EBA/CP/2018/08

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Consultation Paper

On Guidelines for the estimation of LGD appropriate for an economic downturn ('Downturn LGD estimation')

Contents

1. Responding to this consultation

The EBA invites comments on all proposals put forward in this paper and in particular on the specific questions summarised in 5.2.

Comments are most helpful if they:

- respond to the question stated;
- indicate the specific point to which a comment relates;
- contain a clear rationale;
- provide evidence to support the views expressed/ rationale proposed; and
- describe any alternative regulatory choices the EBA should consider.

Submission of responses

To submit your comments, click on the 'send your comments' button on the consultation page by 22.06.2018. Please note that comments submitted after this deadline, or submitted via other means may not be processed.

Publication of responses

Please clearly indicate in the consultation form if you wish your comments to be disclosed or to be treated as confidential. A confidential response may be requested from us in accordance with the EBA's rules on public access to documents. We may consult you if we receive such a request. Any decision we make not to disclose the response is reviewable by the EBA's Board of Appeal and the European Ombudsman.

Data protection

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2. Executive Summary

This consultation paper provides draft Guidelines specifying how loss given default (LGD) estimates appropriate for an economic downturn, identified in accordance with the draft RTS on economic downturn, should be quantified. It supplements the Guidelines on PD, LGD estimation and treatment of defaulted assets (EBA/GL/2017/16) of 20/11/2017 (EBA GL on PD and LGD estimation) and provides specific guidance on how to incorporate the impact of an economic downturn into LGD estimates. The consultation paper is part of the EBA efforts to harmonise IRB practices.

The proposal builds on a previous consultation paper, published on 1 March 2017, which set out requirements to identify the economic downturn and an example how to incorporate the identified economic downturn into the modelling of LGDs. The approach required that an economic downturn should be specified based on the relation between so-called model components - where *model components* are defined as features of realised losses and CFs - and economic factors, where the latter would include macroeconomic as well as credit-related factors. The originally proposed policy required institutions to consider economic factors, which are likely to affect the considered model component. To this end, institutions would be required to assess the dependency between economic factors and model components based on qualitative and quantitative analysis. The responses received with respect to this concept was generally positive, but also revealed practical difficulties in identifying model components and relevant economic factors.

Taking the feedback from consultation into account, EBA hence materially revised the proposed concept in particular by disentangling the identification of an economic downturn from the impact on model estimates, i.e. the incorporation of the impact of the economic downturn into the IRB modelling. In order to provide clarity on the distinction, the RTS on economic downturn is now limited to narrower scope of solely providing a specification of the identification of an economic downturn in terms of nature, duration and severity and regardless of how the downturn affects realised losses for a considered type of exposure.

In order to address the incorporation of the impact of the identified economic downturn into the modelling, this consultation paper therefore specifically addresses the impact that an economic downturn, identified in accordance with the RTS, might have on the realised losses and thus on the LGD estimation for a considered type of exposure. To this end, the Guidelines differentiates between two situations:

(i) where the impact of an economic downturn has been observed and is covered by loss data that the institution has collected for the considered type of exposures; and

(ii) where such impact has not been observed (e.g. because the downturn periods identified in accordance with the RTS have occurred too far back in the past where the institution did not collect the relevant loss data).

Although the incorporation of downturn LGD estimates should optimally be quantified based on the institutions observed loss data, it is only permitted where there is sufficient data available to analyse the observed impact of the considered downturn period. In the case, where no loss data is available for a considered downturn period, institutions are required to quantify LGD estimates for this downturn period through more prescriptive approaches. Two approaches are allowed in this case, namely the so-called extrapolation and haircut approaches (or a combination of the two) and it will consequently be required to add an appropriate margin of conservatism to cover for the lack of data. Finally, a third method is available in the cases where no loss data is available for the considered downturn periods and institutions can justify to the satisfaction of the supervisors that it cannot apply the extrapolation and or haircut approach. In this case, institutions may apply their preferred modelling approach, but a floor of the downturn LGD estimates is set to the long-run-average LGD plus a 20 percentage point's add-on to compensate for the lack of data (capped at 105%).

In addition to the above approaches, a reference value is proposed which acts as a challenger to the final downturn LGD estimation and as a guide to the regulatory expectations as regards to the level of the quantification.

These GL provide a different calibration target for the downturn LGD than for the long-run average LGD, which is why these GL do not touch issues related to model development. As for the GL on PD and LGD estimation, it is EBAs view that requirements for the calibration of risk parameters, in these GL downturn LGDs, have to be identified in an objective manner. Therefore, the proposed approach includes, in parts, a high degree of prescriptiveness with respect to the analysis or methodologies that should be applied.

Taking this into account the Guidelines will harmonise the quantification of downturn LGD estimates and pave the ground to improved benchmark LGD estimates based on the type of approach used. As for the GL on PD and LGD it is expected that these GL lead to material model changes for a significant number of rating systems. In this context, it should be recalled that these GL are an amendment of the GL on PD and LGD and that therefore the proposed phasing-in approach, as well as the deadline of at latest end-2020 for the final implementation, set out in EBAs Opinion on the implementation of the review of the IRB Approach, published by EBA in February 2016, will apply.

3. Background and rationale

3.1 Introduction

1. The quantification of downturn LGD estimates has been challenging for supervisors, industry and academics ever since the Basel II framework included this concept. The requirement for LGD and conversion factor (CF) estimates to reflect economic downturn conditions has been introduced in the Basel II framework and stems from the general economic model that is used to derive the formula for calculating minimum capital requirements. In the Basel II framework, unexpected losses are based on the conditional expected loss given a value of the single systematic risk factor leading to high credit losses. Whereas the regulatory formula includes a supervisory mapping function to derive conditional PDs[1] from unconditional long-run average PDs estimated by the institutions, it does not provide an explicit function that would transform average LGDs and exposure at default (EAD) into conditional LGDs and exposure values (respectively CFs). Instead, it is required to use LGDs that are appropriate for an economic downturn. The lack of explicit guidance and limited supervisory and industry consensus on how to incorporate the economic downturn component in model estimation has led to significant differences in practices and given rise to unjustified variability in risk-weighted exposure (RWE) amounts where own estimates of LGDs and/or CFs are used.

2. In this consultation paper, downturn LGD estimation is understood as an aspect of LGD quantification – in line with the specification of the respective requirement in Regulation (EU) No 575/2013 (the CRR). This includes, most importantly, that the quantification of downturn LGD estimates should refer to the same model used for the assignment of facilities to facility grades or pools as the long-run average LGD estimation. Thus, it is expected that the rank ordering of facilities within a given calibration segment does not change due to downturn LGD estimation.

Context of downturn LGD estimation

3. In general terms, the EBA is fully supportive of allowing a diversity in model practices. The strength of internal models lies in the ability of institutions to model on institution specific data, which ensures a high degree of risk sensitivity and constitutes an important characteristic of capital requirements to be maintained. It is however also clear that this requires sufficiently granular data and specific guidance on the calibration targets. In this context, the draft Guidelines focus on the calibration target, i.e. LGD estimates appropriate for an economic downturn ('downturn LGD'), and not the calibration methodology applied

[1] conditional on a set value of the single systematic risk factor (i.e. based on the 99.9% confidence level

to ensure that the calibration target is met. Therefore, the proposed policy leaves flexibility with respect to the actual estimation methodology, but provides guidance on the type of approach to be used for quantification of the calibration target (i.e. downturn LGD estimates).

4. As a result of this understanding, the level at which downturn LGDs are quantified should be the same level at which long-run average LGDs are considered for the purpose of calibration. In this context, it should be recalled that the EBA GL on PD and LGD estimation and treatment of defaulted assets introduced the notion of 'calibration segments', which is defined as a uniquely identified subset of the range of application of the a jointly calibrated PD or LGD model. The use of calibration segments does however not imply that the institution calibrates LGD estimates by facility grades or pools by considering the long run average LGD calculated at the level of calibration segments. Institutions may use calibration segments, but calibrate LGD estimates to the long-run average LGD calculated at the level of each grade or pool (for example if in the step of calibration the considered portfolio is split by certain regions). However, regardless of whether an institution calculates the long-run average LGD at the level of calibration segments at the level of grades or pools, both with the objective of providing LGD estimates by facility grade or pool, the quantification of downturn LGD estimates should follow the level considered by the institution for the purpose of calibrating long-run average LGD.

5. The RTS on economic downturn provides a notion of an economic downturn, which might comprise distinct downturn periods. Where more than one downturn period is identified, these GL specify that the downturn LGD estimation needs to be provided for each of those periods. The final downturn LGD estimates should then relate to the one downturn period leading to the highest average LGD considered at the level of calibration segments.

General Approach towards downturn LGD estimation

6. In line with the general philosophy of the internal ratings-based (IRB) approach that the quantification of risk parameters estimates should be based on observed data, the downturn LGD estimation should be based on the observed impact of an economic downturn on the institution's relevant losses, where possible and, where not, it should make use of certain prescribed methodologies. The consultation paper therefore differentiates between three approaches, introduced in **paragraph 17 to 20**,which are increasing in prescriptiveness with regard to aspects that need to be covered by appropriate margin of conservatism ('MoC'):

    i. **Downturn LGD estimates based on observed data:** where observed loss data is available to assess the impact for the considered downturn period, identified in accordance with the RTS on economic downturn, the institution to conduct a fairly prescriptive impact assessment. The impact assessment must analyse whether there is evidence of elevated realised LGDs, decreased annual recoveries,

decreased number of cures (i.e. exposures that defaulted and returned back to the non-defaulted status) or prolonged time in default caused by the considered economic downturn period. Downturn LGD should then be estimated for the considered downturn period coherent with the results obtained from that impact assessment.

ii. **Downturn LGD estimates based on estimated historical loss data (haircut and extrapolation approaches):** where sufficient loss data is not available to base the downturn LGD estimation on an observed impact for a considered downturn period, the downturn LGD should be quantified using a haircut approach, or an extrapolation approach. The approaches may as well be combined and used for the downturn estimation of intermediate risk parameters (such as recovery rates or cure rates). Moreover, institutions may quantify such intermediate risk parameters appropriate for economic downturn conditions, where sufficient data is available to quantify the downturn impact on these intermediate risk parameters. However, the downturn LGD should only be quantified using these approaches for a considered downturn period if an estimation based on sufficient data, i.e. according to point i) above, is not possible. Moreover, MoC has to be added to cover for the lack of loss data impacted by an economic downturn.

iii. **Free modelling flexibility with minimum level of add-on:** where no data is available to quantify downturn LGDs for the considered downturn period, then the institution still has to provide downturn LGD estimates – given the explicit requirement in the CRR to provide these. However, in this case, the estimate furthermore needs to be fulfill a minimum level of MoC, covering the lack of data and methodological deficiencies. Furthermore, the institution must justify to the satisfaction of the competent authority that it is neither possible to apply any of the approaches outlined in point i) and ii) above. Under this third and final approach, it is required that the final downturn LGD estimates including an appropriate MoC are higher than the according long-run-average LGD estimates plus 20 percentage points (capped at a final downturn LGD estimate level of 105%).

In addition, a reference value is proposed which acts as a challenger to the final downturn LGD estimation under point i) and ii) and as a guide to the regulatory expectations with regards to the level of the quantification.

3.2 General requirements on downturn LGD estimation

7. **Paragraph 13** of the current draft Guidelines on downturn LGD estimation (GL hereafter) clarifies that the GL should be understood as an amendment of the GL on PD and LGD estimation. Therefore, all definitions and all relevant requirements of Section 4 on general estimation requirements, of Section 7 on LGD-in-default estimation, of Section 8 on the application of risk parameters and of Section 9 on the review of estimates of the GL on PD and LGD estimation should equally apply to downturn LGD estimation.

8. This means in particular that the concept of MoC laid down in the GL on PD and LGD estimation should also be applied to downturn LGD estimation. Therefore the MoC for downturn LGD estimation should be assessed along the requirements set out in Section 4.4 of the GL on PD and LGD estimation. In particular, this means that:

    - institutions need to identify all deficiencies related to the estimation of downturn LGDs that lead to a bias in the quantification of the estimates or to an increased uncertainty which is not captured by the general estimation error specifically related to the downturn LGD estimation in accordance with the guidance set out in Subsection 4.4.1 of the GL on PD and LGD estimation;

    - appropriate adjustments (as described in Subsection 4.4.2 of the GL on PD and LGD estimation) should be applied to overcome the identified deficiencies in order to provide a more accurate downturn LGD estimation;

    - institutions should reflect the uncertainty of the downturn LGD estimation (including appropriate adjustments) by quantifying a MoC segmented in three categories:

        i. Category A: MoC related to data and methodological deficiencies identified under Category A as referred to in paragraph 36(a) of the GL on PD and LGD estimation;

        ii. Category B: MoC related to relevant changes to underwriting standards, risk appetite, collection and recovery policies and any other source of additional uncertainty identified under Category B as referred to in paragraph 36(b) of the GL on PD and LGD estimation;

        iii. Category C: the general estimation error.

9. The GL clarify that in **paragraph 14** that downturn LGD estimates should be quantified at the same level at which the long-run average LGD is quantified for the considered type of exposure. The rationale for this is that downturn LGD estimation should be understood as risk quantification of LGD estimates appropriate for an economic downturn, i.e. downturn LGD estimation just provides a different calibration target as compared to long-run average LGD estimation. As such, the applicable level at which the calibration target is specified for the quantification of LGD estimates should be preserved when quantifying downturn LGDs. Thus, if an institution considers the long-run average LGDs by grades or pools (in line with paragraph 161(a) of the GL on PD and LGD estimation) for the purpose of quantifying LGD estimates for these grades or pools, it needs to consider the same level for quantifying downturn LGD. If an institution considers long-run average LGDs calculated at the level of calibration segments for the purpose of LGD calibration (in line with Article 161 (b) of the GL on PD and LGD estimation) it needs to quantify downturn LGDs at least by calibration segment.

10. As an exception to the principle described in the previous paragraph, the proposed policy in the GL allows to quantify downturn LGD estimates at a more granular level than long-run average LGD estimates where this provides more appropriate final downturn LGD estimates. The rationale for allowing a more granular quantification of downturn LGDs is that in exceptional cases such a granular quantification of downturn LGDs may be appropriate. As an example, it may be the case that no significant difference in the level of realised LGDs between certain regions of a jurisdiction for a mortgage portfolio is observed, but observed region-specific house price indices may indicate, when considering past downturn periods, that a downturn might have a significantly different impact on the economic losses across the regions. If however a more granular level than the one considered for the long-run average LGD estimation is chosen for the downturn LGD estimation, institutions need to provide a meaningful aggregation scheme to ensure that the resulting downturn LGD estimates can be compared to the long-run average LGD estimates (as required by paragraph 21 of the draft GL).

