EUROPEAN CENTRAL BANK

BANKING SUPERVISION

ECB report on banks' ICAAP practices

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Contents

Executive summary

The internal capital adequacy assessment process **(ICAAP) has been and remains one of ECB Banking Supervision's top supervisory priorities**[1] since they were first published in 2016. In this context, and to clarify our expectations of the significant institutions (SIs) with regard to the ICAAP, the **ECB published in November 2018 the ECB Guide to the internal capital adequacy assessment process (ICAAP Guide)**[2]. Following the publication of these ICAAP expectations, ECB Banking Supervision's horizontal function conducted a **structured analysis of ICAAP practices** based on the ICAAP packages which a representative sample of SIs submitted in 2019. This report summarises the results of this analysis, describing the **range of ICAAP practices** observed in a sample of 37 banks. Furthermore, the analysis underlines areas where **banks' practices appear to be further developed**, as well as those where the ECB is of the opinion that additional work is warranted across banks.

The **ECB undoubtedly acknowledges that many banks have made a considerable effort towards improving their ICAAPs** over recent years and also that they have made **clear progress**. This is reflected in the report by providing examples of good ICAAP practices observed in banks included in the analysis sample. A further observation of the positive developments seen in banks was that there are some ICAAP areas which are **broadly established across banks**. For instance, **all banks** in the sample have **risk identification** processes, produce **capital adequacy statements** and conduct **stress-testing** and **capital planning including adverse scenarios**.

As mentioned, the analysis also revealed **several ICAAP areas that are less developed**, all of which meriting attention as weak practices in those areas could undermine the overall effectiveness of the ICAAPs. The **ECB would like to draw particular attention to the importance of a more general feature of the ICAAP, namely that of the underlying concept of continuity**. A good ICAAP fosters a bank's ability to sustainably pursue its business model by allowing it to effectively prepare for, quickly respond to and **successfully manage through potential crisis situations**, stay **economically healthy** and take appropriate management decisions based on a **strong set of reliable information**.

The conclusions presented here were drawn before the outbreak of COVID-19. However, the **current crisis situation emphasises the crucial importance of three particular areas of the ICAAP for the continuity of banks, as described below**. The ECB is convinced that better ICAAP practices strengthen banks' ability to **successfully navigate through stressful times such as the current extraordinary situation** and that, in broader terms, good **ICAAPs are key success factors** for effective risk management, sustainable financial soundness and long-term economic

1 See for 2020, the SSM Supervisory Priorities 2020.

2 See the ECB Guide to the internal capital adequacy assessment process (ICAAP).

prosperity, also during post-crisis times. Therefore, **banks are strongly encouraged to undertake the efforts needed to even further improve their ICAAPs**, making them reliable management instruments which play a key role in decision-making.

The ECB **identified three key areas as being particularly in need of improvement** to allow the ICAAPs to effectively foster banks' continuity. One of them is the set of data upon which the ICAAP is based. Good **ICAAP data quality** is a prerequisite for a sound ICAAP. Many banks show material deficiencies in this key area. This gives rise to strong concerns, for it hampers the effectiveness of the ICAAPs as a whole and it can hamper banks' ability to take decisions on the basis of timely, available and reliable figures. Ultimately, **weak data quality poses a clear threat to banks' continuity**.

The second **key area is the economic ICAAP perspective** which warrants improvements with regard to several areas, beginning with the implementation of the **general economic perspective concept**, the determination of **internal capital** in line with **continuity and economic value considerations**, the consistent and conservative **quantification of economic risk**, the well-informed determination of **internal capital adequacy thresholds**, the **information flow to the normative perspective**, the effective performance of **stress tests**, and last, but not least, the **use of economic perspective information in decision-making**, as reflected, for instance, in the limit system and internal reporting.

A weak economic perspective can hamper banks' ability to **take decisions with due consideration of the economic risk**[3] associated with those decisions, which will ultimately be detrimental to banks' financial strength. Moreover, **it evidentially threatens banks' continuity**, because issues concerning the relationship between economic value and economic risk cannot be addressed in an active and timely manner. This, in turn, **could weaken market participants' and depositors' trust**.

The third **key area of particular concern is stress-testing**. While banks are exposed to a wide, and at times dynamically changing, range of threats, many banks do not **systematically monitor their environment to identify new threats** early enough. This is related to the frequency of **application and review** of stress-testing scenarios, **ad hoc stress-testing capabilities, the severity level of stress-testing assumptions** and **follow-up management actions**. All of these issues can impede banks' ability to **effectively prepare for, avoid and respond to potential upcoming stress situations** and, thus, their ability to ensure continuity. Often, stress-testing, on the basis of comprehensive scenarios, is just regarded as a regular annual exercise conducted by the finance functions, **rather than risk management being the "owners" of an agile and responsive instrument** used to swiftly assess the bank-wide potential impact of adverse external developments.

[3] Under the economic "perspective, the institution's assessment is expected to cover the full universe of risks [irrespective of their Pillar 1 treatment] that may have a material impact on its capital position from an economic perspective" (see ECB Guide to the ICAAP, paragraph 49).

The remainder of this chapter follows the same structure as that of the ICAAP Guide, presenting the **main conclusions alongside the seven principles under the ICAAP Guide**.

Principle 1 – ICAAP governance

The analysis reveals that with regard to the format and content of **the capital adequacy statement** (CAS), banks have improved, yet there is room for improvement in striking the right balance between **comprehensiveness** (including factoring in the uncertainties stemming from ICAAP weaknesses) and **management body accountability**. In many banks, the regular **internal review** (including validation of risk quantification methodologies) of the ICAAP does **not follow a clear allocation of responsibilities** between and within the three lines of defence and the ICAAPs are not proactively adjusted to material changes. On the topic **of ownership and the involvement of internal functions** in the ICAAP, in a number of banks, no ownership is assigned to the risk management function for key ICAAP areas such as risk identification or quantification. This could be a source of concern if **business decisions were not also informed by an unbiased independent view to risk**[4].

Principle 2 – ICAAP integration

It was observed that many banks integrate the ICAAP into their overall management framework, for example, by using their **internal limit systems** and **management reporting**. However, weaknesses have been identified with respect to the **connection between the ICAAP and other strategic processes** such as the internal liquidity adequacy assessment process (ILAAP), as well as the **use of the ICAAP for decision-making**. In particular, **the economic perspective is often not used for managing** the relationship between risk and return. Additional areas for improvement are the use of effective and sufficiently granular **limit systems** and adequately frequent and detailed **reports to the management body**.

Principle 3 – ICAAP perspectives

With regard to the implementation of the **two ICAAP perspectives**, there is **room for improvement** under both the normative as well as the economic perspective, with particular attention being needed on the latter perspective. Many banks still either **have not fully elaborated their economic perspective** or do not explicitly follow a **continuity approach** under this perspective. Generally, the **capital plans** do look ahead at least three years. However, in many banks, deficiencies are apparent, for example, with regard to the consideration of **upcoming changes** in the legal, accounting, or regulatory frameworks and to the **number and severity of adverse scenarios that are** assessed. Furthermore, the assessment of capital adequacy from

[4] See, for example, the ECB Guide to the ICAAP Principle 2 (iii).

an **economic perspective in a forward-looking** manner over the medium term and the consideration of the insights gained from such assessments into the capital planning under the normative perspective and strategic decision-making are not well established.

Another area where improvement is warranted under both perspectives is the internal definition of **minimum capital adequacy thresholds**. In many cases, these thresholds are still based on management`s intuition, rather than on a **thorough assessment of the aspects that are relevant** for a bank to sustainably follow its strategy. Further sources of concern are the **lack of mutual information** between the normative and economic perspective, for example potential losses stemming from material risks under the economic perspective are often not systematically translated into profit and loss (P&L)/balance sheet impacts for projecting regulatory capital ratios under the normative perspective.

Principle 4 – Risk identification

Processes for the identification of material risks are **established** and regularly performed. For many banks, however, there is room for improvement regarding **forward-looking, pro-active** risk identification, the use of a **"gross approach"**[5], and the concepts used for deciding on **materiality** with regard to both the scope of material entities and risk types.

Principle 5 – Internal capital

More than half of the banks do not have an elaborated approach for properly defining their internal capital. Before including capital components in internal capital, most banks do **not systematically analyse them, for example** with regard to two key features of the economic perspective, namely **continuity assumption and economic value considerations**. This often leads to **unjustified inclusions** of certain capital components (e.g. minority interest, **Additional Tier 1** (**AT1**) **or Tier 2** (**T2**) **instruments**) or neglected deductions (e.g. hidden losses), which can inflate the internal capital figures. As a consequence, **economic capital adequacy** may be **over-estimated**.

Principle 6 – ICAAP risk quantification methodologies

Banks mainly rely on **regulatory approaches** and on **statistical models** for quantifying risks under the economic perspective. While most banks do adjust their regulatory methodologies, in a number of cases regulatory methodologies are directly applied without making any adjustments, meaning **without tailoring them to the bank's individual risk profile**. This could, in some cases, **compromise the**

[5] This means without taking into account specific techniques designed to mitigate the underlying risks.

accuracy of ICAAP risk quantification and, thus, jeopardise the effectiveness of internal risk management.

There are also some concerns regarding **statistical models**, as they are only capable of capturing situations that were previously factored into their design and reflected in the input data used. **Forward-looking threats** may therefore be overlooked by statistical models. Other issues observed, such as **inadequate holding periods** applied to market risk positions in combination with insufficient data histories, for example, may lead to a material **underestimation of risk**. Another issue identified is that many banks need to align their risk quantifications with the different underlying natures of the two ICAAP perspectives and clearly distinguish between **balance sheet/P&L impacts under the normative perspective** and **economic value impacts under the economic perspective**. Overall, ICAAP figures under the economic perspective are materially higher than Pillar 1 requirements, however concerns still remain regarding the **reliability of the quantification** methodologies being used.

This also draws attention to the issue of the **inter-risk diversification effects** that are widely used by banks in their risk quantification process. Given that during times of stress **correlations may change dramatically**, the availability of sufficient internal capital might not be ensured if the effects from such changes are not properly assessed.

Principle 7 – Stress-testing

On the positive side, **all banks are performing internal stress tests** that are forward-looking over a sufficiently long time **horizon**. While internal stress-testing under the normative perspective is well established, stress-testing is underdeveloped under the economic perspective. The **number of scenarios** and the **frequency of the review and the application of these scenarios** are heterogeneous, with a tendency towards applying a few scenarios only. Likewise, the **severity level** underlying the adverse scenarios appears to be too low, which is also reflected in **low levels of Common Equity Tier 1** (**CET1**) **depletion**. Overall, the stress-testing programmes at many banks do not seem to foster a well-informed and timely reaction to changes in their risk situation and to upcoming threats, as also triggered by underdeveloped **ad hoc stress-testing** capabilities and insufficient **monitoring of upcoming threats**.

1 Introduction

Background

The ECB considers the internal capital adequacy assessment process (ICAAP) to be a key risk management instrument, which allows banks to assess the risks they are exposed to in a structured manner, and which is thus of paramount importance for improving banks` resilience. Therefore, the ICAAP has been an ECB supervisory priority ever since it was first established and published in 2016. The 2020 priorities emphasise that "ECB Banking Supervision will continue to work towards improving banks' ICAAPs […] by promoting a common understanding of the ECB's expectations for them[6]".

The ECB's ICAAP expectations were published in November 2018 in the Guide to the internal capital adequacy assessment process (ICAAP) (hereinafter the "ICAAP Guide"), which have been deduced from Capital Requirements Directive (CRD) IV ICAAP provisions and are considered, inter alia, by SSM supervisors in the assessment of each significant institution's ICAAP as part of the Supervisory Review and Evaluation Process (SREP) since 1 January 2019. By clarifying its expectations in this Guide, the ECB intends to assist banks in strengthening their ICAAPs and encouraging the use of best practices.

Structured horizontal analysis: objective and approach taken

Against this background, the horizontal function of ECB Banking Supervision has conducted a structured analysis of ICAAPs based on a sample of SSM significant institutions. The aim of the analysis was to gain an insight into ICAAP practices in light of the expectations provided in the ICAAP Guide.

The analysis focused on the ICAAP packages[7] submitted by banks in April 2019. A sample of 37 SSM SIs was selected with the aim of it being representative for all SIs, with a stronger focus on larger banks. Therefore, the selected sample contains all global systematically important banks (G-SIBs) and covers all SSM countries, as well as all bank clusters and almost all business models.

The analysis was performed by way of a questionnaire, the content and the structure of which was formulated in line with the expectations outlined under the seven principles of the ICAAP Guide. It was completed by an ECB horizontal team, jointly with national competent authority (NCA) colleagues with specific expertise on the

6 See SSM Supervisory Priorities 2020.

7 Note that for resource reasons, the connections between ICAAPs and recovery plans were not considered.

ICAAP. The main assessment results were thereafter cross-checked by the Joint Supervisory Teams (JSTs), to ensure the accuracy of the facts presented.

In order to have a common reference date for the report (April 2019), any changes banks may have implemented after April 2019 were not taken into account. Moreover, the information contained in the ICAAP packages submitted by the banks has been assumed, for the purpose of the report, to be a fair and accurate representation of banks' real practices, that is to say, situations whereby the real practices are not in line with the documents provided and where practices are implemented but not documented could not be taken into account in the report. In rare cases, charts contain the category "N/A" which stands for situations whereby the assessors could not find the necessary information in the given ICAAP package to assess a relevant aspect.

The insights gained from the selected sample of 37 banks form the core of this report[8].To broaden the information base, however, some analyses were performed on the full range of SIs (referred to as the "extended sample" throughout the document) for which the respective information was available, for example, effectively meaning to include all SIs for which the ICAAP templates were available. It should be noted, however, that the said templates are subject to significant data quality issues (see also Chapter 2.8 on data quality) which should be borne in mind when interpreting the figures.

Structured horizontal analysis: report

The chapters of the report follow the same structure as the ICAAP Guide, with its seven principles. At the beginning of each chapter, relevant references to the ICAAP Guide principles are explained. Thereafter, the outcomes of the analysis are summarised[9], with the ECB's interpretation and evaluation of the facts being provided for a selection of the outcomes. Where no interpretation and evaluation of a fact is provided in the conclusions, this does not imply that the ECB considers the observed practice as adequate.

In each chapter of the report, not only observed shortcomings but also good practices are illustrated, with the aim of showing how banks have implemented certain ICAAP practices that are well suited to their purpose.[10] That said, the practices described

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8 This report is aimed at ICAAP experts and the interested public alike. Where the meanings of terms and the underlying concepts are not clear, readers are encouraged to read more about those topics in the ECB Guide to the ICAAP, including the glossary at the end of that document.

9 Note that, for efficiency reasons, not all analysis outcomes presented here refer to charts in this report. However, all findings are directly based on the assessments conducted. Note also that in many charts there are the categories "elaborated" and "mentioned, not elaborated". "Elaborated" means that the bank has clearly made an effort and elaborated on the respective aspects in its documentation. It is outside the scope of the analysis to judge whether banks' elaborations are convincing. If ICAAP aspects were just "mentioned" by banks (e.g. by just mentioning a key word or copy-pasting wording from the ECB Guide to the ICAAP), rather than elaborating on how they have actually addressed them, then this is reflected in the "mentioned" categories. Furthermore, note that number in the charts refers to number of banks, unless specified differently

10 Note that the selection of exemplary observed good practices was driven by the information available in the ICAAP packages and by the way the analysis was conducted. It is not correlated to the ECB's perception of how important the respective aspects are for the ICAAP overall.

here should not be considered as the only sound practices, and indeed, each bank bears full responsibility for implementing an ICAAP that is tailored to its own specificities.

2 Analysis outcomes

2.1 Principle 1 – ICAAP governance

2.1.1 Supervisory expectations and focal points of the assessment

Principle 1 of the ICAAP Guide

"Each year the management body is expected to provide its assessment of the capital adequacy of the bank, supported by ICAAP outcomes and any other relevant information, by producing and signing a clear and concise statement, the capital adequacy statement (CAS), […] the ICAAP shall be subject to regular internal review […] conducted by the three lines of defence, consisting of the business lines and the independent internal control functions (risk management, compliance and internal audit), in accordance with their respective roles and responsibilities. The ECB expects a defined process to be in place in order to ensure proactive adjustment of the ICAAP to any material changes that occur [...]".

Due to its fundamental importance for the continuity of the bank, the ICAAP should be subject to sound governance arrangements. Therefore, this chapter focuses on ICAAP governance, assessed mainly with regard to the management body's accountability for the ICAAP, as reflected in the capital adequacy statement (CAS), for example. Furthermore, it explores internal review activities and the adherence to the three-lines-of-defence concept.

2.1.2 Analysis of ICAAP practices

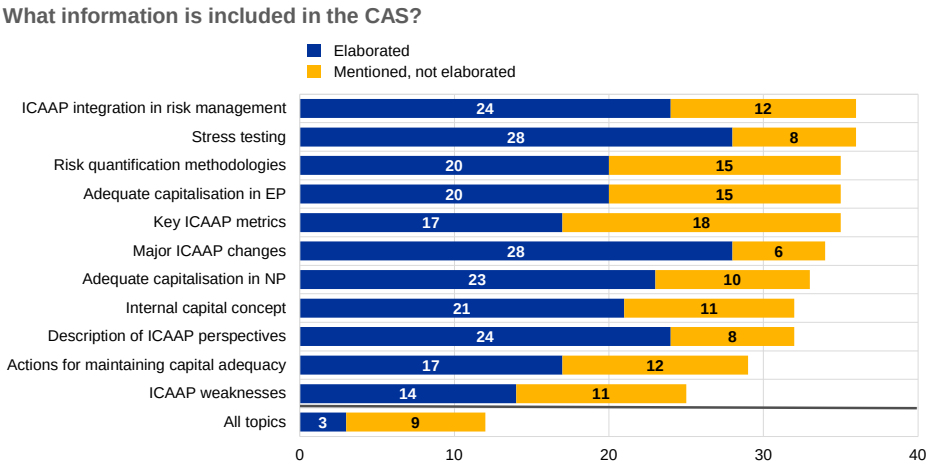
2.1.2.1 Capital adequacy statement

All banks in the sample produce a capital adequacy statement (CAS) which is, however, only signed by all members of the management body at one in three banks. At one in four banks, the CAS is not signed at all. For a number of banks, the signing of the CAS seem to be limited to a short statement made by the management body, which appears not to refer to the full content of the CAS, but just to one sentence or a short paragraph. In terms of format, on average, the CAS is around 22 pages long but overall the length of the analysed documents varies across banks from 3 to 36 pages. Very few banks have a CAS that is less than ten pages long, whereas almost half of the banks' CASs are 25 pages or longer. In terms of content (see Chart 1), the clear majority of banks elaborate on major changes in their ICAAP as well as key stress-testing activities and conclusions. However, over half of the banks do not elaborate on ICAAP key metrics (e.g. risk figures, risk limits), the main weaknesses of

the ICAAP and how they are being addressed. Only one in three banks mentions or elaborates on all areas[11] that the ECB analysed here to justify the overall conclusion drawn regarding capital adequacy and only one in ten banks does so in an elaborated manner.

Chart 1

Information included in capital adequacy statements



Note: NP - normative perspective; EP - economic perspective.

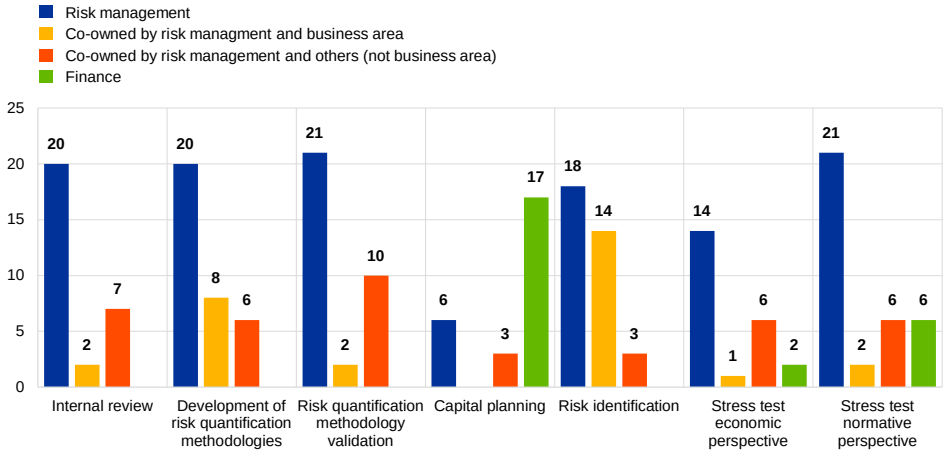
2.1.2.2 Roles and responsibilities of internal functions in the ICAAP

Chart 2 shows that, in around half of the banks, the risk management function is the sole owner of several ICAAP aspects and that in around one-third of the banks, it is the co-owner of these aspects, with the only exception being that of capital planning, which is predominantly owned by the finance function. Business areas play a strong role in identifying risks and developing risk quantification methodologies: in around one in three and one in four banks, respectively, the business areas are jointly responsible with risk management. Furthermore, internal audit is co-responsible also in a few banks, for example, for the areas of risk identification and internal validation of risk quantification methodologies. The involvement of different business areas (other than ownership) in the key processes is heterogeneous, for example, the broad majority of banks involves their business areas in the risk identification process, whereas only a few banks indicate any involvement of their business areas in the stress-testing process or the internal review of the ICAAP.

