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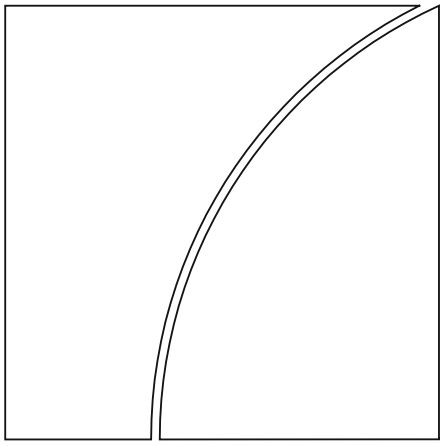

Survey on the interaction of regulatory instruments: results and analysis

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1. Background

This report aims to summarise and analyse the results of the second-wave of the survey conducted by the Basel Committee's Research Task Force (RTF) on the role of multiple regulatory constraints in the Basel III framework. The results of the first wave (reporting date 30 June 2016) were published in February 2017[1] and invited additional survey questions as well as more in-depth interpretations of banks' answers.

The latest survey retains the format of the original one: each block of questions tests the impact of an additional regulatory instrument, thus providing an indication of the interaction among said instruments and the growing complexity of the Basel III framework. Two additions, however, are noteworthy. First, a comprehensive glossary was added to the survey instructions (see Annex). Second, new questions were added asking banks to provide estimates of the impact on internal transfer prices (direct or indirect) of meeting required targets without lowering the return-on-equity (RoE).[2]

Some aggregate results are broken down by bank groups and geography. To provide additional insights (and check data quality), banks' answers from this survey are merged to banks' information on the other topics collected through the Basel III monitoring exercise. We find that there is a great degree of consistency across topics and, also, between the two survey waves.

2. Survey

The survey was conducted as part of the Committee's semi-annual Basel III monitoring exercise for the end-2016 reporting date. It contains 25 questions which provide an indication of (i) the perceived degrees of coherence and complexity of the Basel III framework; (ii) whether, over time, the interaction of multiple regulatory requirements has made regulatory capital the main driver of capital allocation and pricing; and (iii) the role of buffers, both required or internal, as well as planning periods for efficiently allocating risk exposures across business lines. The survey is also designed to provide a better understanding of the qualitative importance of different requirements and the ways in which individual banks might adjust to new regulatory constraints to help inform regulators about the consequences of such constraints on the overall system.

Banks are requested to provide their responses to each regulatory change assuming the scenarios in the questions are in place. All questions offer multiple choices: in the interest of comparability, most questions are closed-ended; a few questions allow banks to provide additional details. Table 1 reports key definitions from the survey.

[1] See Hancock and Ruffino (2017).

[2] See questions 6 and 19 in the Annex.

Definitions	Table 1
Management buffer	Defined as a bank's internally targeted surplus over the sum of Pillar 1 requirement, regulatory buffers and Pillar 2 requirement in "normal times" (ie baseline scenario for stress tests).
Basel III leverage ratio	Assumed to be calibrated at 3%, with an additional G-SIB surcharge.
Management target leverage ratio	Defined as the regulatory leverage ratio plus a bank's management buffer.
Management target risk-based capital ratio	Defined as the sum of the minimum level of Pillar 1 capital requirements, the capital conservation buffers, G-SIB surcharges where applicable, and a bank's management buffer.

3. Sample

Of the 200 banks participating in the Basel III monitoring exercise on end-2016 data,[3] 148 banks, of which 84 Group 1 banks (ie banks that have Tier 1 capital of more than €3 billion and are internationally active), completed at least part of the survey template. This includes 24 banks from the Americas, 69 banks from Europe and 55 banks from the rest of the world. As banks' response rates were, at times, uneven, the sample size detailed in our analysis may vary with a response rate that is well above the 60% for more than two thirds of the survey.[4] See Table 4 in the Annex for details on question-specific response rates.

On balance, in the second survey wave, data quality improved as the combination of a glossary and a frequently-asked-questions manual minimised misinterpretations. The number of respondents was just below the total in the first wave (148 vs 160), with a distribution of Group 1 and Group 2 banks similar to the rest of the sample considered in the Basel III monitoring exercise.

4. Results and analysis

This section presents selected results from the survey. We prioritise novel results from the latest survey wave and refer the reader to the Special Feature in the February 2017 Basel III monitoring report for an overview of our scope.[5] Takeaways are summarised in Section 4.1 while Section 4.2 dives into the analysis of novel results.

4.1 Takeaways

In the absence of a leverage ratio constraint, over two thirds of survey respondents estimate their target management Tier 1 capital buffer, at the consolidated level, to be between 0 and 300 basis points.[6] The

[3] For details on the full sample of the Basel III monitoring exercise see BCBS (2017).

[4] Only in one case the response rate is below 30%. The reason could be specific to the question, given that the response rates of related questions are considerably higher. Please refer to Section 5 for a discussion of possible improvements to the survey.

[5] See Hancock and Ruffino (2017).

[6] 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.

remaining banks' buffer was as high as 500 basis points or higher. Financial market conditions, systemic risk, and return-on-equity maximisation were cited as the most important factors affecting the size of the target management buffer.

In case of a target management Tier 1 capital shortfall, banks' liquidity conditions, as measured by the Liquidity Coverage Ratio (LCR) and the Net Stable Funding Ratio (NSFR), were shown to affect funding and lending decisions to some or to a considerable extent.[7] The Basel III Tier 1 leverage ratio and stress test results, on the contrary, do not affect the relative importance of a bank's target risk-based capital ratio for two thirds of the respondents. The answers are consistent across bank groups but vary largely by geographical macro regions, with the United States in some cases taking the opposite position to the European Union and all other countries. Banks in the United States overwhelmingly answered that stress test results change their target management Tier 1 capital buffer. In the European Union and in all other countries, however, over 60% of survey respondents indicated that stress test results do not affect their target management Tier 1 capital buffer.[8]

To test the robustness of our results, we check for sample-specific differences in banks' answers to three key questions with respect to the common equity Tier 1 ratio (CET1) together with the leverage ratio, the LCR and the NSFR.[9] The analysis shows that, except for a few instances, sample selection – based on the abovementioned regulatory metrics – does not bias our survey results.[10] Twenty-three in 138 interactions are statistically significant at the 90% level. In more than 80% of cases, banks with relatively lower Tier 1 ratios, LCRs or NSFRs provide similar answers to the introduction of regulatory constraints. Similarly, we find that banks that are relatively less confident in their capital position do not react differently to the introduction of the leverage ratio (LR) compared to banks that are more confident in their capital position (see Annex for details).

4.2 Key results

Stronger regulatory requirements have prompted banks to steadily increase their capital since the financial crisis. To understand how banks would adjust to higher capital requirements if they did not meet them, we asked them how they would reach a target leverage ratio requirement calibrated at 3%, with an additional 1% G-SIB add-on. The answers suggest that capital increases, including retained earnings, and factors summed up under the "other" category account for the bulk of the adjustment (22% and 31%, respectively). Each additional factor contributes less than 10% (Graph 1).[11]

[7] Target management Tier 1 capital shortfall is defined as Max [Target management Tier 1 buffer + target Tier 1 capital requirement – Tier 1 capital held; 0].

[8] According to the SREP guidelines of the European Banking Authority, stress testing is a mandatory element of the Pillar 2 'Guidance' (P2G) assessment, which indicates to banks the adequate level of capital to be maintained in order to have sufficient capital as a buffer to withstand stressed situations, in particular as assessed on the basis of the adverse scenario in the supervisory stress tests. While the Pillar 2 'Requirement' (P2R, based on the SSM's risk assessment system, internal ICAAP and supervisory benchmark) are binding and breaches can have direct legal consequences for banks, P2G is not binding, hence banks do not generally need to draw the consequences of stress test results in their target management Tier 1 capital buffer.

