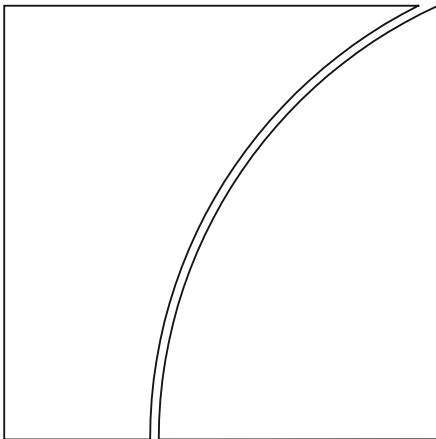


# Basel Committee on Banking Supervision

## Working Paper 35

### Survey on the interaction of regulatory instruments: results and analysis

March 2019



BANK FOR INTERNATIONAL SETTLEMENTS

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<sup>1</sup> Comments by other members of the RTF are gratefully acknowledged.



## 1. Background

This report summarises and analyses the results of the third-wave survey conducted by the Research Task Force (RTF) on the role of multiple regulatory constraints in the Basel III framework.

The latest survey (end-December 2017) retains the format of the end-December 2016 survey: each block of questions tests the impact of a regulatory instrument and provides an indication of the interaction among said instruments and the problems created by the growing complexity of the Basel III framework. To provide additional insights (and check data quality), banks' answers from this survey are merged with banks' information on the other topics collected through the Basel III monitoring exercise. Overall, we find a great degree of consistency across topics and between survey waves.

The report is structured in six sections and an annex. Section 2 summarises the objectives and the structure of the survey, which is reprinted in full in the annex. Section 3 provides an overview of the sample. Section 4 presents the key takeaways. Section 5 presents in-depth analysis of the eight sections of the survey (grouped in subsections 5.1 to 5.8). Section 6 describes the data quality assurance process. The annex contains an overview of question-specific response rates, the glossary and a detailed analysis of the interactions between multiple regulatory constraints.

## 2. Survey

The survey offers banks an opportunity to provide feedback on the impact of regulatory reform across a number of dimensions. A better understanding of the qualitative importance of different requirements and the ways in which individual banks might adjust to new regulatory constraints informs regulators about the consequences of such constraints and their interactions with the overall financial system and the real economy. Banks are requested to provide their responses to each regulatory change assuming certain scenarios take place (as outlined in the questions). Most questions are multiple choice and closed-ended, in the interest of comparability; a few questions allow banks to provide additional details.

The survey contains 28 questions (broken out in eight sets). The first set of questions focuses on banks' Tier 1 capital management buffers and their determinants. The second set contains questions about banks' expected behavioural reactions to a target management leverage ratio (LR) shortfall. The third set concentrates on the probabilities of a target management LR shortfall and a target management Tier 1 capital shortfall over the quarter after the reporting date. The fourth set asks banks about their confidence in allocating risk exposure efficiently across their various lines of business. The fifth set focuses on banks' behavioural reactions to stress test results. The sixth set investigates banks' behavioural reactions to the Liquidity Coverage Ratio (LCR) and the Net Stable Funding Ratio (NSFR). The seventh set asks banks about the most important challenges associated with meeting regulatory requirements. The final set collects information to improve the survey. The annex provides detailed analysis and documentation on the interactions of multiple regulatory constraints. It also focuses on the interaction of banks' behavioural reactions to various regulatory requirements with both profitability and risk-density, which is the ratio of risk-weighted assets (RWA) to total assets.

## 3. Sample

This report analyses data provided by 86 Group 1 banks (ie banks that have Tier 1 capital of more than €3 billion and are internationally active) and 42 Group 2 banks (ie all other banks that submitted the survey). Compared to the second survey wave (with 84 Group 1 banks and 64 Group 2 banks), the size of the Group 1 sample remained stable but participation among Group 2 banks decreased.

The banks in the sample have aggregate total assets of €58,044 billion and vary by many dimensions as shown in the following table.

Main characteristics of the banks in the sample						Table 1
	Mean	Min	1st quartile	Median	3rd quartile	Max
Total assets (EUR bn)	453	3	46	144	611	3,329
Tier 1 ratio (%)	16	9	12	14	18	43
Common Equity Tier 1 ratio (%)	15	8	12	13	17	34
LR (%)	6	2	5	6	7	21
Risk-density (%)	45	6	33	44	57	112
LCR (%)	163	105	126	141	165	1,822
NSFR (%)	129	91	110	116	124	221

Note: Descriptive statistics for the sample of 128 respondent banks. Some banks responded only partially to the survey.

Source: Basel Committee on Banking Supervision.

As response rates are uneven between questions, the analyses are based on a variety of sample sizes. Response rates are above 50% for more than two thirds of the survey.<sup>2</sup> See Table 3 in the annex for details on question-specific response rates. The questions with the lowest response rate focused on price effects. This report shows some results broken out into three regions – Europe (44 participating banks), United States (7) and the rest of the world (77). For some questions, only a couple of banks, which might be relatively large, provide responses.

## 4. Key takeaways

- **The most important determinants of target management Tier 1 buffers are financial market conditions and regulatory constraints.** Risk appetite, return on equity (RoE) maximisation, changes in the credit cycle and internal stress tests are also relevant (p 10).
- **The following findings hold for the introduction of the LR, the LCR and the NSFR:**
  - **The most important behavioural adjustments to new regulatory restraints are intended consequences,** such as increasing capital and holding more high-quality liquid assets (pp 12, 23, 24).<sup>3</sup>
  - **The substantial variation across behavioural reactions does not indicate herding** (pp 13, 24, 25).
  - **There are minimal price pass-throughs following capital shortfalls from stress test results.** Such changes in prices are concentrated in lending, particularly in small- and medium-enterprise (SME) lending (p 22).

<sup>2</sup> Only one question had a response rate below 30%. As the response rates of related questions were considerably higher, the reason for the one low response rate could be specific to that particular question. Please refer to Section 5.8 for a discussion of possible improvements to the survey.

<sup>3</sup> The terms “intended” and “unintended” consequences are used in this report, because they are frequently used in the policy debate about Basel III. In fact, the framework is agnostic with respect to the intended behavioural reactions of banks to the introduction of regulatory constraints. Some unintended consequences, such as a reduction in loan growth, can be intended under certain circumstances (eg in the context of excessive credit growth or a real estate bubble). A more in-depth analysis would be needed to identify which behavioural reaction is intended under specific macro-economic scenarios.



- **The LCR and the NSFR are complementary.** To adjust to the LCR, banks primarily increase holdings of high-quality liquid assets (HQLA). In contrast, to adjust to the NSFR, banks primarily issue more long-term debt. The other steps banks take to adjust to these requirements are similar (p 24).
- **Most banks are confident in their capital positions.** In addition, most banks can manage regulatory complexity (p 15).
- **Stress tests impact capital planning.** The three most important stress tests for capital planning are internal capital stress tests, bottom-up Pillar 2 stress tests and top-down stress tests. Banks make use of various strategies to adjust to stress test results. For example, banks with lower RoE rely more on closing business lines as well as reducing non-core assets and other business lending compared to high RoE banks (pp 16).
- **There is substantial variation in the regulatory requirement that banks report as hardest to meet.** The Tier 1 capital ratio is the most challenging for 35% of banks, the NSFR for 15%, Total Loss-Absorbing Capacity (TLAC) for 12%, the LR for 11% and the LCR for 6% (p 26).
- **The statistical interactions between multiple regulatory constraints are limited.** We test these interactions by splitting the sample by common equity Tier 1 (CET1) ratio, LR, LCR and NSFR as well as their joint CET1/LR position. Overall, differences between samples are small; 18% are statistically significant and only 5% affect the top 5 behavioural reactions (Table 4).<sup>4</sup> The behavioural reaction of banks with lower regulatory ratios and/or risk-density are more likely to be consistent with intended consequences (pp 36).
- **Banks indicated that the complexity of the Basel framework is the most difficult challenge associated with meeting regulatory requirements.** Uncertainty with respect to implementation and/or changes to regulation were also reported as important (p 26).

## 5. Results and analysis

This section presents selected results from the survey by order of questions. We prioritise novel results from the latest survey wave and refer the reader to the BCBS Working Paper 33 of July 2018 for an overview of our scope.<sup>5</sup>

### 5.1 Banks' target management Tier 1 buffer

**The first set of questions (1 to 4 and 21 to 22)** focuses on banks' target management Tier 1 buffer, which is defined as the level of Tier 1 capital internally targeted by senior bank management above the Tier 1 capital requirement level and possible Pillar 2 capital add-ons under normal financial market conditions.<sup>6</sup> The mean Tier 1 ratio in the sample is 16.2% (range from 9 to 43%). While only one bank reports a shortfall, 112 banks report a surplus of the actual Tier 1 capital relative to its target management buffer at the consolidated level (all banks: 99%, Group 1: 100%, Group 2: 97%), virtually unchanged from the previous survey.

<sup>4</sup> These results align with the results of the end-December 2016 survey report.

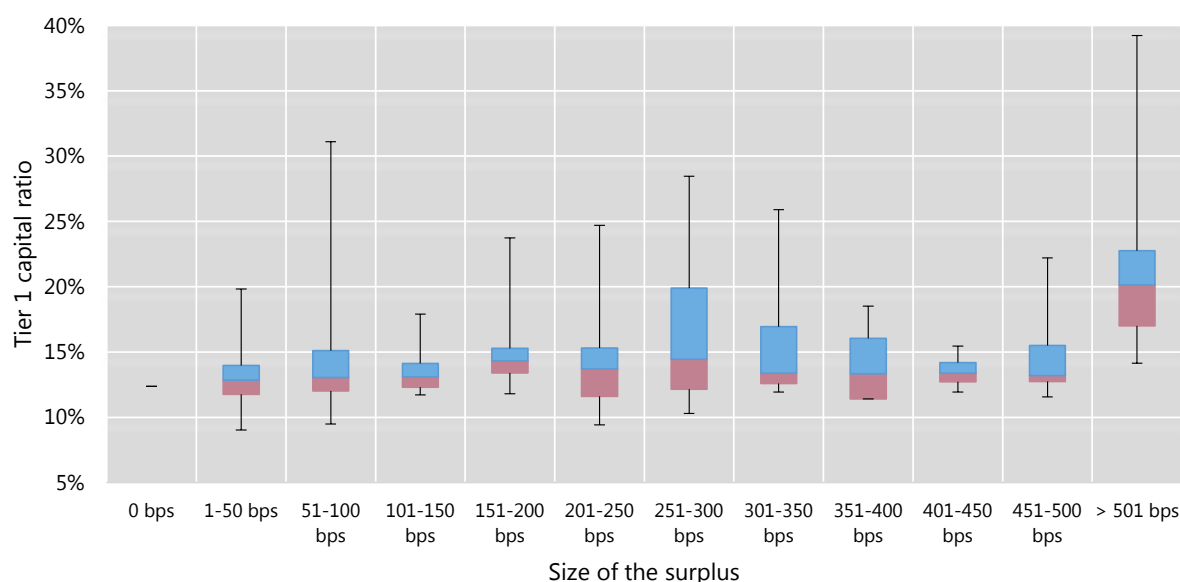
<sup>5</sup> The results of the Basel III monitoring exercise as of 30 June 2016 can be found at [www.bis.org/bcbs/publ/d397.pdf](http://www.bis.org/bcbs/publ/d397.pdf).

<sup>6</sup> Target management Tier 1 capital surplus is defined as  $\text{Max} [\text{Tier 1 capital held} - \text{target management Tier 1 buffer} - \text{target Tier 1 capital requirement}; 0]$ . Target management Tier 1 capital shortfall is defined as  $\text{Max} [\text{Target management Tier 1 buffer} + \text{target Tier 1 capital requirement} - \text{Tier 1 capital held}; 0]$ . Target Tier 1 capital requirement is defined as 6% of risk-weighted asset (RWA) plus 2.5% capital conservation buffer and G-SIB surcharges, where applicable.

The size of the surplus differs widely across banks; 13% report a surplus of 1 to 50 basis points, 17% report a surplus greater than 501 basis points and roughly 10% report a surplus within the range of each of the seven buckets between 101 and 300 basis points. Compared to the 2016 survey, the range of the target management Tier 1 buffer remains unchanged for 39% of the banks; it is lower (higher) for 17% (23%); not applicable for the rest.

Tier 1 capital ratio by the size of target management Tier 1 buffer surplus

Graph 1



Note: The lines show the range of the answers, the red and blue boxes the second and third quartile and the line between red and blue boxes is the median.

Source: Basel Committee on Banking Supervision.

Graph 1 displays the actual Tier 1 ratios versus the buckets of the size of the target management Tier 1 buffer surplus. The dispersion of actual Tier 1 ratios is quite large in most buckets; the average range from minimum to maximum is 17.4% across buckets. There is no significant interaction between banks' actual Tier 1 ratios and the size of their Tier 1 surplus.

Banks were asked about the change in the relative importance of their target Tier 1 capital requirement following the introduction of a target LR requirement. Of the 39 responding banks (25 Group 1 banks, 14 Group 2 banks), one third considers the introduction of a target LR requirement to have no impact on the relative importance of the target Tier 1 capital requirement. For 15 banks (10 Group 1, 5 Group 2), the relative importance of the target Tier 1 capital requirement changes to a considerable extent.

There is no significant interaction between banks' RoE and the size of their Tier 1 surplus. In the absence of a LR constraint, the target management Tier 1 buffer would remain unchanged for 50% of the banks; it would decrease (increase) for 23% (14%) and it would not be applicable for the rest.

Regarding the factors affecting banks' target management Tier 1 buffers, the most important drivers are financial market conditions (ranked 1, 2, or 3 by 52% of banks) and regulatory constraints (ranked top 3 by 49% of banks). In addition, risk appetite, RoE maximisation, changes in the credit cycle and internal stress tests are relevant (ranked top 3 by 31%, 30%, 27% and 27% of banks, respectively).

All but one bank report a target management Tier 1 capital surplus. However, 56% (of the 116 banks that have a target management Tier 1 capital buffer) respond that if they had a shortfall, they would tighten lending standards [Q21–22]. The share is substantially higher for Group 1 banks than for Group 2 banks (58% and 42%). Out of the 116 banks, 46% would curtail lending to specific borrowers and 38% would deny more credit requests and/or increase lending rates.

The top 3 rankings are very similar across Group 1 and Group 2 banks, across bank subsamples with higher/lower Tier 1 ratios (threshold 14%) and higher/lower RoE (threshold 5%). Compared to 2016, the share of banks (including the distribution across Group 1 and Group 2) that would tighten lending standards remained unchanged.

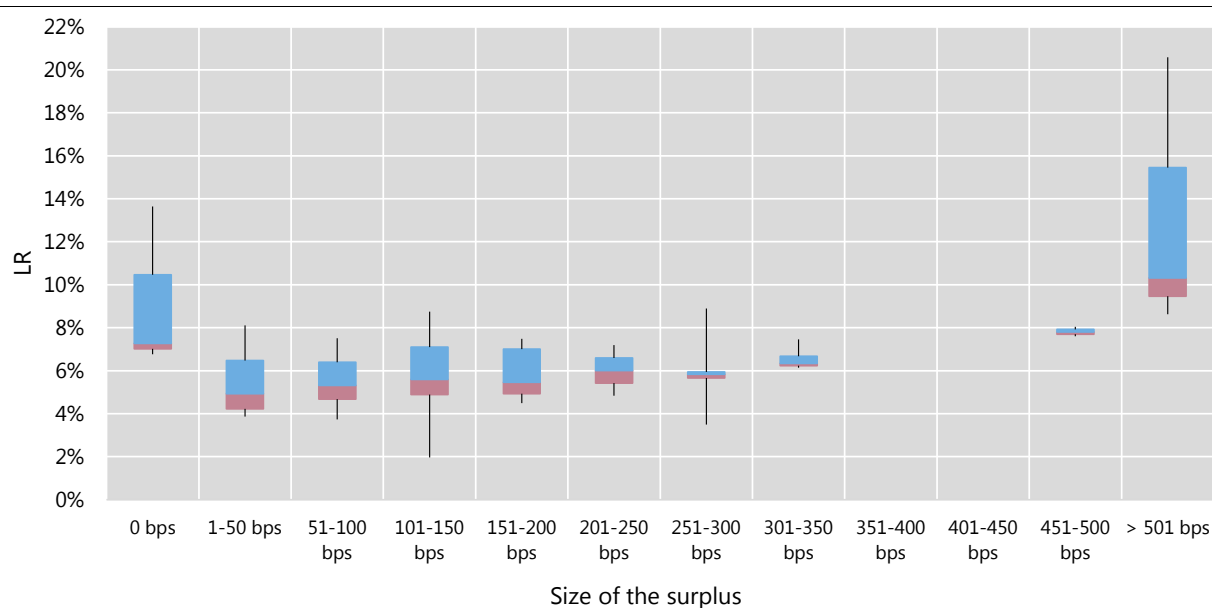
## 5.2 Banks' behavioural reactions to a target management LR buffer shortfall

**The second set of questions (5 and 6)** investigates banks' target management LR buffer. The survey asks banks if they have a target management LR buffer and, if so, what the range of the surplus or shortfall is.<sup>7</sup> Two thirds of responding banks have a target buffer and almost all of them report a surplus. Only two Group 1 banks report a target management LR buffer shortfall.

Half of the responding banks report a target management LR buffer in the range of 1–150 basis points. A few (9% of banks, perfectly split between Group 1 and Group 2 banks) have a target buffer greater than 501 basis points. Graph 2 suggests that, among both banks with no target buffer and banks targeting a buffer greater than 501 basis points, there is strong heterogeneity in terms of their current LR level; these banks represent a relatively small share of the overall sample (ie extreme strategies are adopted only by 13% of banks in the sample).

LR by the size of target management LR buffer surplus

Graph 2



For each column, the line shows the range of the answers, the red and blue boxes the second and third quartiles and the line between the orange and grey is the median.

