality of extensions and changes of the Internal Ratings Based Approach and the Advanced Measurement Approach (<http://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32014R0529&from=EN>).

⁴ As specified in Article 4(1)(b), in particular Annex I, Part II, Section 1, paragraph 3 and Article 8(1)(g).

3.1 Belgium

19. In Belgium, the CA has in the past allowed the use of the 180 DPD criterion on a case-by-case basis. However, no institutions currently make use of this and national transposition of the relevant article of the ECB Guideline 2017/697 will be applied to LSIs as of January 2018. It has been allowed since 1 January 2007, when it was included in the transposition of Basel II in Belgium. It was allowed only for exposures to PSEs and it was allowed on a voluntary basis. Since 2007, two (significant) institutions have made use of it, but they have both stopped using the 180 DPD criterion since ECB Regulation 2016/445 has applied (1 April 2017).

3.2 France

20. With a view to maintaining the pre-existing provisions in the national regulation transposing CRD III, ACPR Decision No 2013-C-110 of 12 November 2013 has made use of the option provided by Article 178(1)(b) CRR. Institutions have been allowed to use the 180 DPD criterion for exposures secured by residential or SME CRE in the retail exposures class, as well as exposures to PSEs. Since ECB Regulation 2016/445 applies, the ACPR Decision is applicable only to LSIs. ACPR is currently in the process of updating its decision on options and national discretions to make it fully compliant with ECB Guideline 2017/697 of 4 April 2017. A draft decision will be submitted to ACPR's board by the end of 2017.

21. As few French LSIs are authorised to use an IRB approach, this option has in practice limited impact. Although SIs have to comply with ECB Regulation 2016/445, one French SI still uses the 180 DPD criterion, in accordance with the definition of default used at a consolidated level by its mother company, established in the UK.

3.3 Italy

22. In Italy, the CA made use of the 180 DPD criterion in the past, but it was removed in 2013.

3.4 UK

23. In the UK, the 180 DPD exemption has been allowed since 1 January 2008 for retail exposures secured by RRE, SME CRE and PSEs on a case-by-case approval, and is currently still allowed. The use of the 180 DPD criterion is voluntary. Currently, a number of institutions make use of this exemption.

3.5 Greece

24. In Greece, the 180 DPD criterion was allowed since 20/08/2007 for retail RRE and PSE exposures and its use was mandatory. The two significant institutions in Greece made use of it only for the retail RRE. Since the ECB Regulation 2016/445 applied (01/04/2017), it is no longer allowed for the SIs. The 180 DPD criterion is no longer allowed for LSIs in Greece either, since the relevant national regulation has changed in November 2017 in order to align with the ECB Guidelines 2017/697 on the exercise of options and discretions for LSIs.

25. The use of the 180 DPD criterion was mandatory for retail RRE and PSEs. However, given that the SIs did not have any exposures to PSEs in the IRB approach (these were under the SA), these institutions only made use of the 180 DPD criterion for retail RRE exposures.

3.6 SSM

26. The ECB published a regulation, applicable since 31 December 2016, on the exercise of options and discretions⁵, which specifies that credit institutions shall apply the ‘more than 90 DPD’ standard. This regulation, however, applies only to credit institutions classified as SIs. For LSIs, the ECB published Guidelines⁶ in April 2017 on the exercise of options and discretions available in Union law by national CAs in relation to LSIs. Article 4 specifies that national CAs should require LSIs to apply the ‘more than 90 days past due’ standard for the categories of exposures specified in Article 178(1)(b) CRR.

27. In line with the Regulation for assessing the materiality of extensions and changes of the IRB approach⁷, any changes in the DoD in accordance with Article 178 CRR are considered material and require CAs’ approval, in which case institutions should submit documentation on the quantitative impact of the change on the risk-weighted exposure amounts or own funds requirements⁸.

3.7 Conclusion

28. Currently, only a number of institutions in the UK and an institution in France make use of the 180 DPD exemption for material exposures. Given this, for the purpose of complying with the EBA mandate in Article 506 CRR, i.e. to determine the impact on risk-weighted exposure amounts of the removal of the 180 DPD criterion, this report focuses on the impact stemming from those institutions.

⁵ Regulation (EU) 2016/445 of the European Central Bank of 14 March 2016 on the exercise of options and discretions (https://www.bankingsupervision.europa.eu/ecb/legal/pdf/oj_jol_2016_078_r_0011_en_txt.pdf).

⁶ Guideline (EU) 2017/697 of the European Central Bank of 4 April 2017 on the exercise of options and discretions available in Union law by national competent authorities in relation to less significant institutions (ECB/2017/9) (http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=uriserv:OJ.L_.2017.101.01.0156.01.ENG).

⁷ Commission Delegated Regulation (EU) No 529/2014 for assessing the materiality of extensions and changes of the Internal Ratings Based Approach and the Advanced Measurement Approach (<http://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32014R0529&from=EN>).

⁸ As specified in Article 4(1)(b), in particular Annex I, Part II, Section 1, paragraph 3 and Article 8(1)(g).

4. Methodology

4.1 Overview

29. The purpose of this section is to explain the methodology that has been used to analyse the effect on risk-weighted exposure amounts⁹ (REA) and own funds. To fulfil the EBA mandate while minimising the operational burden for your institution, the EBA has issued a data request for all relevant exposure classes (see Annex I for an example) to those institutions which currently still make use of the 180 DPD criterion. The EBA has applied the definitions and formulas explained in Annex III to the data submitted, to analyse the impact of the 180 DPD provision.
30. Detailed information has been requested on exposures that are currently treated in models where the 180 DPD provision is applied. In line with Article 78(1)(b) CRR, the stipulation to allow the 180 DPD provision may apply to RRE or SME CRE exposures in the retail exposure class, as well as exposures to PSEs. For each of these, a data request was included in a separate sheet.¹⁰
31. Accordingly, the assessment perimeter consists of exposures that are currently assigned to models where a 180 DPD provision is applied in the DoD. The impact of the hypothetical scenario of removing the 180 DPD provision has been analysed. The quantitative analysis takes into consideration the main effects that would derive from replacing the 180 DPD provision with the 90 DPD provision, i.e. a reallocation of exposures that are currently non-defaulted exposures to defaulted exposures, and the expected change in risk parameters.
- a. Portfolio exposures reallocation:* The assessment perimeter consists of the exposures on which the 180 DPD provision is currently applied (A + B + C). Figure 1 and Figure 2 visualise the naming conventions. The exposures in A are non-defaulted exposures (i.e. fewer than 90 DPD and not unlikely to pay). These will continue to be non-defaulted after the removal of the 180 DPD provision. The exposures in B are between 90 and 180 DPD and not unlikely to pay, so they currently benefit from the 180 DPD provision. The remaining fraction of the assessment perimeter, C, represents the defaulted exposures. The 180 DPD provision removal will shift the exposures in B from non-defaulted status into default, increasing the fraction of defaulted exposures within the assessment perimeter.

⁹ The concept of REA is defined in Article 92 (3) CRR and described in more detail in paragraph 36. This definition generally aligns with the use of Risk Weighted Assets (RWA), which is the terminology used in the Basel framework.

¹⁰ Where some of the exposures to which the 180 DPD applies are allocated to several models, institutions were requested to aggregate the required information from the different models, by computing the exposure-weighted average (PD, LGD non-defaulted, LGD in-default, ELBE and maturity), and by aggregating the exposure values and risk-weighted exposure amounts.