11. The provision set out in **paragraph 15** of the draft GL ensures that, as a general concept, an institution needs to estimate downturn LGDs appropriate for each downturn period identified in accordance with the RTS on economic downturn. As the approach in the RTS can lead to the identification of multiple downturn periods, institutions need to quantify LGD downturn estimates in relation to different downturn periods. Consequently, this may require institutions to estimate downturn LGD based on different types of approaches (as described in paragraph 6 of this section), as data might be available for some identified downturn periods, but not for others.

12. Given that, in the case of multiple downturn periods, institutions may have to use different approaches, it is important to specify in detail how this interaction should work, i.e. how the final downturn LGD estimate should be selected. Therefore three principles are laid down in the proposed policy:

    i. Firstly, the proposed policy requires that the final downturn LGD estimates relate to one downturn period per calibration segment;

    ii. Secondly, where for one of the downturn periods identified LGD estimates are quantified via the approach set out in Section 7 (minimum add-on) and for another downturn period LGD estimates are quantified based on the methodologies set out in Section 5 or 6, then the latter shall be taken into account for the final LGD downturn estimate. In brief, downturn LGD estimation subject to the minimum add-on is dis-regarded where downturn LGD estimation is possible based on observed or estimated loss data for any other downturn period.

    iii. Third, where for several downturn periods LGD estimates are quantified based on the methodologies set out in Section 5 or 6, institutions should choose those LGD estimates relating to the downturn period leading to the highest average downturn LGD estimate for the considered calibration segment. It is important to note that

this refers to the calibration segment as a subset of the current portfolio at the time of calibration.

13. The rationale for the first principle is that where different calibration segments cover exposures from e.g. different jurisdictions, industry sectors or even product types for retail exposures the multiple downturn periods will have different impact on these calibration segments. The second principle is justified by the fact that the LGD estimates based on the approach set out in Section 7 are not based on observed or estimated loss data and are therefore considered less reliable. The third principle ensures that the estimation is based on the downturn period which leads to the highest expected impact when applying the final downturn LGD estimation.

14. The level of quantification of downturn LGD estimations should however not be confused with the downturn period they relate to, as described in the above paragraphs and illustrated in the example. Indeed, as outlined above downturn LGD estimation for the grades and pools of one calibration segment should refer to the same downturn period, although the quantification of these downturn LGD estimates (relating to the same downturn period) may be different per grade or pool, where this is the level at which the institution quantifies long-run average LGD estimates.

15. As an example, consider an obligor-based retail rating system covering three types of facilities: mortgages, consumer credits and overdrafts on current accounts. For the purpose of long-run average LGD estimation, the system differentiates two calibration segments: (A) mortgages; and (B) consumer credits and overdrafts on current accounts. In accordance with Article 1(2) of the draft RTS on economic downturn, the economic downturn should be identified for each type of exposure, where the latter should be understood in the sense of Article 142(2) of the CRR (i.e. as exposures which are homogenously managed). Therefore, in this example, for both calibration segments the institution should analyse the impact of downturn periods identified in accordance with the RTS by considering the following economic factors:

    i. GDP growth and unemployment rate, which are relevant economic factors according to Article 2(1)(a) of the draft RTS on economic downturn for all exposure class categories;

    ii. House price index, which is relevant according to Article 2(1)(b)(i) of the draft RTS on economic downturn for the exposure class category “corporate and retail residential real estate”;

    iii. Household debt[2], which is relevant according to Article 2(b)(i) of the RTS on economic downturn for the exposure class category “retail other than i., ii. or iii”.

[2] Assuming that disposable income is not available.

16. Further, assume GDP growth, unemployment rate and total household debt define one common downturn period lasting from 2008 to 2010 and the housing price index defines a second downturn period lasting from 1990 to 1991 (all identified in accordance with the draft RTS on economic downturn). In this case the institution would need to provide the following downturn LGD estimates:

Example	Calibration Segment A: Mortgages	Calibration Segment B: Consumer credits and overdrafts
Downturn Period 1 (DTP_1) 1990 – 1991 Trough on house price index	LGD downturn estimation related to downturn period 1: LGD_DT(A, DTP_1) (incl. MoC)	LGD downturn estimation related to downturn period 1: LGD_DT(B, DTP_1) (incl. MoC)
Downturn Period 2 (DTP_2) 2008 – 2010 Trough in GDP Growth and peak in unemployment rate and total household debt	LGD downturn estimation related to downturn period 2: LGD_DT(A, DTP_2) (incl. MoC)	LGD downturn estimation related to downturn period 2: LGD_DT(B, DTP_2) (incl. MoC)

The final downturn LGD estimates for the considered calibration segment refer to the one downturn period leading to the highest downturn LGD estimates (on average), as set out by paragraph 15 in the GL text below. Moreover, this implies, for the example above, that the institution should estimate two downturn LGDs for the calibration segment Mortgages, one relating to downturn period 1 (1990-1991, defined according house price index) and another related to downturn period 2 (2008-2010 defined according to GDP growth, unemployment and household debt) and pick the highest of the two downturn LGD estimates, considered as averages at calibration segment level. The latter level of consideration is necessary as otherwise different grades could refer to different downturn periods, which would result in undue complexity and would lack economic rationale.

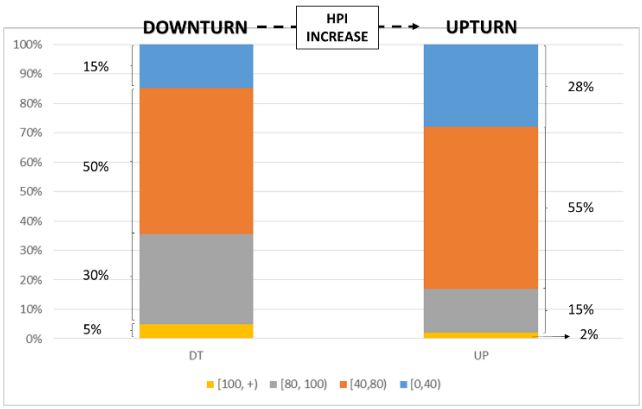
In the case, that the institution does not have or is not able to estimate loss data for the downturn period 1990-1991 and, therefore the downturn LGD is subject to the minimum MoC requirement as set out in Section 7, the latter would not be used in place of the downturn LGD estimated for downturn period 2008-2010 even if higher (unless also this one is estimated according to methodologies described in Section 7), although appropriate margin of conservatism should be added to the final downturn LGD estimate to cover for the downturn period not analysed. Conversely, if the institution does not have data to estimate downturn LGDs based on observed impact related to the downturn period 1990-1991, but it is able to estimate downturn LGDs based on the estimated impact and according to the methodologies described in Section 6, then this estimation might be used in place of the downturn LGD estimated for the downturn period 2008-2010. In this example this is well justified as it could be expected that the impact from the drop in house price index observed in 1990-1991 characterises the more relevant downturn period.

17. **Paragraph 16** of the GL relates to Article 181(1)(b) of the CRR, second sentence, where it is required that institutions to make adjustments to their estimates of risk parameters by grade or pool. This is done to limit the capital impact of an economic downturn to the extent that a rating system is expected to deliver realised LGDs at a constant level by grade or pool

over time. EBA considers that this provision is meant to ensure that the capital impact that stems from the migrations between facility grades and pools (e.g. in cases where risk drivers sensitive to economic conditions are used), does not lead to an over- or underestimation of the LGDs appropriate for an economic downturn over time. This provision however targets migrations caused by changes in the economic environment. Structural changes of a considered portfolio over time (which might as well be caused by changes in the economic environment – e.g. due to tightened underwriting standards) are a matter of representativeness and should be treated in accordance with Section 4 of the GL on PD and LGD.

18. As an example, a simplified LGD model for a retail mortgage portfolio with just one risk driver, in this case the LTV, could be considered. Thus, the LTV-buckets define the pools of the considered LGD model. It is assumed that this LTV is defined as an updated LTV, i.e. an LTV metric where house price index ('HPI') variations affect the value of the collateral and hence the denominator of the LTV metric. Thus, this risk driver is sensitive to economic cycle by construction.

19. In order to illustrate the impact of such a sensitive risk driver on the distribution of facilities over grades and thus the final downturn LGD estimation it is assumed that the composition of the portfolio remains constant[3]. In this case, when moving into an upturn, house prices increase ('HPI increase") and, since the LTV is affected by such increases, facilities tend to migrate to better LTV grades (i.e. LTVs tend to decrease). In the illustration below, the yellow band represents the share of facilities with LTVs of 100% or higher, the grey band illustrates the share of facilities with LTVs between 80% and 100%, the red band illustrates the share of facilities with LTVs between 40% and 80% and the blue band illustrates LTVs between 0% and 40%:



20. In this example it is further assumed that the downturn LGD estimates for the LTV-buckets are quantified using the methodologies described in Section 5, i.e. based on the loss data available for the considered downturn period.

[3] This assumption is necessary as otherwise the portfolio distribution over LTV buckets may as well change over time due to structural changes (e.g. changed underwriting policies).

LTV BUCKET	% # FACILITIES	DT LGD
[0,40)	15%	10%
[40,80)	50%	25%
[80, 100)	30%	35%
[100, +)	5%	43%
PORTFOLIO DT LGD		**26.65%**

Where in the column ("LTV Bucket") represents the grades of the considered LGD model and the column ("DT LGD") represent the realized LGD, impacted by an economic downturn, per facility grade of the considered LGD estimation model. The column ("% # FACILITIES") illustrates the share of facilities that were observed in each LTV band at the point in time where the economic downturn affected the portfolio.

21. If one assumes that the current economic conditions are different that those observed during the economic downturn, i.e. that the economy is currently in an upturn then the downturn LGD estimations applied to the current portfolio would result in the following picture, where the column ("DT LGD") represent the downturn LGD estimates per grade and the column ("% # FACILITIES") illustrates the current share of facilities that are observed in each LTV band:

LTV BUCKET	DT LGD	% # FACILITIES (ONLY HPI INCREASE)
[0,40)	10%	28%
[40,80)	25%	55%
[80, 100)	35%	15%
[100, +)	43%	2%
PORTFOLIO DT LGD		**22.66%**

22. In summary the example above illustrates that, in case of LGD models based on risk drivers sensitive to the economic cycle, the impact on the current capital requirements of an upcoming economic upturn (or downturn) is twofold: (A) Impact stemming from the expected lower (or higher) realised economic losses per facility (in case of a downturn, this is covered by the downturn LGD estimation by grade) and (B) the impact stemming from the migrations of facilities to lower (or higher) LTV bands.

23. It is indeed true that the loss rates in the higher LTV bands already reflect the expected realised LGDs under upcoming downturn conditions. The expected realised loss in contrary (to the loss rates) will however be higher, due to the higher share of facilities that migrate to the higher LTV bands.

24. The provision in paragraph 16 is meant to ensure that those LGD models which are based on risk drivers sensitive to the economic cycle, appropriately estimate the economic loss under economic downturn conditions. The provision thus contains an expectation that for those LGD models a potential downturn adjustment to the long-run average LGD is greater

under favorable economic conditions (at the time of calibration or re-calibration) and smaller under adverse economic conditions (at the time of calibration or re-calibration).

25. The policy proposed in **paragraph 21** of the draft GL provides guidance related to the first sentence of CRR Article 181(1)(b), where it is required that institutions shall use LGD estimates that are appropriate for an economic downturn if those are more conservative than the long-run average. In general and technically downturn LGD estimates may be considered as follows:

a) Either the downturn LGD is estimated via an adjustment to the long-run average LGD or

b) the downturn LGD is directly estimated independently of the long-run average LGD estimation and only compared to the latter for the purpose of choosing the higher estimates as required by CRR Article 181(1)(b).

26. For the purpose of providing guidance on the considered CRR Article, it seemed helpful to differentiate the two different technical approaches. In order to comply with the requirement that the higher of the long-run average and the downturn LGD estimate constitutes the final LGD estimate, paragraph 21 requires that the long-run average LGD ('LRAVLGD') estimates plus the according MoC for long-run average LGD estimation are compared to the downturn LGD estimates plus the according MoCs for the downturn LGD estimation. However, where a downturn adjustment is applied to the long-run average LGD this requirement transfers to the requirement that the MoC applied to the final LGD estimate (i.e. LRAVLG + downturn adjustment + MoC) needs to account for both (i) the uncertainty related to the estimation of long-run average LGD; as well as (ii) the uncertainty related to the calculation of the downturn adjustment.

3.3 Downturn LGD estimation based on observed impact

27. It is worth noting that the proposed guidance laid down in the draft GL builds on the general presumption of the Advanced IRB approach (i.e. where the institution uses own estimates of LGDs) where risk parameters are quantified based on observed data. Therefore, in a first step and in line with the hierarchy of approaches an institution needs to assess whether for a considered type of exposure sufficient loss data is available to assess the impact of a considered downturn period identified in accordance with the RTS on economic downturn. If that is the case the institution follows the guidance for downturn LGD estimation based on observed impact laid down in this Section.

28. In order to ensure that all relevant aspects of the economic loss calculated in accordance with Section 6.3.1. of the GL on PD and LGD estimation are covered appropriately, the components of such an impact assessment are prescribed in **paragraph 22** of the draft GL. In detail, the proposed impact assessment requires institutions to analyse whether there is evidence of impact caused by the considered downturn period on the four following

components, namely (i) elevated realised LGDs; (ii) decreased annual recoveries; (iii) decreased number of facilities returned to non-defaulted status; or (iv) prolonged time in default.

29. Regarding the first two components, the required analysis touches upon the issue on whether the impact of an economic downturn should be considered with respect to the date of default or with respect to the date of recovery. On the one hand, considering the realised LGDs with respect to the time-in-default is more consistent with the calculation of RWE amounts, where the expected loss is expressed as the product of PD and LGD, i.e. implicitly suggesting that it refers to the same reference point in time. On the other hand, considering the impact on annual recoveries per source of cash flow (regardless of the dates of default) better reflects the economic loss appropriate for an economic downturn. In fact, where realised LGDs are computed with respect to the time of default but with long recovery processes compensation effects might absorb a potential downturn impact. Indeed it could be the case that while the date of default reflected downturn conditions the assets may be sold for a higher price once economic conditions have recovered – effectively leading to an economic loss reflecting economic upturn rather than downturn conditions. Because of these considerations, the proposed impact assessment requires both types of analyses in paragraphs 22(a), points (i) and (ii).

