



Consultation papers on estimation and identification of an economic downturn in IRB modelling

EBA Public Hearing, 31 May 2018

Overview of the agenda

1. Introduction

- Overview

2. RTS on economic downturn

- Concept of an economic downturn according to the RTS
- Identification of downturn period(s)

3. GL on downturn LGD estimation

- Overview: Downturn LGD estimation for a given downturn period
- General requirements

3.1. Downturn LGD estimation where relevant loss data is available

3.2. Downturn LGD estimation where relevant loss data is not available

Overview - Consultation

- Two Consultation Papers have been published at the 22 of May 2018 under:
<http://www.eba.europa.eu/regulation-and-policy/model-validation/regulatory-technical-standards-on-the-specification-of-the-nature-severity-and-duration-of-an-economic-downturn>
- The consultation runs until 22 June 2018.
- An earlier consultation on the RTS was launched at the 1 March 2017.

Articles 181(3)(a) and 182 (4)(a) of REGULATION (EU) No 575/2013

“EBA shall develop draft regulatory technical standards to specify the following:

- (a) *the nature, severity and duration of an economic downturn referred to in paragraph 1;*”

Where paragraph 1 refers to 181(1)(b) for LGD estimation and to 182(1)(b) for CF-estimation

Article 181(1)(b): Institutions shall use **LGD estimates that are appropriate for an economic downturn** if those are more conservative than the long-run average. 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;

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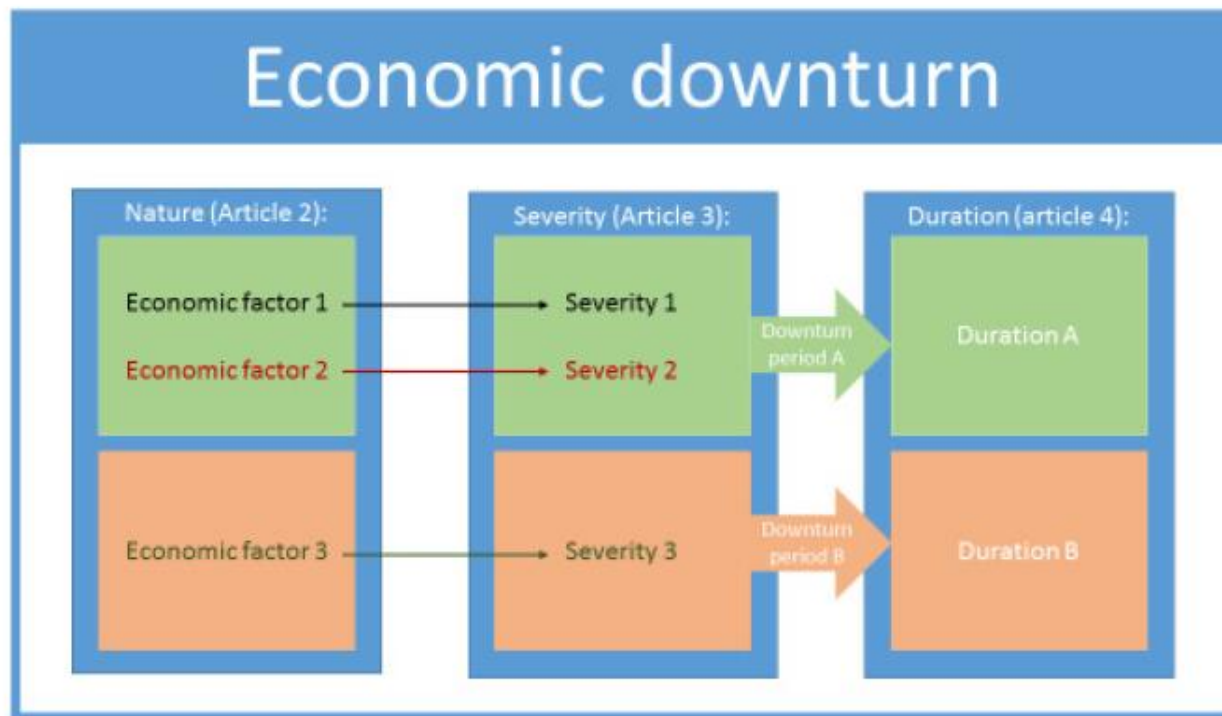
3.1. Downturn LGD estimation where relevant loss data is available