[11] Note that the list of ICAAP areas assessed for purpose of this analysis is neither prescriptive nor to be seen as generally sufficient to underpin the management body's assessment of the bank's capital adequacy.

Chart 2

Ownership of selected key ICAAP areas by internal functions



Note: Figures may not add up to 37, because in some cases, ownership was not clear from the available ICAAP information, for example, in the cases of committees where the members were not clearly identifiable.

The broad majority of banks have defined a process to ensure the proactive adjustment of the ICAAP to material changes. In around one in four banks, the ICAAP is not subject to regular internal audits or to other regular internal reviews. One in three banks does not have a clear allocation of responsibilities with regard to the internal review of the ICAAP. With regard to risk quantification methodologies, again, one in three bank`s ICAAP governance framework does not provide for a clear separation of responsibilities between the development and the validation of risk quantification methodologies.

2.1.2.3 Observed good practices

As regards the CAS, one observed good practice is that all members of the management body, with their different responsibilities and interests, jointly sign the document. A further good practice observed was the well-structured and concise presentation of capital planning figures in the CAS, including projected figures for capital and risk under the baseline scenario and several different adverse scenarios as well as a mapping of these figures to the risk appetite indicators and to internal and external capital requirements. Content-wise, an observed good practice is to include in the CAS a description of key ICAAP weaknesses, including an analysis of how these weaknesses may impact the assessment of capital adequacy, as well as a statement on when and how these deficiencies are to be rectified.

With regard to the roles and responsibilities of internal functions, another observed good practice at a number of banks is to set up robust independent internal validation units that effectively review the ICAAP on a yearly basis, in terms of both the quantitative and qualitative aspects. Roles, responsibilities and the entire review process are clearly defined in line with the three-lines-of-defence concept and results of the review are presented to the Executive Committee and to the Board of Directors at least on a yearly basis. In addition, one bank has developed a validation plan with varying frequencies for the risk quantification methodologies used for the different risk

types depending on the riskiness and on the observed values of certain predefined and regularly monitored indicators (e.g. the frequency of validation for the market risk model depends on the model back-testing results).

2.1.3 Conclusions regarding ICAAP governance

Compared to the first year of their submission in 2017 the CAS is now much more established, both in terms of its format and the content provided. However, these two aspects as well as the overall quality of the CASs are still heterogeneous across banks. With regard to the length of the CASs, still several banks do not strike a good balance between comprehensiveness and conciseness. They either do not provide a convincing set of supporting information or do not draft the CAS in a concise and compact manner that supports full accountability and ownership of the management body. In several cases this ownership is not reflected by the signatures of the members of the management body.

In terms of contents, many banks do not elaborate on a number of selected aspects generally considered to be important when judging capital adequacy, such as ICAAP weaknesses. In this context, it should be noted that the CAS is expected to trigger discussions and the agreement of the members of the banks' highest decision-making bodies on capital adequacy[12].

Although the processes for regular internal ICAAP reviews broadly-speaking appear to be defined, there are concerns that not all banks perform regular reviews (including internal audit reviews) of their ICAAPs. Furthermore, at a number of banks, there is much room for improvement in terms of establishing processes for ensuring the proactive adjustment of the ICAAP to material changes. Currently, these banks risk being left with an ICAAP that cannot be used to effectively manage risk, thus jeopardising capital adequacy.

As regards ownership and involvement of the internal functions in the ICAAP, it is a source for concern that at almost half of the banks the risk management function is not ultimately responsible and accountable for how risks are identified, quantified and stress-tested.[13] Similarly, it is a source of concern that risk management has limited ownership of internal review, validation and stress-testing, and moreover it plays only a minor role in capital planning despite the fact that the assessment as to how stress may threaten the future capital adequacy of the bank is a key component of capital planning.

Another source of concern is the observed issue of the (co-)ownership of internal audit functions in the key ICAAP aspects such as the validation of risk quantification methodologies. This is detrimental to the independence of the second and third lines

[12] The management body is expected to discuss and challenge the ICAAP in an effective way and it is expected to produce and sign the CAS (see, for example, the ECB Guide to the ICAAP Principle 1 (i) and (ii) and paragraphs 15 and 22).

[13] In any case the ECB expects the three-lines-of-defence concept to be applied. All relevant units, including in particular those in business areas, are expected to be key contributors in the ICAAP by providing input, for risk identification and the development of risk quantification methods, for example.

of defence. In addition, for key ICAAP aspects such as stress testing and internal reviews, many banks should involve (but not give ownership to) their business areas to a greater extend in order to benefit from relevant internally available information[14].

2.2 Principle 2 – ICAAP integration

2.2.1 Supervisory expectations and focal points of the assessment

Principle 2 of the ICAAP Guide

"In addition to an adequate quantitative framework for assessing capital adequacy, a qualitative framework needs to ensure that capital adequacy is actively managed. This includes the monitoring of capital adequacy indicators to identify and assess potential threats in a timely manner, drawing practical conclusions and taking preventive action. […] The ICAAP is expected to be integrated into the business, decision-making and risk management processes of the institution. […] Institutions are expected to maintain a sound and effective overall ICAAP architecture and documentation on the interplay between the ICAAP elements and the integration of the ICAAP into the institution's overall management framework. […] The institution is expected to integrate ICAAP outcomes […] into its internal reporting to different managerial levels at appropriate frequencies. […] the institution is expected to use the ICAAP outcomes when setting up an effective risk monitoring and reporting system and an adequately granular limit system."

In order to be able to take business and risk management decisions with due consideration of capital adequacy, banks need to integrate sound ICAAPs in all relevant processes and decisions. Therefore, this chapter focuses in particular on the ICAAP architecture, the use of risk limit systems and the regular reporting of ICAAP outcomes as relevant examples for the integration of the ICAAP in the overall management.

2.2.2 Analysis of ICAAP practices

2.2.2.1 ICAAP architecture

Overall, the general concept of the ICAAP architecture is, to some extent, implemented in virtually all banks. Around one-third of banks document the ICAAP architecture in a separate document, one third dedicate a separate chapter in a

[14] See, for example, the ECB Guide to the ICAAP paragraph 18: "[…] The reviews are expected to be conducted by the three lines of defence, consisting of the business lines […]" and footnote 9 referring to the EBA Guidelines on internal governance (EBA/GL/2017/11).

broader document to the ICAAP architecture and one third provide information about the ICAAP architecture spread across several internal documents.

Chart 3 shows that the clear majority of the banks elaborate on how the key elements of the ICAAP are connected with each other. The picture looks more heterogeneous for the connection between the ICAAP and other key processes, however. Almost all banks elaborate on the integration of the risk appetite statement (RAS) and management reporting into the ICAAP architecture, two third elaborate on how the ICAAP outcomes are used for decision-making and around half of the banks do so for the connection between the ICAAP and the ILAAP. Overall, around one-third of banks do not mention one or more areas shown in Chart 3 and two-thirds do not elaborate on all of these areas.

Chart 3

Documentation of ICAAP architecture and connections within the ICAAP and between the ICAAP and the overall management framework

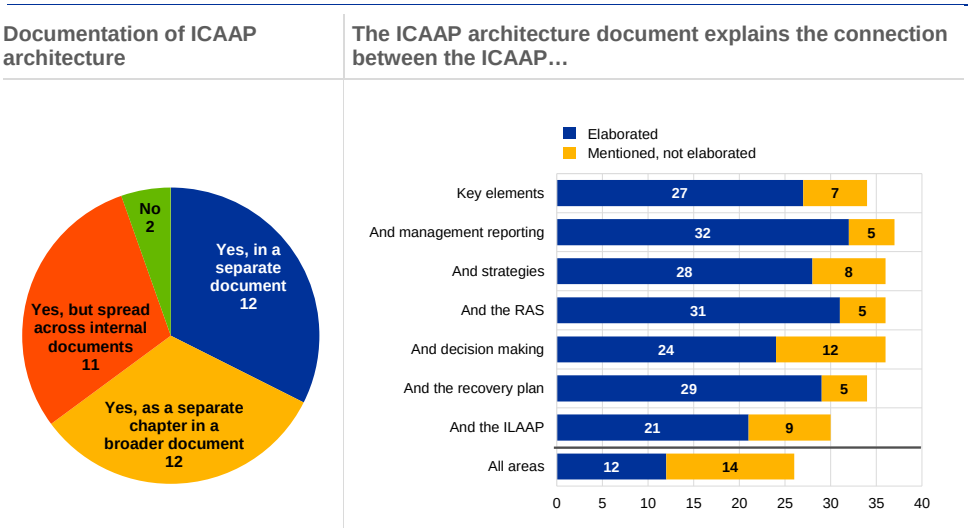
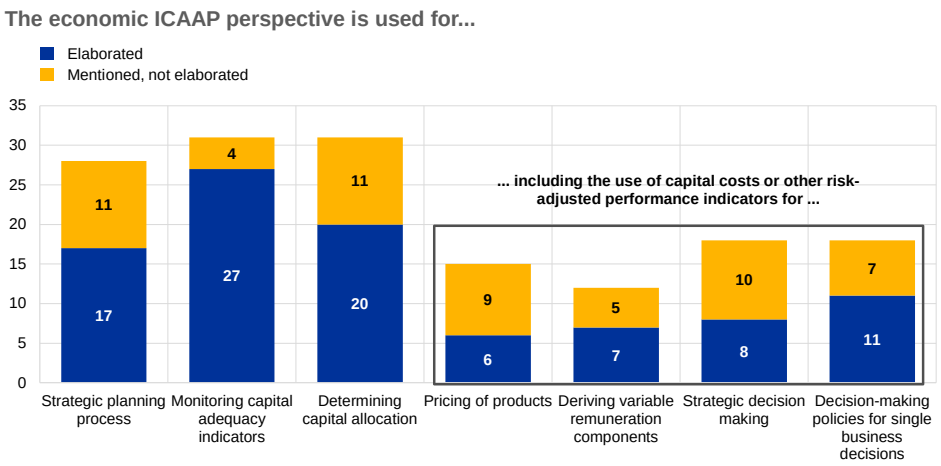


Chart 4 shows the results of further analyses the integration of the ICAAP in material business activities and decisions. Here, most banks use the ICAAP for monitoring capital adequacy indicators in order to identify and assess potential threats in a timely manner. The majority of banks exhibit a comprehensive integration of the ICAAP in the strategic planning process and the determination of capital allocation. Clearly less evident is the use of the ICAAP for managing the relationship between risk and return. Around one-fourth of the banks do not explain in their ICAAP packages how they use capital costs or risk-adjusted performance indicators to this end, with noticeably few banks elaborating on the use of the ICAAP for the pricing of products or deriving variable remuneration.

Chart 4

Integration of the economic ICAAP perspective in material business activities and decisions



2.2.2.2 ICAAP limit systems[15]

Almost all banks use some form of internal limit system as part of their risk monitoring and reporting systems in their ICAAPs. Clearly more than half of the banks make use of a limit system under both, the economic and the normative perspectives. One-quarter of banks, however, use a limit system either only under the economic perspective or the normative perspective (see Chart 5).

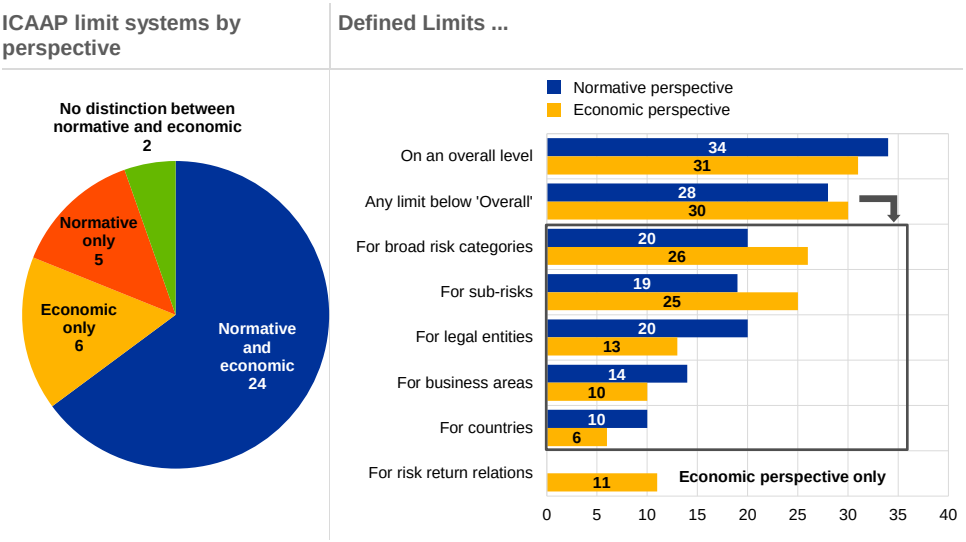
Limits are mostly set at the level of overall capital adequacy but are not always broken down to other levels – the picture looks similar for both perspectives. Almost all banks define internal limits at an overall level across risks and for the whole scope of the ICAAP (e.g. Pillar 1 CET1 ratios, overall economic capital adequacy ratios), whereas only a small share of the sample of banks sets limits for individual business areas or at country level. Limits at the level of broader risk categories, and at the sub-risk level are established for around one-half (normative perspective) and up to two-thirds (economic perspective) of the banks. Turning the message around, under both perspectives, about one fifth of banks have not defined limits more granular than the overall level of capital adequacy.

The limited use of the ICAAP for managing the relationship between risk and return (see Chart 5) is also reflected in the fact that only every fourth bank sets limits in order to manage this relationship. With regard to the use of the limit system, it was observed that some banks do not have elaborated internal escalation procedures for limit breaches and as much as half of the banks have not defined a set of management actions that could be considered to be used, if needed.

[15] "Limit system" is used here in line with the definitions provided in paragraph 34 and in the glossary of the ECB Guide to the ICAAP.

Chart 5

ICAAP limit systems by perspective and level of granularity

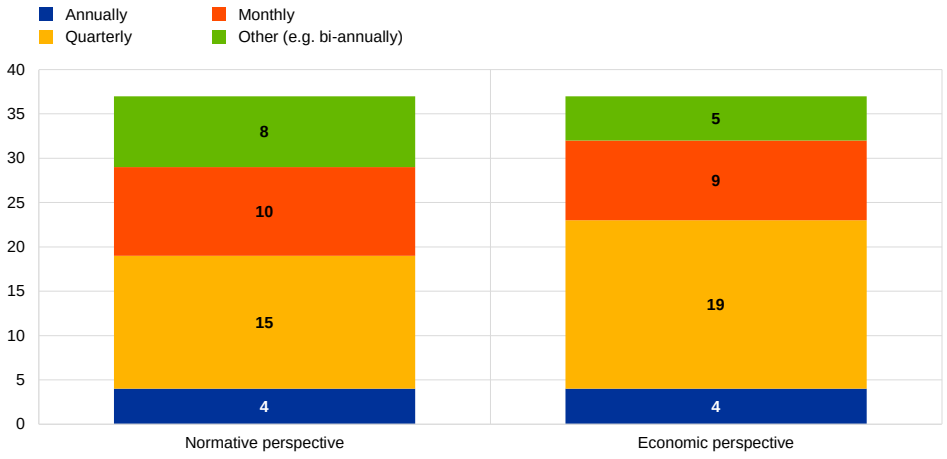


2.2.2.3 ICAAP reporting practices

As shown in Chart 6, the frequency of internal ICAAP reporting to the management body paints a similar picture as regards the information reported under the normative and economic perspective. Under both perspectives, the majority of banks reports ICAAP-related information on a quarterly basis. In around one-quarter of the sample of banks, it was reported on a monthly basis. However, a few banks regularly reported ICAAP information to the management body only on an annual basis.

Chart 6

Frequency of regular internal ICAAP reporting, by ICAAP perspective



With regard to the regularly reported information under the normative perspective, Chart 7 shows that almost all banks report their current regulatory CET1 and leverage

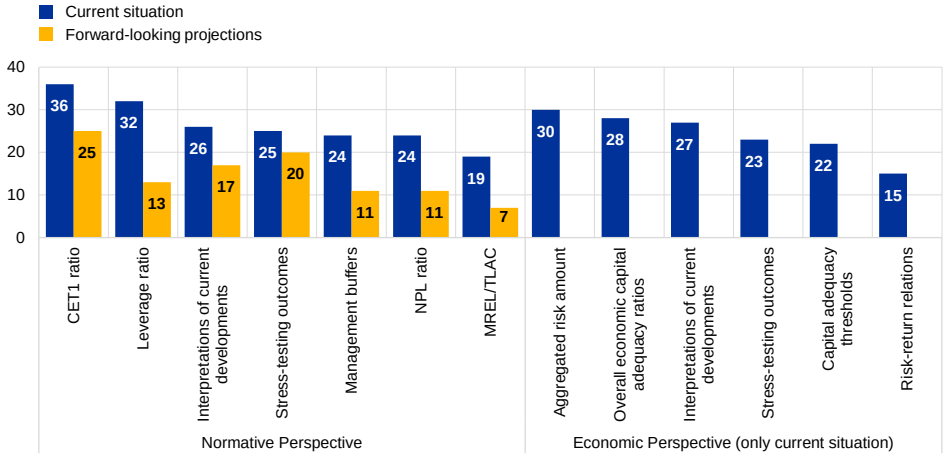
ratios. Current minimum requirement for own funds and eligible liabilities (MREL)/total loss absorbency capacity (TLAC) and NPL ratios, on the other hand, are reported only in around one-half of the sampled banks. Notably, fewer banks also report forward-looking projections in terms of their key ratios under the normative perspective, with particularly low coverage of projected MREL/TLAC, leverage and NPL ratios.

Under the economic perspective, a broad majority of banks regularly report both the overall economic capital adequacy ratios as well as the aggregated economic risk amount. Economic risk figures are also regularly reported on a single risk (and sub-risk) basis. In line with their limited use in decision-making and limit systems, risk/return relationships (e.g. risk-adjusted return on capital (RAROC)/return on risk-adjusted capital (RORAC)) are reported in about one-third of the cases.

Under both perspectives, internally set minimum capital levels (management buffers/ economic capital adequacy thresholds) are not regularly reported by one-third of the banks. Likewise, stress-testing outcomes and the interpretation of current developments in the reported figures are provided to the management body under both perspectives only by two-thirds of the banks.

Chart 7

Regularly reported ICAAP information – normative and economic perspective



Notes: The absence of forward-looking information under the economic perspective is due to the design of the analysis - ICAAP packages and risk reports were not analysed for that aspect. Accordingly, the analysis results presented here does not mean that such information is not being internally reported.

2.2.2.4 Observed good practices

With regard to the ICAAP architecture[16], a good observed practice is the description of a well-structured ICAAP architecture described in a separate document and enriched with direct references to other, more detailed, documents. The ICAAP architecture overview document provides full transparency for the interface between the different ICAAP elements and also between the ICAAP and the other key processes in the

[16] See glossary of the ICAAP Guide for a description of the concept.

bank. At the same time, it provides concrete references to where the different interconnections are described in greater detail.

With regard to the reporting in the context of limit systems, an observed good practice at some banks is the use of an enhanced traffic light system for certain indicators to allow the addressees to see, at first glance, not just the bucket the indicator is currently in (as in standard traffic light systems) but also the distance to the adjacent buckets.

Figure 1
Indicative example of an enhanced traffic light system

A third observed good practice is that certain banks have implemented a concept for increasing the reporting frequencies and reporting granularity for specific risks in a crisis, based on risk materiality and potential dynamics of changes. Particularly for the assessment of stress test outcomes it can be useful for senior management to receive the outcomes more frequently in times of stress and to see the contributions of each risk to the normative or economic capital demand, in order to take the appropriate targeted decisions.

