



# **BASEL III REFORMS: UPDATED IMPACT STUDY**

RESULTS BASED ON DATA  
AS OF 31 DECEMBER 2019

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**EBA**

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BANKING  
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# 1. Executive summary

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## 1.1 Introduction

**The final Basel III framework is a central element of the global regulatory response to the financial crisis.**

In response to the global financial crisis, the Basel Committee endorsed the final elements of the Basel III framework and the final market risk framework (the fundamental review of the trading book — FRTB) in December 2017 and January 2019, respectively. The revised standards address shortcomings of the pre-crisis regulatory framework and provide a foundation for a resilient banking system that can support the real economy through the economic cycle.

**In 2019, the EBA delivered its advice to the European Commission, supporting the implementation of the final Basel III standards in the EU.**

The EBA delivered its advice on the final Basel III framework in two parts in August 2019 and December 2019, responding to the European Commission's Call for Advice (CfA) of May 2018.<sup>1,2,3</sup> The advice included a quantitative impact assessment at the highest level of consolidation, a set of policy recommendations and a macroeconomic impact assessment, produced jointly by the EBA and the ECB.<sup>4,5</sup> In March 2020, the EBA complemented the quantitative impact assessment with an analysis at the individual entity (solo) level. The EBA supports the full implementation of the Basel III reforms, which in its view will enhance credibility in the EU banking sector (such as enhanced resilience of banks). This credibility benefit far outweighs in the view of the EBA the overall limited regulatory capital gains assessed in those reports from deviating from international standards.

**In August 2020, the European Commission requested the EBA to update its impact assessment, also taking into**

Following the outbreak of the COVID-19 pandemic and the subsequent deferral of the Basel III implementation by one

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<sup>1</sup> European Commission (2018), ['Call for Advice to the EBA for the purpose of revising the own fund requirement for credit, operational, market and credit valuation adjustment risk'](#).

<sup>2</sup> EBA (2019), [EBA advises the European Commission on the implementation of the final Basel III framework](#).

<sup>3</sup> EBA (2019), ['Basel III reforms: Impact study and key recommendations - Macroeconomic assessment, credit valuation adjustment and market risk'](#). At the time of publication, the final targeted revisions to the CVA framework, published on July 2020, were not available. Consequently, the EBA provided only an indicative sensitivity analysis on the potential impact of these adjustments, based on the targeted adjustments proposed in the BCBS consultation document ['Credit Valuation Adjustment risk: targeted final revisions'](#) published in November 2019

<sup>4</sup> EBA (2019), [EBA advises the European Commission on the implementation of the final Basel III framework](#).

<sup>5</sup> EBA (2019), ['Basel III reforms: Impact study and key recommendations - Macroeconomic assessment, credit valuation adjustment and market risk'](#). At the time of publication, the final targeted revisions to the CVA framework, published on July 2020, were not available. Consequently, the EBA provided only an indicative sensitivity analysis on the potential impact of these adjustments, based on the targeted adjustments proposed in the BCBS consultation document ['Credit Valuation Adjustment risk: targeted final revisions'](#) published in November 2019



**account the potential impact of COVID-19 pandemic.**

year to 1 January 2023<sup>6</sup>, the EU Commission postponed the adoption of its legislative proposal to implement the final elements of the Basel III framework in the EU and requested the EBA to update its previous advice on the final Basel III reforms.<sup>7</sup>

**This report presents the updated quantitative impact assessment of the final Basel III reforms and a complementary analysis of the potential impact of the COVID-19 pandemic.**

This report provides an update of the EBA's previous impact assessment of the final Basel III framework using data from regular EBA data collections as of end-December 2019. No ad-hoc data collection was carried out. Compared to the earlier Call for Advice reports, which benefitted from a specific ad hoc data collection, the results are based on a reduced sample of 99 banks<sup>8</sup> from 17 EU countries and are thus not directly comparable.<sup>9</sup> Due to the limited sample, results shown by size, country and business model could be biased, although the results can be considered valid on an aggregate level, as the sample represents around 75% of total EU banks' assets.

The update is complemented by an analysis of the potential additional impact of the COVID-19 pandemic on top of the usual impact of the implementation of the Basel III framework. This part of the analysis is mainly qualitative in nature; however, a quantitative credit risk sensitivity analysis is included in the assessment.

**The EBA conclusions in the original report remain unchanged. The EBA continues to support the policy recommendations published in its advice in 2019.**

The policy analysis conclusions and recommendations presented in the original report remain unchanged, as the analysis has fundamentally not changed with regard to the overall benefits stemming from the introduction of the Basel III framework in the EU. On the contrary, the positive effects of the reform remain unchanged, whereas the capital impact has decreased overall. The EBA continues to support the considerations and the policy recommendations that it put forward in the advice it published in 2019.

**The cumulative results of the present CfA report are not directly comparable to those of the Basel III monitoring report.**

Beyond the results of the present CfA report, on 10 December 2020, the EBA has also published its regular Basel III monitoring report, based on the same data as of end-December 2019.<sup>10</sup> The cumulative results of the present CfA report are not directly comparable to those of the Basel III

<sup>6</sup> BCBS (2020), [Governors and Heads of Supervision announce deferral of Basel III implementation to increase operational capacity of banks and supervisors to respond to Covid-19](#)

<sup>7</sup> The EC also requested an update to the macroeconomic impact assessment, to be produced jointly by the EBA and the ECB. A separate report will be delivered on this in 2021 Q1.

<sup>8</sup> The results presented in the December 2019 CfA report were based on a sample of 198 banks. In this report, the terms 'banks' and 'institutions' are used interchangeably.

<sup>9</sup> Results based on the 2018 Q2 data used in the previous CfA reports for the consistent sample are provided in the Annex for comparability purposes.

<sup>10</sup> [See Basel III monitoring report.](#)

monitoring report, due to different samples and some key methodological differences.

**Calculations are based on several assumptions, most leading to potential overestimation of the impact.**

Similarly to the 2019 exercise, the quantitative assessment is based on several assumptions that may lead to an over or underestimation of the results. Taken together these assumptions are expected to lead to an overestimation of impact. Information reported by banks in quantitative impact studies like the present one also tends to err on the conservative side, particularly when banks are asked to estimate the impact of completely new pieces of regulation. Finally, some impacts are based on proxies and should be interpreted with caution.

## 1.2 Overall impact

**The overall impact is presented under two implementation scenarios: the first one updates the impact presented in the previous CfA reports; the second one considers the additional features requested by the European Commission in its CfA**

The overall impact is presented under two implementation scenarios. The first scenario (called ‘Basel III’), corresponds to the Basel III central scenario in the August 2019 and December 2019 CfA reports and is in line with the EBA policy recommendations. The goal of this scenario is to update the impact of the Basel III framework as presented in the August 2019 and December 2019 CfA reports. The second scenario (called ‘EU-specific’) considers the additional features requested by the European Commission in its Call for Advice: applying the SME supporting factors on top of the Basel SME preferential risk weight treatment; maintaining EU CVA exemptions; exercising the jurisdictional discretion contemplated in the Basel III framework to exclude the bank-specific historical loss component from the calculation of the capital for operational risk (ILM=1). Some features in this scenario deviate from the EBA’s policy recommendations from the August 2019 and December 2019 CfA reports. In addition, two measures that have been frontloaded to mitigate the effect of Covid-19 pandemic have been considered (the change in the prudential treatment of software assets and the change in Pillar 2 composition rules). Both scenarios consider proxy calculations for the final CVA risk framework published in July 2020.

Table 1 Percentage change in T1 MRC (relative to current T1 MRC), by implementation scenario

Scenario	Δ SA	Δ IRB	Δ CCP	Δ SEC	Δ MKT	Δ OP	Δ CVA	Δ LR	Δ OF	Δ Total
Basel III	2.4	2.6	0.0	0.4	0.8	3.8	2.1	-0.2	6.7	18.5
EU-specific	1.7	1.3	0.0	0.4	0.8	1.7	0.5	-0.1	6.9	13.1

Sources: EBA 2019-Q4 QIS data and EBA calculations.

Notes: Based on a sample of 99 banks: SA, standardised approach to credit risk; IRB, internal ratings-based approach to credit risk, CCP, central counterparty, SEC, securitisation; MKT, market risk; OP, operational risk; CVA, credit valuation adjustment; LR, leverage ratio; OF, output floor. Δ MKT based on ‘reduced bias estimation’. Δ CVA based on July 2020 CVA framework. Δ OF impact is based on the main approach to implement the output floor.

Table 2 Capital ratio and shortfalls (EUR billion), by implementation scenario

Scenario	CET1			T1			Total capital		
	Current ratio (%)	Revised ratio (%)	Shortfall (bn)	Current ratio (%)	Revised ratio (%)	Shortfall (bn)	Current ratio (%)	Revised ratio (%)	Shortfall (bn)
Basel III	14.6	12.3	30.2	15.7	13.2	41.0	18.2	15.3	52.2
EU-specific	14.6	12.9	17.4	15.8	13.9	23.6	18.2	16.1	33.0

Sources: EBA 2019-Q4 QIS data and EBA calculations.

Notes: Based on a sample of 99 banks. Δ MKT based on 'reduced bias estimation'. Δ CVA based on July 2020 CVA framework. Δ OF impact is based on the main approach to implement the output floor.

**Under the Basel III scenario, the minimum required Tier 1 capital increases by +18.5%.**

Under the Basel III scenario, the steady-state implementation of the overall reform scheduled for January 2028 could increase the Tier 1 (T1) minimum required capital (MRC) amount, which includes Pillar 2 requirements and EU-specific buffers, by +18.5% with respect to the December 2019 baseline. The T1 MRC impact is very heterogeneous across the sample of participating institutions with a modest impact for the median institution (+11.7%) and the weighted average result being driven by some very large outlier institutions in the highest quartile of the distribution.

**The impact would determine a EUR 52.2 billion total capital shortfall, of which EUR 30.2 billion of CET1.**

The impact would reduce the average total capital ratio of the banks in the sample from 18.2% to 15.3% and result in a shortfall in total capital of EUR 52.2 billion (across 13 out of 99 banks), of which EUR 30.2 billion of common equity Tier 1 (CET1).

**The increases in MRC and capital shortfall are noticeably lower than the estimates reported in the December 2019 CfA report, for a consistent sample.**

The MRC impact is lower than the +24.1% estimated in the December 2019 CfA report, which used data from June 2018 (when considering consistent samples). The current total capital shortfall is also lower than the EUR 109.5 billion reported in December 2019. The MRC reduction is driven by a lower CVA impact (+2.1% compared to +4.3% based on June 2018 data) following the introduction of the July 2020 CVA framework and a lower impact of the output floor (+6.7% compared to +9.5% based on June 2018 data). The reduction in shortfall is driven by the combination of the banks' improved capital position and lower MRC.

**Under the EU-specific scenario, the MRC impact would reduce to +13.1%, resulting in a total capital shortfall of EUR 33.0 billion, of which EUR 17.4 billion of CET1.**

Under the EU-specific scenario, steady-state implementation of the final Basel III framework (i.e. 2028) could increase the T1 MRC amount by +13.1% with respect to the December 2019 baseline, resulting from the additional elements in this scenario which lower the MRC impact for the specific risk type to which they are related. This reduction is then slightly offset by the output floor, which becomes more binding as risk-based requirements become less constraining.

The lower MRC impact would cause a milder reduction in the average total capital ratio from 18.2% to 16.1% and

determine a shortfall in total capital of EUR 33.0 billion, of which EUR 17.4 billion CET1.

**The overall conclusion drawn in the previous CfA Reports remain valid.**

In line with the findings in the previous CfA reports, the main drivers of the impact remain the output floor, credit risk, and operational risk. The CVA risk is a smaller contributor to the overall impact compared to previous results, but it should be kept in mind that its calculation was based on a proxy for the CVA risk under the new CVA framework introduced in July 2020.

The reform has a materially higher impact on large and systemically important institutions than on medium-sized and small ones. Although the coverage of small and medium-sized banks in the sample is limited and results should therefore be interpreted with caution, the banks in this size category will see their capital requirements increase, mostly due to the revised standardised approach to credit risk, with other reforms, including the output floor, playing a minor role and operational risk a negative role.

The impact of the reform is heterogeneous across countries and business models. Indeed, a number of banks in the sample, especially medium-sized and small banks, will see their overall capital requirements fall from their current levels, mostly due to the changes in the standardised approach and in the operational risk framework.

As in the previous reports, the shortfall in total capital is almost exclusively reported by large banks, with global systemically important institutions (G-SIIs) alone accounting for a material share of its total amount.

**The impact of Basel III has been assessed under different implementation approaches for the output floor, as requested in the CfA.**

The main results presented in this report are based on the implementation approach for the output floor recommended by the EBA (the main approach in the previous CfA reports). This main approach applies the full stack of EU requirements, including Pillar 2 and EU-specific systemic buffers, to floored RWA. As requested by the Commission, the report also presents results under different implementation approaches, which however have been assessed by the EBA in its Policy Advice published in August 2019 as having significant drawbacks or not being Basel-compliant.

**This report also presents the updated impact of Basel III on MREL.**

This report also provides an update of the EBA's previous impact of Basel III framework on MREL, using data as of end-December 2019. As the BRRD2 will become the applicable framework before the implementation of the revised Basel III, the impact is assessed differently for G-SIIs and toptier banks, which are expected to be subject to BRRD2

subordination requirements, and the remaining banks, which are not expected to be subject to those requirements. For the former, the MREL shortfall attributable to the revised Basel III framework is estimated based on the minimum subordination levels prescribed in the BRRD2, while for the latter, this is based on the BRRD1 MREL requirements. Bearing in mind the limited size of the sample and the difficulty to estimate future BRRD2 MREL decisions, overall, under the Basel III scenario, the total estimated MREL shortfall attributable to the final Basel III framework is within the range of EUR 7 billion to EUR 8.6 billion. Under the EU-specific scenario, the MREL shortfall would account for around EUR 2 billion.

### 1.3 Complementary analysis

**The COVID pandemic represents an unprecedented shock to the EU economies and financial sector. To alleviate its effects, mitigating policy measures were adopted at EU and MS level.**

The outbreak of the COVID-19 pandemic has caused an unprecedented economic downturn worldwide. Although the crisis has mainly affected the non-financial sectors of the economy, the impact could yet spread to the financial sector. In order to ensure that banks continue lending to the non-financial sector and to avoid one-off effects to banks' capital ratios, extraordinary policy measures have been implemented across the EU, including loan moratoria, public sector guarantees, frontloading of selected CRR II/CRD V measures and release of buffers.

The purpose of the complementary analysis is to understand if and to what extent the adverse COVID-19 impact on banks' balance sheets could interact with the implementation of the revised Basel III framework. The analysis takes into account the fact that the time horizon of the application of the mitigating policy measures may differ and not all of them will be in place at the time of the implementation of the final Basel III framework. It also considers that some elements of the final Basel III framework (i.e. the implementation of the output floor) will have a phase in period of five years, until 2028.

**It is expected that the new Basel III standards will interact differently with the effects of the crisis, compared to current framework**

There is uncertainty with regards to how banks' balance sheets will change as a consequence of the COVID-19 crisis. The interaction of the Basel III framework and the impact of the COVID-19 crisis can only be properly assessed once the full effects of the crisis on bank balance sheets have played out. While a complete assessment of how each of the elements of the Basel III reforms interact with the effects of the crisis is not possible in the absence of data that illustrate the actual impacts once these effects are visible, some qualitative reflections on the potential interactions between

different elements of the Basel III framework and the expected shocks to banks' balance sheets are presented in the latter part of the report.

At the same time, the effects of Basel III taken in conjunction with COVID-19, is not likely to be additive, as pass-through effects are in some cases off-setting. Furthermore, whereas it is certain that the Basel III framework will become fully applicable in January 2028, the losses related to COVID-19 are likely to be transitory, and therefore the timing of the effects may not coincide.

## 2. General remarks

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### 2.1 Background and mandate

1. On 7 December 2017, the Group of Governors and Heads of Supervision (GHOS) endorsed the final Basel III framework, completing the global reform of the regulatory framework following the onset of the financial crisis. The main elements of the Basel III standards relate to the standardised approach for credit risk, the internal ratings-based approaches for credit risk, the credit valuation adjustment (CVA) risk framework, the operational risk framework, the leverage ratio framework and the output floor. In parallel, the Basel Committee on Banking Supervision (BCBS) has endorsed the revised framework for market risk (FRTB) in January 2016 and made targeted amendments in January 2019. In July 2020, the BCBS also endorsed the final targeted revisions to the CVA framework, replacing the earlier version of the standard as published in December 2017.
2. In May 2018, the Commission requested technical advice from the EBA<sup>11</sup> on the implementation of the Basel III reforms in the EU. The EBA submitted its advice in two parts, on 5 August 2019 and on 4 December 2019. The first part covered the areas of credit risk, operational risk, securities financing transactions and output floor (August 2019 CfA report).<sup>12</sup> The second part covered the areas of market risk and credit valuation adjustment risk standards<sup>13</sup>, as well as a macroeconomic impact assessment carried out in cooperation with the ECB (December 2019 CfA report). The advice included a detailed quantitative impact assessment and a set of policy recommendations on the various elements of the final Basel III standards.
3. On 15 July 2019, the EBA received a supplementary request from the European Commission to provide additional analysis in the areas of specialised lending, equity exposure class (including the impact on intra-group equity exposures), minimum requirements for own funds and eligible liabilities (MREL) and the application of the output floor at all levels (individual, sub-consolidated, consolidated). The additional analysis was submitted in two

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<sup>11</sup> European Commission (2018), ['Call for Advice to the EBA for the purpose of revising the own fund requirement for credit, operational, market and credit valuation adjustment risk'](#).

<sup>12</sup> EBA (2018), ['Basel III reforms: Impact study and key recommendations'](#)

<sup>13</sup> EBA (2018), ['Basel III reforms: Impact study and key recommendations - Macroeconomic assessment, credit valuation adjustment and market risk'](#). At the time of publication, the final targeted revisions to the CVA framework, published on July 2020, were not available. Consequently, the EBA provided only an indicative sensitivity analysis on the potential impact of these adjustments, based on the targeted adjustments proposed in the BCBS consultation document ['Credit Valuation Adjustment risk: targeted final revisions'](#) published in November 2019

parts: the first part on specialised lending and MREL was published on 25 February 2020<sup>14,15</sup>, and the second part on the output floor and the equity exposure class on 5 March 2020.<sup>16</sup>

4. In light of the economic impact of COVID-19 pandemic, on 23 March 2020 the GHOS endorsed a set of measures to provide additional operational capacity for banks and supervisors. The measures comprised a change in the implementation timeline of the outstanding Basel III standards and the revised market risk framework, which was deferred by one year to 1 January 2023. The accompanying transitional arrangements for the output floor were also extended by one year, until 1 January 2028.
5. Consequently, the Commission postponed the adoption of the legislative proposal to implement these reforms in the EU (originally planned for June 2020). In addition, on 21 August 2020, the Commission asked the EBA to update its previous advice on the final Basel III reforms, considering the potential impact of the COVID-19 pandemic on the EU banking sector and the wider economy.<sup>17</sup> As a separate exercise, the ECB is working to update the macroeconomic impact assessment included in the December 2019 CfA report.
6. This report provides an update of the EBA's previous impact assessment on the final Basel III framework using data as of end-December 2019. Beyond the results of the present CfA report, on 10 December 2020, the EBA also published its regular Basel III monitoring report, based on the same reference date (December 2019).<sup>18</sup> The cumulative results of the present CfA report are not directly comparable to those of the Basel III monitoring report, as they are based on somewhat different samples (composition and size), and there are two key methodological differences described in section 2.4.4.

## 2.2 Data collection process governance

7. The impact assessment in this report is primarily based on end-December 2019 QIS data that institutions provided on a voluntary basis as part of the regular EBA Basel III monitoring exercise.
8. With the purpose of reducing the burden for participating institutions, where the information necessary to address the CfA request was not available in the end-December 2019 QIS templates, the EBA relied on existing available data sources and refrained from carrying out additional data collections. Specifically, the EBA made use of the information collected in the June 2018 CfA QIS exercise, supervisory data (e.g. COREP, FINREP), data collected from

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<sup>14</sup> EBA (2020), [Letter on additional analysis for the Call for Advice for the purposes of revising the own fund requirements for credit, operational, market and credit valuation adjustment risk: specialised lending](#)

<sup>15</sup> EBA (2020), [Letter on additional analysis for the Call for Advice for the purposes of revising the own fund requirements for credit, operational, market and credit valuation adjustment risk: impact of Basel III on MREL](#)

<sup>16</sup> EBA (2020), [Letter on additional analysis for the Call for Advice for the purposes of revising the own fund requirements for credit, operational, market and credit valuation adjustment risk: output floor and equity exposure class](#)

<sup>17</sup> European Commission (2020), ['Call for advice to the EBA on the implementation of the final Basel III reforms in light of the impact of the COVID-19 pandemic'](#)

<sup>18</sup> [See Basel III monitoring report](#)



exercises already scheduled in the EBA work programme and publicly available data sources (e.g. European Systemic Risk Board macroprudential measures).

## 2.3 Sample

### 2.3.1 Classification criteria

9. The Basel framework is designed to apply to large and internationally active institutions. Several jurisdictions, including the EU, traditionally choose to apply the international standards to a wider set of entities.
10. In the August 2019 and December 2019 CfA reports, the sample for the cumulative analysis was significantly enlarged compared to the one used in the regular EBA Basel III monitoring exercise, thanks to a number of additional banks participating on a voluntary basis, improving the coverage in terms of smaller and less complex institutions, as well as different business models.
11. However, given that for this report, the EBA relied on the existing sample of institutions participating in the regular EBA Basel III monitoring exercise, the coverage in terms of different sizes and business models is rather limited, especially for smaller and more specialised institutions (see section 2.3.3 for details on the current sample). To create a comparable sample with respect to the August 2019 and December 2019 CfA report, banks not covered in these reports, but which are part of the regular EBA Basel III monitoring exercise, are excluded.
12. The classification of institutions by size and by business model are explained in section 2.3.1 and 2.3.2 of the August 2019 CfA report.

### 2.3.2 Consolidation

13. Institutions participating in the QIS data collection exercise were asked to report data at the highest level of EU consolidation to ensure that no double-counting of impact occurs.
14. Unless stated otherwise, subsidiaries of EU parents are included in the average calculations only when impact results are presented by business model or by country, provided that they do not belong to the same business model or country as their parent entity.

### 2.3.3 Cumulative sample: summary statistics

15. The cumulative analysis published in the August 2019 and December 2019 CfA reports was based on a sample of 189 institutions, reporting data of sufficient quality at the highest level of consolidation.<sup>19</sup> Additionally, the cumulative analysis results presented by business model

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<sup>19</sup> See section 2.3.5 in the August 2019 CfA Report for further details on the sample breakdown by size, business model and country, as well as on the subsidiaries sample.

or by country included 15 subsidiaries of EU parents, of which 12 were designated as O-SIs in the jurisdictions where they are located.

16. The current sample is reduced to a subset of 99 institutions submitting data at the highest level of consolidation in the EU (Table 3). Additionally, four subsidiaries of EU parents (from two Member States) are included in the cumulative analysis results by country (Table 4) and business model (Table 5).<sup>20</sup>
17. In comparison with the sample included in the August 2019 and December 2019 CfA report, some countries (Estonia, Croatia, Latvia, Malta) and business models (leasing and factoring banks) are no longer represented in the current sample, while others have a much more limited representation. In addition, the coverage in terms of small and medium-sized banks is considerably reduced (4 small banks and 22 medium-sized banks).

Table 3 Cumulative analysis sample, by bank size (highest level of EU consolidation)

Bank size	Number of banks
Large	73
of which: G-SII	8
of which: O-SII	46
Medium	22
Small	4
<b>Total</b>	<b>99</b>

Sources: EBA 2019-Q4 QIS data and EBA calculations.

Table 4 Cumulative analysis sample, by country

Bank size	Number of banks (highest level of EU consolidation)	Number of banks (subsidiaries of EU parents)
AT	5	
BE	4	
DE	24	2
DK	4	
ES	6	
FI	1	
FR	7	
GR	3	
HU	1	
IE	8	2
IT	11	
LU	2	
NL	7	
NO	2	
PL	4	
PT	4	

<sup>20</sup> A total of 114 institutions have submitted data for the December 2019 EBA Basel III monitoring exercise, of which 12 institutions did not provide data of sufficient quality to be included in the cumulative analysis.

<b>Bank size</b>	<b>Number of banks (highest level of EU consolidation)</b>	<b>Number of banks (subsidiaries of EU parents)</b>
SE	6	
<b>Total</b>	<b>99</b>	<b>4</b>

Sources: EBA 2019-Q4 QIS data and EBA calculations.

Table 5 Cumulative analysis sample, by business model

<b>Bank size</b>	<b>Number of banks (highest level of EU consolidation)</b>	<b>Number of banks (subsidiaries of EU parents)</b>
Cross-border U	34	
Local U	31	2
Auto & Cons	2	1
Building Soc	2	
S&L Coop	11	
Private	2	
Custody	3	
CCP	1	
Merchant	2	
Public Dev	4	
Mortgage	5	
Other special	2	1
<b>Total</b>	<b>99</b>	<b>4</b>

Sources: EBA 2019-Q4 QIS data and EBA calculations.