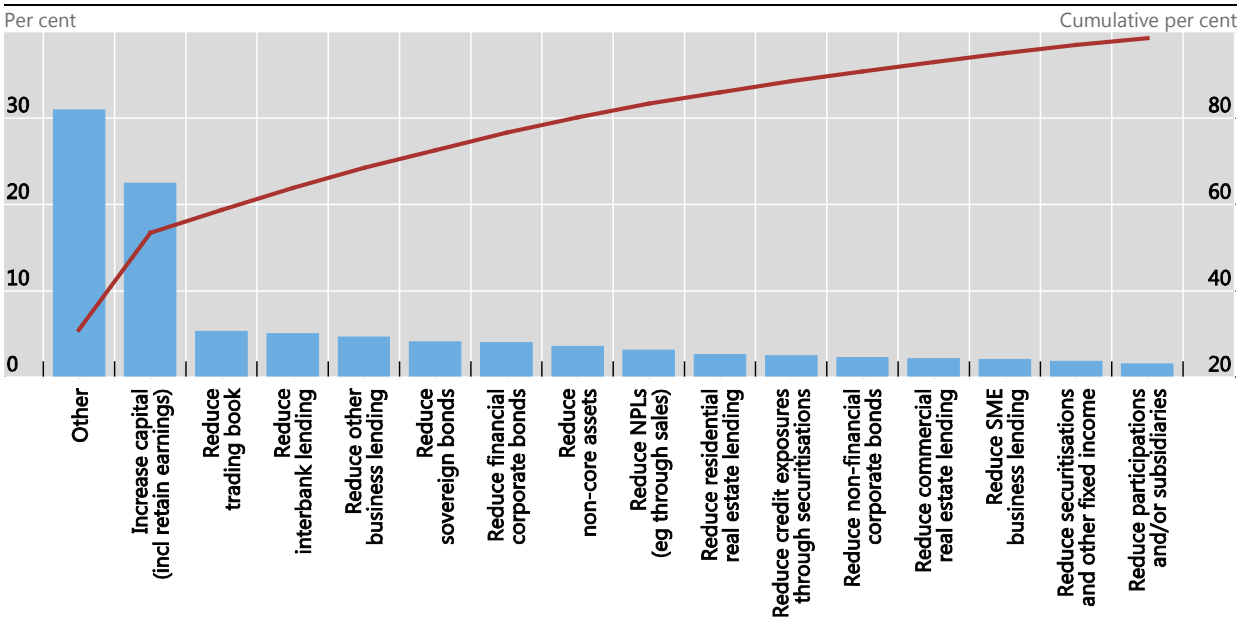
[9] See questions 5, 18 and 24 in the Annex.

[10] We analyse the statistical sample differences in banks' answers with respect to the following regulatory metrics: CET1 combined with the LR, LCR and NSFR. Do the answers of banks with regulatory ratios above certain levels differ significantly from those of banks with ratios below? The thresholds were chosen in the vicinity of current or future regulatory thresholds and so that subsample sizes could be sufficiently large. For example, the threshold for CET1 (12%) takes into account not only the regulatory minimum of 4.5%, but also Pillar 2 requirements and guidelines, the capital conservation buffer (2.5%), the G-SIB buffer (up to 3%), the systemic risk buffer (up to 2%) and the countercyclical capital buffer (up to 2.5%). See Annex for details.

[11] Text provided along with "other" includes economic conditions, equity distribution, competitors' credit rating and capital ratio levels, political risk, a market confidence buffer, internal target credit ratings, currency risk and pension risk.

Marginal contributions to reaching the target leverage ratio requirement

Graph 1



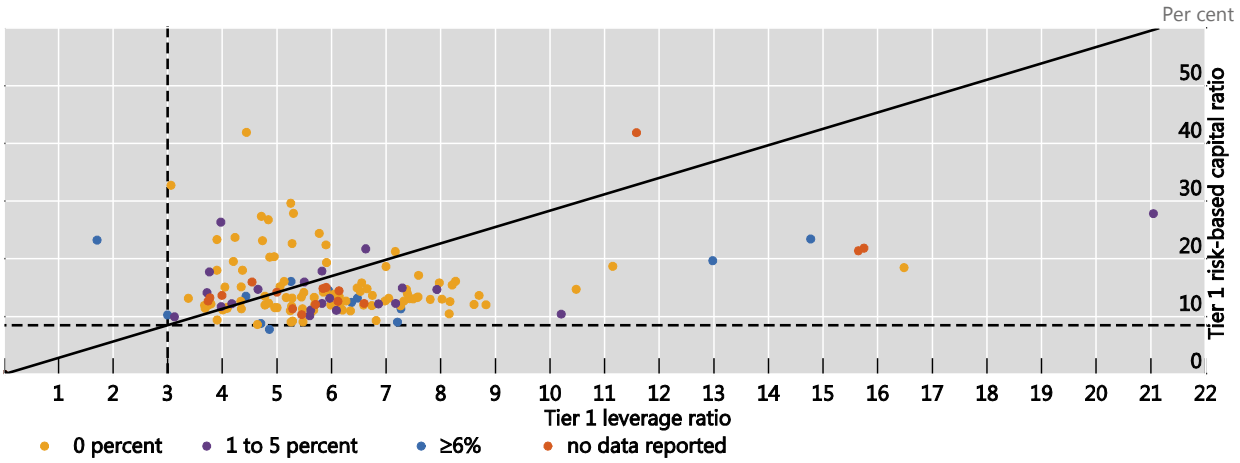
Source: Basel Committee on Banking Supervision.

To learn about the relative bindingness of different regulatory constraints, we asked banks to estimate the probability of (i) a target management leverage ratio shortfall, (ii) a target management Tier 1 capital shortfall, and (iii) both a target management leverage ratio shortfall and a target management Tier 1 capital shortfall over the next quarter.[12]

Graph 2 displays a bank's joint probability of both a target management leverage ratio shortfall and a target management Tier 1 capital shortfall over the next quarter in colour, in relation to its fully phased-in **Basel III Tier 1 leverage ratio** (horizontal axis) and **Tier 1 risk-weighted capital ratio** (vertical axis). Coloured dots indicate probability values (or ranges) specified by the surveyed banks with yellow indicating 0% probability of joint shortfall. The dashed horizontal line represents a Tier 1 target risk-based capital ratio of 8.5%, whereas the dashed vertical line represents a Basel III Tier 1 leverage ratio of 3%. The diagonal line represents proportionally equivalent increase in capital ratio and leverage ratio as is 8.5% to 3% at the crossing of the dashed lines. Therefore, for example, banks plotted above the diagonal line have a current Tier 1 leverage ratio with less of a buffer in relation to the target leverage ratio of 3% than their current capital ratio buffer in relation to the target of 8.5%.

[12] Target management leverage ratio shortfall is defined as Max [Target management leverage ratio buffer + target leverage ratio requirement – Tier 1 capital held; 0].

Probabilities of both a target management leverage ratio shortfall and a target management Tier 1 capital shortfall over the next quarter, relative to the fully phased-in Basel III Tier 1 leverage ratio and the Tier 1 risk-weighted capital ratio[1] Graph 2



[1] 98 banks indicated a 0% probability, 21 banks indicated a probability between 1% and 5%, and 13 banks indicated a probability greater than 5%. 16 banks did not answer the question.

Source: Basel Committee on Banking Supervision.

Only one bank does not meet the minimum fully phased-in Basel III Tier 1 leverage ratio (plotted in the north-west quadrant) and no bank is below the 8.5% capital ratio target. There does not seem to be much of a relationship between the current leverage and capital ratio levels and the probability of joint shortfall as the blue and purple dots are not all close to the dashed lines. However, the concentration of blue and purple dots below the diagonal shows that having less buffer on the capital ratio side *increases* the probability of joint shortfall. [13,14] Altogether, these results square well with the evidence that, for two thirds of banks, the leverage ratio did not change the relative importance of their target Tier 1 capital ratio, or that it only did to a minimal extent. These findings indicate that despite the interaction of multiple regulatory requirements, regulatory capital (as opposed to the leverage ratio) could be considered as the main driver of capital allocation and pricing.

Liquidity management, on the contrary, repeatedly emerged as the most important factor in changing banks' incentives to engage in specific funding or lending activities. In June 2016, 86% of the banks that responded to the survey reported setting a **target management liquidity buffer**.[15] In December 2016, we probed banks' ways to reach their target and weighed their answers against their LCR and return-on-assets (RoA).[16]

[13] For comparison, in June 2016, 84 banks chose 0%, 26 banks chose 1–5%, and 21 banks chose a probability greater than 5%.