Source: Basel Committee on Banking Supervision.

The post-crisis regulatory and supervisory frameworks define stringent regulatory requirements. To better understand how banks would adjust to higher capital requirements, the survey asks how banks would reach a target LR requirement calibrated at 3%, with an additional G-SIB add-on. The answers

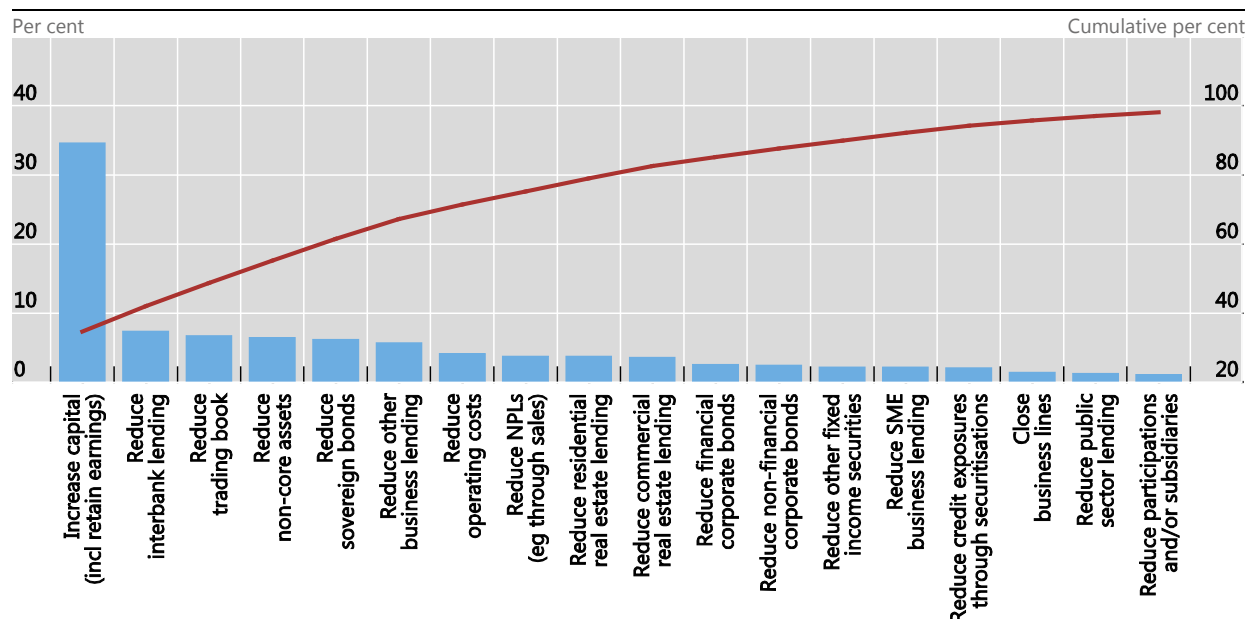
<sup>7</sup> Target management leverage ratio buffer is defined as the level of the Basel III leverage ratio internally targeted by senior bank management above the target leverage ratio requirement level (ie including G-SIB add on) under normal financial market conditions.

suggest that increasing capital, including retained earnings, reducing interbank lending, trading book, non-core assets and sovereign bonds account for the bulk of the adjustment (63%). In large part, these are intended behavioural reactions (with the exception of a 6% reduction of sovereign bonds).<sup>8</sup> Each additional factor contributes less than 6%. In total, reductions of lending to SMEs, other businesses and the public sector as well as reductions in residential real estate (RRE) and commercial real estate (CRE) lending account for 17%. The main adjustments are broadly similar across different categories of banks, Group 1 and Group 2, although the ranking is slightly different. The substantial variation across behavioural reactions indicates that there is little sign of herding (Graph 4).

Banks with lower risk-density place more weight on the top 5 responses (72% vs 57%) and less on unintended consequences (15% vs 22%). Banks with higher profitability in 2017 report higher contributions for capital increases (43% vs 26%).

Average contributions to reach the target management LR buffer

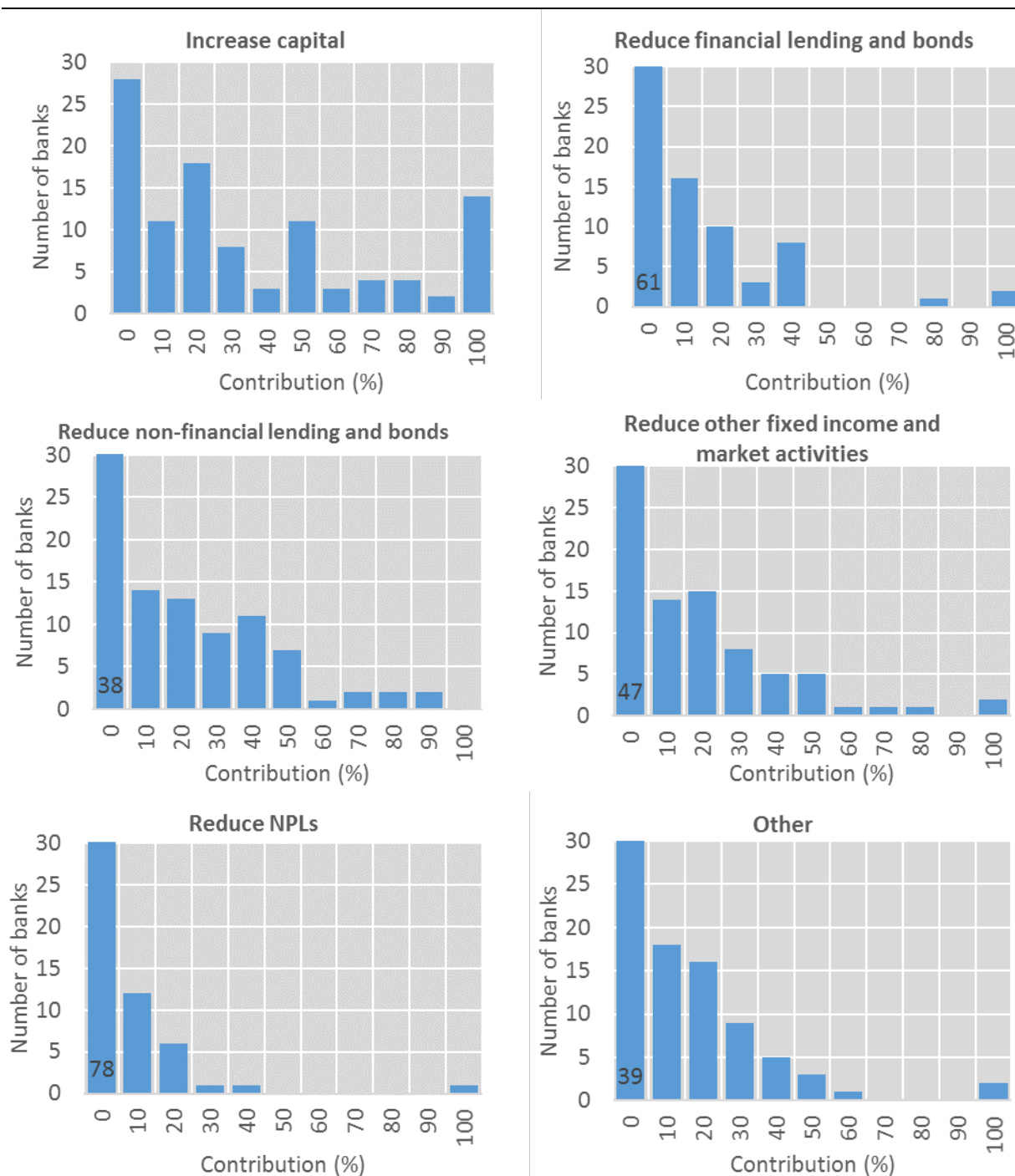
Graph 3



Note: The blue bars are the marginal contribution of each categories to reach the target management LR buffer (left axis). The red line is the cumulative contribution of all categories (right axis).

Source: Basel Committee on Banking Supervision.

<sup>8</sup> Banks' confidence in their ability to raise capital may reflect the current industry and market environment. These bank responses could be sensitive to macroeconomic conditions and may not hold through time.



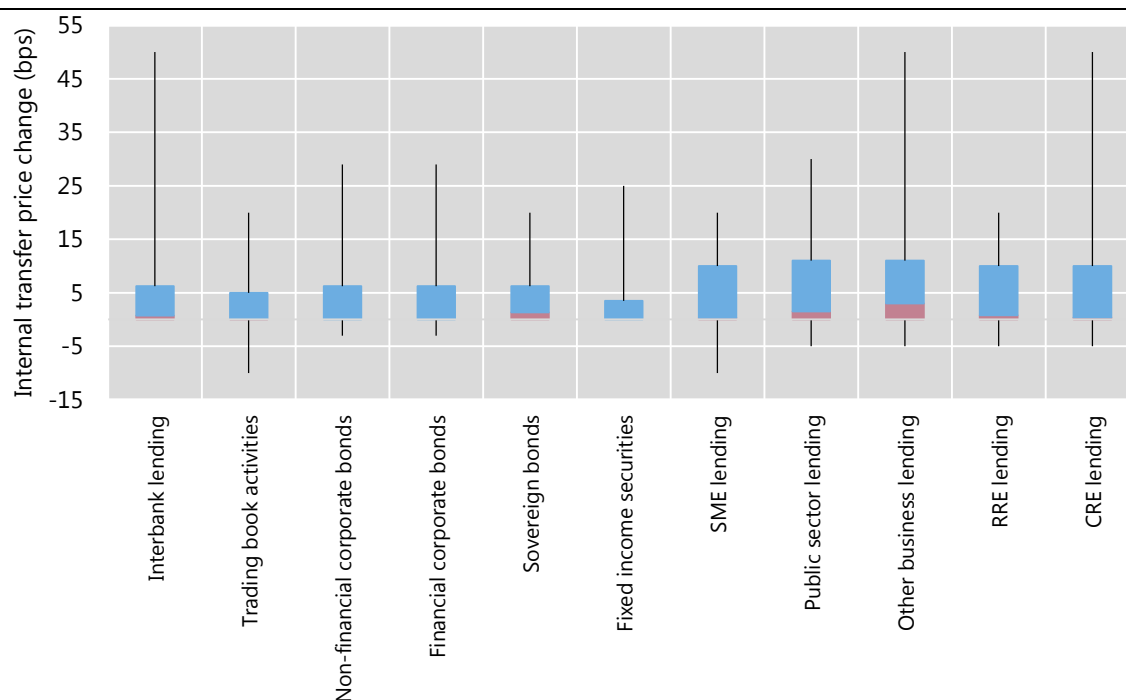
Each panel shows the contribution per bank of one of the six groups of measures to closing the management target LR shortfall (in per cent from 0 to 100). Reduce financial sector lending and bonds includes interbank lending and financial corporate bonds. Reduce non-financial lending and bonds includes public sector lending, RRE lending, CRE lending, non-financial corporate bonds and other business lending. Reduce other fixed-income and market activities includes reduce market activity, sovereign bonds and other fixed income securities. Other includes reducing operating costs, non-core assets, credit exposures through securitisations, participations and subsidiaries and close business lines. On average, 30 banks did not respond.

Source: Basel Committee on Banking Supervision.

In addition to volume adjustments, banks were also asked to estimate the extent to which prices would change in order to keep a constant RoE (Graph 5). Half of 22 responding banks,<sup>9</sup> 15 of which are Group 1 banks, indicate an increase in prices and only a few report a decrease (5%). The rest of respondents (45%) estimate no internal transfer price with respect to the suggested categories of assets. The most important positive price impacts are estimated for interbank lending, CRE lending and other business lending (50 basis points for each category), followed by public sector lending and financial corporate bonds (30 basis points).<sup>10</sup>

Internal transfer price changes from calibration of 3% target LR requirement

Graph 5



Note: The question asks banks to assume that the target LR requirement will be calibrated at 3% with an additional 1% G-SIB add-on, the finalisation of Basel III will keep the overall risk weights broadly constant in comparison with current levels and Pillar 2 capital requirements set by their supervisors will also remain unchanged in comparison with current levels. The question also asks banks to assume that their RoE remains constant. The line shows the range of the answers, the blue and red boxes the second and third quartiles, the line between the blue and red boxes is the median. The categories are ordered by the mean change value.

Source: Basel Committee on Banking Supervision.

<sup>9</sup> Overall, 88 banks responded out of 128. Among them, 66 banks answered 0 basis points to all categories. Only 22 banks provided non-zero values for at least one asset category. We omit from the graph one outlier that reports price impacts of 150 basis points on SME lending, 100 basis points on CRE lending, 50 basis points on RRE lending, 200 basis points on other business lending and 0 basis points on other assets categories.

<sup>10</sup> Only two banks report a decrease in prices for trading activities and SME lending (-10 basis points) and, to a lesser extent, on RRE lending, public sector lending and other business lending (-5 basis points) and both non-financial and financial corporate bonds (-3 basis points).

Internal transfer price change from calibration of 3% target LR requirement

Table 2

Asset category	Share of responding banks (%)		
	Increase	No change	Decrease
Interbank lending	55	45	0
Trading book activities	50	40	10
Non-financial corporate bonds	40	55	5
Financial corporate bonds	45	50	5
Sovereign bonds	55	45	0
Fixed income securities	40	60	0
SME lending	50	40	10
Public sector lending	60	35	5
Other business lending	65	30	5
RRE lending	52	38	10
CRE lending	50	45	5

Note: The question asks banks to assume that the target LR requirement will be calibrated at 3% with an additional 1% G-SIB add-on, the finalisation of Basel III will keep the overall risk weights broadly constant in comparison with current levels and Pillar 2 capital requirements set by their supervisors will also remain unchanged in comparison with current levels. The question also asks banks to assume that their RoE remains constant.

Source: Basel Committee on Banking Supervision.

### 5.3 Banks' confidence in their capital positions over the next quarter

**The third set of questions (7 to 12)** concentrates on the probabilities at the reporting date of a target management LR shortfall, a target management Tier 1 capital shortfall and both a target management LR shortfall and a target management Tier 1 capital shortfall over the next quarter.

Among the 109 responding banks, more than 75% are very confident that they will not experience a target management Tier 1 capital shortfall (ie they reported a 0% probability). Only four banks report a probability higher than 10% that they might have both a target management LR shortfall and a target management Tier 1 capital shortfall over the next quarter.

In the absence of capital increases or portfolio adjustments, some banks report a probability to incur a capital shortfall over the next quarter relative to their management target ratio.<sup>11</sup> Only a small share of respondents indicate that their funding and lending decisions will be affected to a considerable extent (11% and 7% of Group 1 banks, respectively).

In the case of a target management Tier 1 capital shortfall, banks' liquidity conditions can also affect funding and lending decisions. More than a third of responding banks<sup>12</sup> say that the LCR affects their decisions to a considerable extent and 28% of responding banks say the LCR affects their decisions only to some extent. In turn, the majority of responding banks report that the NSFR impacts lending and funding decisions only to some extent (34%), and even fewer banks report that it has a considerable effect on their decisions (19%)<sup>13</sup>.

<sup>11</sup> Either a target management LR shortfall, a target management Tier 1 capital shortfall, or both of them.

<sup>12</sup> Twenty (of which 14 Group 1) of 58 say that the LCR affects their decisions to a considerable extent.

<sup>13</sup> The NSFR affects funding and lending decisions to a considerable extent for 11 banks and to some extent for 20 banks (58 banks responded in total).

## 5.4 Allocation of risk exposure

**The fourth set of questions (13 to 16)** studies banks' confidence in their ability to allocate risk exposure efficiently across their various lines of business.

Almost half of the responding banks (50 banks of which 35 Group 1 banks) are very confident about their ability to efficiently allocate risk exposures to their various lines of business. Few banks (five Group 1 and one Group 2) are minimally confident and only one Group 2 bank is not at all confident.

Two thirds of responding banks (67 banks of which 40 Group 1 banks) estimate that they can efficiently allocate risk exposures to their various lines of business within 6 months and a third (36 banks of which 28 Group 1 banks) will need at least 12 months. Among the latter, nine banks estimate a delay of at least 36 months.

## 5.5 Banks' behavioural reactions to stress test results

**The fifth set of questions (17 to 20)** focuses on banks' reactions to stress test results. Out of the 128 banks in the sample, 109 provided information regarding the stress tests to which they are subject. Out of 44 European banks, 45% participate in the EBA stress test, 73% run internal capital stress tests and 77% perform internal liquidity stress tests. All US banks in the sample (seven) are subject to the Comprehensive Capital Adequacy Review (CCAR), the Dodd-Frank Act Stress Tests (DFAST) and internal liquidity stress tests. Six of the seven US banks also run internal capital stress tests and one of them also participates in the EBA stress test. Out of 77 banks from other regions, 57% are subject to supervisory capital stress tests, 47% are subject to supervisory liquidity stress tests and 79% run internal capital and/or liquidity stress tests. 10% are subject to CCAR and 6% to DFAST (with the latter nested in the former).