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Concept of an economic downturn according to the RTS

- Level of application (Article 1 (2)): Institutions shall specify the economic downturn for each type of exposures as defined in point 2 of Article 142(2) of Regulation (EU) No 575/2013.
- The economic downturn is specified by a set of relevant economic factors and their according severities relating to one or more downturn periods.

Figure 1: Economic downturn



The three characteristics

Concept of an economic downturn according to the RTS

| Nature Article 2 | Severity Article 3 | Duration Article 4 |
|--|--|---|
| <p>As a set of relevant economic factors, which are</p> <ul style="list-style-type: none"> • Those listed in Article 2(1) • (additionally) explanatory variables for the economic cycle specific for the considered type of exposures; • To be considered in terms of changes or absolute levels; • To be tailored to the relevant geographical areas and sectors covered by the considered type of exposures; unless strong co-movements where regrouping possible; | <p>By relevant economic factor</p> <ul style="list-style-type: none"> • The most severe value relating to a 12-month period observed over a minimum period of 20 years; <p>Exemptions on the minimum observation period:</p> <ul style="list-style-type: none"> • Longer period if values in minimum period are not sufficiently severe; • Shorter period if values are non-representative due to the corresponding country's process of entry into the European Union; | <p>By downturn period</p> <ul style="list-style-type: none"> • Generally one year; <p>Exemptions:</p> <ul style="list-style-type: none"> • Economic factors show their severities over a longer period • To cover all peaks and troughs of different economic factors which are significantly correlated and belong to the same downturn period; • To cover adjacent peaks or troughs on one economic factor; |

Identification of downturn period(s)

Article 1 (c):

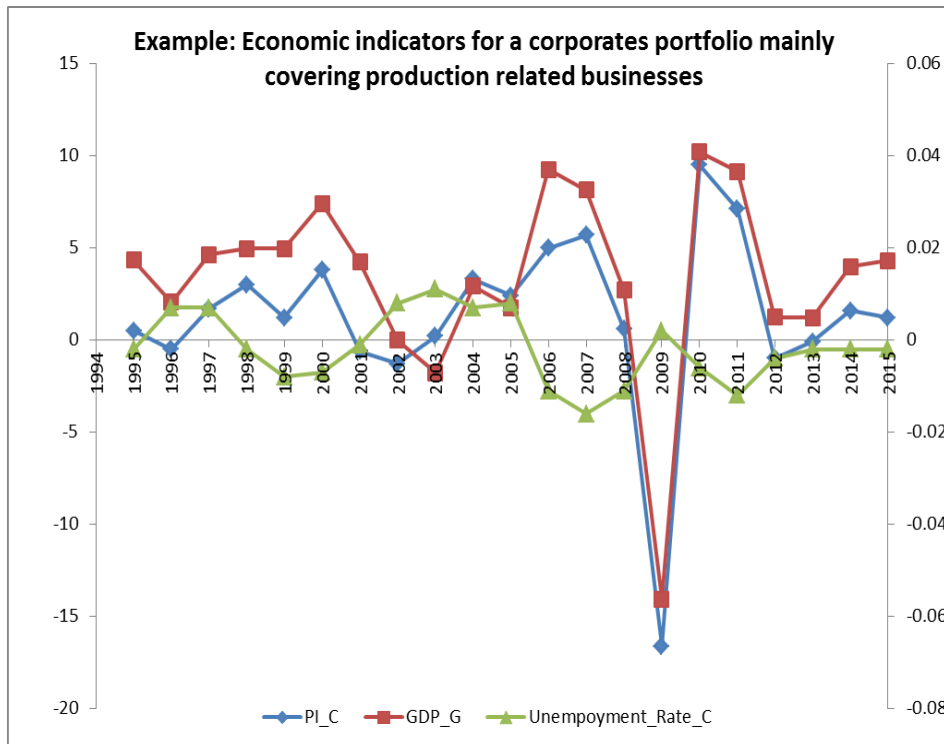
(c) they shall identify the duration of the economic downturn as a set of durations, consisting of one duration for each downturn period in accordance with Article 4. Institutions shall specify, for this purpose, an economic downturn that comprises one or several distinct downturn periods, taking into account all of the following:

- i. a downturn period shall be the period in which a relevant economic factor, as referred to in point (a), reaches its most severe value, as referred to in point (b).
- ii. where different economic factors are significantly correlated and where therefore their peaks or troughs, which relate to the most severe values in accordance with Article 3, are reached simultaneously or shortly after each other, the downturn period relating to these economic factors shall be the period covering these peaks and troughs.

Identification of downturn period(s) – Step (1)

Step 1: Identification of relevant economic factors and their severities

Covered by the draft RTS on economic downturn



According to Article 2 for all types of exposure:

- GDP: Trough 2009
- Unemployment rate: Peak 2003

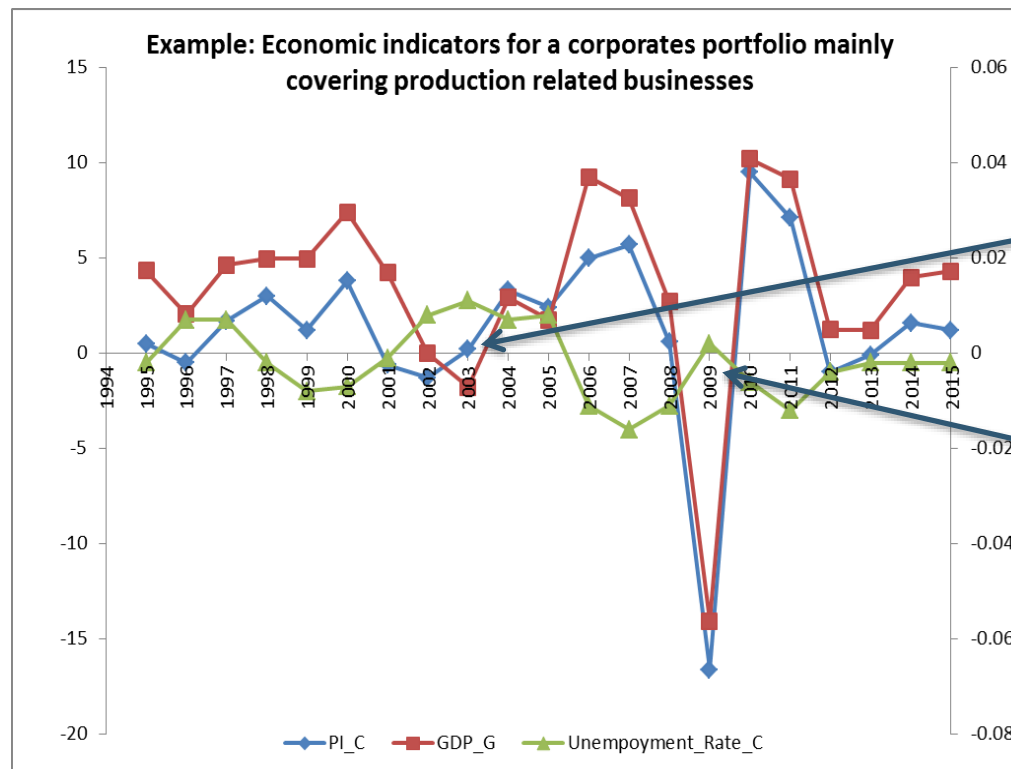
For a portfolio of corporate exposures:

- Productivity Index Trough 2009

Identification of downturn period(s) – Step (2)

Step 2: Identification of downturn periods and their duration

Covered by the draft RTS on economic downturn



According to Articles 1 and 4:

Downturn Period A
(Unemployment rate):
Peak 2003

Downturn Period B (GDP,
PI): Trough 2009

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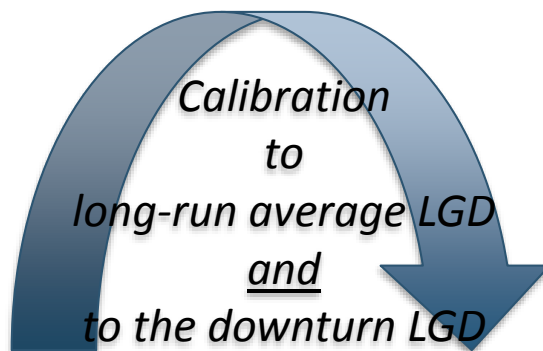
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General requirements for downturn LGD estimation

Risk differentiation
CRR Articles 170 - 174

Risk quantification
CRR Articles 178 - 184

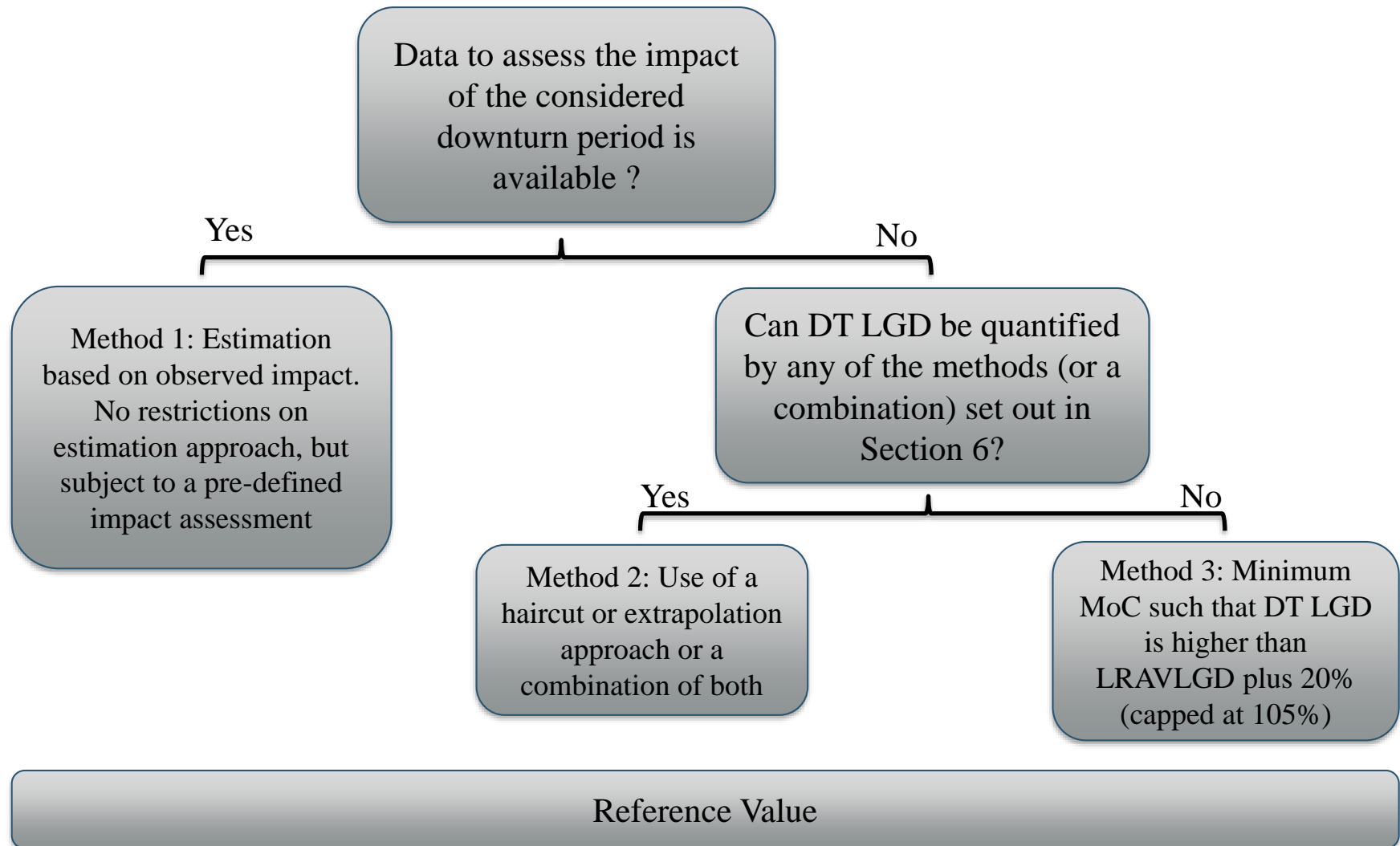
| Internal rating grade |
|-----------------------|
| Facility grade 1 |
| Facility grade 2 |
| Facility grade 3 |
| Facility grade 4 |
| Facility grade 5 |
| Facility grade 6 |
| Facility grade 7 |
| Facility grade 8 |
| Facility grade 9 |