18. The sample covers 76% of the total assets of EU domestic banking groups and stand-alone banks (compared to 86% in the August 2019 and December 2019 CfA reports). The level of coverage varies across jurisdictions (Table 23 in Annex 1). It is lowest for Austria (13%) and varies from 42% to 143% for the remaining jurisdictions. The coverage reaches above 100% in those jurisdictions where some QIS participants are EU-located subsidiaries of non-EU-controlled (e.g. US) groups and are therefore not included in the denominator of the coverage ratio.
19. It should be noted that while at the EU level the reduction in coverage relative to the August 2019 and December 2019 CfA reports is not considered material, this is not the case for some countries. In particular, the coverage in Austria (from 74% to 13%), Luxembourg (from 103% to 65%) and Poland (from 88% to 42%) has dropped significantly. Therefore, for these countries the results in the current report are much less representative and are either not displayed in the country breakdowns or, if shown, should be interpreted with caution.

## 2.4 Methodology

20. The methodology of this report follows to a large extent the methodology used in the August 2019 and December 2019 CfA reports. This section focuses on selected aspects of the methodology, including proxies, data quality checks and adjustments, which are different from the previous CfA reports. In order to get a complete picture and full description of the methodology, please refer to the previous CfA reports.<sup>21</sup>

### 2.4.1 Aggregation

21. Unless otherwise stated in the report:

- all averages are weighted (e.g. average RWA in the EU is weighted by country RWA);
- averages by country or business model include institutions that are subsidiaries of EU parents, unless they belong to the same country or business model as their parent company.

### 2.4.2 Impact assessment scenarios

22. In accordance with the CfA request, the cumulative analysis presented in this report is based on two different implementation scenarios for the final Basel III reforms in the EU.

- **The first scenario (called 'Basel III')** corresponds to the Basel III central scenario in the August 2019 and December 2019 CfA reports and is in line with the EBA policy recommendations. It represents the situation as it would have been in 2019 if the Basel III framework had already been fully implemented and the transitional period had passed. The goal of this scenario is to update the impact of Basel III framework as presented in the August 2019 and December 2019 CfA reports.
- **The second scenario (called 'EU-specific')** considers additional features requested by the European Commission in its Call for Advice<sup>22</sup>: applying the SME supporting factors on top of the Basel SME preferential risk weight treatment; maintaining EU CVA exemptions; exercising the jurisdictional discretion contemplated in the Basel III framework to exclude the bank-specific historical loss component from the calculation of the capital for operational risk (ILM=1). Some features in this scenario deviate from the EBA's policy recommendations from the August 2019 and December 2019 CfA reports. In addition, two measures that have been frontloaded to mitigate the effect of COVID-19 have been considered (the change in the prudential treatment of software assets and the change in Pillar 2 composition rules). These two measures were

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<sup>21</sup> EBA (2019), '[Basel III reforms: Impact study and key recommendations](#)' and EBA (2019), '[Basel III reforms: Impact study and key recommendations - Macroeconomic assessment, credit valuation adjustment and market risk](#)'.

<sup>22</sup> The additional features were considered on a best effort basis based on data availability.

considered in both the starting point and end point of the scenario, as these items have already been approved and are now permanent features of the EU framework.

23. Table 6 presents the main implementation features of the Basel III and EU-specific scenario.

Table 6 Main implementation features of Basel III and EU-specific scenario

Risk Area	Basel III	EU-specific
<b>Credit Risk</b>	<ul style="list-style-type: none"> <li>✓ SA-CR: ECRA framework adopted</li> <li>✓ SA-CR: loan-splitting method adopted on GRRE, GCRE, IPCRE + hard test</li> <li>✓ No SME supporting factor</li> </ul>	<ul style="list-style-type: none"> <li>✓ SA-CR: ECRA framework adopted</li> <li>✓ SA-CR: loan-splitting method adopted on GRRE, GCRE, IPCRE + hard test</li> <li>✓ SME supporting factor</li> </ul>
<b>CVA</b>	<ul style="list-style-type: none"> <li>✓ Final CVA framework (July 2020)</li> <li>✓ No CVA exemptions</li> <li>✓ CVA simplified method (based on EUR 100 billion threshold)</li> </ul>	<ul style="list-style-type: none"> <li>✓ Final CVA framework (July 2020)</li> <li>✓ CVA exemptions</li> <li>✓ CVA simplified method (based on OEM eligibility criteria)</li> </ul>
<b>Operational Risk</b>	<ul style="list-style-type: none"> <li>✓ ILM: bank-specific</li> <li>✓ Minimum loss threshold: EUR 20 000</li> </ul>	<ul style="list-style-type: none"> <li>✓ ILM = 1 for bucket 2 and 3 banks (ILM = 1 as a phase-out arrangement will also be measured)</li> </ul>
<b>Prudential treatment of software assets</b>	<ul style="list-style-type: none"> <li>✓ Deduction from CET1 items</li> </ul>	<ul style="list-style-type: none"> <li>✓ Subject to 100% risk weight*</li> </ul>
<b>Capital requirements</b>		<ul style="list-style-type: none"> <li>✓ Change in P2R composition*</li> </ul>

Note: Similarly to the August 2019 and December 2019 CFA reports, the Basel III scenario considers the SME preferential risk weight treatment introduced with the Basel III reform, while the EU specific scenario applies the SME supporting factor on top of the SME preferential risk weight treatment introduced with the Basel III reform.

(\*) These features were considered at both the starting point and end point of the scenario, as these items have already been approved and are now permanent features of the EU framework.

24. The features included in the EU-specific scenario are the following:

- **CRR2 SME supporting factor:** maintaining the supporting factor for exposures to SMEs envisaged in CRR2 proposal under SA and IRB (including for the purpose of the output floor calculation);
- **CVA exemptions:** maintaining the current CVA exemptions in the own fund requirements for CVA risks;
- **CVA simplified method:** reusing the eligibility criteria of the original exposure method (OEM) (see Article 273a(2) of the CRR2)<sup>23</sup> for the eligibility criteria of the simplified method for the own funds requirements for CVA risks;
- **ILM = 1:** assuming that the EU will exercise the discretion included in the final Basel III framework to set the historical loss component equal to 1 on the own funds requirements for operational risk, either permanently for buckets 2 and 3 banks only;

<sup>23</sup> Article 273a(2) of the CRR2 specifies that an institution may use the OEM, provided that the size of its on- and off-balance-sheet derivative business is equal to or less than both of the following thresholds on the basis of an assessment carried out on a monthly basis using the data as of the last day of the month: (a) 5 % of the institution's total assets; b) EUR 100 million.

or as a phase-out arrangement, aligned with the phase-in period for the output floor, in which the discretion would be applied at the beginning of the phase-in period for buckets 2 and 3 banks only but would be then linearly phased-out until the end of the phase-in period.

- **Prudential treatment of software assets:** under the RTS on prudential treatment of software assets, ‘prudently valued software assets’, which are not materially affected in a gone concern situation can be exempted from the deduction of intangible assets from CET1 items.<sup>24</sup> For these assets, the positive difference between the prudential and the accounting accumulated amortisation shall be fully deducted from CET1 capital, while the residual portion of the carrying amount of software is to be risk-weighted. The original application date of the revised treatment of software assets has been set to 12 months after the entry into force of the RTS. However, the CRR quick fix has brought forward the date of application of the exemption and allow banks to use it as soon as the RTS enters into force. For the purpose of this report, the residual portion of the carrying amount of software is assumed to be risk weighted under the standardised approach, with a risk-weight of 100%.
  - **Pillar 2 requirements (P2R) composition:** under the Capital Requirements Directive (CRD V), the approach for P2R composition has changed allowing P2R to be covered by at least 56.25% CET1, 18.75% Additional Tier 1 instruments (AT1) and 25% Tier 2 instruments. This change in capital composition under P2R was initially scheduled to come into effect in January 2021, in line with the revised approach, but is being frontloaded for the banks under the ECB supervision (significant institutions) and in two other countries represented in the sample which frontloaded this measure for their less significant institutions.
25. The final CVA framework published in July 2020 is reflected under both scenarios via a proxy (see section 2.4.4 for more details).<sup>25</sup> Annex 4 provides additional qualitative considerations of the implementation of the new CVA framework in the EU.
26. Moreover, as requested in the CfA, the report presents the individual impact of three implementation options for the output floor in both scenarios as identified in the EBA’s policy report on the output floor (Box 1):<sup>26</sup>
- The **main approach**, whereby the floored RWA is applied to the full stack of capital requirements applicable in the EU, i.e. Pillar 1 minimum capital requirements, Pillar 2 requirements and the combined buffer requirement for the floored RWA.

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<sup>24</sup> [Draft Regulatory Technical Standards on the prudential treatment of software assets under Article 36 of Regulation \(EU\) No 575/2013 \(Capital Requirements Regulation – CRR\)](#)

<sup>25</sup> Under both scenarios, the final CVA framework is only reflected in the cumulative analysis based on data as of December 2019 presented in chapter 3. It is not reflected in the cumulative analysis based on data as of June 2018 and the consistent sample presented in the annex. For more details on the latter, see Annex 2.

<sup>26</sup> EBA (2018), [‘Policy advice on the Basel III reforms: Output floor’](#)

- The **alternative approach**, whereby the floored RWA is applied only to the capital requirements explicitly mentioned by the Basel III standards on the output floor, i.e. the Pillar 1 minimum capital requirements, the CET1 capital conservation buffer and the CET1 G-SII/ O-SII buffer (where applicable). The pre-floor RWA would be applied to Pillar 2 requirements as well as the systemic risk buffer.
  - The **parallel stacks approach**, whereby the output floor requirement, calculated by applying the requirements explicitly mentioned by the Basel III standards to the floored RWA, serves as a backstop amount to the full stack of EU capital requirements, i.e. to the Pillar 1, Pillar 2 and combined buffer requirements applied to the pre-floored RWA. The impact of this approach was not assessed in the August 2019 and December 2019 CfA reports, as the EBA considers this proposal non-compliant with the Basel III standards and has several drawbacks, as discussed later in this report.
27. Unless otherwise stated in the report, the output floor impact results are based on the main approach that is the option recommended by the EBA.

#### Box 1 Three approaches to implement the output floor (MRC calculation)

##### Main approach: MRC=

Floored RWA × (Pillar 1 minima + Pillar 2 requirements + combined buffer)

##### Alternative approach: MRC= sum of:

Floored RWA × [Pillar 1 minima + CCB buffer + CCyCB buffer + max (G-SII, O-SII buffer)];

Pre-floor RWA × (Pillar 2 requirements + contribution<sup>27</sup> of the SRB buffer to the combined buffer)

##### Parallel stacks approach: MRC= higher of:

Floored RWA × (Pillar 1 minima + CCB buffer + CCyCB buffer + G-SII buffer);

Pre-floor RWA × (Pillar 1 minima + Pillar 2 requirements + combined buffer)

Note: CCB, capital conservation buffer; CCyCB, countercyclical capital buffer.

28. When comparing the impact across the two scenarios, it should be kept in mind that whenever capital requirements decrease for a non-modellable risk category, i.e. a risk category for which only standardised approaches are available under the Basel III reforms, e.g. CVA or operational risk, it is likely to lead to a higher impact of the output floor. This is because, other things being equal, a higher volume of non-modellable RWA offsets a given gap between internal model RWA and standardised equivalent RWA for market risk and credit risk (i.e. a higher non-modellable requirement may lead to a lower impact of the output floor).

### 2.4.3 Impact metrics

<sup>27</sup> Contribution of the systemic risk buffer (SRB) to the combined buffer requirement means i) excess of SRB over max (G-SII buffer, O-SII buffer) if the institution applies Article 131(14) of the CRD and ii) the whole SRB amount if the institution applies Article 131(15) of the CRD.

29. The methodologies for computing results shown in terms of MRC and regulatory capital ratios and shortfalls remain the same as for the August 2019 CfA report (for details see section 2.4.2 of that report).

#### 2.4.4 Main differences with respect to other exercises

##### a. Differences from previous CfA reports

30. The methodology used in this report is based on the 2018-Q2 CfA methodology. However, some differences from previous CfA exist mainly due to data availability or changes in the QIS templates. The Basel monitoring 2019-Q4 data is less comprehensive than the June-2018 data collection, and as a result, many pieces of data required to assess the impact in the same way as in the August 2019 and December 2019 CfA reports are missing. In such cases, proxies were developed based on other available resources such as COREP 2019-Q4 and June 2018 CfA data collection.
31. The main differences between the two exercises are described below:
- P2R data was not available in the 2019-Q4 Basel monitoring data, so a proxy based on 2019-Q4 COREP data was used, where available (74 banks). For 25 banks for which the EBA does not have COREP data, 2018 Basel III CfA data on P2R was used.
  - SME and infrastructure supporting factors were not available in the 2019-Q4 templates. In the August 2019 CfA Report, this information was specifically added in the templates to assess the impact of this measure. In order to create a proxy for the impact of the SME supporting factor, for each bank and for each exposure class, the % change in RWA was calculated between the 'pure' Basel III framework and the Basel III framework with the supporting factor using the June 2018 CfA data. The % change was then applied to the RWA by exposure class and by bank in the QIS 2019-Q4.<sup>28</sup> For the infrastructure supporting factor in the August 2019 CfA report data was provided by only two banks and was therefore insufficient to conduct analysis in that report. Therefore, it was not possible to create a proxy for this supporting factor this time either.
  - EU CVA exemptions were not available in 2019-Q4 templates. In August 2019 CfA report, this information was collected via an EU-specific worksheet (EU CVA) to assess the impact of this EU specificity.<sup>29</sup> In order to create a proxy for EU CVA exemptions, for each bank, the % change in RWA was calculated between the 'pure' Basel III framework and Basel III framework with EU CVA exemptions using the June 2018 CfA data. The %

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<sup>28</sup> Exclusion criteria were applied by exposure class. If an exposure class was excluded, its value was replaced by average impact calculated using non-excluded banks from the new sample.

<sup>29</sup> The CVA impact calculated in the June 2018 and December 2018 CfA reports was based solely on data collected via the EU CVA worksheet. Given that this worksheet was not available in the 2019-Q4 template, slightly different data quality checks had to be applied.



change was then applied to the RWA by exposure class and by bank in the QIS 2019-Q4.<sup>30</sup>

- The July 2020 final CVA risk framework was not included in 2019-Q4 templates, as the framework was published after the launch of the QIS data collection. In order to create a proxy for the July 2020 CVA risk framework, for each bank, the CVA RWA in QIS 2019-Q4 was adjusted to reflect the following revisions: a) reductions in risk weights under the SA-CVA approach for interest rate risk and FX risk; b) overall recalibration of the SA-CVA and BA-CVA approaches. These revisions are expected to be the most impactful on the 2017 CVA risk framework. The remaining revisions were not captured, as the existing data granularity did not make it possible to create a meaningful proxy.
- The impact for market risk in this report is based on a 'reduced bias estimation' in line with the **baseline scenario** analysis in the regular EBA Basel III monitoring exercise.<sup>31</sup>
- The prudential treatment of software assets was not considered in the 2018-Q2 CfA report. The methodology used to estimate the impact of this treatment follows the methodology used in the impact assessment done in the EBA RTS on prudential treatment of software assets.<sup>32</sup> No data on the amount of new investments in software has been collected for the reference date and sample of banks in this report. Therefore, the amount of new investments in software is proxied as the adjusted annual increase in the deduction of intangible assets excluding goodwill using four years of COREP data (2016-2019).

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<sup>30</sup> Exclusion criteria were applied by bank. If a bank was excluded, its value was replaced by the weighted average impact calculated using non-excluded banks from the new sample.

<sup>31</sup> In the regular EBA Basel III monitoring exercise, the key figures are expressed for two separate samples, owing to the submission of overly conservative data for market risk by three G-SIIs. To reduce the reported bias, the **baseline scenario** analysis sets the market risk impact for the three G-SIIs in question equal to zero. The conservative estimation results are based on the originally reported, but overly conservative, market risk data. In the current sample, the three G-SIIs applied a sequence of conservative assumptions, namely, the treatment of all trading book positions in equity investment in funds, that may no longer be allowed to be modelled, using the most conservative standardised approach, i.e. the 'other bucket' treatment subject to the highest applicable risk weights. This implies that they are unable to use other treatments, such as the index treatment or the mandate-based approach as set out in MAR21.36 (Standardised approach: sensitivities-based method – ways for calculating capital requirements for equity investments in funds that cannot be looked through), which these G-SIIs are expected to be able to apply before the implementation of the framework

<sup>32</sup> Three-year prudential amortisation is applied to yearly investments in software. The remaining amount (after amortization) is no longer deducted from CET1 but risk weighted at 100% RW.

## b. Differences with Basel monitoring

32. While the main source of data for this CfA is the regular 2019-Q4 Basel monitoring exercise, there are differences in methodology between the two exercises:
- The most important methodological difference relates to the application of different buffers, which affects the estimation of capital shortfalls.<sup>33</sup>
  - Another, less significant, difference is the sequence of estimating the capital requirements for the output floor and leverage ratio. The latter difference has an impact on the minimum required capital assigned to these two categories, but not on the cumulative impact<sup>34</sup>.
33. In addition to these two key differences, there are some additional differences related to the application of the criteria for exclusion and scaling factors due to updates in the last CfA report and the calculation of the IRB shortfall of provisions due to updates in the last CfA report.

## 2.5 Data quality issues and interpretation of the results

34. The results should be interpreted with caution, considering data quality and several simplifying assumptions.

### 2.5.1 Sample

35. The CfA data collection ensured the participation of a large number of small and medium banks, to have a representative sample. The sample in the current CfA update consists of the banks that were included in both the August 2019 CfA report and 2019-Q4 Basel monitoring exercise. The resulting sample include 99 banks, of which only 4 are small banks. Unlike August 2019 and December 2019 CfA reports, which had 24 small banks out of 189, the sample in the updated CfA is not representative of small banks, and hence the results for small banks should be interpreted with caution.

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<sup>33</sup> The Basel III monitoring report applies Pillar 1 minimum capital requirement, the capital conservation buffer (CCB) and the global systemically important institutions (G-SIIs) surcharge, where applicable. In addition to these requirements, the present CfA report additionally applies Pillar 2 minimum capital requirements and EU capital buffers. This difference has a meaningful effect on the level of capital shortfalls, i.e. the shortfalls presented in the Basel III monitoring report are generally lower than the shortfalls reported in the present CfA report.

<sup>34</sup> The Basel III monitoring report estimates the output floor impact as part of the risk-based capital requirements. The additional leverage-ratio-based requirement is subsequently calculated as the incremental increase compared to the risk-based capital requirement (incl. output floor). The present CfA report estimates first the risk-based capital requirements excluding the output floor impact. The additional leverage-ratio-based requirement is subsequently calculated as the incremental increase compared to the risk-based capital requirement (excl. output floor). Finally, the impact of the output floor is estimated as the additional incremental increase compared to the maximum of the risk-based capital requirement (excl. output floor) and the leverage-ratio-based requirements.

### 2.5.2 Proxies

36. As in the August 2019 and December 2019 CfA reports, it is expected that the SME supporting factor impact is underestimating the real impact. The reason is that the implementation of the SME supporting factor as specified in the November 2016 proposal for amending the CRR was used for the data collection, which means that a threshold loan size of EUR 1.5 million was used instead of EUR 2.5 million, to identify the part of the loan which qualifies for the preferential 76.19% RW. The quality and reliability of data on the SME supporting factor from the August 2019 CfA were in some cases assessed as not sufficient. Data quality checks were implemented, leading to an exclusion of some exposure classes at bank level and their replacement with EU averages.
37. It should also be noted that, as in the August 2019 and December 2019 CfA reports, the SME supporting factor applies on top of the SME preferential risk weight treatment introduced with the Basel III reform.
38. The real CVA impact is expected to be lower than the one presented in this report (based on a proxy). The reason is that the proxy used for the July 2020 CVA framework reflects only selected revisions that could be quantified given the existing data granularity. The remaining revisions are expected to further reduce the CVA impact.
39. The proxy for the software impact is expected to underestimate the real impact. The proxy used to estimate the amount of new investments in software is based on the yearly increase in the deduction of intangible assets excluding goodwill, adjusted by a haircut based on the net value of software. The impact is lower than the one calculated in the impact assessment done in the EBA RTS on prudential treatment of software assets.

### 2.5.3 Conservatism in our estimates

40. As in August 2019 and December 2019 CfA reports, a number of simplifying and conservative assumptions were applied that may result in an overestimation of the capital impact, as follows:
  - Static balance sheet assumption: institutions do not react to the revised requirements by adjusting their businesses and/or managing their regulatory capital costs.
  - Static requirements assumption: Pillar 2 and combined buffer requirements as of December 2019, defined as a percentage of the bank's RWA, were used both for the CRR baseline and the two reforms implementation scenarios (i.e. Basel III and EU-specific scenario).<sup>35</sup> Higher RWA resulting from the implementation of the revised framework may lead – in some cases – to a revision and, possibly, re-calibration of the Pillar 2 and buffer requirements.

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<sup>35</sup> In EU-specific scenario, all the requirements were kept constant as well, except for the P2R requirements, which changed for some banks due to frontloading of P2R composition change.

- Profit retention to cover capital shortfall: the cumulative impact analysis assumes no role for profit retention in rebuilding the capital base.

## 2.6 Structure of the report

41. This report is structured as follows:

- **Chapter 3** provides an overview of the impact of the reform based on the two implementation scenarios;
- **Chapter 4** presents a complementary analysis of the potential effects of the COVID-19 pandemic on the Basel III reforms;
- the **annexes** include i) a qualitative assessment of the implementation of the final adjustments to the CVA risk framework in the EU; ii) additional information on sample coverage; iii) additional impact assessment results; iv) additional information on the methodology used for the complementary analysis.

## 3. Main findings

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42. This section presents the impact of Basel III in terms of changes in Tier 1 minimum required capital (T1 MRC) and capital shortfall. Annex 5 presents the impact of Basel III on MREL.

### 3.1 Changes in minimum required capital (T1 MRC)

43. It is important to mention at the outset that the overall conclusions drawn in the cumulative analysis of the August 2019 and December 2019 CfA reports remain valid. This also means that the policy recommendations included in those two reports remain unchanged.

#### 3.1.1 Basel III scenario

44. As of December 2019, the implementation of the final Basel III standards under the Basel III scenario is expected to increase T1 MRC by 18.5% as shown in Table 7. The output floor (main approach: +6.7%) remains the key driver, explaining over one third of the total impact, with credit risk (+5.0%) and operational risk (+3.8%) following, respectively, as the second and third most important drivers of the impact. The reforms of the revised CVA framework (+2.1%) and market risk (+0.8%)<sup>36</sup> contribute less to the total impact. The impact of the remaining revisions relates to securitisation (+0.4%) and exposure to central counterparties (CCPs) (+0.0%). Other elements of the risk-weighted assets (RWA) calculation remains, on average, minor or negligible.
45. In comparison with the results based on data as of June 2018, presented in the December 2019 CfA report, the total T1 MRC impact has decreased by -5.6 percentage points (p.p.) (from 24.1%) for the consistent sample of 99 institutions (see Table 24 in Annex 2). The difference is mainly driven by a reduction in the impact of the output floor (from 9.5% to 6.7%) and CVA (from 4.3% to 2.1%). The lower impact of the output floor is partially driven by a few large institutions, for which the gap between modellable and non-modellable RWA has decreased.<sup>37</sup> The drop in the CVA impact is predominantly attributed to the introduction of the new CVA framework (which is not reflected in the impact figures as of June 2018 in Table 24 of Annex 2).<sup>38</sup>

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<sup>36</sup> The difference in the market risk impact between the reduced estimation bias and the conservative estimation bias is 1.4 percentage points (0.8% for reduced estimation bias vs 2.2% for conservative estimation) and the corresponding difference in the total impact on T1 MRC is 1.5 percentage points (18.5% for reduced estimation bias vs 20.0% for conservative estimation).

<sup>37</sup> For some other institutions, while the absolute gap between modellable and non-modellable RWA has not decreased, the baseline capital requirements (i.e. current MRC) have increased, causing a lower impact in relative terms.

<sup>38</sup> A small share of the change in CVA impact between June 2018 and December 2019 is caused by the 'pure' differences in CVA risk across time, as well as the exclusion of few large banks from the specific risk category in December 2019, due to insufficient data submissions.