[14] When asked whether the aforementioned probabilities might affect funding or lending decisions, about a third of the sample reported some changes in activities. Notably, 48% of the banks would make some changes at the consolidated level while 19% of the banks would make changes at the entity level. In both scenarios, changes would be made with respect to either all or some business lines (as opposed to funding or lending types, products and risk metrics).

[15] The target management liquidity buffer is defined as the level of 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.

[16] Given that compliance with the LCR causes opportunity costs, we study the interaction between the choice of contributing factors and profitability. The RoA is an imperfect profitability indicator, as differences across banks might be due to differences

Irrespective of whether their LCR was below or above 100%, banks placed large weights on the same four contributing factors to reaching the target management liquidity buffer: increasing high-quality liquid assets (HQLA), increasing retail deposits, increasing long-term debt issuance and decreasing short-term unstable funding (Graph 3, top panel).[17] These factors re-appear when banks' answers are organised by their RoA. Graph 3 (bottom panel) shows that irrespective of the RoA the most important contribution factors are increase of HQLA, increase of retail deposits, and a decrease of short-term unstable funding. Particularly profitable banks (RoA > 2%) deviate from the rest of the sample by a more diversified set of contributing factors. Moreover, in both graphs, banks indicate that other factors play a key role to reaching their target: text provided along with "other" includes maintaining liquidity at the parent company and selected subsidiaries, determining the liquidity needed at various subsidiaries based on debt maturities and cash outflows, and diversifying funding sources. We elect to present banks' answers against their LCR, instead of their NSFR, because, when asked about how much does liquidity affect funding and lending decisions, 29% of banks answered that the LCR does "to a considerable extent", while only 18% did for the NSFR. For reference, in December 2016, the average LCR was 132.3% and the average NSFR was 115.6%. Finally, the NSFR, including any revisions, has only moved to a minimum standard in 2018.[18]

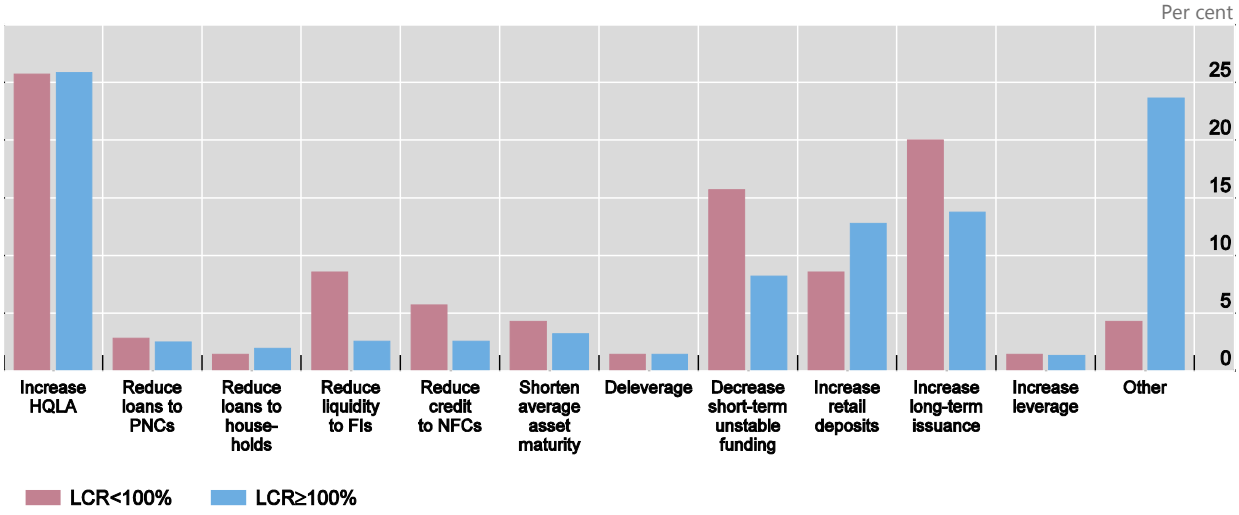
in tax rates or one-off profits rather than differences in operating income. However, the RoA is very comprehensive and does not only apply to specific business models; it is not biased by leverage, like the return-on-equity (RoE).

[17] The sample of banks with an LCR below 100% is small, so we rerun the analysis for banks with an LCR below or above 134% (Table 7). Irrespective of their LCR, banks focus on the same contributing factors to reach their target management liquidity buffer; except that banks with an LCR above 134% place less weight on decreasing short-term unstable funding.

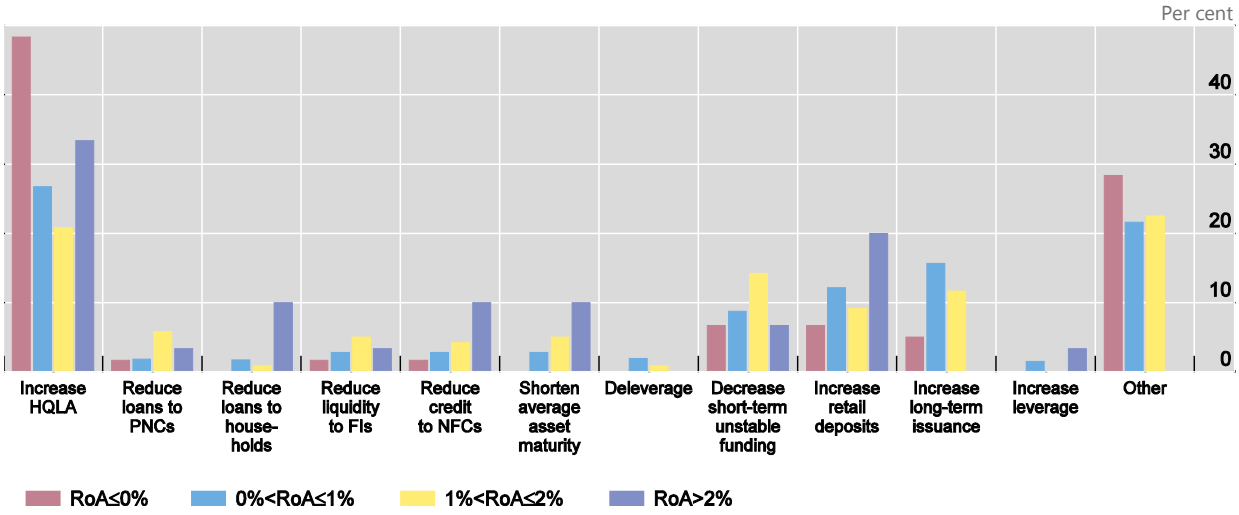
[18] Since markets can soar or plummet at the end of a quarter or a fiscal year, the LCR can be volatile – an argument made by the industry before the finalisation of the LCR framework. The survey results confirm that banks are concerned about the effects of the LCR on their funding and lending decisions more than the effects that the NSFR might have. It is worth noting that, while the LCR is calibrated to a stress scenario lasting 30 calendar days, the NSFR is a quarterly requirement under a normal scenario: a comparison between the two is not "apples to apples".

How would you reach your target management liquidity buffer? Assign weights (in per cent, adding up to 100%) to the following options. Graph 3

Banks organised by LCR[1]



Banks organised by RoA[2]



[1] The graph shows simple averages of the relative contributions provided by banks within each LCR range. Number of banks: LCR<100%, 7; LCR≥100%, 96. [2] The graph shows simple averages of the relative contributions provided by banks within each RoA range. Number of banks: RoA≤0%, 6; 0%<RoA≤1%, 94; 1%<RoA≤2%, 12; RoA>2%, 3. The sample size in the top panel is smaller than in the bottom panel because liquidity information is unavailable for some banks.

Source: Basel Committee on Banking Supervision.