Figure 1: Schematic composition of current portfolio (where the 180 DPD provision is applied)

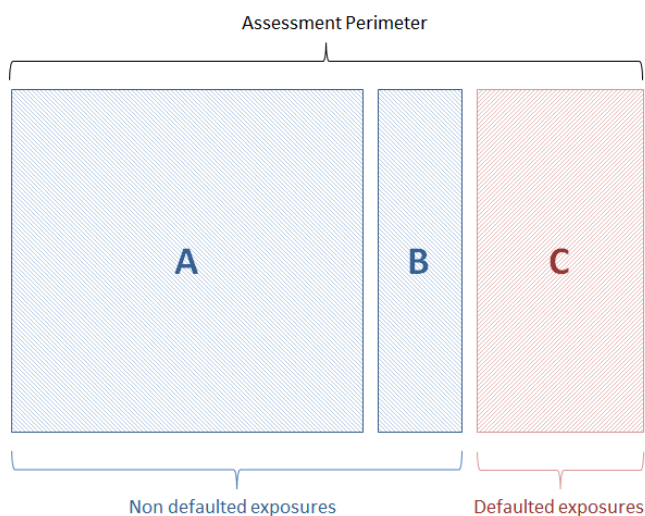
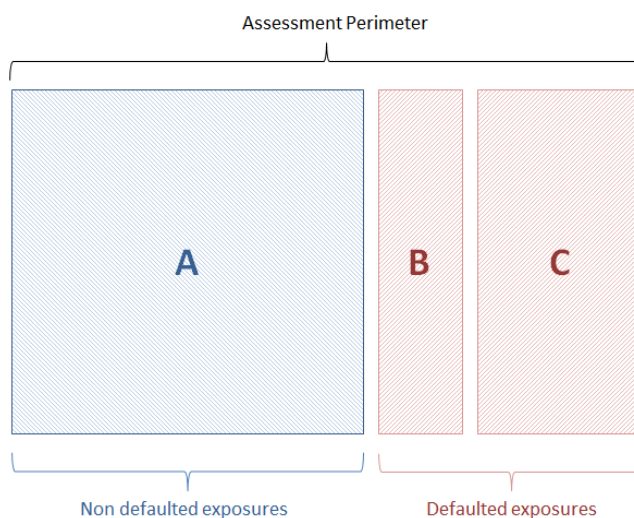


Figure 2: Schematic composition of portfolio under the hypothetical scenario where the 180 DPD provision would be removed, i.e. only the 90 DPD provision would be allowed



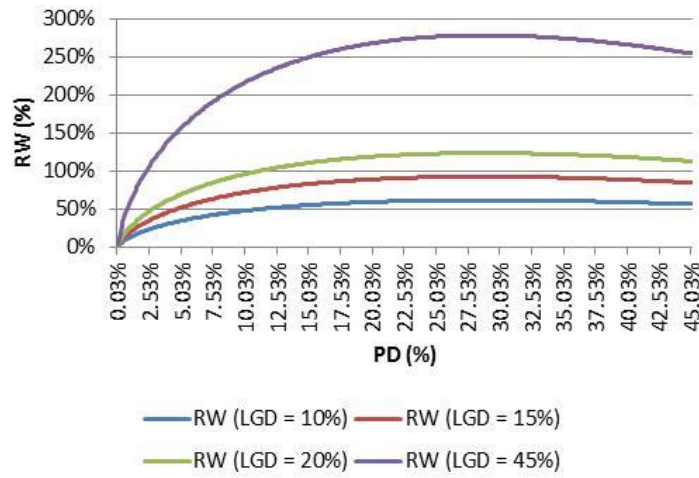
- b. *Risk parameters re-calibration*: Under the scenario where the 180 DPD provision is removed, it is expected that any additional defaults and losses will need to be reflected in a re-calibration of internal risk parameters for non-defaulted (A) and defaulted (B + C) exposures. Assuming that the entire assessment perimeter is covered by a single internal model, the re-calibration determines a change in the risk parameters estimate for the entire assessment perimeter.

Figure 3: Risk parameters re-calibration (current versus hypothetical, re-calibrated values)



32. The impact of the 180 DPD provision removal on the institutions in terms of REA, own funds and, in general, the capital ratios is quantified. This will take into consideration the expected changes in risk parameters, the portfolio exposures reallocation, the expected changes in provisioning and the variation in the IRB excess/shortfall.
33. First, REA variation is calculated separately for defaulted and non-defaulted exposures considering the 180 DPD provision removal. For the non-defaulted exposures (A), the new risk weight (RW) is calculated by introducing in the supervisory formula the parameters of PD, LGD and EAD provided by the institution. The relevant supervisory RW formula is then used, for instance the formula for retail exposures (Article 154(1) CRR) in the relevant cases, which is a concave function of the PD parameter (see Figure 4). The removal of the 180 DPD criterion would mean that those obligors that are currently > 90 DPD and < 180 DPD would be classified as defaulted, whereas they are currently classified as non-defaulted. Therefore, the removal of the 180 DPD criterion is expected to lead to an increase in the PD estimate. Assuming that the PD will be the only parameter value affected, the removal of the 180 DPD criterion will lead to an increase in the applicable RW where the current PD value is below 30%, but it may lead to a slight decrease in the RW for high-risk portfolios where the PD value exceeds 30%. This is due to the hump-shaped distribution of the Gordy curve. However, for instance for the data requested on institutions' current PD estimates in their retail RRE portfolios, it is below 30% for all institutions. Therefore, only the graph at the beginning of the PD scale represents the likely effect on the RW.

Figure 4: Supervisory RW (only of non-defaulted exposures) as a function of PD (retail exposures secured by immovable property)



34. However, the effect on the supervisory RW is different when the effect on the LGD estimate is also taken into account, which is the case for Advanced internal ratings-based approach (A-IRB) institutions. The supervisory RW formula is linear in LGD, as illustrated in Table 5 (for retail exposures secured by immovable property).

Figure 5: Supervisory RW as a function of LGD (retail exposures secured by immovable property)

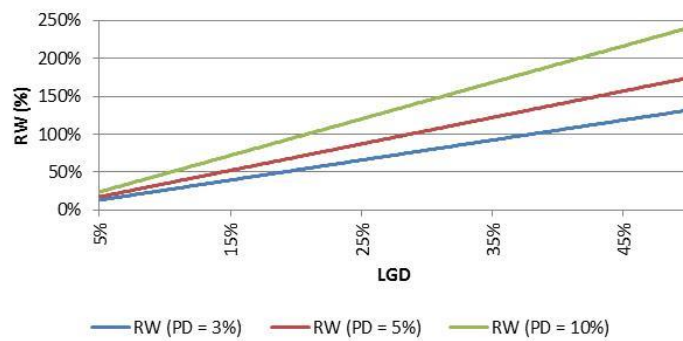
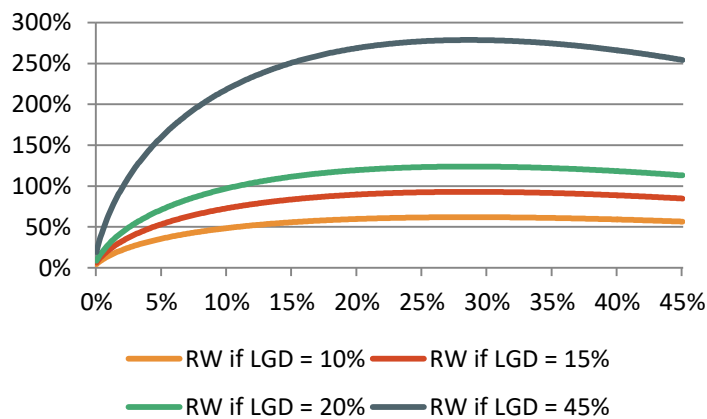


Figure 6: Supervisory RW (only of non-defaulted exposures) as a function of PD (retail exposures secured by immovable property)