Table 7 Percentage change in T1 MRC (relative to current T1 MRC), by bank size, Basel III scenario, December 2019 data

Bank size	Δ SA	Δ IRB	Δ CCP	Δ SEC	Δ MKT	Δ OP	Δ CVA	Δ LR	Δ OF	Δ Total
<b>All banks</b>	<b>2.4</b>	<b>2.6</b>	<b>0.0</b>	<b>0.4</b>	<b>0.8</b>	<b>3.8</b>	<b>2.1</b>	<b>-0.2</b>	<b>6.7</b>	<b>18.5</b>
Large	2.3	2.6	0.0	0.4	0.8	4.0	2.1	-0.2	6.9	19.0
of which: GSII	2.2	3.9	0.0	0.6	0.5	6.3	2.3	0.0	6.7	22.4
of which: OSII	2.6	0.6	0.1	0.3	1.3	2.0	2.1	-0.1	7.9	16.5
Medium	3.2	0.1	0.0	-1.1	-0.9	-0.8	0.3	0.2	0.8	1.9
Small	6.9	0.0	0.0	0.0	0.0	-19.8	0.0	0.0	0.0	-12.9

Sources: EBA 2019-Q4 QIS data and EBA calculations.

Notes: Based on a sample of 99 banks: Large (73), of which G-SII (8), of which O-SII (46); Medium (22); Small (4). SA, standardised approach to credit risk; IRB, internal ratings-based approach to credit risk; CCP, central counterparty; SEC, securitisation; MKT, market risk; OP, operational risk; CVA, credit valuation adjustment; LR, leverage ratio; OF, output floor. Δ MKT based on “reduced bias estimation”. Δ CVA based on July 2020 CVA framework. Δ OF impact is based on the main approach to implement the output floor.

46. The T1 MRC impact is very heterogeneous across the sample of participating institutions (Table 8). One quarter of the institutions in the sample show a T1 MRC increase of less than 2.2% or even capital relief. The median institution incurs a moderate increase in T1 MRC, equal to 11.7%. The weighted average result is driven by some very large outlier institutions in the highest quartile of the distribution.

Table 8 Distribution of percentage change in T1 MRC (relative to current T1 MRC), all banks, Basel III scenario, December 2019 data

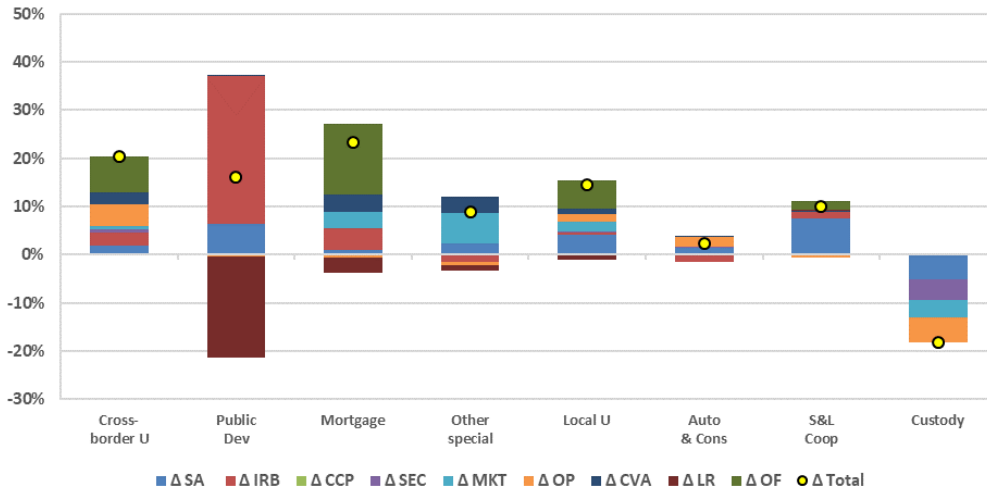
Percentile	Percentage
5th percentile	-7.1
25th percentile	2.2
Median	11.7
75th percentile	20.5
95th percentile	36.1

Sources: EBA 2019-Q4 QIS data and EBA calculations.

Notes: Based on a sample of 99 banks. Δ MKT based on ‘reduced bias estimation’. Δ CVA based on July 2020 CVA framework. Δ OF impact is based on the main approach to implement the output floor.

47. In line with the previous findings of the August 2019 and December 2019 CfA reports, the final Basel III framework has a materially higher impact on large and systemically important institutions than on medium-sized and small ones (Table 7). Although the coverage of small and medium-sized banks in the sample is limited and results should therefore be interpreted with caution, the banks in this size category see their capital requirements increase mostly due to the revised standardised approach to credit risk, with other reforms, including the output floor, playing a minor role and operational risk a negative role. The impact of the reform also remains heterogeneous across business models and countries (Figure 1, Figure 2). Mortgage banks experience the highest impact on T1 MRC (+23.3%), followed by cross-border universal banks (+20.3%), public development banks (16.1%) and local universal banks (+14.5%). Overall, the main drivers identified for the different bank size categories, business models and countries are consistent with the results reported in the previous CfA reports.

Figure 1 Percentage change in T1 MRC (relative to current T1 MRC), by business model, Basel III scenario, December 2019 data



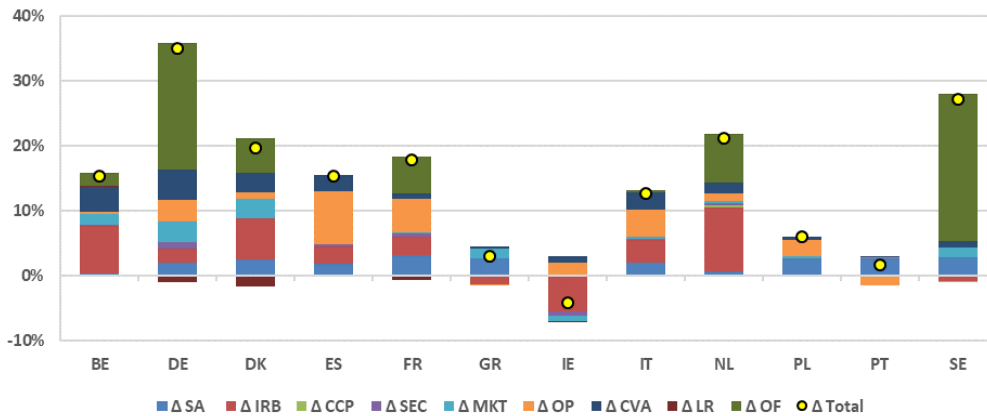
Sources: EBA 2019-Q4 QIS data and EBA calculations.

Notes: Based on a sample of 103 banks: Cross-border U (34), Public Dev (4), Mortgage (5), Other special (3), Local U (33), Auto and Cons (3), Building Soc\* (2), S&L Coop (11), Private\* (2), Custody (3), Merchant (5), CCP\* (1).

SA, standardised approach to credit risk; IRB, internal ratings-based approach to credit risk; CCP, central counterparty; SEC, securitisation; MKT, market risk; OP, operational risk; CVA, credit valuation adjustment; LR, leverage ratio; OF, output floor. Δ MKT based on 'reduced bias estimation'. Δ CVA based on July 2020 CVA framework. Δ OF impact is based on the main approach to implement the output floor.

\* Not shown in the chart because fewer than three entities in the cluster.

Figure 2 Percentage change in T1 MRC (relative to current T1 MRC), by country, Basel III scenario, December 2019 data



Sources: EBA 2019-Q4 QIS data and EBA calculations.

Notes: Based on a sample of 102 banks: AT\* (5), BE (4), DE (26), DK (4), ES (6), FR (7), GR (3), HU\* (1), IE (10), IT (11), LU\* (2), NL (7), NO\* (2), PL (4), PT (4), SE (6).

SA, standardised approach to credit risk; IRB, internal ratings-based approach to credit risk; CCP, central counterparty; SEC, securitisation; MKT, market risk; OP, operational risk; CVA, credit valuation adjustment; LR, leverage ratio; OF, output floor. Δ MKT based on 'reduced bias estimation'. Δ CVA based on July 2020 CVA framework. Δ OF impact is based on the main approach to implement the output floor.

\* Not shown in the chart because fewer than three entities in the cluster or less than 25% of country RWA coverage.

### 3.1.2 EU-specific scenario

48. In the EU-specific scenario, the impact of the final Basel III framework is expected to reduce by 5.4 percentage points (p.p.) to 13.1% (as of December 2019) relative to the Basel III scenario. The inclusion of the CRR2 proposal SME supporting factor (SF) reduces the contribution of the credit risk reform (both SA and IRB) to the total T1 MRC change (-2.0 p.p.). The impact of the operational risk framework is highly sensitive to the national discretion to set ILM = 1 for bucket 2 and bucket 3 banks. If applied, the impact of the operational risk reform would be more than halved relative to the Basel III scenario (-2.1 p.p.). The implementation of the CVA exemptions in the final Basel III framework would decrease the contribution of CVA risk to the total MRC change by 1.6 p.p. The aforementioned reductions are slightly offset by an increase in the impact of the output floor (+0.2 p.p.).

Table 9 Percentage change in T1 MRC (relative to current T1 MRC), by bank size, EU-specific scenario, December 2019 data

Bank size	Δ SA	Δ IRB	Δ CCP	Δ SEC	Δ MKT	Δ OP	Δ CVA	Δ LR	Δ OF	Δ Total
<b>All banks</b>	<b>1.7</b>	<b>1.3</b>	<b>0.0</b>	<b>0.4</b>	<b>0.8</b>	<b>1.7</b>	<b>0.5</b>	<b>-0.1</b>	<b>6.9</b>	<b>13.1</b>
Large	1.7	1.4	0.0	0.4	0.8	1.7	0.5	-0.1	7.1	13.4
of which: GSII	1.4	3.1	0.0	0.6	0.5	2.1	0.6	0.0	7.6	15.9
of which: OSII	2.0	-1.2	0.1	0.3	1.3	1.4	0.4	0.2	7.3	11.6
Medium	2.0	0.1	0.0	-1.1	-0.9	0.2	-0.2	0.1	0.8	1.0
Small	4.9	0.0	0.0	0.0	0.0	-19.8	0.0	0.0	0.0	-14.9

Sources: EBA 2019-Q4 QIS data and EBA calculations.

Notes: Based on a sample of 99 banks: Large (73), of which G-SII (8), of which O-SII (46); Medium (22); Small (4). SA, standardised approach to credit risk; IRB, internal ratings-based approach to credit risk; CCP, central counterparty; SEC, securitisation; MKT, market risk; OP, operational risk; CVA, credit valuation adjustment; LR, leverage ratio; OF, output floor. Δ MKT based on 'reduced bias estimation'. Δ CVA based on July 2020 CVA framework. Δ OF impact is based on the main approach to implement the output floor.

49. The T1 MRC impact remains very heterogeneous across the sample of participating institutions (Table 10) although at generally lower levels than under the Basel III scenario. For one quarter of the sample, the T1 MRC change is close to 0% or negative. The median institution experiences a moderate increase in T1 MRC (+7.5%). As in the Basel III scenario, the weighted average result is driven by some very large outlier institutions in the highest quartile of the distribution.



Table 10 Distribution of percentage change in T1 MRC (relative to current T1 MRC), all banks, EU-specific scenario, December 2019 data

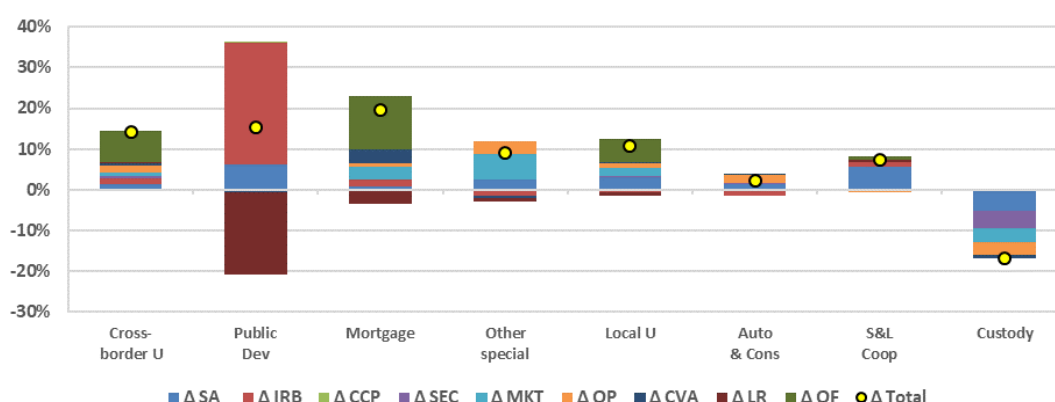
Percentile	Percentage
5th percentile	-9.1
25th percentile	0.1
Median	7.5
75th percentile	15.7
95th percentile	32.3

Sources: EBA 2019-Q4 QIS data and EBA calculations.

Notes: Based on a sample of 99 banks. Δ MKT based on 'reduced bias estimation'. Δ CVA based on July 2020 CVA framework. Δ OF impact is based on the main approach to implement the output floor.

- 50. Overall, the results observed under the Basel III scenario remain valid, despite a general decrease in the overall impact in most bank sizes, business models and countries. In particular, while large and systemically important institutions benefited the most from the introduction of EU-specificities, especially from setting ILM=1 and implementing the CVA exemptions, they still experience a materially higher impact relative to small and medium-sized institutions under this scenario. For medium-sized banks, the impact of operational risk when ILM=1 increases under the EU-specific scenario, compared to the Basel III scenario. This suggests that medium-sized banks have suffered fewer operational losses than expected based on their size. The results also give an indication that the SME SF has a higher impact for medium and small banks, but they should be interpreted with caution as the sample for this groups, especially small banks, is reduced.
- 51. Regarding the impact across business models, mortgage banks experience the highest impact on T1 MRC (+19.5%), followed by public development banks (+15.4%), cross-border universal banks (+14.3%) and local universal banks (+10.9%). Cross-border universal banks benefit the most from the introduction of the EU specificities (-6.0 p.p. mainly driven by setting ILM=1), followed by mortgage banks (-3.7 p.p. mainly from the introduction of SME SF) and local universal banks (-3.6 p.p. mainly from the introduction of SME SF).

Figure 3 Percentage change in T1 MRC (relative to current T1 MRC), by business model, EU-specific scenario, December 2019 data

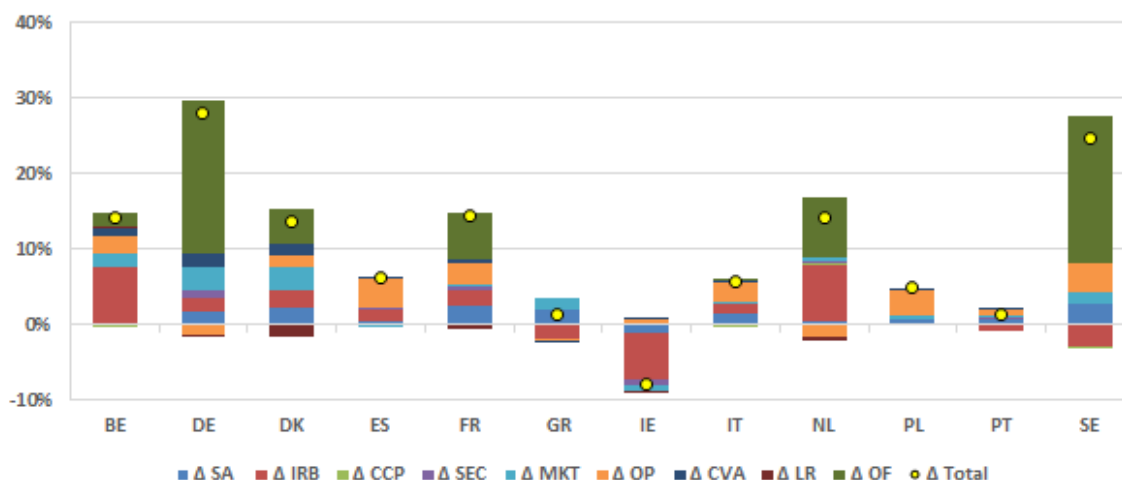


Sources: EBA 2019-Q4 QIS data and EBA calculations.

Notes: Based on a sample of 103 banks: Cross-border U (34), Public Dev (4), Mortgage (5), Other special (3), Local U (33), Auto and Cons (3), Building Soc\* (2), S&L Coop (11), Private\* (2), Custody (3), Merchant (2), CCP\* (1). SA, standardised approach to credit risk; IRB, internal ratings-based approach to credit risk; CCP, central counterparty; SEC, securitisation; MKT, market risk; OP, operational risk; CVA, credit valuation adjustment; LR, leverage ratio; OF, output floor.  $\Delta$  MKT based on 'reduced bias estimation'.  $\Delta$  CVA based on July 2020 CVA framework.  $\Delta$  OF impact is based on the main approach to implement the output floor.

\* Not shown in the chart because fewer than three entities in the cluster.

Figure 4 Percentage change in T1 MRC (relative to current T1 MRC), by country, EU-specific scenario, December 2019 data



Sources: EBA 2019-Q4 QIS data and EBA calculations.

Notes: Based on a sample of 102 banks: AT\* (5), BE (4), DE (26), DK (4), ES (6), FR (7), GR (3), HU\* (1), IE (10), IT (11), LU\* (2), NL (7), NO\* (2), PL (4), PT (4), SE (6).

SA, standardised approach to credit risk; IRB, internal ratings-based approach to credit risk; CCP, central counterparty; SEC, securitisation; MKT, market risk; OP, operational risk; CVA, credit valuation adjustment; LR, leverage ratio; OF, output floor.  $\Delta$  MKT based on 'reduced bias estimation'.  $\Delta$  CVA based on July 2020 CVA framework.  $\Delta$  OF impact is based on the main approach to implement the output floor.

\* Not shown in the chart because fewer than three entities in the cluster or less than 25% of country RWA coverage.

- 52. Similarly to the Basel III scenario, the total T1 MRC impact under the EU-specific scenario is lower by -4.1 p.p (from 17.2%) compared to the results as of June 2018 for the consistent sample of 99 institutions (see Table 26 in Annex 2). As before, the main drivers of the reduction were the lower impact of the output floor (-2.7 p.p.) and new CVA framework (-0.6 p.p.).

## 3.2 Impact on capital ratios and capital shortfalls

### 3.2.1 Basel III scenario

- 53. Under the Basel III scenario, the total capital (TC) ratio would decrease by approximately 3 p.p. relative to the current levels, from 18.2% to 15.3%. The reduction is slightly lower for T1 and CET1 ratios, which will reach, respectively, 13.2% and 12.3% in the revised framework. The impact will result in a shortfall in total capital of EUR 52.2 billion, of which EUR 30.2 billion CET1 (Table 11). In accordance with the August 2019 and December 2019 CfA reports, the capital shortfall is expected to arise almost entirely in large institutions, with G-SIIs accounting for 83% of the total amount.

54. In comparison with the results based on data as of June 2018, included in the December 2019 CfA report, the shortfall in total capital decreased significantly by EUR 57.3 billion (from EUR 109.5 billion) for the consistent sample (Table 27 in Annex 2). Large institutions are driving most of this reduction, due to a combined effect of higher available capital and lower MRC impact.<sup>39</sup> In particular, the institutions that experienced a shortfall in June 2018 have EUR 19.9 billion more total capital available in December 2019 to cover their minimum total capital requirements under the Basel III reforms. The remaining part of the reduction is driven by the lower the MRC impact (EUR 37.4 billion).<sup>40</sup>

Table 11 Capital ratios and shortfalls, Basel III scenario, December 2019 data

Bank size	CET 1			T1			TC		
	Current ratio (%)	Revised ratio (%)	Shortfall (bn)	Current ratio (%)	Revised ratio (%)	Shortfall (bn)	Current ratio (%)	Revised ratio (%)	Shortfall (bn)
<b>All banks</b>	<b>14.6</b>	<b>12.3</b>	<b>30.2</b>	<b>15.7</b>	<b>13.2</b>	<b>41.0</b>	<b>18.2</b>	<b>15.3</b>	<b>52.2</b>
Large	14.5	12.2	30.2	15.6	13.1	40.8	18.1	15.2	51.9
of which: G-SII	13.6	11.2	23.6	14.7	12.1	33.1	17.1	14.0	43.1
of which: O-SII	15.4	13.2	4.7	16.6	14.3	5.2	19.3	16.6	5.6
Medium	17.7	17.2	0.0	17.9	17.4	0.2	19.9	19.3	0.3
Small	24.7	28.1	0.0	24.7	28.1	0.0	25.6	29.1	0.0

Sources: EBA 2019-Q4 QIS data and EBA calculations.

Notes: Based on a sample of 99 banks: Large (73), of which G-SII (8), of which O-SII (46); Medium (22); Small (4). Δ MKT based on 'reduced bias estimation'. Δ CVA based on July 2020 CVA framework. Δ OF impact is based on the main approach to implement the output floor.

### 3.2.2 EU-specific scenario

55. The inclusion of EU specificities would cause a milder reduction (-2.1 p.p.) in the TC ratio under the revised framework, from 18.2% to 16.1% (Table 12) The impact will result in a shortfall in total capital of EUR 33.0 billion, of which EUR 17.4 billion CET1. G-SIIs still account for a large share of the total capital shortfall (77%). Relative to the Basel III scenario, the shortfall in total capital is decreased by EUR 19.2 billion, of which EUR 12.8 billion CET1. The total decrease is mainly stemming from G-SIIs, which see their total capital shortfall decrease by EUR 17.8 billion, of which EUR 11.8 billion CET1.

<sup>39</sup> See section 3.1.1 for the main drivers of the reduction in MRC.

<sup>40</sup> Result based on assumption that the shortfall is first reduced by a decrease in MRC and then by the disposal of additional capital.

Table 12 Capital ratios and shortfalls, EU-specific scenario, December 2019 data

Bank size	CET 1			T1			TC		
	Current ratio (%)	Revised ratio (%)	Shortfall (bn)	Current ratio (%)	Revised ratio (%)	Shortfall (bn)	Current ratio (%)	Revised ratio (%)	Shortfall (bn)
<b>All banks</b>	<b>14.6</b>	<b>12.9</b>	<b>17.4</b>	<b>15.8</b>	<b>13.9</b>	<b>23.6</b>	<b>18.2</b>	<b>16.1</b>	<b>33.0</b>
Large	14.5	12.8	17.4	15.7	13.8	23.4	18.2	16.0	32.7
of which: GSII	13.6	11.8	11.8	14.7	12.8	17.5	17.1	14.8	25.3
of which: OSII	15.4	13.9	3.8	16.7	15.0	3.5	19.3	17.4	4.1
Medium	17.7	17.4	0.0	18.0	17.6	0.2	19.9	19.5	0.3
Small	24.7	28.9	0.0	24.7	28.9	0.0	25.6	30.0	0.0

Sources: EBA 2019-Q4 QIS data and EBA calculations.

Notes: Based on a sample of 99 banks: Large (73), of which G-SII (8), of which O-SII (46); Medium (22); Small (4). Δ MKT based on 'reduced bias estimation'. Δ CVA based on July 2020 CVA framework. Δ OF impact is based on the main approach to implement the output floor.

56. Similarly, with the Basel III scenario results, the shortfall is considerably lower compared to the results based on June 2018 data for the consistent sample, caused by the combined effect of higher capital positions and lower MRC (from EUR 70.3 billion to EUR 33.0 billion).<sup>41</sup>

### 3.3 Impact during the transitional period

57. This section assesses the impact of two transitional arrangements over the transitional period 2023 to 2028 (Table 13):

- **Output floor:** under both Basel III and EU-specific scenarios, the calibration of the output floor will be phased in starting from 50% of the total floored RWA in 2023 and progressively increasing every year to reach the 72.5% steady-state level in 2028.
- **Operational risk:** an alternative EU-specific scenario is considered where the discretion of setting ILM=1 for bucket 2 and 3 banks will be phased out, starting from an ILM=1 in 2023 and progressively increasing every year to reach the bank-specific ILM steady-state level in 2028. For institutions with bank-specific ILM lower than 1 (i.e. with losses that are low relative to their Business Indicator Component), the phase-out arrangements are not applied. For these banks, the bank-specific ILM is used from 2023 and throughout the transitional period, i.e. it is assumed that these banks can frontload any capital relief stemming from their relatively benign operational loss history. For the Basel III and (default) EU-specific scenario, no transitional arrangements for operational risk are considered, i.e. ILM bank-specific and ILM=1 is used, respectively, throughout the transitional period.

<sup>41</sup> See section 3.1.2 for the main drivers of the reduction in MRC.