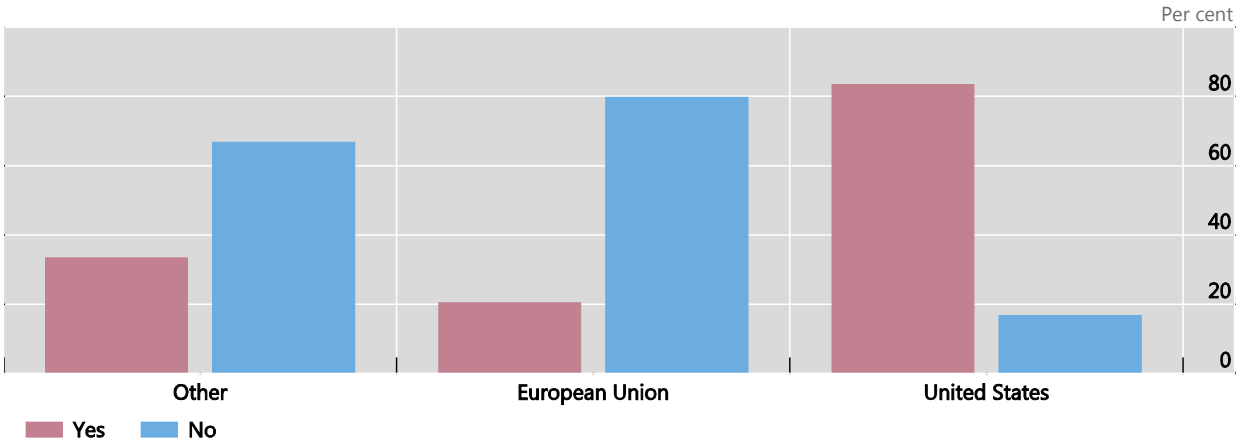
In the following, we study changes to banks' incentives following **stress test results**. First, we ask if stress test results impact a bank's target management Tier 1 capital buffer. The answers vary largely by geographical macro regions, with the United States taking the opposite position to the European Union (EU) and all other countries (Graph 4). Banks in the United States overwhelmingly answered that stress test results change their target management Tier 1 capital buffer while in the European Union and in all other countries over 60% of survey respondents indicated that stress test results do not affect their target management Tier 1 capital buffer. [19] To ascertain that the results in Graph 4 are not biased towards a given

[19] This is due to the fact that the target management Tier 1 capital buffer is defined excluding Pillar 2 add-ons. According to the SREP guidelines of the European Banking Authority, however, stress testing is a mandatory element of the Pillar 2 assessment; hence banks do not generally need to recognise stress test results in a buffer above the Pillar 2 add-ons.

bank group, we further disaggregated banks' answers. In the European Union, 72% of Group 1 banks and 82% of Group 2 banks indicated that stress test results do not affect their target management Tier 1 capital buffer, respectively. In all other countries (excluding the United States), the corresponding results for Group 1 banks and Group 2 banks are 65% and 68%, respectively.

Do your stress test results (EBA EU stress test, Pillar 2 stress test, or other) change your target management Tier 1 capital buffer?[1]

Graph 4



[1] Other banks: Yes, 24; No, 48. European Union banks: Yes, 12; No, 47. US banks: Yes, 5; No, 1.

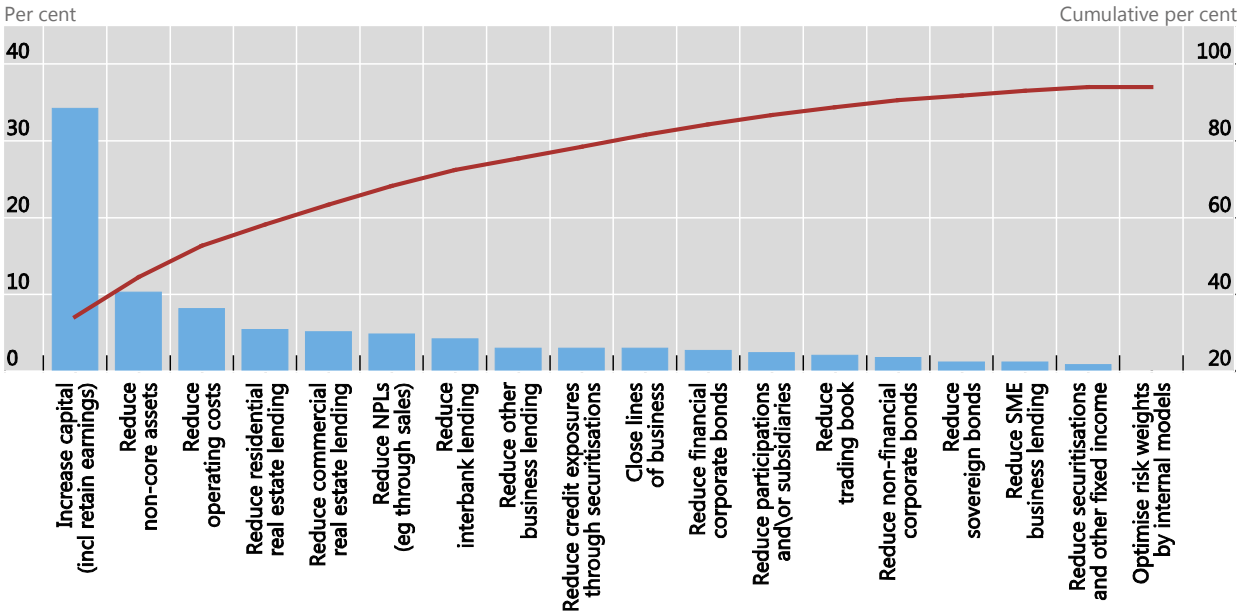
Source: Basel Committee on Banking Supervision.

Most banks, however, reported at least some adjustment to their target management Tier 1 capital buffer in response to stress test results. In the aggregate, the bulk of the adjustment takes place through capital increases (34%), lower non-core assets (10%) and lower operating costs (9%).

While capital increases account for the largest adjustment across macro regions – 34% for banks in the European Union, 40% for banks in the United States, and 31% for banks located in other countries – there are some differences with respect to other adjustments to the target buffer. For example, banks in the European Union (Graph 5) report reductions in lending activities (just shy of 20%), mainly in commercial and residential real estate (11%). Banks from other countries (Graph 6) also report reductions in lending activities (21%), beginning with small and medium-sized enterprises (SME) lending (5%). Banks in the United States (Graph 7) also adjust the target management capital buffer by closing other lines of business and reducing business and real estate lending.

Marginal contributions of actions to increase the target management Tier 1 capital buffer as a consequence of stress test results

European Union[1] Graph 5

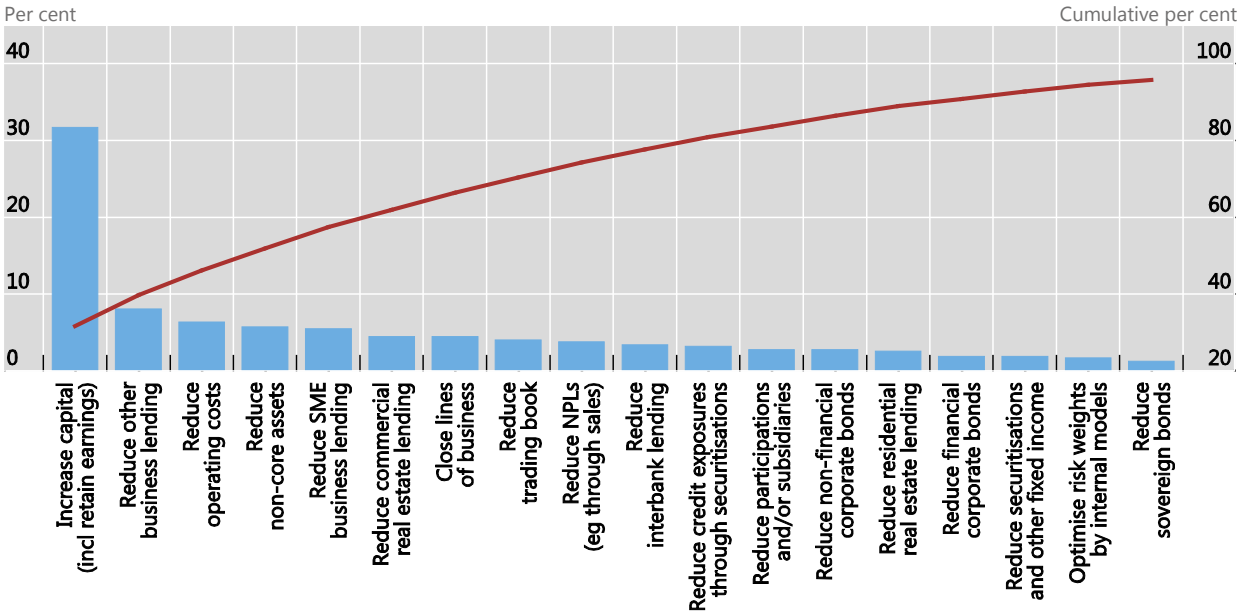


[1] Countries included: Belgium, France, Germany, Italy, Luxemburg, the Netherlands, the United Kingdom, Spain and Sweden.