2.2.3 Conclusions regarding ICAAP integration

The analysis shows that the ICAAP architecture concept is established in most banks, but often the description of the architecture is spread across multiple documents. This undermines the underlying concept of establishing and illustrating clear links between the different ICAAP elements and between the ICAAP and the bank's overall management framework. In particular, silo-thinking between the ICAAP and the ILAAP, as well as the limited use of the ICAAP, for example in strategic decision-making, also raises concerns in respect of many of the banks.

Even less well established is the use of the ICAAP for managing the relationship between risk and return, for example, for the pricing of products or deriving variable remuneration. These are examples of where the ECB expects improvements to be made to ensure that banks set the right incentives and take well-informed business decisions that do not expose them to disproportionate and unintended risks that threaten their continuity.[17] Conversely, a strong role of a sound ICAAP in business decision-making is a competitive advantage that pays off in the medium to long term.

Another source of concerns are banks' limit systems, in relation to which, there is some doubts as to whether timely and effective risk management can be ensured if

[17] In line with, for example, the ECB Guide to the ICAAP Principle 2 (v) and paragraph 24.

the degree of limit usages is managed only at the level of overall capital adequacy, as opposed to limits on individual risk-categories or at a country level, for example.

The frequency of regular reporting of current ICAAP figures to the management body is lower than quarterly at a number of banks and projected ratios[18] and stress-testing outcomes[19] are reported even less frequently than figures for the current situation or not at all. This is rather concerning, as a low ICAAP reporting frequency means that the management body may receive ICAAP-related information too late for it to be able to manage the bank's capital adequacy effectively and in a forward-looking manner. For a number of banks under both, the economic and normative perspectives, several key ICAAP ratios are not reported at all. This could pose a major threat to banks, particularly if unexpected dynamic changes emerge, such as in an abrupt crisis.

2.3 Principle 3 – ICAAP perspectives

2.3.1 Supervisory expectations and focal points of the assessment

Principle 3 of the ICAAP guide

"The ICAAP contributes fundamentally to the continuity of the institution […]. The institution is expected to implement a normative perspective, which is a multi-year assessment of the institution's ability to fulfil all of its capital-related regulatory and supervisory requirements and demands and to cope with other external financial constraints on an ongoing basis over the medium term.

[…] The normative perspective is expected to be complemented by an economic perspective, under which the institution is expected to identify and quantify all material risks that may cause economic losses and deplete internal capital. […] In order to capture the undisguised economic situation, this perspective is not based on accounting or regulatory provisions. Rather, it should take into account economic value considerations […]. The institution is expected to use the outcomes and metrics of the economic capital adequacy assessment in its strategic and operational management and when reviewing its risk appetite and business strategies. […] Both perspectives are expected to mutually inform each other and be integrated into all material business activities and decisions […], the institution is expected to assess and define management buffers above the regulatory and supervisory minima and internal capital needs that allow it to sustainably follow its strategy."

In order to support the continuity of the bank, it is a key prerequisite that normative and economic ICAAP perspectives are fully and consistently implemented. Banks need to set internal minimum capital thresholds (for the normative perspective these are management buffers) that are well reflected and banks are expected to assess on this basis their ability to maintain an adequate capitalisation. This is facilitated by reliable

[18] Note that projected ratios are meant to be future capital ratios that banks determine under the application of scenarios.

[19] For details regarding the reporting frequency of stress testing outcomes, see Principle 7.

capital planning and sound mutual information between the two perspectives. This chapter focuses on these key aspects of the ICAAP framework.

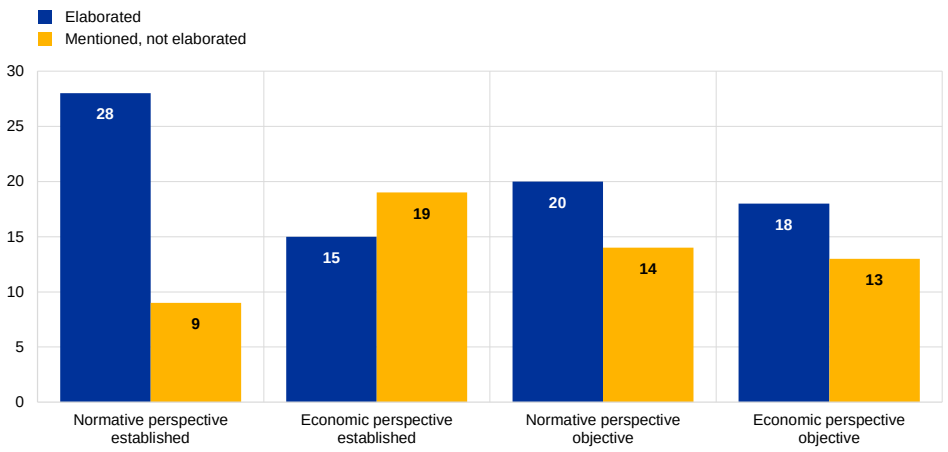
2.3.2 Analysis of ICAAP practices

2.3.2.1 ICAAP perspectives and management buffers[20]

Three out of four banks have implemented an elaborated normative ICAAP perspective, while for the economic perspective, this is the case for less than half of the banks (see Chart 8). The normative perspective is also better established than the economic perspective both in terms of the explanations given as to the basis of these perspectives and in describing their underlying objectives. However, for both perspectives, around half of the banks have elaborated on their approaches.

Chart 8

Establishment of normative and economic perspectives and description of objectives



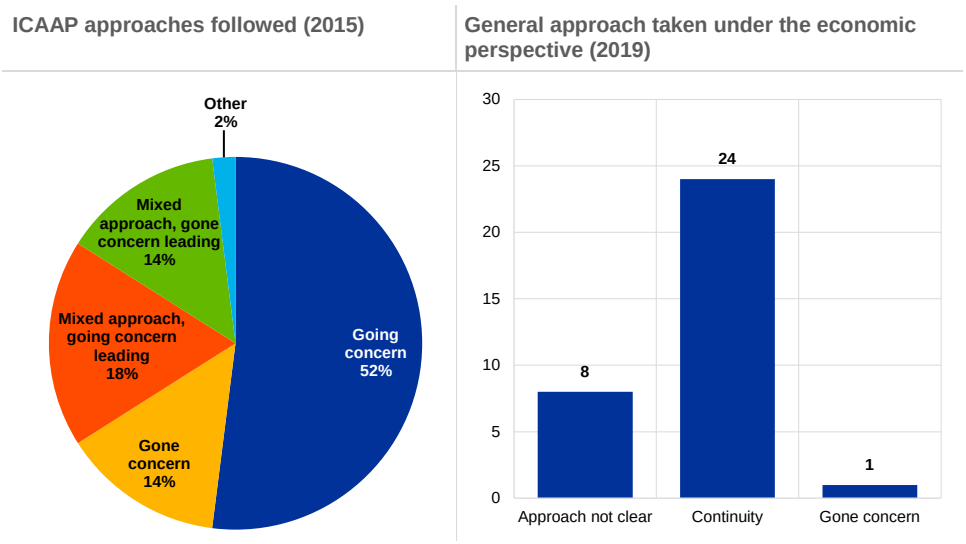
While the normative perspective follows a continuity approach by nature, this objective is not clearly spelled out under the economic perspective by one in three banks (see Chart 9). Moreover, in one case the economic perspective still explicitly follows a gone concern approach[21]. Compared to 2015, the use of gone concern approaches has decreased significantly. In 2015, only half of the banks exclusively followed a continuity approach, one-third of banks followed a combined approach and one in seven banks exclusively followed a gone concern approach.

[20] The concept of "management buffers" is explained in paragraph 40 of the ECB Guide to the ICAAP. Under the economic perspective, the concept refers to consciously deciding on capital adequacy thresholds that the bank considers to be adequate to be able to sustainably follow its business model. Hence, this does not necessarily imply that there is always a real "buffer" that is set above another internally set minimum ratio. This is different from the normative perspective where such minimum ratios always exist because there are explicitly externally set minimum capital ratios (e.g. the TSCR).

[21] Those banks with unclear or gone concern approaches also happened to be, in most cases, those with either no or weak definitions of internal capital.

Chart 9

Comparison of general ICAAP approaches followed in 2015 and in 2019



Note: The approach followed in 2015 is based on a different sample of banks than that used in the current report.

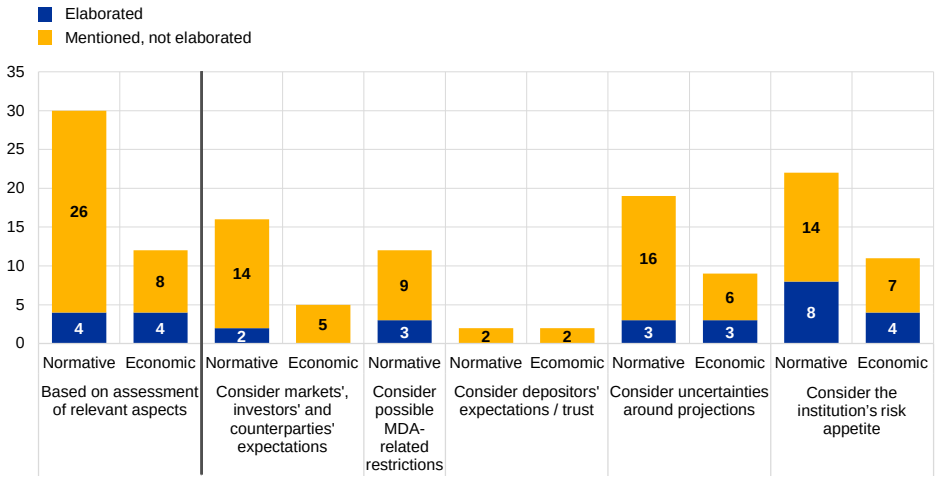
When considering the management buffer concept introduced by the ICAAP Guide, it becomes evident that the two ICAAP perspectives are established to different degrees. Almost all banks have established some kind of management buffer under the normative perspective, while under the economic perspective only slightly more than half of the banks have defined some kind of internal minimum capital threshold.

With regard to the way management buffers/internal minimum capital thresholds are derived, under each perspective, only one in ten banks has a relatively elaborated approach. Under the normative perspective, the vast majority of banks have carried out at least some kind of rudimentary assessment, while under the economic perspective this is the case for less than one-third of the banks.

Chart 10 shows that, under both perspectives, banks perceive their risk appetite and potential fluctuations in capital ratios arising from uncertainties as the most relevant aspects for defining management buffers. The expectations of markets, investors, and counterparties also play a role, particularly under the normative perspective, under which almost half of the banks mention (but for the most part do not elaborate on) this aspect, while it is mentioned only by one in seven banks under the economic perspective. Moreover, under the normative perspective, one in three banks explicitly relates internal triggers to the maximum distributable amount (MDA) trigger. Finally, depositor expectations do not play a noteworthy role under either perspective.

Chart 10

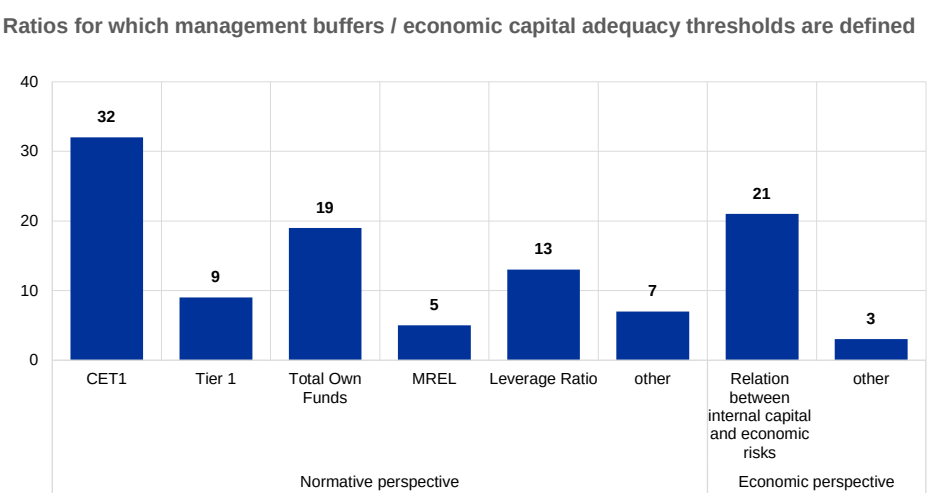
Considerations underlying internally set management buffers and internal minimum capital adequacy thresholds



In terms of the ratios used for setting management buffers (see Chart 11), a wide range of ratios is used under the normative perspective, while under the economic perspective virtually all banks that have defined capital adequacy thresholds did so on the basis of the relationship between overall economic risks and internal capital. Under the normative perspective, banks set management buffers in terms of one to six different ratios (average: 2.3). The vast majority of banks express their management buffers in terms of CET1 ratios. Almost half of the banks also set management buffers for total own funds ratios and one-third for the leverage ratio. Management buffers for other regulatory ratios such as the MREL or the Tier1 ratio are not implemented by many banks.

Chart 11

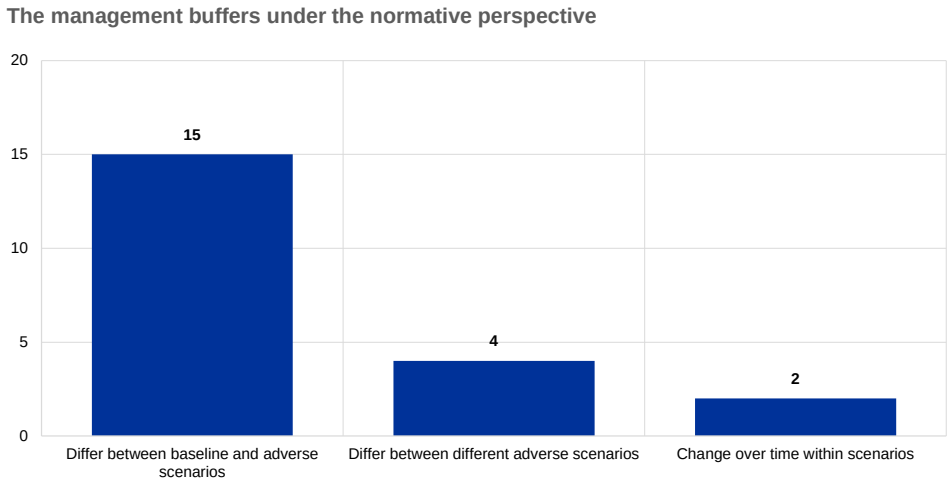
Ratios used for setting internal capital adequacy thresholds



Moreover, for less than half of the banks, the management buffers under the normative perspective differ between baseline and adverse scenarios but they are usually identical across different adverse scenarios and over the projected horizons within the scenarios (see Chart 12).

Chart 12

Differences in management buffers under the normative perspective



2.3.2.2 Capital planning

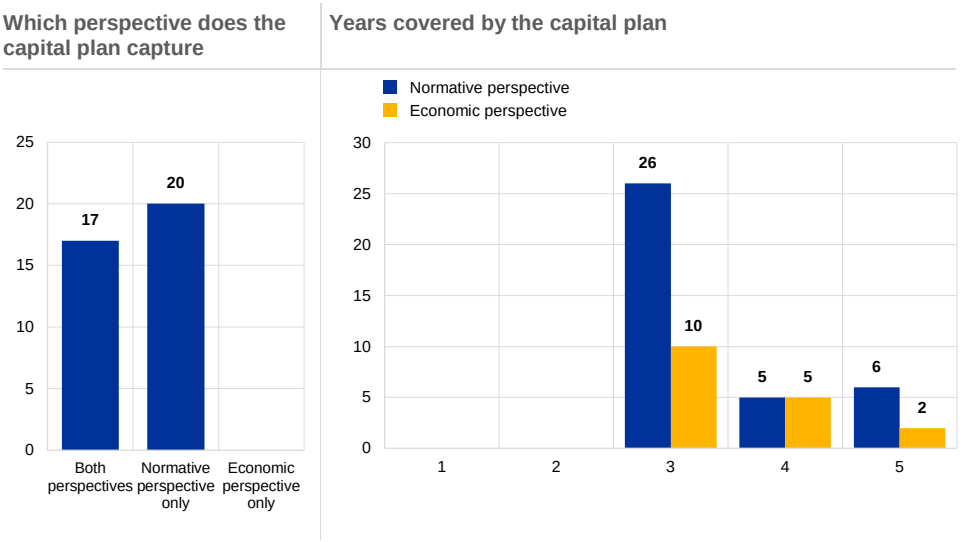
Chart 13 shows that all banks conduct capital planning under the normative perspective and half of the banks also consider the economic perspective in their capital planning[22]. Under both perspectives, the most frequent time horizon used for capital planning is three years. Under both perspectives, a significant number of banks also plan their capital adequacy over four or five years, meaning that almost one in three banks applies quite long forward-looking time horizons under the normative perspective.

[22] Note that the ECB does not generally expect projections to be made under the economic perspective (see the ECB Guide to the ICAAP, footnote 46), however paragraph 50 of the ECB Guide to the ICAAP mentions a “medium-term assessment of the impact of material future developments that are not incorporated in the assessment of the current situation”.

Chart 13

Capital planning: Role of ICAAP perspectives in capital plans and time horizons covered

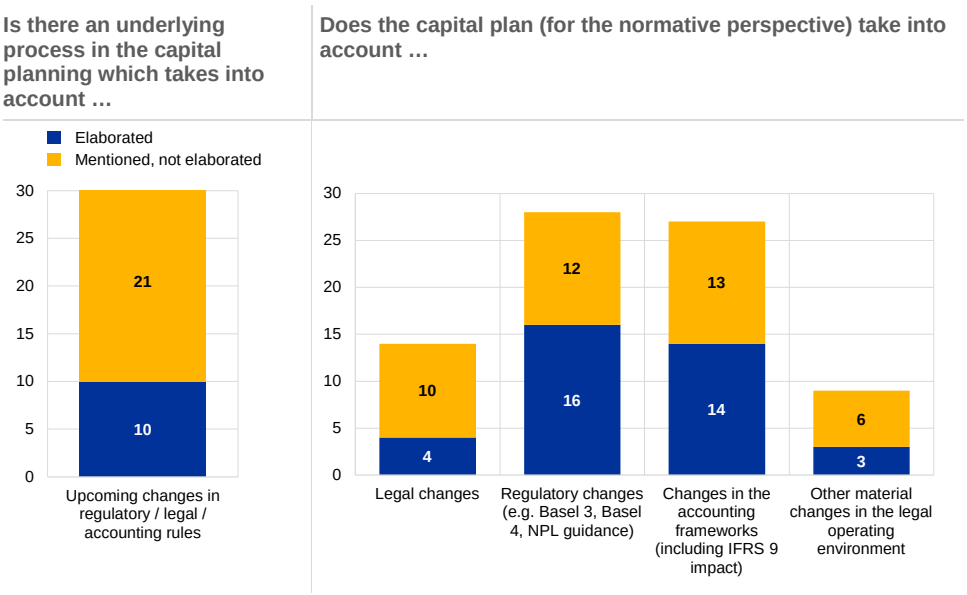
(right-panel: x-axis: years)



While most banks implemented a process under the normative perspective to take into account the impact of upcoming changes in regulatory, legal, and accounting frameworks in their capital planning, for one in four banks this process is elaborated (see Chart 14). Furthermore, while regulatory and accounting changes are taken into account by less than half of the banks, legal changes or other changes in the operating environment are considered to far less a degree.

Chart 14

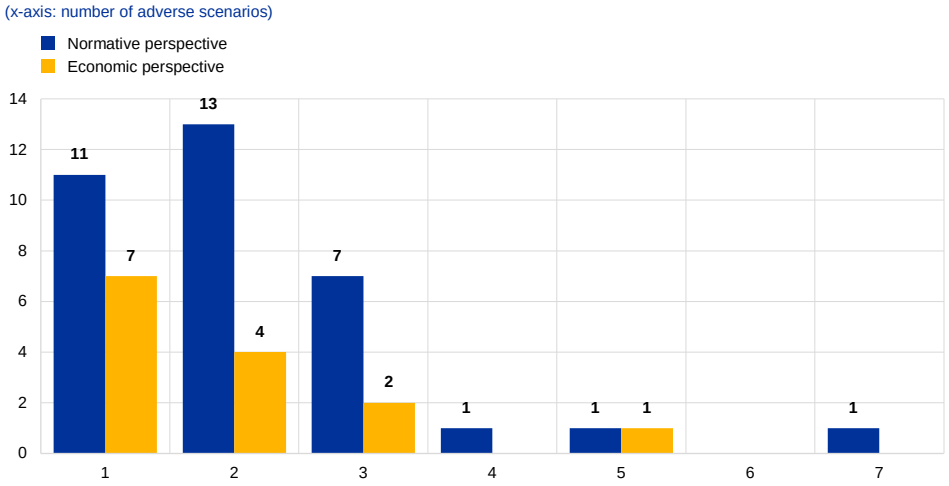
Considerations of future changes in relevant regulations in the capital plans



Focusing on the number of adverse scenarios used for capital planning (see Chart 15), almost all banks have presented at least one adverse scenario under the normative perspective in their capital plans. The most common approach is to use two adverse scenarios, while one in three banks only uses one adverse scenario. Less than half of the banks use adverse scenarios under the economic perspective, most of them use only one.