Table 13 Transitional arrangements for output floor calibration and operational risk ILM

Scenario	Reform	1 Jan 2023	1 Jan 2024	1 Jan 2025	1 Jan 2026	1 Jan 2027	1 Jan 2028
<b>Basel III scenario</b>	<b>Output floor calibration</b>	50%	55%	60%	65%	70%	72.5%
<b>EU-specific scenario</b>	<b>Output floor calibration</b>	50%	55%	60%	65%	70%	72.5%
<b>Alternative EU-specific scenario</b>	<b>Output floor calibration</b>	50%	55%	60%	65%	70%	72.5%
	<b>Operational risk ILM for bucket 2 and 3 banks(*)</b>	1	1+20%* bank-specific ILM -1	1+40%* bank-specific ILM -1	1+60%* bank-specific ILM -1	1+80%* bank-specific ILM -1	bank-specific ILM

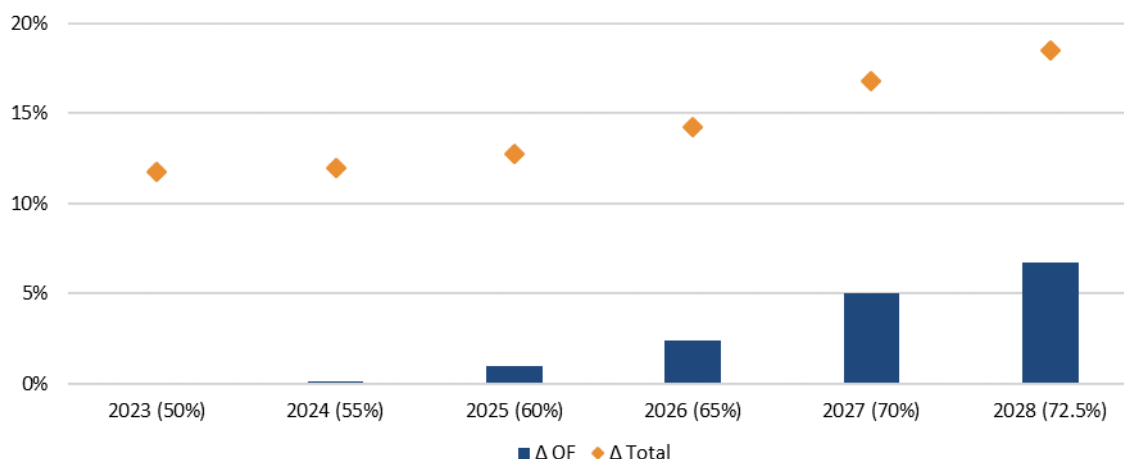
(\*) Only relevant for EU-specific scenario. For bucket 2 and bucket 3 banks with ILM bank-specific lower than 1, the phase-out arrangement is not applied, i.e. a constant ILM bank-specific is used from 2023 and throughout the transitional period.

### 3.3.1 Basel III scenario

58. During the phase-in period, the contribution of the output floor to the total MRC impact steadily accelerates under the Basel III scenario:

- The contribution of the output floor under the main approach adds less than 1 p.p. to the total MRC change for calibration levels below 60% until the end of year three of the six-year transition period in 2025;
- Beyond the 60% calibration level, the contribution of the output floor to the total MRC change more than doubles every year until the end of year five in 2027, reaching +5.0% when the output floor calibration is at 70%;
- In 2028, when the output floor reaches its steady-state 72.5% calibration, the contribution of the output floor to the EU average MRC is +6.7%.

Figure 5 Contribution of the output floor to the total T1 MRC impact (relative to current T1 MRC) during the transitional period, Basel III scenario, December 2019 data



Sources: EBA 2019-Q4 QIS data and EBA calculations.

Note: Based on a sample of 99 banks. Δ Total based on ‘reduced bias estimation’ for market risk impact and July 2020 CVA framework for CVA risk impact. Δ OF impact is based on the main approach to implement the output floor.

59. Similarly to the contribution to MRC, the capital shortfall also increases progressively during the transitional period. In 2023, the impact determines a shortfall in total capital of EUR 27.6 billion (of which EUR 10.8 billion in CET1), which is almost half the amount of the total capital shortfall incurred at the steady state in 2028 (Table 14).

Table 14 Capital shortfall (EUR billion) during the transitional period, Basel III scenario, December 2019 data

Year (floor)	CET 1 shortfall (EUR bn)	T1 shortfall (EUR bn)	TC shortfall (EUR bn)
2023 (50%)	10.8	18.9	27.6
2024 (55%)	10.8	18.9	27.6
2025 (60%)	14.6	23.3	32.6
2026 (65%)	19.5	28.7	38.7
2027 (70%)	26.6	36.4	47.4
<b>2028 (72.5%)</b>	<b>30.2</b>	<b>41.0</b>	<b>52.2</b>

Sources: EBA 2019-Q4 QIS data and EBA calculations.

Notes: Based on a sample of 99 banks. Δ MKT based on ‘reduced bias estimation’. Δ CVA based on July 2020 CVA framework. Δ OF impact is based on the main approach to implement the output floor.

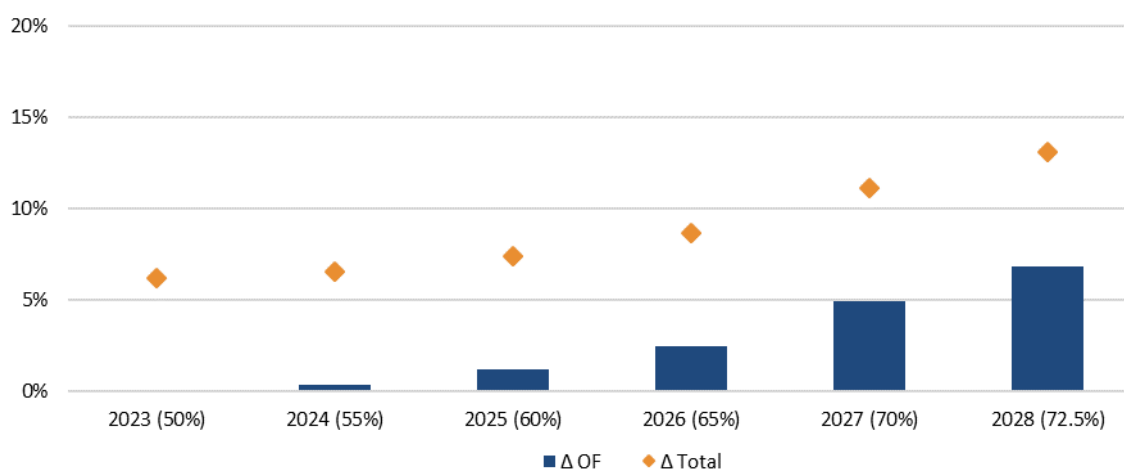
### 3.3.2 EU-specific scenario

60. Figure 6 shows the contribution of the output floor to the total MRC impact during the transitional period under the EU-specific scenario:

- the contribution of the output floor remains low (less than 1 p.p.) for calibration levels below 55%, then almost doubles every year until the calibration level 70% in 2027 and reaches 6.9% at the end of the transition period in 2028;

- as a result of the above, the total MRC impact increases progressively during the six-year transition period, starting from +6.2% in 2023 and reaching +13.1% in 2028.

Figure 6 Contribution of the output floor risk to the total T1 MRC impact (relative to current T1 MRC) during the transitional period, EU-specific scenario, December 2019 data



Sources: EBA 2019-Q4 QIS data and EBA calculations.

Notes: Based on a sample of 99 banks. Δ MKT based on 'reduced bias estimation'. Δ CVA based on July 2020 CVA framework. Δ OF impact is based on the main approach to implement the output floor.

61. In terms of shortfall, the impact determines an initial shortfall in total capital of EUR 7.6 billion (of which EUR 2.4 billion in CET1) in 2023, which grows to EUR 33.0 billion (of which EUR 17.4 billion in CET1) in 2028.

Table 15 Capital shortfall (EUR billion) during the transitional period, EU-specific scenario, December 2019 data

Year	CET 1 shortfall (EUR bn)	T1 shortfall (EUR bn)	TC shortfall (EUR bn)
2023 (50%)	2.4	3.0	7.6
2024 (55%)	2.4	5.0	10.5
2025 (60%)	4.8	9.4	15.9
2026 (65%)	8.7	13.9	21.3
2027 (70%)	14.1	19.6	28.5
2028 (72.5%)	17.4	23.6	33.0

Sources: EBA 2019-Q4 QIS data and EBA calculations.

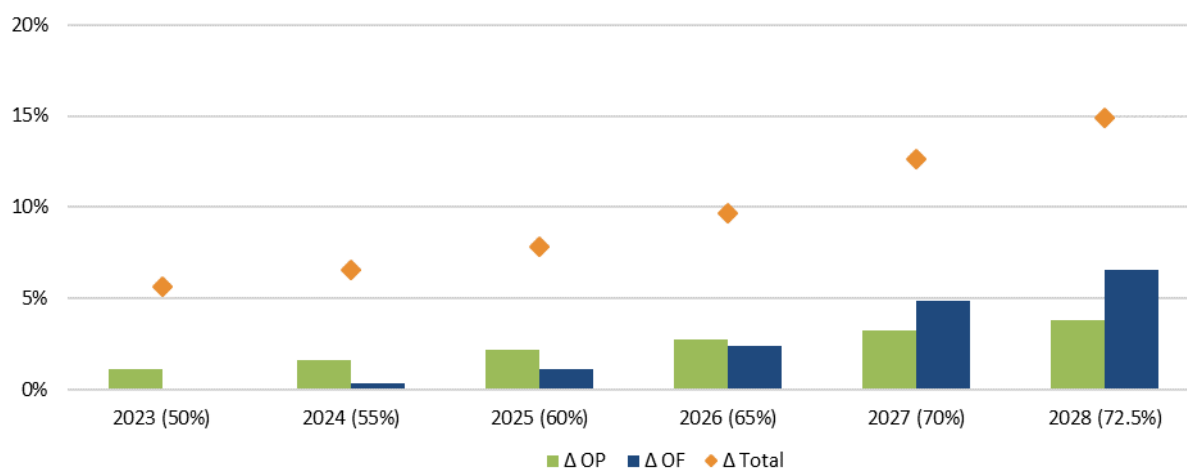
Notes: Based on a sample of 99 banks. Δ MKT based on 'reduced bias estimation'. Δ CVA based on July 2020 CVA framework. Δ OF impact is based on the main approach to implement the output floor.

### 3.3.3 Alternative EU-specific scenario

62. Figure 7 shows the contribution of the output floor and the operational risk to the total MRC impact during the transitional period for the *alternative* EU-specific scenario (i.e. differently from the EU-specific scenario where ILM=1 during the transitional period, under this scenario under the discretion of setting ILM=1 for bucket 2 and 3 banks will be phased out until it reaches the bank-specific ILM level at the end of the transitional period in 2028):

- the contribution of the output floor remains low (less than 1 p.p.) for calibration levels below 55%, then almost doubles every year until the calibration level 70% in 2027 and reaches 6.5p.p. at the steady state in 2028;
- the contribution of the operational risk starts from 1.1 p.p. in 2023 and increases linearly every year (by around 0.5 p.p.) to reach 3.8 p.p. in 2028 (i.e. the same level observed under the Basel III scenario);
- as a result of the above, the total MRC impact increases progressively during the transitional period, starting from +5.7% in 2023 and reaching +14.9% in 2028.

Figure 7 Contribution of the output floor and operational risk to the total T1 MRC impact (relative to current T1 MRC) along the transitional period, alternative EU-specific scenario, December 2019 data



Sources: EBA 2019-Q4 QIS data and EBA calculations.

Notes: Based on a sample of 99 banks. Δ MKT based on 'reduced bias estimation'. Δ CVA based on July 2020 CVA framework. Δ OF impact is based on the main approach to implement the output floor.

63. In terms of shortfall, the impact determines an initial shortfall in total capital of EUR 7.3 billion (of which EUR 2.0 billion in CET1) in 2023, which reaches EUR 39.7 billion (of which



EUR 19.9 billion in CET1) in 2028.<sup>42</sup> The transitional arrangements for the output floor contribute the most to the reduction in shortfall during the transitional period relative to the steady-state level. This reflects the fact that in the steady state, the output floor will determine a large share of the total capital shortfall incurred by the EU banks in the sample.

Table 16 Capital shortfall (EUR billion) during the transitional period, alternative EU-specific scenario, December 2019 data

Year	CET 1 shortfall (EUR bn)	T1 shortfall (EUR bn)	TC shortfall (EUR bn)
2023 (50%)	2.0	2.9	7.3
2024 (55%)	2.0	5.4	11.0
2025 (60%)	5.5	10.6	17.3
2026 (65%)	10.0	15.9	23.7
2027 (70%)	15.9	21.8	32.1
2028 (72.5%)	19.9	26.6	39.7

Sources: EBA 2019-Q4 QIS data and EBA calculations.

Notes: Based on a sample of 99 banks. Δ MKT based on 'reduced bias estimation'. Δ CVA based on July 2020 CVA framework. Δ OF impact is based on the main approach to implement the output floor.

### 3.4 Alternative implementation options for output floor

64. The results presented in section 3.1, 3.2 and 3.3 are based on the **main approach** for the implementation of the output floor, i.e. by applying the full stack of capital requirements applicable in the EU (Pillar 1 minimum capital requirements, Pillar 2 requirements and the combined buffer requirement) to the floored RWA.<sup>43</sup> Following the CfA request, this section presents the impact of the output floor under an alternative implementation option as presented in Box 1 above. In the policy recommendations in the August 2019 and December 2019 CfA reports, this approach was assessed as having significant drawbacks compared with the main approach: neither the capital ratio based on pre-floor RWA nor the capital ratio based on floored RWA were considered a good indicator of compliance with the requirements. In order to make requirements comparable across all layers in the stack, the applicable percentage rate for some layers (systemic risk buffer (SRB), Pillar 2 requirements) would need to be adjusted based on the percentage of floored RWA. This would lead to increased complexity and lack of transparency, as the applicable percentage rates would be need to change any time there is a change in pre-floor RWA or floored RWA. It would also

<sup>42</sup> The steady state level in 2028 is higher EUR 6.7 billion than the EU-specific scenario (EUR 33.0 billion) as a result of the phasing-out of the ILM=1 discretion. Specifically, in Table 21 the bank-specific ILM is used in 2028, while in Table 15 an ILM=1 is used.

<sup>43</sup> As explained in section 2.5.3, the results presented in this report are based on a number conservative assumptions, including an assumption on static requirements, i.e. Pillar 2 and combined buffers, defined as a percentage of the bank's RWA, are assumed to be constant under the CRR baseline and the two reforms implementation scenarios (Basel III and EU-specific scenario). Higher RWA resulting from the implementation of the revised framework may lead – in some cases – to a revision and, possibly, re-calibration of the Pillar 2 and buffer requirements. It is recalled that the EBA, in its [“Policy Advice on the Basel III reforms: Output floor”](#), recommended to competent authorities to reconsider the appropriate level of Pillar 2 to ensure that these amounts take into account the new output floor requirements. In addition, the EBA recommended to designated authorities to reconsider the appropriate level of SRB rates for output floor-constrained institutions, once the revised Basel III framework enters into force in EU legislation, to ensure no overlap in objectives between the macroprudential measure and the output floor or unintended increases in the requirement due to an increase in RWA.

hinder comparability of capital ratios and requirements across banks. Another drawback is that there is no justification of why the setting of the systemic risk buffer and Pillar 2 would be based on pre-floored RWA while other macroprudential buffer requirements are calculated on the basis of floored RWA. This would also lead to the paradoxical outcome that the effectiveness of SRB and P2 requirements will be limited for banks that are bound by the output floor, and would therefore appear to limit the effectiveness of the output floor for banks with aggressive modelling practices.<sup>44</sup>

- 65. Finally, for illustrative purposes Annex 2 presents the impact also under the ‘parallel stack approach’. The EBA considers this proposal non-compliant with the Basel III standards and has several drawbacks, as discussed in the Annex.<sup>45</sup>

### 3.4.1 Basel III scenario

- 66. Under the Basel III scenario and the alternative approach, the total T1 MRC percentage change will decrease from 18.5% to 17.1% (Table 17). This decrease stems entirely from the output floor, as its contribution to the MRC change goes down from 6.7 p.p. to 5.4 p.p. The contribution of all the other components to the MRC percentage change, namely each risk category and overall RWs, as well as the leverage ratio, will remain unchanged. If the alternative approach were adopted instead of the main approach, the shortfall in total capital would decrease from EUR 52.2 billion to EUR 45.0 billion.

Table 17 Percentage change in T1 MRC (relative to current T1 MRC), by bank size, Basel III scenario, December 2019 data

Bank size	Main approach			Alternative approach		
	Δ OF	Δ Total	TC shortfall (EUR bn)	Δ OF	Δ Total	TC shortfall (EUR bn)
<b>All banks</b>	<b>6.7</b>	<b>18.5</b>	<b>52.2</b>	<b>5.4</b>	<b>17.1</b>	<b>45.0</b>
Large	6.9	19.0	51.9	5.5	17.6	44.7
of which: GSII	6.5	22.4	43.1	5.5	21.2	39.5
of which: OSII	7.9	16.5	5.6	6.1	14.7	1.9
Medium	0.8	1.9	0.3	0.6	1.6	0.3
Small	0.0	-12.9	0.0	0.0	-12.9	0.0

Sources: EBA 2019-Q4 QIS data and EBA calculations.

Notes: Based on a sample of 99 banks: Large (73), of which G-SII (8), of which O-SII (46); Medium (22); Small (4). Δ MKT based on ‘reduced bias estimation’. Δ CVA based on July 2020 CVA framework.

- 67. Despite the change in MRC, the number of internal model institutions that are constrained by risk weights, output floor or leverage ratio would remain the same if an alternative approach were adopted (Table 18). Under both approaches, the output floor is equally

<sup>44</sup> Please refer to the [EBA \(2019\) Policy Advice on the Basel III reforms: Output floor](#) for a detailed description for the drawbacks of this implementation option of the output floor.

<sup>45</sup> Note that the ‘parallel stack’ approach is considered not in compliance with the Basel III agreement mainly because it is based on a comparison of two amounts of capital requirements, whereas the Basel text is clear that the capital requirements should be applied to the institution’s RWA (floored RWA in this case). Instead, this approach derives its impact from the difference between two stacks of requirements. In addition, this approach can be considered a circumvention of the floor, as it turns out that the ‘stack’ determined by IRB weights will be nearly always non-binding thus giving the banks an incentive to embark on aggressive internal modelling strategies.

constraining as the risk-based capital requirements (48.4% of the total number of banks, respectively for each constraint), leaving only 3.2% of the total number of banks constrained by the leverage ratio. Internal model institutions constrained by the output floor in the revised framework represent 60.5% of current total RWA in the sample under both approaches.

Table 18 Number and percentage RWA of internal model institutions (highest level of EU consolidation) constrained by the different regulatory metrics, by output floor implementation option, Basel III scenario, December 2019 data

OF approach	Number of banks			62	% of total RWA		
	RWs	LR	OF		RWs	LR	OF
Current framework	57	5	0		96.9%	1.1%	0.0%
Basel III OF main approach	30	2	30		37.3%	0.2%	60.5%
Basel III OF alternative approach	30	2	30		37.3%	0.2%	60.5%

Sources: EBA 2019-Q4 QIS data and EBA calculations.

Note: Based on a sample of 62 banks. Δ MKT based on 'reduced bias estimation'. Δ CVA based on July 2020 CVA framework.

### 3.4.2 EU-specific scenario

68. Under the EU-specific scenario and the alternative approach, the MRC percentage change will decrease from 13.1% to 11.9% (Table 19). As before, this decrease stems entirely from the output floor, as its contribution to the MRC change goes down from 6.9 p.p. to 5.7 p.p., while the contribution of all the other components to the MRC percentage change remains unaffected. If the alternative approach were adopted instead of the main approach, the shortfall in total capital would decrease from EUR 33.0 billion to EUR 26.3 billion.

Table 19 Percentage change in T1 MRC (relative to current T1 MRC), by bank size, EU-specific scenario, December 2019 data

Bank size	Main approach			Alternative approach		
	Δ OF	Δ Total	TC shortfall (EUR bn)	Δ OF	Δ Total	TC shortfall (EUR bn)
<b>All banks</b>	<b>6.9</b>	<b>13.1</b>	<b>33.0</b>	<b>5.7</b>	<b>11.9</b>	<b>26.3</b>
Large	7.1	13.4	32.7	5.8	12.2	26.1
of which: GSII	7.6	15.9	25.3	6.6	14.9	21.4
of which: OSII	7.3	11.6	4.1	5.7	10.1	1.4
Medium	0.8	1.0	0.3	0.6	0.9	0.3
Small	0.0	-14.9	0.0	0.0	-14.9	0.0

Sources: EBA 2019-Q4 QIS data and EBA calculations.

Notes: Based on a sample of 99 banks: Large (73), of which G-SII (8), of which O-SII (46); Medium (22); Small (4). Δ MKT based on 'reduced bias estimation'. Δ CVA based on July 2020 CVA framework.

69. The number of internal model institutions that are constrained by risk weights, output floor or leverage ratio is the same under the main and alternative approach (Table 20). The output floor is almost equally constraining across the Basel III and EU-specific scenarios for both output floor approaches.

Table 20 Number and percentage RWA of internal model institutions (highest level of EU consolidation) constrained by the different regulatory metrics, by the output floor implementation option, EU-specific scenario, December 2019 data

OF approach	Number of banks			62	% of total RWA		
	RWs	LR	OF		RWs	LR	OF
Current framework	59	3	0		96.2%	1.8%	0.0%
Basel III OF main approach	31	2	29		37.5%	0.2%	60.3%
Basel III OF alternative approach	31	2	29		37.5%	0.2%	60.3%

Sources: EBA 2019-Q4 QIS data and EBA calculations.

Note: Based on a sample of 62 banks. Δ MKT based on 'reduced bias estimation'. Δ CVA based on July 2020 CVA framework.

## 4. Complementary analysis: COVID-19 pandemic and the impact on the Basel III reforms

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### 4.1 Introduction

70. The outbreak of the COVID-19 pandemic has caused an unprecedented economic downturn in European economies. Although the crisis has mainly affected the non-financial sectors of the economy, the magnitude of the contraction will depend on many factors (including the duration of the crisis and the restricting measures put in place in the different countries), and the impact could yet propagate to the financial sector. Any exercise on assessing the interaction of the COVID-19 health crisis and the impact of implementing the Basel III reforms in the EU will therefore be a somewhat speculative exercise, with the necessity of making many assumptions, especially as regards whether the effects will be permanent or only transitory.
71. The following sections present a preliminary analysis of the effects of the COVID-19 pandemic and its interaction with Basel III. The first two sub-sections aim to provide an overview on how certain factors which are consequences of the COVID-19 pandemic may affect banks' balance sheets and capital positions as of today. Section 4.2 provides an overview of the policy responses taken in the context of COVID-19, which in general have brought capital relief. Section 4.3 provides a descriptive analysis of the first preliminary changes happening to bank balance sheets based on June 2020 data. The last two sub-sections aim to provide a forward looking assessment about how changes in banks' balance sheets due to the COVID-19 pandemic are expected to interact with the revised Basel III framework at the time of its implementation. As previously stated, any exercise on assessing the interaction of the COVID-19 health crisis and the impact of implementing the Basel III reforms in EU will be speculative and based on many assumptions. Section 4.4 provides an overview of the main channels of transmission of the COVID-19 crisis into the features of the revised Basel III framework. Finally, section 4.5 provides a quantitative assessment, based on a sensitivity analysis which uses a stress-test methodology with a severe scenario to assess the effects of COVID-19 independently.
72. The Basel III standards, as highlighted in the first EBA report on assessing the impact, are a structural reform, which introduces higher risk sensitivity in the standardised approaches and rectifies some of the shortcomings observed as regards the use of internal models. This is different to the effect of COVID-19, as the effect on banks' balance sheets and capital positions is in some sense – despite the unprecedented situation, that exists today – likely to be more comparable to cyclical changes in the economy. The impact of COVID-19 will most

likely take many forms, but a strong driver will likely be through the recognition of impairment losses and valuation adjustments. It is therefore important to stress that the effects of the Basel III reforms and effects of the pandemic will most likely not be comparable.

73. On the prudential side, this section nonetheless attempts to highlight the main channels, through which an interaction will take place. One clear conclusion, of the analysis presented below, is that the effects of COVID-19 are not likely to be additive to the effects of implementing Basel III. For instance, an increase in IRB risk weights due to COVID-19 will limit the impact of the output floor, as long as the underlying SA RW is unchanged. Nonetheless, it is clear that an impact on banks' RWA is also expected via changes in ratings, risk parameters, expected losses and applicable risk weights. In any case, the combination of the two effects will translate into an impact on banks' capital ratios and capital shortfalls, but the size of the impact is difficult to assess. The purpose of the quantitative analysis is to understand how the COVID-19 impact on the banks' balance sheets could interact with the implementation of the revised Basel III framework and how the impacts explained in section 3 may change.

## 4.2 Policy and legislative response to COVID-19 outbreak

74. As a consequence of the COVID-19 pandemic and in order to ensure that banks continue lending to households and non-financial corporations and to avoid any one-off effects on banks' capital ratios, extraordinary policy support measures have been adopted worldwide. Such prudential and supervisory measures, as well as targeted fiscal measures, are expected to partially offset the adverse effects on banks' balance sheets and capital positions.
75. These measures include, in many instances, some forms of **moratorium on payments** of credit obligations, with the aim of supporting the short-term operational and liquidity challenges faced by borrowers. The EBA Guidelines on payment moratoria avoid the automatic and unwarranted classification of the exposures as defaulted. Indeed, they clarify which legislative and non-legislative moratoria do not to trigger forbearance classification, and supplement the EBA Guidelines on the application of the definition of default as regards the treatment of distressed restructuring. In particular, these guidelines clarify that the payment moratoria do not trigger forbearance classification and the assessment of distressed restructuring if they are based on the applicable national law or on an industry- or sector-wide private initiative agreed and applied broadly by relevant credit institutions. In accordance with guidelines, the deadline to request payment moratoria was initially the end of September 2020 and was extended until March 2021 at a later stage subject to specific conditions<sup>46</sup>. The EBA statement in light of COVID 19 provides a similar type of clarification for the non-automatic classification under stage 2 under IFRS 9 accounting standards.