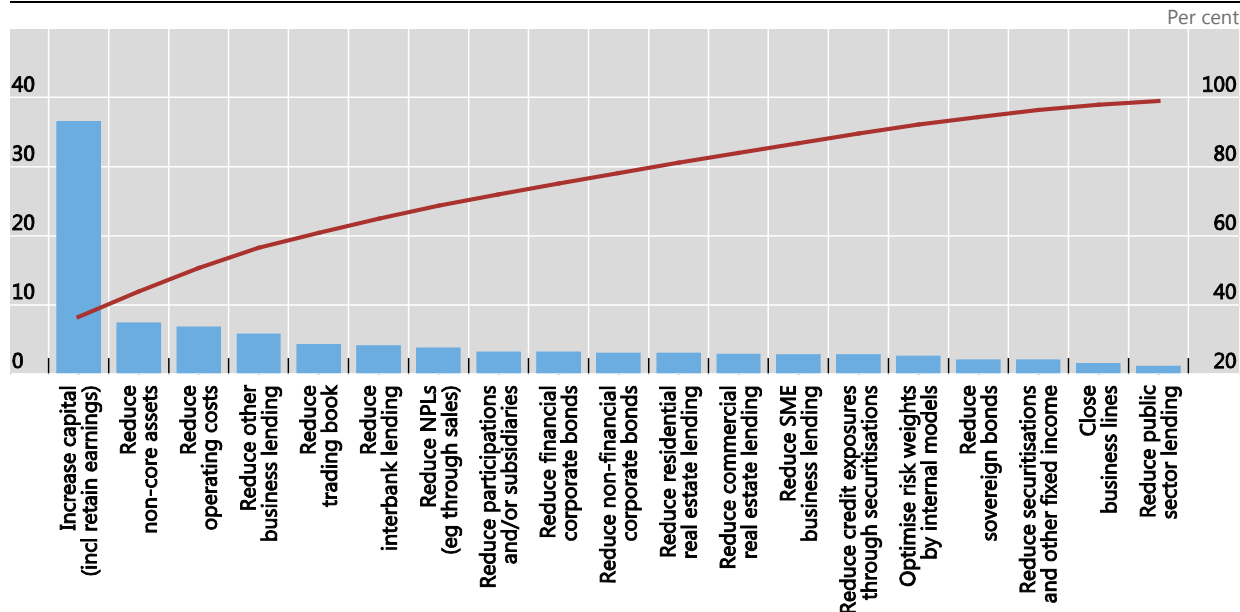
The 89 banks that are subject to some capital stress test respond that stress test results impact their capital planning or other business decisions. The stress tests with the greatest impact were internal capital stress tests for 58% of banks, bottom-up Pillar 2 stress tests for 22%, top down stress tests for 18% and other for 2%.

Banks were then asked how they would reach a new target management Tier 1 capital buffer assuming that they needed to increase it following their stress test results (Graph 6). Out of the 128 banks in the sample, 99 banks provided a per cent contribution breakdown of their approach (ie the breakdown added up to 100%). In the aggregate, the bulk of the adjustment takes place through capital increases (37%), lower non-core assets (7%), lower operating costs (7%), reduced other business lending (6%) and reduced trading book (4%). Most of these adjustments are intended reactions to stress tests, with the exception of other business lending. In sum, reductions of SME, public sector, RRE, CRE and other business lending account for 16% of the adjustment.



Average contributions to reach the target management Tier 1 capital buffer as a consequence of stress test results

Graph 6

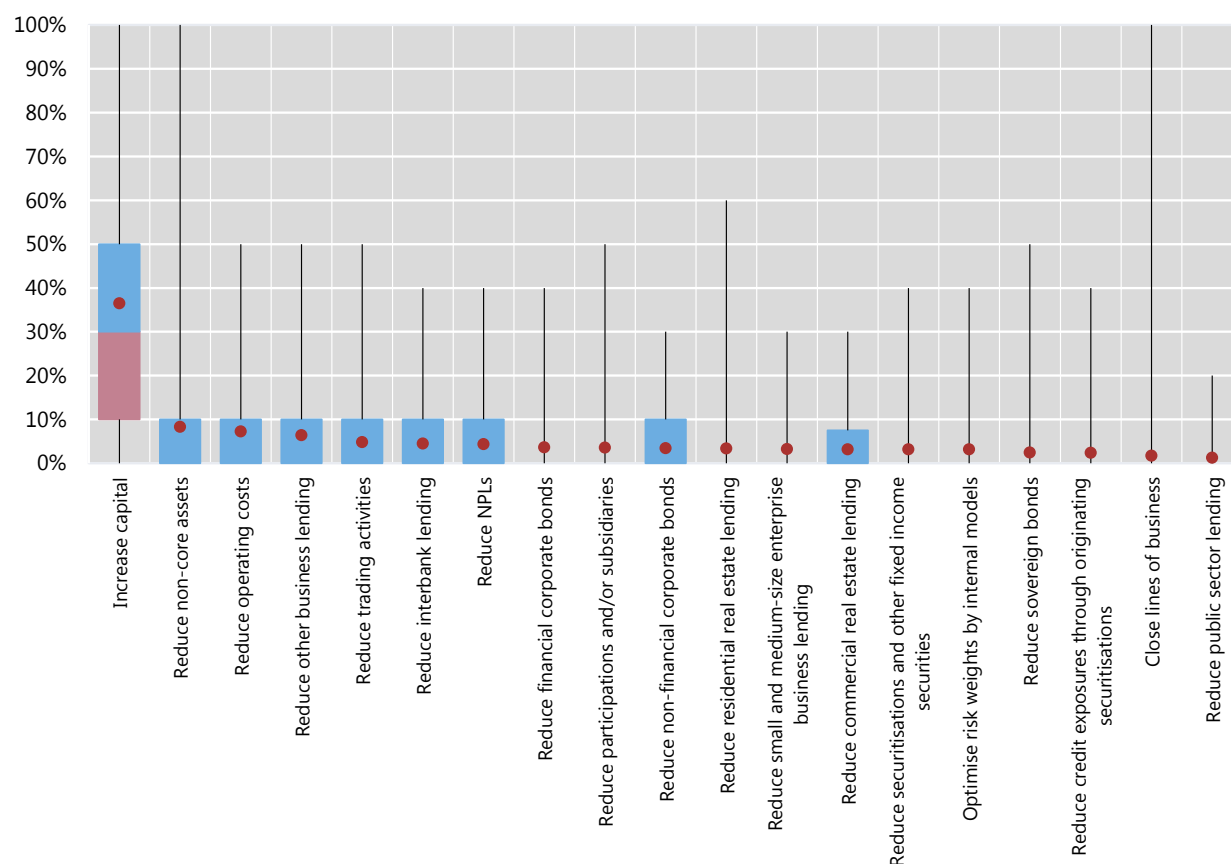


Note: The blue bars are the marginal contribution of each categories to reach the target management Tier 1 capital buffer (left axis). The red line is the cumulative contribution of all categories (right axis).

Source: Basel Committee on Banking Supervision.

## Contributions to reach the target management Tier 1 capital buffer as a consequence of stress test results

Graph 7



Note: The line shows the range of the answers, the red and blue boxes the second and third quartiles and the line between the red and blue boxes is the median. The categories are ordered by the mean contribution, as represented by red dots.

Source: Basel Committee on Banking Supervision.

Banks differ in their reactions to shortfalls due to stress test results (Graph 7). For example, some banks report that they plan to cover the hypothetical Tier 1 gap solely by increasing capital while others do not expect to increase any capital. The ranges between the lowest and the highest contribution per option are 20 to 100 percentage points; for most options the ranges are 40 to 60 percentage points. For all options but increasing capital the median is 0 percentage points. The adjustments the banks project vary and thus no systematic impact or herding is expected.

We split the sample of banks by the median risk-density, which is 44%. Banks with low risk-density reduce non-financial corporate bonds (mean of 0% vs 4%) and CRE loans (1% vs 5%) less than banks with higher risk-density. The latter place a lower weight on the reduction of trading book (2% vs 5%). Banks with low risk-density feature higher values for the top 5 responses (67% vs 60%) and lower ones for unintended consequences (13% vs 17%). Beyond capital increases, the results suggest that banks with high risk-density use a wider range of categories to increase their target management Tier 1 capital buffer. The largest differences between high risk-density banks and low risk-density banks are lowering non-core assets (6% vs 11%), lowering non-financial corporate bonds (4% vs 1%), lowering CRE lending (5% vs 1%) and lowering trading book (2% vs 5%).

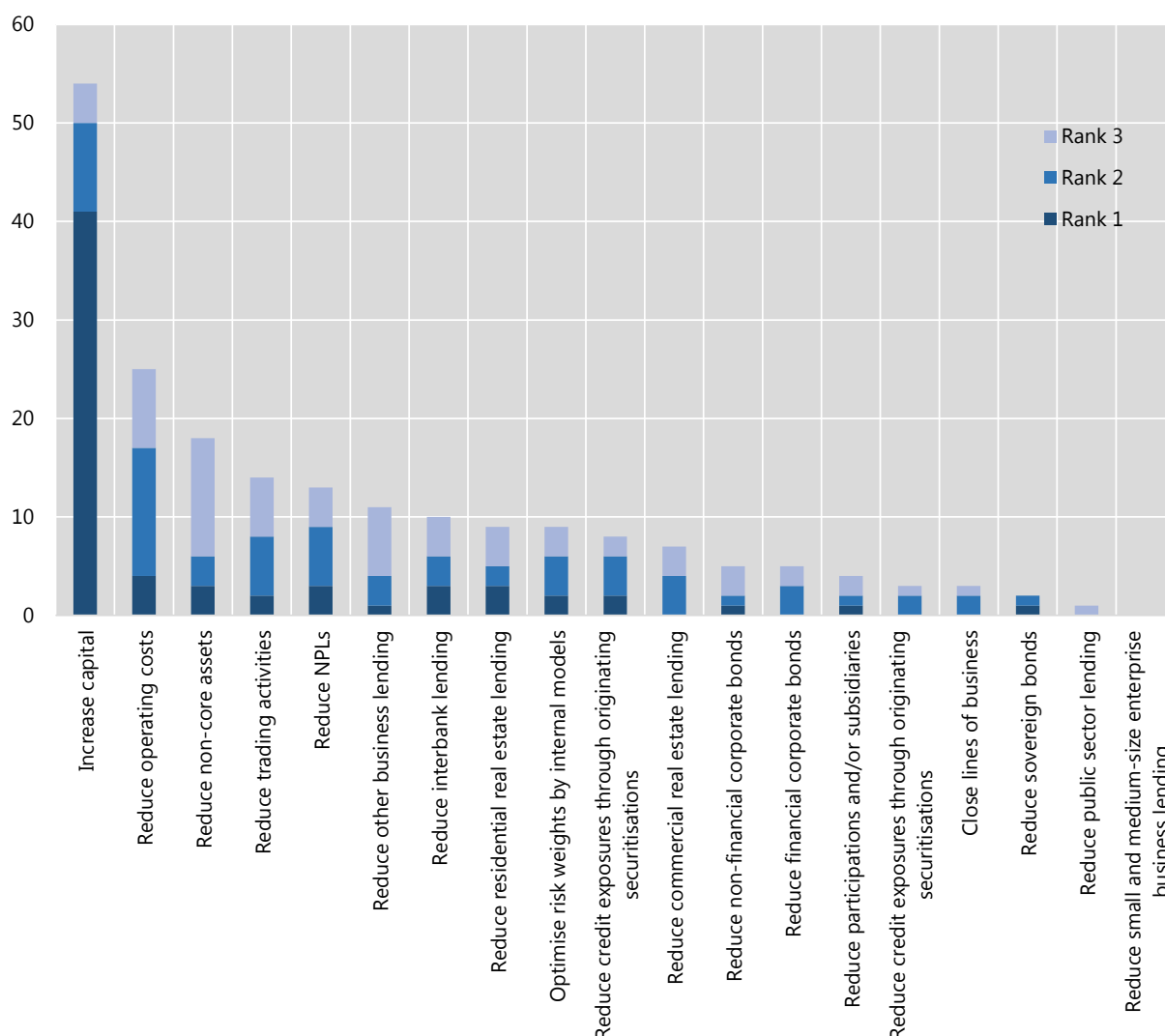
The survey results suggest that a bank's profitability affects its approach to increase its target management Tier 1 capital buffer as a consequence of its stress test result. We split the sample of banks by the median RoE, which is 4.9%. Most strikingly, capital increases account for 10 percentage point more

for banks with high RoE compared to banks with low RoE (41% vs 31%). This difference suggests that more profitable banks can raise equity more easily. Banks with lower RoE prefer lowering non-core assets (10% vs 5%) and closing of business lines (3% vs 0.4%) compared to high RoE banks.

### Highest-ranked contributions to increase the target management Tier 1 capital buffer as a consequence of stress test results

Graph 8

Number of banks



Source: Basel Committee on Banking Supervision.

Banks were then asked how required yields for various lending and funding activities might change in order to neutralise higher costs from new regulations or stress test results, assuming the bank's RoE remains constant.

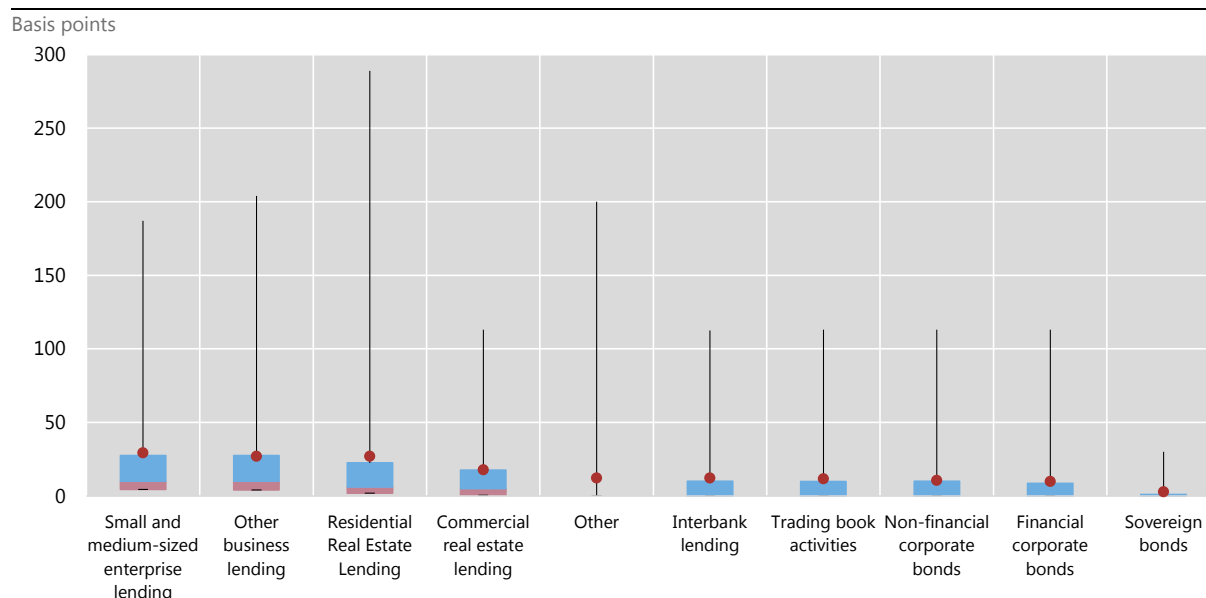
The first hypothetical regulatory change is a one percentage point increase in Tier 1 capital requirements (measured as a percentage of RWA). Of the 128 responding banks, 23 Group 1 banks and four Group 2 banks provided at least one non-zero answer.<sup>14</sup> The increase in required yields is particularly

<sup>14</sup> The survey instructs Group 2 banks that cannot estimate pricing effect to skip the question. We set any missing answers to zero. Also, this analysis do not include answer less than -100 basis points.

pronounced in business lending (SME and other) and real estate lending (residential and commercial) (Graph 9). The median required yield increase for SME, other business lending, RRE and CRE lending are 10, 10, 6 and 5 basis points, respectively (the mean increases are 29, 27, 27 and 18 basis points, respectively).<sup>15</sup>

### Change in required yields following a one percentage point increase in Tier 1 capital requirements

Graph 9



Note: The line shows the range of the answers, the red and blue boxes are the second and third quartiles and the line between the red and blue boxes is the median. The categories are ordered by the mean change in required yield.

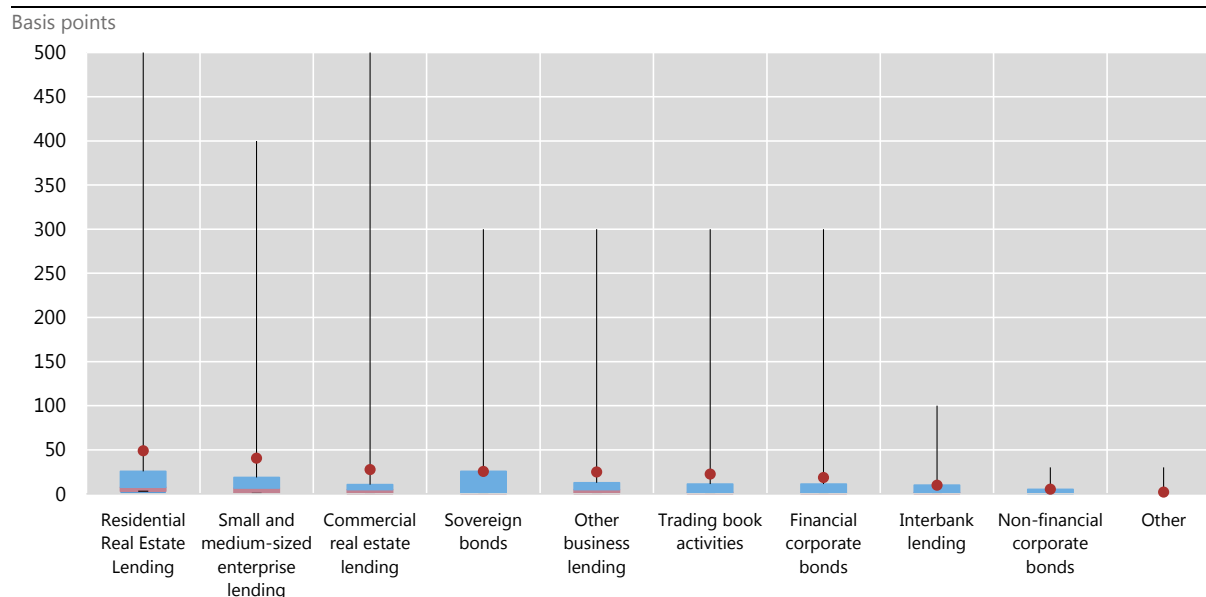
Source: Basel Committee on Banking Supervision.