35. Because of the additional obligors or exposures entering into default, one would expect the denominator of the realised LGD to increase, whereas one could further expect that a great part of the additional defaults would cure without loss. Given this, one might expect the numerator not to increase in proportion to the denominator, leading to a decrease in the LGD estimate. The decrease in the LGD estimate, however, is constrained by the LGD floor of 10% for retail exposures secured by RRE (Article 164(4) CRR). Depending on the magnitude of the PD increase versus the LGD decrease, the RW for non-defaulted exposures will either increase or decrease.
36. The effect on the RW, however, needs to be considered jointly with the distribution of exposures among the non-defaulted and defaulted portfolio. Similarly to non-defaulted exposures, the new RW is calculated for defaulted exposures on the basis of the new parameters (LGD in-default and ELBE) that would apply under the scenario where the 90 DPD provision is applied. Given that $REA = RW_{nd} \cdot exposure\ value_{nd} + RW_d \cdot exposure\ value_d$, the final effect on REA is a combination of the effect on RW_{nd} and the increased exposure amount in default.
37. The analysis then evaluates how the variation of credit risk adjustments (CRA) and expected loss (EL) affects the IRB excess/shortfall. As for the non-default exposures, the new (hypothetical) CRA and EL estimates are compared with the current ones. As a result of the smaller amount of non-defaulted exposures, one would expect the CRA for non-defaulted exposures to decrease, but the magnitude of the change in the EL amount will depend on the interplay between the increase in the PD, the decrease in LGD and the decrease in the non-defaulted exposure amount. For defaulted exposures, the values of CRA and ELBE are compared with those that assume the removal. As a result of the increase in the defaulted exposures, one would expect an increase in CRA for defaulted exposures.
38. As regards the changes in CRA, we have to bear in mind that the IFRS 9 rules enter into force from 2018. Under the IFRS 9 rules (and as further clarified in paragraph 90 of the EBA GL on expected credit losses¹¹), there is a rebuttable 90 DPD assumption. An entity should apply a DoD that is consistent with the definition used for internal credit risk management purposes for the relevant financial instrument, and it should consider qualitative factors (for example financial covenants) where appropriate. However, there is a rebuttable presumption that default does not occur later than when a financial asset is 90 DPD, unless an entity has reasonable and supportable information to demonstrate that a more lagging default criterion is more appropriate. For efficiency reasons, some institutions may find it more appropriate to align their regulatory and accounting definition of default.
39. Subsequently, the effect on the own funds is analysed considering the current excess/shortfall of the institution. The changes in the two parameters (REA and own funds) are then combined to quantify the total impact on the capital ratios for each institution.

¹¹ <https://www.eba.europa.eu/-/eba-publishes-final-guidelines-on-credit-institutions-credit-risk-management-practices-and-accounting-for-expected-credit-losses>

40. To compute the impact on total REA and capital, additional information is needed on the REA and capital of the institutions. For this purpose, this analysis makes use of information reported by institutions under COREP¹² as at 31 March 2017 (see Annex II).

4.2 Caveats and mitigating factors

41. One of the key assumptions underlying the methodology is that the use of exposure-weighted average parameter estimates would not materially change the outcome. In particular, it is assumed that the difference between calculating the impact on REA by applying the supervisory risk formula at an aggregated level¹³ and not at obligor or exposure level will be immaterial, because this bias is assumed to be of the same magnitude under the 180 DPD as under the 90 DPD scenario¹⁴. However, a correction factor is applied (see Annex III) to both the current REA (using the 180 DPD criterion) and the new hypothetical REA (assuming that the 90 DPD criterion applies), to correct for the difference between calculating the REA at exposure level and as an exposure-weighted average.
42. In addition, it should be mentioned that any quantitative assessment of the impact on REA would probably be an upper bound of the true effect, because it is likely that obligors will change their practice of repayment after the 180 DPD criterion is removed. More precisely, one can reasonably assume that those obligors which do not have financial difficulties, and for which the longer repayment time is more a habit than a financial need, will change their behaviour if they are informed that late repayment would result in being put in default.
43. Another reason why the assessment is an upper bound of the true effect is that the institutions participating in data collection for this report still make use of the 180 DPD criterion. Since the questions in the data request directly asked about institutions' re-estimated and re-calibrated parameter estimates under the hypothetical scenario of removing the 180 DPD criterion, there might be a bias in the results, in that institutions might have overstated the true expected change in parameters (for instance, the expected increase in the PD parameter may have been overstated, and the decrease in the expected LGD parameter may have been understated).
44. It should also be highlighted that the impact assessment has been conducted under a ceteris paribus clause, i.e. it is assumed that all other factors remain equal. This holds in particular for the materiality threshold, where the RTS on materiality threshold¹⁵ will apply, as well as for the GL on the definition of default¹⁶, which include, among other things, clarifications to the criteria for considering an exposure 'unlikely to pay'. It should also be kept in mind that the IFRS 9 rules will enter into force at the end of 2018, and include a rebuttable 90 DPD assumption. As shown

¹² Common Reporting standards (Commission Implementing Regulation (EU) No 680/2014 of 16 April 2014 laying down implementing technical standards with regard to supervisory reporting of institutions according to Regulation (EU) No 575/2013 of the European Parliament and of the Council (Text with EEA relevance)

¹³ Aggregated for all retail RRE exposures that fall under a model where a 180 DPD criterion is applied.

¹⁴ See footnote 19 in Annex III for a detailed explanation.

¹⁵

<https://www.eba.europa.eu/documents/10180/1597002/Final+draft+RTS+on+the+materiality+threshold+for+credit+obligations+%28EBA-RTS-2016-06%29.pdf/fe1db887-c6dc-4777-89c1-4f243584cafd>

¹⁶

<https://www.eba.europa.eu/documents/10180/1597103/Final+Report+on+Guidelines+on+default+definition+%28EBA-GL-2016-07%29.pdf/004d3356-a9dc-49d1-aab1-3591f4d42cbb>

in the EBA quantitative impact study (QIS)¹⁷, IFRS 9 is expected to lead to an increase in provisions, which should lead to a smaller decrease in own funds (the results in Section 5 show that all institutions currently have an IRB shortfall, which is expected to decrease further for most institutions because of an increase in the EL amount which is higher than the increase in provisions), and hence a smaller decrease in the capital ratio.

45. Finally, it should be mentioned that, whereas the CRR mandate in Article 506 requires analysing how replacing 90 DPD with 180 DPD affects risk-weighted exposure amounts, this report analyses the impact of how replacing the 180 DPD criterion with 90 DPD affects risk-weighted exposure amounts (and capital ratios). Given the wide applicability of the 90 DPD criterion and the exceptional use of the 180 DPD criterion, however, it is more appropriate and cost-efficient to focus on those institutions which currently still make use of 180 DPD, to address the mandate.

5. Empirical results

46. The submissions for the data request have been used to assess the impact of replacing 180 DPD with 90 DPD on risk-weighted exposure amounts and own funds. Before analysing the effect on REA, own funds and the capital ratio (in Table 5 and Table 6), it is useful to consider some intermediate statistics. All tables in this section show the minimum, maximum and average of the changes (percentage changes or percentage point changes) in specific variables across the institutions in the sample.

Table 1: Distribution of 180 DPD exposures

Proportion	Average (%)
Proportion of exposures A in total (i.e. in A + B + C)	98.62
Proportion of exposures B in total (i.e. in A + B + C)	0.23
Proportion of exposures C in total (i.e. in A + B + C)	1.16
Proportion of REA under 180 DPD in total risk exposure amount	24.39

47. Table 1 shows the distribution of 180 DPD exposures between the categories A, B and C (see Figure 1 and Figure 2), as well as the proportion of the REA of these (A + B + C) in the total REA of the institution. It can be noted that the vast majority of exposures fall under category A (more than 98% on average). Some differences can be observed between the sizes of proportion B and proportion C. The higher the amount of exposures in category B, the larger

¹⁷ <https://www.eba.europa.eu/documents/10180/1720738/EBA+Report+on+results+from+the+2nd+EBA+IFRS9+IA.pdf>

the portfolio exposures reallocation under the hypothetical scenario of a removal of the 180 DPD exemption.