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<sup>46</sup>The overall duration of the moratoria for a specific loan cannot exceed a period of 9 months and the documentation for UTP assessment plan is required for those loans.

76. **Public sector guarantee schemes** have been launched worldwide and across member states to underpin the flow of credit during the COVID-19 crisis.<sup>47</sup> Under the aforementioned schemes, newly-issued credits to non-financial corporations and households are guaranteed by the government. However, the exact conditions vary significantly across schemes and countries. It is expected that the use of these guarantee schemes will mitigate the impact of the crisis on the banks' solvency positions. On the accounting side, there will be a mitigating impact on the banks' income statements, as the recognition of the expected credit losses (ECL) will benefit from the existence of collateral or public guarantees. On the prudential side, RWA associated with guaranteed loans are expected to be lower in line with credit risk mitigation (CRM) provisions.
77. Supervisors and regulators also addressed the extreme market volatility that followed the pandemic outbreak. One of the most relevant measures taken by prudential authorities was the **release of certain capital buffers**, including allowing banks to operate temporarily below the level of capital defined by the Pillar 2 Guidance (P2G)<sup>48</sup>. The impact of these measures has been further amplified by the decision of national macroprudential authorities to reduce countercyclical capital buffers (CCyB) and systemic risk buffers (SyRB). In addition, and in line with the approach already adopted by some euro and non-euro area EU jurisdictions, the ECB has allowed banks under its direct supervision to partially meet Pillar 2 requirements (P2R) using non-CET1 capital instruments (i.e. Additional Tier 1 [AT1] or Tier 2 [T2]), thus anticipating a measure that was scheduled to enter into force in January 2021<sup>49</sup>
78. The set of measures adopted to facilitate banks' role in supporting the economy also included the **Capital Requirements Regulation (CRR) 'quick fix'**, approved by the European Parliament in June 2020.<sup>50</sup> These measures aimed to increase the ability of EU banks to continue lending during the downturn. First, there was an extension by two years of the transitional arrangements for mitigating the impact of additional IFRS 9 expected credit losses. Second, the application date of the exemption of software assets from capital deduction was frontloaded as soon as the relevant RTS entered into force, and legislative changes were adopted to bring forward the date of application of the SME supporting factor. A more favorable prudential treatment was also granted for certain loans to pensioners or employees and banks were temporarily allowed to remove unrealised gains and losses on certain public sector exposures from the calculation of their CET1 ratio. Additionally, the legislation introduced the preferential treatment of public sector guaranteed loans under the NPL backstop, similar to the guarantees issued by official export credit agencies (ECAs). Lastly, the applicable date of the leverage ratio buffer for global systemically important

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<sup>47</sup> The EC keeps an extensive list of the policy measures adopted by EU countries, while a global list of policy measures is provided by the IMF.

<sup>48</sup> See for instance the [EBA's statement on actions to mitigate the impact of COVID-19 on the EU banking sector and the ECB's statement on temporary capital and operational relief in reaction to coronavirus, which also allowed banks to operate temporarily below their capital conservation buffer](#).

<sup>49</sup> See the [ECB press release on the measures to provide temporary capital and operational relief in reaction to coronavirus](#).

<sup>50</sup> See Regulation (EU) 2020/873 which introduced legislative changes to Regulation (EU) 575/2013

institutions (G-SIIs) is deferred by one year to 1 January 2023, and central bank reserves may temporarily be excluded from the leverage ratio calculation.

### Time horizon of the application of extraordinary policy and legislative measures

- 79. The application of the existing policy and legislative measures started throughout 2020. However, the time horizon of their application may differ between measures. Figure 8 summarises an indicative time of application of the different extraordinary policy measures and their interaction with the time of application of the revised Basel III framework (phased-in and fully loaded). The green background indicates that the measure is in place at the specific time horizon, while the grey background shows that the measure will no longer be in place at that time.
- 80. The time horizon of the application of the majority of the policy measures does not differ across EU member states. Nevertheless, the time horizon of the public sector guarantees schemes and the duration of the release of capital buffers are country-specific. Moreover, the time horizons of these last two measures are more uncertain because they are enforced through government and supervisory decisions that can be reassessed more easily. Therefore, Figure 8 provides an indicative expectation of the time horizon of their application and should not be considered as a forecast or recommendation. Caution should be used when making conclusions on the time horizon of the two aforementioned measures.

Figure 8 Expected time horizon of application of extraordinary policy and legislative measures

Time horizon	Short term (1-2 years)	Medium term (2-5 years)	Long term (>5 years)
<b>Revised basel III framework</b>	4Q2019	Start of phase-in period	Fully loaded implementation
Moratoria on loan repayments	Green	Grey	Grey
Public sector guarantee schemes	Green	Green with diagonal lines	Grey
Release of capital buffers	Green	Green	Green
Changes in P2R Composition	Green	Green	Green
Frontloading some of the non-deduction of prudently valued software assets.	Green	Green	Green
Frontloading the CRR II SME SF	Green	Green	Green
Extension of transitional arrangement for IFRS 9 provisions (*)	Green	Green	Green
Frontload of the preferential treatment of loans to pensioners or employees	Green	Green	Green
Preferential treatment to public sector guaranteed loans under the NPL backstop	Green	Green	Grey
Temporal exclusion of central banks reserves from the LR calculation	Green	Grey	Grey
Delay G-SII buffer for LR	Green	Green	Green

Measure not in place

Measure in place

Uncertainty

(\*) The extension of the transitional arrangements for IFRS 9 provisions represents a stronger mitigation effect in the short term, as the add-back factors are higher at the beginning of the phase-in period and decrease progressively in the following years.



81. In general, the measures have led to capital relief for banks. For some of the elements, the effect will no longer be present by the time the revised Basel III framework has been fully implemented. For all other elements for which the effect will remain, such as the non-deduction of software assets, this will lead to higher levels of capital being available and thereby mitigate shortfalls stemming from Basel III. With regards to the impact of SME and infrastructure supporting factors, the effects are less straightforward for IRB institutions, but nonetheless expected to be positive and mitigate shortfalls stemming from Basel III.

### 4.3 Implications of the COVID-19 outbreak on the banks' balance sheets.

82. A preliminary impact of the COVID-19 pandemic on the banks' balance sheets as of June 2020 can be understood by looking at the evolution of key banks' metrics within the first semester of year 2020.
83. Banks entered the COVID-19 crisis with strong capital positions. Thanks to the regulatory measures adopted in the past few years, as of December 2019, European banks (excluding UK institutions) on average presented a fully loaded (FL) CET1 ratio of 14.8%. During the first quarter of 2020, the sharp increase in the cost of risk (CoR) along with the extensive use of existing loan commitments (credit lines), brought the ratio slightly down to 14.4%. In the second quarter, risk weighted assets (RWA) decreased on the back of regulatory relief measures and public guarantees. After its contraction in the first quarter, CET1 capital grew in the second quarter of 2020, to some extent supported by the retention of dividends. However, this impact was only muted, presumably due to the temporary nature of the restrictions and some banks' decisions to not yet include the banned dividends in retained earnings pending a final recommendation from supervisors. As a result, the CET1 ratio bounced back to 14.7% in June 2020. Looking forward, risk weights can be expected to rise, mostly driven by the credit risk component. The leverage ratio has declined from 5.7% at the beginning of the year to 5.3% as of June 2020, due to a significantly higher increase in total assets than in capital.
84. Between January and June 2020, the banks' total assets increased by 10%. This was mostly due to the rise in cash balances, but also to an increase in loans, in particular to non-financial corporates (NFC). The increase of cash balances was particularly driven by the deployment of accommodative monetary policy measures introduced by various central banks in the EU. Regarding NFC exposures, in the first quarter the growth was mostly due to borrowers making use of standing loan commitments in order to secure liquidity and operational continuity in an environment of increased uncertainty. Subsequently, during the second quarter of this year, loans remained stable as many of the loan commitments were likely replaced by loans backed by government guarantees. Debt securities and derivatives also reported significant growth during the first half of this year, which might in part be linked to rising sovereign exposures, but also to EU banks transferring assets from their affiliated UK

entities to EU entities ahead of the end-2020 deadline for the Brexit transition period. The growth in derivatives might also be driven by fair value effects.

85. Asset quality has been generally improving throughout the recent years, and the EU banks' NPL ratio has fallen to around 3%, which, however, remains above the pre-global financial crisis (GFC) levels. During the first half of 2020, the NPL ratio has continued to fall, although at a slower pace, and despite a slight rise of NPL volumes in the second quarter, which broke a trend of constantly declining NPL volumes in the previous years. Besides this aspect, there are further early indicators of asset quality deterioration, such as the increase in stage 2 loans and in forbore loans, as well as the rising cost of risk. It still needs to be seen how, for instance, payment moratoria will affect asset quality in the future. Once the moratoria expire, the effects of the pandemic on asset quality might become more visible.
86. The reduction in impairment costs has supported banks' profitability over the past few years. However, on average, return on equity (RoE) levels have not managed to rise above the estimated cost of equity (around 8%-10%) since the GFC. More importantly, the margin for further increases seemed to be already exhausted in 2019 (the RoE was 5.7% as of December 2019). The low interest rate environment and increasing competition not only from banks but also from other financial players (e.g. Fintech firms) exert a continued pressure on core revenues low, which can be only partially offset by cuts in operating expenses. Thus, COVID-19 has aggravated banks' structural profitability problems. Beyond the temporary hit on profitability via impairment costs, interest rates are now expected to remain low for even longer than prior to the pandemic outbreak. Net fee and commission income faced a contracting trend this year. This decrease was mainly due to the trends in the second quarter of 2020 (-5.2% QoQ), which coincided with the peak of the confinement measures across the EU. Net trading income (including results from assets at fair value through profit and loss) was highly volatile during the first half of 2020. Whereas its contribution to RoE was 1.5 p.p during the first half of 2019, it fell to 1.2 p.p during the first six months of this year (both figures on an annualised basis). Although a slight increase in operating costs was observed in the first quarter of 2020, presumably, as banks were preparing for the lockdown, a material drop took place in the second quarter. It remains to be seen if those declines could be sustained once the pandemic is over as the savings may mostly be related to reduced travel and office maintenance expenses.

#### 4.4 Interactions of COVID-19 impact and the revised Basel III framework.

87. The interaction of the Basel III framework and the impact of the health crisis can only be properly assessed once the full effects of the crisis on bank balance sheets have been played out. Concretely, a complete assessment of how each of the elements of the Basel III reforms interact with the effects of the crisis is not possible in the absence of data to illustrate the actual impacts once these effects are visible (the effect of the crisis with the Basel III framework in place). As a result, the rest of this section provides some qualitative reflections

on the potential interactions between different elements of Basel III framework and the expected shocks to the banks' balance sheets.

88. Overall, this section illustrates clearly that the interactions are not straightforward. On the one hand, it is clear that a possible effect are potential losses stemming from COVID-19, modelled in more detail in section 4.5. At the same time, the effects of Basel III taken in conjunction with COVID-19, is not likely to be additive, as pass-through effects are in some cases off-setting. Furthermore, the timing of the effects from respectively COVID-19 and the application of Basel III is not likely to coincide.
89. It is important also to recall that a number of the measures taken in response to COVID-19, such as introducing of moratoria, public guarantee schemes and the CRR quick fix are expected to no longer be relevant at the time of the Basel III implementation. More details on this can be found in section 4.5. Furthermore, the permanent features, such as the EBA RTS on software, are already assessed in the previous section. What is not included and the main focus in this section is therefore the consequences from the transitory/cyclical effect stemming from COVID-19, assessed from a qualitative perspective, on credit risk, operational risk, market risk and the output floor.
90. The following sections therefore examine in more detail the potential channels of effect for COVID-19 in the context of Basel III for:: 1) credit risk SA, 2) credit IRB 3) operational risk, 4) market risk and CVA and 5) output floor.

#### 4.4.1 Credit risk SA

91. Overall, there is a risk that the effects of COVID-19 will lead to higher levels of losses. This will in itself likely lead to an increase in credit risk charges, as the defaulted assets will carry a risk weight of 100% and 150%, depending on the level of credit risk adjustments. In addition, the short term risk weights could increase, as a result of rating downgrades for industries which are especially hit by the current crisis (e.g. airlines). In this context, it is important to recall that the introduction of the new SA will not change this effect, and the effects of introducing Basel III should not appear significant, but rather similar compared to today.
92. Another area where the deterioration of the economic environment is expected is the effect of the possible decrease of the level of collateralisation of the loans that may suffer a devaluation. It is expected to be a secondary effect after the first shock on the debt-service-to-income (DSTI) ratio due to the impact on the cash flows. In the new Basel III framework, this effect should be mirrored into the effect on the calculation of the LTV's of the residential real estate (RRE) and commercial real estate (CRE) loans affecting the assignment of risk weights. The reduction in the level of collateralisation may be mitigated in some countries by the introduction of public guarantees, as highlighted below.
93. As far as the interaction between the final Basel III provisions for CR SA and the COVID-19 crisis is concerned, the use of external credit ratings for regulatory purposes is one of the

main areas where the deterioration of the economic environment is expected to have an impact. The introduction of due diligence requirements in Basel III may on the contrary act as a control function for these effects, although it is challenging to determine the exact extent of any such control at this early stage.

- 94. Furthermore, in the short term, several government measures have been taken, such as the introduction of public guarantees and moratoria. There may be longer-term effects, for instance if the public guarantees for new loans will last for the lifetime of the loan: However in general, these effects appear transitory.
- 95. It should therefore be stressed that the impact related to increasing losses would appear to be fully reflective of changes in the underlying risk. Furthermore, it is far from clear that these effects will be permanent, but rather they would appear to be transitory and not impacting the structural elements of the Basel reforms. It is therefore an effect that is independent from the implementation of Basel III, as the introduction of Basel III will for SA banks lead to quite limited changes in capital requirements, compared to the situation today.
- 96. Overall, it is also important to recall, that the main users of the SA continue to be small banks. For the large banks, the effect applies to a smaller share of their total capital requirements. Should credit risk losses increase as a consequence of Basel III, the effects will consequently be comparable to the current regime.

#### 4.4.2 Credit risk IRB

- 97. Similarly to the effects of the SA, IRB requirements may increase as a consequence of the higher risks faced and the inclusion of expected loss stemming from increases in defaulted assets. However, the combined impact of COVID 19 and Basel III will be lower than the simple sum of the impacts of COVID-19 and the Basel III framework prior to COVID-19. This is because a number of provisions will be less impactful in the post COVID-19 world. Basel III will nonetheless in total continue to increase IRB requirements – in response to the problems observed with IRB models during the financial crisis.
- 98. The following table provides a qualitative assessment of the key elements of the reform and illustrates more clearly the mitigating features:<sup>51</sup>

Table 21 Key elements of the Basel III reform related to IRB and expected post COVID-19 impact

Element of the Basel III reform related to IRB exposures	Expected impact post COVID-19
Migration of exposures to less sophisticated approaches (i.e. the A-IRB approach no longer available for large corporates, financial	The migration of large corporates is expected to be lower, as it applies to <i>‘exposures to general corporates belonging to a group with</i>

<sup>51</sup> the key elements of the reform were identified in paragraph 324 of the credit risk answer to the CfA [https://eba.europa.eu/sites/default/documents/files/document\\_library/881123/Policy%20Advice%20on%20Basel%20III%20reforms%20-Credit%20Risk.pdf](https://eba.europa.eu/sites/default/documents/files/document_library/881123/Policy%20Advice%20on%20Basel%20III%20reforms%20-Credit%20Risk.pdf)

Element of the Basel III reform related to IRB exposures	Expected impact post COVID-19
institutions treated as corporates and institution exposures, obligation to use the SA for the equity exposures);	<i>total consolidated annual revenues greater than EUR 500 million</i> ’ (paragraph 34 of the final Basel III framework). The assessment should be based on the <i>‘the average amounts calculated over the prior three years, or on the latest amounts updated every three years by the bank’</i> . If COVID-19 crisis is still impacting the economy at the time of implementation, the number of corporates falling under the scope of migration will be lower than previously expected.
Increase in PD input floors and introduction of LGD input floors;	In the case where the deterioration of the general economic situation results in an increase in the PD and LGD values, the new PD and LGD floors introduced in the final Basel III framework would become less binding. However, this effect may be offset on the LGD side given that for secured exposures, the value of the LGD floor will increase in case of a reduced level of collateralisation. This stems directly from the weighted average formula introduced in paragraph 86 of the final Basel 3 framework.
Change in the regulatory LGD values (under the F-IRB approach)	The COVID-19 does not have a direct effect on the impact of the change in the calculation of LGD regulatory values. However, in the case COVID-19 leads to a diminished level of collateralisation of the loans, the new Basel III framework would be more beneficial as it removes the need for a minimum collateralisation level (see Figure 27 of the answer to the CfA – COVID-19 may push exposures to the right hand-side of the curve, where the benefits of the Basel III framework are the higher)
Clarification of the calculation of the effective maturity (M) risk parameter	The clarification brought to the calculation of the maturity is independent from COVID-19
Change in the treatment of guarantees provided by guarantors, risk weighted under the F-IRB approach and the SA	The new treatment of guarantees will have to be applied for the public guarantee schemes introduced following the COVID-19 outbreak. It is however not straightforward to assess the impact in terms of own fund requirements, because it depends on the approach currently used by institutions to recognise such guarantees and on the difference between the own fund requirements calculated in accordance with this current approach and

Element of the Basel III reform related to IRB exposures	Expected impact post COVID-19
	<p>the own fund requirements calculated via a substitution approach. Therefore:</p> <ol style="list-style-type: none"> <li>1. If an institutions is already using the substitution approach for the PGS related to COVID-19, the requirements in Basel III are without any effect;</li> <li>2. If an institution is using a different approach, and the sovereign has its RWA calculated in accordance with the AIRB, the requirements in Basel III are without any effect;</li> <li>3. If an institution is using a different approach, and the sovereign has its RWA calculated in accordance with the FIRB or the standardised approach (SA), the combined impact will depend on the difference between the results of the two approaches, which needs to be assessed on a case by case basis. It is worth recalling that the guarantees are mostly of the time in the sovereign portfolios, where it is common to have lower own fund requirements under the SA (in particular where the 0% RW is used)</li> </ol>
<p>Change in the treatment of CCFs (including change in the modelling scope, new regulatory values, introduction of input floors and clarification in the requirements for estimation)</p>	<p>CCF floors could be less impactful post COVID-19 if realised CCF increased due to COVID-19 Other changes introduced are independent of COVID-19</p>

99. As for the Credit Risk SA, these effects may be of a transitory/cyclical nature and solely reflect the potentially higher risk. Nonetheless, it is clear that, while the effects are still having an impact, when seen in isolation, COVID-19 will likely lower the impact of the reforms. This is so, because the Basel III review lowers the procyclicality of the framework. However, as clarified before, the combined impact of the final Basel III requirements and COVID-19 will be not be lower than the sole impact of Basel-III assessed before COVID-19. Furthermore, it remains unclear, whether the actual effects on IRB charges will still remain, once the Basel III framework is implemented in the EU, as these cyclical effects will depend on the macroeconomic developments.

#### 4.4.3 Operational risk

100. As a result of the COVID-19 crisis, the banks’ capital requirements associated with operational risk can be affected in several ways. First, all the approaches, both in the current

and revised frameworks, will be affected due to changes in profits. The current simple approaches, i.e. the basic indicator approach (BIA), the standardised approach (TSA), the alternative standardised approach (ASA), and the Business Indicator Component of the Basel III SA would all be affected through variation of items of, respectively, the relevant indicator and the Business Indicator, directly or indirectly caused by the COVID-19 crisis. While not certain, in such situations it is more likely that there will be a reduction in the institutions' margins. This should in general imply a lower value for the relevant indicator/Business Indicator and a reduced risk weighted assets (RWA) figure for operational risk. Furthermore, the increase in operational risk losses due to COVID-19 could impact operational risk RWA through the Business Indicator Component too if it over weights the mentioned reduction of revenues.

101. In addition some operational risks may be higher as a result of the COVID-19 crisis, such as risks related to the continuity of business, risks related to the institutions' ordinary course of business, risks related to loss events, etc.<sup>52</sup>
102. In order to assess the impact of COVID-19, it is however also important to recall that the increase in operational risk requirements in generally stems from large banks, especially those who use the AMA today. Under Basel II, historical losses are only considered under the AMA (i.e. internal models), and not under the standardised approaches. These additional risks, if later materialised as losses, will thus have an impact only on the banks using AMA, so for most banks no significant difference in impact is expected.
103. The Basel III standardised approach (SA) will replace those standardised approaches under the current framework. The new SA is calculated as product of two components, one of which includes historical losses from the previous 10 years (which means including the COVID-related ones). In the EU, the co-legislators may decide to include in the CRR the banks' own ILM component, as this is an option (national discretion) in the Basel III accord. The means of accounting for operational risk losses, specifically the ones arising from COVID, will impact directly the implementation of the Basel III finalisation package. If the ILM was set as bank-specific, then all losses would be captured in the historical loss component during the 10 year window for which losses are considered, and may have a longer-term impact on the capital requirements of banks.
104. The EBA recommendation in the response to the CfA on Basel III finalisation (2 Aug 2019) was to include the ILM for medium and large banks. This policy advice remains valid even considering the impact of the COVID-19 impact case. The available data do not make it possible to further elaborate on the impact of COVID with respect to the original proposal in that report.

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52 EBA (2020) Report on implementation of selected COVID policies, [https://eba.europa.eu/sites/default/documents/files/document\\_library/Publications/Reports/2020/888311/Report%20on%20implementation%20of%20selected%20COVID-19%20policies%20.pdf](https://eba.europa.eu/sites/default/documents/files/document_library/Publications/Reports/2020/888311/Report%20on%20implementation%20of%20selected%20COVID-19%20policies%20.pdf)

105. Overall, should banks have recorded losses as a consequence of COVID-19, these will have an impact through the ILM component. Likewise, if profitability decreases this will also have an effect on the Basel III SA, which as mentioned above would result in a lower BIC. At this stage the order of magnitude of each of these opposite effects and the impact that COVID-19 might produce in the coming years are subject to a high degree of uncertainty, but on average institutions will continue to experience an increase in overall capital requirements for operational risk compared to the current situation.

#### 4.4.4 Market risk: FRTB standardised approach

106. The effects of COVID-19 led to increased uncertainty in the financial markets, leading, for example, to higher volatility in market risk factors. However, in terms of own funds requirements for market risk, under Basel III, these would not be expected to have a significant impact, when those requirements are computed with the FRTB standardised approach<sup>53</sup>. Under the FRTB-SA, sensitivities are risk-weighted with a prescribed set of risk-weights that are calibrated to reflect market conditions in a period of financial stress. Those risk weights are fixed, and therefore the results provided by the FRTB algorithms are expected to be stable. This is similar to the situation today, where the SA requirements are stable.

107. Nevertheless, a period of stress may still trigger effects that would impact those own funds requirements. For example:

- In a period of stress, the value of a risk factor may be in a domain for which the delta-sensitivity is higher than in a period of stable market conditions;
- Under the jump-to-default framework, obligors to which a bank is exposed may experience rating downgrades.

108. However, these effects mostly depend on the banks' portfolios subject to market risk and the hedging strategies in place. Hence, it is not possible to draw any general conclusions in this respect, and overall, the effects of COVID-19 does not appear to lead to any changes in the situation compared today.

#### 4.4.5 Market risk: FRTB internal model approach

109. Under the FRTB-IMA, the expected shortfall for modellable risk factors and the stress scenario risk measure for non-modellable risk factors are calibrated on a stress period that occurred in the past. Thus, related figures are expected to be relatively stable. However, if a

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<sup>53</sup> In this context, the impact is qualitatively assessed in relative terms. In particular, the absolute value of the own funds requirements for market risk may significantly change when a stress period occurs. However, if compared to the size of the market risk portfolio, those own funds requirements are not expected to materially change. The ratio of the own funds requirements for market risk over the size of the trading book can indeed be considered as a measure for assessing a potential procyclicality of the regulatory framework for market risk.



period of financial stress occurs and triggers an update of the stress period used for calibrating those measures, the expected shortfall and the stress scenario risk measure may significantly change, depending on how the new stress period differs from the previous one. This effect is fairly comparable compared to the situation today.