Chart 15

Number of adverse scenarios included in the capital plans



Note: Banks may also assess adverse scenarios for stress testing which they do not use for their capital planning (see Principle 7 in this report).

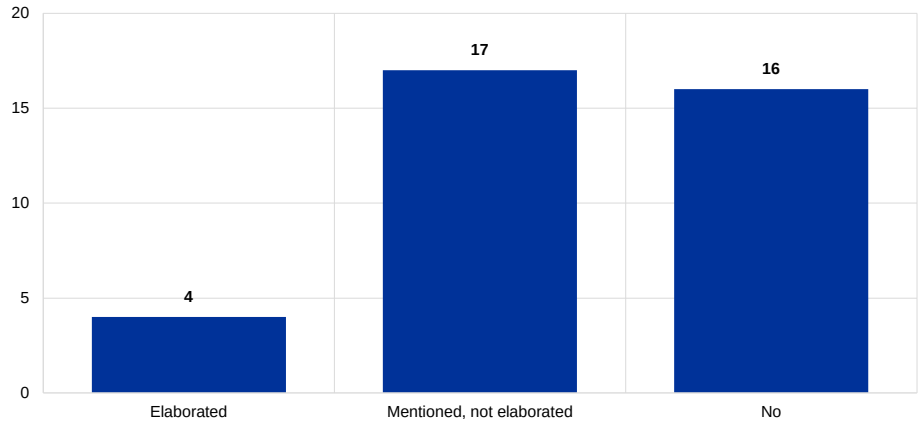
2.3.2.3 Mutual information

Mutual information refers to how the normative and the economic perspectives of the ICAAP inform and influence each other. The risks taken into account under the economic perspective are considered under the normative perspective in an elaborated manner only by one in ten banks. Moreover, for one-third of the banks, this aspect of the mutual information concept is not considered at all (see Chart 16).

Chart 16

Mutual information concept: the economic perspective informs the normative perspective

Risks from the economic perspective have an impact on the normative perspective

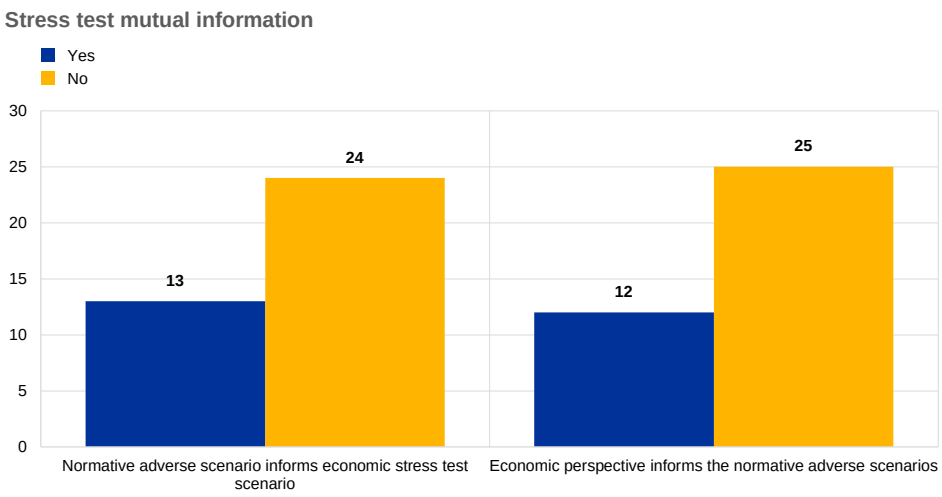


Very few banks systematically reflect the management actions[23] foreseen under the normative perspective under the economic perspective as well. Likewise, when considering stress-testing, the mutual information between the normative and the economic perspective is not commonly established (see Chart 17). In fact, around one-third of banks have a process in place for translating or applying adverse scenarios used under the normative perspective to stress test scenarios used under the economic perspective. Approximately one in three banks uses the economic perspective to inform stress test scenarios under the normative perspective. For example, banks that face hidden losses identified under the economic perspective often do not consider the extent to which these could materialise under the normative perspective (stress) scenarios.

[23] See paragraph 47, example 3.3, and the glossary in the ECB Guide to the ICAAP for an explanation of the specific terminology.

Chart 17

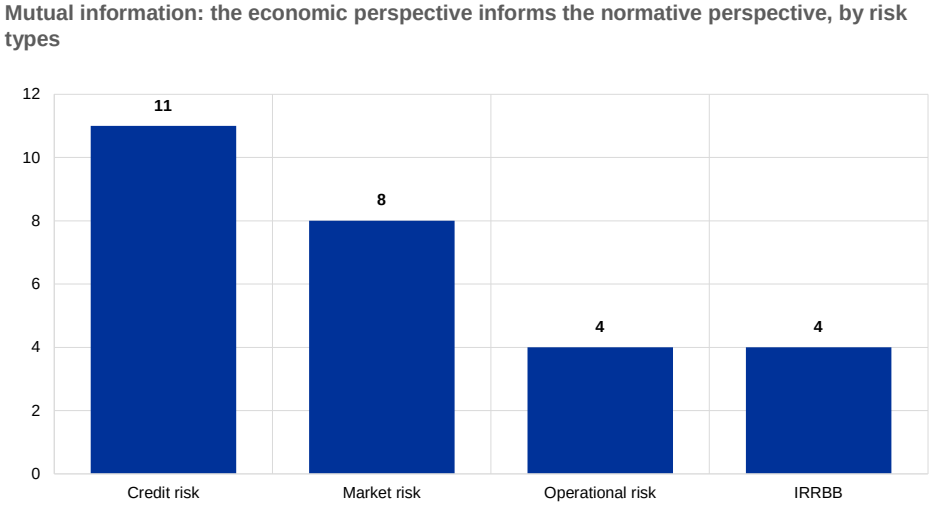
Mutual information: do the perspectives explicitly inform each other?



Less than one-third of banks derive owns funds and total risk exposure amount (TREA) for the adverse scenario projections, taking into account input from the economic perspective (see Chart 18). Focusing on single risk categories, the information from the economic to the normative perspective is more often used for certain risks (e.g. credit and market risk) than for others (e.g. operational risk and interest rate risk in the banking book (IRRBB)).

Chart 18

Use of economic perspective outcomes to inform normative perspective projections (through own funds/TREA changes)



Box 1

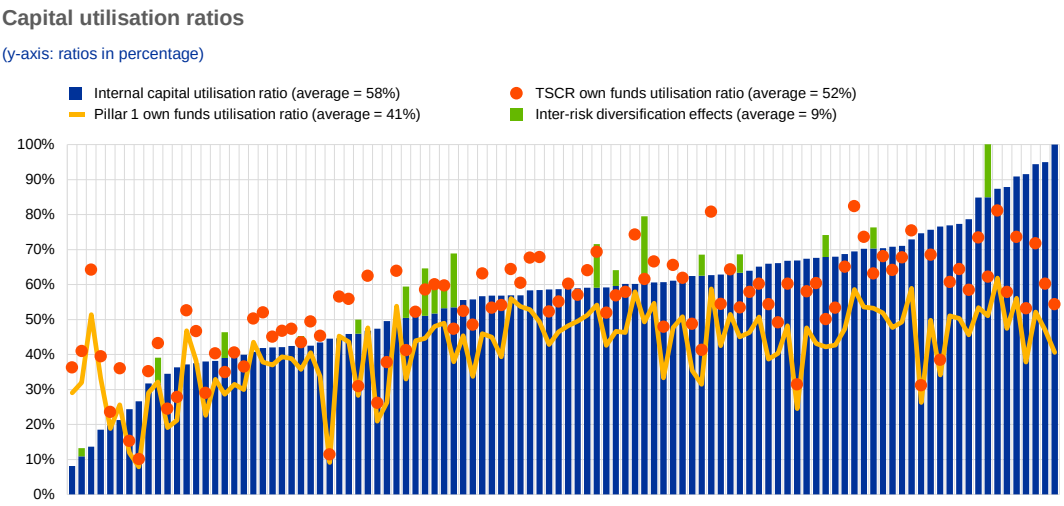
Excursus: quantitative analysis[24]

Chart A shows the utilisation of capital under the normative and the economic perspectives, that is to say, the extent to which the available capital (total own funds, internal capital) is needed to cover own funds requirements/economic risks. Generally, this relationship is heterogeneous within and also between the perspectives. Under the economic perspective (dark blue bars)[25], the utilisation rate ranges from around 8% to 100%, with an average of 58%. Looking at available total own funds versus Pillar 1 requirements (orange line)[26], the chart shows much less heterogeneity, with most banks' utilisation rate ranging between 40% and 70%. Obviously, banks reflect, under their economic perspectives, a much more differentiated view of capital adequacy than under Pillar 1.

Factoring in the bank-specific Pillar 2 capital requirements (P2R) (red circles)[27], brings the capital utilisation in the ICAAP and the total SREP capital requirement (TSCR) own funds utilisation much closer to each other on average (58% versus 52%) and also individually. However, the relationship between these two perspectives still remains heterogeneous. For some banks, the economic perspective shows higher values (light green bars higher than red circles), but sometimes it is the other way around. Overall, however, the utilisation ratio is in most cases higher under the economic perspective, in particular at those banks that have higher utilisation ratios in their ICAAPs. Thus, on average the economic perspective is more restrictive than the TSCR capital utilisation[28].

Chart A

Capital utilisation under the normative versus the economic perspective



24 The ICAAP data (internally determined economic risks and available internal capital figures) are collected from banks as of the reference date of the fourth quarter of 2018; based on the extended sample of SIs.

25 See the legend in the chart "Internal capital utilisation ratio" (which is derived as the ratio of sum of economic risks minus inter-risks diversification effects to available internal capital).

26 See the legend in the chart "Pillar 1 own funds utilisation ratio" (which is derived as the ratio of Pillar 1 requirements to available own funds).

27 See the legend in the chart "TSCR own funds utilisation ratio" (which is derived as the ratio of Pillar 1 requirements plus P2R to available own funds).

28 Note that this analysis focuses on the "hard" capital requirements, i.e. the TSCR. The picture could look different if the "softer" instruments of CRD buffers and Pillar 2 capital guidance (P2G) were to be factored in

The heterogeneity between capital utilisation rates under the two ICAAP perspectives shows that in terms of managing capital adequacy, managing it under just one perspective does not generally ensure capital adequacy from the other perspective. Therefore, while mutual information between the perspectives is important to strengthen each one of them, it does not mean that either one of them can generally be disregarded in decision-making. Experience shows that either perspective alone can threaten the continuity of banks, thus decisions with a material impact should be taken with due consideration of their implications for capital adequacy under both perspectives[29]. Against this background, it is a source of concern that the role of the economic perspective in decision-making is underdeveloped, not just in strategic capital management but in banks' management frameworks overall (see Chapter 2.2 for details).

2.3.2.4 Observed good practices

A number of banks have implemented processes and governance structures that allow them to systematically monitor, discuss and prioritise upcoming regulatory changes.

With regard to mutual information between the economic and normative perspectives, a good observed practice is that of implementing processes to comprehensively analyse the potential impact of economic risks under the normative perspective. This involves taking into account both qualitative considerations and quantitative impact analyses, as well as providing clear conclusions as to how the outcomes of the analysis are considered under the normative view.

Providing full transparency regarding (potential) management actions considered in the capital planning and stress-testing is also considered to be good practice. This includes, for example: (i) a list of the different (possible) management actions and justifications for when they will be used; (ii) the quantitative impact of the single actions under the different scenarios and perspectives; and (iii) the results presented both without and with consideration of those management actions and a clear statement as to which actions are supposed to be implemented and when.

Another good practice was seen in one bank that presented a table in its CAS that showed, in a transparent manner and for each economic perspective risk type, how and to what extent it impacted the Pillar 1 capital projections under each of its baseline and adverse normative perspective scenarios separately. Another observed good practice in this context is to consider, among other things, what impact the scenarios and other assumptions (e.g. business growth, dividend policy, tax rates) used under the normative perspective projections would have on economic capital adequacy and, if needed from the economic perspective, to adjust management actions accordingly.

[29] See, for example, the ECB Guide to the ICAAP, Principle 2 (ii) and (v) and Principle 3 (i) and (iv).

2.3.3 Conclusions regarding ICAAP perspectives

While some of the key features of the ICAAP perspectives are implemented by all banks, there is much room for improvement under both perspectives. For example, a clear description of the general concepts and objectives of the two perspectives that could guide the implementation of all other ICAAP-related aspects is often lacking under both perspectives. Not surprisingly, the economic perspective is even less developed at many banks. In fact almost half of the banks do not even have an elaborated economic perspective, albeit this is a clear expectation of the ECB since January 2016[30].

A large number of banks are expected to rectify these identified deficiencies, as they pose a threat to their continuity[31]. Past experience (e.g. during the recent financial crisis) has shown that the trust of investors, depositors and counter-parties in a bank depends not just on Pillar 1 ratios but also on their perception of the real economic value and risks.[32] While it is positive that the use of gone concern approaches has decreased over the past few years, a number of banks are still either not clear about their economic perspective approaches or they even continue to follow a gone concern approach, which is not suitable for supporting the banks' continuity.[33]

Another area in many banks' ICAAPs that requires attention is the mutual information between the economic and the normative perspective. In this area, at most banks, the comprehensive knowledge of economic risks and hidden losses/reserves which is expected to be acquired under the economic perspective is not systematically used to inform the normative perspective. Conversely, the normative perspective scenarios are largely not used to inform the economic perspective. These silo approaches mean that important information that is available within the bank is not systematically exploited and, thus, business and risk management decisions are not duly informed or triggered by two cross-fertilising perspectives.

Room for improvement has also been identified in regard to setting internal capital thresholds. All banks set these thresholds under the normative perspective (in the form of management buffers), however, only half of the banks do so under the economic perspective. Under both perspectives, these internal capital thresholds are continue to be largely set based on managers' intuition, rather than on a thorough assessment of the aspects that are relevant for a bank to sustainably follow its business model. Thus, for many banks, it is doubtful whether they are in a position to effectively manage their capital ratios towards sustainable levels.

As for capital planning, it has become standard at all banks to manage regulatory capital ratios over a capital planning horizon of three to five years.

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30 In January 2016, the first set of ECB ICAAP expectations was published in Annex A to a letter from Daniele Nouy to the banking industry.

31 See, for example, the ECB Guide to the ICAAP, Principle 3 (i) and (iv) and paragraphs 51 and 52.

32 Many banks became distressed in the past even though their Pillar 1 ratios were clearly above the required levels.

33 See also the ECB Guide to the ICAAP, paragraph 39.

Weaknesses were identified in the number (see Principle 7, Chart 37) and severity levels (see Principle 7, Chart 39) of adverse scenarios and many banks do not systematically consider upcoming changes in the legal, accounting or regulatory frameworks in their capital planning. These issues under the normative perspective are paralleled and exacerbated by the fact that the majority of banks do not systematically assess their economic capital adequacy in a forward-looking manner over the medium-term.

To conclude, the observed weaknesses in banks' forward-looking capital management under both perspectives raise concerns about the ability of many banks to take well-informed management decisions in a timely manner and with due consideration of sustainable capital levels as well as of the impacts of their decisions on and potential future developments in capital adequacy from both perspectives.

2.4 Principle 4 – Risk identification

2.4.1 Supervisory expectations and focal points of the assessment

Principle 4 of the ICAAP Guide

"The institution is responsible for implementing a regular process for identifying all material risks it is or might be exposed to under the economic and normative perspectives. […] Taking a comprehensive approach, including all relevant legal entities, business lines and exposures, the institution is expected to identify at least annually risks that are material, using its own internal definition of materiality. This risk identification process is expected to result in a comprehensive internal risk inventory. […], the institution is expected to consider […] any risks, and any concentrations within and between those risks, that may arise from pursuing its strategies or from relevant changes in its operating environment. […] The risk identification process is expected to follow a "gross approach", i.e. without taking into account specific techniques designed to mitigate the underlying risks. […] When determining its internal risk inventory, the institution is responsible for defining its own internal risk taxonomy. […] In addition to its current risks, the institution is expected to consider in its forward-looking capital adequacy assessments any risks […]."

In order to ensure a comprehensive and up-to-date view of all material risks the bank is or might be exposed to, a bank's internal risk inventory should be regularly updated in a forward-looking manner, following a clear process, an elaborated materiality concept and a risk taxonomy that allows for the most effective management of its risks. Therefore, this chapter focuses on how risk identification processes are implemented in banks and which materiality concepts and risk taxonomies are used.

2.4.2 Analysis of ICAAP practices

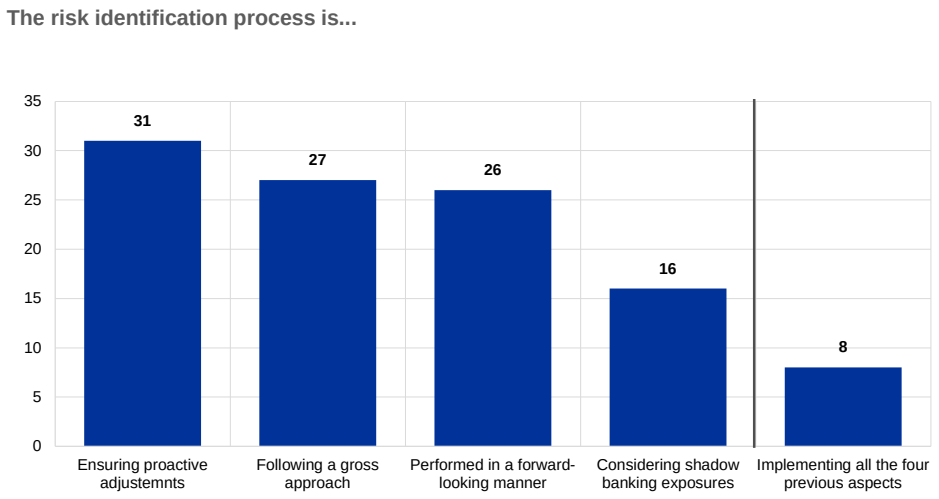
2.4.2.1 Risk identification process

All banks in the sample regularly identify their capital-related risks. Predominantly, banks perform this process on an annual basis; a few banks do it bi-annually or quarterly. However, one in three banks has no elaborated process in place for identifying risks in a forward-looking manner at all. One in five banks does not systematically assess risks in a proactive manner, for example before taking decisions such as launching new products, entering new markets, etc. Over half of the banks do not have a process in place for identifying risks stemming from exposures to shadow banking entities (see Chart 19).

Around two-thirds of the banks follow a gross approach[34] in their risk identification, in line with ECB expectations, meaning that they look at risks without considering risk mitigating factors. This also effectively means that the other one-third of banks does not follow a pure gross approach. Looking at these four aspects in conjunction, the analysis revealed that only one in five banks identifies its risk in a forward-looking and proactive manner, systematically considers shadow banking exposures and at the same time follows a gross approach. All others, meaning the vast majority of banks, do not have well-elaborated approaches for at least one of these aspects (see Chart 19).

Chart 19

Key features of banks' risk identification processes



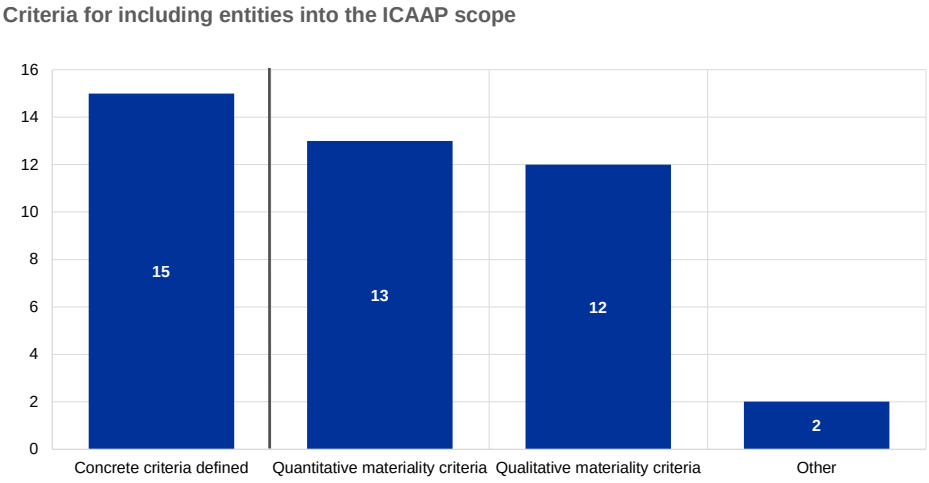
[34] See paragraph 61 and example 4.2 in the ECB Guide to the ICAAP for an explanation of the "gross approach".