48. Furthermore,
49. Table 1 shows that the proportion of REA under 180 DPD in the institution's total REA. On average, this proportion amounts to 24.39%, but significant variation exists across the institutions.
50. Table 2 shows how the risk parameters and CRA would be affected under the hypothetical scenario of a removal of the 180 DPD exemption. The PD estimate on the non-defaulted exposures is expected to increase on average by 43.52% after a removal of the 180 DPD exemption. However, a wide variation can be observed, ranging from 0% to 116.07%. For the LGD estimate, the results show either a decrease or no effect at all, which confirms our expectations (see paragraph 35). It should be mentioned that this may be due to the constraint of the 10% LGD floor (Article 164(4) CRR). This means in particular that without the LGD floor the impact on REA would have been smaller, since the increase in the PD estimate would have been compensated for by a greater decrease in the LGD estimate.
51. The interplay of the higher increase in PD than the decrease in the LGD and the portfolio reallocation leads to an increase in the EL amount for most institutions. A decrease in the LGD in-default and the ELBE estimate is reported on average.
52. A decrease or no change in the amount of CRA for non-defaulted exposures is expected for all institutions. For the CRA of defaulted exposures, the opposite pattern can be observed. Both are in line with expectations, stemming from a reallocation of non-defaulted to defaulted exposures.

Table 2: Effect on risk parameters and CRA

Change	Min (%)	Average (%)	Max (%)
Change in PD estimate	0.00	43.52	116.07
Change in LGD (non-defaulted) estimate	-54.15	-9.58	0.00
Change in LGD in-default estimate	-50.35	-17.58	7.70
Change in ELBE estimate	-53.00	-20.01	-0.25
Change in CRA for non-defaulted exposures	-16.75	-6.53	0.00
Change in CRA for defaulted exposures	-3.97	7.26	28.40

53. Table 3 shows the expected relative change in the RW for both the non-defaulted and defaulted exposures (in the 180 DPD perimeter). The change in the RW for non-defaulted exposures is driven by the change in PD and LGD. It can be noted that the increase in the PD estimate outweighs the decrease in the LGD estimate on average, leading to an increase in the non-defaulted RW. As a minimum, a decrease in the RW for non-defaulted exposures is observed, which is due to the drop in the LGD estimate which compensates for the increase in the PD estimate. The RW for defaulted exposures is a function of the maximum of 0 and $12.5 \times (\text{LGD} - \text{ELBE})$. On average, an increase of 12.40% is expected. However a wide variation can be observed. For instance, the maximum change in the RW amounts to 233%, stemming from an institution that reported an increase in the LGD in-default and a decrease in the ELBE estimate, leading to an increase in the RW for defaulted exposures.

Table 3: Effect on RWs (180 DPD perimeter)

Change	Min (%)	Average (%)	Max (%)
Change in RW non-defaulted exposures	-32.58	9.23	38.62
Change in RW defaulted exposures	-58.92	12.40	233.10

54. Table 4 shows the expected relative change in the IRB excess/shortfall. There is a shortfall prior to assessing the effect of the hypothetical 180 DPD removal for all institutions. On average, the removal of the 180 DPD criterion is expected to lead to an increase in the shortfall (17.75%), because a greater increase in the EL amount is expected than in the CRA for non-defaulted exposures. Again, however, there is variation in results, as shown for instance by the minimum of -35.45%, which can be explained by an expected decrease in the EL amount versus credit risk adjustments, which are expected to remain stable.

Table 4: Effect on IRB excess/shortfall (level of the institution)

Change	Min (%)	Average (%)	Max (%)
Change in IRB excess/shortfall (non-defaulted and defaulted)	-35.45	17.75	94.02

55. Table 5 shows the relative change on the REA of the institutions under the hypothetical scenario of removing the 180 DPD exemption. An increase in REA of 1.61% is expected on average, but a wide variation can be observed, ranging from -20.30% to +23.57%. The increases in REA can be explained by the fact that the increase in PD has a greater (upward) effect than the decrease in LGD has on reducing the REA. Any decrease in REA is because the effect of the decrease in the LGD estimate outweighs the effect of the increase in PD.

56. A decrease in own funds can be observed on average (0.44%), which is driven by an increase in the shortfall, i.e. a larger (negative) shortfall, thereby reducing the Tier 1 capital. However, the largest expected decrease in own funds is 2.68%. The maximum of 0.51% stems from an expected decrease in the shortfall, i.e. a smaller (negative) shortfall increases the Tier 1 capital.

Table 5: Effect on REA and own funds

Change	Min (%)	Average (%)	Max (%)
Change in REA	-20.30	1.61	23.57
Change in own funds	-2.68	-0.44	0.51

57. Table 6 shows how the REA increase is coupled with a decrease in own funds. A decrease in the capital ratio of 2.30% can be observed on average, representing a decrease of 0.37 percentage points. The largest percentage point decrease in the capital ratio amounts to 4.02. However, one can note that the maxima of the percentage and percentage point increases are positive, stemming from a decrease in REA coupled with an increase in own funds.

58. The main reasons for the expected decreases in the capital ratio are (i) an expected increase in the PD estimate, (ii) a more modest expected decrease in the LGD estimate, which for some institutions is constrained by the LGD floor, and (iii) the wide applicability of the 180 DPD criterion in the institution, i.e. the institution currently applies the 180 DPD criterion for a large proportion of its REA.

Table 6: Effect on total capital ratio

Change	Min (%)	Average (%)	Max (%)
Change in capital ratio	-21.24	-2.30	16.47
Percentage point change in capital ratio	-4.02	-0.37	4.35

6. Conclusion

59. Currently, only a number of institutions in the UK and an institution in France make use of the 180 DPD exemption for material exposures. Several jurisdictions where the 180 DPD exemption was allowed in the past have already returned to the 90 DPD criterion in all institutions. Furthermore, the SSM issued a regulation (for its SIs) and GL (for its LSIs) allowing only the 90 DPD criterion.
60. Analysis of the data submitted by the institutions that still make use of the 180 DPD criterion shows that a removal of the 180 DPD criterion would lead to an increase in REA in two thirds of the institutions. These increases in REA can be explained mostly by the fact that the increase in PD has a greater (upward) effect than the decrease in LGD on reducing the REA. The average expected relative change in REA is 1.61%. However, a wide variation in these numbers can be observed, reaching a maximum of 23.57% and a minimum of -20.30% (relative changes in RW).
61. For some institutions, the decrease in the LGD parameter was constrained by the 10% floor on retail exposures secured by RRE (Article 164(4) CRR). Without this floor, the increase in REA would naturally have been smaller, since the increase in the PD would have been counterbalanced by a larger decrease in the LGD estimate.
62. On average, a decrease in own funds of 0.44% can be expected, which is driven by the change in the shortfall (i.e. a larger shortfall to be deducted from Tier 1 capital). The decrease in the own funds further aggravates the effect on the capital ratio.
63. A decrease in the capital ratio can be observed in several institutions. The average expected decrease is 0.37 percentage points with significant variation across institutions. For all institutions, however, there is a sufficiently large buffer above the minimum required capital ratio of 8% (Article 92(1)(c) CRR).
64. The largest downward expected effects on the capital ratio can be explained by (i) the wide applicability of the 180 DPD criterion to the institution's REA, (ii) the fact that the expected increase in the PD estimate is not counterbalanced by a decrease in the LGD estimate and (iii) the increase in the IRB shortfall (i.e. leading to a larger deduction from Tier 1 capital).
65. Considering that the removal of the 180 DPD criterion is expected to lead to an increase in REA in two thirds of the institutions, a relative change of 1.61% on average, but with a maximum of 23.57% and a minimum of -20.30%, it is fair to say that the 180 DPD criterion is a source of undue REA variability.
66. It should also be kept in mind that the IFRS 9 rules will enter into force at the end of 2018. In IFRS 9, there is a rebuttable 90 DPD assumption, which may persuade additional institutions to make the change to the 90 DPD criterion for regulatory purposes.

Annex I: Example template for data request

Basic information about the reporting entity

Legal Entity Identifier	
Name of the institution	
Jurisdiction	

Reference date (DD/MM/YYYY)	31/03/2017
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Units

EAD, RWA, CRA, ELBE	Millions
PD, LGD non-defaulted, LGD in-default, ELBE	In percentage (%) with two decimals, i.e. 5.00%

Reporting currency

EAD, RWA, CRA, IRB excess/shortfall	
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Data request for retail exposures secured by residential real estate (RRE)¹⁸:

Please provide the following data filling in the 'Input' cell. You can leave any comment in the specific cell 'Comments'.