Source: Basel Committee on Banking Supervision.

Marginal contributions of actions to increase the target management Tier 1 capital buffer as a consequence of stress test results

Other countries[1] Graph 6



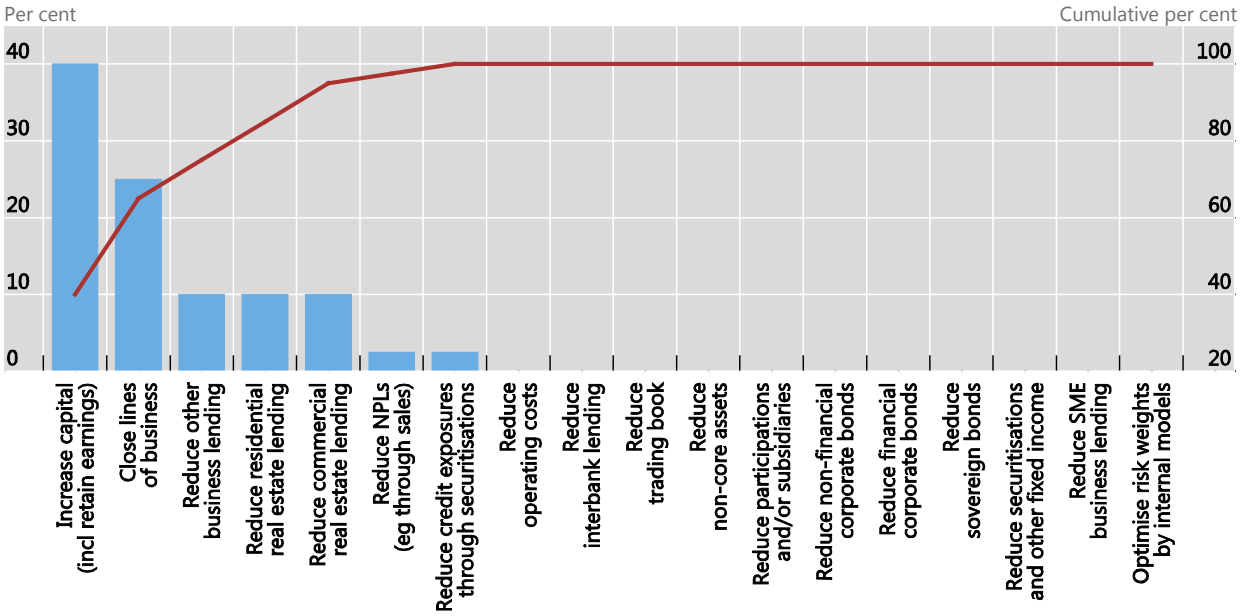
[1] Countries included: Argentina, Australia, Canada, China, India, Indonesia, Japan, Korea, Mexico, Russia, Saudi Arabia, Turkey, South Africa and Switzerland.

Source: Basel Committee on Banking Supervision.

Marginal contributions of actions to increase the target management Tier 1 capital buffer as a consequence of stress test results

United States

Graph 7



Source: Basel Committee on Banking Supervision.

Secondly, we find that the most cited factors used to increase the target management Tier 1 buffer following stress test results have a limited effect on internal transfer prices (ITPs).[20] In the aggregate sample, stress test results increase internal transfer prices for SME lending and commercial real estate lending by six and four basis points, respectively. The price impact from changes to other business categories was comparable or lower.

The survey ends with an all-encompassing question on the most important challenges associated with meeting regulatory requirements. In both bank groups, the most cited **challenges associated with meeting regulatory requirements** were regulatory uncertainty, the complexity of the regulatory framework and the difficulty to meet requirements simultaneously (Table 2 and Table 3). Banks had expressed the same grievances in the first survey wave. However, a close reading of the text added to the option "other" suggests that, between June and December of last year, banks' focus shifted from regulatory uncertainty to uncertainty about the implementation of the regulatory framework. This result, of course, is not entirely unexpected as international bank regulators were at the time of the survey still working to finalise Basel III.[21]

[20] The internal transfer price consists of the funds transfer price (FTP) and the cost of capital. FTP measures the costs, benefits and risks of debt-funding a bank's business and product lines. It allows the bank to estimate the value of risk-adjusted profits from debt and capital funding. The transfer price is the sum of FTP and the direct and indirect costs (benefits) of capital-funding a bank's business and product lines in need (excess) of capital.

[21] The Basel III framework was finalised at the December 2017 meeting of the Group of Governors and Heads of Supervision.

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

Group 1 banks

Table 2

	Rank											No answer	Total
	1	2	3	4	5	6	7	8	9	10	11		
Complexity of the framework	21	20	20	6	6	1	0	0	0	1	0	9	84
Difficulty in achieving multiple constraints simultaneously	15	24	13	9	6	2	2	1	2	2	0	8	84
Cyclical variation in requirements	1	4	7	7	12	9	12	4	7	6	1	14	84
Geographical differences in requirements	2	5	7	17	7	8	4	4	6	9	3	14	84
Uncertainty with respect to implementation and/or changes in regulation	33	10	17	11	2	3	0	1	1	0	0	6	84
Market discipline	2	2	6	8	13	7	14	7	7	4	1	13	84
Changes made by peers that affect your relative market dominance	1	1	3	4	6	13	12	14	7	6	0	17	84
Contracts designed under different regulatory regime	0	1	1	6	9	4	12	10	10	11	2	18	84
Competition from entities not subject to requirements	1	8	1	5	9	11	3	7	12	9	0	18	84
Systemic risk	1	0	2	2	7	6	6	15	12	14	1	18	84
Other	3	3	0	1	2	1	0	0	0	2	39	33	84

Source: Basel Committee on Banking Supervision

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

Group 2 banks

Table 3

	Rank											No answer	Total
	1	2	3	4	5	6	7	8	9	10	11		
Complexity of the framework	22	11	15	5	4	0	2	0	1	0	1	3	64
Difficulty in achieving multiple constraints simultaneously	15	15	12	6	1	3	1	3	1	1	2	4	64
Cyclical variation in requirements	6	7	7	12	10	7	6	3	1	0	1	4	64
Geographical differences in requirements	0	3	3	2	2	4	3	10	4	24	3	6	64
Uncertainty with respect to implementation and/or changes in regulation	22	10	13	8	4	4	0	1	0	0	0	2	64
Market discipline	2	7	4	3	7	10	7	9	6	2	2	5	64
Changes made by peers that affect your relative market dominance	1	4	4	3	5	7	7	13	8	3	2	7	64
Contracts designed under different regulatory regime	1	3	4	5	1	4	9	6	15	8	2	6	64
Competition from entities not subject to requirements	1	4	2	9	6	3	8	10	6	6	2	7	64
Systemic risk	1	5	0	2	11	11	8	7	6	5	1	7	64
Other	4	2	0	1	1	1	0	0	0	1	35	19	64

Source: Basel Committee on Banking Supervision.

4.3 Putting results into perspective

This section compares key survey results to recent research assessing the impact of post-crisis regulatory reforms. To this end, we borrow from the RTF's 2016 literature review on the integration of regulatory capital and liquidity instruments.[22] As one might expect, there are many studies on the effects of capital requirements but relatively few on the effects of liquidity requirements and other supervisory tools. In part, this is because capital requirements have been in place for a considerable time and over more than one business cycle. Liquidity requirements and other supervisory tools, on the contrary, have only been

[22] See BCBS (2016).

implemented since the recent financial crisis. Furthermore, banks only recently started to disclose comparable data on liquidity risk and liquid assets.