30. The analysis on the additional two components, decreased number of facilities returned to non-defaulted status and prolonged time in default as set out in paragraph 22(a), points (iii) and (iv) respectively, ensures the inclusion of the potential impact of a considered downturn period which may not be measurable at the level of the average realised LGD or annual recoveries. Indeed, if for example an impact is only measurable with respect to the increased observed time in default (e.g. in case a bank has not appropriately adjusted its estimation for incomplete workouts), this analysis would ensure the incorporation of the downturn impact into the LGD estimation for example by applying the increased time in default to the observations. The same principle applies to facilities returned to non-defaulted status.

31. Paragraph 22(b) of the draft GL accounts for the situation where one or several of the outlined analyses cannot be meaningfully conducted due to insufficient coverage of loss data during the downturn period. This should not be confused with situations where no data is available for the considered downturn period due to this period being too far back in time. However, in order to account for the issue of scarce data the proposed policy allows to merge consecutive years of observations as long as deemed of benefit for the analysis.

32. Finally, the last paragraph on the impact assessment requires that any lag between a downturn period and its potential impact on the relevant loss data has to be taken into account. To account for the individual situations regarding data availability as well as on the specifics of a considered type of exposure, no guidance is set out regarding the length of the time lags that should be considered. As an example, not taking into account restrictions

on data availability, institutions could consider the average time of the recovery processes as an indicator for the appropriate length of the time lags to be considered.

33. The guidance regarding the quantification of LGD estimates appropriate for an economic downturn for the case in which loss data is available to assess the impact of a considered downturn period on a considered calibration segment is laid down in Section 5 of the current draft GL. **Paragraph 23** clarifies that the resulting LGD estimation needs to be coherent with the outcome obtained from the impact analysis. In other words, the final quantification target should appropriately account for the impact of a considered downturn period (i) on the realised LGDs; (ii) on the annual recoveries; (ii) on the facilities returned to non-defaulted status; as well as (iv) on time in default. Anyway, the proposed policy leaves flexibility to institutions with respect to the detailed methodology applied for the purpose of quantification of downturn LGD estimates based on results of the impact assessment. The rationale for this is that EBA considers that there is no one-size-fits-all aggregation scheme for the results obtained from the analyses required in paragraph 22. Depending on the risk profile of the considered type of exposure it might be appropriate to choose the maximum average LGD by vintage of defaults affected by the considered downturn period where this best reflects the results obtained from the impact assessment laid down in paragraph 22(a), points (i) to (iv). In another case, in particular where such maximum average LGD would incorporate significant catch-up effects due to late recoveries when economic conditions improved (as outlined in paragraph 28 above), it might be more appropriate to base the downturn LGD estimation on the impact observed on annual recoveries per source of cash flow.

34. The impact analysis is particularly relevant to ensure that the long-run average LGD may only be appropriate as a downturn LGD estimate when no impact of a considered downturn period can be observed on the relevant loss data and realised LGDs. The detailed conditions under which the long-run average LGD and the according MoC may be appropriate for an economic downturn are laid down in **paragraph 24**. In particular, it is required that the considered MoC covers for all additional elements of uncertainty related to the identified downturn periods including deficiencies identified under Category A in accordance with paragraph 37(a) of the EBA GL on PD and LGD estimation and deficiencies identified under Category B in accordance with paragraph 37(b) of the EBA GL on PD and LGD estimation.

35. In order to reflect the aspects addressed in the impact assessment in paragraph 22(a), points (i) to (iv), institutions should aim to continue reflecting the credit risk profile of the considered type of exposure. For example, only setting a downturn haircut (based on observed loss data) on the best quality collateral based on materiality in order to reflect the results obtained from the impact assessment may not be the preferred approach as it could lead to incentives to use less good quality collateral.

3.4 Downturn LGD estimation based on estimated impact

General description

36. In the case where no sufficient data is available to estimate downturn LGD in accordance with the proposed policy described above, institutions should aim to quantify their downturn LGD estimates based on estimated realised losses in the past impacted by an economic downturn. However, institutions should estimate such impact by way of applying either a haircut or an extrapolation approach as further described below to estimate LGDs, intermediate parameters or risk drivers. For the purpose of estimating realised LGDs institutions may as well, where observed data is available, but limited to a certain intermediate parameters or risk drivers, estimate the according realised LGD based on the observed data on these intermediate parameters and combine these results with the estimation of other intermediate parameters resulting from haircut or an extrapolation approach. As said above both approaches estimate realised LGDs in the past.

37. The haircut approach provides an estimate indirectly by way of adjusting (i.e. applying an haircut to) the input variables of the LGD model. As such a haircut approach relies on the the functional relationship that is established in the LGD model development between realised losses and certain input parameters. In particular, in order to apply a haircut approach, this functional relationship needs to describe the dependency of the LGD estimate from a number of risk drivers, of which at least one of them is an economic factor. The downturn LGD estimate is then computed by applying the LGD model where the above-mentioned economic factor (or even factors) is adjusted to reflect the level observed in the considered downturn period.

38. The extrapolation approach is a methodology to enable the institution to estimate downturn LGDs based on simulated historical loss data (based on backward extrapolation). This approach estimates “realised” historial LGDs, intermediate parameters or even risk drivers that serve as an input into the considered LGD estimation model by extrapolating them backwards in time based on their dependency with relevant economic factors. It is worth noting that this dependency needs to be established on the relevant observed loss data, which could be challenging in particular for low default portfolios

39. The main difference to the haircut approach is that the extrapolation approach derives downturn LGD estimates based on the reference data set and a statistical model, whereas the haircut approach derives downturn LGD estimates by applying an existing LGD estimation model to the current exposures using input variables adjusted to reflect downturn conditions.

40. Finally it is worth noting that when the haircut or extrapolation approach is applied, it is required that a strictly positive Category A MoC[4] needs to be applied to reflect the related uncertainty with respect to the estimated impact. This is laid down in paragraph 30 of the current draft GL.

[4] See paragraph 8 for a description of Cat A MoC.

Haircut approach

41. **Paragraph 26** of the draft GL describes the haircut approach and sets out the conditions under which institutions should apply this approach. Under this approach the impact of a considered downturn period on the realised losses of a considered type of exposure is estimated by applying the LGD model used for the assignment of facilities to facility grades and pools using adjusted input parameters. Therefore, a precondition for the applicability of this approach is that the LGD model used for the assignment to grades and pools takes one or several economic factor as input in application. These economic factors are then, in the application of the LGD-Model, adjusted to reflect the values of the economic factor(s) observed under economic downturn conditions instead of applying the current values of this economic factor (or these economic factors).

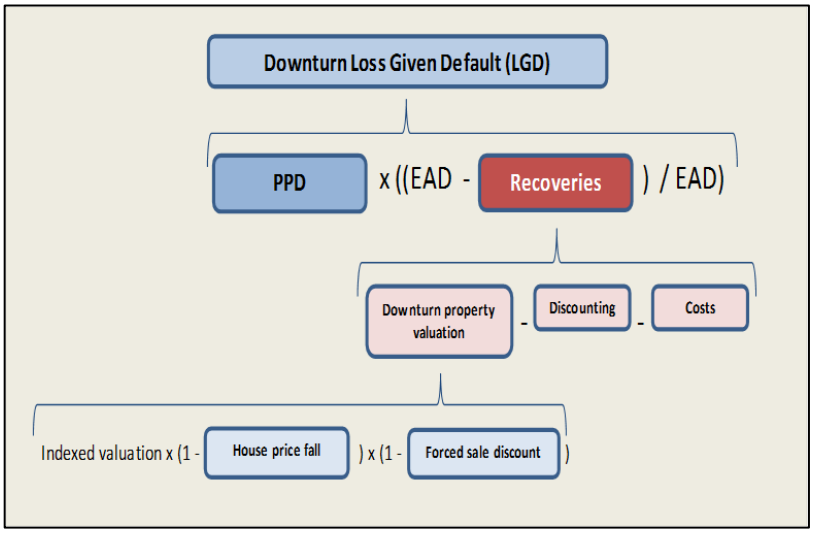
42. More formally, given an LGD-model as a function f where $LGD_{est} = f(x_1, x_2, \dots, ec_1, ec_2, \dots)$, where:

- is an estimation of the realised LGDs given current values of the input variables;
- $ec_1, ec_2, \dots$ are risk drivers for realised LGD which are economic factors;
- $x_1, x_2, \dots$ are other risk drivers for realised LGD.

In order to estimate the impact of a considered downturn period on realised LGDs for a considered calibration segment and related to a set of economic factors ec_i, all economic factors which are inputs for the application of the LGD-model, are adjusted to reflect the levels observed under the considered downturn period, when applying the model $LGD_{DT} = LGD_{est} = f(x_1, x_2, \dots, \widehat{ec_1}, \widehat{ec_2}, \dots)$, where:

- LGD_{DT} is the according downturn LGD estimate for a given exposure,
- $\widehat{ec_1}, \widehat{ec_2}$ are economic factors adjusted to downturn conditions (i.e. after applying the haircut),
- $x_1, x_2, \dots$ are other risk drivers.

For simplicity, no time dimension has been introduced in the example above. It should however be noted that the risk drivers $x_1, x_2, \dots$ relate to the point in time when the model is applied (and the specification of the according risk driver), whereas $\widehat{ec_1}, \widehat{ec_2}$ relate to the point in time where the downturn conditions have been observed on these factors. As an example on how to apply the haircut approach, the following model design for a mortgage portfolio could be considered:



LGD estimation model (PPD = Probability of possession)

Downturn LGD estimation

43. The above example could in in more detail relate to the example set out in paragraph 14 of this section where the institution would have identified 2 downturn periods to be analysed for the considered type of exposure:

Example	Mortgages – Portfolio
Downturn Period 1 (DTP_1) 1990 – 1991 Trough on house price index	LGD downturn estimation related to downturn period 1: LGD_DT(A, DTP_1) (incl. MoC)
Downturn Period 2 (DTP_2) 2008 – 2010 Trough in GDP Growth and peak in unemployment rate	LGD downturn estimation related to downturn period 2: LGD_DT(A, DTP_2) (incl. MoC)

44. For the purpose of estimating downturn LGD for the downturn period identified in 1990 and 1991. In this case the institution has no observed loss data related to that downturn period. As the house price index is a transformed input into the institutions model for LGD estimation and the house price index is as well an economic factor related to a relevant type of collateral for the considered type of exposure, the institutions would need to apply a haircut approach according to the proposed policy in paragraph 25 of the GL.

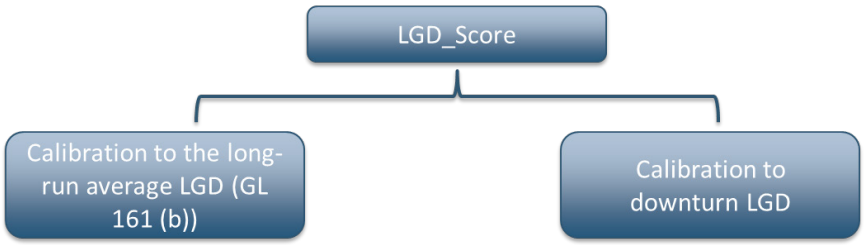
45. In more detail the institution may have a LGD model which differentiates facilities by their loss risk in case of a default using the following scoring formula:

i. $LGD\ Score = PPD \cdot \left[EAD - {min(EAD, RR \cdot current\ Mkt\ Price)}/{EAD}\right]$ where the current market price is achieved by an indexed valuation which adjusts the market price validated at the time when the according mortgage has been granted (or at another more recent point in time where the market value has been individually (re-)assessed) to reflect a current market price.

ii. The recovery rates could be estimated in dependence of certain risk drivers, e.g. the location of the underlying property:

LTV	City-Area	Suburb-Area	Country-Side
<20%	90%	85%	75%
20% - <50%	80%	75%	65%
50% - <60%	70%	70%	55%
60%- < 80%	60%	65%	45%
>80%	56%	50%	35%

As previously pointed out, downturn LGD estimation is part of the risk quantification, thus the institution would need to provide two calibrations in relation to the considered LGD model:



For the purpose of quantifying downturn LGD (LGD_DT) estimation the institution would now estimate downturn LGD by way of applying the formula for the LGD Score, however using "downturn market prices" instead of current market prices:

$$LGD\ Score = PPD \cdot \left[EAD - {min(EAD, RR \cdot downturn\ Mkt\ Price)}/{EAD}\right]$$

Where the $downturn\ Mkt\ Price$ is achieved by adjusting the $current\ Mkt\ Price$ according to the severity that has been identified in accordance with the RTS on economic downturn, which in this case could be the house-price index drop observed in 1990:

$$downturn\ Mkt\ Price = current\ Mkt\ Price \cdot \boldsymbol{Haircut}$$

iii. It should be noted that, although detailed, this example is still simplified as for example according to paragraph 25 of the draft GL the institution would need ensure that the applied methodology for downturn LGD estimation appropriately reflects a potential downturn effect on all relevant components of economic loss. The example above however only considered recoveries. Where necessary the institution could for example estimate the impact on the cure rate (i.e. the rate of returned exposures to the performing portfolio) by way of applying an extrapolation approach.

46. The draft policy in paragraph 25 requires the use of a haircut approach in case both the two following conditions are fulfilled:

i. there is no sufficient data to estimate downturn LGDs based on observed loss data (i.e. apply the policy laid down in paragraph 18);

ii. an economic factor that has been identified as a relevant economic factor in accordance with Article 2 of the RTS on economic downturn and that relates to a relevant type of collateral for the considered type of exposure is a direct, or transformed, input of the institution's model for LGD estimation.