	Data Requirement	Specifics	Input	Comments
Q1	EAD within the assessment perimeter	Please specify the retail RRE exposure values on which the 180 DPD exemption is applied (exposures A + B + C) in the reference date (31/03/2017 as specified in the General information sheet) (i.e. which retail RRE exposure values falls under (a) model(s) which use(s) a 180 DPD criterion in its definition of default). Please specify exposure values similar to how this should be reported in the ITS on supervisory reporting (http://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=OJ:L:2014:191:FULL&from=EN), i.e. determined in accordance with Article 166 CRR and Article 230(1) sentence 2 CRR.		
Q2	Total exposure value of non-defaulted exposures which are ≤ 90 DPD and not unlikely to pay	Please specify the sum of (non-defaulted) exposure values on which the 180 DPD exemption is applied which are ≤ 90 DPD		

¹⁸ Two separate and slightly different sheets were included for retail SME exposures secured by CRE as well as for exposures to PSEs.

			and which are not considered unlikely to pay (exposures A).		
Q3		Total exposure value of non-defaulted exposures which are > 90 DPD, ≤ 180 DPD and not unlikely to pay	Please specify the sum of (non-defaulted) exposure values on which the 180 DPD exemption is applied which are > 90 DPD, ≤ 180 DPD and which are not considered unlikely to pay (exposures B).		
Q4		Total exposure value of defaulted exposures, i.e. exposures which are > 180 DPD or unlikely to pay	Please specify the sum of exposure values on which the 180 DPD exemption is applied and which are > 180 DPD or unlikely to pay (exposures C).		
Q5	Total RWA within the assessment perimeter		Please specify the RWA stemming from retail RRE exposures on which the 180 DPD exemption is applied (exposures A + B + C) in the reference date (31/03/2017 as specified in the General information sheet), i.e. which stems from (a) model(s) which use(s) a 180 DPD criterion in its definition of default. Please specify RWA similar to how this should be reported in the ITS on supervisory reporting (http://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=OJ:L:2014:191:FULL&from=EN), i.e. calculated in accordance with Article 154 CRR for retail exposures.		
Q6		Total RWA of non-defaulted exposures which are ≤ 90 DPD and not unlikely to pay	Please specify the RWA stemming from exposures on which the 180 DPD exemption is applied which are ≤ 90 DPD and which are not considered unlikely to pay (exposures A).		
Q7		Total RWA of non-defaulted exposures which are > 90 DPD, ≤ 180 DPD and not unlikely to pay	Please specify the RWA stemming from exposures on which the 180 DPD exemption is applied which are > 90 DPD, ≤ 180 DPD and which are not considered unlikely to pay (exposures B).		
Q8		Total RWA of defaulted exposures, i.e. exposures which are > 180 DPD or unlikely to pay	Please specify the RWA stemming from exposures on which the 180 DPD exemption is applied which are > 180 DPD or unlikely to pay (exposures C).		
	PD		The same definition as in the ITS on supervisory reporting applies: the exposure-weighted average of the PDs assigned to the obligor grades or pools, according to the internal rating scale. The exposure value as defined above shall be used for the calculation of the exposure-weighted average PD. All risk parameters should be derived from the risk parameters used in the internal rating system approved by the respective competent authority.		
Q9		Average PD estimate (in %) (31/03/2017)	Please specify the exposure-weighted average PD estimate corresponding to all retail RRE exposures which fall under (a) model(s) which use(s) a 180 DPD criterion (exposures A + B) in the reference date (31/03/2017). Note that we refer to the PD estimate which is applied to the portfolio on 31/03/2017 (i.e. not to the PD estimate in		

			the development sample but the PD estimate in the application portfolio on 31/03/2017).		
Q10		Re-calibrated* PD estimate (in %)	Please specify the (exposure-weighted) average PD estimate which would apply to the non-defaulted retail RRE exposures (A) under the scenario that a 90 DPD criterion would apply instead of the 180 DPD criterion after a re-calibration of the PD model*. Similar to the cell above, we refer to the PD estimate which would have been applied to the portfolio on 31/03/2017 in case the PD model was already re-calibrated under the scenario where the 90 DPD criterion would apply.		

	LGD		The same definition as in the ITS on supervisory reporting applies: exposure-weighted LGD (%) where all the impact of CRM techniques on LGD values as specified in Part 3, Title II, Chapters 3 and 4 of CRR are considered. In the case of exposures subject to the double default treatment the LGD corresponds to the one selected according to Article 161(4) CRR. For defaulted exposures, provisions laid down in Article 181(1)(h) CRR should be considered. The definition of exposure value as specified above should be used for the calculation of the exposure-weighted averages. All effects should be considered including the floor applicable to mortgages. For institutions applying the IRB approach but not using their own estimates of LGD the risk mitigation effects of financial collateral are reflected in E*, the fully adjusted value of the exposure, and then reflected in LGD* according to Article 228(2) CRR. If own estimates of LGD are applied Article 175 and Article 181(1) and (2) CRR should be considered. The calculation of the exposure-weighted average LGD should be derived from the risk parameters really used in the internal rating system approved by the respective competent authority.		
Q11		Average LGD estimate (non-defaulted) (in %) (31/03/2017)	Please specify the exposure-weighted average LGD estimate corresponding to all retail RRE exposures which fall under (a) model(s) which use(s) a 180 DPD criterion (exposures A + B) in the reference date (31/03/2017). Note that we refer to the LGD estimate which is applied to the portfolio on 31/03/2017 (i.e. not to the LGD estimate in the development sample but the LGD estimate in the application portfolio on 31/03/2017).		

Q12	Re-calibrated* LGD estimate (non-defaulted) (in %)	Please specify the (exposure-weighted) average LGD estimate which would apply to the non-defaulted retail RRE exposures (A) under the scenario that a 90 DPD criterion would apply instead of the 180 DPD criterion after a re-calibration of the LGD model*. Similar to the cell above, we refer to the LGD estimate which would have been applied to the portfolio on 31/03/2017 in case the LGD model would have been re-calibrated under the scenario where the 90 DPD criterion would apply.		
Q13	Average LGD in-default (in %) (31/03/2017)	Please specify the exposure-weighted average LGD in-default corresponding to all exposures which fall under (a) model(s) which use(s) a 180 DPD criterion (i.e. corresponding to exposures C) in the reference date (31/03/2017).		
Q14	Re-calibrated* LGD in-default estimate (in %)	Please specify the (exposure-weighted) average LGD in-default estimate which would apply (to the exposures B + C) under the scenario that a 90 DPD criterion would apply instead of the 180 DPD criterion after a re-calibration of the LGD in-default model*. Similar to the cell above, we refer to the LGD in-default estimate which would have been applied to the portfolio on 31/03/2017 in case the LGD in-default model would have been re-calibrated under the scenario where the 90 DPD criterion would apply.		
Q15	Average ELBE estimate (%)	Please specify the exposure-weighted average ELBE estimate (in %) for the defaulted retail RRE exposures which fall under (a) model(s) which use(s) a 180 DPD criterion (i.e. exposures C). The ELBE estimate should be calculated in accordance with Article 181(1)(h) CRR using the methodology currently applied by the institution.		
Q16	Re-calibrated* ELBE estimate (%)	Please specify the expected (exposure-weighted) average ELBE estimate (in %) which would apply (to the exposures B + C) under the scenario that a 90 DPD criterion would apply instead of the 180 DPD criterion after a re-calibration of the ELBE model*. Similar to the cell above, we refer to the ELBE estimate which would have been applied to the portfolio on 31/03/2017 in case the ELBE model would have been re-calibrated under the scenario where the 90 DPD criterion would apply.		
Q17	Total CRA for non-defaulted exposures	Please specify the total reported value adjustments as well as specific and general provisions under Article 159 CRR, for non-defaulted retail RRE exposures which fall under (a) model(s) which use(s) a 180 DPD criterion (exposures A + B). The amount of general provisions should be assigned pro		