An important conclusion from the literature review was that the optimal range for capital requirements is not dissimilar to the current calibration of the Basel III requirements.[23] Our results proved to track these findings closely as two thirds of survey respondents reported a sizeable voluntary surplus, after accounting for all regulatory requirements and buffers (Section 4.1). Moreover, the survey finds that banks engage in a combination of adjustments to meet new regulatory requirements, including the reallocation of capital within the bank to more efficient units.[24]

With respect to the interactions of capital and liquidity requirements, the literature suggests that minimum capital requirements and the LCR interact.[25] These findings suggest that banks with a low LCR would be more likely to employ those strategies to reach their new target leverage ratio requirements which also improve their LCR (eg reduce interbank lending); and that banks with a low CET1 ratio would be more likely to employ strategies to reach their liquidity management buffer which also improve their CET1 ratio (increase HQLA). However, our results suggest that banks do not actively exploit these interactions in their decisions on how to reach their new leverage requirement (Table 5) or their liquidity management buffer (Table 7).

Contrary to past research, survey results suggest that the Basel III Tier 1 leverage ratio and stress test results do not affect the relative importance of a bank's target risk-based capital ratio for two thirds of survey respondents. In the aggregate, most banks appear unconstrained with respect to the leverage ratio (Sections 4.1 and 4.2).[26]

As described in Section 4.2, banks' incentives following stress test results vary largely by geographical macro regions. Banks in the United States overwhelmingly answered that stress test results change their target management Tier 1 capital buffer while in the European Union and in all other countries over 60% of survey respondents indicated that stress test results do not affect their target management Tier 1 capital buffer. These differences likely mirror the fact that in the European Union, supervisory stress test results are already part of the Pillar 2 add-ons with less need to be factored into additional management buffers. Taken together, past research and empirical results, suggest that stress tests can only be a complement, and never a substitute, for other supervisory tools and processes in properly informing supervision policy.

5. Data quality and outlook

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. For this reason, we have not focused on outliers. In addition, we check for sample-specific differences in banks' responses to questions related to the calibration of the framework by stratifying the sample according to various capital and liquidity regulatory ratios and considering whether responses are statistically different. We conclude that, except for a few instances, sample selection does not bias our survey results. As the survey is all the more valuable when the same questions are repeated over time, the RTF did not make substantial changes ahead of the third wave (December 2017). Questions with low response rates have, however, been redrafted. Also notable is that the frequency is reduced as

[23] See Repullo and Suarez (2013), among others.

[24] Supporting the findings of Goel et al (2017).

[25] See, for example, EBA (2013) and Puhr and Schmitz (2014).

[26] Ingves (2012) highlights the objectives of the leverage ratio.

these changes in bank responses and strategies are not as frequent and in this way we can also limit the survey burden on the banks.

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 Max [Tier 1 capital held – target management Tier 1 buffer - target Tier 1 capital requirement; 0].
- **Target management Tier 1 capital shortfall** is defined as Max [Target management Tier 1 buffer + target Tier 1 capital requirement – Tier 1 capital held; 0].
- **Target leverage ratio requirement** is defined as (3%+G-SIB add-ons) · 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 Max [Target management leverage ratio buffer + target leverage ratio requirement – 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 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

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 Max [Tier 1 capital held – target management Tier 1 buffer - target Tier 1 capital requirement ; 0]. Target management Tier 1 capital shortfall is defined as Max [Target management Tier 1 buffer + target Tier 1 capital requirement – 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. **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.

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

   [Options] (i) Excess, (ii) Shortfall.

   (b) 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.

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, 9=least important)] (i) 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 uncertainty, (viii) Changes in the credit cycle, (ix) 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. In these circumstances, would you reduce assets or increase capital to reach your new target leverage ratio requirement? **Allocate contributions to reaching the new target in per cent adding up to 100%.** [Example: You are 0.5 ppts short of your new target leverage ratio requirement. If you closed the gap by retaining earnings (thereby decreasing your shortfall to 0.1 ppts) 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) Reduce interbank lending, (ii) Reduce trading book, (iii) Reduce non-core assets (provide brief example below), (iv) Reduce NPLs (eg through sales), (v) Reduce participations and/or subsidiaries, (vi) Reduce non-financial corporate bonds, (vii) Reduce financial corporate bonds, (viii) Reduce sovereign bonds, (ix) Reduce securitisations and other fixed income securities, (x) Reduce small and medium-sized enterprise business lending, (xi) Reduce other business lending, (xii) Reduce residential real estate lending, (xiii) Reduce commercial real estate lending, (xiv) Reduce credit exposures through originating securitisations, (xv) Increase capital (incl. retain earnings), (xvi) Other (provide brief text below).

   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) Small and medium-sized enterprise business lending, (vii) Other business lending, (viii) Residential real estate lending, (ix) Commercial real estate lending, (x) Other (provide brief text below).

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?

   [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) 51 to 60 per cent, (ix) 61 to 70 per cent, (x) 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 15

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. 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 16 to 19

16. Do your **stress test results** (EBA EU stress test, Pillar 2 stress test, or other) **change your target management Tier 1 capital buffer**? If yes, provide brief text below to specify which stress test results are most important to you and answer questions 17, 18 and 19. If no, please skip to question 20.

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

17. If yes, what was the direction of the change?

    [Options] (i) An increase in the target management T1 capital buffer, (ii) A decrease in the target management T1 capital buffer.

18. How would you increase your target management Tier 1 capital buffer as a consequence of stress test results? **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 (incl retain earnings)" and 20% to "Reduce interbank lending".]

    [Options] (i) Reduce operating costs, (ii) Reduce interbank lending, (iii) Reduce trading book 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 other business lending, (xiii) Reduce residential real estate lending, (xiv) Reduce commercial real estate lending, (xv) Reduce credit exposures through originating securitisations, (xvi) Increase capital (incl retain earnings), (xvii) Close lines of business (provide brief example below), (xviii) Optimise risk weights by internal models (eg by increasing the revaluation frequency of collateral, recalibrating models, etc).

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

19. 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, (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 20 to 21

20. If you had a target management Tier 1 capital shortfall, would you tighten lending standards? If no, please skip to question 22.

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

21. 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 22 to 25

22. Do you have a target management liquidity buffer? If no, please skip to question 25.

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

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

    [Options] (i) Excess, (ii) Shortfall.

24. How would you reach your target management liquidity buffer? Assign weights (in per cent, adding up to 100%) to the following options.

    [Options] (i) Increase holdings of high-quality liquid assets (HQLA), (ii) Reduce loans to private non-financial corporates (PNCs), (iii) Reduce loans to households, (iv) Reduce committed liquidity facilities to banks and other financial institutions, (v) Reduce committed credit facilities to non-financial corporates, (vi) Shorten the average maturity of assets, (vii) Deleverage, (viii) Decrease short-term unstable funding (eg unsecured interbank borrowing), (ix) 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.

25. 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).

Bank response rates

Sample size

All banks — Table 4

Question	1	2	2b	3	4	5	6	7	8	9	10	11	12
Responding banks, of which	133	129	129	138	134	39	112	133	126	79	36	87	87
Group 1	75	71	73	79	75	26	59	73	72	50	22	49	49
Group 2	58	58	56	59	59	13	53	60	54	29	14	38	38
Non-responding banks, of which	15	19	19	10	14	14	36	15	22	69	112	61	61
Group 1	9	13	11	5	9	9	25	11	12	34	62	35	35
Group 2	6	6	8	5	5	5	11	4	10	35	50	26	26
Question	13	14	15	16	17	18	19	20	21	22	23	24	25
Responding banks, of which	134	121	134	137	33	81	74	129	75	138	108	116	142
Group 1	76	72	75	79	23	45	45	75	45	76	61	65	79
Group 2	58	49	59	58	10	36	29	54	30	62	47	51	63
Non-responding banks, of which	14	27	14	11	115	148	74	19	73	10	40	32	6
Group 1	8	12	9	5	61	39	39	9	39	8	23	19	5
Group 2	6	15	5	6	54	28	35	10	34	2	17	13	1

Note: 148 banks (84 in Group 1 and 64 in Group 2) participated to the survey. For each question, the table shows the breakdown between responding banks (including their partial answers) and non-responding banks (including missing data or not applicable information). Note that only questions 3, 5, 6, 9, 18, 19, 20, 24, and 25 include the option "Other". A positive answer to question 16 (elected by 41 banks) requires a brief explanation that only 19 banks did provide.