The second hypothetical regulatory change is a 10 percentage point increase in the NSFR requirement. Of the 128 responding banks, 19 Group 1 banks and five Group 2 banks provided at least one non-zero answer. Yield increases are similarly concentrated in lending activities. The median required yield increases for SME lending, other business lending, RRE and CRE are 7, 5, 8 and 5 basis points, respectively (Graph 10). The mean required yield increases for SME, other business lending, RRE and CRE lending are 41, 25, 49 and 28 basis points, respectively.

<sup>15</sup> In the comments to the category "other", banks that provided at least a non-zero answer listed public sector lending, central bank reserves, private customers (mortgages, tenant owners associations and other), and other commercial and consumer lending. Banks that did not provide any answer primarily focused on the difficulty of answering this question.

## Change in required yields following a 10 percentage point increase in NSFR requirement

Graph 10



Note: The line shows the range of the answers, the red and blue boxes are the second and third quartile and the line between the red and blue boxes is the median. The categories are ordered by the mean change in required yield.

Source: Basel Committee on Banking Supervision.

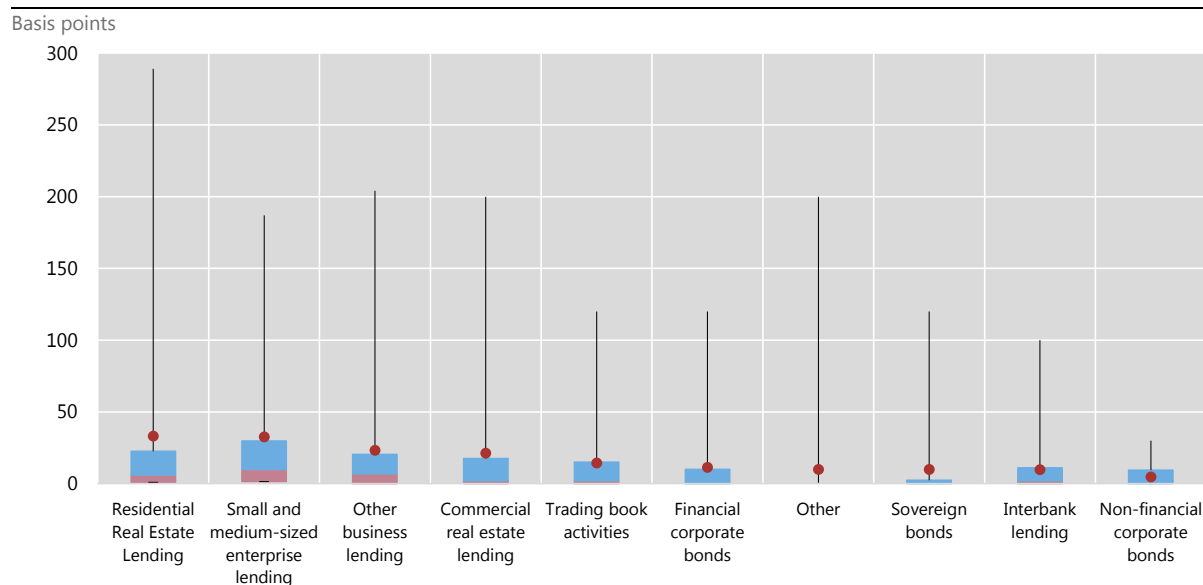
The final hypothetical situation is a one percentage point shortfall in the bank's Tier 1 capital ratio (relative to its internal target or regulatory requirement) as a consequence of stress test results (Graph 11). Of the 128 responding banks, 18 Group 1 banks and five Group 2 banks provided at least one non-zero answer. Again, yield increases are concentrated in lending activities. The median required yield increases for SME, other business lending, RRE and CRE lending are 10, 7, 6 and 2 basis points, respectively (the mean required yield increases are 33, 23, 33 and 21 basis points, respectively).

Across all three examples, required yields increase most for lending activities. In particular, the modest changes in required yields following a capital shortfall from stress test results (Graph 11) support the findings of recent research by Cortés, Demyanyk, Li, Loutskina and Strahan.<sup>16</sup> Making use of US data, Cortés et al (2018) find that banks more affected by stress tests increase interest rates to reduce their supply of small-business loans. The reduction in small business loan originations, however, is largely absorbed by banks not subject to the stress tests. These results are consistent with the minimal price pass-throughs depicted in Graph 11 for the whole survey sample.

<sup>16</sup> Cortés, K, Y Demyanyk, L Li, E Loutskina and P E Strahan (2018), "Stress Tests and Small Business Lending", NBER Working Paper Series, Working Paper 24365.

## Change in required yields following a one percentage point shortfall in Tier 1 capital ratio from stress test results

Graph 11



Note: The black vertical lines show the range of the answers, the red and blue boxes are the second and third quartiles and the line between the red and blue boxes is the median. The categories are ordered by the mean change in required yields.

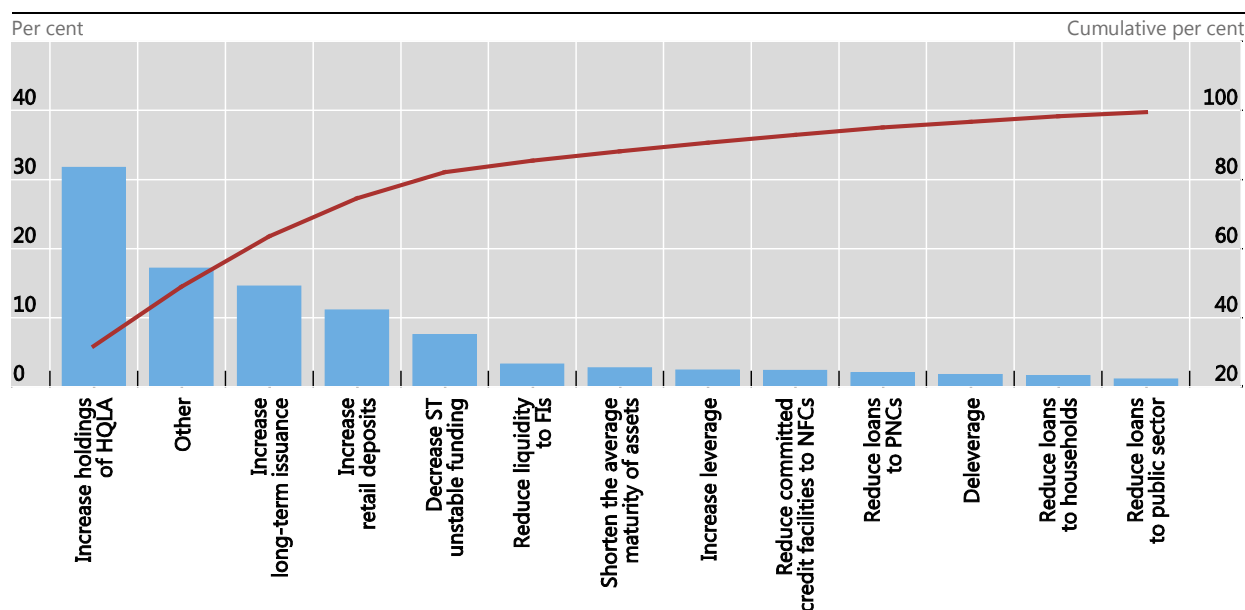
Source: Basel Committee on Banking Supervision.

## 5.6 Banks' behavioural reactions to target management LCR and NSFR buffer shortfalls

**The sixth set of questions (23 to 25)** studies banks' behavioural reactions to the LCR and the NSFR. Out of the 113 banks that respond to question 23, 99 banks (88%) have a target management LCR buffer. All but one of these banks have a surplus at the consolidated level, similar to the second survey wave. The results are consistent across Group 1 and Group 2 banks.

Average contributions to reach the target management LCR buffer

Graph 12



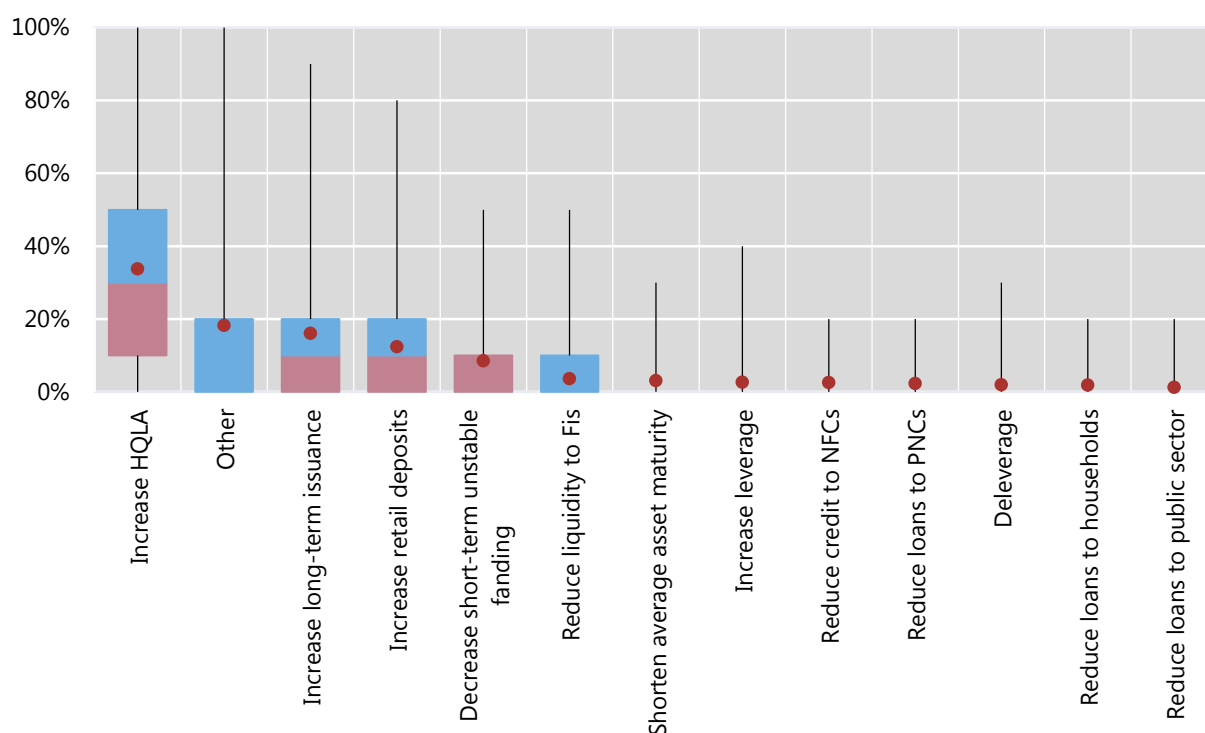
Note: The blue bars are the marginal contribution of each categories to reach the target management LCR buffer (left axis). The red line is the cumulative contribution of all categories (right axis).

Source: Basel Committee on Banking Supervision.

91 banks reported marginal contributions to reach their target management LCR buffer. The following contributions dominate banks' behavioural adjustment (Graph 12): increase in HQLA (32 percentage points), other options (17 percentage points), increase in long-term issuances (15 percentage points), increase in retail deposits (11 percentage points) and decrease in short-term unstable funding (8 percentage points). These intended behavioural reactions (including most of the responses to "Other") account for 82% of the total. The reduction of loans to households, to non-financial companies and to the public sector as well as the reduction in credit facilities to non-financial corporates together amount for 7%. Compared to 2016, the results are very stable: only the contribution "other" dropped markedly from 30 to 17 percentage points. Nevertheless, banks seem to select "other", as their adjustment strategies vary widely and may not be fully captured by the eighteen options offered in the survey. The results are quite similar for Group 1 and Group 2 banks.

There is no evidence of herding. Especially for the four most important behavioural reactions, the ranges between the minimum and the maximum are 80 to 100 percentage points. The range between the 25th and the 75th percentiles are 20 to 40 percentage points (Graph 13).

There is some interaction between risk-density and banks' behavioural adjustment to the LCR: banks with lower risk-density (below the median of 45.3%) report significantly lower values for reducing loans to private non-financial corporates (0% vs 4%), reducing committed credit lines to non-financial corporates (1% vs 4%) and shortening the average maturity of assets (0% vs 4%). They report higher values for the top five categories (89% versus 78%) and lower ones for unintended consequences, such as the reduction of loans (3% versus 11%) (see annex Table 13). There is lower interaction between RoE and banks' behavioural reactions.



Note: The black vertical lines show the range of the answers, the red and blue boxes are the second and third quartiles and the line between the red and blue boxes is the median. The categories are ordered by the mean contribution.

Source: Basel Committee on Banking Supervision.

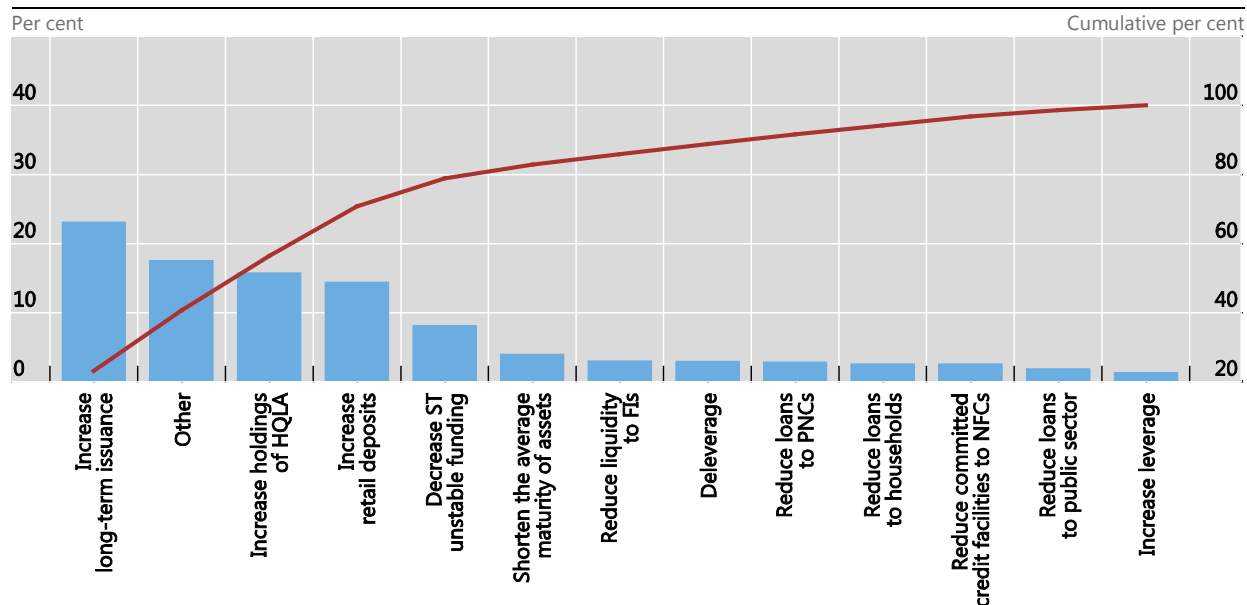
The median LCR in the sample is 142%. We find that banks with a lower LCR rely less on increases in HQLA (28 vs 35 percentage points) and more on Other options (25 vs 11 percentage points) as well as decreases in short-term unstable funding (10 vs 6 percentage points) (see annex Table 7).

Marginal contributions to reach the target management NSFR buffer indicate that only three banks have NSFRs below 100% (between 91 and 98%). The main adjustment strategies to reaching the NSFR are identical to the LCR's; however, increases in long-term issuances weigh 23 percentage points (compared to 15 percentage points for LCR) at the expense of increases in HQLA, which drop to 16 percentage points (32 percentage points for LCR) (Graph 14). The remaining categories remain virtually unchanged: Other options (18 percentage points vs 17 percentage points for LCR), increase in retail deposits (14 vs 11 percentage points LCR) and decrease in short-term unstable funding (8 vs 8 percentage points for LCR). These intended behavioural reactions (including most of the responses to "Other") account for 79% of the total NSFR adjustment. The contribution of the reduction in loans to households, non-financial companies and the public sector as well as the reduction of credit facilities to non-financial corporates amount together to 10 percentage points (up from 7 percentage points for the LCR).



Average contributions to reach the target management NSFR buffer

Graph 14

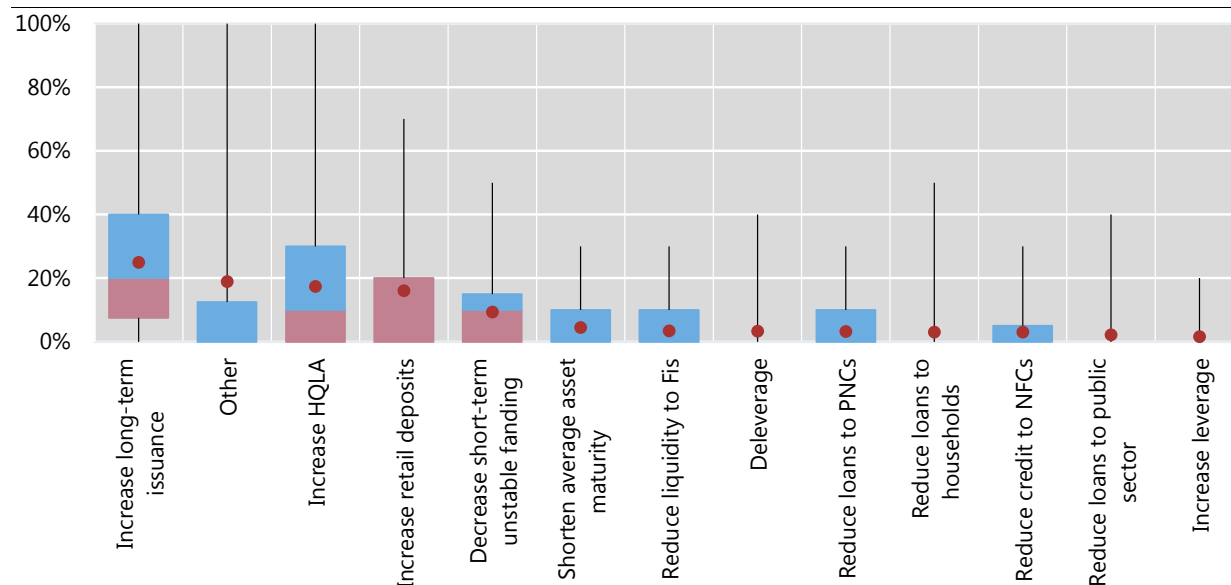


Note: The blue bars are the marginal contribution of each categories to reach the target management NSFR buffer (left axis). The red line is the cumulative contribution of all categories (right axis).