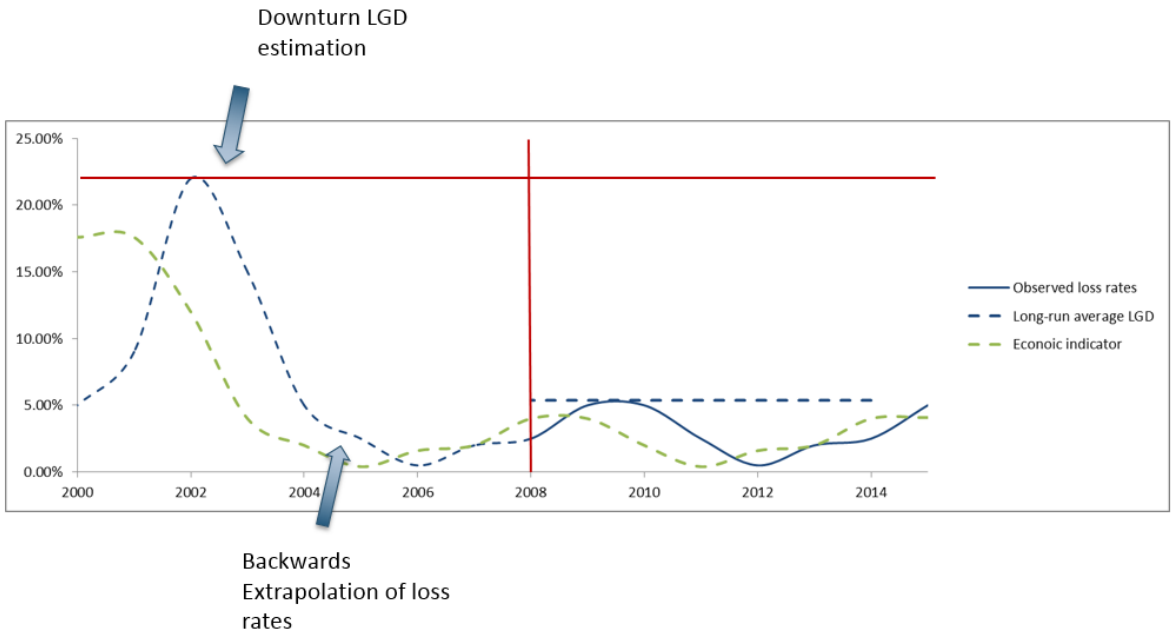
47. Two remarks are important to make. First, it should be noted that the mandatory use of the haircut approach is related to the situation where the LGD estimation model takes as one of its inputs the economic factor related to a relevant collateral type for the considered type of exposure (e.g. market values or a market index). In this case, the policy prescribes that the actual haircut (i.e. the adjustment the economic factor which serves as input into the model to reflect downturn conditions) should be based on the most severe observation of the market value or market index in accordance with the specification of the severity of an economic downturn in accordance with Article 3 of the RTS on economic downturn. Second, institutions may apply a haircut approach as well, where applicable, i.e. where an economic factor is a direct or directly transformed input to the LGD model and is not related to the relevant collateral types to quantify downturn LGD estimates. If for example the GDP is a direct or transformed input into the LGD-model, a haircut approach may be used as well, but it is not mandatory.

48. Last, it should be mentioned that institutions that have to quantify LGD based on observed loss data impacted by an economic downturn, as set out in paragraph 18 of the draft GL, are not prohibited from using haircut approaches for the purpose of calibrating their LGD model to the quantification of downturn LGD estimations achieved in accordance with paragraph 18 of the current draft GL. An institution that has observed loss data impacted by an economic downturn for a considered type of exposure needs to calculate haircuts such that the resulting downturn LGD estimates reflect the observed impact from an economic downturn (i.e. to reach the "calibration target") in accordance with paragraph 23 of the current draft GL. Whereas an institution that does not have such data needs to consider haircuts in accordance with the downturn severities observed on the corresponding economic factors in accordance with paragraph 26 of the draft GL and add additional MoC.

Extrapolation approach

49. **Paragraph 27** of the draft GL describes the extrapolation approach and sets out requirements for the application of this approach. For the purpose of these GL, the extrapolation approach refers to a methodology to estimate "realised" LGDs, intermediate parameters or even risk drivers that serve as an input into the considered LGD estimation model. These estimated realised LGDs (or intermediate parameters or risk drivers) are extrapolated backwards based on the dependency of the realised LGDs (or intermediate parameters or risk drivers) from relevant economic factors. This dependency should be established based on observed loss data. The main difference to the haircut approach is that the extrapolation approach derives downturn LGD estimates from the reference data set and a statistical model, whereas the haircut approach derives downturn LGD estimates

by applying an existing LGD estimation model to the current exposures using input variables adjusted to reflect downturn conditions. The following graph illustrates the concept of the extrapolation approach, where the red vertical line illustrates the point in time from where onwards the institution has reliable data and the red horizontal line illustrates the resulting downturn LGD estimation:



50. As an example of an extrapolation approach, an institution could develop a statistical model for the dependency of

i. average yearly realised LGD values $\overline{Y_t}$ and

ii. economic factors $e_t^1, e_t^2, \ldots$ which should be identified according to the RTS on economic downturn, for the considered type of exposure, via e.g. a linear regression:

$$\overline{Y_t} = \alpha + \beta_1^1 e_{t-l_1}^1 + \beta_2^1 e_{t-l_2}^1 + \beta_n^k e_{t-l_n}^k + \varepsilon$$

where $,e_s^j, j = 1, \ldots, , \ldots, k$, describe the value of the j^{th} economic factor in year s. In order to be taken into account possible time lags these are considered with a lag of t (which is the point in time where the realised LGD rate is assessed) minus $l_1 \ldots . l_n$.

51. The extrapolation approach has however been perceived as potentially leading to less conservative results and also suffering from the uncertainty if the derived dependency will as well apply under non-observed downturn conditions and therefore a requirement is added in paragraph 30 to cover the additional uncertainty related to the application of the extrapolation approach by additional MoC for downturn LGD estimation. Considering the example in the previous paragraph, it could be assumed for simplicity that the methodology

applied for the regression discards all but one economic factor, e.g. GDP of the past year. In this case the error of this model could be assessed as $\hat{Y}_0 - Y_0$ for a chosen point t_0 in time (where the internal loss would need to be extrapolated) and as an estimator for the variance of the residuals the following could be used (under the assumption that the residuals are normally distributed), where *n* denoted the number of observations (points in time) used for the regression:

$$s_Y^2 = Var\left(\hat{Y}_0 - Y_0\right) = \frac{1}{n-2}\sum_{i=1}^{n}\left(Y_i - \hat{Y}_i\right)^2$$

A confidence interval for the extrapolated realised LGDs in year 0 based on the regression could be assed as follows:

$$s_Y^2 = s_\epsilon^2\left(1 + \frac{1}{n} + \frac{(GDP_{-1} - \overline{GDP})^2}{\sum_{i=1}^{N}(GDP_i - \overline{GDP})^2}\right)$$

The confidence interval around the extrapolated realised LGDs could be assessed as (only upper interval shown):

$$I = \left(Y_0 + s_Y \cdot t_{1-\frac{\alpha}{2},n-2}\right)$$

where $t_{1-\frac{\alpha}{2},n-2}$ denotes the $1-\frac{\alpha}{2}$ percentile of the Student t distribution, which would then have to be taken into account in the quantification of a Category A MoC for that extrapolation.

Explanatory Box

In the proposed approach the confidence interval is built around the realised LGD, because these are estimated under the considered approach. This is done to be consistent with the approaches taken in the GL on PD, LGD estimation and treatment of defaulted assets. Alternatives were however also considered, for instance one could state that the target variable for the downturn adjustment estimation should be the expected LGD under a downturn scenario:

$$E(Y^0|GDP = GDP_{-1}) = \boldsymbol{\alpha} + \boldsymbol{\beta_1^1 e_{0-l_1}^1} + \boldsymbol{\beta_2^1 e_{0-l_2}^1} + \cdots + \boldsymbol{\beta_n^k e_{0-l_n}^k}$$

This would be consistent with the overall IRB framework as the capital requirement under the IRB formula is the expected loss (and not the realised one) conditioned to the worst 99.9% realisation of the systematic factor. However if the target is the expectation and not the realised one than the confidence interval should take into account the error estimation of in the expected values.

Taking into account this, $E(Y^0|GDP = GDP_0)$ becomes a linear combination of random variables whose distribution under standardised assumptions is normal with variance equal to:

$$s_C^2 = e_0'(s_\epsilon^2(e'e)^{-1})e_0$$

The confidence interval should therefore be:

$$I = \left(Y_0 + s_c.t_{1-\alpha,n-2}\right)$$

The difference is material because in the approach proposed the width of the confidence interval narrows together with a reduction in the estimation error while in the forecast the volatility of the residuals cannot be eliminated, which implies that no matter how much data is available, it can never be predicted perfectly. Furthermore, it would remove the link to the realised LGDs, which is considered very important and in all cases, the approach would need further considerations and was therefore not put forth as one of the limited approaches available.

3.5 Downturn LGD estimation where the observed or estimated impact is not available

52. Section 7 (**paragraph 31**) of the draft GL allows for exceptional cases where neither the approach outlined in paragraph 18, nor the policy laid down in paragraph 19 can be applied, and where institutions may apply any alternative methodologies to quantify downturn LGD estimates. In this case the institution can only rely on observed loss data during favorable economic conditions for the considered type of exposure (as otherwise this would be subject to the policy laid down in paragraph 18). Furthmore, as the institution applies a quantification methodology which might be more favorable than those outlined in Section 6, it needs to quantify a MoC in relation to this downturn LGD estimation such that the final downturn LGD estimates including MoC is higher or equal to the long-run average LGD plus 20 percentage points. In any case the final downturn LGD estimate should be lower or equal to 105%.

3.6 Reference value

53. Finally it should be noted that Section 8 (**paragraph 32**) proposes a reference value that set acts as a challenger to downturn LGD estimation based on losses. The introduction of a reference value is assessed to guide a more harmonized approach to downturn LGD estimates, while at the same time retaining the advantages of modelling approaches. The reference value only serves as guidance and institutions may deviate from it. However, deviations have to be justified in all cases, for instance by documenting robust modelling relationships.

3.7 Remarks

54. It should be clear from the policy as well as from the above outlined rationale that there is a hierarchy of the approaches towards quantification of downturn LGD estimates outlined in paragraphs 18 to 20. Where loss data impacted by an economic downturn of a considered downturn period is available, the institution needs to follow the policy set out in Section 5 of the current draft GL. Otherwise the institution needs to follow the policy set out in

Section 6 and only in exceptional cases downturn LGD estimates should be quantified according to Section 7. A clear advantage of this approach is that it harmonises institutions' methodologies for quantifying downturn LGD estimates. While this approach should make downturn LGD estimations more transparent and comparable than in the past, while at the same time leaving sufficient flexibility for the institutions. The policy will improve the distinction of risk-based variability in applied LGD parameters from variability stemming from other sources.

55. The policy also accounts for the situation where the observed or estimated impact of an economic downturn on the relevant loss data is zero or near zero. In addition, it clarifies the terminology by distinguishing between the identified economic downturn for a considered type of exposure and its impact, i.e. by noting that no impact of an economic downturn observed on the relevant loss data does not necessarily mean that there is no economic downturn. Although there might be cases where the acceding economic factors do not show a cyclical pattern, the RTS on economic downturn provides a clear definition that works independently of such patterns (which could as well just reflect very long cycles). Moreover, it should be noted that the notion of the duration provided in Article 3 of the RTS on economic downturn is in particular relevant to apply the policy laid down in paragraph 22 of the current draft GL and the notion of severity is in particular relevant to apply the policy laid down in paragraph 26 of the current draft GL.

56. As mentioned before, flexibility is left with regard to the calibration methodology as long as the calibration target, i.e. the downturn LGD estimation, complies with the rules set out in the draft GL. This allows institutions in particular to apply a discount rate higher than the one set out in paragraph 143 of the [EBA GL on PD and LGD] where this is the most appropriate calibration methodology to ensure that the calibration target (i.e. the downturn LGD estimates in accordance with these GL) is met.

3.8 Exemplary illustration of an downturn LGD estimation for an obligor rating system in the retail exposure class

Example	Calibration Segment A: Mortgages	Calibration Segment B: Consumer credits and overdrafts
Downturn Period 1 (DTP_1) 1990 – 1991 Trough on house price index	LGD downturn related to downturn period 1 estimated via Haircut approach: LGD_DT(A, DTP_1) (incl. MoC)	LGD downturn related to downturn period 1 estimated via extrapolation approach (e.g. along total household debt): LGD_DT(B, DTP_1) (incl. MoC)
Downturn Period 2 (DTP_2) 2008 – 2010 Trough in GDP Growth and peak in unemployment rate and total household debt	Impact analysis conducted based on observed loss data: No impact observable, all MoC requirements fulfilled: LRAVLGD + MoC appropriate for LGD downturn estimate relating to this downturn period. LRAVLGD+MoC = LGD_DT(A, DTP_2)	Impact analysis conducted based on observed loss data resulting in LGD downturn estimates related to downturn period 2: LGD_DT(B, DTP_2) (incl. MoC)

In this example, the final downturn LGD including MoC could be expressed as follows:

$$LGD_{DT_{Final}} = \begin{cases} LGD_{DT(A,DTP_1)}, for\ calibration\ segment\ A \\ LGD_{DT(B,DTP_2)}, for\ calibration\ segment\ B \end{cases}$$

where it is assumed that

$$Average_A\left(LGD_{DT(A,DTP_1)}\right) = max_A\left(\left(Average_A\left(LGD_{DT(A,DTP_1)}\right), Average_A(LGD_{DT(A,DTP_2)})\right)\right)$$

$$Average_B\left(LGD_{DT(B,DTP_2)}\right) = max_B\left(\left(Average_B\left(LGD_{DT(B,DTP_1)}\right), Average_B(LGD_{DT(B,DTP_2)})\right)\right)$$

4. Draft GL

Draft Guidelines on the estimation of LGD appropriate for an economic downturn ('Downturn LGD estimation')

1. Compliance and reporting obligations

Status of these guidelines

1. This document contains guidelines issued pursuant to Article 16 of Regulation (EU) No 1093/2010[5]. In accordance with Article 16(3) of Regulation (EU) No 1093/2010, competent authorities and financial institutions must make every effort to comply with the guidelines.

2. Guidelines set the EBA view of appropriate supervisory practices within the European System of Financial Supervision or of how Union law should be applied in a particular area. Competent authorities as defined in Article 4(2) of Regulation (EU) No 1093/2010 to whom guidelines apply should comply by incorporating them into their practices as appropriate (e.g. by amending their legal framework or their supervisory processes), including where guidelines are directed primarily at institutions.

Reporting requirements

3. According to Article 16(3) of Regulation (EU) No 1093/2010, competent authorities must notify the EBA as to whether they comply or intend to comply with these guidelines, or otherwise with reasons for non-compliance, by ([dd.mm.yyyy]). In the absence of any notification by this deadline, competent authorities will be considered by the EBA to be non-compliant. Notifications should be sent by submitting the form available on the EBA website to compliance@eba.europa.eu with the reference 'EBA/GL/201x/xx'. Notifications should be submitted by persons with appropriate authority to report compliance on behalf of their competent authorities. Any change in the status of compliance must also be reported to EBA.

4. Notifications will be published on the EBA website, in line with Article 16(3).

[5] Regulation (EU) No 1093/2010 of the European Parliament and of the Council of 24 November 2010 establishing a European Supervisory Authority (European Banking Authority), amending Decision No 716/2009/EC and repealing Commission Decision 2009/78/EC, (OJ L 331, 15.12.2010, p.12).