		rata — according to the expected loss of the different exposures.		
Q18	Total CRA for the defaulted exposures	Please specify the total reported value adjustments as well as specific and general provisions under Article 159 CRR, for defaulted retail RRE exposures which fall under (a) model(s) which use(s) a 180 DPD criterion (exposures C). The amount of general provisions should be assigned pro rata — according to the expected loss of the different exposures.		
Q19	Re-estimated CRA for non-defaulted exposures	Please specify the value adjustments as well as specific and general provisions under Article 159 CRR which you expect* for the non-defaulted retail RRE exposures (exposures A) under the scenario where the 180 DPD criterion would be replaced by a 90 DPD criterion.		
Q20	Re-estimated CRA for defaulted exposures	Please specify the value adjustments as well as specific and general provisions under Article 159 CRR which you expect* for the defaulted retail RRE exposures (exposures C) under the scenario where the 180 DPD criterion would be replaced by a 90 DPD criterion.		
Q21	IRB excess or shortfall from non-defaulted exposures	Please specify the IRB excess (as a positive number) or shortfall (as a negative number) corresponding to all non-defaulted retail RRE exposures which fall under (a) model(s) which use(s) a 180 DPD criterion (i.e. corresponding to exposures A + B) in the reference date (31/03/2017).		
Q22	IRB excess or shortfall from defaulted exposures	Please specify the IRB excess (as a positive number) or shortfall (as a negative number) corresponding to all defaulted retail RRE exposures which fall under (a) model(s) which use(s) a 180 DPD criterion (i.e. corresponding to exposures C) in the reference date (31/03/2017).		

*The re-calibrated or re-estimated PD, LGD (non-defaulted), LGD in-default, ELBE and CRA estimate refers to the institutions' best estimate of what would be the estimate under the hypothetical scenario where the 180 DPD criterion would be replaced by the 90 DPD criterion. Institutions should ideally apply statistical methods to re-estimate the model, but may determine this estimate also on the basis of expert judgement or a recalculation of the model.

Annex II: COREP data

Item	Formula used in Annex III	Template	Data point ID
Own funds	Own funds ^{old}	C 01.00	33413
Tier 2 capital	Tier 2 ^{old}	C 01.00	33412
Tier 1 capital	Tier 1 ^{old}	C 01.00	84817
IRB excess (+) or shortfall (-) of credit risk adjustments, additional value adjustments and other own funds reductions to expected losses for non-defaulted exposures	IRB excess /shortfall(institution) _{ND} ^{old}	C 04.00	55204
IRB excess (+) or shortfall (-) of specific credit risk adjustments to expected losses for defaulted exposures	IRB excess /shortfall (institution) _D ^{old}	C 04.00	55203
Risk-weighted exposure amounts for calculating the cap to the excess of provision eligible as T2	0.6% * REA	C 04.00	70027
Total risk exposure amount	REA _{TOT} ^{old}	C 02.00	38483

Annex III: Methodology to assess the impact on REA and capital

In applying the current regulatory framework, the removal of the 180 DPD provision is expected to have an impact on capital requirements by affecting both the REA and the own funds. For IRB institutions, the estimation of the UL takes into consideration various input parameters for the REA formula, while the IRB excess/shortfall mechanism changes the regulatory capital value.

- *Effects of changes through UL on capital requirements for IRB institutions:* the 180 DPD provision removal will lead to a risk parameter re-calibration and therefore a change in the input values for the RW.

For retail exposures, the RW formula for non-defaulted exposures are the following (Article 154(1) CRR):

$$RW_{ND}^{old} = \left(\overline{LGD}_{A+B}^{old} \cdot N \left(\frac{1}{\sqrt{1-R}} \cdot G(\overline{PD}_{A+B}^{old}) + \sqrt{\frac{R}{1-R}} \cdot G(0.999) \right) - \overline{LGD}_{A+B}^{old} \cdot \overline{PD}_{A+B}^{old} \right) \cdot 12.5 \cdot 1.06$$

$$RW_{ND}^{new} = \left(\overline{LGD}_A^{new} \cdot N \left(\frac{1}{\sqrt{1-R}} \cdot G(\overline{PD}_A^{new}) + \sqrt{\frac{R}{1-R}} \cdot G(0.999) \right) - \overline{LGD}_A^{new} \cdot \overline{PD}_A^{new} \right) \cdot 12.5 \cdot 1.06$$

where $\overline{LGD}_{A+B}^{old}$ refers to the exposure-weighted LGD for non-defaulted exposures under fractions A and B in Figure 1;

where \overline{LGD}_A^{new} refers to the exposure-weighted LGD for non-defaulted exposures under fraction A in Figure 2, under the hypothesis that the 180 DPD provision is removed and replaced by the 90 DPD provision;

where $\overline{PD}_{A+B}^{old}$ refers to the exposure-weighted PD estimate under fractions A and B in Figure 1;

where \overline{PD}_A^{new} refers to the exposure-weighted PD estimate under fraction A in Figure 2, under the hypothesis that the 180 DPD provision is removed and replaced by the 90 DPD provision; and

where R refers to the coefficient of correlation, which is set at 15% for retail exposures as specified in Article 154(1) CRR.

For the defaulted exposures, when institutions use own estimates of LGD, the RW shall be as follows, in accordance with Article 154(1)(i) CRR:

$$RW_D^{old} = \max\{0, 12.5 \cdot (\overline{LGD}_D^{old} - \overline{ELBE}_D^{old})\}$$

$$RW_D^{new} = \max\{0, 12.5 \cdot (\overline{LGD}_D^{new} - \overline{ELBE}_D^{new})\}$$

where \overline{ELBE}_D^{old} refers to the current exposure-weighted ELBE estimate calculated as specified in Article 181(1)(h);

where \overline{ELBE}_D^{new} refers to the exposure-weighted ELBE estimate calculated as specified in Article 181(1)(h) CRR, under the hypothesis that the 180 DPD provision is removed and replaced by the 90 DPD provision;

where \overline{LGD}_D^{old} refers to the current exposure-weighted LGD in-default estimate calculated in accordance with Article 181(1)(h) CRR; and

where \overline{LGD}_D^{new} refers to the LGD in-default estimate calculated in accordance with Article 181(1)(h) CRR.

The RWs are then multiplied by the non-defaulted and defaulted exposure amounts respectively. The SME supporting factor of 0.7919 should be applied where allowed for exposures to SMEs (in accordance with Article 501 CRR). In practice, the REA for non-defaulted (retail) SME exposures should be multiplied by 0.7919. For simplicity and since all of the 180 DPD exposures are retail exposures secured by RRE, it will be assumed that the SME supporting factor does not apply to any of the non-defaulted retail RRE exposures.

$$RWA_{ND}^{old} = RW_{ND}^{old} \cdot (EAD_A + EAD_B)$$

$$REA_{ND}^{new} = RW_{ND}^{new} \cdot EAD_A$$

$$REA_D^{old} = RW_D^{old} \cdot EAD_C$$

$$REA_D^{new} = RW_D^{new} \cdot (EAD_B + EAD_C)$$

where EAD_A , EAD_B and EAD_C correspond to the exposure values under fractions A, B and C respectively.

Given that the exposures under fraction B in Figure 2 will be identified as defaulted if the 180 DPD criterion is removed, the RW for defaulted exposures applies to the sum of exposure values under fractions B and C.

The total risk-weighted exposure amount is calculated as follows:

$$REA_{180DPD}^{old} = REA_{ND}^{old} + REA_D^{old}$$

$$REA_{90DPD}^{new} = REA_{ND}^{new} + REA_D^{new}$$

The final impact (in absolute amounts) on REA due to the 180 DPD provision removal is then calculated:

$$REA_{TOT}^{new} = REA_{TOT}^{old} - REA_{180DPD}^{old} + REA_{90DPD}^{new}$$

where REA_{TOT}^{old} refers to the total risk exposure amount at the level of the institution, and is obtained from COREP.