Source: Basel Committee on Banking Supervision.

Contributions to reach the target management NSFR buffer

Graph 15



Note: The black vertical lines show the range of the answers, the red and blue boxes are the second and third quartiles and the line between the red and blue boxes is the median. The categories are ordered by the mean contribution.

Source: Basel Committee on Banking Supervision.

Banks utilise many options to reach the target management NSFR buffer and their adjustment strategies differ (Graph 15). There is no evidence of herding. For the four most important behavioural reactions, the ranges between the minimum and the maximum are 70 to 100 ppt. The ranges between the 25th and the 75th percentiles are 10 to 30 ppt.

Group 1 banks place more weight on the option Other (21 vs 12 percentage points for Group 2) and less on increase of long-term issuance (21 vs 26 percentage points for Group 2).

If the sample is split by the median NSFR (ie 116%), banks with low NSFRs place more weight on increasing long-term issuance (27 vs 20 percentage points for banks with high NSFRs). These banks place less weight on increasing of HQLA (11 vs 20 percentage points) as well as on the reduction of loans (to households, non-financial companies and the public sector) and credit facilities to non-financial corporates (6 vs 14 percentage points) (see annex Table 10).

There is little interaction between banks' RoEs and their behavioural reactions to the NSFR, though banks with higher RoE tend to decrease short-term unstable funding more (10% vs 6%).

There is some interaction between risk-density and banks' behavioural adjustment to the NSFR: banks with lower risk-density place significantly less weight on reducing loans to private non-financial corporates (0% vs 5%) and committed facility lines for financial intermediaries (1% vs 5%) as well as on shortening the average maturity of assets (1% vs 5%). Also, they place more weight on increasing long-term issuance (31% vs 19%). Overall, their behavioural reactions are more focused on the top five categories (84% vs 75%) and less on unintended consequences (8% vs 11%) (see annex Table 13).

## 5.7 Challenges associated with meeting regulatory requirements

**The seventh set of questions (26 to 27)** asks banks what is the most challenging regulatory requirement for them to meet and what are the most important challenges associated with meeting regulatory requirements. Of the 101 banks that answered the first question, 35 banks (35%) find the target Tier 1 ratio to be most challenging to meet, for 11 (11%) it is the LR, for six (6%) the LCR, for 15 (15%) the NSFR and for 12 (12%) TLAC. Twenty-two banks do not select any of the above. Bank responses regarding the Tier 1 ratio do not differ across Group 1 and Group 2 banks. As for the LCR and the NSFR, the share of Group 1 banks that find either of the two to be most challenging is twice as high as that of Group 2 banks (8% vs 3% and 18% vs 9%, respectively). For TLAC, the share of Group 2 banks that find it most challenging to meet is twice as high as that of Group 1 banks (17% vs 10%); almost all Group 2 banks are in the EU where TLAC is also imposed on non-G-SIBs in the form of MREL (Minimum Requirement for own funds and Eligible Liabilities).

As for the most important challenges associated with meeting regulatory requirements, 83 banks (75% of the 110 that answered this question) rank uncertainty with respect to implementation and/or changes to regulation among the top three challenges. For 78 banks (71%) the complexity of the regulatory framework is most challenging and for 65 (60%) it is the difficulty in achieving multiple constraints simultaneously.

Group 2 banks more frequently rank uncertainty with respect to implementation and/or changes in regulation among the top three (84% vs 70% for Group 1 banks). There is no significant difference between Group 1 and Group 2 banks with respect to the other two top challenges. The geographical differences in capital regulation are more challenging for Group 1 banks (25% vs 13% for Group 2 banks). However, the cyclical variation of capital requirements seems to be somewhat more challenging for Group 2 banks (20% vs 13% for Group 1 banks).

Banks submitted the third wave responses after the Basel III packages have been agreed, but the actual implementation of the final Basel framework by each jurisdiction is still under way. Relative to the previous survey wave, banks report fewer concerns over the difficulty of simultaneously achieving multiple regulatory requirements.

## 5.8 Banks' feedback on the survey

**The final question 28** collects information to improve the survey. About half of the banks answering this question (53 of 102; 52%) regard question 20 on the price impact of regulatory changes (Tier 1 Pillar 1 or 2, NSFR) or stress tests as the most difficult to answer.

Another 12 banks (12%) indicate that the most challenging question is question 6, also on price effects. To that question, most respondents select 'other' and only 8 provide further explanations.

For seven banks (7% of 102), the question regarding the factors affecting the target management Tier 1 buffer is most challenging. Some banks find it somewhat unclear and state that the given options do not apply to their circumstances.

The questions that focus on the quantitative behavioural reactions to a shortfall in the target management Tier 1 buffer or following a shortfall due to stress test results (Q 5 and Q 19) are selected by 6 banks (6% of 102) each.

Fifty-two banks (52% of 102) provide suggestions to improve the survey. Seventeen banks suggest to provide more detailed instructions or FAQ and to simplify the survey (eg illustrative examples, shorter survey, fewer hypothetical questions, fewer quantitative more qualitative questions, more closed (N/Y) questions, fewer strategy questions).<sup>17</sup> Five banks call for adaptations to local, regional or business model specific circumstances. Four banks suggest providing the rationale for each question. Four banks ask for more "Other" options and the opportunity to explain specific points. Three banks call for assumptions that are more specific.

## 6. Data quality and outlook

The number of respondents for the third wave (128 banks) was lower than the total in the first wave (160 banks) and second wave (148 banks). Also, the sample gives more weight to Group 1 banks compared to the second wave (84 Group 1 banks in the second wave versus 86 Group 1 banks in the third wave). As qualified in the previous monitoring exercise, all results could be biased (albeit, arguably, not in any given direction) if banks perceived that their individual responses could impact various aspects of the Basel III framework.

Substantial effort was put forward to improve data quality relative to the initial submissions. In particular, bank supervisors received a list of issues to be addressed to improve the quality of the submissions. The majority of these issues concerned filling in missing or partial responses. Many banks did not complete responses to questions with multiple parts (eg question 5d). The motivation behind asking banks to fill in these responses was to better differentiate between banks that were uncertain about how to answer a given question and banks whose answer was zero (eg no contribution from a given category or no change in a given category). In addition, a substantial number of these inquiries were meant to allow banks to conform their answers to the requested format. In particular, a number of banks were asked to omit units from their responses. Furthermore, some banks did not restrict responses to the predetermined set of possible options for multiple choice questions (eg question 7). Finally, some of the inquiries asked banks to double-check responses that were outliers. After reviewing the initial set of bank responses, a list of suggestions for ways to improve the future reporting template was created.

Four questions (5, 18, 19 and 20 in the third wave) were rewritten between the second and third waves to improve their response rates. All four questions saw substantially higher response rates in the third wave: 60 percentage points higher for question 5, 63 percentage points higher for question 18, 31 percentage points higher for question 19 and 23 percentage points higher for question 20. In addition, all

<sup>17</sup> Banks could provide multiple suggestions.

four questions received a larger absolute number of responses, even though the sample size dropped from 148 banks to 128 banks between the second and third wave. In total, nine questions saw response rates below two-thirds (ie fewer than 100 banks responded) compared to the second wave. The other five questions (questions 9, 10, 11, 12 and 22 in the third wave) were not rewritten between the second and third wave. These questions saw moderately lower response rates (between 1 percentage point and 13 percentage points).

## Annex

### Glossary

- **Target Tier 1 capital requirement** is defined as 6% of risk-weighted asset (RWA) plus 2.5% capital conservation buffer and G-SIB surcharges, where applicable.
- **Target management Tier 1 capital buffer** is defined as the level of the Tier 1 capital ratio internally targeted by senior bank management above the target Tier 1 capital requirement level and possible Pillar 2 capital add-ons under normal financial market conditions.
- **Target management Tier 1 capital surplus** is defined as  $\text{Max} [\text{Tier 1 capital held} - \text{target management Tier 1 buffer} - \text{target Tier 1 capital requirement}; 0]$ .
- **Target management Tier 1 capital shortfall** is defined as  $\text{Max} [\text{Target management Tier 1 buffer} + \text{target Tier 1 capital requirement} - \text{Tier 1 capital held}; 0]$ .
- **Target leverage ratio requirement** is defined as  $(3\% + \text{G-SIB add-ons}) \cdot \text{Basel III leverage ratio exposure measure}$ .
- **Target management leverage ratio buffer** is defined as the level of the Basel III leverage ratio internally targeted by senior bank management above the target leverage ratio requirement level (ie including G-SIB add on) under normal financial market conditions.
- **Target management leverage ratio shortfall** is defined as  $\text{Max} [\text{Target management leverage ratio buffer} + \text{target leverage ratio requirement} - \text{Tier 1 capital held}; 0]$ .
- **Internal transfer price** consists of the internal funds transfer price (FTP) and the cost of capital; the FTP measures the cost, benefits and risks of debt funding liquidity which are allocated to a bank's business lines and product categories and forms part of the internal funds transfer pricing mechanism which allows the bank to assign a risk-adjusted profit contribution value to debt funding and capital gathered and lent or invested by the bank. The transfer price results from the sum of the FTP plus the direct and indirect cost (benefits) of capital funding allocated to bank's business lines and product categories that require (provide) capital.
- **Target management liquidity buffer** is defined as the level of the stable funding and liquid assets internally targeted by senior bank management above the target requirement levels (including possible jurisdiction-specific requirements) under normal financial market conditions.

### Survey: version 3.7.4 of the Basel III monitoring workbook

#### Questions 1 to 4

**In questions 1 through 4, target management Tier 1 capital buffer is defined as the level of Tier 1 capital internally targeted by senior bank management above the target Tier 1 capital requirement level and possible Pillar 2 capital add-ons under normal financial market conditions. Target management Tier 1 capital surplus is defined as  $\text{Max} [\text{Tier 1 capital held} - \text{target management Tier 1 buffer} - \text{target Tier 1 capital requirement}; 0]$ . Target management Tier 1 capital shortfall is defined as  $\text{Max} [\text{Target management Tier 1 buffer} + \text{target Tier 1 capital requirement} - \text{Tier 1 capital held}; 0]$ . Target Tier 1 capital requirement is defined as 6% of risk-weighted asset (RWA) plus 2.5% capital conservation buffer and G-SIB surcharges, where applicable.**

1. (a) Do you have a target management Tier 1 capital buffer at the consolidated level?  
*[Options] (i) Yes, (ii) No.*

If "No", please complete the following questions assuming that your target management Tier 1 capital buffer is equal to the difference between your Tier 1 capital and the regulatory requirements."

(b) Do you have a target management Tier 1 capital surplus or shortfall at the consolidated level?

*[Options]* (i) Surplus, (ii) Shortfall.

(c) Your target management Tier 1 capital surplus or shortfall at the consolidated level is in the range of:

*[Options]* (i) 0 basis points, (ii) 1 to 50 basis points, (iii) 51 to 100 basis points, (iv) 101 to 150 basis points, (v) 151 to 200 basis points, (vi) 201 to 250 basis points, (vii) 251 to 300 basis points, (viii) 301 to 350 basis points, (ix) 351 to 400 basis points, (x) 401 to 450 basis points, (xi) 451 to 500 basis points, (xii) Greater than 501 basis points.

2. **In the absence of a leverage ratio constraint**, your target management Tier 1 capital buffer at the consolidated level would be in the range of

*[Options]* (i) 0 basis points, (ii) 1 to 50 basis points, (iii) 51 to 100 basis points, (iv) 101 to 150 basis points, (v) 151 to 200 basis points, (vi) 201 to 250 basis points, (vii) 251 to 300 basis points, (viii) 301 to 350 basis points, (ix) 351 to 400 basis points, (x) 401 to 450 basis points, (xi) 451 to 500 basis points, (xii) Greater than 501 basis points.

3. What factors affect your target management Tier 1 capital buffer? Rank the factors that apply to you with 1 representing the most important change in incentives.

*[Rank options (1=most important, 14=least important)]* (i) Operational (including cyber risk) and litigation risk, (ii) Financial market conditions, (iii) Debt issuance prices, (iv) Perceived systemic risk, (v) Model error risk, (vi) Return on Equity (RoE) maximisation, (vii) Regulatory or supervisory constraints or uncertainty, (viii) Changes in the credit cycle, (ix) Market expectations/funding cost optimisation, (x) Internal stress tests, (xi) Uncertainty about potential supervisory Pillar 2 measures, (xii) Risk appetite, (xiii) Safeguard (fixed buffer), (xiv) Others (*provide brief text below*).

*[Change options]* (i) increase, (ii) decrease, (iii) stay the same.

4. Do you also set a target management Tier 1 capital buffer at the entity level?

*[Options]* (i) Yes, (ii) No.

#### Questions 5 to 12

**In questions 5 through 12, assume that (1) the target leverage ratio requirement will be calibrated at 3% with an additional 1% G-SIB add-on; (2) the finalisation of Basel III will keep the overall risk weights broadly constant in comparison with current levels; and (3) Pillar 2 capital requirements set by your supervisor will also remain unchanged in comparison with current levels.**

5. (a) Do you have a target management leverage ratio buffer at the consolidated level?

*[Options]* (i) Yes, (ii) No.

If "No", please complete the following questions assuming that your target management leverage ratio buffer is equal to the difference between your leverage ratio and the regulatory ratio.

(b) Do you have a target management leverage ratio surplus or shortfall at the consolidated level?

*[Options]* (i) Surplus, (ii) Shortfall.

(c) In these circumstances, your target management leverage ratio buffer at the consolidated level would be in the range of:

*[Options]* (i) 0 basis points, (ii) 1 to 50 basis points, (iii) 51 to 100 basis points, (iv) 101 to 150 basis points, (v) 151 to 200 basis points, (vi) 201 to 250 basis points, (vii) 251 to 300 basis points, (viii)

301 to 350 basis points, (ix) 351 to 400 basis points, (x) 401 to 450 basis points, (xi) 451 to 500 basis points, (xii) Greater than 501 basis points.

(d) Assuming you do not reach your new target leverage ratio buffer, would you reduce assets or increase capital to reach your new target leverage ratio? Please allocate contributions to reaching the new target in per cent adding up to 100% to the following options. [Example: You are 0.5 percentage points short of your new target leverage ratio. If you closed the gap by retaining earnings (thereby decreasing your shortfall to 0.1 percentage points) and by reducing interbank lending (thereby erasing your shortfall), then you would allocate 80% to "Increase capital (incl retain earnings)" and 20% to "Reduce interbank lending".]

[Options] (i) Increase capital (incl. retain earnings), (ii) Reduce operating costs ((incl. management bonus and human resources) interbank lending, (iii) Close business lines (please provide a brief example), (iv) Reduce non-core assets (please provide a brief example), (v) Reduce interbank lending, (vi) Reduce NPLs (eg through sales), (vii) Reduce market (trading and post-market) activities, (viii) Reduce participations and/or subsidiaries, (ix) Reduce non-financial corporate bonds, (x) Reduce financial corporate bonds, (xi) Reduce sovereign bonds, (xii) Reduce other fixed income securities, (xiii) Reduce small and medium-sized enterprise business lending, (xiv) Reduce public sector lending, (xv) Reduce other business lending, (xvi) Reduce residential real estate lending, (xvii) Reduce commercial real estate lending, (xviii) Reduce credit exposures through originating securitisations.

*Each option allows to select a contribution between 0% and 100%, in 10% increments.*

6. In these circumstances, by how much would your **internal transfer price** (including the direct and indirect costs of debt funding as well as the overall cost of capital) allocated to the asset categories below have to **increase** (positive sign, in basis points), **decrease** (negative sign, in basis points) or **stay the same** (zero) to keep your RoE constant?

[Options] (i) Interbank lending, (ii) Trading book activities, (iii) Non-financial corporate bonds, (iv) Financial corporate bonds, (v) Sovereign bonds, (vi) Other fixed income securities, (vii) Small and medium-sized enterprise business lending, (viii) Public sector lending, (ix) Other business lending, (x) Residential real estate lending, (xi) Commercial real estate lending.

7. Assume that (1) you would not raise new equity capital; and (2) you would hold constant your portfolio of assets. In these circumstances, what were the probabilities at the reporting date of a **target management leverage ratio shortfall, a target management Tier 1 capital shortfall and both a target management leverage ratio shortfall and a target management Tier 1 capital shortfall** over the next quarter?

*Three categories: Target management leverage ratio shortfall, Target management Tier 1 capital shortfall, Target management leverage ratio shortfall and target management Tier 1 capital shortfall.*

[Options]: (i) 0 per cent, (ii) 1 to 5 per cent, (iii) 6 to 10 per cent, (iv) 11 to 20 per cent, (v) 21 to 30 per cent, (vi) 31 to 40 per cent, (vii) 41 to 50 per cent, (viii) Higher.

8. To what extent are you making funding and lending decisions based on the probabilities you provided in question 7? If not at all, please skip to question 13.

[Options] (i) To a considerable extent, (ii) To some extent, (iii) To a minimal extent, (iv) Not at all.

9. If dynamic balance sheet optimisation decisions are based on the probabilities you provided in question 7, how are such decisions implemented? [Check option most relevant.]