How to quantify the calibration target for downturn LGD?

| Internal rating grade | LGD | DT LGD |
|-----------------------|------|--------|
| Facility grade 1 | 5% | 7.5% |
| Facility grade 2 | 8% | 12% |
| Facility grade 3 | 15% | 22.5% |
| Facility grade 4 | ... | ... |
| Facility grade 5 | | |
| Facility grade 6 | ... | |
| Facility grade 7 | ... | |
| Facility grade 8 | ... | |
| Facility grade 9 | ... | |

Downturn LGD estimation for a given downturn period



General requirements for downturn LGD estimation

- Integration into the Guidelines on PD estimation, LGD estimation and the treatment of defaulted exposures EBA/GL/2017/16
- Level of application for DT LGD quantification
 - At least at the same level of application that is considered for LGD calibration
- Multiple downturn periods
 - DT LGD estimates to be provided for each downturn period as illustrated on the previous slide;
 - The resulting estimates are applied to the current portfolio (or calibration segment) at the time of calibration
 - Institutions should pick the estimates relating to the downturn period which provides for the highest average DT LGD (with some exceptions in order to ensure estimations subject to the minimum MoC do not overwrite any other)
- Downturn LGD estimates should be stable over the economic cycle

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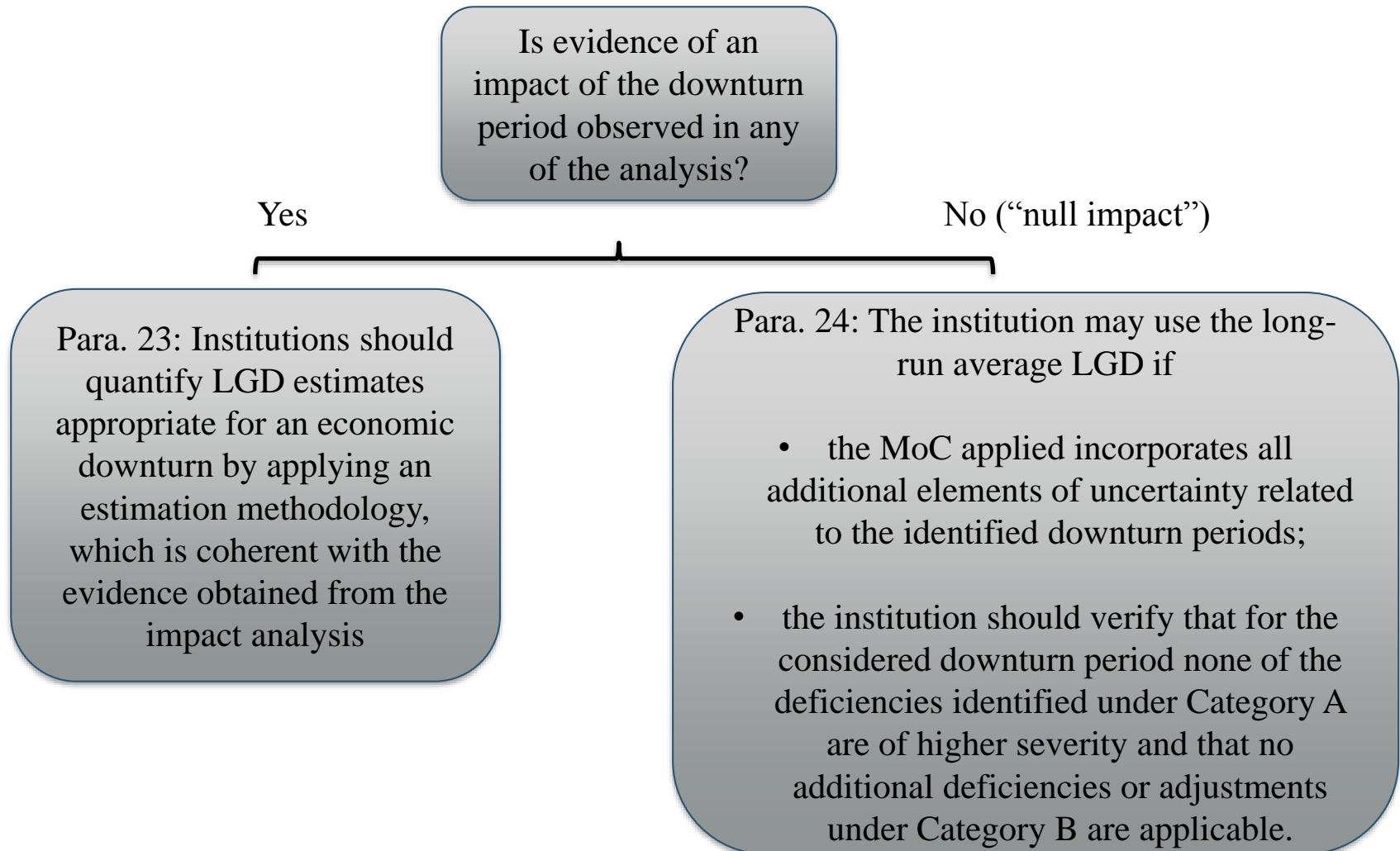
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Downturn LGD estimation where relevant loss data is available I

- **Flexibility towards estimation methodology applied as long as the final downturn LGD estimates reflect the results of an impact assessment exploring**
 - evidence of elevated levels of realised LGDs driven by the considered downturn period;