2. Subject matter, scope and definitions

The Guidelines will be included into the Guidelines on PD, LGD estimation and defaulted assets and aligned in structure with the subject matter, scope of application, addressees, definitions and application date.

3. Implementation

The Guidelines will be included into the Guidelines on PD, LGD estimation and defaulted assets and aligned in structure with the subject matter, scope of application, addressees, definitions and application date.

4. General requirements on downturn LGD estimation

13. Institutions should apply all definitions and all requirements relevant to the LGD estimation referred to in Sections 4, 7, 8 and 9 of the EBA Guidelines on PD estimation, LGD estimation and the treatment of defaulted exposures (EBA/GL/2017/16) of 20/11/2017 (EBA GL on PD and LGD estimation).
14. For the purpose of estimating downturn LGD by facility grade or pool Institutions should quantify downturn LGD estimates at least at the same level at which institutions calculate the corresponding long-run average LGDs for the purpose of calibrating LGDs in accordance with paragraph 161 of the [EBA GL on PD and LGD estimation]. This means that where institutions calibrate their LGD estimates to the long-run average LGD calculated for each grade or pool they should quantify downturn LGDs at least for each grade and pool and where institutions calibrate their LGDs to the long-run average LGD calculated at the level of calibration segments they should quantify downturn LGDs at least at the level of calibration segments. Where institutions consider a more granular level for the purpose of calibrating downturn LGDs than for the purpose of calibrating to the long-run average LGD institutions should provide an appropriate aggregation for the purpose of calculating downturn LGD at the level at which long-run LGDs are considered.
15. Where institutions identify multiple downturn periods in accordance with Regulation (EU) xx/xx [RTS on economic downturn], they should provide downturn LGD estimates for each of those downturn periods quantified in accordance with the methodologies set out in Sections 5 and 6, and choose those estimates, including their MoC, that result in the highest average downturn LGD estimate on a considered calibration segment, at the time of calibration, taking into account all of the following:
    a. In case that institutions can quantify the downturn LGD in accordance with Sections 5 and 6 for at least one downturn period but they are unable to quantify downturn LGD in accordance with Sections 5 and 6 for one or several other downturn periods, institutions should only consider the estimates based on Sections 5 and 6, and add appropriate MoC to the final LGD estimate to cover for the downturn periods that were not analysed.
    b. In case that none of the identified downturn periods can be assessed with the methodologies set out in Sections 5 and 6, institution should quantify the downturn LGD in accordance with Section 7 for each identified downturn period and choose the highest average LGD estimate on a considered calibration segment, including any MoC, for a considered calibration segment at the time of calibration

16. Institutions should ensure that the resulting downturn LGD estimates, considered at the level of calibration segments, are not sensitive to migrations of facilities between grades or pools due to changes in economic conditions when applied to the considered calibration segment.

They should do so by ensuring that such migrations of facilities between grades or pools in the period between the point in time where a downturn period affected a considered calibration segment and the most recent point in time where the downturn LGD estimates were calibrated or recalibrated are reflected in the final estimate.

17. For the purpose of quantifying downturn LGD estimates for a considered downturn period identified in accordance with Regulation (EU) xx/xx [RTS on economic downturn], institutions should use one of the three types of approaches set out in Sections 5, 6 and 7 of these GL in accordance with the hierarchy set out in paragraphs 18 to 20 below.

Explanatory text for consultation purposes

The proposed methodology specifies how to quantify LGD estimates that are appropriate for an economic downturn identified according to the RTS on economic downturn. The principles in these GL are therefore applicable to both LGD for non-defaulted exposures and LGD in-default for defaulted exposures. Please note in this regard, that according to paragraph 189 of the GLs on PD, LGD and defaulted assets, in fact, the LGD in-default should reflect downturn conditions. The above text thereby implicitly require that the quantification is also done for LGD in-default.

This can potentially raise a number of issues, for instance due to the additional risk drivers considered (e.g. time in-default) and the use of the reference date for the LGD in-default estimation institutions may have different downturn periods taken into account for the final LGD and LGD in-default. Furthermore, it may affect data availability, which again could materialise in differences in Downturn LGD estimates for LGD-in default. In particular, there could be then cases where an institution is able to produce downturn estimates for LGD according to Section 5 or 6 but only LGD in-default downturn estimates according to Section 7, making the two estimates not comparable. In order to clarify better the issue, consider the following two examples:

1) Where LGD in-default is estimated on a mortgage exposure which reference date is picked according to the realisation of collateral. In this case suppose that 50% of the exposures in the reference data set are fully collateralised (i.e. the sale of collateral covers for the entire exposure value). If an institution has to estimate the LGD in-default after the realisation of collateral for an exposure which was not fully collateralised this means the LGD-in-default downturn estimation for this reference date will be based on less data points making more likely that institution could be subject to the policy proposed in Section 6 or Section 7.
2) Where the LGD in-default is computed on an unsecured exposure with multiple reference dates which are a function of time in-default. Similarly to the first example there could be data availability issues materialising when an institution estimates the LGD in-default for a reference date characterised by very long time in-default. The downturn estimates by reference date for LGD in-default, in fact, will be based on a subset (exposure which have been in default for long time) of the data points available

for downturn LGD estimates on performing exposures and this subset of data is not necessarily available for all the downturn periods considered.

To avoid LGD in-default estimates which systematically deviate from LGD estimates (in accordance with paragraph 169 of GLs on PD, LGD and defaulted assets) and to relieve the burden on institution to perform different downturn LGD estimations for non-defaulted and defaulted exposure, an alternative solution is being considered. This alternative would allow that the downturn LGD estimation performed for the LGD on non-defaulted exposures could be used as a basis for the purpose of LGD in-default estimation appropriate for an economic downturn. Consequently a paragraph as outlined below could be included in the final Guidelines:

"*LGD in-default appropriate for an economic downturn could be estimated on the basis of the downturn estimation methodology performed for the LGD estimates of non-defaulted exposures. In particular, for the purpose of considering possible adverse changes in economic conditions during the expected length of the recovery process, institutions may refer to the downturn periods to which the according LGD estimates for performing exposures relate to*".

This would imply that LGD in-default estimation appropriate for an economic downturn and performed for a reference date after the realisation of collateral could be based on the LGD on performing exposure adjusted according to the probability of the downturn conditions affecting the remaining unsecured recoveries.

Question 1: Do you think that additional guidance around the estimation of LGD in-default, which reflect downturn conditions, is needed? If yes, could you provide examples of sound methodologies for transposing downturn LGD estimates from performing to non-performing exposures?

18. Where institutions have sufficient and relevant loss data to conduct the impact analysis set out in paragraphs [22(a) to 22(c)], they should quantify downturn LGD estimates for a considered downturn period in accordance with Section 5 of these Guidelines. For this purpose, institutions should ensure that the relevant loss data is available for the considered downturn period as well as for an appropriate period before and after the considered downturn period.
19. Where sufficient and relevant loss data to assess the impact of the considered downturn period is not available and it is possible to quantify downturn LGD estimates for the considered downturn period by applying the approach set out in Section 6, institutions should quantify downturn LGD estimates for the considered downturn period in accordance with Section 6 of these Guidelines.
20. Where sufficient and relevant loss data to assess the impact of the considered downturn period is not available, and it is not possible either to quantify downturn LGD estimates for the considered downturn period by applying the approach set out in Section 6, institutions

should quantify downturn LGD estimates for the considered downturn period in accordance with Section 7.

21. For the purpose of ensuring that the downturn LGD estimates are more conservative than the long-run average as referred to in Article 181 (1)(b) of the CRR, institutions should apply the following:
    a. Where institutions use separate estimation methodologies for long-run average LGD and downturn LGD, they should compare their final downturn LGD estimates to their long-run average LGD after application of the MoC at the level where the long-run average LGD is quantified and taking into account the policy laid down in paragraph 14.
    b. Where institutions set a single LGD estimate, which involves a long-run average LGD estimation and a downturn adjustment applied to the long-run average LGD, they should ensure that the MoC on the final LGD estimate encompasses the uncertainties stemming from both the long-run average LGD estimation and the calculation of the downturn adjustment.

Explanatory text for consultation purposes

The RTS on economic downturn requires firms to assess multiple economic factors. This could lead to multiple downturn periods being identified. The proposed policy requires institutions to estimate a downturn LGD for each and every downturn period identified in accordance with the [RTS on economic downturn] for each calibration segment.

This could be burdensome for an institution if it identifies a large number of downturn periods in accordance with the [RTS on economic downturn] and has a large number of calibration segments. Therefore and as an alternative to the proposed prescriptive approach, it has been considered to introduce an element of flexibility regarding the requirement that LGD downturn estimates have to be provided for each identified downturn period. This might involve applying different approaches towards LGD downturn estimation depending on the considered downturn period and calibration segment. For example, the relevant loss data to estimate LGD downturn in accordance with paragraph 18 might be available for one identified downturn period but not for another identified downturn period (for the same calibration segment).

Therefore, and as an alternative to the proposed prescriptive approach, it has been considered to introduce an element of flexibility to the requirement that LGD downturn estimates have to be provided for each and every identified downturn period.

However, it is difficult to identify criteria according to which an identified downturn period could be exempted from the proposed policy in paragraph 15. Considering the example in paragraph 14 of background and rationale, it is however clear that data availability does not serve as appropriate criteria for this purpose:

Example	**Calibration Segment A: Mortgages**

Downturn Period 1 (DTP_1) 1990 – 1991 Trough on house price index	LGD downturn estimation related to downturn period 1: LGD_DT(A, DTP_1) (incl. MoC)
Downturn Period 2 (DTP_2) 2008 – 2010 Trough in GDP Growth and peak in unemployment rate and total household debt	LGD downturn estimation related to downturn period 2: LGD_DT(A, DTP_2) (incl. MoC)

As in this example clearly the downturn period from 1990-1991, stemming from the drop in house prices, would be the relevant one for mortgages, it is unlikely that an institution has sufficient data to apply the policy from section 5 and thus the relevance of a downturn period cannot depend on data availability alone.

Moreover, potential criteria to exempt an identified downturn period from the policy proposed in paragraph 15 should ensure that the objective of reducing unjustified variability in LGD downturn estimation is kept. Such criteria could for example relate to

(a) downturn periods that occurred far back in the past and which may have lost economic significance in terms of current and foreseeable macroeconomic environment (e.g. structural break/evolution);

(b) ensuring that in the case relevant loss data are not observed for each downturn period, simulated impacts on older periods do not overshadow observed impacts on more recent ones where this is not justified by the nature of the economic factors comprising the considered downturn period (e.g. house prices in the example above);

(c) a justified expectation that the considered downturn period would not have an impact on the institutions loss data. The LGD estimates under downturn will therefore not be impacted of the according economic factors, which therefore cannot be considered as drivers of the economic cycle specific for the considered type of exposure;

(d) a justified expectation that the considered downturn period would not have an impact in light of specific contractual terms applicable to that type of exposure, the business environment or the internal processes of the institution.

However, with a view to creating regulation that is not unduly burdensome, we invite respondents to propose that could be used to justify the removal of one or more downturn periods from consideration in the downturn LGD estimation.

Question 2: Do you share the concern that the proposed policy in paragraph 15 could create an undue burden if applied to every downturn period identified? If yes, in order to better balance the accuracy of the estimations and its operational complexity what evidence should

be provided by institutions in order to justify the exemption of identified downturn periods from the proposed policy in paragraph 15?

Question 3: Do you agree with the proposed level of LGD downturn estimation set out in paragraph 14? In particular, do you support the concept that the LGD downturn estimates of different calibration segments could be based on different downturn periods? Is the policy on the level of LGD downturn estimation as well as the relation between the level of LGD downturn estimation and the relevant downturn periods sufficiently clear?

5. Downturn LGD estimation based on observed impact

22. In order to estimate downturn LGDs based on the observed impact of a considered downturn period, institutions should carry out an analysis of the impact of the considered economic downturn on the loss data relating to the considered calibration segment by:
    a. analysing all of the following:
        i. evidence of elevated levels of realised LGDs, driven by the downturn periods identified according to the [RTS on economic downturn]. The realised LGDs should be calculated as averages related to all defaults that happened in a considered year including the treatment of incomplete recovery processes where relevant and pursuant to Section 6.3.2.3 of the [GL on PD and LGD estimation];
        ii. evidence of decreased annual recoveries by sources of recoveries that are relevant for the considered calibration segment (with and without repossessions where applicable and irrespective of the date of default);
        iii. evidence of decreased numbers of exposures that defaulted and returned back to the non-defaulted status within twelve months in accordance with CRR Article 178(5) per year of default;
        iv. evidence of increased time in default per year related to all defaults in a considered year.
    b. conducting the analysis required in point (a) by taking into account as many points in time as possible where sufficient relevant loss data is available. Otherwise, if only scarce relevant loss data is available on an annual basis, institutions should merge consecutive years of observation as long as deemed of added value for the analysis; and
    c. conducting the analysis required in points (a) and (b), by taking into account any lag between a downturn period and the time when its potential impact is observed on the relevant loss data.

23. Based on the evidences obtained from the impact analysis referred to in paragraph 22, institutions should quantify LGD estimates appropriate for an economic downturn by applying an estimation methodology, which is coherent with the evidence obtained from the impact analysis conducted according to paragraphs [22(a) – 22(c)]. Although the impact assessment considers realised LGD by vintage of defaults, it may be more appropriate to consider realised LGDs by vintage of closed recovery processes for the quantification of downturn LGD estimates where this provides better predictors of the impact of the considered downturn period on the relevant loss data when considering all analysis required in paragraph [22(a) – 22(c)].

24. Where the impact analysis conducted in accordance to paragraph 22 shows no evidence of an impact of an economic downturn of a considered downturn period on an institution's

relevant loss data, such that the average observed realised losses in this downturn period are not different from those under other economic conditions, the institution may use the long-run average LGD for the computation of the own funds requirements for the considered calibration segment, where all of the following applies:

a. The institution ensures and documents that the deficiencies identified and MoC applied in accordance with Section 4.4 of the [EBA GL on PD and LGD estimation] incorporate all additional elements of uncertainty related to the identified downturn periods.
b. For the purpose of point (a) the institution should in particular verify that for the considered downturn period none of the deficiencies identified under Category A in accordance with paragraph 37(a) of [EBA GL on PD and LGD estimation] are of higher severity and that no additional deficiencies or adjustments under Category B in accordance with paragraph 37(b) of [EBA GL on PD and LGD estimation] are applicable.