The relative change in REA is obtained as follows:

$$\Delta(\%)REA = \frac{REA_{TOT}^{new} - REA_{TOT}^{old}}{REA_{TOT}^{old}}$$

or

$$\Delta(\%)REA = \frac{REA_{90DPD}^{new} - REA_{180DPD}^{old}}{REA_{TOT}^{old}}$$

However, the approach above applies the supervisory RW formula to exposure-weighted average parameters, instead of applying the supervisory formula at exposure or obligor level directly. In particular, the parameter estimates are exposure-weighted averages, i.e. aggregated for all retail RRE exposures that fall under a model where a 180 DPD criterion is applied. While there is a bias due to calculating the REA based on exposure-weighted averages instead of at exposure level, this bias disappears in the calculation of the relative change in REA if it is assumed that this bias is equal under the 180 DPD versus the 90 DPD scenario¹⁹.

¹⁹ The REA at the level of the institution is calculated as:

$$\begin{aligned} REA_{TOT}^{new} &= REA_{TOT}^{old} - REA_{180DPD,exposure\ class\ level}^{old} + REA_{90DPD,exposure\ class\ level}^{new} \\ REA_{TOT}^{old} &= REA_{TOT}^{old,COREP} \end{aligned}$$

where $REA_{TOT}^{old,COREP}$ refers to the total risk exposure amount at the level of the institution, and is obtained from COREP.

The relative change in REA is obtained as $\Delta(\%)REA = \frac{REA_{TOT}^{new} - REA_{TOT}^{old}}{REA_{TOT}^{old}}$

since we know that:

$$\begin{aligned} REA_{180DPD,exposure\ class\ level}^{old} &= REA_{180DPD,exposure\ level}^{old} + bias_{180DPD}^{old} \text{ and} \\ REA_{90DPD,exposure\ class\ level}^{new} &= REA_{90DPD,exposure\ level}^{new} + bias_{90DPD}^{new} \end{aligned}$$

Since it can be assumed that $bias_{180DPD}^{old} \approx bias_{90DPD}^{new}$, it follows that:

$$\begin{aligned} REA_{TOT}^{new} &= REA_{TOT}^{old,COREP} - REA_{180DPD,exposure\ class\ level}^{old} + REA_{90DPD,exposure\ class\ level}^{new} \\ &= REA_{TOT}^{old,COREP} - REA_{180DPD,exposure\ level}^{old} - bias_{180DPD}^{old} \\ &\quad + REA_{90DPD,exposure\ level}^{new} + bias_{90DPD}^{new} \\ REA_{TOT}^{new} &\approx REA_{TOT}^{old,COREP} - REA_{180DPD,exposure\ level}^{old} + REA_{90DPD,exposure\ level}^{new} \end{aligned}$$

$$\Delta(\%)REA \approx \frac{REA_{TOT}^{old,COREP} - REA_{180DPD,exposure\ level}^{old} + REA_{90DPD,exposure\ level}^{new} - REA_{TOT}^{old}}{REA_{TOT}^{old}} \text{ and}$$

Since the current REA that fall under the scope of the 180 DPD exemption have also been requested, these REA (which are calculated at the exposure or obligor level) can be compared with the REA that are calculated on the basis of the expected parameter changes. By multiplying the ratio of both (i.e. the correction factor (CF)) to the calculated REA amounts, the calculation of the relative change in REA can be corrected for the bias.

$$CF = \frac{REA_{180DPD,exposure\ level}^{old}}{REA_{180DPD}^{old}}$$

$$\Delta(\%)REA = \frac{REA_{90DPD}^{new} \cdot CF - REA_{180DPD}^{old} \cdot CF}{REA_{TOT}^{old}}$$

- *Effect of the changes through EL on capital requirements for IRB institutions:* the removal of the 180 DPD provision is expected to lead to a re-calibration of both the EL model and the internal model for calculating CRA. The EL amount is generally affected by both the change of risk parameters and exposures reallocation. For the non-defaulted assets, it is calculated in accordance with Article 158(5) CRR with the following formula:

$$EL_{ND}^{old}(\text{amount}) = \overline{PD_{A+B}^{old}} \cdot \overline{LGD_{A+B}^{old}} \cdot (EAD_A + EAD_B)$$

$$EL_{ND}^{new}(\text{amount}) = \overline{PD_A^{new}} \cdot \overline{LGD_A^{new}} \cdot EAD_A$$

For the defaulted exposures, the EL amount is calculated differently, in accordance with Article 158(5) CRR:

$$EL_D^{old}(\text{amount}) = \overline{ELBE_D^{old}} \cdot EAD_C$$

$$EL_D^{new}(\text{amount}) = \overline{ELBE_D^{new}} \cdot (EAD_B + EAD_C)$$

where $\overline{ELBE_D^{old}}$ and $\overline{ELBE_D^{new}}$ refer to the institution's current exposure-weighted best estimate of expected loss, calculated as specified in Article 181(1)(h) CRR; and

where $\overline{ELBE_D^{old}}$ and $\overline{ELBE_D^{new}}$ refer to the institution's exposure-weighted best estimate of expected loss calculated as specified in Article 181(1)(h) CRR under the hypothesis that the 180 DPD provision is removed and replaced with the 90 DPD provision.

Considering the value of the general and specific CRA (Article 110 CRR), the IRB excess/shortfall amount for non-defaulted and defaulted exposures is calculated as specified in Article 159 CRR:

$$IRB\ excess/shortfall_{ND}^{old} = CRA_{ND}^{old} - EL_{ND}^{old}(\text{amount})$$

$$IRB\ excess/shortfall_{ND}^{new} = CRA_{ND}^{new} - EL_{ND}^{new}(\text{amount})$$

$$IRB\ excess/shortfall_D^{old} = CRA_D^{old} - EL_D^{old}(\text{amount})$$

$$\Delta(\%)REA \approx \frac{REA_{90DPD,exposure\ level}^{new} - REA_{180DPD,exposure\ level}^{old}}{REA_{TOT}^{old,COREP}}. \text{ Hence, } \Delta(\%)REA \text{ has no bias.}$$

$$\text{IRB excess/shortfall}_D^{\text{new}} = \text{CRA}_D^{\text{new}} - \text{EL}_D^{\text{new}} (\text{amount})$$

where $\text{CRA}_{ND}^{\text{old}}$ and $\text{CRA}_D^{\text{old}}$ refer to the current value adjustments as well as specific and general provisions under Article 159 CRR for non-defaulted (i.e. corresponding to fractions A and B in Figure 1) and defaulted exposures (i.e. corresponding to fraction C in Figure 1); and

where $\text{CRA}_{ND}^{\text{new}}$ and $\text{CRA}_D^{\text{new}}$ refer to the value adjustments as well as specific and general provisions under Article 159 CRR for non-defaulted (i.e. corresponding to fraction A in Figure 2) and defaulted exposures (i.e. corresponding to fractions B and C in Figure 2), under the hypothesis that the 180 DPD provision is removed and replaced with the 90 DPD provision.