2.4.2.2 Materiality concepts and risk taxonomies

As for the ICAAP scope, the majority of banks include participations and other connected entities in their risk identification processes. However, Chart 20 shows that less than half of these banks select the entities they include in their ICAAPs on the basis of materiality criteria, most of them are based on both qualitative and quantitative criteria.

Chart 20

Materiality concept for including entities in the ICAAP



With regard to the materiality of risk types (see Chart 21), the use of elaborated materiality concepts is more frequent under the economic perspective than under the normative perspective, both with regard to qualitative and quantitative criteria. However, it is worth noting that almost one-half of the banks do not have an elaborated materiality concept under the normative perspective, whereas under the economic perspective, this is the case for one-third of the banks.

Chart 21

Risk materiality concepts banks use in their ICAAPs

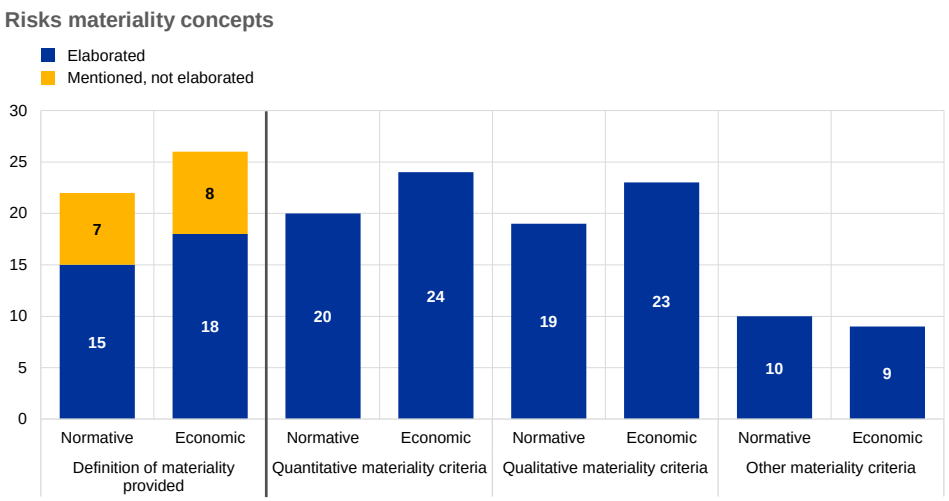


Table 1 shows the number of sub-risk types that banks consider to be material. It is very clear that the level of granularity of banks' internal risk taxonomies is heterogeneous, be it due to different individual risk profiles of the banks or due to the different risk taxonomy approaches used. Typically[35], the number of risks and sub-risks considered to be material for operational risk, for example, varies between one and fourteen. For IRRBB, this range is much smaller (one to five categories).

For "other" risks, i.e. risks that are considered by banks not to be part of Pillar 1 risks or IRRBB, the number ranges typically from one to ten risks, with a maximum of twelve. It should be mentioned that banks do not usually quantify all sub-risks they consider to be material separately, but rather combine sub-risks within broader risk types. For operational risk, for example, banks typically quantify just one to five sub-risks separately, while they consider one to fourteen sub-risks to be material. Overall, banks identify, on average, 29 (sub-) risk categories as being material and they quantify 11 risks separately.

[35] Note that "typically" refers to the banks between the 10th and the 90th percentile. Figures are presented as such to show the usual range observed, eliminating potential outliers. Please also note that the ICAAP templates underlying this analysis are subject to data quality issues (see Chapter 2.8.2.1 for further details).

Table 1

Granularity of ICAAP risk taxonomies: number of risk subcategories that are considered to be material and quantified either separately or as part of broader risk types

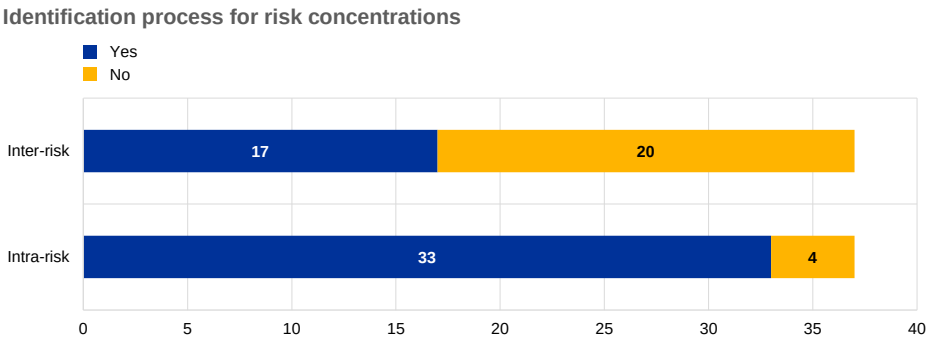
Number of risk sub-categories considered as material	MIN	10% Percentile	Average	90% Percentile	MAX
Credit risk	1	4	8	11	15
Market risk	0	2	6	10	12
Operational risk	1	1	7	14	15
IRRBB	0	1	3	5	8
Other risks	0	1	6	10	14

Note: This table covers the extended sample of SIs that delivered ICAAP templates which are collected on an annual basis from banks as part of the ECB's regular data collection. Please also note that these ICAAP templates are subject to severe data quality issues (see Chapter 2.8 on data quality for further details).

Chart 22 shows that most banks in the sample take into consideration risk concentration within risk types. However, it also reveals that about half of the banks do not consider risk concentrations between risk types.

Chart 22

Processes for identifying intra- and inter-risk concentrations



Box 2

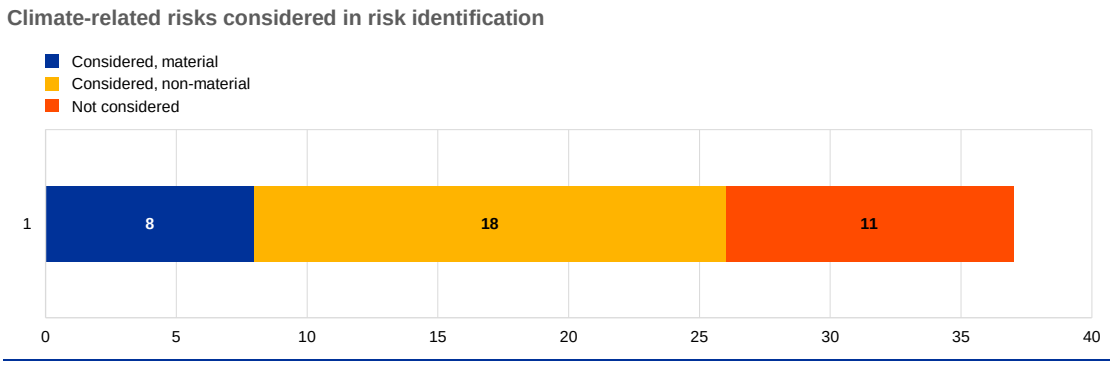
Deep dive on climate-related risk

Climate-related risks are considered to be a key risk driver for the euro area banking sector.[36] Banks' practices for considering these in their risk management processes are barely established and heterogeneous. Chart A shows that almost three out of four banks consider this risk type in their risk identification process. However, just one-third of those banks concludes that such risks are material for them at this stage; one-half of the banks also mentions them in their CASs. The criteria used for the materiality assessment are not well elaborated and when concrete criteria are used, these are mostly of a qualitative nature.

[36] See: ECB Banking Supervision: Risk Assessment for 2019 and the ECB Guide on climate-related and environmental risks.

Chart A

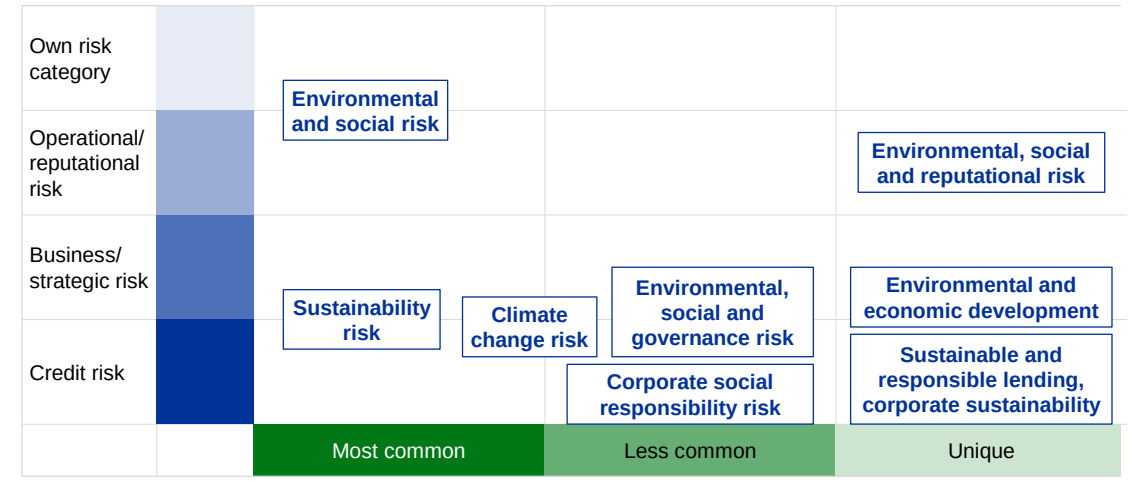
Risk identification and materiality of climate-related risks



The risk taxonomies used by banks are heterogeneous (see Figure A). Usually, banks bundle climate-related risks with other risks, with “environmental and social risk” and “sustainability risk” being the most common categories. Mostly, banks include climate-related risks in other risk categories, most frequently in credit or operational/reputational risk. Only a few banks treat climate-related risk as a separate risk category.

Figure A

Climate-related risks: observed clustering with other risks in risk taxonomies and inclusion in risk types



Notes: The location of rectangles is based on the most frequent inclusion of specific terminology in a certain risk category and the observed frequency for doing so. The size of rectangles has no meaning. The analysis of climate-related risk taxonomies reflects the practices of the 26 banks that do consider climate-related risks in their risk identification processes.

One in five banks uses climate-related indicators, for example as part of a broader sustainable finance strategy (e.g. limits for total carbon intensity (gCO2/kWH) or the carbon dioxide (CO2) portfolio footprint, target volumes for finance linked to green/social bonds). Based on such indicators, one in five banks has implemented some mitigating actions such as “negative screening”[37] in order to

[37] Negative screening means the exclusion of investing in companies, sectors, countries, based on pre-selected criteria, tailored to a specific approach (e.g. climate-specific, environmental-specific or a broader approach, for example, “environmental, social and governance”).

limit their exposure to climate-related risks, in other words they try to avoid certain credit exposures that bear the risk of having a negative climate-related impact on banks in the future. Only a few banks include climate-related risks in their ICAAP stress-testing programmes.

Conclusion regarding climate-related risks

Given the uncertainty surrounding the timing of climate change and its negative consequences, as well as the potentially far-reaching impact in breadth and magnitude along several transmission channels[38] via which climate-related risks may impact banks' capital adequacy, it is rather concerning that almost one-third of the banks has not even considered these risks in their risk identification processes at all. The vast majority of banks have not yet established internal processes that allow them to systematically identify and manage climate-related risks. Therefore, these banks continue to take uninformed business decisions that expose them to risks that could have material negative consequences for capital adequacy in the medium to long term. Banks are encouraged to quickly adopt a forward-looking, comprehensive and strategic approach to managing these risks.[39]

2.4.2.3 Observed good practices

One observed good practice for risk identification is to explicitly include a forward-looking assessment in the risk identification process and to clearly outline its impact. The forward-looking assessment is conducted regularly (particularly before deciding on changes to its business strategy) to identify potential threats that could impact the feasibility of its business plan or its strategic objectives.

Another bank was observed to have implemented, in addition to its annual risk identification, a process for re-assessing the materiality of risks on a quarterly basis in the light of evolving changes in its business activities and operating environment. This includes, in particular, a re-assessment of the materiality of risks that it had previously not identified or identified as being exposed to, however not (yet) to a material extent.

Another good practice that was observed was structured combination of a top-down and bottom-up approach in the risk identification process, such that there is cooperation between group and local risk management functions. The first stage consists of a group risk committee that develops a global risk driver map, which comprehensively identifies and assesses the set of risk drivers from a group perspective, based on their severity and time to impact. After that, the local risk management function of the group entities assess, at the second stage, the extent to which these global drivers are relevant for their perimeter, how they might materialise into risk events and what other, exclusively locally relevant risk drivers it is exposed to. At the final stage, it determines which risks from this broad list are material from a local perspective and includes them in its local ICAAP risk inventory.

[38] See the Network for Greening the Financial System: A call for action: Climate change as a source of financial risk, April 2019.

[39] See, for example, the ICAAP Guide, Principle 4 (ii), paragraphs 39 and 60 and footnote 22 and ECB Banking Supervision: Risk Assessment for 2019, ECB Guide on climate-related and environmental risks (currently under consultation).

2.4.3 Conclusions regarding risk identification

Processes for the regular identification of risks appear to be established and performed at adequate frequencies. However, many banks should improve their forward-looking and pro-active risk identification and follow the "gross approach"[40]. Otherwise, these banks risk being taken by surprise by either ineffective risk mitigation or by evolving risks and they may take business decisions that expose them to unknown or unintended risks. With regard to risks stemming from shadow banking entities, many banks should improve their processes in order to be able to systematically identify and to adequately manage those risks with their very specific nature.

There is clear room for improvement with regard to bank's materiality concepts, both with regard to the decision on which entities to include in the ICAAP and, in particular, with regard to the decision on the materiality of risks. In many cases, more elaborated materiality concepts, including concrete materiality criteria are needed to ensure a structured and consistent identification of material risks.

The observed large heterogeneity in banks' internal risk taxonomies does not per se raise concerns given that these differences result from differences in banks' risk profiles and their processes in order to be able to systematically identify and adequately manage those risks with their very specific nature. Incomprehensive or non-systematic risk identification practices, however, pose a threat to banks' continuity and should be addressed.

Starting with risk identification processes, many banks also need to overcome their current silo approaches and start identifying and managing concentrations, particularly across risks. The way things stand, those banks might unconsciously expose themselves to identical or correlated risk drivers that may simultaneously impact them via different risk types, thereby threatening their continuity to a far greater extent than they are aware.

2.5 Principle 5 – Internal capital

2.5.1 Supervisory expectations and focal points of the assessment

Principle 5 of the ICAAP Guide

"The institution is expected to define, assess and maintain internal capital under the economic perspective. […] Internal capital is expected to be of sound quality, and determined in a prudent and conservative manner. The institution is expected to show clearly, assuming the continuity of its operations, how its internal capital is available to cover risks. […] The institution could use, for example, a fully-fledged net present value model, or use the regulatory own funds as a starting point.

[40] See, for example, the ICAAP Guide, paragraphs 60 and 61.

[…] If the institution uses the regulatory own funds as a starting point for its internal capital definition, it is expected that a large part of its internal capital components will be expressed in Common Equity Tier 1 (CET1) own funds. In addition, certain adjustments are conceptually necessary to arrive at the capital that is in line with the economic value concept underlying the economic perspective. […] The definition of internal capital is expected to follow the economic value considerations."

In order to ensure that adequate internal capital is available to absorb losses and cover risks under the economic perspective, it is crucial that internal capital is clearly defined and determined. Irrespective of the starting point used for its definition, banks should base their internal capital on continuity assumptions and economic value considerations. This chapter focuses on these key aspects.

2.5.2 Analysis of ICAAP practices

2.5.2.1 Internal capital definition approaches

Less than half of the banks have clearly defined internal capital under the economic perspective in their ICAAPs. For most of the banks the definition is not elaborated, and for one bank it is even missing. Chart 23 shows that more than two-thirds of the banks use regulatory own funds as a starting point for their internal capital definition and almost one-third of the banks uses accounting values. Not one bank in the sample uses a pure net present value approach.

Chart 23

Internal capital definition: Elaboration level and starting points

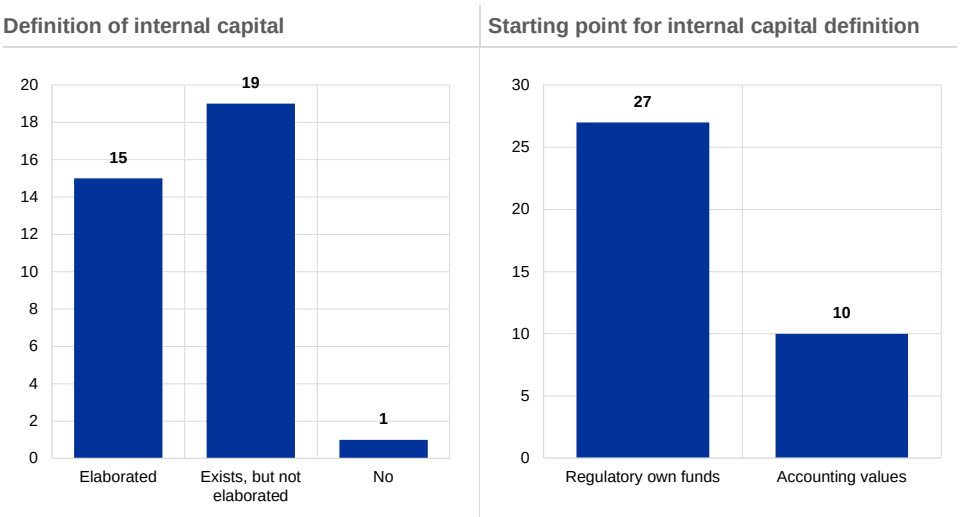


Chart 24 compares the levels of regulatory own funds to internal capital. Looking at the relationship between internal capital and regulatory CET1, most banks have internal capital levels at or above CET1. This relationship is heterogeneous across

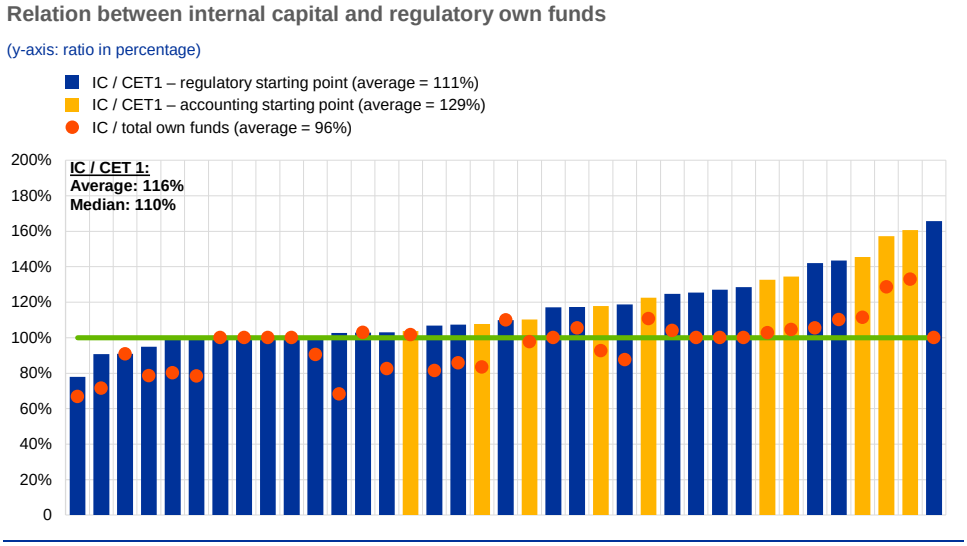
banks, ranging from 78% to 166%. On average, internal capital is 16% higher than CET1. When comparing internal capital to total regulatory own funds, the difference is less, internal capital is, on average, 4% lower.

On the right-hand side of the chart, there are banks for which internal capital is much higher than CET1. Potential underlying reasons for this can be, for example, that the internal capital includes AT1 and T2 instruments, that there are different perimeters between the internal and the prudential view, or that some banks claim to have significant amounts of hidden reserves.