6. Downturn LGD estimation based on estimated impact

25. Where paragraph 19 applies, institutions should quantify LGD estimates appropriate for an economic downturn using the two methodologies specified in paragraphs 26 ('haircut approach') and 27 ('extrapolation approach'). Institutions should in particular choose the most relevant combination of the two methodologies based on:
    a. the appropriateness of one methodology to estimate realised LGDs, intermediate parameters or risk drivers; and
    b. the appropriateness of the methodology or the combination of the two methodologies to ensure that the final downturn LGD estimate adequately reflects a potential downturn effect on all relevant components of economic loss in accordance with section 6.3.1 of the GL on PD and LGD.

    In particular, the haircut approach should be considered most appropriate for the above purposes where the market value or an according index related to a relevant type of collateral for a considered type of exposure serves as a direct or transformed input into an institution's model for LGD estimation and has been identified as a relevant economic factor in accordance with Article 2 of Regulation (EU) No xx/xxx [RTS on economic downturn].

Explanatory text for consultation purposes

As an example, an institution which uses the house price index as an input to estimate recoveries from residential mortgages in their LGD estimation model would apply a haircut approach to these estimated recoveries and it could choose to apply an extrapolation approach to estimate the impact of an economic downturn on cure rates and unsecured recoveries.

26. ('Haircut approach') For the purposes of these GL, a 'haircut approach' refers to an approach for the estimation of downturn LGDs in which one or several economic factors as referred to in Regulation (EU) xx/xx [RTS on economic downturn] are adjusted to reflect the economic conditions during an economic downturn and are then used as direct, indirect or transformed input(s) in the LGD model or in intermediate parameters. In particular, where the considered economic factor relates to the downturn period under consideration, the haircut should be based on the most severe observation of the considered economic factor in accordance with the specification of the severity of an economic downturn laid down in Article 3 of Regulation (EU) xx/xx [RTS on economic downturn].
27. ('Extrapolation Approach') For the purposes of these GL, an 'extrapolation approach' refers to the estimation of downturn LGDs, intermediate parameters or risk divers by estimating realised LGDs, realised intermediate parameters or realised risk drivers based on a statistical model that estimate the dependency between the realised LGDs, intermediate parameters or

risk drivers and the economic factors selected in accordance with Article 2 of Regulation xx/xxx [RTS on economic downturn] relevant for the downturn period under consideration. The resulting downturn LGD estimates should be based on the extrapolated values of the realised LGDs or intermediate parameters or risk drivers for the period reflecting the impact of the downturn period under consideration.

28. Institutions may, in combination with either of the two approaches outlined in paragraphs 26 to 27, estimate intermediate parameters or risk drivers based on observed loss data instead of using the methods in paragraphs 26 and 27, where this data is available and reflects the impact of the considered downturn period.
29. Where institutions apply any of the approaches outlined in paragraphs 26 to 28 for the purpose of estimating intermediate parameters, they should ensure that the dependency structure between intermediate parameters, which is used to aggregate these intermediate parameters for the final downturn LGD estimation, is sufficiently stable throughout the economic cycle.
30. Institutions should quantify a strictly positive MoC in Category A in accordance with paragraph 37(a), point (xi) of the [GL on PD and LGD] regardless of which of the approaches set out in paragraphs 26 to 28 is used. Institutions applying an extrapolation approach as defined in paragraph 27 should, for the purpose of quantifying the Category A MoC, calculate an appropriate confidence level reflecting the uncertainty related to the backwards extrapolated realised LGDs, intermediate parameters or risk drivers. In any case the MoC should be quantified taking into account the uncertainty of the statistical model used to describe the dependency between the realised LGDs, intermediate parameters or risk drivers and the relevant economic factors.

Explanatory box for consultation purposes

Several approaches were considered, before introducing the haircut and extrapolation approaches, but the two quantification methodologies were considered to be the most common and reliable methodologies. The choice to restrain the use to two methodologies, in case of scarce data, contributes to the objective of limiting unjustified variability in RWA. A drawback of this approach may be that better quantification methodologies (for the case of missing data) could be developed in the future. EBA is however not aware of other more promising methodological approaches which are broadly used. If other convincing quantification methodologies come up in the future, this restriction could be lifted.

As an alternative to the proposed approach it was however considered to allow any approach towards quantification of LGD downturn estimates but to safeguard this approach by a general minimum MoC (as used in Section 7) and principles on the aspects which such estimation needs to take into account. Such principles were considered along the lines of the prescriptive impact assessment applied in case that there is enough data, i.e. institution would be required to assess the estimated impact from severe levels as observed on the relevant economic factors identified according to the RTS on economic downturn in terms of:

(1) levels of "estimated realised" LGDs including treatment of incompletes at portfolio level, or at the relevant sub-range of application relevant for the current portfolio. The "estimated realised" LGDs should be calculated as averages related to all defaults that happened in a considered year;

(2) annual "estimated" recoveries by source of the recovery relevant for the considered type of exposure (with and without repossessions and regardless of when the underlying defaults happened);

(3) "estimated" numbers of creditors that default and returned back to the non-defaulted status in accordance with Article 178(5) CRR in a considered year; and

(4) "estimated" time in-default calculated as averages related to all defaults that happened in a considered year according to the considered estimation methodology.

This alternative would have been simpler in terms of policy but would have required significantly more efforts on the institutions' side. It would have required backwards extrapolation in a lot of cases to estimate the impact of a considered downturn period on all listed four components. Moreover, the calibration of a minimum MoC covering such a broad range of approaches would have been a challenging and probably quite controversial issue.

However, in case a haircut approach cannot be applied due to the considered economic factors not being inputs in the application of the LGD model for assigning facilities to facility grades and pools, the extrapolation approach currently remains the only alternative in case no observed loss data is available. The extrapolation approach is however controversial and therefore simplified approaches, such as the distributional approach (on which feedback has been gathered already in the CP on the draft RTS on economic downturn published on the 1st of March 2017), might be considered for the final policy.

Question 4: Do you consider the description of the approaches to be sufficiently clear?

Question 5: Do you agree to the limitation of approaches for quantification of downturn LGD estimates? If not, which other approaches should be considered? Would you prefer the alternative policy considered – if yes how should a minimum MoC be established in this case?

7. Downturn LGD estimation where the observed or estimated impact is not available

31. Where the relevant loss data to assess the impact of the considered downturn period is not available and it is not possible either to quantify downturn LGD estimates for the considered downturn period in accordance with Section 6, institutions should quantify LGD estimates appropriate for an economic downturn through any other approach subject to the following conditions:
    a. they should ensure that the appropriate MoC required to be applied in accordance with Section 4.4.3 of the [EBA GL on PD and LGD estimation] includes Category A MoC that is strictly positive to account for the missing data;
    b. they should ensure that the final downturn LGD estimate including MoC for the considered downturn period is higher or equal to the long run average LGD plus 20 percentage points. In any case the final downturn LGD estimate should be lower or equal to 105%;

they should provide justification to the satisfaction of the competent authority that they cannot quantify downturn LGD for the considered downturn period by applying any of the approaches set out in Sections 5 and 6 of these GL.

Explanatory box for consultation purposes

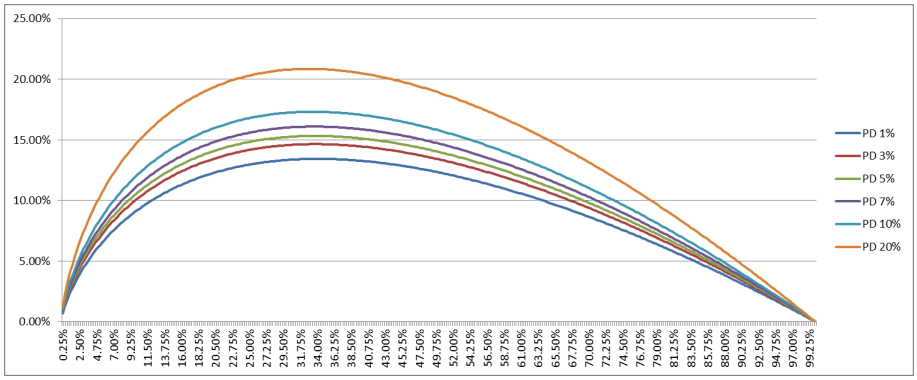
The proposed requirements for the assessment of the appropriateness of the MoC for downturn LGD in estimation in case that no data is available and that neither a haircut nor an extrapolation approach can be applied in order to assess the calibration target for downturn LGD estimation, are rather restrictive. There is however a good rationale for a rather restrictive regulation in case that an institution can neither base their downturn LGD estimation on observed impact nor on historical impact using standard methodologies. It has to be kept in mind that in this case it is assumed that the long-run average LGD exclusively reflects favorable economic conditions (as otherwise Section 5 would apply). Thus, the MoC applicable need to cover for the missing data as well as for the methodological deficiencies, as it is unclear why the institution cannot follow the guidance in Section 6.
Numerous other possibilities were explored to phrase the requirement regarding a minimum MoC in this case. Among those alternatives, the following three methodologies for assessing such minimum MoC have been explored in more detail:

A. Distributional approach. The method relies on estimated variance of the estimates, which is used as an add-on. The advantage of this approach is its simplicity. Its caveat however is, that the minimum MoC would be based on a variance which will, most

probably, be driven by anything but economic conditions (as the assumption is that the long-run average LGD exclusively reflects favourable economic conditions). Moreover, it could in particular punish low-default-portfolios.

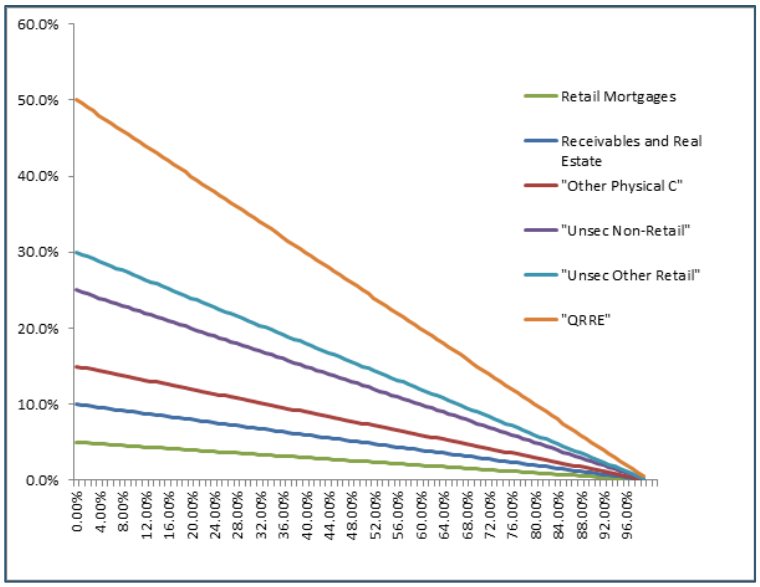
B. Parametric downturn LGD approach, which mirrors the approach for PD in the formula used for RWA calculation. In the IRB formula, the PD, which has been determined by the institution is transformed to a conditional PD, based on a 99.9% confidence interval. No such transformation is performed for the LGD. Thus this approach draws on the elements from the distributional approach applied in the IRB formula for PDs and includes a similar transformation of the LGD. Under this approach, the downturn LGD is obtained through an analytical formula, where the required inputs are PD, ELGD (expected LGD in Frye's and Jacobs' paper - http://michaeljacobsjr.com/FryeJacobs_2012_CrdtRiskSysLGD_JCR_8-1_Spring_pp1-32.pdf), correlation(R) and quantile q. This approach effectively assumes that there exists a correlation between PD and LGD; however, if institutions can establish that there is no PD and LGD correlation for certain portfolios, then the downturn LGD is effectively the ELGD.

   The advantage of this approach is its consistence with the theoretical framework underlying the formula for the RWA calculation. One major caveat is however that the theoretical assumptions of an unconditional ELGD are not met as the long-run average LGD according to the GL on PD and LGD estimation will reflect just favorable conditions. Another caveat is that the applied correlation assumptions as well as the applied PD would have to be specified (which leaves quite a lot of possibilities for the final requirement).Moreover, the shape of the theoretical loss distribution was not supported by any empirical evidence, nor was the shape of the expected impact of an economic downturn on the LGD estimates. Last but not least the resulting add-ons were even higher than the proposed fixed add-on for certain ELGDs. The following Figure illustrates that add-on under the Frye-Jacobs approach depending on the ELGD (x-axis):



C. LGD transformation approach, which estimates LGD downturn as X% * LGD + Y% where Y=100-X. It is a simple formula which applies a relatively higher add-ons for portfolios

with low LGDs, see illustration below. It can be seen as an approach that adds more conservatism on the estimates for portfolios, where banks have observed low LGDs. The advantage of this simplified approach is that, apart from its simplicity, it works for all portfolios, whether collateralized or unsecured, as it simply is a parametric reformulation of the LGD estimate. The main disadvantage is that it alters arbitrarily the risk sensitivity since it adds an asymmetric add-on on the LGDs, although there is no empirical evidence that lower LGDs are more uncertain than higher LGDs. Some form of risk sensitivity could be introduced by adjusting the formula by taking into account the minimum LGDs (input floors) foreseen under the Basel III finalization package. The following figure illustrates the add-on under such a transformation approach, where the long-run average LGD is displayed on the x-axis:



Question 6: Do you expect that the total exposure amount or share which is treated with the policy proposed in Section 7 is material?

Question 7: Do you have specific examples of types of exposures which will fall under the policy proposed in Section 7?

Question 8: Do you agree to require a minimum MoC quantified via a fixed add-on to the long-run average LGD? If not, which of the alternatives should be considered? Do you see reasons for differentiating the fixed add-on according to exposure classes?

Question 9: Do you agree to the minimum MoC as the max(0,min(20%, 105% - LRAVLGD)?

8. Reference Value

32. After quantifying downturn LGD estimates in accordance with sections 5-7 Institutions should compare the downturn LGD estimates derived in accordance with Sections 5 to 7 with the reference value derived in accordance with the following steps:

    a. First, Institutions should identify all observed defaults within the reference data set (RDS) and corresponding EADs and economic losses for the preceding twenty years. Where all representativeness requirements are met and the period considered actually contains years which include adverse economic conditions as well as years for which the maximum period of the recovery process referred to in paragraph 156 of the EBA GL on PD & LGD estimation has been observed, institutions may identify the above-mentioned defaults and losses for the ten years preceding the time of the LGD estimation, in which case this period should increase by one year thereafter until they reach twenty years;

        i. institutions should then group all defaults identified for the years referred to in letter (a) per year in which the default occurred to obtain, for each of those years, the annual ratio of total economic losses to total Exposure at Default;

        ii. institutions should then select the two individual years with the highest annual ratio of total economic losses to total EAD as the two individual years with the highest observed economic losses.

    b. Second, institutions should calculate the reference values in either of the following ways:

        i. where the LGD estimates do not result from combining different intermediate parameters, as the average realised LGD from those two individual years, for each facility grade or pool;

        ii. where the LGD estimates result from combining different intermediate parameters(for example, secured and unsecured), the reference value may be calculated at the level of each of the intermediate parameter, in which case the comparison made at this level should take into account the correlation structure between the intermediate parameters.