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: the common equity Tier 1 (CET1) ratio, the leverage ratio (LR), the liquidity coverage ratio (LCR), and the net stable funding ratio (NSFR). For example, are the answers of banks with relatively higher regulatory ratios statistically different than the answers of other banks?

Overall, sample-specific differences are small and few of them are statistically significant. As banks with relatively higher CET1 ratios often exceed the target LR requirement by construction, we jointly interact the two ratios with banks' responses with three key survey questions (Table 5, Table 6 and Table 7).

We consider the following non-overlapping subsamples: CET1 ratio $\lesseqgtr$ 12% and LR $\lesseqgtr$ 3.8%, LCR $\lesseqgtr$ 134%, and NSFR $\lesseqgtr$ 115.9%. The thresholds were chosen to allow subsample sizes to be sufficiently large and to be in the vicinity of current or prospective regulatory thresholds. [27] Then, we apply Welch's *t*-test

[27] 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

to detect statistically significant differences in bank subsamples (based on banks' CET1 ratio/LR, LCR and NSFR) with respect to the following three survey questions:[28]

5. How would you reach your new target leverage ratio requirement?

18. How would you increase your target management Tier 1 capital buffer as a consequence of stress test results?

24. How would you reach your target management liquidity buffer?

Question 5 yields 48 interactions – each of the 16 optional answers is interacted with the three regulatory subsamples detailed above. The two-sided Welch's *t*-test is significant at the 10% level in eight instances. Five out of the eight statistically significant interactions relate to banks' capitalisation. In particular, banks whose CET1 ratio and LR are above 12% and 3.8%, respectively, assign significantly lower values to the options: reduce trading book, reduce participations and/or subsidiaries, and reduce business lending, including lending to SMEs. The same banks assign higher values to: reduce credit exposures through securitisations. Banks with an LCR above the median (134%) rely significantly less on the reduction of commercial real estate lending. Similarly, banks with an NSFR above the median (115.9%) tend to reduce trading book exposures and commercial real estate lending significantly less than banks with NSFR below the median. The complete analysis can be found in Table 5.

In question 18, there are 54 potential interactions between the 18 optional answers and the abovementioned combinations of regulatory ratios. We find that five interactions are statistically significant at the 10% level. In particular, banks whose CET1 ratio and LR are above 12% and 3.8%, respectively, assign higher values to the reduction of interbank lending and of credit exposures through securitisations. Banks with an LCR above the median (134%) rely significantly less on reducing commercial real estate lending. Finally, banks with an NSFR above the median (115.9%) place higher weights on reducing operational costs and credit exposures through securitisations. The complete analysis can be found in Table 6.

In question 24, there are 36 potential interactions between the 12 optional answers and the three combinations of regulatory ratios. We find that ten interactions are statistically significant at the 10% level. Banks with CET1 ratios and LR above 12% and 3.8%, respectively, place lower weights on increasing retail deposits. Banks with an LCR above the median (134%) are more likely to reduce loans to households and shorten the average maturity of their assets. In addition, these banks are less likely to reduce short-term unstable funding and committed liquidity facilities to other banks. Similarly, banks with an NSFR above the median (115.9%) place significantly more weight on the options: increase of high-quality liquid assets (HQLA), reduce loans to households and private non-financial corporates, shortening the average asset maturities. The same banks tend to place less weight on "other" options. The complete analysis can be found in Table 7.

requirements differ across banks and jurisdictions, the 12% and 3.8% thresholds chosen for the CET1 ratio and the LR, respectively, should not be interpreted as regulatory minimum requirements. The thresholds for the LCR and the NSFR were set equal to the median values in the sample because, as of December 2016, almost all banks exceeded the regulatory minimum values set at 100%.

[28] 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 for the effective degrees of freedom which is bounded 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.

Finally, we analyse the interaction between questions 7(c) and 5 as well as 7 (c) and 18 (Table 8 and Table 9), respectively.[29] We split banks into two subsamples based on their joint probability of both a target management leverage ratio shortfall and a target management Tier 1 capital shortfall over the next quarter.[30] In response to a hypothetical increase of the LR, banks that reported a 0% probability (subsample 1) place significantly more weight on "other" than banks that reported some chance of a shortfall probability (subsample 2). Banks in subsample 1 place significantly less weight on the options: reduce trading book and reduce participations and/or subsidiaries. In Table 9, banks in subsample 1 place more weight on increasing capital (including retained earnings) and reducing residential real estate lending. These banks place less weight on reducing SME lending.

[29] 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?"

[30] We apply the two-sided Welch's *t*-test. The smallest sample is comprised of 23 banks.

Q5: How would you reach your new target leverage ratio requirement?

Table 5

	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 other business lending	Reduce residential real estate lending	Reduce commercial real estate lending	Reduce credit exposures through securitisations	Increase capital (incl retain earnings)	Other
t (CET1, LR)	*1.05*	***–1.85****	*–0.17*	*0.06*	***–1.86****	*0.48*	*0.66*	*0.75*	*–0.67*	***–1.80****	***–2.43****	*0.74*	*0.18*	***1.74****	*0.76*	*0.34*
df (CET1, LR)	61	56	60	58	56	60	62	62	57	57	56	62	63	70	59	59
x1 (CET1, LR)	6.08	3.11	3.51	3.24	0.81	2.57	4.59	4.86	1.62	1.35	2.30	2.57	2.30	3.78	24.59	32.70
x2 (CET1, LR)	4.04	8.42	3.86	3.16	2.63	2.11	3.51	3.33	2.28	3.16	8.07	1.75	2.11	1.05	20.53	30.00
t (LCR)	*0.27*	*–0.96*	*–0.33*	*–0.04*	*–0.03*	*–0.20*	*–0.42*	*1.58*	*0.45*	*0.44*	*0.11*	*–1.41*	***–2.72*****	*–1.51*	*1.18*	*0.06*
df (LCR)	56	56	57	56	56	56	56	57	56	56	56	56	56	56	56	56
x1 (LCR)	5.86	4.48	3.45	3.10	1.55	2.24	2.93	6.38	2.41	2.59	5.17	1.90	0.69	1.38	24.31	31.55
x2 (LCR)	5.26	7.37	4.21	3.16	1.58	2.46	3.51	2.63	1.93	2.11	4.91	4.21	3.33	4.39	17.89	31.05
t (NSFR)	*1.05*	***–1.67****	*0.29*	*–0.43*	*0.50*	*1.08*	*0.70*	*1.66*	*0.16*	*0.31*	*0.07*	*–0.31*	***–2.01****	*1.22*	*0.76*	*–1.02*
df (NSFR)	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65
x1 (NSFR)	6.21	3.18	3.94	2.88	1.82	2.88	4.70	5.91	1.97	2.27	4.85	2.42	1.06	3.64	24.85	27.42
x2 (NSFR)	4.09	7.58	3.33	3.48	1.36	1.82	3.48	2.42	1.82	1.97	4.70	2.88	3.33	1.52	20.76	35.45

Note: Thresholds for sample splitting: CET1 ratio≥12% and LR ≥3.8% (sample size: 131); LCR ⩽⩾ 134% (median value, sample size: 115); NSFR ⩽⩾ 115.9% (median value, sample size: 132). Values reported in the x1 and x2 rows correspond, respectively, to the averages of the subsamples above and below the abovementioned thresholds. Symbols "*", "**" and "***" are reported in correspondence of t-values (two-sided test) that are significant at 10%, 5% and 1%, respectively.