110. In addition, banks may face challenges during a period of stress. In particular, banks may observe overshootings when back-testing the VaR against the P&L. The back-testing has a crucial role under the FRTB: indeed, it is not employed just for capital purposes, but also for determining whether trading positions can be capitalised via an internal model approach<sup>54</sup>. The FRTB and the CRR2 already foresee specific cases where banks could be allowed by competent authorities to keep using internal models for capitalising their risks, and market conditions like those observed in COVID-19 times would be a perfect candidate (i.e. an extraordinary circumstance using the CRR<sup>55</sup> wording) for this waiver to be applied. This should ensure that unintended consequences of the back-testing requirements at desk level are addressed. It is worth highlighting that supervisory measures can be used also to limit the add-on to the one resulting from the overshootings observed when back-testing the VaR against the hypothetical P&L. However, this measure, which is also available under the current VaR framework, was not considered sufficient to address the surge in market volatility that was triggered by the COVID-19 crisis. Indeed, many overshootings not related to model deficiencies still occurred when back-testing the actual P&L against the VaR, justifying the regulatory changes under the CRR ‘quick fix’.
111. When it comes to the institution-wide backtesting, banks are expected to obtain similar results to those observed when using the current framework.
112. Finally, a period of financial stress may lead some risk factors to be less observable in the market. Thus, some risk factors may switch their modellability status from being modellable to become non-modellable, leading to an increase in the capital requirements. This is an effect that is difficult to compare to today considering the novelty of the FRTB risk factor eligibility test (RFET).
113. It should be noted that the FRTB framework, which relies on expected shortfall measures rather than VaR measures for capitalising risks, is expected to be more resilient to extreme shocks, as by definition the expected shortfall is a weighted average of tail events that are not captured in the current framework. Thus, in principle, under the FRTB the effect of a period of financial stress on the capital figures is expected to be less prominent than under the current framework. In addition, differently from the current framework, the final FRTB

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<sup>54</sup> Banks may face challenges also in meeting the P&L attribution (PLA) requirements where, due to the volatility observed in the market, the pricing functions of the institutions’ risk-measurement model may not provide P&L results that are sufficiently aligned with those provided by the Front-Office pricing functions. However, in this report, particular focus is given to the back-testing since (i) the PLA is performed only at desk level and regulatory measures are already foreseen for banks to continue using the IMA under exceptional circumstances although not meeting the PLA requirements, and (ii) differently from the back-testing which is already employed in the current framework, it is difficult to draw accurate conclusions on the magnitude of the deterioration in the PLA results under stress conditions as the PLA test is a novelty of the FRTB.

<sup>55</sup> Article 325az(5).

own funds requirements rely only on risk measures that are calibrated on a stress period, thus reducing potential procyclical effects of the market risk framework.

114. As a conclusion, although institutions are expected to obtain more stable capital requirements when facing a period of financial stress if compared to the current framework, the FRTB still presents some features of the current framework (e.g. institution-wide backtesting against a VaR calibrated on the last 12 months period) that would lead credit institutions to face similar challenges to those faced during the COVID-19 crisis.

#### 4.4.6 Output floor

115. The impact of the output floor is dependent on the difference between IRB and SA risk weights. In general, since the SA is more stable, any increase in IRB risk weights will lower the overall impact of the output floor. When assessing the impact of the output floor, it should be stressed that both the RWA calculated using the standardised approach (which forms the basis of the output floor), is likely to respond less cyclically than RWA that is calculated using internal modelling approaches. In this case the output floor impact could also decrease. For those banks constrained by the output floor, the effect is therefore likely to be lower under Basel III.
116. In addition to this, it needs to be kept in mind that extensive transitional arrangements (from the start of the application date) are being planned to support a smooth introduction of the output floor standard.<sup>56</sup> As seen by the results provided in the previous sections, the impact of the output floor will be even further reduced during the transitional arrangement.

### 4.5 Sensitivity analysis on credit risk of loan portfolios

117. The methodology applied in the EBA's impact assessments is usually based on static balance sheet assumption. The sensitivity analysis included in this report differs from the EBA standard impact assessment methodology. Any assumptions about changes in bank's balance sheets are speculative, and therefore, results in this analysis should be interpreted with extreme caution.
118. The current macroeconomic forecasts for the EU anticipate an extraordinary economic downturn for 2020-21. Against this background, EU banks will most likely suffer material losses on their loan portfolios as a result of the COVID-19 outbreak and the confinement measures. Nevertheless, at the time of writing it is very difficult to predict the pace of the economic recovery and too early to determine the mitigating impact of the government support measures. The measurement of the COVID-19 impact will necessarily have to be based on assumptions about the evolution of the banks' balance sheets. Attempts to quantify the losses and the mitigating impact of the support measures are therefore surrounded by significant uncertainty. Furthermore, the effects will not be of a permanent nature, and the

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<sup>56</sup> Also see section 3.5 on the "Transitional measures regarding the output floor" in EBA's policy advice on the Basel III reforms: Output floor.

results are therefore highly dependent on the overall economic effects of the COVID-19 crisis. This is in particular relevant in light of the fact that the full effect of the Basel III implementation will only be observed in 2028.

119. With all these caveats in mind, the following analysis aims to provide a quantitative assessment of the EU capital ratios and capital shortfalls under the revised Basel III framework in a situation where economic credit losses and credit risk weighted assets would increase due to the translation of the COVID-19 impact into banks' balance sheets. To the extent possible, the analysis also incorporates an estimation of the mitigation effect coming from the extraordinary policy measures adopted by competent authorities and Member States. As previously stated, the future amount of losses due to the COVID-19 impact and the potential effect of the mitigating measures is still unknown. Additionally, no data is available to measure the impact of the revised Basel III framework where the COVID-19 impact<sup>57</sup> would be included. This implies that the interactions of Covid-19 impact and the revised Basel III framework listed in the previous section are not considered in the present analysis. Therefore, caution should be exercised in drawing conclusions from the results of this sensitivity analysis.
120. The starting point of this analysis is the EU banks' capital positions and RWA under the EU-specific scenario on the date of the beginning of the implementation (1 January 2023). The EU specific scenario is taken as starting point of this analysis for simplicity reasons and should not be considered as an EBA preference. The results are presented using the main approach for the implementation of the output floor (i.e. by applying the full stack of capital requirements applicable in the EU - Pillar 1 minimum capital requirements, Pillar 2 requirements and the combined buffer requirement - to the floored RWA), and setting it at its transitional value of 50%, which will be applicable in 2023.<sup>58</sup> Therefore, the starting point of this analysis corresponds to results showed in section 3.3.2 for year 2023.
121. Two effects are introduced over this starting point situation:
- **Stress effect:** Bank by bank, an increase in both credit risk losses (ECL) and credit risk requirements (RWA) is introduced, based on the estimates in the sensitivity analysis on the credit risk of loan portfolios from the COVID-19 Thematic Note<sup>59</sup>. In this analysis, increases in both ECL and RWA are estimated based on the 2018 EU-wide stress test data. The sensitivity to the 2018 stress test adverse scenario is applied, bank by bank, to the loan portfolios of NFCs and households as of December 2019 (all exposures under these portfolios are subject to a shock in their credit quality). A hypothetical instantaneous shock is applied, and it is assumed to be of similar magnitude to the

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<sup>57</sup> Q2 2020 QIS data collection was cancelled as part of the BCBS relief measures for institutions.

<sup>58</sup> Under the revised Basel III framework the calibration of the output floor will be phased in starting from 50% of the total floored RWA in 2023 and progressively increasing every year to reach the 72.5% steady-state level in 2028;

<sup>59</sup> See Box 4: Sensitivity on credit risk of loan portfolios from the [Covid-19 Thematic Note](#) published by EBA on the 25 May 2020. The relative increase of ECL and RWAs are extrapolated to banks that are not in the Covid-19 Thematic Note sample, whenever possible, on country averages.

cumulative adverse shock arising from the 2018 stress test<sup>60</sup>. The caveats and limitations of the sensitivity analysis described in the COVID-19 Thematic Note should be considered for the purposes of this report.

The COVID-19 Thematic Note considers three different sensitivities: The main sensitivity analysis (sensitivity 1) is based on the 2018 stress test transitions to stage 2 (from stage 1) and to stage 3 (from stage 1 and 2). The two additional sensitivity analyses include an additional stress to sectors expected to be highly affected by the crisis and confinement measures (sensitivity 2) and an additional stress to countries which are expected to be more affected by the crisis (sensitivity 3).<sup>61</sup> The results in this analysis are shown as an interval: the lower bound of the interval corresponds to the increases in ECL and RWA in sensitivity 1 whereas the upper bound of the interval corresponds to the increases in ECL and RWA in sensitivity 2. The results under sensitivity 3 are not considered in the analysis as the country-specific shocks that were applied following the COVID-19 crisis in May<sup>62</sup> may not remain valid. The evolution of the crisis changed the distribution of countries that were most affected by the crisis. At this point in time, there is still no full clarity on possible significant differences across EU countries, as the situation is still evolving.

- **Mitigation effect:** The effect of some of the CRR and CRD ‘quick fixes’ that are part of the COVID-19 mitigation measures, such as the frontloading of the CRR II SME supporting factor, the frontloading of the non-deduction treatment for prudently valued software and the CRD V changes in the P2R composition, are already included in the EU-specific scenario which is the starting point of the sensitivity analysis. Additionally, the mitigating effect of the following extraordinary policy measures has been considered in this analysis:
  - The **release of capital buffers** has been considered by reducing the bank-specific capital requirements of each bank with the amount released.<sup>63</sup>
  - The **extension of the transitional arrangements** to include the prudential effect of IFRS 9 provisions envisaged in the CRR ‘quick fixes’. 50%<sup>64</sup> of the estimated ECL increase from performing exposure, is added back to banks’ available capital. Consequently, the amount of RWA under the standardised approach has been adjusted to consider the lower deduction of provisions from exposures that occur under the standardised approach.
  - The **beneficial treatment of the new issued loans guaranteed by the public sector** has been considered by applying a beneficial RW and 0% coverage ratio (which will

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<sup>60</sup> The stress test covers a horizon of three years.

<sup>61</sup> More details about the methodology used in the Covid-19 Thematic Note are explained in the annex of this report and in Box 4 and annex of the Covid-19 Thematic Note.

<sup>62</sup> When the Covid-19 Thematic Note was done and published.

<sup>63</sup> More details about the reduction of capital buffers considered in this analysis are explained in the annex of the report.

<sup>64</sup> Add back factor as of 1/1/2023 as stated in regulation (EU) 2020/873 (CRR quick fix).

imply a lower amount of ECL) to existing loans that are expected to be rolled over. As explained in section 2.5.3 of this report, the impact assessment methodology relies on a static balance sheet assumption. Therefore, no new loans originated after December 2019 are being considered in this impact assessment, and only the loans that are expected to be rolled over could benefit from the beneficial effect of public sector guarantees. The amount of loans that is assumed to be rolled over is proxied based on the share of newly issued guaranteed loans as of June 2020.<sup>65</sup> The quantification of the beneficial effect of this measure is directly dependent on the assumption used to estimate the amount of rolled-over loans and should therefore be interpreted with caution.<sup>66</sup>

122. The two effects (stress and mitigation) are included through the following two adjustments: on the one hand a decrease in banks’ available capital and, on the other hand an increase in their credit risk RWA, which in turn leads to an increase in the banks’ minimum required capital. For the purpose of this analysis, these adjustments are denominated as ‘COVID-19 adjustments’. The increase in banks’ MRC is partially off-set by the application of lower requirements due to a reduction of the applicable capital buffers. Table 22 shows a comparison between the capital ratios and capital shortfalls under the revised Basel III framework at the beginning of the transitional period (results shown in section 3.3.2 for year 2023) and the same capital ratios and shortfalls after the inclusion of the COVID-19 adjustments. In the event that the estimated adjustments to available capital and RWA crystallised, the TC shortfall under the revised Basel III framework would range between EUR 30.4 billion and EUR 59.8 billion (depending on whether the results are calculated under sensitivity 1 or sensitivity 2). A comparison with the revised TC ratio in the EU-Specific scenario as of 1 January 2023 would show a weighted average reduction that ranges between around 168 bps in sensitivity 1 to around 272 bps in sensitivity 2.

Table 22: Capital ratios and capital shortfalls (EUR billion) during **the transitional period as of 1 January 2023**, EU-specific scenario and EU-specific scenario with COVID-19 impact , December 2019 data

	CET 1		T1		TC	
	Revised ratio (%)	Shortfall(bn)	Revised ratio (%)	Shortfall(bn)	Revised ratio (%)	Shortfall(bn)
<b>EU Specific</b>	13.8	2.4	14.8	3.0	17.2	7.6
<i>Differences (S1,S2)</i>	<i>(-182 bps, -286 bps)</i>	<i>(09.7-29.9)</i>	<i>(-167 bps, -269 bps)</i>	<i>(15.9-42.0)</i>	<i>(-168 bps, -272 bps)</i>	<i>(22.8-52.2)</i>
<b>COVID-19 (S1,S2)</b>	<b>(11.9-10.9)</b>	<b>(12.1-32.3)</b>	<b>(13.2-12.1)</b>	<b>(18.9-45.1)</b>	<b>(15.5-14.4)</b>	<b>(30.4-59.8)</b>

Sources: EBA 2019-Q4 QIS data, COVID-19 impact estimations based on 2018 EU-wide ST, COREP/FINREP data (including COVID templates).

Notes: Based on a sample of 98 banks. S1: Results under sensitivity 1 (lower bound of the interval). S2: Results under sensitivity 2 (upper bound of the interval).

<sup>65</sup> More details about the methodology used to estimate the beneficial effect of public sector guarantees (PSG) are explained in the annex of the report.

<sup>66</sup> Additional details of the mitigating effect of public sector guarantees as of June 2020 can be found in the [Thematic note on moratoria and public guarantees](#) published by the EBA on 20/11/2020 and in Box 9 ‘Usage of public guarantee schemes in banks’ lending’ included in the [Risk Assessment Report](#) published by the EBA on 11/12/2020.

123. With regard to the percentage change in T1 MRC (relative to current T1 MRC), the inclusion of the COVID-19 adjustments would lead to an overall increase in T1 MRC of 9.3% in sensitivity 1 and 10.3% in sensitivity 2 (3.1-4.1 percentage points more than the estimated increase during the first year of the transitional implementation of the Basel III framework under the EU specific scenario. See the results in section 3.3.2 for year 2023). However, these results need to be interpreted with caution as the percentage change in T1 MRC is driven by the combination of two effects: the application of the revised Basel III framework and the inclusion of the Covid-19 adjustments. Due to the interaction between the revised Basel III provisions and the effect of COVID-19 (See section 4.4.), these two effects cannot be disentangled from each other.
124. Capital ratios and shortfalls shown in Table 22 already include the estimated beneficial effect of policy measures (mitigation effect). This mitigation effect drives a reduction of the TC shortfall of between EUR 14 billion and EUR 22 billion (sensitivity 1, sensitivity 2) and a 0.6% decrease in the percentage change in T1 MRC.
125. The mitigating effect of the extraordinary policy measures considered in the sensitivity analysis excludes the potential benefits of moratoria on loan repayments. The decision to exclude this effect is based on two factors: the underlying economic environment which is highly adverse, and the horizon of the analysis which is long-term. At the time when moratoria were granted, most borrowers only faced liquidity issues. However, were the adverse scenario to materialise, many of those borrowers would likely also face solvency issues. In the long-term, this should lead to a broadly neutral impact of moratoria in terms of provisioning, as a significant part of the losses would still materialize, albeit though at a later stage. Additionally, in accordance with the EBA guidelines, the deadline to request payment moratoria was initially the end of September 2020 and was later extended until March 2021 subject to specific conditions<sup>67</sup>. At the time of writing, a significant part of moratoria that were granted will be in place for a maximum period of six months. For these reasons, and in line with the methodology published by EBA for the upcoming 2021 stress test exercise<sup>67</sup>, the analysis does not consider a mitigating effect from moratoria.
126. As already stated, caution should be exercised in drawing conclusions of the results the sensitivity analysis. The duration and severity of the COVID-19 crisis is still unknown, and no data is yet available to measure the true impact of the COVID-19 crisis on the banks' balance sheets. For this reason, the stressed effect in this analysis has been quantified based on past data from the 2018 stress test exercise. Another important caveat to the analysis is that it is assumed that the impact of the output floor remains constant after the introduction of the COVID-19 adjustments. No data is available to estimate how the output floor would interact with the changes in banks' balance sheets and therefore, it is assumed that the output floor impact would remain constant<sup>68</sup>. However, it is expected that the impact of the output floor

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<sup>67</sup> See [ST 2021 Methodology note](#).

<sup>68</sup> See section 4.4 for a qualitative explanation of the interactions between output floor and Covid-19.

at the beginning of the transitional arrangement would have a limited impact on banks' capital requirements, in line with the results shown in section 3.3.2.

# Annex 1: Sample coverage

Table 23 QIS cumulative sample coverage in terms of banking assets, by country and total EU

Country	QIS assets as % of total domestic assets
AT	13%
BE	93%
DE	56%
DK	89%
ES	79%
FI	71%
FR	87%
GR	73%
HU	75%
IE	143%*
IT	89%
LU	65%
NL	89%
NO	67%
PL	42%
PT	72%
SE	84%
<b>All banks</b>	<b>76%</b>

Sources: EBA 2019-Q4 QIS data, ECB Statistical Data Warehouse, Norges Bank 2019 Financial Stability Report, and EBA calculations.

Notes: The *total domestic assets* are the total assets of domestic banking groups and stand-alone banks (EU and non-EU subsidiaries are not included). For Norway, the total domestic assets is total assets of banks, excluding branches of foreign banks, mortgage companies (including branches of foreign companies), finance companies (including branches of foreign companies) and state lending institutions as of 30 June 2019. QIS assets excludes QIS institutions that are subsidiaries of EU27 parents.

\* Percentages higher than 100% are due to the presence of foreign-controlled (non-EU) subsidiaries in the QIS sample of certain EU Member States (e.g. subsidiaries of US institutions located in the EU).



## Annex 2: Additional results

### Cumulative analysis based on June 18 data for the consistent sample

This section presents the findings of the EBA's impact assessment analysis of the final Basel III framework under the two implementation scenarios, using June 2018 data for the consistent sample of 99 institutions.

Consistent with the results of Chapter 3, the market risk impact is based on the 'reduced bias estimation' (i.e. the baseline scenario in the EBA Basel III monitoring exercise) rather than the 'conservative estimation' results presented in the December 2019 CfA report.

However, unlike the results presented in Chapter 3, the application of the revised CVA framework published in July 2020 is not reflected in this section for either scenario. Therefore, the differences in the CVA impact observed between Chapter 3 and this section should primarily reflect the impact from introducing the new CVA framework. Moreover, the EU specificities related to P2R composition and the treatment of software assets are not reflected in the EU-specific scenario, as those were frontloaded as part of the wider measures taken by EU bodies to address the adverse impact of COVID-19 on the EU banking sector.

#### Basel III scenario

Table 24 Percentage change in T1 MRC (relative to current T1 MRC), by bank size, Basel III scenario, June 2018 data

Bank size	$\Delta$ SA	$\Delta$ IRB	$\Delta$ CCP	$\Delta$ SEC	$\Delta$ MKT	$\Delta$ OP	$\Delta$ CVA	$\Delta$ LR	$\Delta$ OF	$\Delta$ Total
<b>All banks</b>	<b>2.3</b>	<b>3.2</b>	<b>0.1</b>	<b>0.7</b>	<b>0.9</b>	<b>3.6</b>	<b>4.3</b>	<b>-0.5</b>	<b>9.5</b>	<b>24.1</b>
Large	2.1	3.3	0.1	0.7	0.9	3.7	4.4	-0.5	9.7	24.5
of which: GSII	1.7	3.5	-0.1	1.2	0.8	5.5	5.1	0.0	6.8	24.5
of which: OSII	2.5	2.3	0.2	0.4	1.2	2.2	4.1	-0.6	13.3	25.6
Medium	7.8	0.4	0.0	-0.1	0.0	0.4	0.6	0.0	1.0	10.2
Small	5.0	0.0	0.0	0.0	0.0	-16.9	0.0	0.0	0.0	-12.0

Sources: EBA 2019-Q4 QIS data and EBA calculations.

Notes: Based on a sample of 99 banks: large (73), of which G-SII (8), of which O-SII (46); medium (22); small (4). SA, standardised approach to credit risk; IRB, internal ratings-based approach to credit risk; CCP, central counterparty; SEC, securitisation; MKT, market risk; OP, operational risk; CVA, credit valuation adjustment; LR, leverage ratio; OF, output floor.  $\Delta$  MKT based on 'reduced bias estimation'.  $\Delta$  CVA based on December 2017 CVA framework.  $\Delta$  OF impact is based on the main approach to implement the output floor.

Table 25 Capital ratios and shortfalls, Basel III scenario, June 2018 data

Bank size	CET 1			T1			TC		
	Current ratio (%)	Revised ratio (%)	Shortfall (bn)	Current ratio (%)	Revised ratio (%)	Shortfall (bn)	Current ratio (%)	Revised ratio (%)	Shortfall (bn)
<b>All banks</b>	<b>14.0</b>	<b>11.2</b>	<b>74.6</b>	<b>15.0</b>	<b>12.1</b>	<b>106.8</b>	<b>17.6</b>	<b>14.1</b>	<b>109.5</b>
Large	13.9	11.2	74.6	14.9	12.0	106.2	17.6	14.1	108.9
of which: GSII	12.7	10.3	39.2	13.8	11.2	52.2	16.2	13.1	62.6
of which: OSII	15.1	12.0	31.5	16.1	12.9	48.7	19.0	15.2	40.1
Medium	16.3	14.7	0.0	16.5	14.8	0.5	17.8	16.0	0.6
Small	25.3	28.8	0.0	25.3	28.8	0.0	26.3	29.9	0.0

Sources: EBA 2019-Q4 QIS data and EBA calculations.

Notes: Based on a sample of 99 banks: Large (73), of which G-SII (8), of which O-SII (45); Medium (22); Small (4).  $\Delta$  MKT based on 'reduced bias estimation'.  $\Delta$  CVA based on December 2017 CVA framework.  $\Delta$  OF impact is based on the main approach to implement the output floor.

## EU-specific scenario

Table 26 Percentage change in T1 MRC (relative to current T1 MRC), by bank size, EU-specific scenario, June 2018 data

Bank size	$\Delta$ SA	$\Delta$ IRB	$\Delta$ CCP	$\Delta$ SEC	$\Delta$ MKT	$\Delta$ OP	$\Delta$ CVA	$\Delta$ LR	$\Delta$ OF	$\Delta$ Total
<b>All banks</b>	<b>1.5</b>	<b>1.9</b>	<b>0.1</b>	<b>0.7</b>	<b>0.9</b>	<b>1.3</b>	<b>1.1</b>	<b>0.1</b>	<b>9.6</b>	<b>17.2</b>
Large	1.4	1.9	0.1	0.7	0.9	1.5	1.1	0.1	9.8	17.6
of which: GSII	0.9	2.6	-0.1	1.2	0.8	1.8	1.4	0.7	7.4	16.7
of which: OSII	2.0	0.5	0.2	0.4	1.2	1.6	1.0	-0.2	12.9	19.4
Medium	5.9	0.3	0.0	-0.1	0.0	-6.3	-0.1	0.3	1.3	1.4
Small	3.5	0.0	0.0	0.0	0.0	-46.9	0.0	13.1	0.0	-30.3

Sources: EBA 2019-Q4 QIS data and EBA calculations.

Notes: Based on a sample of 99 banks: Large (73), of which G-SII (8), of which O-SII (46); Medium (22); Small (4). SA, standardised approach to credit risk; IRB, internal ratings-based approach to credit risk; CCP, central counterparty; SEC, securitisation; MKT, market risk; OP, operational risk; CVA, credit valuation adjustment; LR, leverage ratio; OF, output floor.  $\Delta$  MKT based on 'reduced bias estimation'.  $\Delta$  CVA based on December 2017 CVA framework.  $\Delta$  OF impact is based on the main approach to implement the output floor. The EU-specific treatment for software assets and P2R composition is not taken into account.

Table 27 Capital ratios and shortfalls, EU-specific scenario, June 2018 data

Bank size	CET 1			T1			TC		
	Current ratio (%)	Revised ratio (%)	Shortfall (bn)	Current ratio (%)	Revised ratio (%)	Shortfall (bn)	Current ratio (%)	Revised ratio (%)	Shortfall (bn)
<b>All banks</b>	<b>14.0</b>	<b>11.9</b>	<b>46.6</b>	<b>15.0</b>	<b>12.8</b>	<b>68.7</b>	<b>17.6</b>	<b>15.0</b>	<b>70.3</b>
Large	13.9	11.8	46.6	14.9	12.7	68.3	17.6	14.9	69.8
of which: GSII	12.7	11.0	19.0	13.8	11.9	27.1	16.2	13.9	34.1
of which: OSII	15.1	12.7	23.9	16.1	13.6	36.6	19.0	16.0	30.2
Medium	16.3	16.1	0.0	16.5	16.2	0.4	17.8	17.5	0.5
Small	25.3	42.8	0.0	25.3	42.8	0.0	26.3	44.5	0.0

Sources: EBA 2019-Q4 QIS data and EBA calculations.

Notes: Based on a sample of 99 banks: Large (73), of which G-SII (8), of which O-SII (46); Medium (22); Small (4).  $\Delta$  MKT based on 'reduced bias estimation'.  $\Delta$  CVA based on December 2017 CVA framework.  $\Delta$  OF impact is based on the main approach to implement the output floor. The EU-specific treatment for software assets and P2R composition is not taken into account.