[Options]: (i) At the consolidated entity, (ii) At specific entities, (iii) By business lines (*provide your most important business line below*), (iv) By products (*provide your most important product below*), (v) By risk metrics (*provide your most important risk metric below*).

10. If dynamic balance sheet optimisation decisions are based on the probabilities you provided in question 7, are such decisions implemented [check option most relevant]
- [Options]* With respect to: (i) the overall consolidated balance sheet, (ii) specific lending types, (iii) all lending types, (iv) specific funding types, (v) all funding types, (vi) specific business lines, (vii) all business lines, (ix) to specific products, (x) all products, (xi) specific risk metrics, (xii) to all risk metrics.
11. To what extent are funding and lending decisions based on the probabilities you provided in question 7, affected by the **Liquidity Coverage Ratio**?
- [Options]* (i) To a considerable extent, (ii) To some extent, (iii) To a minimal extent, (iv) Not at all.
12. To what extent are funding and lending decisions based on the probabilities you provided in question 7, affected by the **Net Stable Funding Ratio**?
- [Options]* (i) To a considerable extent, (ii) To some extent, (iii) To a minimal extent, (iv) Not at all.

#### Questions 13 to 16

13. Given the limitations of your firm's IT and capital planning systems to capture the consolidated effects of various different stress tests, capital requirements and liquidity requirements in combination with each other, how confident do you feel about your ability to efficiently allocate risk exposures to your various lines of business?
- [Options]:* (i) Very confident, (ii) Somewhat confident, (iii) Minimally confident, (iv) Not at all confident.
14. What is the average planning period (**number of months**) you require to efficiently allocate risk exposures to your various lines of business?
- [Open-ended question]*
15. How often do you allocate risk exposures to your various lines of business?
- [Options]* (i) Daily, (ii) Weekly, (iii) Monthly, (iv) Annually, (v) Less than once a year.
16. To what extent did the introduction of a target leverage ratio requirement change the relative importance of your target Tier 1 capital requirement?
- [Options]* (i) To a considerable extent, (ii) To some extent, (iii) To a minimal extent, (iv) Not at all.

#### Questions 17 to 19

17. Which stress test(s) are you required to conduct? Check the stress tests that apply to you. If none do, please skip to question 19.
- [Options]* (i) CCAR, (ii) DFAST, (iii) EBA EU stress test, (iv) Other supervisory capital stress tests (please provide brief example below), (v) Other supervisory liquidity stress tests (please provide brief example below), (vi) Internal capital stress tests, (vii) Internal liquidity stress tests, (viii) Other (please provide brief example below).
18. (a) Do your **stress test results** impact **your capital planning or other business decisions**? If no, please skip to question 19.
- [Options]* (i) Yes, (ii) No.
- (b) Which stress tests have had the greatest impact on your capital planning or other business decisions?
- [Options]* (i) top-down stress test (eg EBA or CCAR), (ii) bottom-up stress test (Pillar 2 stress test, SREP Process), (iii) internal stress tests, (iv) other (please provide brief example below).



(c) In these circumstances, was the impact on your capital planning or other business decisions:  
[Options] (i) an increase in the target Tier 1 capital requirement level, (ii) a decrease in the target Tier 1 capital requirement level, (iii) an increase in the target management Tier 1 capital buffer, (iv) a decrease in the target management Tier 1 capital buffer, (v) an increase in RWA, (vi) a decrease in RWA, (vii) other (please provide brief example below).

19. Assuming you would increase your target management Tier 1 capital buffer as a consequence of stress test results, **how would you allocate contributions to reaching the new target in per cent adding up to 100%**? [Example: You are 0.5 percentage points short of your new target management Tier 1 capital buffer. If you closed the gap by retaining earnings (thereby decreasing your shortfall to 0.1 percentage points) and by reducing interbank lending (thereby erasing your shortfall), then you would allocate 80% to "Increase capital (including retain earnings)" and 20% to "Reduce interbank lending".] Group 2 banks that cannot allocate contributions in per cent may rank the three most important contributions that apply to them, with 1 representing the most important one.

[Options] (i) Reduce operating costs, (ii) Reduce interbank lending, (iii) Reduce trading activities, (iv) Reduce non-core assets (*provide brief example below*), (v) Reduce NPLs (eg through sales), (vi) Reduce participations and/or subsidiaries, (vii) Reduce non-financial corporate bonds, (viii) Reduce financial corporate bonds, (ix) Reduce sovereign bonds, (x) Reduce securitisation and other fixed income securities, (xi) Reduce small and medium-size enterprise business lending, (xii) Reduce public sector lending, (xiii) Reduce other business lending, (xiv) Reduce residential real estate lending, (xv) Reduce commercial real estate lending, (xvi) Reduce credit exposures through originating securitisations, (xvii) Increase capital (incl retain earnings), (xviii) Close lines of business (*provide brief example below*), (xix) Optimise risk weights by internal models (eg by increasing the revaluation frequency of collateral, recalibrating models, etc).

*For the contribution in per cent, each option allows to select a contribution between 0% and 100%, in 10% increments. For ranks, three options are available: 1, 2 or 3.*

20. Assume your bank aims at keeping its ROE constant in the face of higher costs due to regulatory changes or stress tests, which asset classes would your bank mostly choose to neutralise the cost impact? Given your current level of Tier 1 capital measured as a percentage of RWA and your current NSFR, by how much would the required yield of the average asset categories listed below have to increase (positive, in basis points), decrease (negative, in basis points) or stay the same (zero) to maintain your RoE constant, following a 1 percentage point increase in Tier 1 capital requirements (measured as a percentage of RWA), a 10 percentage point increase in the NSFR requirement, or a 1 percentage point shortfall of your Tier 1 capital ratio (relative to your internal target or regulatory requirements) as a result of stress test results?

Please consider the direct and indirect costs of an increase in Tier 1 capital requirements (including Pillar 1, Pillar 2 and macroprudential buffers), an increase in the NSFR and a capital reduction following stress test results (excluding ICAAP and Pillar 2 stress tests). Please provide an estimate of the changes in costs. For example, a 1 percentage point increase in the Tier 1 capital requirement (including buffers) from your current level might increase the required yield of an average SME loan by about 5/10/20/30/etc basis points to keep the overall ROE constant despite increasing regulatory costs. Similarly, a 10 percentage points increase in the NSFR from your current level might increase the price for an average commercial real estate loan by about 5/10/20/30/etc. basis points. If the impact on the required yield of a given asset category is negligible, please enter 0. **Group 2 banks that cannot estimate pricing effects at all may skip to question 21.**

Three asset categories: (i) Tier 1 capital requirements (including Pillar 1, Pillar 2 and macroprudential buffers; in basis points for a 1 percentage point increase in requirements), (ii)

NSFR (in basis points for a 10 percentage points increase in the NSFR), (iii) Stress tests (supervisory stress tests, excluding ICAAP\* and Pillar 2 stress tests; in basis points for 1 percentage point reduction in Tier 1 capital requirements as a result of stress test results).

*[Options]* (i) Interbank lending, (ii) Trading book activities, (iii) Non-financial corporate bonds, (iv) Financial corporate bonds, (v) Sovereign bonds, (vi) Small and medium-enterprise business lending, (vii) Other business lending, (viii) Residential real estate lending, (ix) Commercial real estate lending, (x) Other (*provide brief text below*).

#### Questions 21 to 22

21. Assume you had a target management Tier 1 capital shortfall, would you tighten lending standards? If no, please skip to question 23.

*[Options]* (i) Yes, (ii) No.

22. If you were to tighten lending standards because you had a target management Tier 1 capital shortfall, then you would do the following in rank order [with 1 representing the most important rank]

*[Rank options (1=most important, 6=least important)]* (i) Increase required collateral, (ii) Increase haircuts for securities lending transactions, (iii) Increase lending rates, (iv) Deny more credit requests, (v) Curtail lending to specific borrowers, (vi) Other (*provide brief text below*).

#### Questions 23 to 25

23. Do you have a **target management liquidity buffer**? If no, please skip to question 26.

*[Options]* (i) Yes, (ii) No.

24. Do you have a target management liquidity surplus or shortfall at the consolidated level?

*[Options]* (i) Surplus, (ii) Shortfall.

25. How would you reach your target management liquidity buffer? Assign weights (in per cent, adding up to 100%) to the following options. [N.B. Not all options might be relevant for your bank's LCR and NSFR strategy. Assign 0 percentage points or disregard those options that you do not consider relevant for your bank's LCR and NSFR strategy.]

*[Options]* (i) Increase holdings of high-quality liquid assets (HQLA), (ii) Reduce loans to private non-financial corporates (PNCs), (iii) Reduce loans to public sector, (iv) Reduce loans to households, (v) Reduce committed liquidity facilities to banks and other financial institutions, (vi) Reduce committed credit facilities to non-financial corporates, (vii) Shorten the average maturity of assets, (viii) Deleverage, (ix) Decrease short-term unstable funding (eg unsecured interbank borrowing), (x) Increase retail deposits, (x) Increase long-term issuance, (xi) Increase leverage, (xii) Other (*provide brief text below*).

*Each option allows to select a contribution between 0% and 100%, in 10% increments for each metric, eg LCR and NSFR.*

#### Questions 26 and 27

26. The most challenging regulatory requirement to meet is the:

*[Options]* (i) target Tier 1 capital requirement, (ii) target leverage ratio requirement, (iii) liquidity coverage ratio requirement, (iv) net stable funding ratio requirement, (v) total loss-absorbing capital requirement, (vi) other.

27. The most important **challenges associated with meeting regulatory requirements** are in rank order, with 1 being most important

[Rank options (1=most important, 11=least important)] (i) Complexity of the framework, (ii) Difficulty in achieving multiple constraints simultaneously, (iii) Cyclical variation in capital requirements, (iv) Geographical differences in capital requirements, (v) Uncertainty with respect to implementation and/or changes in regulation, (vi) Effects of market discipline imposed by investors and other stakeholders, (vii) Changes made by peers that affect your relative market dominance, (viii) Contracts designed under different regulatory regimes, (ix) Competition from entities not subject to capital requirements, (x) Systemic risks (eg inability to dispose of assets at fair prices), (xi) Other (provide brief text below).

## Questions 28

28. (a) The most challenging question to answer is:

[Options]: from 1 to 27.

(b) It is a challenging question to answer because

[Options]: (i) it is unclear, (ii) the options provided in the answer do not reflect my circumstances, (iii) both, (iv) other (please provide brief explanation below).

(c) This survey could be improved by

[Open-ended question]

(d) Please enter your title or the name of your unit within the organisation. **Please do not mention anything which would allow identification of your bank.**

[Open-ended question]

## Bank response rates

### Sample size

All banks

Table 3

Question	1	2	3	4	5	6	7	8	9	10	11	12	13	14
Responding banks, of which	116	114	104	114	111	88	109	105	56	27	58	58	112	106
Group 1	76	75	67	75	72	59	71	67	37	18	38	38	74	69
Group 2	40	39	37	39	39	29	38	38	19	9	20	20	38	37
Question	15	16	17	18	19	20	21	22	23	24	25	26	27	28
Responding banks, of which	112	112	109	110	93	47	108	63	113	99	91	101	110	102
Group 1	74	73	71	72	59	40	71	42	73	63	56	66	71	68
Group 2	38	39	38	38	34	7	37	21	40	36	35	35	39	34

Note: 128 banks (86 in Group 1 and 42 in Group 2) participated to the survey. For each question, the table shows the breakdown between Group 1 and Group 2 responding banks (including their partial answers).

Source: Basel Committee on Banking Supervision.

## Sample robustness: Welch's *t*-test

To test the robustness of our results, we check for the statistical significance of sample-specific differences in banks' answers with respect to four regulatory ratios: CET1 ratio, LR, LCR and NSFR. For example, are

the answers of banks with relatively higher regulatory ratios statistically different from the answers of other banks?

We consider the following non-overlapping subsamples: CET1 ratio  $\leq 12\%$  and LR  $\leq 5.9\%$ , LCR  $\leq 141.8\%$  and NSFR  $\leq 116.3\%$ . The thresholds were chosen to allow subsample sizes to be sufficiently large and to be near current or prospective regulatory thresholds for the CET1 ratio.<sup>18</sup> The thresholds for the LR, the LCR and the NSFR were set equal to the median values in the sample because, as of December 2017, almost all banks exceeded the regulatory minimum (set at 100% regardless of phase-in period). Then, we apply Welch's *t*-test to detect statistically significant differences in bank subsamples (based on banks' CET1 ratio, LR, LCR and NSFR as well as the joint values of the CET1 ratio and LR) with respect to the following three survey questions:<sup>19</sup>

5. How would you reach your new target leverage ratio buffer?
19. How would you increase your target management Tier 1 capital buffer as a consequence of stress test results?
25. How would you reach your target management liquidity buffer?

Overall, sample-specific differences are small, few of them are statistically significant (18%) and even fewer affect the economically relevant top 5 contributions to banks' behavioural adjustments (5%). In the case of significant interactions, banks with lower regulatory ratios are more like to feature intended behavioural reactions (such as increases of capital or HQLA) and less unintended reactions (such as reduction of lending).

Adjustments to the NSFR and to the LCR are most affected by interactions with regulatory ratios (25% and 22% of potential interactions are significant, respectively; see Table 4). The corresponding values for the LR and the reaction to stress tests are 18% and 13%, respectively. The share of interactions that affect the top five behavioural reactions is small and varies between 3% for the LCR and 8% for the LR.

<sup>18</sup> For example, the threshold for the CET1 ratio takes into account the regulatory minimum (4.5%), the capital conservation buffer (2.5%), the Other Systemically Important Institutions buffer (OSII)/Global Systemically Important Bank surcharge (up to 3%), the systemic risk surcharge (up to 2%) and the countercyclical capital buffer (up to 2.5%) and Pillar 2 requirements. As these requirements differ across banks and jurisdictions, the 12% threshold chosen for the CET1 ratio should not be interpreted as regulatory minimum requirement.

<sup>19</sup> Welch's *t*-test is a *t*-test on two independent data samples. It tests the null hypothesis that banks' answers come from independent random samples with equal means and unequal variances. The alternative hypothesis is that banks' answers come from populations with unequal means. The Welch test uses the Welch-Satterthwaite adjustment, which binds the effective degrees of freedom by  $\min(n_1-1, n_2-1)$  and  $n_1+n_2-2$ , where  $n_1$  and  $n_2$  are the number of banks in relevant subsamples.

## Overview of the results of the interaction analysis

All banks

Table 4

Adjustment to	LR	Stress tests	LCR	NSFR	Aggregate
Potential interactions	90	95	65	65	315
Interactions (in % of potential interactions)	18%	13%	22%	25%	18%
Interactions that affect top 5 behavioural reactions	8%	4%	3%	6%	5%
Potential interaction per adjustment to (column)	18	19	13	13	63
Interaction with CET1 ratio	11%	5%	15%	15%	11%
Interaction with LR	44%	21%	23%	15%	24%
Interaction with LCR	11%	5%	23%	23%	14%
Interaction with NSFR	11%	21%	23%	38%	22%
Interaction with CET1/LR	22%	11%	23%	31%	24%
Potential interaction with Q7(c): confidence in Tier 1 ratio and LR buffers	18	19	13	13	63
Interactions (in % of potential interactions)	11%	16%	23%	15%	16%
Interactions that affect top 5 behavioural reactions	0%	11%	0%	15%	6%

Source: Basel Committee on Banking Supervision.

The highest interactions are those of the LR with the adjustment to the LR. The initial value of the LR is significant in 44% of the potential behavioural reactions to the LR. Similarly, the initial value matters for 38% of the behavioural reactions to the NSFR. The combined CET1 ratio and LR matters for the behavioural reaction to the NSFR for 31% of the options.

The interaction between the answers to question 7(c) is low: we split banks into two subsamples based on their joint probability of both a target management LR shortfall and a target management Tier 1 capital shortfall over the next quarter.<sup>20</sup> Interactions range from 11% (LR) to 23% (LCR) and relevant interactions with the top 5 behavioural reactions range from 0% (LR and LCR) to 15% for the NSFR. For the latter, this means that banks with a lower confidence in their CET1 ratio and their LR are more likely to reduce short-term unstable funding more and use the option "Other" less. Regarding the reaction to stress test results, banks with lower confidence reduce other business lending more and increase capital less. The results for the LR and the reactions to the stress tests results, the numbers are similar to 2016.

The following detailed analysis is based on Table 5 to Table 12.

Question 5 yields 90 interactions – each of the 18 optional answers is interacted with the five regulatory subsamples detailed above. The two-sided Welch's *t*-test is significant at the 10% level in 16 instances (or about 18% similar to the 17% in 2016). Two out of the eight statistically significant interactions relate to banks' CET1 ratio. Banks with CET1 ratios above the median feature significantly higher contributions of the reduction of interbank lending and the reduction of credit exposure through securitisations. Most significant interactions pertain to the LR (8 out of 18) where banks with lower LRs place higher weights on increasing capital and reducing trading book. They feature lower values for reducing interbank lending, reducing participations and/or subsidiaries, reducing non-financial and

<sup>20</sup> We apply the two-sided Welch's *t*-test.

financial bonds, SME lending and CRE lending. In particular, banks whose CET1 ratio and LR are above 12% and 5.9%, respectively, assign significantly higher values to reduce interbank lending and reduce credit exposures through securitisations and lower values to increase capital and reduce trading book. Banks with an LCR above the median (141.8%) rely significantly less on the reduction of participations and/or subsidiaries and significantly more on the reduction of sovereign bonds. Similarly, banks with an NSFR above the median (116.3%) tend to place a higher weight on the reduction of sovereign bonds and of non-financial corporate bonds. Out of the 90 possible interactions, 48 were also tested for in the 2016 analysis. Six significant interactions in 2017 were also tested in 2016, and only one of these interactions was significant in 2016. In both waves of the survey, banks with higher CET1 ratios and LRs placed significantly more weight on the reduction of credit exposure through securitisations. Not only are there few interactions, only seven out of these 16 affect one of the top 5 contributions to banks' behavioural reactions to the LR buffer: in particular, the LR matters for the behavioural reaction of banks to the LR with 3 out of 5 significant interactions in the top 5. Banks with lower LRs increase capital more, they reduce trading book more and interbank lending less. Banks with, both, higher CET1 ratios and LRs place less weight on increasing capital and reducing trading book, but more on reducing interbank lending and credit exposure through securitisation. Banks with higher LCRs and/or NSFRs place more weight on the reduction of sovereign bonds to achieve new target LR buffer. Neither of these interactions were significant in the 2016 wave.<sup>21</sup> The complete analysis can be found in Table 5. Banks with lower capitalisation (LR or combined CET1 and LR) are more likely to choose top 5 behavioural responses (73% vs 55% and 68% vs 58%, respectively) (Table 13).