Explanatory box for consultation purposes

Examples of how to calculate reference values at various levels:

(a) Where the institution uses secured as against unsecured components, it may be necessary (depending on the specificities of the model) to at least establish a comparison between the observed values for defaults occurring during those two individual years and those actually used by the institution for their DT LGD estimates of (i) collateral haircuts and (ii) average realised LGD as regards the uncollateralised component.

(b) Where the institution uses model components, such as for example cure probabilities as well as LGDs for "cured" and "not cured", the realisation of each of these components during the two individual years should be compared with the DT LGD estimates actually being used by the institution

The reference value will act as a challenger to downturn LGD estimation. It is however clear that it cannot be related to LGD estimates appropriate for an economic downturn if the observed data do not cover the period where a downturn impact could have been observed. In this regard the reference value might have an economic meaning for downturn LGD estimated in accordance with paragraph 18, but it will not have such a meaning for downturn LGD estimated in accordance with paragraph 19-20 from the draft GL. However in particular for the first case the reference value might contribute to the objective of lowering unjustified variability and it should therefore at least remain for LGD downturn estimates quantified in accordance with paragraph 18. The role of the reference value for LGD downturn estimation in accordance with paragraph 19-20 is less clear and could therefore be dropped, if it can be expected that the final policy lowers unjustified variability.

Alternatively the role of the reference value could be clarified as follows:

- For downturn LGD estimates based on the policy in Section 5: For institutions using the approach described in Section 5, where DT LGD estimates obtained by the institution are lower than those resulting from the reference value described above, the institution should be able to provide evidence that the losses observed in the two years selected for the reference value are not linked with an economic downturn.
- For downturn LGD estimates based on the policy in Sections 6 or 7: For institutions using one of the approaches described in Sections 6 or 7, where DT LGD estimates obtained by the institution are not significantly above those resulting from the reference value described above, the institution should be able to provide evidence that their MoC accounts appropriately for the lack of information on losses during a downturn period.

Question 10: Is the policy regarding the reference value sufficiently clear? Alongside with the potentially limited applicability of the reference value to the downturn LGD estimation according to paragraphs 18-19-20, for what reasons could the reference value feasibly be omitted? Do you agree to the proposed clarification of the role of the reference value?

5. Accompanying documents

5.1 Draft cost-benefit analysis / impact assessment

The impact Assessment (IA) analyses the potential related costs and benefits of the policy provided in the draft guidelines. This analysis shall provide the reader with an overview of the findings as regards the problem identification, the options identified to remove the problem and their potential impacts.

A. Problem identification

While the proposed RTS aims to harmonise the definition of an economic downturn, these guidelines focus on the estimation of downturn LGD *per se*. Indeed, both the definition of an economic downturn as well as the downturn LGD estimation have been identified in different reports (from the EBA[6] as well as from the industry) as one of the key drivers of non-risk based variability of capital requirements. All issues that have been considered while developing this RTS and these guidelines refer to the identification and/or limitation of drivers of unjustified RWA variability in the context of downturn LGD.

The RTS and these GLs are expected to provide a more harmonised framework on the identification of downturn economic conditions and downturn LGD estimations, leading to more comparable RWA outcomes across institutions.

B. Policy objectives

The objective of these guidelines is to establish convergence of institutions' methodological choices in estimating downturn LGD estimates. These methodological choices are considered to be drivers of unjustified RWA variability, hence the harmonisation of the current practices is expected to enhance comparability of own funds requirements.

The guidelines introduce three different type of approaches to estimate the downturn LGD, taking into account the data availability of the institution. The most appropriate approach should be used:

- The first and optimal approach should be relied on when loss data reflecting the impact of an economic downturn (identified in accordance with the draft RTS on the specification of the nature, severity and duration of an economic downturn) is available – in this case the institution can model the downturn directly.

[6] Report on comparability and pro-cyclicality of risk weighted assets (RWA), EBA Report on IRB modelling practices

- The second approach comes into play, if no sufficient data is available, in which case the institution has the choice to quantify the downturn adjustment using a limited set of methodologies.
- Finally, if no such data is available and the limited set of methodologies cannot be applied either, the institution still has to provide downturn LGD estimates (as this is a CRR requirement) but needs to include a margin of conservatism, covering for the lack of data and methodological deficiencies. Under this third and final approach, it is required that the final downturn LGD estimates include an appropriate margin of conservatism and are higher than the according long-run-average LGD estimates plus 20% (capped at a final downturn LGD estimate of 105%).

C. Baseline scenario

The baseline scenario can be defined in terms of supervisory rules and practices, institutions current practices and regulatory environment.

The baseline scenario in terms of the supervisory expectations is specified on the basis of data collected from competent authorities for the purpose of the reports on comparability and pro-cyclicality of capital requirements published by the EBA in December 2013. These data have updated for what concern downturn LGD and CF supervisory rules and practices in December 2016 and were summarised in the last CP.

Findings from Report on the comparability of supervisory rules and practices

Downturn LGD: around half 45% (9 CAs) of the CAs define a rule concerning the methodology of downturn LGD. Among those CAs in 4 cases the rule is public and binding and, moreover, 7 CAs confirm that banks should base their downturn LGD estimates on historical scenarios with 3 of them specifying further that their methodology build also on hypothetical stressed scenarios, in particular for those cases where downturn period is not reflected in the historical series of the institutions. Moreover, 3 CAs mentioned the use of either margin of conservatism to address data issues or conservative add-on for those cases where the estimation made at institution level is not considered conservative enough.

Downturn CF: only 30% of the CAs (6 CAs) define a rule concerning the methodology of downturn CF. Among those CAs only in one the rule is public and binding and, moreover, only 2 CAs confirm that banks should base their downturn CF estimates basing on historical scenarios with 1 of them specifying further that their methodology build also on hypothetical stressed scenarios for those cases downturn period is not reflected in the historical series of the institutions.

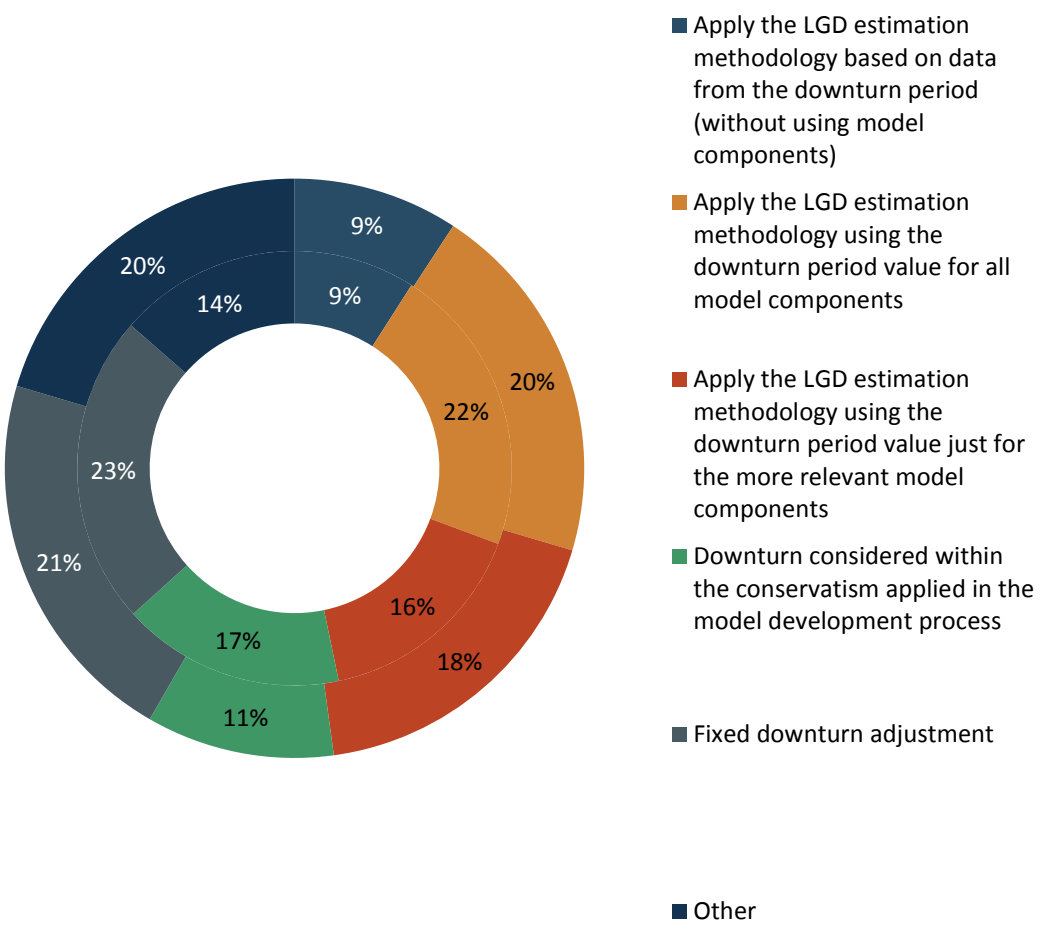
Furthermore, the work on the harmonisation of the estimation of the risk parameters has been completed in 2017 through guidelines[7] which were based on a survey on the main practices of

[7] https://www.eba.europa.eu/regulation-and-policy/model-validation/guidelines-on-pd-lgd-estimation-and-treatment-of-defaulted-assets

modelling. In this context, the report on the IRB practices[8] published in 2017 also highlights the wide variety of practices for the estimation of the downturn LGD.

Findings from the IRB survey on the variety of methodologies

Figure 53: What is the main methodology used to determine LGD estimates that are appropriate for an economic downturn?



Note: the inner circle shows the share of each option where all LGD models are weighted equally, whereas the outer circle shows the share of each option where LGD models are weighted by their corresponding exposure value.

244. When it comes to the methodologies that institutions use to determine downturn LGD estimates, a wide variety of practices can be observed (see Figure 53). However, in 38% of LGD models, the downturn period value is used for all model components (22%), or for the most relevant components (16%). In 23% of LGD models, a fixed downturn adjustment is applied, and in 9% of models the LGD estimation is based on data from the downturn period without using model components.

[8] https://www.eba.europa.eu/documents/10180/1720738/EBA+Report+on+IRB+modelling+practices.pdf/0212ecde-426d-4e18-84f8-04b036dcce00

245. Around 17% of respondents indicate that they use conservatism in the model development process to reflect downturn LGD estimates.

In terms of the regulatory environment the baseline scenario for downturn LGD estimates is set out by the currently applicable Guidelines on the implementation, validation and assessment of Advanced Measurement (AMA) and Internal Ratings Based (IRB) Approaches (so called GL 10) published by CEBS in April 2006. These previous Guidelines define appropriate downturn conditions as those in which relevant drivers of default rates are consistent with conditions in which credit losses for the supervisory exposure class are expected to be substantially higher than average. This framework put emphasis on the correlation between default rates and recovery rates, in fact, if no material dependencies between default rates and recovery rates are identified the downturn LGD estimates may be based on the long-run average LGD.

D. Options considered

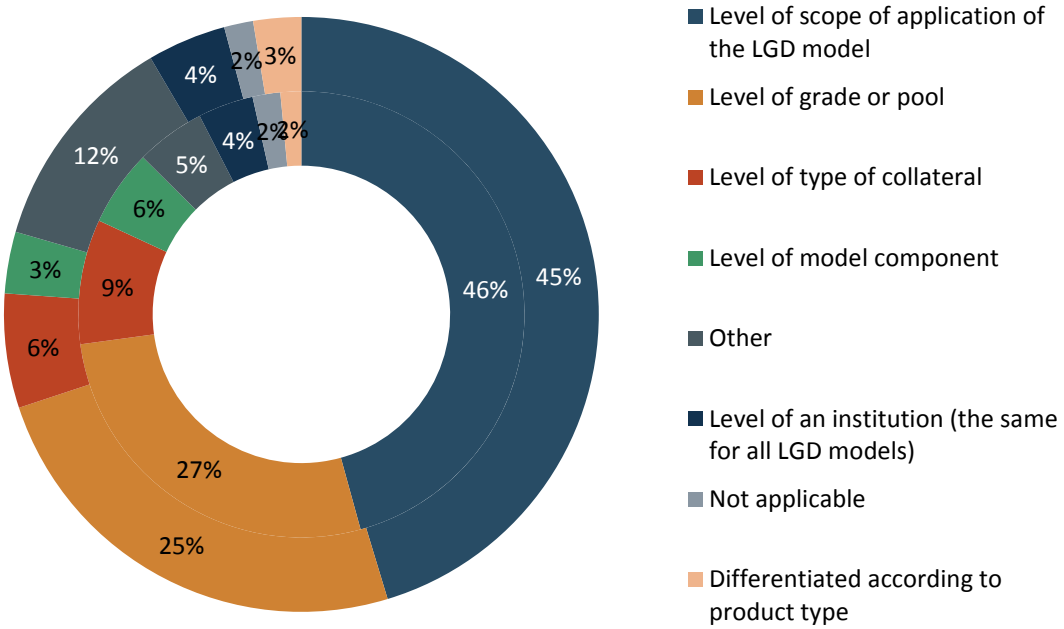
This section presents the assessment of the technical options considered in the Guidelines. Under each option, the potential advantages and disadvantages of the options together with potential costs and benefits are discussed. Since most of the alternatives are presented in explanatory text for the consultation, this section refers to these explanations.

Specification of the level of application of the downturn

Paragraph [14] requires institutions to provide a downturn LGD estimate at the same level as the one considered for long run average LGD in LGD calibration. The report on IRB modelling highlights a significant variability of practices

Findings from the IRB survey on the variety of methodologies

Figure 52: At which level is the downturn adjustment specified?



Note: the inner circle shows the share of each option where all LGD models are weighted equally, whereas the outer circle shows the share of each option where LGD models are weighted by their corresponding exposure value.