## Capital shortfalls

### Basel III scenario

Table 28 Number of banks incurring a shortfall in total capital and respective shortfall amount (EUR bn), by bank type and OF approach, Basel III scenario, December 2019 data

	Number of banks in TC shortfall		TC Shortfall (bn)	
	Main approach	Alternative approach	Main approach	Alternative approach
<b>All banks</b>	<b>13</b>	<b>13</b>	<b>52.2</b>	<b>45.0</b>
Standardised banks	4	4	0.7	0.7
Internal model banks constrained by the OF	6	6	42.5	35.3
Internal model banks not constrained by the OF	3	3	9.0	9.0

Sources: EBA 2019-Q4 QIS data and EBA calculations.

Notes: Based on a sample of 99 banks.

### EU-specific scenario

Table 29 Number of banks incurring a shortfall in total capital and respective shortfall amount (EUR bn), by bank type and OF approach, EU-specific scenario, December 2019 data

	Number of banks in TC shortfall		TC Shortfall (bn)	
	Main approach	Alternative approach	Main approach	Alternative approach
<b>All banks</b>	<b>10</b>	<b>9</b>	<b>33.0</b>	<b>26.3</b>
Standardised banks	4	4	0.6	0.6
Internal model banks constrained by the OF	5	4	29.1	22.4
Internal model banks not constrained by the OF	1	1	3.3	3.3

Sources: EBA 2019-Q4 QIS data and EBA calculations.

Notes: Based on a sample of 99 banks.

## Transitional impact

### Basel III scenario

Table 30 Contribution of the output floor to the total T1 MRC impact (relative to current T1 MRC) and shortfall in total capital (EUR bn) during the transitional period, by OF approach, Basel III scenario, December 2019 data

	Main approach			Alternative approach		
	Δ OF	Δ Total	TC shortfall (bn)	Δ OF	Δ Total	TC shortfall (bn)
2023 (50%)	<b>0.0</b>	<b>11.8</b>	27.6	<b>0.0</b>	<b>11.8</b>	27.6
2024 (55%)	0.2	12.0	27.6	0.1	11.9	27.6
2025 (60%)	1.0	12.8	32.6	0.8	12.6	31.7
2026 (65%)	2.4	14.2	38.7	1.9	13.7	36.5
2027 (70%)	5.0	16.8	47.4	4.0	15.8	41.7
2028 (72.5%)	6.7	18.5	52.2	5.4	17.1	45.0

Sources: EBA 2019-Q4 QIS data and EBA calculations.

Notes: Based on a sample of 99 banks.

## EU-specific scenario

Table 31 Contribution of the output floor to the total T1 MRC impact (relative to current T1 MRC) and shortfall in total capital (EUR bn) during the transitional period, by OF approach, EU-specific scenario, December 2019 data

	Main approach			Alternative approach		
	$\Delta$ OF	$\Delta$ Total	TC shortfall (bn)	$\Delta$ OF	$\Delta$ Total	TC shortfall (bn)
2023 (50%)	<b>0.0</b>	<b>6.2</b>	7.6	<b>0.0</b>	<b>6.2</b>	7.6
2024 (55%)	0.3	6.5	10.5	0.3	6.5	10.0
2025 (60%)	1.2	7.4	15.9	1.0	7.1	14.4
2026 (65%)	2.5	8.7	21.3	2.0	8.2	18.9
2027 (70%)	5.0	11.2	28.5	4.1	10.2	23.6
2028 (72.5%)	6.9	13.1	33.0	5.7	11.9	26.3

Sources: EBA 2019-Q4 QIS data and EBA calculations.

Notes: Based on a sample of 99 banks.

## 'Parallel stack approach' for the implementation of the output floor

As highlighted in the August 2018 CfA policy report on the output floor, the parallel stack approach is considered not compliant with the Basel III agreement, because it is based on a comparison of two amounts of capital requirements, whereas the Basel text states that the capital ratio requirements should be applied to the institution's floored RWA.

It also goes against the objectives of the output floor to reduce excessive risk-weight variability and enhance comparability between banks. This is because it would reduce the output floor to a very minor role and result in the risk-based requirement continuing to be based on the RWA resulting from internal-model-based approaches. Conversely, for institutions for which the output floor requirement leads to the highest amount of capital requirements, there may be no changes in capital requirement stemming from the introduction of EU-specific buffers, such as Pillar 2 or SRB requirements. In that case, it would render the EU-specific buffers ineffective to address bank-specific or system-wide risks.

In addition, the parallel stack approach would create confusion about trigger levels, such as that of AT1 or those associated with the minimum distributable amount (MDA), as these levels would be calculated in both the internal models RWA stack and the floored RWA stack.

More generally, it would make the interpretation of capital ratios difficult and introduce additional complexity in reconciling the final capital requirements.

## Basel III scenario

Table 32 Percentage change in T1 MRC (relative to current T1 MRC) and shortfalls, parallel stack approach, by bank size, Basel III scenario, December 2019 data

Bank size	T1 MRC percentage change		Shortfall
	$\Delta$ OF	$\Delta$ Total	TC
<b>All banks</b>	<b>0.7</b>	<b>12.5</b>	<b>32.0</b>
Large	0.8	12.9	31.8
of which: GSII	0.4	16.2	27.8
of which: OSII	1.2	9.8	0.6
Medium	0.0	1.1	0.3
Small	0.0	-12.9	0.0

Sources: EBA 2019-Q4 QIS data and EBA calculations.

Notes: Based on a sample of 99 banks: Large (73), of which G-SII (8), of which O-SII (46); Medium (22); Small (4).  $\Delta$  MKT based on 'reduced bias estimation'.  $\Delta$  CVA based on July 2020 CVA framework.

Table 33 Number of banks incurring a shortfall in total capital and respective shortfall amount (EUR bn), by bank type and parallel stack approach, Basel III scenario, December 2019 data

	Number of banks in TC shortfall	TC shortfall (bn)
	Parallel approach	Parallel approach
<b>All banks</b>	<b>10</b>	<b>32.0</b>
Standardised banks	4	0.7
Internal model banks constrained by the OF	3	22.3
Internal model banks not constrained by the OF	3	9.0

Sources: EBA 2019-Q4 QIS data and EBA calculations.

Notes: Based on a sample of 99 banks.

Table 34 Contribution of the output floor to the total T1 MRC impact (relative to current T1 MRC) and shortfall in total capital (EUR bn) during the transitional period, parallel stack approach, Basel III scenario, December 2019 data

	Parallel stack approach		
	$\Delta$ OF	$\Delta$ Total	TC shortfall (bn)
2023 (50%)	<b>0.0</b>	<b>11.8</b>	27.5
2024 (55%)	0.0	11.8	27.5
2025 (60%)	0.0	11.8	27.5
2026 (65%)	0.2	12.0	27.5
2027 (70%)	0.4	12.2	29.6
2028 (72.5%)	0.7	12.5	32.0

Sources: EBA 2019-Q4 QIS data and EBA calculations.

Notes: Based on a sample of 99 banks.

## EU-specific scenario

Table 35 Percentage change in T1 MRC (relative to current T1 MRC) and shortfalls, parallel stack approach, by bank size, EU-specific scenario, December 2019 data

Bank size	T1 MRC percentage change		Shortfall
	$\Delta$ OF	$\Delta$ Total	TC
<b>All banks</b>	<b>1.5</b>	<b>7.7</b>	<b>15.4</b>
Large	1.6	7.9	15.1
of which: GSII	2.1	10.5	11.2
of which: OSII	1.1	5.4	0.6
Medium	0.0	0.2	0.3
Small	0.0	-14.9	0.0

Sources: EBA 2019-Q4 QIS data and EBA calculations.

Notes: Based on a sample of 99 banks: Large (72), of which G-SII (8), of which O-SII (46); Medium (22); Small (4).  $\Delta$  MKT based on 'reduced bias estimation'.  $\Delta$  CVA based on July 2020 CVA framework.

Table 36 Number of banks incurring a shortfall in total capital and respective shortfall amount (EUR bn), by bank type and OF approach, EU-specific scenario, December 2019 data

	Number of banks in TC shortfall	TC shortfall (bn)
	Parallel approach	Parallel approach
<b>All banks</b>	<b>7</b>	<b>15.4</b>
Standardised banks	4	0.6
Internal model banks constrained by the OF	2	11.5
Internal model banks not constrained by the OF	1	3.3

Sources: EBA 2019-Q4 QIS data and EBA calculations.

Notes: Based on a sample of 99 banks.

Table 37 Contribution of the output floor to the total T1 MRC impact (relative to current T1 MRC) and shortfall in total capital (EUR bn) during the transitional period, parallel stack approach, EU-specific scenario, December 2019 data

	Parallel stack approach		TC shortfall (bn)
	$\Delta$ OF	$\Delta$ Total	
2023 (50%)	<b>0.0</b>	<b>6.2</b>	7.6
2024 (55%)	0.0	6.2	7.6
2025 (60%)	0.0	6.2	7.6
2026 (65%)	0.4	6.6	8.7
2027 (70%)	1.0	7.3	13.2
2028 (72.5%)	1.5	7.7	15.4

Sources: EBA 2019-Q4 QIS data and EBA calculations.

Notes: Based on a sample of 99 banks.

## Basel III scenario including prudential treatment of software assets and P2R composition features

Table 38 Percentage change in T1 MRC (relative to current T1 MRC), by bank size, Basel III scenario including software and P2R features, December 2019 data

Bank size	Δ SA	Δ IRB	Δ CCP	Δ SEC	Δ MKT	Δ OP	Δ CVA	Δ LR	Δ OF	Δ Total
<b>All banks</b>	<b>2.4</b>	<b>2.6</b>	<b>0.0</b>	<b>0.4</b>	<b>0.8</b>	<b>3.8</b>	<b>2.1</b>	<b>-0.2</b>	<b>6.7</b>	<b>18.5</b>
Large	2.4	2.7	0.0	0.4	0.8	4.0	2.1	-0.2	6.8	18.9
of which: GSII	2.2	3.9	0.0	0.6	0.5	6.3	2.3	0.0	6.6	22.4
of which: OSII	2.6	0.6	0.1	0.3	1.3	1.9	2.1	0.0	7.8	16.5
Medium	3.3	0.2	0.0	-1.1	-0.9	-0.8	0.3	0.1	0.7	1.8
Small	6.9	0.0	0.0	0.0	0.0	-19.8	0.0	0.0	0.0	-12.9

Sources: EBA 2019-Q4 QIS data and EBA calculations.

Notes: Based on a sample of 99 banks: Large (73), of which G-SII (8), of which O-SII (45); Medium (22); Small (4). Δ MKT based on 'reduced bias estimation'. Δ CVA based on December 2017 CVA framework. Δ OF impact is based on the main approach to implement the output floor.

Table 39 Capital ratios and shortfalls, Basel III scenario including software and P2R features, December 2019 data

Bank size	CET 1			T1			TC		
	Current ratio (%)	Revised ratio (%)	Shortfall (bn)	Current ratio (%)	Revised ratio (%)	Shortfall (bn)	Current ratio (%)	Revised ratio (%)	Shortfall (bn)
<b>All banks</b>	<b>14.6</b>	<b>12.3</b>	<b>22.7</b>	<b>15.8</b>	<b>13.3</b>	<b>30.7</b>	<b>18.2</b>	<b>15.4</b>	<b>51.6</b>
Large	14.5	12.2	22.7	15.7	13.2	30.5	18.2	15.3	51.3
of which: GSII	13.6	11.2	16.2	14.7	12.1	23.5	17.1	14.1	42.5
of which: OSII	15.4	13.3	4.6	16.7	14.3	4.5	19.3	16.6	5.5
Medium	17.7	17.2	0.0	18.0	17.4	0.2	19.9	19.3	0.3
Small	24.7	28.1	0.0	24.7	28.1	0.0	25.6	29.1	0.0

Sources: EBA 2019-Q4 QIS data and EBA calculations.

Notes: Based on a sample of 99 banks: Large (73), of which G-SII (8), of which O-SII (45); Medium (22); Small (4). Δ MKT based on 'reduced bias estimation'. Δ CVA based on December 2017 CVA framework. Δ OF impact is based on the main approach to implement the output floor. The difference in current ratios in comparison to the results included in the main body are negligible and therefore almost not visible.

## EU-specific scenario including impact of prudential treatment of software assets and P2R composition features (features considered in the end-point only)

This section presents the results on the EU-specific scenario considering the impact of the prudential treatment of software assets and P2R composition. In comparison to the findings presented in the main body of the report, those results include the prudential treatment of the software assets and the new P2R composition only in the end-point of the analysis, instead of in the starting- and end-point. The results show the impact of the Basel III reforms under the EU-specific scenario as well as the impact of implementing the treatment of software assets and new P2R compositions.

Table 40 Percentage change in T1 MRC (relative to current T1 MRC), by bank size, EU-specific scenario and impact of software and P2R features, December 2019 data

	$\Delta$ SA	$\Delta$ IRB	$\Delta$ CCP	$\Delta$ SEC	$\Delta$ MKT	$\Delta$ OP	$\Delta$ CVA	$\Delta$ LR	$\Delta$ OF	$\Delta$ Total
<b>All banks</b>	<b>0.7</b>	<b>-0.3</b>	<b>0.0</b>	<b>0.3</b>	<b>0.7</b>	<b>1.3</b>	<b>0.4</b>	<b>0.0</b>	<b>6.7</b>	<b>9.7</b>
Large	0.7	-0.3	0.0	0.4	0.7	1.3	0.5	0.0	6.9	10.0
of which: GSII	0.3	1.1	0.0	0.6	0.3	1.6	0.6	0.0	7.3	11.8
of which: OSII	1.0	-2.6	0.1	0.2	1.1	1.1	0.4	0.3	7.1	8.6
Medium	1.0	-0.2	0.0	-1.2	-0.9	0.0	-0.2	0.2	0.8	-0.5
Small	4.9	0.0	0.0	0.0	0.0	-19.8	0.0	0.0	0.0	-14.9

Sources: EBA 2019-Q4 QIS data and EBA calculations.

Notes: Based on a sample of 99 banks: Large (73), of which G-SII (8), of which O-SII (45); Medium (22); Small (4).  $\Delta$  MKT based on 'reduced bias estimation'.  $\Delta$  CVA based on December 2017 CVA framework.  $\Delta$  OF impact is based on the main approach to implement the output floor.

Table 41 Capital ratios and shortfalls, EU-specific scenario and impact of software and P2R features, December 2019 data

Bank size	CET 1			T1			TC		
	Current ratio (%)	Revised ratio (%)	Shortfall (bn)	Current ratio (%)	Revised ratio (%)	Shortfall (bn)	Current ratio (%)	Revised ratio (%)	Shortfall (bn)
<b>All banks</b>	<b>14.6</b>	<b>12.9</b>	<b>17.4</b>	<b>15.8</b>	<b>13.9</b>	<b>23.6</b>	<b>18.3</b>	<b>16.1</b>	<b>33.0</b>
Large	14.5	12.8	17.4	15.7	13.8	23.4	18.2	16.0	32.7
of which: GSII	13.6	11.8	11.8	14.7	12.8	17.5	17.1	14.9	25.3
of which: OSII	15.4	13.9	3.8	16.7	15.0	3.5	19.4	17.4	4.1
Medium	17.7	17.4	0.0	18.0	17.6	0.2	19.9	19.5	0.3
Small	24.7	28.9	0.0	24.7	28.9	0.0	25.6	30.0	0.0

Sources: EBA 2019-Q4 QIS data and EBA calculations.

Notes: Based on a sample of 99 banks: Large (73), of which G-SII (8), of which O-SII (45); Medium (22); Small (4).  $\Delta$  MKT based on 'reduced bias estimation'.  $\Delta$  CVA based on December 2017 CVA framework.  $\Delta$  OF impact is based on the main approach to implement the output floor.



# Annex 3: Sensitivity analysis on credit risk of loan portfolios: a methodological annex

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## Data sources

In addition to the sources of data used in the main analysis presented in this report (update of the impact assessment on the final Basel III framework using data as of end-December 2019), the sensitivity analysis on credit risk of loan portfolios relies on additional sources of data:

- Estimates calculated for the sensitivity analysis on credit risk portfolios presented in the COVID-19 Thematic Note published by the EBA on the 25 May 2020.<sup>69</sup>
- Data from supervisory reporting (COREP/FINREP) available in the EBA database, including data from the COVID templates recently collected by EBA to gather data on the COVID-19 measures put in place by Member States.
- Supervisory reporting data collected via the QIS as of June 2020.<sup>70</sup>
- ESRB list of COVID measures, as of 12 October 2020.

## Sample

The sample coincides with the 99 banks considered in the main analysis presented in this report (update of the impact assessment on the final Basel III framework using data as of end-December 2019). Data from the additional sources used in this analysis is not always available for all the banks in the sample. In these cases, assumptions or extrapolations rules were applied.

## General considerations

As explained in section 4.5, the starting point of the sensitivity analysis is the banks' capital positions and RWA under the EU-specific implementation (main approach) of the revised Basel III framework on the date of the beginning of the implementation date (1 January 2023). Given this starting point, two effects are introduced: the stress effect and the mitigation effect, which are translated into adjustments to the available capital side and to the minimum required capital side at the starting point, as explained in the diagram below. Firstly, the available capital<sup>71</sup> is updated to the available

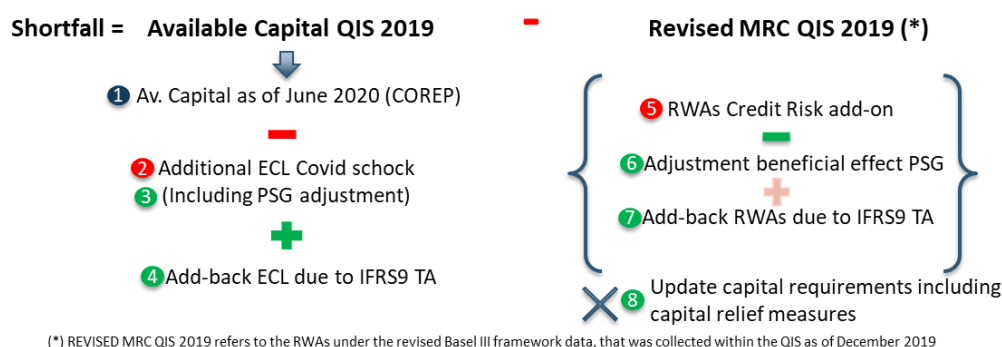
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<sup>69</sup> See Box 4: Sensitivity on credit risk of loan portfolios from the [Covid-19 Thematic Note](#)

<sup>70</sup> The June 2020 QIS exercise was cancelled, and therefore no data was collected from banks. Nevertheless, supervisory reporting data was collected as of June 2020 for banks in the QIS sample via the SRS template.

<sup>71</sup> Available capital reported by participating banks in the end-December 2019 QIS data collection.

capital as of June 2020 based on COREP data<sup>72</sup>. Secondly, bank-by-bank stress and mitigation effects are introduced.



### Stress effect considered in the sensitivity analysis

An increase in the credit risk losses (ECL or adjustment 2) and an increase in the credit risk requirements (RWA or adjustment 5) are included based on the estimates in the sensitivity analysis on credit risk of loan portfolios from the COVID-19 Thematic Note.

- The **increase in ECL** in the COVID-19 Thematic Note is calculated as follows: for all sensitivities, the differences between stressed transition rates (from stage 1/2 to stage 2/3) projected in the 2018 stress test and the respective starting point are calculated ('stressed add-ons'). In sensitivity 1, the stressed add-ons are based on the adverse scenario of the 2018 stress test. Sensitivity 2 builds on those stressed add-ons, but applies a further amplification of shocks to some sectors expected to be more affected by the COVID-19 crisis. Sensitivity 3 builds on sensitivity 2 but further extends the shock to combinations of the most affected sectors and countries. The impact on ECL is derived from the application of the banks' 2019 average coverage ratios by stage to the stressed exposure flows.
- The **impact on RWA** in the COVID-19 Thematic Note is also derived in line with the 2018 EU-wide stress test and considers increased shocks in sensitivities 2 and 3. For IRB banks, a stressed regulatory probability of default (PD) is calculated similarly to the stressed IFRS 9 transition rates and subsequently used in the IRB regulatory formula to derive new average risk weights. For standardised approach banks, a multiple of the RWA increase during the stress test horizon is calculated and applied to the starting point RWA.

There are some caveats that need to be considered with regards to the COVID-19 Thematic Note estimates. For example, results are based on a potential deterioration of PDs of similar severity to the 2018 stress test, while other relevant parameters are kept constant. LGDs and exposures at default (EADs) are not stressed in order to restrict the changes to the PD parameters.<sup>73</sup>

<sup>72</sup> For the banks for which COREP data is not available, the starting point available capital is not updated.

<sup>73</sup> More details about the methodology used in the Covid-19 Thematic Note are explained in Box 4 and the annex of the Covid-19 Thematic Note.

The bank by bank COVID-19 Thematic Note estimates of additional ECL that are deducted from banks' available capital are first adjusted to account for the provisions already recognised by banks in the first half of 2020, to avoid any potential double counting of ECL for banks whose capital is updated as of June 2020.<sup>74</sup>

### COVID-19 mitigation measures considered in the sensitivity analysis

- a. **Release of capital buffers (adjustment 8):** Capital buffers are released in line with the measures taken by the competent authorities, by reducing the capital requirements of each bank by the amount released. The following table summarises the adjustments included in the sensitivity analysis.

Table 42 Methodology for application of capital buffer releases

	Capital buffer release measure (based on ESRB list, 12 October 2020)	Methodology
<b>CCyB</b>	In some countries the CCyB was lowered, foreseen increases were postponed, or a full release of the CCyB was implemented.	The CCyB buffer was adjusted based on the bank by bank data as of 2020-Q2 in the EBA Supervisory Reporting database. For banks not included in this data based, the CCyB was proxied as the CCyB buffer set in the country of the bank.
<b>OSII buffer</b>	Some countries decreased the OSII buffer, postponed the transitional period, or implemented a full release.	The OSII buffer was adjusted based on the information from the ESRB list of COVID measures, as of 12 October 2020.
<b>SRB</b>	Some countries decreased the SRB, fully released it, or postponed its introduction.	The SRB buffer was adjusted based on the information from the ESRB list of COVID measures, as of 12 October 2020.

- b. The **extension of the transitional arrangements** to include the prudential effect of IFRS 9 provisions envisaged in the CRR 'quick fixes' (adjustment 4 and 7). Thus, 50% of the estimated ECL increase from performing exposures is added back to banks' available capital. Consequently, the amount of RWA under the standardised approach has been adjusted to consider the lower deduction of provisions from exposures under the Standardised approach. The increase of RWA has been proxied by the application of an average RW calculated bank by bank, to the 50% of the estimated ECL increase from performing exposures.
- c. The beneficial treatment of loans guaranteed by the public sector (adjustment 3 and 6):

<sup>74</sup> This adjustment is done in two steps based on COREP/FINREP data: 1) Calculation of the ratio flow of provisions over total gross loans for 2019-H1 and 2020-H1. 2) The difference between both ratios is applied over total gross loans as of 2020-H1. This amount is the proxy of provisions allocated in the first half of the year.

- The beneficial treatment is applied bank by bank to a proportion of the total exposure as of end-December 2019, which is assumed to be the exposure that will be rolled-over with a public guarantee.
- The proportion applied to the end-December 2019 exposure is calculated as the proportion of exposure of loans subject to public guarantee schemes over total credit risk exposure as of June 2020.<sup>75,76</sup>
- The exposure amount to which the beneficial treatment is applied is capped to the amount of exposure of public sector guaranteed loans as of June 2020<sup>77</sup>.
- The beneficial treatment implies the application of a preferential RW (risk weighted assets density for the guaranteed loans as of June 2020<sup>75</sup>) and a reduction of the estimated additional ECL by applying a 0% coverage to those exposures.

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<sup>75</sup> Calculated bank by bank based on the data received by the EBA in the COVID templates as of June 2020.

<sup>76</sup> As an underlying assumption, all loans that benefited from a public guarantee as of June 2020 are assumed to be already existing loans as of end-December 2019 that were rolled over. It is also assumed that no additional loans will be rolled-over and subject to public sector guarantees between June 2020 and January 2023.

<sup>77</sup> Based on the data received by the EBA in the COVID templates as of June 2020

## Annex 4: Qualitative assessment of the implementation of the final adjustments to the CVA risk framework in the EU

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With regard to CVA risk, the second paragraph of section 2.1.1 of the CfA requires the EBA to provide a qualitative assessment of the implementation in EU legislation of the final adjustments to the CVA risk framework, particularly for those adjustments which could not be reflected in the impacts due to data limitation.

The BCBS published on 8 July 2020 revised standards<sup>78</sup> on CVA risk that include targeted revisions to the CVA risk standards previously published in December 2017 as part of the Basel III post-crisis reforms. These revisions were intended to align relevant parts of the CVA risk framework with the revised standards for market risk issued in January 2019 and with the standards on capital requirements for bank exposures to central counterparties. In addition, the revisions introduce a recalibration of the overall capital requirements for CVA risk calculated under the new approaches for CVA risk.