At the level of the institution, the IRB excess/shortfall for non-defaulted and defaulted exposures (IRB excess/shortfall (institution) $_{ND}^{\text{old}}$ and IRB excess/shortfall (institution) $_D^{\text{old}}$ are known from COREP (see Annex II) (for the same reference date — 31 March 2017 — as the data requested from the institutions on the 180 DPD perimeter). The new IRB excess/shortfall (i.e. under the hypothetical scenario of 180 DPD removal) is computed by subtracting the current IRB excess/shortfall stemming from the 180 DPD perimeter and by adding the calculated IRB excess/shortfall under the removal of the 180 DPD criterion:

$$\begin{aligned} & \text{IRB excess/shortfall (institution)}_{ND}^{\text{new}} \\ &= \text{IRB excess/shortfall (institution)}_{ND}^{\text{old}} - \text{IRB excess/shortfall}_{ND}^{\text{old}} + \text{IRB excess/shortfall}_{ND}^{\text{new}} \end{aligned}$$

$$\begin{aligned} & \text{IRB excess/shortfall (institution)}_D^{\text{new}} \\ &= \text{IRB excess/shortfall (institution)}_D^{\text{old}} - \text{IRB excess/shortfall}_D^{\text{old}} + \text{IRB excess/shortfall}_D^{\text{new}} \end{aligned}$$

When computing the total (i.e. non-defaulted and defaulted) IRB excess/shortfall, the IRB excess/shortfall of both non-defaulted and defaulted exposures should be taken into account, considering that the excess of provisions for defaulted exposures cannot be used to cover the shortfall of provisions for non-defaulted exposures (Article 159 CRR):

$$\text{IRB excess/shortfall (institution)}^{\text{old}} = \text{IRB excess/shortfall (institution)}_{ND}^{\text{old}} \text{ if IRB excess/shortfall (institution)}_{ND}^{\text{old}} < 0 \text{ and IRB excess/shortfall (institution)}_D^{\text{old}} > 0$$

$$\text{IRB excess/shortfall (institution)}^{\text{old}} = \text{IRB excess/shortfall (institution)}_{ND}^{\text{old}} + \text{IRB excess/shortfall (institution)}_D^{\text{old}} \text{ otherwise}$$

The same formulae apply for the new IRB excess/shortfall under the removal of the 180 DPD criterion, as well as to compute the current and new IRB excess/shortfall corresponding to the 180 DPD perimeter (IRB excess/shortfall $_{180 \text{ DPD}}^{\text{old}}$ and IRB excess/shortfall $_{180 \text{ DPD}}^{\text{new}}$).

Finally, the IRB excess should be deducted from Tier 1 capital in the event of a shortfall, and should be added to Tier 2 in the event of an excess (up to 0.6% of REA) in accordance with Article 36(1)(d) and Article 62(d) CRR.

The new Tier 1 capital is computed as follows, on the basis of the current Tier 1 capital:

$$Tier\ 1^{new} = Tier\ 1^{old} - (CRA_{ND}^{old} + CRA_D^{old}) + (CRA_{ND}^{new} + CRA_D^{new}) - IRB\ excess/shortfall\ (institution)^{old} + IRB\ excess/shortfall\ (institution)^{new}\ \text{if}\ IRB\ excess/shortfall\ (institution)^{old} < 0\ \text{and}\ IRB\ excess/shortfall\ (institution)^{new} < 0$$

The Tier 1 capital should be adjusted because of the change in provisions (i.e. subtracting the current provisions and adding the hypothetical provisions under the scenario of the removal of the 180 DPD criterion²⁰), and because of the change in the IRB excess/shortfall, which stems from the change in the provisions and the change in the EL amounts.

The new Tier 2 capital is computed as follows, on the basis of the current Tier 2 capital:

$$Tier\ 2^{new} = Tier\ 2^{old} - IRB\ excess/shortfall\ (institution)^{old} + MIN(IRB\ excess/shortfall\ (institution)^{new}, 0.6\% * REA)\ \text{if}\ IRB\ excess/shortfall\ (institution)^{old} > 0\ \text{and}\ IRB\ excess/shortfall\ (institution)^{new} > 0$$

where the REA for calculating the cap to the excess of provision eligible as Tier 2 is obtained from COREP.

- Finally, the own funds are calculated as specified in Articles 25 and 72 CRR:

$$Own\ funds^{new} = Tier\ 1^{new} + Tier\ 2^{new}$$

The total impact on own funds due to the 180 PD provision removal is then calculated:

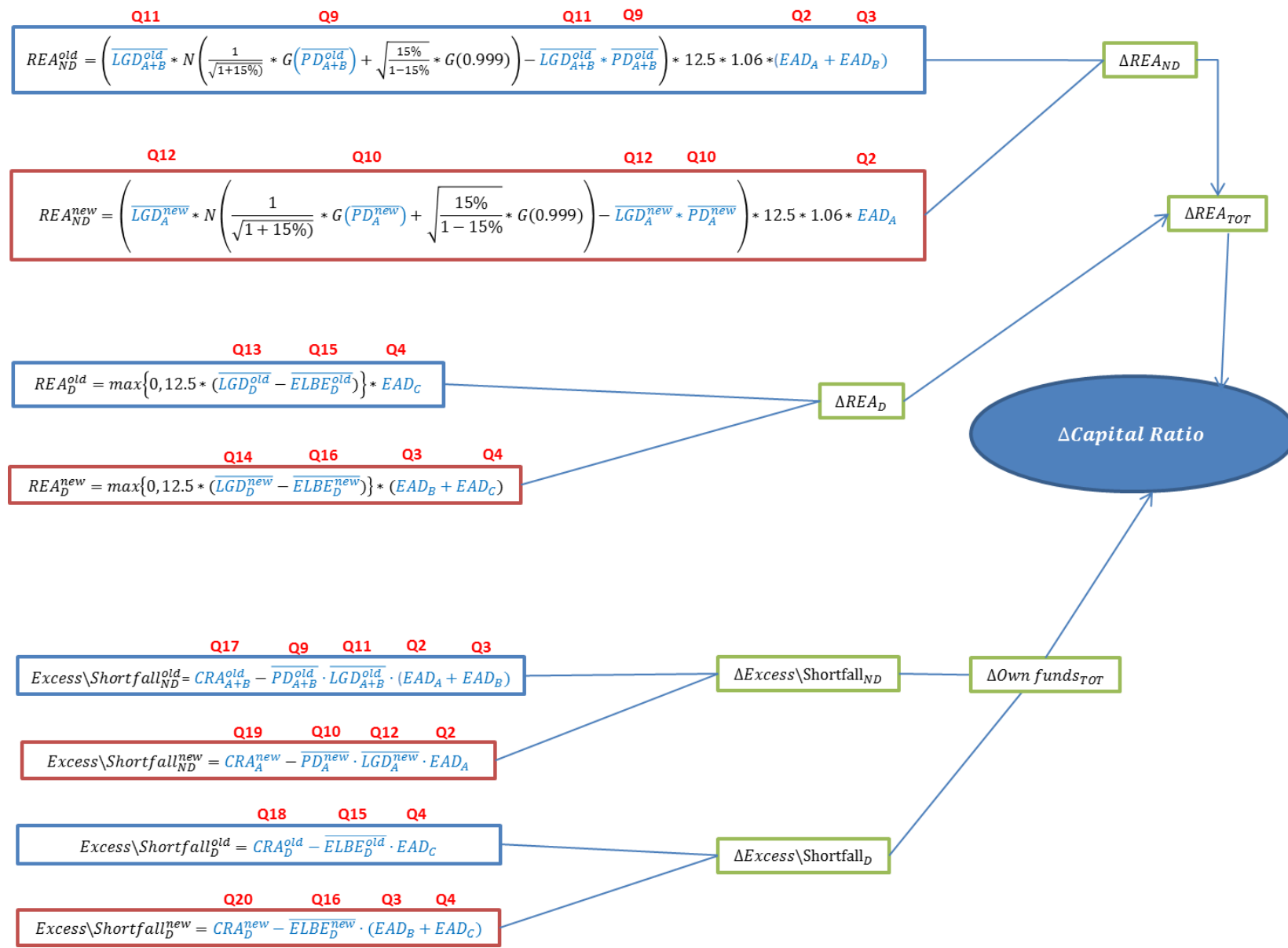
$$\Delta(\%)Own\ funds = \frac{Own\ funds^{new} - Own\ funds^{old}}{Own\ funds^{old}}$$

where Own funds^{old} is obtained from COREP.

The final impact on the total capital ratio is then assessed by combining the old and new values of REA and own funds:

$$\Delta Capital\ Ratio = \frac{Own\ funds^{new}}{REA_{TOT}^{new}} - \frac{Own\ funds^{old}}{REA_{TOT}^{old}}$$

²⁰ This stems from the way Tier 1 capital should be obtained: as clarified in Article 26(1)(c) and Article 26(2) CRR, CET1 items consist of retained earnings, which may include year-end profits (under certain conditions), from which provisions (i.e. losses) have been deducted.





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