 - evidence of decreased annual recoveries by sources of recoveries;
 - evidence of decreased numbers of exposures that defaulted and returned back to the non-defaulted status;
 - evidence of increased time in default per year related to all defaults in a considered year.
- On annual data. However if more frequent data is available this should be used. If loss data is scarce because of the characteristic of the portfolio consecutive years may be merged as long as deemed of added value for the analysis.
- Time lags between potential impact and the downturn period considered should be taken into account

The objective of the impact assessment is to inform the estimation of downturn LGD and to ensure that the final downturn LGD estimates appropriately reflect the impact observed.

Downturn LGD estimation where relevant loss data is available II



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The Haircut approach

Pre-condition: The institution applies an LGD model which takes (at least) one of the relevant economic factors of the considered downturn period as an input in application:

| Internal rating grade | LGD | DT LGD |
|-----------------------|----------------|-----------------|
| Facility grade 1 | $F(x,..,e(t))$ | $F(x,..,e(DT))$ |
| Facility grade 2 | $F(x,..,e(t))$ | $F(x,..,e(DT))$ |
| Facility grade 3 | $F(x,..,e(t))$ | $F(x,..,e(DT))$ |

*where $e(t)$ denotes the current value of the economic factor and $e(DT)$ denotes the value observed in the downturn period, and $x,..$ denote other input values of the LGD model.

Mechanics: Downturn LGD estimates are calculated by applying the LGD model taking as an input the economic factor(s) adjusted to the value observed in the considered downturn period instead of their current values.