The ratios presented in the chart are further differentiated by the starting point (own funds – dark blue; accounting values – orange) used for defining internal capital. Banks that use accounting figures as a starting point tend to have higher internal capital levels compared to CET1 levels (average: 129%) than those that use regulatory own funds as a starting point (average: 111%). This is in line with the fact that prudential filters, deductions and other adjustments usually lead to own funds figures that are lower than balance sheet capital figures.

Chart 24

Comparison of internal and regulatory capital levels, differentiated by starting points used for internal capital definition



Note: IC - internal capital.

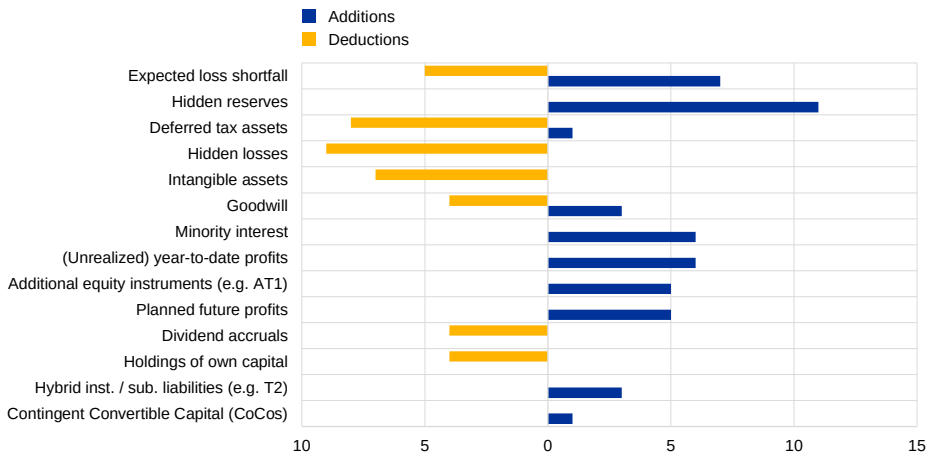
Chart 25 shows the most frequent adjustments banks make to the starting points (e.g. CET1, paid-in equity) used for determining internal capital.[41] The most frequent adjustments observed are the addition of hidden reserves (one in three banks) and the deduction of hidden losses (one in four banks), followed by the addition related to the

[41] Please note that this is a mere description of the facts (additions and deductions made by banks) observed, irrespective of the ECB's evaluation of the practices. For example, the ICAAP Guide lists some examples for general deductible items such as T2 instruments, deferred tax assets (DTAs), hidden losses and minority interests. However, it is also worth noting that the ICAAP is a bank-internal process. It does not follow external provisions on the internal capital composition. For example, Pillar 1 prudential filters are not binding for the ICAAP but rather internal capital components are expected to be assessed by the bank on a case-by-case basis.

Pillar 1 expected shortfall adjustments, as well as the deduction of deferred tax assets and additions related to the Pillar 1 expected shortfall adjustments (around one in five banks, in each case). One in five bank uses CET1 or total own funds as internal capital without any adjustments.

Chart 25

Illustrative additions to and deductions from starting points used when determining internal capital



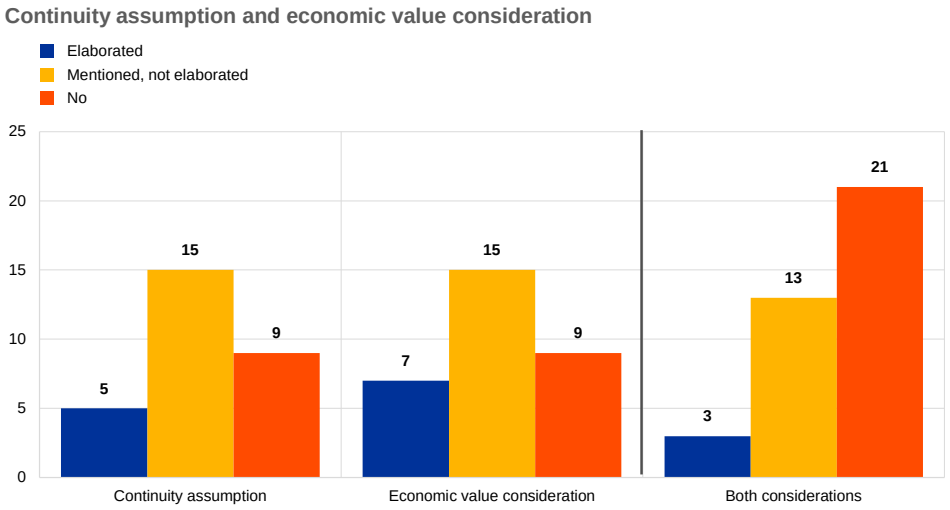
Note: The chart refers to all 37 banks in the sample, irrespective of the starting points used for internal capital determination.

2.5.2.2 Continuity assumption and economic value consideration

In the chapter on Principle 3, it was analysed whether banks had implemented the economic perspective in broader terms. This chapter focuses on whether banks apply the two key features of the economic ICAAP perspective when determining their internal capital, namely the assumption of the bank's continuity and economic value considerations. Chart 26 illustrates how banks have considered these two criteria for assessing whether components they intend to use as internal capital can absorb economic losses under the assumption of continuity. Apparently, for each criteria, only around half of the banks consider them at all when deciding on the inclusion of the capital components and just a few banks do so in an elaborated manner. Taking both criteria together, only one in ten banks elaborates on both aspects when defining their internal capital. Moreover, almost half of the banks do not refer at all to the continuity assumption in their internal capital definition and the same is true for economic value considerations.

Chart 26

Consideration of continuity assumptions and economic value considerations in internal capital definition



Around half of the banks include AT1 in their internal capital, but only one in ten of these banks provides a justification for including these instruments and virtually none of these elaborates on why including AT1 instruments is consistent with the continuity assumption and economic value considerations. More specifically, these banks do not assess and justify how AT1 trigger levels are commensurate with the continuity assumption underlying the ICAAP.

This includes the consideration of the ability to maintain regulatory and internal capital levels, on an ongoing basis, that allow them to sustainably follow their business model, taking into account potential negative signalling effects from non-servicing or even converting AT1 instruments. Furthermore, banks do not assess and demonstrate how the regulatory AT1 instrument can be considered as internal capital under the economic perspective, which means that these instruments would need to be risk-bearing and loss-absorbing from an economic point of view.

Finally, around one-third of the banks include T2 instruments in their internal capital, but only one-third of those which include these instruments provide some kind of justification, the explanation for which is, however, not well elaborated in any case.

2.5.2.3 Observed good practices

With regard to the definition of internal capital, a good observed practice is that a bank clearly defines the capital components it considers eligible to cover risks under the economic perspective, subject to an assessment of potential capital components following clear predefined criteria. These criteria include: (i) ability to absorb losses under the assumption of business continuity; (ii) marketability in a crisis scenario (i.e. possibility to sell assets without material discounts); and (iii) consistency with risk quantification under the economic perspective (i.e. economic value considerations as

the common guiding principle). In addition, the bank monitors best practices used by other banks so as to continuously challenge its own approach.

With regard to how economic value considerations are taken into account in the definition of internal capital, it is also good practice to systematically and granularly analyse the need for economic value adjustments to the banks' assets and liabilities.

2.5.3 Conclusions regarding internal capital

Virtually all banks have a definition of internal capital in place. However, over half of the banks have not elaborated on this definition.

The relationship between internal and regulatory capital levels is heterogeneous across banks. While such differences generally do not come as a surprise[42], attention has been drawn to the observation that – compared to CET1 own funds – internal capital is in most cases and on average noticeably larger, particularly when accounting values are taken as the starting point.[43]

How to judge this depends on the individual situation and on the thoroughness of the bank's case-by-case assessment of the capital components included.[44] Material hidden reserves or a larger ICAAP scope compared to prudential consolidation[45] could be a reasonable justification for this phenomenon. However, there could be other, unwarranted underlying reasons for this, such as an unjustified inclusion of minority interests, AT1 or T2 instruments. The BIS observed a deterioration in price-to-book values of bank's equity over the past years[46], which seems to indicate that, in some cases, internal capital levels might need to be lower than regulatory capital levels, which is a point of attention, as this analysis shows that overall according to the banks' view the exact opposite is the case. This observation supports the general finding of this analysis, which is that material improvements are needed in terms of the two key features under the economic ICAAP perspective – continuity assumptions and economic value considerations. These features need to be duly considered and applied when deciding, case-by-case, whether and to what extent each capital component may be considered as internal capital. This also refers, for example, to the inclusion of T2 instruments in internal capital or the inclusion of AT1 instruments without assessing to what extent they are able to generate internal capital under the economic perspective. While many T2 instruments are, by nature, not loss-absorbing following the continuity assumption, AT1 instruments (such as e.g. CoCos[47]) are also generally considered to be problematic.[48] As things stand,

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42 See the ECB Guide to the ICAAP, paragraph 68.

43 The latter finding reflects the fact that for those banks the starting point is usually higher because the prudential filters used to transform balance sheet figures to own funds are not being applied.

44 This should also be read in conjunction with footnote 41.

45 Note that a different perimeter does not only mean higher internal capital compared to the prudential perimeter, but also more risk stemming from the entities that have been included.

46 See Graph 1 in "The ABCs of bank PBRs: What drives bank price-to-book ratios?", BIS Quarterly Review, March 2018, Bank for International Settlements.

47 Contingent convertible bonds.

there are clear deficiencies in terms of how banks justify the inclusion of capital components in their internal capital.

This unjustified inclusion of capital components is a source of concern, because there is the risk that the level of internal capital could be over-estimated and, therefore that economic capital adequacy could be misjudged and consequently not well managed.

2.6 Principle 6 – ICAAP risk quantification methodologies

2.6.1 Supervisory expectations and focal points of the assessment

Principle 6 of the ICAAP Guide

"The institution is expected to implement risk quantification methodologies that are tailored to its individual circumstances, […]. The risk quantification methodologies and assumptions […] are expected to be robust, sufficiently stable, risk sensitive, and conservative enough to quantify losses that occur rarely. […] Uncertainties arising from risk quantification methodologies are expected to be addressed by an increased level of conservatism. […] The institution is expected to take a prudent approach whenever assuming risk diversification effects […] and be cautious when applying inter-risk diversification in its ICAAP. The institution is expected to be fully transparent about assumed risk diversification effects and […] ensure that risks are adequately covered by capital, even in times of stress when diversification effects may disappear […]"

Appropriate risk quantification methodologies and parameters are crucial for ensuring banks' adequate capital coverage and sound management of their risks. Therefore, this chapter focuses on the risk quantification methodologies used by the banks, the underlying key assumptions and the levels of risk compared to Pillar 1.

2.6.2 Analysis of ICAAP practices

2.6.2.1 Risk quantification methodologies

Despite the fact that also other risks can be highly material for banks, the scope of risks analysed in this section is limited to those which are considered to be very relevant for many banks and for which regulatory quantification methodologies exist

[48] See also comment 208 in the Responses to the public consultation on the draft ECB Guides to the internal capital and liquidity adequacy assessment processes (ICAAP and ILAAP).

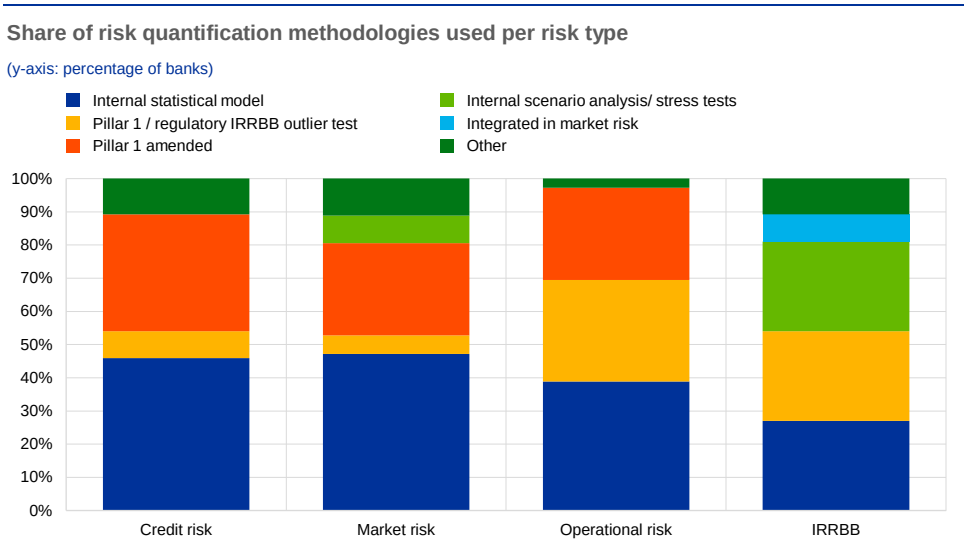
(Pillar 1 risks and IRRBB).[49] With regard to the methodologies used for quantifying those risks under the economic perspective, Chart 27 shows that for Pillar 1 risks, banks use predominantly (mostly amended) regulatory approaches and non-Pillar 1 statistical models. For IRRBB, the majority of banks use scenario analysis and many banks rely on statistical models.

For operational risk and IRRBB, one-third of the banks use Pillar 1 and supervisory outlier test figures, respectively, without any amendments; this is much less common for market and credit risk. Overall, almost one-half of the banks use Pillar 1 and supervisory IRRBB figures for at least one risk type, also under the economic perspective, and one in seven banks uses standardised Pillar 1 methodologies for at least one risk type.

Whereas Pillar 1 risks are always quantified as separate risk categories, approximately one in ten banks integrates IRRBB risk in market risk.

Chart 27

Risk quantification methodologies used under the economic perspective for Pillar 1 risks and IRRBB

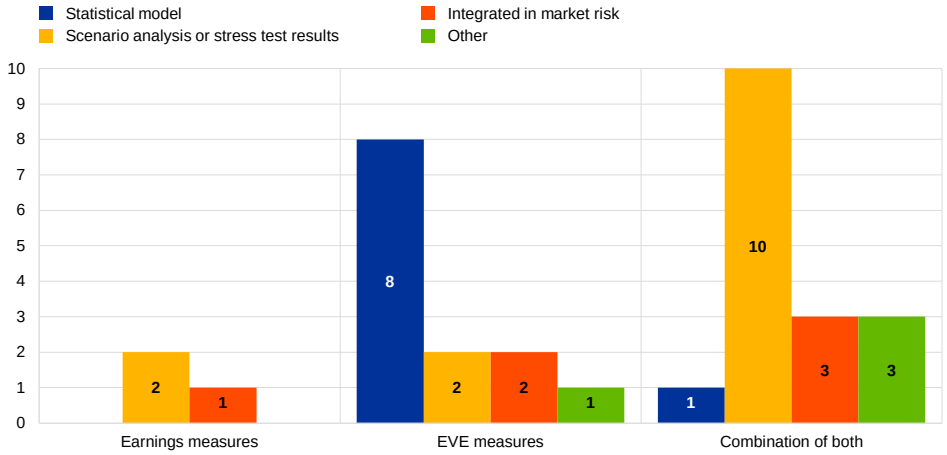


For IRRBB, Chart 28 also shows that around one-quarter of the banks in the sample use statistical models that focus on economic value of equity (EVE) measures. Overall, one-half of the banks use some kind of combination of EVE and earnings measures for determining risk figures under the economic perspective and one in ten banks only quantifies earnings measures.

[49] This decision does of course not imply that other risks such as the credit spread risk may not be material. On the contrary, other risks can be even more relevant for an individual bank. All risks identified as material are expected to be addressed in all parts of the ICAAP.

Chart 28

Measures used for quantifying IRRBB under the economic perspective

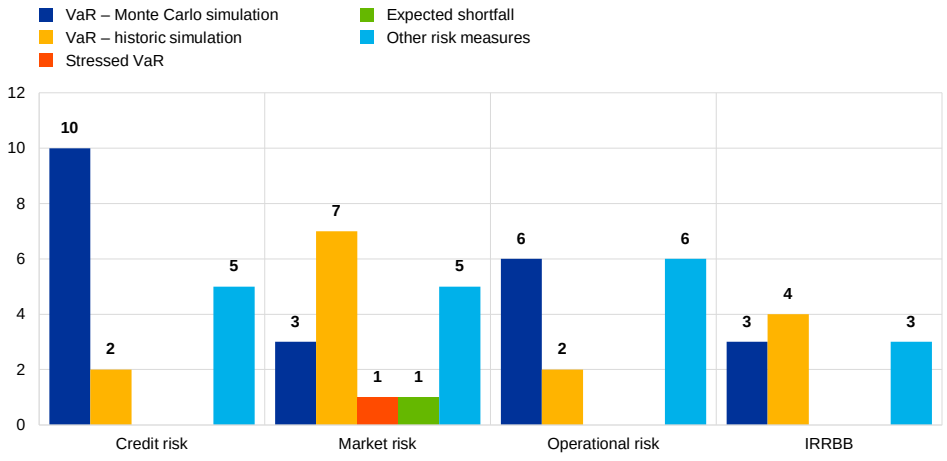


Banks that use amended Pillar 1 risk quantification methodologies for quantifying credit, market and operational risk most commonly use scopes different to those used under Pillar 1. Moreover, approximately one-half of the banks adjust their underlying assumptions and parameters, including the confidence levels that they use in Pillar 1 for credit and market risk, respectively.

As for the statistical models used for quantifying risk, value at risk (VaR) measurement of distributions based on Monte Carlo simulations is the most commonly used approach for credit and operational risk, while for market risk, VaR methods based on historical simulations are more common.

Chart 29

Frequency of risk measures banks used in internal statistical models, by risk type



G-SIBs mostly use statistical models for the quantification of credit and market risk, rely more on Pillar 1 Advanced measurement approach (AMA) models for quantifying operational risk, and either include IRRBB as part of market risk or use scenario

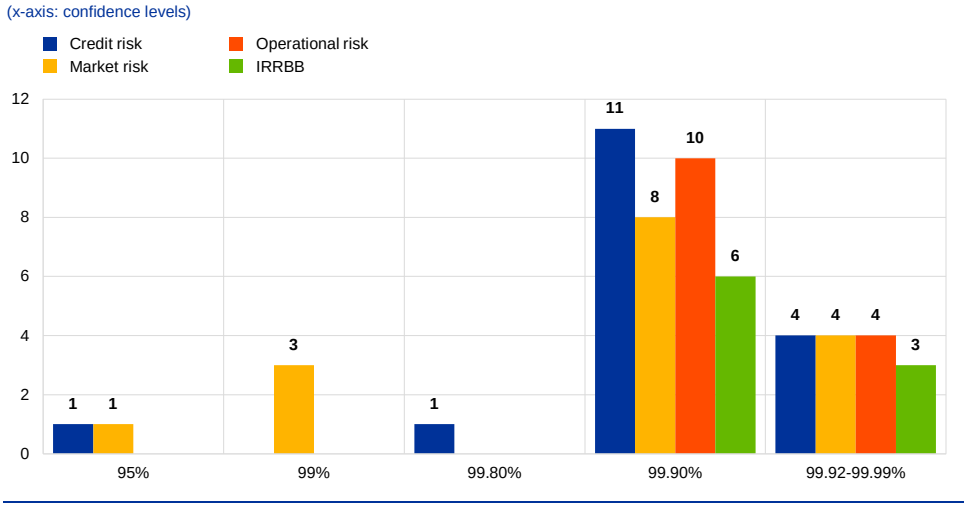
analysis for IRRBB quantification. On average, risks quantified by G-SIBs under their economic perspective are 11% lower than total Pillar 1 own funds requirements.

One in four banks relies on vendor models for their risk quantification and they do this most commonly for credit risk. However, not all of these banks demonstrate model ownership in their ICAAP documentation.

Confidence levels used for statistical models seem to be more homogeneous compared to 2015. While only a few banks have recently changed their confidence levels, values of 99.9% and above are meanwhile an established standard amongst SIs for the ICAAP, with 99.9% now being most commonly used across risks. Very few banks use lower levels than this, down to 95.0%, and quite a number of banks use higher values than 99.9% – ranging up to as far as 99.99%[50].