242. In nearly half of the LGD models, the downturn adjustment is specified at the level of the LGD model, whereas in smaller shares of models, the downturn adjustment is specified at a lower level: at the level of the grade or pool (in 27% of models), differentiated according to the type of collateral (9%) or differentiated by product type (2%) (see Figure 52). In around 4% of models, the downturn adjustment is specified uniformly in the institution. Some respondents (around 6%) mentioned that the downturn adjustment is applied at model component level, in which case it is not entirely clear whether this leads to a different adjustment by grade or pool, collateral, or product type, or whether this leads to a uniform adjustment for all exposures under the scope of application of the LGD model.

The following options were considered:

Options	Advantages	Disadvantages
1. Flexibility based approach: no requirements		No reduction of undue variability
2. Consistency approach: level at which the long run average is considered for LGD calibration	In line with the CRR where the requirement to reflect downturn conditions in the LGD is part of risk quantification (and not risk differentiation). Ensures consistency with the LGD Long Run Average (in particular for the comparison)	This approach may increase the burden on the estimation for some banks.
3. Prescriptive approach: level of the type of exposure	Easy to implement	Differences between a potential impact of an economic downturn on e.g. secured and unsecured parts or different grades and pools might not be appropriately reflected.

The second option was retained since it strikes a good balance between harmonization and the necessary flexibility that has to be kept in modelling choices.

Possibility to dismiss a downturn period in the assessment of a Downturn LGD (presented in explanatory texts)

Paragraph [15] requires institutions to provide a downturn LGD estimate for all identified downturn periods. The following options were considered:

Options	Advantages	Disadvantages
1. Flexibility based approach: possibility to dismiss a downturn period	Less burdensome for institutions	Opens the possibility of regulatory arbitrage: it is not easy to set objective criteria to dismiss a downturn period Possible lack of prudence, all the more in case where no severe downturn is reflected in the internal loss data
2. Prescriptive approach: no possibility to dismiss a downturn period	Ensure maximum harmonization Most prudent approach	Downturn LGD has to be estimated as well where no data is available for a considered downturn period, which might lead to less reliable estimations.

The second option was retained for the consultation in order to ensure sufficient harmonization of the practices across jurisdictions.

Adjustment of the calibration to take into account potential migrations (not presented in explanatory texts)

CRR article 181(1)(b) states that *"to the extent a rating system is expected to deliver realised LGDs at a constant level by grade or pool over time, institutions shall make adjustments to their estimates of risk parameters by grade or pool to limit the capital impact of an economic downturn;"*

The following interpretations were considered:

- The capital impact of an economic downturn should be limited at the portfolio level through a calibration methodology that reflects the facility-grade distribution of exposures at the point in time where the downturn impact was observed. The rationale for this is, that capital requirements stemming from the downturn LGD estimation should not increase in case of an economic downturn but rather be appropriate for an economic downturn as required in Article 181 (1)(b) regardless of the current state of economy. .

- The capital impact of an economic downturn should be limited by requiring institutions to make adjustment to their estimates by grade and pool by using a calibration

methodology that takes into account the fluctuation arising from the economic cycle of the loss rates.

Options	Advantages	Disadvantages
1. Additional requirements (paragraph 16)	Ensures that capital requirements (stemming from downturn LGD estimation) do not increase in case of an economic downturn.	Taking into account the potential migrations in the calibration may be complicated and increase RWA variability Not consistent with the introduction of grades and pools in the Basel framework
2. No additional requirements	Ensures the realised LGDs are stable at the grade level	Capital requirements (stemming from downturn LGD estimation) increase in case the economy enters into an economic downturn.

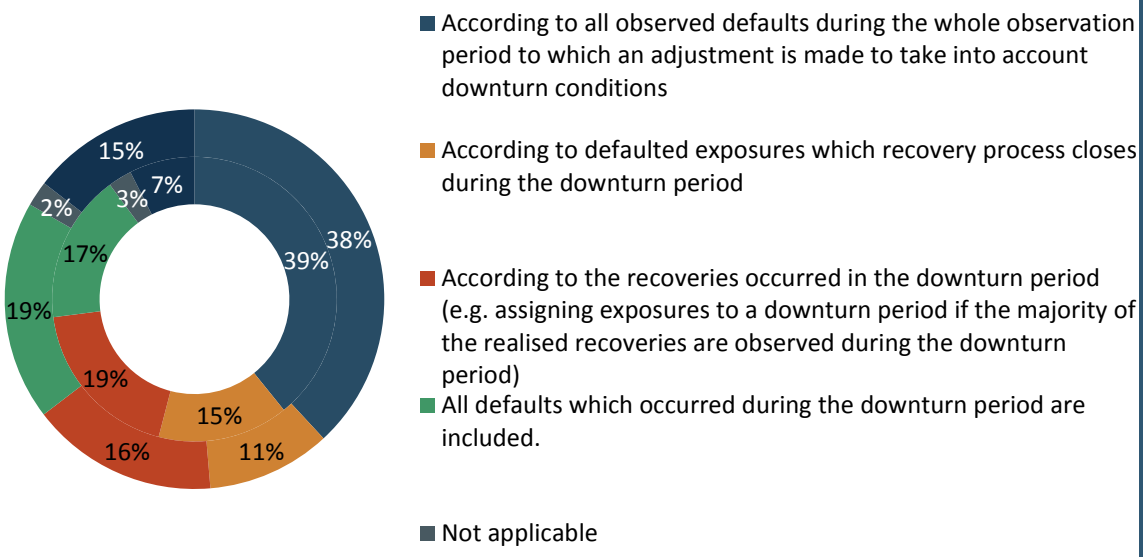
The first option was selected for the consultation, in order to assess the materiality of the issue from the industry.

Alternative approach under type 1 methodology: vintage of defaults and vintage of recoveries

Paragraph 22 requires institutions to conduct an impact assessment related to the considered calibration segment. In this regard, the construction of several yearly time series is required.. Several grouping options have been considered: use of the date of default, the date of the main recovery or the date of return to non-defaulted status or close work out process.

Findings from the IRB survey on the variety of methodologies

Figure 51: How are data selected used in downturn estimation?



Note: the inner circle shows the share of each option where all LGD models are weighted equally, whereas the outer circle shows the share of each option where LGD models are weighted by their corresponding exposure value.

237. The IRB survey then enquired how institutions select data once the downturn period is established to compute the long-run average LGD. Based on the responses, however, it appears that this question was not properly understood, since nearly 50% of original responses were for the category 'other' and provided a wide range of explanations not answering the question. As a result, many of the responses have been discarded because the explanations given responded to a different question. This was the case when it was mentioned, for instance, that the data used in downturn estimation are selected based on expert judgement, or based on historical time series, etc. The results shown in Figure 51 are therefore based on a much smaller sample of LGD models than those represented in Table 57 (148 instead of 202).

238. In nearly 40% of LGD models, the data used in downturn estimation are selected based on all observed defaults during the whole observation period to which an adjustment is made, to take into account downturn conditions, whereas in 17% of models all defaults that occurred during the downturn period are included.

239. In 19% of models, those exposures for which the recoveries occurred in the downturn period are selected (e.g. assigning exposures to a downturn period if the majority of the realised recoveries are observed during the downturn period). In two institutions, the data are selected according to defaulted exposures for which the recovery process starts during the downturn period. However, in around 15% of models defaulted exposures are selected for which the recovery process closes during the downturn period.

240. Among the responses in the category 'other', one institution mentioned that it selects the data used in downturn estimation according to exposures that default during the downturn period. One institution mentioned a three-step approach: (1) downturn periods are identified if the house price index has decreased; (2) the average house price decline during the downturn period is calculated; and (3) the recovery rate under downturn periods is computed by subtracting the average house price decline from the usual recovery rate. Other institutions mentioned a combination of selecting all exposures that defaulted during the downturn period for the unsecured part of the exposure, and selecting all exposures for which the recovery process ends during the downturn period for the secured part of the exposure.

241. In some cases, the respondent mentioned that the question is not applicable. This was the case for a sovereign portfolio and an aviation portfolio, and in one case it was mentioned that no downturn period could be identified.

The following approaches have been considered:

Options	Advantages	Disadvantages
1. Vintage of default	Consistent with PD series	Unclear consequences on models using loss components
2. Year of recoveries	May be easier to find a relationship with the economic cycle	Year of recoveries is not currently defined in the regulatory framework Potential inconsistency with the PD series
3. Different analysis covering both views	Allows consistent estimation with respect to impact observed considering various dimensions. Catch-up effects (i.e. sales after a downturn) can be identified	It may be challenging building a model which reflects all aspects.

The proposed text is a compromise between the different options:

- The impact assessment consider different grouping, depending on the aspect component considered

- The flexibility is left with regard to the estimation of the impact on the regulatory LGD, and institution may consider *"realised LGDs by vintage of closed workout processes (and/or cures) for the quantification of downturn LGD estimates where this provides better predictors of the impact of an economic downturn for a considered downturn period on the relevant loss data when considering all analyses required in paragraph [22(a) – 22(c)]"*.

This approach was retained because of the lack of consensus in the responses of the previous consultation paper as well as the diversity of practices highlighted in the IRB survey. It is however acknowledge that this option leaves some RWA variability in the estimates.

Condition to use the LRA as a downturn LGD parameter

CRR article 181(1)(b) states that *"institutions shall use LGD estimates that are appropriate for an economic downturn if those are more conservative than the long-run average."*

The following options were considered:

Options	Advantages	Disadvantages
1. Flexibility based approach: no requirements		No harmonization of practices
2. Prescriptive approach: give conditions to use the LRA	Bring harmonization in practices	The specifications may not be sufficiently clear.

The final proposal is building on the second option, where the conditions to use the Long Run Average are prescribed (e.g. certain data requirements where the assumption of no-impact on long-run average LGD is justified) and cases where the Long Run Average cannot be used are explicitly mentioned; in particular, if the downturn LGD is estimated via an add on the Long Run Average, this add on can be estimated as being null but an appropriate MoC should be added to cover for the uncertainty of this estimation. Indeed, it was clarified that the comparison should be performed between the two estimates, and therefore after the inclusion of the MoC.

The alternatives and the costs and benefits analysis are presented in the explanatory boxes.

E. Cost-Benefit Analysis

The guidance given in these guidelines and the according draft RTS on economic downturn affect LGD and CFs modelling. Therefore it is expected that these regulatory products will lead to additional model steps, involving the identification and inclusion of economic downturn conditions, and in general to model changes.

However detailed assessment of the costs for institutions of these model changes and their impact on capital requirements is not possible as the current flexibility of the IRB Approach does not allow

a definition of a common baseline scenario regarding current modelling choices from an institution perspective. It is expected that the impact of these guidelines and RTS on individual institutions will vary depending on the currently implemented solutions. In this sense, the qualitative assessment performed in the last CP remains valid.

However, compared to the CP, the complexity has been reduced, in particular with respect to the concept of model components, and the allowed flexibility with respect to which economic factors that have to be considered has been reduced,.

F. Preferred option

This part presents a direct comparison between the new downturn package and the previous consultation.

This part presents a direct comparison between the new downturn package and the previous consultation (and more particularly) based on the example that was presented in the Explanatory Box related to Article 6 (assessment of the joint impact):

<table>
<tr><th rowspan="2">CP</th><th rowspan="2">New ordering</th><th colspan="3">New proposal</th></tr>
<tr><th>Type 1 estimation (Section 5)</th><th>Type 2 estimation (Section 6)</th><th>Type 3 estimation (Section 7)</th></tr>
<tr><td>Step 1: identifying model components</td><td>4</td><td colspan="3">There is no requirement to identify model components

Prescriptive impact analysis covers main loss components (para 22) | No prescription, but relevant components of economic loss should be identified (para 24(b)) | No prescription</td></tr>
<tr><td>Step 2: identifying relevant economic factors</td><td>1</td><td colspan="3">In the RTS, now independent with the model components, and more prescriptive with a list economic factors in article 2, that have to be considered relevant, instead of general principles (article 3 of the CP)</td></tr>
<tr><td>Step 3: identifying downturn period for each economic factors</td><td>2</td><td colspan="3">The notion of a downturn period in the CP was liked to an individual economic factor.

In the revised concept a downturn period related to different economic factors.</td></tr>
<tr><td>Step 4: identification of</td><td>3</td><td colspan="3">In the revised draft RTS, the concept of the downturn period is similar to the previous concept of downturn scenario, i.e. it is characterised by a set of economic factors where their</td></tr>
</table>

the downturn scenarios		severities are reached simultaneously or are shportly after each other and are the effect of one overall economic condition.
Step 5: computation of downturn LGD for each downturn scenario	**5**	Downturn LGD estimation according to the three types depending on the data availability and the ability to us the methods prescribed in section 6.
Step 6: identification of the final downturn scenario	**6**	In the guidelines, the highest downturn LGD per calibration segment (and not type of exposure, as specify in article 6 of the CP) is selected.

5.2 Overview of questions for consultation

Question 1: Do you think that additional guidance around the estimation of LGD in-default, which reflect downturn conditions, is needed? If yes, could you provide examples of sound methodologies for transposing downturn LGD estimates from performing to non-performing exposures?

Question 2: Do you share the concern that the proposed policy in paragraph 15 could create an undue burden if applied to every downturn period identified? If yes, in order to better balance the accuracy of the estimations and its operational complexity what evidence should be provided by institutions in order to justify the exemption of identified downturn periods from the proposed policy in paragraph 15?

Question 3: Do you agree with the proposed level of downturn LGD estimation set out in paragraph 14? In particular, do you support the concept that the downturn LGD estimates of different calibration segments could be based on different downturn periods? Is the policy on the level of downturn LGD estimation as well as the relation between the level of downturn LGD estimation and the relevant downturn periods sufficiently clear?

Question 4: Do you consider the description of the approaches to be sufficiently clear?

Question 5: Do you agree to the limitation of approaches for quantification of downturn LGD estimates? If not, which other approaches should be considered? Would you prefer the alternative policy considered – if yes how should a minimum MoC be established in this case?

Question 6: Do you expect that the total exposure amount or share which is treated with the policy proposed in Section 7 is material?

Question 7: Do you have specific examples of types of exposures which will fall under the policy proposed in Section 7?

Question 8: Do you agree to require a minimum MoC quantified via a fixed add-on to the long-run average LGD? If not, which of the alternatives should be considered? Do you see reasons for differentiating the fixed add-on according to exposure classes?

Question 9: Do you agree to the minimum MoC as the max(0,min(20%, 105% - LRAVLGD)?

Question 10: Is the policy regarding the reference value sufficiently clear? Alongside with the potentially limited applicability of the reference value to the downturn LGD estimation according to paragraphs 18-19, for what reasons could the reference value feasibly be omitted? Do you agree to the proposed clarification of the role of the reference value?