These methodologies may be applied in combination, e.g. for the estimation of intermediate parameters

The Extrapolation approach

Pre-condition: None

Analysis for estimating downturn LGD:

- Establish statistical dependency of economic factors and realised losses (or alternative variables)
- Extrapolate target variable backwards based on the established dependency in order to estimate “realised LGD” impacted by the considered downturn period

Mechanics (Example): Downturn LGD estimates in application are taken from a Look-up table containing the estimates established at the time of downturn LGD calibration.

| Internal rating grade | LGD | DT LGD |
|-----------------------|-----|--------|
| Facility grade 1 | 5% | 7.5% |
| Facility grade 2 | 10% | 15% |
| Facility grade 3 | 15% | 22.5% |

Downturn LGD estimation where relevant loss data is not available II

- **Limitation of the methodologies used for estimating downturn LGD**
 - 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.
- **Mandatory use of the haircut approach if the LGD model takes a market value or market index related to a relevant type of collateral as input variable and this market value or market index is a relevant economic factor of the considered downturn period.**
- **Institutions may combine the haircut or extrapolation approach with the estimate of intermediate parameters or risk drivers based on observed loss data.**
- **In case of the haircut or extrapolation approach being used to estimate intermediate parameters the aggregation scheme of these needs to be sufficiently stable throughout the economic cycle**
- **Category A MoC needs to be positive (due to the lack of data). In particular, in case of the extrapolation approach the MoC should reflect the uncertainty related to the backwards extrapolated realised LGDs**

Downturn LGD estimation where relevant loss data is not available III

How to develop a policy (that limits undue variability) for quantification of downturn LGD for a given downturn period if no loss data is available for that period? Two alternatives were considered:

| Alternative A (reflected in the policy): | Alternative B (reflected in the explanatory box): |
|--|---|
| Limit the set of methodologies to be applied in order to quantify downturn LGD | Leave flexibility with respect to the methodologies applied for quantification of downturn LGD estimates but set out a common minimum level |

Questions for consultation:

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?

Backstop approaches

- **Backstop 1: Downturn LGD estimation where relevant loss data is not available and it is not possible to estimate downturn LGD using the methodologies set out in Section 6**
 - Institutions may use any approach towards downturn LGD estimation subject to the following conditions
 - ▶ 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;
 - ▶ 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%;
- **Backstop 2:** For the purposes of assessing the final LGD downturn estimation a **reference value** based on the average of the two years with the highest ratio of total economic loss and total exposure in default is put in place.

Annex

Article 142

Definitions

1. For the purposes of this Chapter, the following definitions shall apply:

(1) '**rating system**' means all of the methods, processes, controls, data collection and IT systems that support the assessment of credit risk, the assignment of exposures to rating grades or pools, and the quantification of default and loss estimates that have been developed for a certain type of exposures;

(2) '**type of exposures**' means a group of homogeneously managed exposures which are formed by a certain type of facilities and which may be limited to a single entity or a single sub-set of entities within a group provided that the same type of exposures is managed differently in other entities of the group;

Relevant Terminology from the GL on PD and LGD

| Term | Definition |
|---------------------|---|
| Model development | The part of the process of the estimation of risk parameters that leads to an appropriate risk differentiation by specifying relevant risk drivers, building statistical or mechanical methods to assign exposures to obligor or facility grades or pools, and estimating intermediate parameters of the model, where relevant. |
| LGD calibration | The part of the process of the estimation of risk parameters which leads to appropriate risk quantification by ensuring that the LGD estimates correspond to the long-run average LGD, or to the downturn LGD estimate where this is more conservative, at the level relevant for the applied method. |
| Calibration segment | A uniquely identified subset of the scope of application of the PD or LGD model which is jointly calibrated. |

Relevant Terminology - Model development vs calibration

Risk differentiation
CRR Articles 170 - 174

Risk quantification
CRR Articles 178 - 184

| Internal rating grade |
|-----------------------|
| Facility grade 1 |
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| Internal rating grade | LGD |
|-----------------------|------|
| Facility grade 1 | 5% |
| Facility grade 2 | 8% |
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| Facility grade 4 | ... |
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