Before adopting the revisions on CVA risk, the BCBS issued on 28 November 2019 a consultative document<sup>79</sup> to seek feedback from stakeholders on the revisions. In its final standards, the BCBS adopted all the revisions on which it had consulted. Other proposals for revisions made during the consultations by stakeholders and outside the scope of the revisions consulted by the BCBS were however not reflected in the final standards. In particular when consulting the BCBS noted the limited, targeted and final characteristics of the revisions, and it also noted that it had no plans for any further adjustments to the CVA risk framework.

Against the above background, the following were the revisions included in the final standards:

- **Reduction in the risk weights.** Under the SA-CVA all delta risk weights in the interest rate and FX risk classes have been reduced by 30% and 50% respectively. The vega risk weights in the SA-CVA have been capped at 100%. In addition, the risk weight for credit spread risk for high yield and non-rated sovereigns has been reduced from 3% to 2% both under the SA-CVA and BA-CVA. These revisions align the CVA risk standards with the market risk standards.
- **Introduction of new index buckets and revised aggregation under the SA-CVA.** New buckets for credit and equity indices have been introduced under the SA-CVA in line with their presence in the market risk standards. In addition, the formula for

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<sup>78</sup> <https://www.bis.org/bcbs/publ/d507.pdf>

<sup>79</sup> <https://www.bis.org/bcbs/publ/d488.pdf>

aggregating capital requirements across buckets has been revised. These revisions align the CVA risk standards with the market risk standards, and should ensure a better recognition of index hedges under the SA-CVA.

- **Revisions to the scope of the CVA risk framework.** The revisions exclude from the scope of CVA capital requirements fair-valued SFTs where the CVA risks stemming from them are not material. Clients' exposures to clearing members, in relation to transactions where the clearing member is acting as an intermediary between the client and a central counterparty are also excluded from the scope of the CVA risk framework.
- **Reduction in the margin period of risk (MPoR) for selected transactions.** Under the SA-CVA the supervisory floor for the MPoR associated to SFTs and clearing members' exposures to clients has been reduced to five business days. These revisions align the CVA risk standards with the standards on capital requirements for bank exposures to central counterparties.
- **Revisions to the overall calibration of the CVA risk charge.** The multiplier  $m_{CVA}$  under the SA-CVA has been reduced from 1.25 to 1, while in turn, to achieve an appropriate relative calibration between the SA-CVA and the BA-CVA, the scalar  $DS_{BA-CVA}$  equal to 0.65 has been introduced. This is to be applied to the original capital requirement calculated under the BA-CVA. In this regard, the EBA is supportive of the efforts aimed at ensuring an appropriate calibration of the revised CVA risk framework.

The EBA provided its advice on the implementation of the revised CVA risk framework in the EU in its response to the call for advice on Basel III published on 4 December 2019<sup>80</sup>. In that advice the EBA provided an assessment of the revised CVA risk standards, and it communicated that its advice on CVA risk should suffice for the purposes of the implementation in the EU of the CVA risk framework, also taking into account the scope of the BCBS consultation on the CVA risk framework, which was undergoing at the time when the EBA published its advice.

The EBA also communicated that while it supports further monitoring of the impact of the revisions to the CVA risk framework, it considered that, taking into account the scope of the revisions to the CVA risk standards that were also considered as appropriate in this advice, there was no need for additional advice on the implementation of the CVA risk framework at a later stage, once the revisions are completed at international level. Considering that the final standards on CVA risk do not include further revisions to those already envisaged in the consultative document (which have also been outlined above), the EBA refers therefore to the advice it published in December 2019.

In particular, the EBA continues to support the considerations and the policy recommendations that it put forward in its advice published in December 2019. In addition, the EBA supports the implementation of the revised CVA risk framework in the EU, including the targeted revisions

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<sup>80</sup> <https://eba.europa.eu/eba-updates-estimates-impact-implementation-basel-iii-and-provides-assessment-its-effect-eu-economy>

introduced to the standards in June 2020, in order to ensure alignment with international standards.

However, with respect to the revised treatment for fair-valued SFTs under the revised standards, the EBA continues to be concerned by the introduction of a discretion to include or exclude fair-valued SFTs from the scope of the CVA risk charge based on the materiality of the CVA risk stemming from the fair-valued SFTs held by a particular institution. As noted by the EBA in its December 2019 advice, leaving the assessment of the materiality to banks or competent authorities would undermine the level playing field in the scope of transactions subject to the CVA risk charge in the EU.

Therefore, the EBA recommends that the discretion should be fully removed when implementing the revised CVA risk framework in the EU and replaced by a mandate for the EBA to specify in draft regulatory technical standards (RTS) when the CVA risk stemming from fair-valued SFTs is material for institutions. The draft RTS would lead to the automatic capitalisation of material CVA risk stemming from fair-valued SFTs without the intervention of institutions or competent authorities. This would allow a fully harmonised CVA risk framework to be applied in the EU.

# Annex 5: MREL analysis

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## Impact of Basel III on MREL

This annex supplements section 3 of the updated impact study on the Basel III reforms. It leverages the main findings on the impact of the Basel III reforms on RWA and MRC shortfalls under the Basel III and the EU specific scenario.<sup>81</sup> In particular, it updates the analysis delivered to the European Commission in December 2019, which focused on the estimation of the finalisation of Basel III on some elements of the BRRD2 framework combined with recent information on available MREL resources and decisions taken by resolution authorities under BRRD1.

The detailed information on available MREL resources and decisions regarding EU banks under BRRD1 as of December 2019, together with the resulting shortfalls, will be presented in an EBA report to be published in Q1 2021. The sample underlying this analysis shares a total of 45 banks (from 13 EU member states) with the sample of 99 banks underlying the main impact study on the impact of Basel III. These 45 banks represent sc. 67% of RWA. This limited sample contributes to constrain the validity of this results, in particular with reference to absolute terms.

The impact on the MREL requirements stemming from Basel III could in theory be estimated both under the current BRRD1 and under a BRRD2 setting. However, for both frameworks, in order to understand the impact of the Basel III revised framework on MREL requirements, it must be stressed that it is not possible to provide an exact assessment, as MREL is a bank specific requirement, reflecting an individual bank's resolution strategy as set by the relevant resolution authority.

Given that the BRRD2 will become the applicable framework before the implementation of the revised Basel III framework, the main focus of the assessment is the interaction between Basel III and the BRRD2. The data sample for this BRRD2-based part of the analysis is limited to the 23 banks in the sample which are expected to be subject to BRRD2 subordination requirements and which are also part of the sample of 99 banks underlying the updated impact study on the revised Basel III framework. These 23 banks are GSIs and top Tier banks (with total assets above EUR 100 bn), representing 61% of the total RWA included in the CfA sample.

The estimation is based on the fact that the BRRD2 will introduce (i.e. at level 1) minimum subordination levels that are not bank specific and are therefore straightforward to estimate both under a high and a low scenario (see methodology below).<sup>82</sup> These minimum levels only apply to

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<sup>81</sup> See section 2.4.2 for more details on the scenarios.

<sup>82</sup> To reflect the possibility of senior debt allowance, the BRRD2 estimation is computed on the basis of two possible scenarios (no senior debt allowance earmarked as a 'high' scenario and full senior debt allowance as a 'low' scenario), leading to a range of possible values



GSIIs and top Tier banks (with total assets above EUR 100 billion) of which we have 23 in our sample, representing 61% of the total RWA included in the CfA sample. These subordination levels are a minimum and resolution authorities retain the possibility to increase them to address the risk of no creditor worse off (NCWO)<sup>83</sup>. It is not clear today to which extent resolution authorities will make use of this power, but this implies that the impact of Basel III on BRRD2 subordination levels may somewhat be underestimated.

As indicated, in the calculation of these shortfalls, it has been assumed that shortfalls in own funds resulting from the Basel III revised framework ('MRC shortfall') will be closed by a build-up of own funds. To the extent that these banks have an MREL shortfall, such a build-up of own funds (which qualify as MREL eligible resources) will also be used to meet the BRRD2 MREL subordinated requirement. In this way, covering the MRC shortfall will contribute to the reduction of the MREL shortfall. Also, the MREL shortfall has been reduced by any MREL shortfall that would occur against the BRRD2 MREL subordinated requirements before the implementation of the revisions to the Basel III framework.

To include a broader range of banks, the BRRD2 analysis is complemented with a BRRD1 based analysis on banks not expected to be subject to BRRD2 subordination requirements. This additional analysis covers the 22 banks which are both in the sample of the CfA report as well as in the (BRRD1 based) MREL report. These banks cover 6% of the sample of the CfA report, which together with the 23 banks included in the BRRD2-based analysis leads to total coverage of 67% of the original CfA sample.

To estimate the additional shortfall relevant to these 22 banks, the impact of the Basel III revised framework on MREL requirements is solely estimated using BRRD1 based data (on available MREL resources and MREL requirements) combined with the estimated increases in RWAs due to the Basel III revised framework. The MREL requirements are linearly scaled with the increase in RWA, after which they are compared to available own funds and eligible liabilities, in order to obtain figures for hypothetical MREL shortfalls.

It needs to be noted that the estimation of the impact for the additional sample of 22 banks is performed based on the hypothetical assumption that MREL decisions under BRRD1 are mechanically linked to the RWA of a bank, rather than other indicators such as leverage ratio exposure. In fact, the current BRRD1 framework already provides for a leverage ratio as a potentially applicable base. In addition, MREL requirements can be adjusted by Resolution Authorities in light of the resolution strategy – for instance by adjusting the MREL beyond the 8% total liability and own fund (TLOF) benchmark to ensure the contribution to losses of resolution financing arrangements.

For these reasons, it is not possible, based on available data, to foresee how the RWA inflation will affect the existing MREL requirements set by Resolution Authorities; therefore the impact of RWA inflation from the implementation of the revised Basel III framework can only be approximated on

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<sup>83</sup>DIRECTIVE 2014/59/EU Article 45b(5)

the basis of strong assumptions. These assumptions are likely to contribute to an overstating of the impact. This results from the fact that for some banks either the leverage ratio or the 8% of total liabilities requirement will be the driving requirement for subordination and these measures will remain unaffected by the revised Basel III framework.

In line with the main update, the impact of the Basel III reforms on MREL is estimate under two scenarios: (i) Basel III and (ii) EU-specific.

### Basel III scenario

This scenario corresponds to the Basel III central scenario in the August 2019 and December 2019 CfA reports and is in line with the EBA policy recommendations. It represents the situation in 2019 as if the Basel III framework was already fully implemented, and the transitional period has passed. The goal of this scenario is to update the impact of Basel III framework as presented in August 2019 and December 2019 CfA reports.

For the 23 banks expected to be subject to BRRD2 subordination requirements, we estimate that the increased RWAs under the Basel III scenario (total RWA for this subsample would increase by 19%) would lead to a c. 13.9-14.4%% increase in BRRD2 requirements. The reason for having an estimate that is lower than the increase of RWAs, reflects the fact that BRRD2 subordination levels are partially a factor of non-risk based metrics (such as Leverage ratio exposure and TLOF).

As indicated in Table 43, this increase translates into a shortfall in MREL subordinated resources ranging from EUR 6.1 billion under the low scenario to EUR 4.5 billion under the high scenario. The lower shortfall under the high BRRD2 scenario reflects the fact that non-risk based variables – leverage based and TLOF - have a greater impact on the BRRD2 high subordination calibration (see Methodology section below). The significant drop from the previous year’s analysis largely reflects the lower increase in RWA under this scenario and the strong increase in subordinated resources among GSIs and top tier banks compared to December 2018. The fact that the share of MRC shortfall contributing to closing the MREL shortfall is nil reflects the fact that for the banks with a shortfall either (i) the MRC shortfall resulting from Basel III is nil or (ii) the subordinated MREL shortfall resulting from Basel III is nil.

Table 43 MREL shortfall attributable to revised Basel III –BRRD2 based sample under the Basel III scenario

Basel III scenario (EUR bn)	Number of banks	Total RWA	MRC shortfall	Of which covering MREL shortfalls	MREL shortfall attributable to Basel III
CfA Sample	99	9,147	52	na	na
BRRD high sub	23	5,890	40	-	5
BRRD2 low sub				-	6

Note: For the sample of 23 banks, the capital shortfall of the finalisation of Basel III is assessed to be EUR 40 billion. It is assumed that this capital will be raised and this has been deducted in the calculation of the MREL shortfall under BRRD2. It is also assumed that any shortfalls arising from an implementation of BRRD2 subordination requirements under the current Basel III framework will be covered.

For the sample of 22 additional banks which are not expected to be subject to BRRD subordinated requirement, we estimate the impact on current (BRRD1) MREL decisions. As indicated in Table 44, we find that in absolute terms, total MREL requirements under BRRD1 would indeed increase, in line with MRC and RWA, by around 6.6%. This is to be expected as the MREL requirement for these banks is just scaled up with the increase in RWA, which for this specific sample is around 6.4%. This increase in MREL requirements results in an estimated shortfall of EUR 2.5 billion attributable to the revised Basel III framework, which would come on top of both the existing shortfall under BRRD1 and any estimated shortfall in own funds due to the implementation of the revised Basel III framework.

Table 44 MREL shortfall attributable to revised Basel III –BRRD1 based sample under the Basel scenario

Basel III scenario (EUR bn)	Number of banks	Total RWA	MRC shortfall	Of which covering MREL shortfalls	MREL shortfall attributable to Basel III
CfA Sample	99	9,147.0	52.0	na	na
BRRD1	22	587.8	0.7	0.5	2.5

As indicated in Table 45, aggregating the results from the BRRD2 based analysis for the 23 bank sample with the results from the BRRD1 based analysis for the 22 bank sample, we find that in absolute terms, the total estimated MREL shortfall for the total of 45 banks, attributable to the Basel III framework under the Basel III scenario, would be within the range of EUR 7 billion to EUR 8.6 billion.

Table 45 MREL shortfall attributable to revised Basel III –aggregation of BRRD2 based and BRRD1 based sample under the Basel scenario

Basel III scenario (EUR bn)	Number of banks	Total RWA	MRC shortfall	Of which covering MREL shortfalls	MREL shortfall attributable to Basel III
CfA Sample	99	9,147.0	52.0	na	na
BRRD1 & 2	45	6,478.2	41.0	-	[7-8.6]

### EU-specific scenario

The second scenario (called ‘EU-specific’) considers additional features requested by the European Commission in its Call for Advice: applying of SME supporting factors on top of the Basel SME preferential risk weight treatment, maintaining EU CVA exemptions, exercising the jurisdictional discretion contemplated in the Basel III framework to exclude the bank-specific historical loss component from the calculation of the capital for operational risk (ILM=1), the change in the prudential treatment of software assets and the change in Pillar 2 composition rules. The last two features were considered in both the starting point and end point of the scenario, as these items have already been approved and are now permanent features of the EU framework. Some features

in this scenario deviate from the EBA's policy recommendations in the August 2019 and December 2019 CfA reports.

For the sample of 23 banks, we estimate that the increased RWA under the revised EU-Specific scenario (total RWA for this subsample would increase by 13%) would lead to a 9.3% increase in BRRD2 requirements.

As indicated in Table 46, this increase translates into a shortfall in MREL subordinated resources ranging from EUR 489 million under the low scenario to EUR 472 million under the high scenario. Here again, the lower shortfall under the high BRRD2 scenario reflects the fact that non-risk based variable – leverage based and TLOF - have a greater impact on the BRRD2 high subordination calibration (see Methodology section below).

Table 46 MREL shortfall attributable to revised Basel III –BRRD2 based sample under the EU Specific scenario

EU-specific scenario (EUR bn)	Number of banks	Total RWA	MRC shortfall	Of which covering MREL shortfalls	MREL shortfall attributable to Basel III
CfA Sample	99	9,147	52	na	na
BRRD high sub	23	5,890	40	-	0.472
BRRD2 low sub				-	0.489

Note: For the sample of 23 banks, the capital shortfall of the finalisation of Basel III is assessed to be EUR 40bn. It is assumed that this capital will be raised and this has been deducted in the calculation of the MREL shortfall under BRRD2. It is also assumed that any shortfalls arising from an implementation of BRRD2 subordination requirements under the current Basel III framework will be covered.

As indicated in Table 47, for the sample of 23 additional banks not expected to be subject to BRRD2 subordination requirement, we find that in absolute terms, total MREL requirements under BRRD1 would indeed increase, in line with MRC and RWA, by around 3.6%. This is to be expected as the MREL requirement for these banks is just scaled up with the increase in RWA, which for this specific sample is around 3.5%. This increase in MREL requirements results in an estimated increase in the shortfall attributable to the revised Basel III framework of EUR 1.5 billion, which would come on top of both the existing shortfall under BRRD1 and any estimated shortfall in own funds due to the implementation of the revised Basel III framework.

Table 47 MREL shortfall attributable to revised Basel III –BRRD1 based sample under the EU Specific scenario

EU-specific scenario (EUR bn)	Number of banks	Total RWA	MRC shortfall	Of which covering MREL shortfalls	MREL shortfall attributable to Basel III
CfA Sample	99	9,147	52.0	na	na
BRRD1	22	572.2	0.4	0.4	1.5

As indicated in Table 48, aggregating the results from the BRRD2 based analysis for the 23 bank sample with the results from the BRRD1 based analysis for the 22 bank sample, we find that in absolute terms, the total estimated MREL shortfall for the total of 45 banks, attributable to the revised Basel III framework under the EU specific scenario, would be within the range of EUR 2 billion.

Table 48 MREL shortfall attributable to the revised Basel III – aggregation of BRRD2 based and BRRD1 based sample under the EU-specific scenario

EU-specific scenario (EUR bn)	Number of banks	Total RWA	MRC shortfall	Of which covering MREL shortfalls	MREL shortfall attributable to Basel III
CfA Sample	99	9,147.0	33.0	na	na
BRRD1 & 2	45	6,158.5	23.1	-	[2-2.01]

As indicated in Table 49, aggregating the results from the Basel III and EU specific scenarios we find that the impact of Basel III on MREL shortfall varies between EUR 2 billion and EUR 8.6 billion. Together with the possible overestimation of the impact on the remaining banks (as it depends on the hypothetical assumption that MREL decisions are only and mechanically linked to the RWA of a bank), it should also be noted that this shortfall cannot be directly compared with the shortfall of own funds as a result of the implementation of the revised Basel III framework, as the shortfall resulting from MREL requirements can be covered by MREL-eligible instruments. Furthermore, the timeline for closing the shortfall related to the revised Basel III framework is longer than what is currently envisaged under BRRD2.

Table 49 MREL shortfall attributable to revised Basel III – aggregation of BRRD2 based and BRRD1 based sample under both scenarios

Basel III & EU-specific scenarios (EUR bn)	Number of banks	Total RWA	MRC shortfall	Of which covering MREL shortfalls	MREL shortfall attributable to Basel III
CfA Sample	99	9,147	1.5	na	na
BRRD1 & 2 (Basel Pure)	45	6,478	41.0	-	[7-8.6]
BRRD1 & 2 (EU specific)	45	6,158	23.1	-	[2-2.01]

## Subordination levels under BRRD2

GSIIIs	<p>High = max. [18% RWA + CBR; 6.75% of LRE; 8% TLOF]</p> <p>Low = max. [14.5% RWA + CBR; 6.75% of LRE-3.5%RWAs; 8% TLOF*(1-3,5%/(18%+CBR))]</p>
Top Tier	<p>High = max. [13.5% RWA + CBR; 5% LRE; 8% TLOF]</p> <p>Low = max. [13.5% RWA + CBR; 5% LRE; 8% TLOF* (1-3,5%/(18%+CBR))]</p>

## Methodology and shortfall estimates

### Summary of the methodology

As described in Impact of Basel III on MREL, to isolate the impact on MREL shortfall that is attributable to the introduction of the revised Basel III framework, the shortfall estimates are reduced by any own funds shortfall resulting from increased MRC under the revised Basel III framework (referred to as ‘MRC shortfall’) as well as by the MREL shortfalls that would occur under either BRRD1 or BRRD2 without the implementation of the revised Basel III framework.

To calculate the MRC shortfall for the credit institutions in the sample, the same methodology has been applied as for the updated impact study on the Basel III framework.

To calculate MREL shortfalls the EBA MREL monitoring exercise has provided the necessary estimations on available own funds, eligible liabilities and required MREL before the implementation of the Basel III revised framework, based on available own funds and eligible liabilities as of December 2019 and the most recent MREL requirements, which are determined in the context of the currently applicable framework (BRRD1).

To calculate shortfalls attributable to the revised Basel III framework under BRRD2, for those 23 banks in the sample that are subject to the BRRD2 subordination requirements, the EBA MREL monitoring exercise only provides the necessary data on available own funds and eligible liabilities. To derive the shortfalls, these existing resources are compared with the estimations on the required amounts of BRRD2 subordination on the basis of the formulas in *Subordination levels under BRRD2*.

To obtain the amount displayed in Table 45 and Table 48 (i.e. the EUR 7 billion to EUR 8.6 billion range under Basel III and EUR 2 billion shortfall under EU-specific) of shortfall attributable to the Basel III revised framework for the 23 banks, the MRC shortfall is subtracted as well as the estimate of what the BRRD2 subordination shortfall would be if BRRD2 were applicable currently (i.e. comparing available resources against the BRRD2 subordination requirements based on RWA and balance sheet numbers reported in December 2019). MRC shortfall is only subtracted to the extent that there is an MREL shortfall.

For the 22 banks of the sample that are not subject to BRRD subordination requirements, the described methodology cannot apply. In this cases, to calculate shortfalls attributable to the revised Basel III framework under BRRD1 (Table 44 and Table 47), the EUR 2.5 billion shortfall under Basel III and EUR 1.5 billion under EU-specific is obtained by likewise subtracting an MRC shortfall in addition to a currently existing MREL shortfall (under BRRD1). However, it needs to be noted the limitations embedded in such hypothetical assumption that MREL decisions under BRRD1 are mechanically linked to the RWA of a bank, since the current BRRD1 framework provides for a leverage ratio as a potentially applicable base and, in addition, MREL requirements can be adjusted by Resolution Authorities in light of the resolution strategy – for instance by adjusting the MREL beyond the 8% total liability and own fund (TLOF) benchmark to ensure contribution to losses of resolution financing arrangements.

Throughout this exercise, where comparing existing resources with required amounts of MREL/subordination, shortfalls for the shortfall banks are aggregated, without offsetting any shortfall with surpluses of other banks.

### **Background on the MREL monitoring exercise**

The EBA MREL monitoring exercise focuses on external MREL requirements, available own funds and eligible liabilities and resulting shortfalls. The sample of more than 230 banks / resolution groups reflects the actual population of banks effectively subject to MREL requirements above their minimum capital requirement (i.e. earmarked for resolution as opposed to liquidation), actual MREL requirements for these entities or groups and MREL resources actually eligible in the relevant jurisdiction.

The study is realised at resolution group level, which is the level at which MREL decisions are taken. For instance, in the case of a multiple point of entry (MPE) group there is one MREL decisions for each resolution group and thus one shortfall computed for each resolution group.

Subsidiaries are not considered. The focus on the report is external MREL decisions with the aim of understanding MREL related issuance needs. The impact of subsidiaries is captured by the impact of the resolution group as a whole. In the case of subsidiaries of foreign bank, those are excluded as well as, except in the case of an MPE strategy, they would be expected to issue MREL to their parent as opposed to issuing to the market.

The MREL decisions taken and methodology followed are set in the context of the currently applicable framework (BRRD1), which means that they may only be indicative at the time of the data collection. But MREL eligible resources other than own funds are only considered at the point of entry – in line with BRRD2.

### **Background on BRRD2 requirements used**

Regarding BRRD2 the EBA has focused the analysis on subordination levels only, as required MREL levels under the new directive would not be possible to anticipate. Particularly, BRRD2 clarifies MREL calibration but leaves significant discretion for the resolution authority to adjust MREL

decisions up or down – to ensure that MREL remains a bank specific requirement. However, BRRD2 does introduce a minimum level of subordination for both GSIs and Top tier banks – as the highest between multiples of RWA, leverage exposures or total liabilities and own funds (TLOF).<sup>84</sup> This calibration is not bank specific, beyond the matter of the senior debt allowance and is thus straightforward to estimate.

For these reasons, BRRD2 subordinated levels were recalibrated using RWA in accordance with the revised Basel III framework. The EBA estimated the impact of the revised Basel III framework on BRRD2 by calculating shortfalls between existing resources and BRRD2 subordination levels. The outcome is provided as a range to reflect the fact that resolution authorities retain some discretion in the granting of a senior debt allowance of up to 3.5% RWA to meet their subordinated requirements (the ‘high’ scenario for a zero senior debt allowance and a ‘low’ scenario for a full senior debt allowance).

It is to be noted that, next to characteristics that may lead to an overestimation, an aspect that may be underestimated in the calculation of subordinated debt shortfalls may be the additional level of subordination that can be imposed on banks at the discretion of the resolution authority, which is not taken into account in this approach. However, as explained earlier there are several reasons why the estimations are on the conservative side.

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<sup>84</sup> BRRD Art. 45b and see annex 2 for formulas





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