Q18: How would you increase your target management Tier 1 capital buffer as a consequence of stress test results? 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 orporate bonds	Reduce sovereign bonds	Reduce securitisations and other fixed	Reduce SME business lending	Reduce other business lending	Reduce residential real estate lending	Reduce commercial real estate lending	Reduce credit exposures through	Increase capital (incl retain earnings)	Other	Optimise risk weights by internal models
t (CET1, LR)	*1.43*	***1.86****	*–0.99*	*–0.38*	*–0.66*	*–0.58*	*–0.43*	*–0.61*	*–0.63*	*–1.15*	*–0.92*	*–1.64*	*0.60*	*–0.49*	***2.37****	*0.49*	*0.73*	*–0.68*
df (CET1, LR)	36	37	32	33	33	32	31	32	32	31	31	31	39	33	40	32	34	31
x1 (CET1, LR)	8.51	4.89	2.55	7.02	3.83	2.34	2.13	1.91	1.06	1.06	2.98	4.68	4.04	4.68	4.68	36.38	6.60	0.64
x2 (CET1, LR)	5.31	2.19	4.38	8.75	5.31	3.13	2.81	2.81	1.56	2.19	5.00	9.38	2.81	5.63	1.25	32.81	3.13	1.56
t (LCR)	*0.99*	*–1.35*	*0.07*	*–0.99*	*0.14*	*–1.38*	*0.77*	*–1.02*	*1.33*	*0.59*	*0.23*	*–0.14*	*0.30*	***–2.44****[1]	*–0.53*	*0.75*	*0.25*	*1.35*
df (LCR)	35	38	37	37	36	37	34	39	35	35	37	36	35	38	36	36	36	32
x1 (LCR)	7.27	2.73	3.64	5.45	4.85	1.82	3.03	1.21	1.82	1.82	4.24	6.36	5.15	2.73	3.03	36.36	6.36	2.12
x2 (LCR)	5.25	5.00	3.50	10.25	4.50	3.75	1.75	2.50	0.75	1.25	3.75	6.75	4.25	6.75	4.00	30.75	5.00	0.25
t (NSFR)	***1.87****	*–0.42*	*–0.38*	*–1.36*	*–0.44*	*–1.43*	*1.48*	*0.27*	*0.59*	*0.48*	*0.94*	*0.64*	*1.67*	*–1.13*	***1.75****	*–0.32*	*–1.01*	*1.29*
df (NSFR)	39	38	38	38	38	38	39	39	39	39	39	39	40	38	39	38	38	40
x1 (NSFR)	9.27	3.41	2.93	4.63	3.90	1.71	3.41	2.44	1.46	1.71	4.63	7.32	6.34	4.15	4.63	33.66	2.68	1.71
x2 (NSFR)	4.87	4.10	3.59	10.77	4.87	3.59	1.28	2.05	1.03	1.28	2.82	5.64	2.05	6.41	1.79	35.90	7.69	0.26

Note: Thresholds for sample splitting: CET1 ratio≥12% and LR ≥3.8% (sample size: 131); LCR ⩾/⩽ 134% (median value, sample size: 115); NSFR ⩾/⩽ 115.9% (median value, sample size: 132). Values reported in the x1 and x2 rows correspond, respectively, to the averages of the subsamples above and below the abovementioned thresholds. Symbols "*", "**" and "***" are reported in correspondence of t-values (two-sided test) that are significant at 10%, 5% and 1%, respectively.

Q24: How would you reach your target management liquidity buffer? Interaction with regulatory ratios. Table 7

	Increase holdings of HQLA	Reduce loans to PNCs	Reduce loans to households	Reduce committed liquidity facilities to banks	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
t (CET1andLR)	*1.01*	*–0.77*	*1.64*	*0.80*	*0.87*	*1.09*	*0.30*	*0.00*	***–1.75****	*–1.49*	*0.96*	*–0.01*
df (CET1andLR)	54	53	57	55	57	56	55	54	54	53	57	54
x1 (CET1andLR)	29.68	1.90	2.38	3.33	3.49	3.65	1.75	9.05	9.68	11.90	1.90	21.27
x2 (CET1andLR)	24.91	2.64	0.94	2.45	2.45	2.26	1.51	9.06	14.34	17.17	0.94	21.32
t (LCR)	*–0.56*	*1.60*	***1.98****	***–2.02****	*–0.40*	***1.98****	*–1.19*	***–2.34****	*1.64*	*1.25*	*0.81*	*–0.55*
df (LCR)	51	50	50	52	51	50	51	52	51	50	50	51
x1 (LCR)	24.40	3.40	3.00	1.80	2.60	4.80	1.00	5.40	15.00	16.60	1.80	20.20
x2 (LCR)	27.17	1.70	0.94	4.15	3.02	1.89	1.89	11.89	10.19	11.89	0.94	24.34
t (NSFR)	***2.01****	***2.60****	***2.68*****	*0.92*	*1.52*	***3.11*****	*–0.21*	*–1.62*	*1.22*	*0.69*	*–0.82*	***–3.22*****
df (NSFR)	57	57	57	57	57	57	57	57	57	57	57	57
x1 (NSFR)	32.24	3.45	2.93	3.45	3.97	5.00	1.55	6.90	13.45	15.52	1.03	10.52
x2 (NSFR)	22.76	1.03	0.52	2.41	2.07	1.03	1.72	11.21	10.17	13.10	1.90	32.07

Note: Thresholds for sample splitting: CET1 ratio≥12% and LR ≥3.8% (sample size: 131); LCR ⩽ 134% (median value, sample size: 115); NSFR ⩽ 115.9% (median value, sample size: 132). Values reported in the x1 and x2 rows correspond, respectively, to the averages of the subsamples above and below the abovementioned thresholds. Symbols "*", "**" and "***" are reported in correspondence of t-values (two-sided test) that are significant at 10%, 5% and 1%, respectively.

Interaction between banks' answers to questions 7(c) and 5

Table 8

	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 other business lending	Reduce residential real estate lending	Reduce commercial real estate lending	Reduce credit exposures through securitisations	Increase capital (incl retain earnings)	Other
t	*–0.03*	***–1.89****	*–1.32*	*–1.36*	***–1.93****	*–0.58*	*–1.13*	*–0.71*	*–1.27*	*–1.18*	*–1.43*	*1.21*	*–0.73*	*0.34*	*–0.63*	***4.69*****
df	36	33	36	33	33	33	34	33	33	33	33	44	33	46	34	41
x1	4.95	2.53	2.64	2.53	0.77	2.20	3.63	3.30	1.43	1.65	3.08	2.97	1.98	2.86	22.53	40.99
x2	5.00	9.71	5.29	5.29	3.53	2.94	5.88	5.59	2.94	3.24	7.65	1.47	3.24	2.35	26.47	9.41

Note: sample size: 125. Banks are split in two groups according to the answer they provided to question 7c (A7: joint probability to not meet the target management leverage ratio and Tier 1 capital ratio). Values in the x1 row are the sample averages of the banks assigning a joint probability equal to 0% and in the x2 row are reported the sample averages of the banks reporting a probability different from zero. Symbols "*", "**" and "***" are reported in correspondence of t-values (two-sided test) that are significant at 10%, 5% and 1%, respectively.

Source: Basel Committee on Banking Supervision.

Interaction between banks' answers to questions 7(c) and 18

Table 9

	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 other business lending	Reduce residential real estate lending	Reduce commercial real estate lending	Reduce credit exposures through securitisations	Increase capital (incl retain earnings)	Other	Optimise risk weights by internal models
t	*–0.77*	*–0.73*	*–1.63*	*–0.71*	*–0.72*	*0.04*	*0.81*	*–0.57*	*–0.78*	*–1.62*	***–1.74****	*–0.42*	***1.80****	*0.11*	*–0.32*	***2.12****	*1.63*	*–1.14*
df	24	25	23	24	23	24	30	24	23	23	23	23	35	23	24	25	48	23
x1	6.67	3.33	1.96	6.67	3.92	2.55	2.75	1.96	0.98	0.98	2.16	6.08	5.69	5.69	3.14	39.22	5.88	0.39
x2	8.75	4.58	5.83	10.42	5.83	2.50	1.67	2.92	1.67	2.92	7.08	7.50	1.67	5.42	3.75	24.58	0.42	2.50

Note: sample size: 75. Banks are split in two groups according to the answer they provided to question 7c (A7: joint probability to not meet the Target management leverage ratio and Tier 1 capital ratio). Values in x1 are the sample averages of the banks assigning a joint probability equal to 0% and in x2 are reported the sample averages of the banks reporting a probability different from zero. Symbols "*", "**" and "***" are reported in correspondence of t-values (two-sided test) that are significant at 10%, 5% and 1%, respectively.

Source: Basel Committee on Banking Supervision.

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