In question 19, there are 95 potential interactions between the 19 optional answers and the abovementioned five combinations with regulatory ratios. We find that twelve interactions are statistically significant at the 10% level (13%). The comparable number in 2016 was 10%. Banks with lower CET1 ratios place less weight on the reduction of sovereign bonds to achieve their new target Tier 1 buffers because of stress test results. Banks whose CET1 ratio and LR are below the respective thresholds feature higher values for reducing trading book and reducing RRE lending. Banks with an LCR above the median (141.8%) rely significantly more on reducing other business lending. Finally, banks with an NSFR above the median (116.3%) place higher weights on reducing other business lending, RRE lending, interbank lending and non-financial corporate bonds. Not only are there few interactions, only four of the twelve interactions refer to top 5 contributors to banks' behavioural adjustment: banks with lower LRs feature higher values on reduce trading book and do banks with, both, lower CET1 ratios and LRs. Banks with lower LCRs and/or NSFRs place less weight on the reduction of other business lending to achieve new target Tier 1 buffers as a consequence of stress test results. The complete analysis can be found in Table 6. Banks with lower capitalisation (LR or combined CET1 and LR) are more likely to choose unintended consequences (17% vs 13% and 17% vs 13%, respectively) (see annex Table 13). Banks with lower LCRs are less likely to choose unintended consequences (12% vs 18%).

In question 25, there are 65 potential interactions for the LCR and the NSFR, respectively. There are 13 optional answers and 5 combinations of regulatory ratios. For the LCR, we find that 14 (22%) interactions are statistically significant at the 10% level. The corresponding number in 2016 was 28%. Banks with lower CET1 ratios feature lower weights for the reduction of loans to households and higher weights for increases of retail deposits. Banks with lower LRs reduce loans to private non-financial corporates and to the public sector less; they place also emphasise on shortening the average maturity of assets. Banks with CET1 ratios and LR below 12% and 5.9%, respectively, place higher weights on increasing retail deposits and lower weights on reducing loans to private non-financial corporates and to the public sector. Banks with LCRs below the median (141.8%) reduce household loans and increase leverage significantly less than the other banks, but reduce the average maturity of assets more. Similarly, banks with an NSFR below the median (116.3%) place significantly less weight on the options: reduce loans to households and reduce loans and/or credit facilities to the private non-financial corporates. Out of 14 interactions, only two affect the top five contributions: banks with lower CET1 ratios as well as banks with both lower CET1

<sup>21</sup> Only the LCR, the NSFR and the combined CET1 ratio and LR were included in the 2016 interaction analysis.

ratios and lower LR increase retail deposits more. For eight of the interactions 2016 data is available; five interactions in the 2017 survey were also significant in 2016. If significant interactions pertain to reducing lending to households, private non-financial corporates, or the public sector, banks with lower regulatory ratios (CET1, LR, LCR, NSFR, CET1 and LR) rely significantly less on of these options. The complete analysis can be found in Table 7. Banks with lower capitalisation (LR or combined CET1 and LR) are more likely to choose top 5 behavioural reactions (90% vs 80 and 88% vs 78%, respectively) and are less likely to choose unintended consequences (3% vs 11% and 4% vs 12%, respectively) (see annex Table 13). Banks with lower NSFRs are less likely to choose unintended consequences (4% vs 10%).

For the NSFR we find that 16 out of 65 potential interactions are significant (25%). Banks with lower CET1 ratios reduce loans to the public sector and to households less. Banks with lower LR reduce committed credit facilities to private non-financial corporates less and shorten the average maturity of assets less. Banks with, both, lower CET1 ratios and LR place less weight on reducing loans to the public sector, liquidity to financial intermediaries and committed credit facilities to private non-financial corporates as well as shortening the average maturity of assets. Banks with lower LCRs increase HQLA, long-term issuance and decrease short-term unstable funding more. Banks with lower NSFRs place significantly less weight on the following options: reducing loans to the public sector, liquidity to financial intermediaries and committed credit facilities to private non-financial corporates as well as on shortening the average maturity of assets. Out of the 16 interactions, four pertain to the top five behavioural reactions: banks with a lower LCR place significantly higher weights on increasing HQLA and decreasing short-term unstable funding, but less on long-term issuance. Banks with lower NSFRs feature significantly lower values for increasing HQLA. If significant interactions pertain to reducing lending to households, private non-financial corporates, or the public sector, banks with lower regulatory ratios (CET1, LR, LCR, NSFR, CET1 and LR) rely significantly less on of these options. The complete analysis can be found in Table 8. Banks with lower capitalisation (LR or combined CET1 and LR) are more likely to choose top 5 behavioural reactions (85% vs 74% and 85% vs 70%, respectively) and are less likely to choose unintended consequences (6% vs 13% and 7% vs 15%, respectively) (Table 13). Banks with lower NSFRs are less likely to choose unintended consequences (6% vs 14%).

Finally, we analyse the interaction between questions 7(c) and 5 as well as 7 (c), 19 and 25 (for the LCR and the NSFR) (Table 9, Table 10, Table 11 and Table 12), respectively.<sup>22</sup> We split banks into two subsamples based on their joint probability of both a target management LR shortfall and a target management Tier 1 capital shortfall over the next quarter.<sup>23</sup> In Table 9 (LR adjustment), two out of 18 potential interactions are significant. The corresponding number in 2016 was three. Banks that reported a 0% probability (subsample 1) place significantly more weight on reducing NPLs and significantly less on reducing SME loans than banks that reported some chance of a shortfall probability (subsample 2). None of the interactions refers to any of the top five behavioural reactions. None of the significant interactions was also significant in the 2016 survey. Regarding banks' reactions to stress test results. In Table 10 (Tier 1 adjustment to stress test results), three out of 19 potential interactions are significant, the same number as in 2016. Banks in subsample 1 place significantly more weight on increasing capital (including retained earnings) and significantly less on reducing other business lending and on reducing SME lending to achieve new target Tier 1 buffers because of stress test results. Two of the three interaction refer to top five categories. Two of the three significant interactions in 2017 were also significant in 2016 (increase of capital and reduction of SME lending). In Table 11 (LCR adjustment), three out of 13 potential interactions are significant. Banks that are more confident with respect to their capital position place less weight on reducing liquidity facilities to other financial institutions, reducing loans to private non-financial corporates and on deleveraging. None of the three significant interactions is in the top five of banks' adjustments to

<sup>22</sup> Question 7: "Assume that (1) you would not raise new equity capital; and (2) you would hold constant your portfolio of assets. In these circumstances, what was the probability at the reporting date of both a target management leverage ratio shortfall and a target management Tier 1 capital shortfall over the next quarter?"

<sup>23</sup> We apply the two-sided Welch's *t*-test.

their new target management LCR buffer. A comparison to 2016 is not available. In Table 12 (NSFR adjustment), two out of 13 potential interactions are significant. Banks that are more confident in their capital position place higher weights on “Other” and less on decrease short-term unstable funding, both of which are among the top five behavioural reactions to the NSFR.



Interaction between regulatory ratios and answers A5 in QIS survey

Table 5

	Increase capital (incl retain earnings)	Reduce operating costs	Close business lines	Reduce non-core assets	Reduce interbank lending	Reduce NPLs (eg through sales)	Reduce trading book	Reduce participations and/or subsidiaries	Reduce non-financial corporate bonds	Reduce financial corporate bonds	Reduce sovereign bonds	Reduce other fixed income securities	Reduce SME business lending	Reduce public sector lending	Reduce other business lending	Reduce residential real estate lending	Reduce commercial real estate lending	Reduce credit exposures through securitisations
Average contrib. (%)	35.28	4.25	1.51	6.60	7.55	3.87	6.89	1.13	2.55	2.64	6.32	2.26	2.26	1.32	5.85	3.87	3.68	2.17
Sample size	106	106	106	106	106	106	106	106	106	106	106	106	106	106	106	106	106	106
t* (CET1)	-0.60	1.05	-0.95	-0.28	2.33	-0.94	-1.46	0.20	0.67	-0.83	1.35	0.48	-0.12	1.62	-0.65	1.48	0.57	2.79
df (CET1)	33	34	31	36	47	31	31	33	34	32	37	33	32	39	31	42	33	54
x1 (CET1)	33.53	4.71	0.44	6.62	9.41	2.79	5.29	0.74	2.94	2.35	7.79	2.35	2.35	1.76	5.29	4.71	3.97	2.94
x2 (CET1)	38.13	3.13	3.44	7.50	3.13	5.94	11.25	0.63	2.19	3.44	3.75	1.88	2.50	0.63	7.19	1.88	3.13	0.31
Sample size (CET1)	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
t* (LR)	-2.19	1.05	-0.78	-0.45	1.80	1.43	-2.30	2.36	2.30	2.66	-0.19	1.58	2.33	-1.27	1.16	-1.34	1.88	1.25
df (LR)	41	41	42	41	40	40	42	39	40	40	41	40	40	42	41	42	41	41
x1 (LR)	26.75	5.00	0.50	7.00	12.00	6.25	3.25	1.25	3.25	4.00	6.25	2.75	4.00	0.75	6.75	2.50	4.50	3.25
x2 (LR)	43.49	3.26	2.33	8.84	4.65	2.09	9.07	0.00	0.93	0.93	6.98	1.16	1.16	1.86	3.95	6.05	1.86	1.40
Sample size (LR)	83	83	83	83	83	83	83	83	83	83	83	83	83	83	83	83	83	83
t* (LCR)	-1.10	-0.64	-1.19	0.55	0.19	0.47	0.22	-2.35	-0.76	-0.87	2.39	0.92	-0.63	-0.30	-0.54	0.85	-0.39	1.12
df (LCR)	41	41	41	42	41	42	41	41	41	41	42	41	41	41	41	42	41	42
x1 (LCR)	31.40	3.49	0.00	8.84	8.37	4.65	7.67	0.00	1.63	1.86	10.70	2.33	2.09	1.16	4.65	5.35	2.79	3.02
x2 (LCR)	40.00	4.52	2.86	6.67	7.62	3.33	6.90	1.19	2.38	2.86	2.14	1.43	2.86	1.43	5.95	3.10	3.33	1.43
Sample size (LCR)	85	85	85	85	85	85	85	85	85	85	85	85	85	85	85	85	85	85
t* (NSFR)	-0.44	0.17	-0.81	-0.96	-0.06	-0.52	-1.66	0.76	2.19	0.17	2.58	0.65	-1.28	-1.10	0.50	1.36	-0.64	1.28
df (NSFR)	51	51	50	51	50	50	50	53	52	51	53	51	51	50	51	52	50	52
x1 (NSFR)	33.82	4.36	0.73	5.09	7.45	3.27	4.55	1.45	3.64	2.73	10.00	2.55	1.64	0.91	6.36	5.27	3.27	2.91
x2 (NSFR)	36.86	4.12	2.35	8.24	7.65	4.51	9.41	0.78	1.37	2.55	2.35	1.96	2.94	1.76	5.29	2.35	4.12	1.37
Sample size (NSFR)	106	106	106	106	106	106	106	106	106	106	106	106	106	106	106	106	106	106
t* (CET1andLR)	-2.10	1.11	-0.92	-0.15	2.00	-0.12	-2.16	0.93	1.16	1.36	0.49	0.89	0.77	-0.74	1.26	-1.11	1.06	1.74
df (CET1andLR)	41	35	49	39	32	45	46	35	37	37	37	37	38	44	39	48	39	34
x1 (CET1andLR)	24.52	5.48	0.32	7.74	14.52	3.87	3.23	0.97	2.90	3.55	8.06	2.58	3.23	0.97	7.42	2.58	4.19	3.87
x2 (CET1andLR)	40.60	3.40	2.20	8.40	4.60	4.20	8.40	0.40	1.60	1.80	6.00	1.60	2.20	1.60	4.20	5.20	2.60	1.00
Sample size (CET1andLR)	81	81	81	81	81	81	81	81	81	81	81	81	81	81	81	81	81	81

Source: Basel Committee on Banking Supervision.

Interaction between regulatory ratios and answers A19 in QIS survey

Table 6

	Reduce operating costs	Reduce interbank lending	Reduce trading book	Reduce non-core assets	Reduce NPLs (eg through sales)	Reduce participations and/or subsidiaries	Reduce non-financial corporate bonds	Reduce financial corporate bonds	Reduce sovereign bonds	Reduce securitisations and other fixed income	Reduce SME business lending	Reduce public sector lending	Reduce other business lending	Reduce residential real estate lending	Reduce commercial real estate lending	Reduce credit exposures through securitisations	Increase capital (incl retain earnings)	Close business lines	Optimise risk weights by internal models
Average contribution (%)	6.87	4.14	4.34	7.47	3.84	3.23	3.03	3.23	2.12	2.12	2.83	1.11	5.86	3.03	2.93	2.83	36.87	1.52	2.63
Sample size	99	99	99	99	99	99	99	99	99	99	99	99	99	99	99	99	99	99	99
t* (CET1)	0.18	1.10	-0.26	0.91	-0.96	-0.51	0.43	-0.62	1.73	0.55	-0.22	0.27	-0.97	1.38	-0.78	0.11	0.38	-1.06	-0.83
df (CET1)	31	33	29	35	29	30	30	29	48	32	29	31	29	38	29	31	30	28	29
x1 (CET1)	7.23	4.46	3.69	8.62	3.38	2.92	2.92	3.08	2.92	2.46	2.77	1.23	4.92	3.85	2.62	2.92	37.69	0.46	1.85
x2 (CET1)	6.90	2.76	4.14	5.86	5.17	3.79	2.41	4.14	0.69	1.72	3.10	1.03	7.24	1.72	3.79	2.76	35.17	4.14	3.45
Sample size (CET1)	94	94	94	94	94	94	94	94	94	94	94	94	94	94	94	94	94	94	94
t* (LR)	-0.35	0.69	-2.15	-0.38	1.74	0.39	1.66	1.87	-0.30	-0.84	0.42	0.31	-0.22	-2.56	0.94	0.50	0.67	-0.98	-0.65
df (LR)	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37
x1 (LR)	7.63	4.47	1.84	7.89	5.53	4.21	2.89	4.21	1.32	1.58	2.37	1.32	5.00	0.79	3.68	2.63	40.53	0.53	1.58
x2 (LR)	8.42	3.16	5.53	9.47	2.37	3.42	1.05	1.32	1.84	2.89	1.84	1.05	5.53	6.32	2.37	1.84	35.79	3.16	2.63
Sample size (LR)	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76
t* (LCR)	1.24	-1.00	-0.03	0.08	1.10	1.11	-0.96	-0.63	0.96	1.63	-1.51	0.48	2.13	0.98	-0.28	0.98	-1.47	-0.83	-1.57
df (LCR)	39	40	39	38	38	37	40	40	37	37	40	38	37	37	39	38	40	41	41
x1 (LCR)	9.19	2.70	3.51	8.65	4.86	4.86	1.35	2.16	2.43	3.51	1.08	1.35	7.84	4.59	2.70	2.97	34.59	0.81	0.81
x2 (LCR)	6.43	4.52	3.57	8.33	2.86	2.62	2.38	3.10	0.71	0.95	2.86	0.95	2.86	2.38	3.10	1.43	45.00	2.86	3.10
Sample size (LCR)	79	79	79	79	79	79	79	79	79	79	79	79	79	79	79	79	79	79	79
t* (NSFR)	0.14	1.78	-0.16	-0.17	1.27	-0.78	1.95	-0.04	0.60	0.12	-1.58	-0.32	1.76	1.84	-0.55	-0.60	-1.12	-1.08	-0.03
df (NSFR)	48	48	48	48	48	48	49	48	48	48	48	48	49	49	48	48	48	48	48
x1 (NSFR)	7.00	5.60	4.20	7.20	4.80	2.60	4.20	3.20	2.60	2.20	1.80	1.00	7.60	4.60	2.60	2.40	33.40	0.40	2.60
x2 (NSFR)	6.73	2.65	4.49	7.76	2.86	3.88	1.84	3.27	1.63	2.04	3.88	1.22	4.08	1.43	3.27	3.27	40.41	2.65	2.65
Sample size (NSFR)	99	99	99	99	99	99	99	99	99	99	99	99	99	99	99	99	99	99	99
t* (CET1andLR)	-0.54	0.38	-2.18	-0.05	0.83	0.59	0.47	0.50	0.06	-1.07	0.25	0.26	-0.47	-2.61	0.69	0.06	1.11	-1.12	-0.13
df (CET1andLR)	35	36	42	35	35	34	37	34	38	42	37	38	39	44	37	34	35	44	36
x1 (CET1andLR)	7.33	4.33	1.67	8.67	5.00	4.67	2.33	3.33	1.67	1.33	2.33	1.33	4.67	0.67	3.67	2.33	42.33	0.33	2.00
x2 (CET1andLR)	8.67	3.56	5.11	8.89	3.33	3.33	1.78	2.44	1.56	2.89	2.00	1.11	5.78	5.56	2.67	2.22	34.00	2.89	2.22
Sample size (CET1andLR)	75	75	75	75	75	75	75	75	75	75	75	75	75	75	75	75	75	75	75

Source: Basel Committee on Banking Supervision.