Chart 30

Confidence levels used in statistical models, by risk type

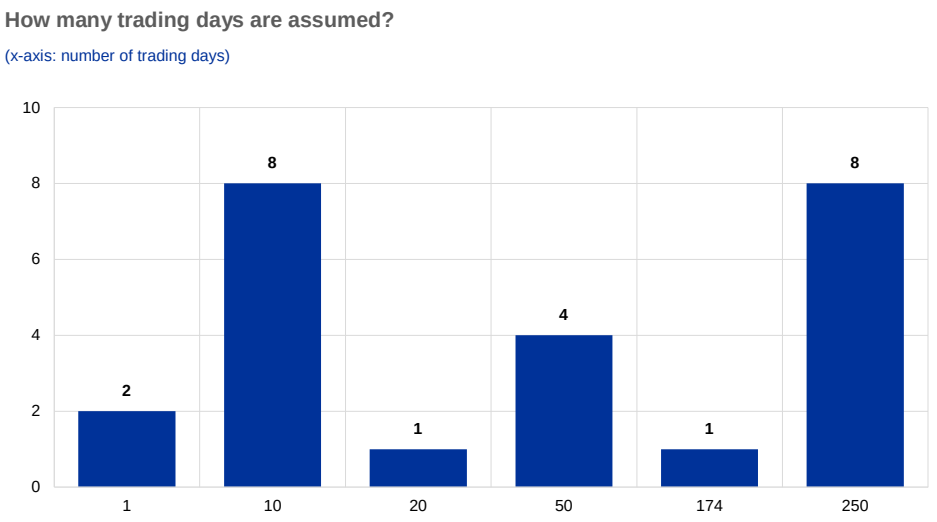


For market risk, the holding period is another modelling assumption made by banks, which in most cases is lower than 250 trading days. Overall, ten days and 250 days are the most frequent assumptions. A couple of banks apply a combination of a relatively short holding period (less than 250 days) and a less conservative confidence interval of 99%.

[50] 99.99% was observed in one case, each for credit risk, operational risk and IRRBB.

Chart 31

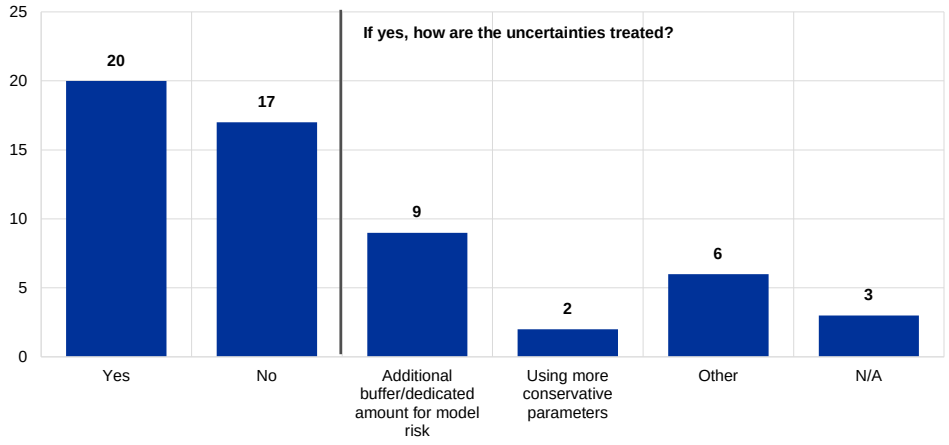
Holding periods used for market risk quantification



Slightly more than half of the banks explicitly address the uncertainties surrounding risk quantification methodologies by increasing their level of conservatism. Among them, almost half of them do so by allocating an additional buffer for model risk, while only a few do so by explicitly using more conservative parameters.

Chart 32

Treatment of uncertainties in risk quantification



One in four banks in the sample applies inter-risk diversification effects.[51] However, one-half of the banks does not subject its inter-risk diversification assumptions to

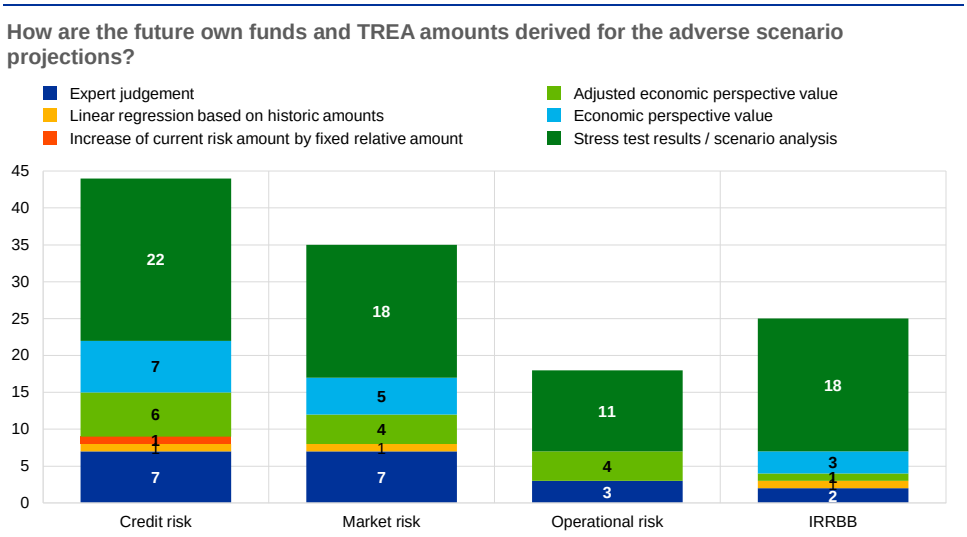
[51] See the green-shaded parts of the bars in Box 1- Chart A for an overview of all SIs that apply inter-risk diversification effects.

stress in its stress-testing scenarios and one in three banks does not transparently report these effects. Among the different risk aggregation methods used, justified expert judgment and copulas lead to the highest average risk reductions. On average, inter-risk diversification reduces the overall risk amount by 12%, with a minimum value of 7% and a maximum value of 21%. In one bank outside the sample of the analysis, the total risk amount without taking inter-risk diversification effects into account was materially higher than the level of internal capital.

As shown in Chart 33, under the normative perspective banks predominantly use stress-testing and scenario analysis for projecting own funds and TREA, for their adverse scenario projections, across Pillar 1 risks and IRRBB categories. A few banks also use expert judgements. Around one in five of the projections under the normative perspective is based on economic perspective risk figures, either directly or after adjustments.

Chart 33

Approaches used for projecting capital figures under adverse normative perspective scenarios



Note: For credit, market and operational risk, future own funds ratios are impacted through changes in own funds levels and TREA, whereas for IRRBB, the chart refers exclusively to the projected impact of the risk on future own funds levels, as there is no Pillar 1 TREA for IRRBB. Figures may not add up to 37 because multiple answers selection was possible.

Box 3

Excursus: quantitative analysis of ICAAP risk figures

Table A shows the relative shares of risk, compared to overall risk amounts. It is obvious that the level of heterogeneity across banks is much greater for the ICAAP than for Pillar 1 (values in brackets). The typical[52] share of credit risk, for example, ranges from 65% to 87% under Pillar 1 versus 35% and 84% in the ICAAP. The figures also reveal that banks on average consider credit risk to be much less dominant than the Pillar 1 regulators do (60% versus 78%) and furthermore that banks are of the opinion that Pillar 1 requirements massively underestimate market risk (2% versus 10%). It is worth

[52] "Typical" refers to the range between the 10th and the 90th percentile in order to eliminate outliers.

noting that non-Pillar 1 risks can also play an important role, with IRRBB ranging up to 46% and other non-Pillar 1 risk reaching up to 58% in shares of overall risk amounts in the ICAAP.

Table A

Shares of risks in the ICAAP versus "Pillar 1", including (IRRBB outlier test results)

Risk shares: ICAAP (in brackets: Pillar 1, including IRRBB outlier test)	MIN	10% Percentile	Average	90% Percentile	MAX
Credit risk	4% (42%)	35% (65%)	60% (78%)	84% (87%)	100% (98%)
Market risk	0% (0%)	0% (0%)	10% (2%)	23% (6%)	87% (21%)
Operational risk	0% (0%)	4% (5%)	11% (9%)	15% (15%)	87% (27%)
IRRBB	0% (0%)	0% (2%)	7% (11%)	17% (23%)	46% (48%)
Other risks	0%	0%	12%	28%	58%

Notes: The table captures the extended sample of significant institutions' ICAAP templates, which are subject to severe data quality issues (see Chapter 2.8 on data quality for further details). Please also note that the ratios are calculated as follows: risk amount by category, divided by total risk amount. Despite not being subject to a Pillar 1 TREA requirement, IRRBB was included in the comparison to broaden the scope of the comparison and because it is compatible with the Pillar 1 risk treatment, to a certain extent, as IRRBB is the only non-Pillar 1 risk for which there is a regulatory quantification methodology (in accordance with the supervisory outlier test described in Article 98(5) CRD). For the table, the maximum impact of the six regulatory scenarios was used.

A similar picture emerges when looking at Charts A and B, which show the relationship between ICAAP economic perspective risk figures and Pillar 1 own funds requirements at the overall level and – as an indicative example – they also show this for market risk. At the overall level, ICAAP figures show a large range of relationships between Pillar 1 and ICAAP risk figures, with around one in five banks quantifying Pillar 1 lower than the ICAAP figures and a vast majority quantifying ICAAP figures to be higher than the Pillar 1 requirement, yet to a very different degree. In some cases, banks consider their risks to be two or even three times as high as Pillar 1 requirements. Median and average ICAAP figures for Pillar 1 risks are noticeably higher than respective Pillar 1 requirements. That is true to an even greater extent when looking at the situation for market risk, where banks consider, on average, that their economic perspective risk levels are five times as high as those under Pillar 1. More than one in three banks has more than ten times[53] as high ICAAP figures as those under Pillar 1.

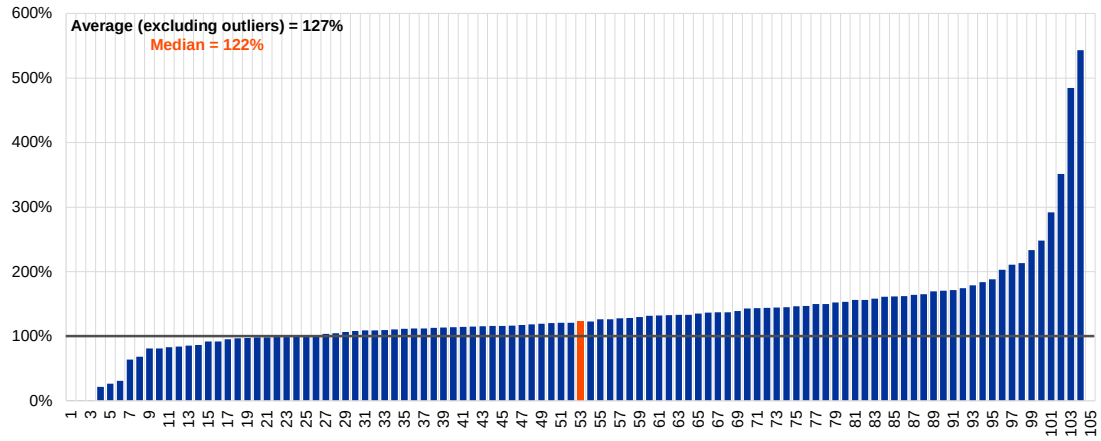
[53] Note that the ratios are influenced by the sometimes very low Pillar 1 market risk figures at banks that have small trading books.

Chart A

Relationship between total ICAAP risk amounts and total Pillar 1 requirements

(ICAAP total risk amount) / (Total pillar 1 capital requirement)

(y-axis: ratio in per cent; x-axis: individual banks)



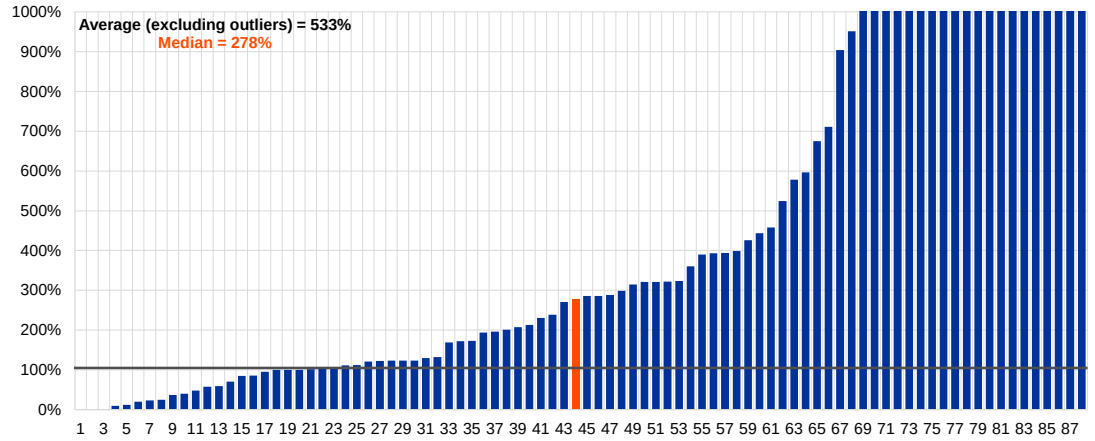
Note: Pillar 1 figures were calculated by multiplying TREA by 8% (total Pillar 1 own funds requirement). The average was calculated excluding outliers (outliers are calculated as the 10th and 90th percentile).

Chart B

Relationship between ICAAP risk amount and Pillar 1 requirements for market risk

(ICAAP market risk figure) / (Pillar 1 market risk requirement)

(y-axis: ratio in per cent; x-axis: individual banks)



Note: The average was calculated excluding outliers (outliers are calculated as the 10th and 90th percentile).

2.6.2.2 Observed good practices

With regard to the risk quantification methodologies, one good practice observed is to maintain an inventory of all ICAAP risk quantification methodologies used, including for risks that are not easy to quantify. Besides a description of the methodological approaches and the parametrisation, the inventory contains information about the validation history as well about imposed limits, limit usage, thresholds, etc. This

provides the management body with a good overview of the level of conservatism applied in risk quantification methodologies in relation to the risk appetite.

2.6.3 Conclusions regarding ICAAP risk quantification methodologies

Overall, for Pillar 1 risks and IRRBB, banks predominantly base their risk quantification methodologies, under the economic perspective, on regulatory approaches and on statistical models.

While most banks use regulatory methodologies with amendments, a number of banks use them without adjustments, and in some cases, they even use very risk-insensitive standardised approaches. This can be an issue when regulatory methodologies used do not properly capture banks' risk profiles, bearing in mind that regulatory methodologies, by nature, cannot ideally capture banks' individually very diverse risk profiles. Moreover, this applies even to those banks using internal Pillar 1 models to quantify their risk, because even those methodologies are based on several assumptions and parameters that are set by regulators[54] and which may not cover all the specificities of banks' individual risk exposures. Irrespective of which methodologies banks use for their risk quantifications, they are, in any case, expected to tailor them towards their individual risk profiles, based on economic value considerations.

Against this background, assuming that the risk quantification methodologies are robust, risk sensitive, as well as sufficiently stable and conservative and conservative enough, it could be interpreted as a positive outcome that many banks exhibit economic perspective figures that are individually very different from Pillar 1 figures and that, on average, the total risk amount in the ICAAP is significantly higher than the total Pillar 1 own funds requirements. However, when JSTs assessed the ICAAP risk quantification methodologies in closer detail in an internal deep dive on risk quantification in 2019, half of the risk quantifications showed material deficiencies. This finding is exacerbated by the data quality issues generally observed and moreover by the fact that one-half of the banks does not systematically ensure that the uncertainty surrounding the accuracy of risk quantifications (model risk) is appropriately addressed by an increased level of conservatism.

While it is acknowledged that the overall level of conservatism in risk quantifications depends on several methodological assumptions and parameters, it is seen as a positive development that one relevant key parameter in that regard, namely the confidence level applied in ICAAP models, has increased overall over the past few years. In that respect, 99.9% has established itself as the minimum standard value. On the other hand, some banks still use inconsistent levels of confidence across risk types or unduly low confidence levels.

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[54] Even internal Pillar 1 models are subject to many non-internal / regulatory parameters such as correlation and granularity assumptions, distribution assumptions, and the risk weight function. All of these externally set parameters are sources for deviations in Pillar 1 capital requirements from the economic reality of individual banks. Moreover, even the internally determined parameters, such as PDs, EADs, and LGDs may not accurately reflect economic risk, because they are based on accounting and regulatory provisions (e.g. for the definition of default).

Another modelling assumption that raises concerns are inadequate holding periods applied to market risk exposures, which in most cases are lower than 250 trading days, with ten days' holding period being the most frequent assumption. While banks are generally free to choose any holding period, periods that are shorter than the general risk horizon imply the far-reaching strategic decision being taken that the bank would close its market risk exposures and not re-open positions until the end of the general risk horizon, once losses, quantified for the holding period, had materialised. Inadequate holding periods, therefore, lead to a blurred view of risks and can pose a threat to economic capital adequacy.

Another issue observed concerns the quantification of IRRBB, where one-half of the banks use either a combination of earnings and EVE measures or a pure earnings concept to quantify their IRRBB under the economic perspective. This is a rather surprising outcome, because the distinction made between interest rate-related effects on the P&L and balance sheet (earnings risk measures) and the impact of interest rate changes on the net present value of assets and liabilities (EVE risk measures) served as a prototype to explain the different natures of the normative and the economic perspectives in the ICAAP Guide.[55]

It is important for banks using vendor models to have full access to the modelling and programming specifications in order to understand what is behind the models and to take full ownership for them. The analysis revealed that in many banks concerned there is room for improvement in this regard.

While banks may, in principle, apply inter-risk diversification effects in their decision-making, they should also ensure that they maintain sufficient internal capital even in times of stress when correlations may change dramatically. As things stand, not all banks treat inter-risk diversification effects in a sound manner, including in stress-testing. This conclusion is to be seen in conjunction with the fact that almost half of the banks do not systematically identify threats stemming from risk concentrations across risk types, including those banks that, on the other hand, claim the benefits from inter-risk diversification effects.

Generally, risk is, by its very nature, a forward-looking concept. Therefore, the risk quantification methodologies are expected to take a forward-looking approach. Whichever risk quantification methodologies banks decide to use, they are expected not to confine their capital adequacy assessments solely to situations that were already observed in the (recent) past, but to take a forward-looking approach under both perspectives. Any risk quantification methodology, such as the widely-used statistical models, is limited by the information that was used to create and feed it. In this respect, and also with regard to consistency with the natures of the two different ICAAP perspectives, with the normative perspective reflecting future regulatory ratios based on balance sheet and P&L developments, as opposed to the economic

[55] "The general reasoning behind this is the same as that set out for IRRBB in the EBA Guidelines on the management of interest rate risk arising from non-trading book activities (EBA/GL/2018/02): "Institutions should measure their exposure to IRRBB in terms of potential changes to both the economic value (EV) and earnings.". See also footnote 33 of the ECB Guide to the ICAAP.

perspective tackling effects following economic value consideration, it is apparent that there is significant room for improvement.

2.7 Principle 7 – Stress-testing

2.7.1 Supervisory expectations and focal points of the assessment

Principle 7 of the ICAAP Guide

"Regular stress-testing is aimed at ensuring capital adequacy in adverse circumstances. […] The ECB expects the institution to perform a tailored and in-depth review of its vulnerabilities, capturing all material risks on an institution-wide basis […] on a yearly basis and more frequently, when necessary, […]. […] the institution is expected to define an adequate stress-testing programme for both normative and economic perspectives. […] The application of severe, but plausible macroeconomic assumptions and a focus on key vulnerabilities are expected to result in a material impact on the institution's internal and regulatory capital, for example with regard to the CET1 ratio. […]

The institution is expected to continuously monitor and identify new threats, […] to assess at least quarterly whether its stress-testing scenarios remain appropriate [...]. The impact of the scenarios is expected to be updated regularly (e.g. quarterly). In the case of material changes, the institution is expected to assess their potential impact on its capital adequacy in the course of the year.

[…] the institution is expected to assume […] developments that are plausible, but as severe from the institution's perspective as any developments that might be observed during a crisis situation […].

[…] ICAAP and ILAAP stress tests are expected to inform each other; […]. […] In addition […], the institution is expected to conduct reverse stress-testing assessments. […]"

In order to ensure capital adequacy even in adverse circumstances, stress-testing scenarios should be targeted to key vulnerabilities of the bank and reflect a high level of severity. In addition, the stress-testing framework should allow banks to identify, assess, and address upcoming threats to their capital adequacy and prepare them to survive even very severe level of stress. This chapter therefore focuses on the design of stress-testing programmes in banks, severity levels of the assessed scenarios and the frequencies applied in ICAAP stress-testing.