Interaction between regulatory ratios and answers A25 in QIS survey for LCR

Table 7

	Increase holdings of HQLA	Reduce loans to PNCs	Reduce loans to public sector	Reduce loans to households	Reduce liquidity	Reduce committed	Shorten the average	Deleverage	Decrease ST unstable	Increase retail deposits	Increase long-term	Increase leverage	Other
Average contrib. (%)	32.06	2.06	1.13	1.65	3.30	2.37	2.78	1.75	7.53	11.24	14.54	2.47	17.11
Sample size	97	97	97	97	97	97	97	97	97	97	97	97	97
t* (CET1)	-0.40	1.38	1.36	1.72	0.64	-0.05	1.67	-0.24	0.92	-2.15	-0.11	-0.43	0.26
df (CET1)	34	37	38	43	39	34	42	33	36	35	34	33	34
x1 (CET1)	30.85	2.37	1.53	2.03	3.56	2.37	3.56	1.53	8.31	8.81	14.41	2.03	18.64
x2 (CET1)	33.33	1.21	0.61	0.61	2.73	2.42	1.52	1.82	6.36	15.15	14.85	2.73	16.67
Sample size (CET1)	92	92	92	92	92	92	92	92	92	92	92	92	92
t* (LR)	-1.45	4.25	1.79	1.52	0.73	1.56	2.05	-1.24	-0.38	0.01	-0.36	-0.44	0.20
df (LR)	38	35	36	37	37	38	37	39	38	38	37	38	38
x1 (LR)	26.39	3.89	1.39	2.50	2.78	3.33	3.89	0.83	7.78	10.28	16.11	2.22	18.61
x2 (LR)	35.75	0.00	0.25	0.75	2.00	1.50	0.75	2.25	8.75	10.25	17.75	3.00	17.00
Sample size (LR)	76	76	76	76	76	76	76	76	76	76	76	76	76
t* (LCR)	0.99	-0.89	-0.73	1.96	-1.30	0.20	-1.83	-0.77	-1.41	0.14	1.10	1.89	-1.00
df (LCR)	39	40	40	38	40	39	41	41	40	39	39	38	40
x1 (LCR)	34.47	1.32	0.53	2.63	1.58	2.37	0.79	1.05	6.05	10.00	18.68	4.21	16.32
x2 (LCR)	27.86	2.14	0.95	0.48	2.86	2.14	3.33	1.90	9.52	9.52	13.81	0.95	24.52
Sample size (LCR)	80	80	80	80	80	80	80	80	80	80	80	80	80
t* (NSFR)	0.92	2.73	-0.32	2.07	0.84	1.82	0.71	-1.04	-1.54	-0.01	-0.79	0.24	-0.93
df (NSFR)	47	48	47	48	47	47	47	47	47	47	47	47	47
x1 (NSFR)	34.69	3.27	1.02	2.65	3.88	3.27	3.27	1.22	5.92	11.22	13.06	2.65	13.88
x2 (NSFR)	29.38	0.83	1.25	0.63	2.71	1.46	2.29	2.29	9.17	11.25	16.04	2.29	20.42
Sample size (NSFR)	97	97	97	97	97	97	97	97	97	97	97	97	97
t* (CET1 and LR)	-0.38	2.45	2.07	1.52	1.17	1.10	1.51	-1.33	-0.21	-1.82	-0.56	-0.18	0.12
df (CET1 and LR)	35	29	28	29	32	34	30	44	36	41	35	34	34
x1 (CET1 and LR)	29.26	3.70	1.85	2.96	3.33	3.33	4.07	0.74	8.15	6.67	14.81	2.22	18.89
x2 (CET1 and LR)	31.91	0.85	0.21	0.85	1.91	1.91	1.28	2.13	8.72	12.34	17.45	2.55	17.87
Sample size (CET1 and LR)	74	74	74	74	74	74	74	74	74	74	74	74	74

Source: Basel Committee on Banking Supervision.

Interaction between regulatory ratios and answers A25 in QIS survey for NSFR

Table 8

	Increase holdings	Reduce loans to PNCs	Reduce loans to public sector	Reduce loans to households	Reduce liquidity	Reduce committed	Shorten the average	Deleverage	Decrease ST unstable	Increase retail deposits	Increase long-term	Increase leverage	Other
Average contrib. (%)	15.73	2.81	1.88	2.60	3.02	2.60	3.96	2.92	8.13	14.38	23.13	1.35	17.50
Sample size	96	96	96	96	96	96	96	96	96	96	96	96	96
t* (CET1)	-1.05	-0.07	2.09	2.03	0.77	1.59	1.31	1.02	-0.23	-0.94	-1.03	-0.71	0.56
df (CET1)	32	32	45	50	36	38	35	37	32	33	33	32	34
x1 (CET1)	12.71	2.71	2.71	3.39	3.39	3.22	4.75	3.39	8.14	13.05	21.69	0.85	20.00
x2 (CET1)	17.81	2.81	0.63	0.63	2.50	1.56	2.81	1.88	8.75	16.25	27.19	1.56	15.63
Sample size (CET1)	91	91	91	91	91	91	91	91	91	91	91	91	91
t* (LR)	-0.32	1.58	1.48	0.62	1.54	1.86	2.44	-1.08	0.44	0.22	-1.51	-0.71	-0.34
df (LR)	37	37	36	37	36	37	37	37	37	37	37	38	37
x1 (LR)	13.33	3.89	2.78	3.33	3.89	3.33	5.83	1.67	8.89	13.61	21.67	0.83	16.94
x2 (LR)	14.87	1.79	0.77	2.05	1.79	1.28	1.79	3.59	7.69	12.82	30.26	1.54	19.74
Sample size (LR)	75	75	75	75	75	75	75	75	75	75	75	75	75
t* (LCR)	-1.74	0.44	0.74	1.90	-1.15	0.02	-1.00	0.75	-2.71	1.24	1.89	0.93	-0.63
df (LCR)	40	38	38	36	40	39	40	38	41	39	38	38	40
x1 (LCR)	9.19	2.97	2.16	4.59	1.89	2.16	2.70	3.24	4.59	14.86	31.62	1.62	18.38
x2 (LCR)	17.14	2.38	1.19	0.71	3.33	2.14	4.29	1.90	11.19	10.48	20.71	0.71	23.81
Sample size (LCR)	79	79	79	79	79	79	79	79	79	79	79	79	79
t* (NSFR)	1.93	1.98	0.00	1.83	-0.87	1.69	0.56	-1.34	-1.07	0.13	-1.26	2.08	-0.91
df (NSFR)	47	47	47	47	47	47	47	47	47	47	47	47	47
x1 (NSFR)	19.79	3.96	1.88	4.17	2.50	3.54	4.38	1.88	6.88	14.58	20.00	2.29	14.17
x2 (NSFR)	11.67	1.67	1.88	1.04	3.54	1.67	3.54	3.96	9.38	14.17	26.25	0.42	20.83
Sample size (NSFR)	96	96	96	96	96	96	96	96	96	96	96	96	96
t* (CET1 and LR)	0.01	0.93	1.81	0.89	1.87	1.74	2.36	-0.74	-0.20	-1.16	-1.61	0.25	-0.14
df (CET1 and LR)	37	36	28	31	29	32	31	35	37	39	37	33	35
x1 (CET1 and LR)	13.33	3.70	3.70	4.07	4.81	3.70	6.67	1.85	8.15	10.74	20.00	1.11	18.15
x2 (CET1 and LR)	13.26	2.39	0.65	1.96	1.74	1.52	2.17	3.26	8.70	14.78	29.35	0.87	19.35
Sample size (CET1 and LR)	73	73	73	73	73	73	73	73	73	73	73	73	73

Source: Basel Committee on Banking Supervision.

Interaction between answers A7(c) and answers A5 (leverage ratio) in QIS survey

Table 9

	Increase capital (incl retain earnings)	Reduce operating costs	Close business lines	Reduce non-core assets	Reduce interbank lending	Reduce NPLs (eg through sales)	Reduce trading book	Reduce participations and/or subsidiaries	Reduce non-financial corporate bonds	Reduce financial corporate bonds	Reduce sovereign bonds	Reduce other fixed income securities	Reduce SME business lending	Reduce public sector lending	Reduce other business lending	Reduce residential real estate lending	Reduce commercial real estate lending	Reduce credit exposures through securitisations
Average contribution (%)	34.81	4.13	1.54	6.63	7.50	3.94	6.73	1.15	2.60	2.69	6.44	2.31	2.31	1.35	5.96	3.94	3.75	2.21
Sample size	104	104	104	104	104	104	104	104	104	104	104	104	104	104	104	104	104	104
t* (A7)	0.81	-1.02	0.00	-0.43	1.36	1.90	-0.57	-1.25	-0.44	-0.38	-0.39	-0.49	-1.75	-1.46	0.12	1.24	-1.00	1.37
df (A7)	27	26	41	25	32	46	27	25	25	26	25	26	25	25	28	36	26	34
x1 (A7)	36.28	3.72	1.54	6.15	8.46	4.74	6.28	0.64	2.44	2.56	6.03	2.18	1.67	0.90	6.03	4.49	3.33	2.56
x2 (A7)	30.38	5.38	1.54	8.08	4.62	1.54	8.08	2.69	3.08	3.08	7.69	2.69	4.23	2.69	5.77	2.31	5.00	1.15
Sample size (A7)	104	104	104	104	104	104	104	104	104	104	104	104	104	104	104	104	104	104

Source: Basel Committee on Banking Supervision.

Interaction between answers A7(c) and answers A19 (stress tests) in QIS survey

Table 10

	Reduce operating costs	Reduce interbank lending	Reduce trading book	Reduce non-core assets	Reduce NPLs (eg through sales)	Reduce participations and/or subsidiaries	Reduce non-financial corporate bonds	Reduce financial corporate bonds	Reduce sovereign bonds	Reduce securitisations and other fixed income	Reduce SME business lending	Reduce public sector lending	Reduce other business lending	Reduce residential real estate lending	Reduce commercial real estate lending	Reduce credit exposures through securitisations	Increase capital (incl retain earnings)	Close business lines	Optimise risk weights by internal models	
Average contribution (%)	7.08	4.27	4.48	7.71	3.75	3.02	3.13	3.33	2.19	2.19	2.92	1.15	5.52	3.13	3.02	2.92	35.94	1.56	2.71	
Sample size	96	96	96	96	96	96	96	96	96	96	96	96	96	96	96	96	96	96	96	96
t* (A7)	-0.38	-0.39	-1.94	0.90	-0.84	1.51	-0.08	0.96	0.60	-1.48	-2.57	-1.10	-1.81	0.28	0.72	-1.69	1.97	1.05	1.27	
df (A7)	27	26	25	28	25	33	27	30	34	24	24	24	24	30	27	25	26	55	28	
x1 (A7)	6.90	4.08	3.38	8.45	3.38	3.52	3.10	3.66	2.39	1.41	1.55	0.85	4.37	3.24	3.24	2.11	39.15	1.97	3.24	
x2 (A7)	7.60	4.80	7.60	5.60	4.80	1.60	3.20	2.40	1.60	4.40	6.80	2.00	8.80	2.80	2.40	5.20	26.80	0.40	1.20	
Sample size (A7)	96	96	96	96	96	96	96	96	96	96	96	96	96	96	96	96	96	96	96	96

Source: Basel Committee on Banking Supervision.

Interaction between answers A7(c) and answers A25 in QIS survey for LCR

Table 11

	Increase holdings of HQLA	Reduce loans to PNCs	Reduce loans to public sector	Reduce loans to households	Reduce liquidity to FIs	Reduce committed credit facilities to NFCs	Shorten the average maturity of assets	Deleverage	Decrease ST unstable funding	Increase retail deposits	Increase long-term issuance	Increase leverage	Other
Average contrib. (%)	31.40	2.15	1.18	1.72	3.33	2.37	2.90	1.83	7.63	11.51	14.95	2.26	16.77
Sample size	93	93	93	93	93	93	93	93	93	93	93	93	93
t* (A7)	1.61	-2.34	-1.30	-1.16	-1.96	-0.59	-1.52	-1.92	-0.96	-0.44	0.73	0.19	1.49
df (A7)	28	23	24	23	23	24	23	23	25	25	26	28	27
x1 (A7)	33.48	1.30	0.87	1.30	2.17	2.17	2.17	1.01	7.10	11.16	15.65	2.32	19.28
x2 (A7)	25.42	4.58	2.08	2.92	6.67	2.92	5.00	4.17	9.17	12.50	12.92	2.08	9.58
Sample size (A7)	93	93	93	93	93	93	93	93	93	93	93	93	93

Source: Basel Committee on Banking Supervision.

Interaction between answers A7(c) and answers A25 in QIS survey for NSFR

Table 12

	Increase holdings of HQLA	Reduce loans to PNCs	Reduce loans to public sector	Reduce loans to households	Reduce liquidity to FIs	Reduce committed credit facilities to NFCs	Shorten the average maturity of assets	Deleverage	Decrease ST unstable funding	Increase retail deposits	Increase long-term issuance	Increase leverage	Other
Average contrib. (%)	15.43	2.93	1.96	2.72	3.04	2.61	4.13	3.04	8.26	14.78	22.50	1.41	17.17
Sample size	92	92	92	92	92	92	92	92	92	92	92	92	92
t* (A7)	-0.19	-1.60	-0.65	-0.58	-0.82	-1.34	-1.52	-1.46	-2.42	1.51	1.28	-0.84	1.90
df (A7)	24	23	23	25	23	22	22	22	22	25	23	23	26
x1 (A7)	15.22	2.32	1.74	2.46	2.75	2.03	3.33	2.17	6.38	15.94	24.20	1.16	20.29
x2 (A7)	16.09	4.78	2.61	3.48	3.91	4.35	6.52	5.65	13.91	11.30	17.39	2.17	7.83
Sample size (A7)	92	92	92	92	92	92	92	92	92	92	92	92	92

Source: Basel Committee on Banking Supervision.

Summary of interactions between regulatory ratios and answers: contributions of top 5 behavioural reactions versus unintended consequences

Table 13

Interactions A5	Top 5	Unintended consequences*	Interactions A19	Top 5	Unintended consequences*	Interactions A25 (LCR)	Top 5	Unintended consequences**	Interactions A25 (NSFR)	Top 5	Unintended consequences**
Agg. contribution (%)	62.64	16.98	Agg. contribution (%)	61.41	15.76	Agg. contribution (%)	82.48	7.21	Agg. contribution (%)	78.87	9.89
x1 (CET1)	62.64	18.08	x1 (CET1)	62.15	15.39	x1 (CET1)	81.02	8.3	x1 (CET1)	75.59	12.03
x2 (CET1)	63.76	15.33	x2 (CET1)	59.31	16.88	x2 (CET1)	86.36	4.85	x2 (CET1)	85.63	5.63
x1 (LR)	55.25	18.5	x1 (LR)	62.89	13.16	x1 (LR)	79.17	11.11	x1 (LR)	74.44	13.33
x2 (LR)	73.03	14.88	x2 (LR)	64.74	17.11	x2 (LR)	89.5	2.5	x2 (LR)	85.38	5.89
x1 (LCR)	66.98	16.04	x1 (LCR)	63.78	17.56	x1 (LCR)	85.52	6.85	x1 (LCR)	78.64	11.88
x2 (LCR)	63.33	16.67	x2 (LCR)	66.19	12.15	x2 (LCR)	85.23	5.71	x2 (LCR)	83.33	6.42
x1 (NSFR)	60.91	17.45	x1 (NSFR)	59.4	17.6	x1 (NSFR)	78.77	10.21	x1 (NSFR)	75.42	13.55
x2 (NSFR)	64.51	16.46	x2 (NSFR)	63.47	13.88	x2 (NSFR)	86.26	4.17	x2 (NSFR)	82.3	6.26
x1 (CET1andLR)	58.07	18.39	x1 (CET1andLR)	64.67	12.67	x1 (CET1andLR)	77.78	11.84	x1 (CET1andLR)	70.37	15.17
x2 (CET1andLR)	68	15.8	x2 (CET1andLR)	62.45	17.12	x2 (CET1andLR)	88.29	3.82	x2 (CET1andLR)	85.44	6.52

Source: Authors' own calculations. \*Reductions of loans to SME, other businesses, household, public sector, residential real estate, commercial real estate.\*\*Reduce loans to PNC, households, public sector and committed credit facilities to PNC.



Summary interaction between risk density and RoE and answers to A5, A19, and A25 in QIS survey

Table 14

Interaction A5	Top 5	Unintended consequences*	Interaction A19	Top 5	Unintended consequences*	Interaction A25 (LCR)	Top 5	Unintended consequences**	Interaction A25 (NSFR)	Top 5	Unintended consequences**
Agg. contribution (%)	62.64	16.98	Agg. contribution (%)	61.41	15.76	Agg. contribution (%)	82.48	7.21	Agg. contribution (%)	78.87	9.89
x1 (RiskDensity)	56.52	21.74	x1 (RiskDensity)	59.76	16.74	x1 (RiskDensity)	77.56	10.98	x1 (RiskDensity)	75.48	11.43
x2 (RiskDensity)	72.17	14.56	x2 (RiskDensity)	66.75	12.79	x2 (RiskDensity)	89.08	3.18	x2 (RiskDensity)	83.57	8.33
x1 (RoE)	65.18	18.76	x1 (RoE)	62.6	14.26	x1 (RoE)	81.68	8.89	x1 (RoE)	78.37	9.1
x2 (RoE)	59.58	20.84	x2 (RoE)	60	17.55	x2 (RoE)	83.48	5.11	x2 (RoE)	79.51	10.98

Source: Authors' own calculations. \*Reductions of loans to SME, other businesses, household, public sector, residential real estate, commercial real estate. \*\*Reduce loans to PNC, households, public sector and committed credit facilities to PNC.