2.7.2 Analysis of ICAAP practices

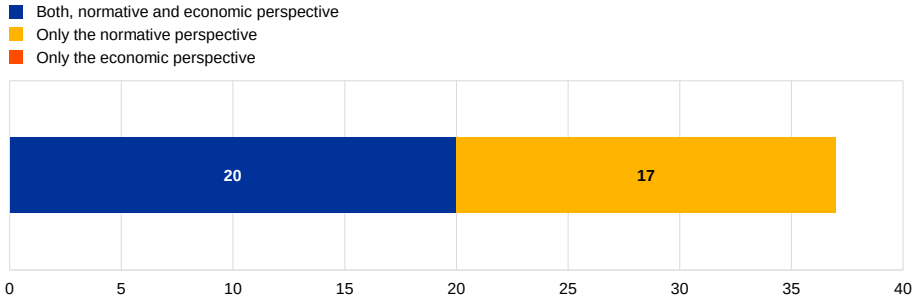
2.7.2.1 Design of stress scenarios

While all banks have stress-testing programmes which cover the normative perspective, this is the case for only half of them for the economic perspective (see

Chart 34). Under both perspectives, almost all banks which conduct stress-testing use hypothetical developments to determine comprehensive scenarios, and over half of the banks also use historical developments, with almost half of the banks considering external stress tests as well (such as European Banking Authority (EBA) stress tests).

Chart 34

ICAAP perspectives covered in stress-testing



The clear majority of banks addresses risks identified as material in their stress tests and one in four banks has an elaborated process in place to do so (see Chart 35).

Chart 35

Process for translating all material risks identified into stress tests, including into scenarios

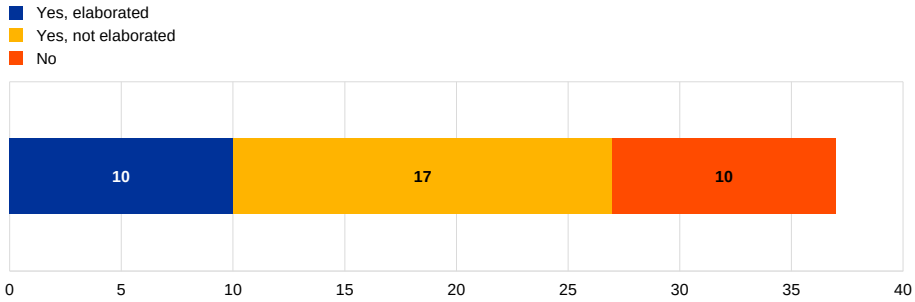
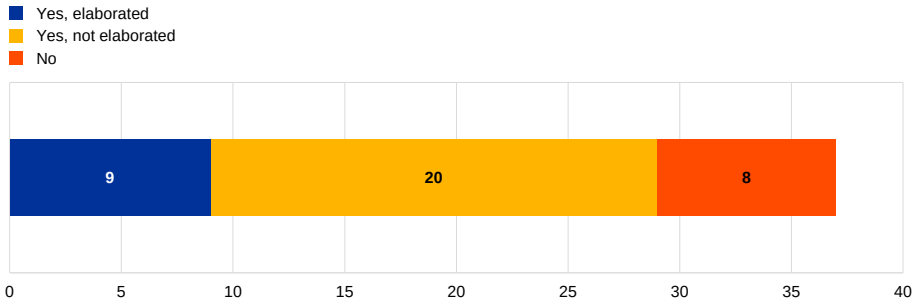


Chart 36 shows that only one in four banks has established an elaborated process for considering the effects of ICAAP stress tests on their liquidity situations and the other way around. One in four banks does not take the interaction between capital and liquidity into account at all.

Chart 36

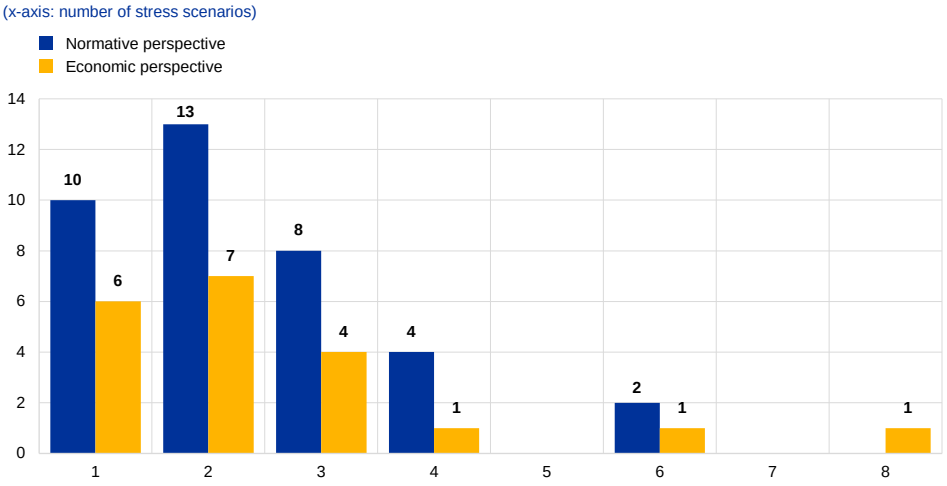
Consideration of interactions between ICAAP stress tests and liquidity situation



With regard to the number of comprehensive bank-wide stress-testing scenarios (see Chart 37), all banks seem to have at least one adverse scenario under the normative perspective; most commonly, two adverse scenarios are used. Under the economic perspective, around one-half of the banks have at least one comprehensive adverse scenario and one in five banks assesses more than two scenarios.

Chart 37

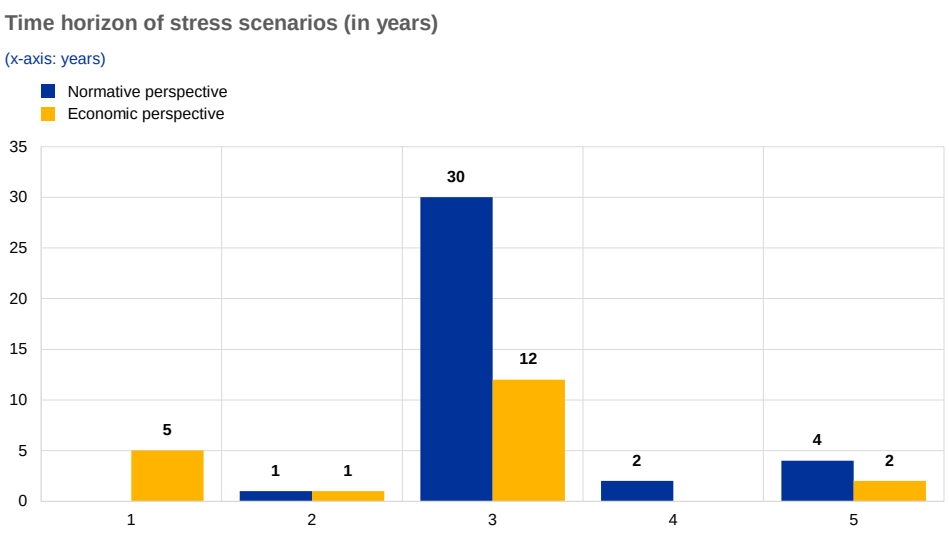
Number of comprehensive adverse/stress scenarios used, by ICAAP perspective



Under both perspectives, banks predominantly use a maximum time horizon of three years in their stress-testing programmes (see Chart 38). Three years has now established itself as the standard time horizon as compared to 2015, when stress-testing time horizons were very heterogeneous. In 2015, one-third of the banks used a one-year time horizon and half of the banks used time horizon of three years or longer.

Chart 38

Stress-testing time horizons: duration of time horizons used in stress-testing by ICAAP perspective



2.7.2.2 Severity level of adverse scenarios

Chart 39 shows that the levels of maximum CET1 depletion[56] across the adverse scenarios assessed by the banks under the normative perspective are heterogeneous across banks. On average[57], 3.3 percentage points is the average of the maximum CET1 depletions over the scenario time horizon across all sample banks and this figure is clearly lower than the comparable[58] average EBA stress test result in 2018 of 4.8 percentage points. Also at the bank-specific level, banks' internal stress tests usually result in lower capital depletions than the EBA stress tests – only for one in ten banks are EBA depletion levels lower than in ICAAP stress tests.[59] Compared to the CET1 depletion level of SIs in 2015 (average: 3.0 percentage points), however, the average CET1 depletion level in internal stress-testing is slightly higher now.

One-third of the banks find itself in a breach of its management buffers under at least one of the normative perspective adverse scenarios. Despite this, only a small number of banks decided to derive (potential) management actions based on stress-testing

56 Maximum CET1 depletion means the largest decrease in the CET1 ratio in any of the adverse scenarios that the bank uses under the normative perspective, determined between the starting point of the scenario (current CET1 levels) and the lowest CET1 ratio over the time horizon that the scenario covers. This is the same approach as that underlying the stress-testing results communicated by the EBA.

57 Not taking into account one extreme outlier bank.

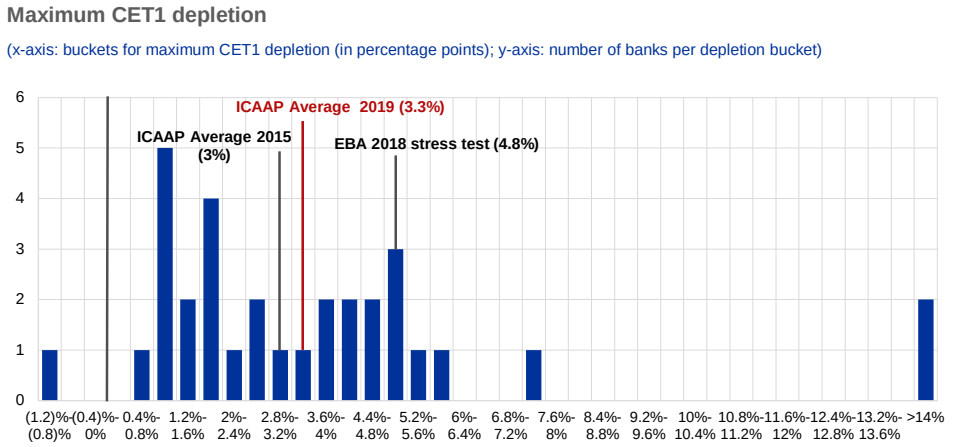
58 Based on the same sample of banks (excluding one extreme outlier from the ICAAP sample) and taking the same "average of maximum depletions" approach. The majority of banks also use a three-year time horizon in their adverse scenarios under the normative perspective in the same way as in the EBA stress test (see also Chart 39).

59 Differences for banks in the sample (excluding one outlier bank) vary between a 5.4 percentage point higher CET1 depletion in EBA stress tests compared to internal stress tests and a 9.4 percentage point lower CET1 depletion in EBA stress tests compared to internal stress tests.

results. Likewise, the levels of resulting economic risks for a number of banks come close to, or even exceed, their internal capital levels. Yet, not one bank explicitly took management action based on these outcomes.

Chart 39

Severity level of adverse scenarios under normative perspective



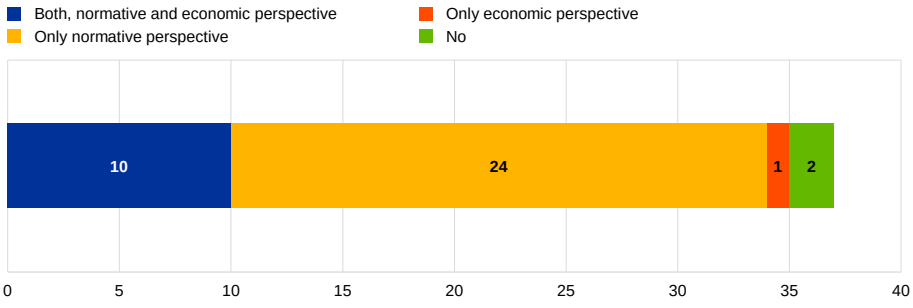
Note: The chart shows "gross" depletions, i.e. management actions are not factored in, according to the documentation submitted in the ICAAP packages. X-axis: values in parentheses indicate negative CET1 depletions, i.e. an increase in CET1 levels.

2.7.2.3 Reverse stress-testing

Almost all banks conduct reverse stress-testing, predominantly only under the normative perspective – only one in four banks conducts reverse stress-testing under the economic perspective.

Chart 40

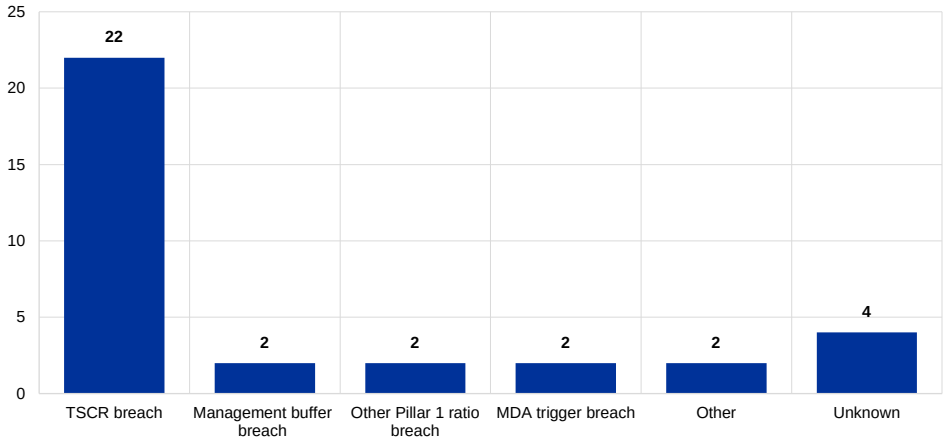
ICAAP perspectives covered by reverse stress-testing



Banks primarily use a breach of the TSCR as the pre-defined outcome of the reverse stress-testing under the normative perspective. Very few banks use other predefined outcomes, such as their management buffers (see Chart 41).

Chart 41

Predefined outcomes used in reverse stress testing – normative perspective

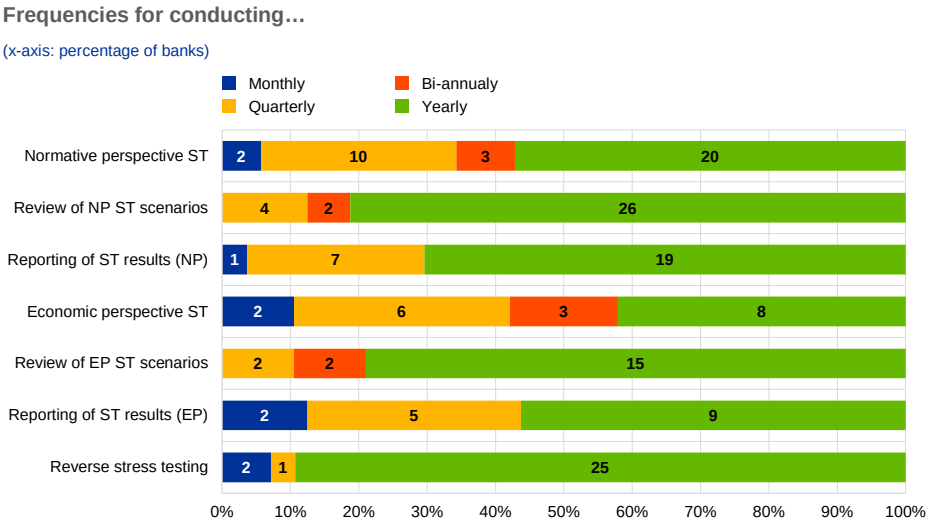


2.7.2.4 Frequencies in stress-testing

Chart 42 shows the frequencies that banks apply in their ICAAP stress-testing. The predominant frequency for reviewing and applying scenarios, for internal reporting of stress-testing results and for conducting reverse stress-testing usually follows an annual cycle under both perspectives. One exception is the application of economic perspective scenarios, which is usually done more frequently. Under the normative perspective, less than half of the banks apply their scenarios more frequently than annually and one in six banks reviews the adequacy of its adverse scenarios accordingly.

Chart 42

Frequencies for conducting, reviewing, and reporting stress tests

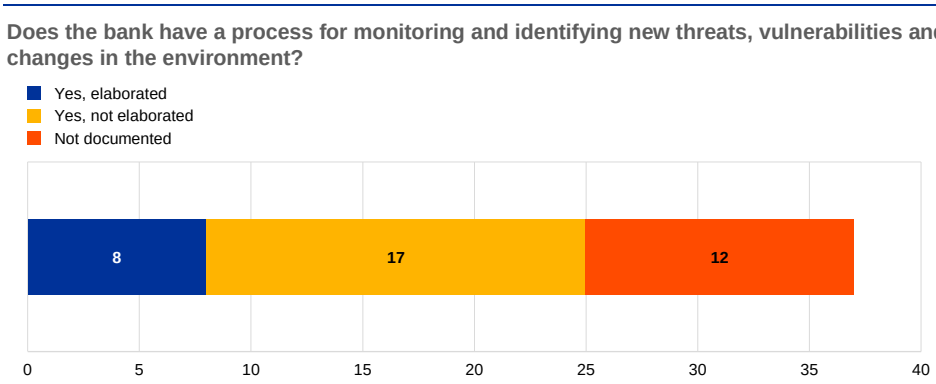


Note: These percentages were calculated on the basis of the number of banks for which the respective category is relevant and also where information regarding frequencies is available, e.g. for economic perspective stress testing which is only done by 20 banks, frequencies were documented by 19 banks in total.

The ability of banks to react quickly to relevant changes in their operating environment also depends on the timely identification of upcoming threats and the ability to assess their potential impact. While two-thirds of the banks have some kind of process in place for monitoring and identifying new threats, one in five bank has an elaborated process for this (see Chart 43).

Chart 43

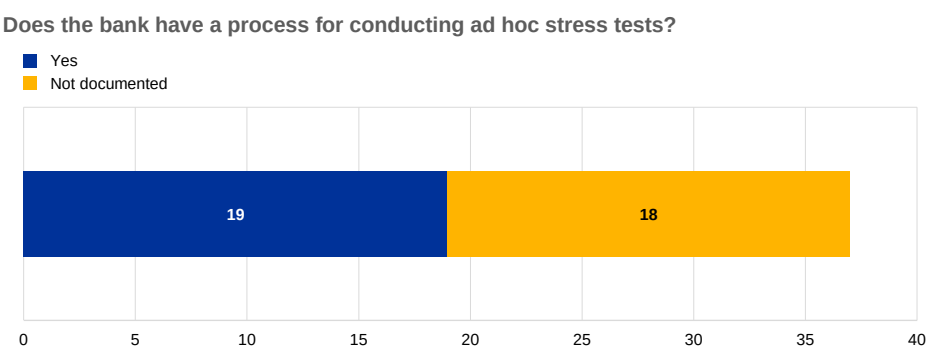
Stress-testing process for identifying new threats to capital adequacy



With regard to stress-testing outside of the regular cycle, a significant number of banks do not have a documented process for conducting ad hoc stress-testing[60] at all (see Chart 44).

Chart 44

Processes for conducting ad hoc stress-testing



2.7.2.5 Observed good practices

Several banks have implemented a process for systematically considering the effects arising from their ILAAP stress-testing, or defined liquidity shocks, in their ICAAP stress-testing.

[60] See BCBS Stress Testing Principles, October 2018 for further details on the concept of ad hoc stress-testing.

Another observed good practice in this respect is to construct a combined solvency and liquidity scenario for the reverse stress test, which incorporates the interdependencies and signalling effects between solvency and liquidity. A stress horizon of 12 months is considered in order to incorporate spill over effects between solvency and liquidity stress.

Another good practice observed is that reverse stress-testing is not only a mathematical exercise, stressing single risk factors such that a pre-defined outcome is reached, but that there is also a discussion of the key vulnerabilities, which could, in plausible combination, lead to the non-viability of the business model and of the results and the potential management actions as well as any follow-up tasks.

2.7.3 Conclusions regarding stress-testing

All banks perform internal stress tests. It is positive that the majority of banks takes appropriate hypothetical developments into account when designing their stress-testing scenarios and that a stress-testing horizon of three years has become standard. Compared to 2015, it is a positive development that banks have improved their forward-looking approaches by extending the stress test time horizons. Banks are also starting to consider the mutual impact of capital and liquidity stress tests, however, there is still considerable room for improvement not just in this regard.

While internal stress-testing under the normative perspective is well established, stress-testing and reverse stress-testing under the economic perspective also leave significant room for improvement. The number of scenarios and the frequency of applying stress tests are heterogeneous. Most banks assess only one or two adverse scenarios under the normative perspective. Given the complex and dynamically changing operating environment of most banks, it is highly doubtful whether this is sufficient preparation for surviving a range of plausible combinations of severe developments in the future that could impact the banks' key vulnerabilities. This finding may also be linked to the fact that many banks do not systematically connect their stress tests to the material risks they have identified.

Looking at maximum CET1 depletion in adverse scenarios under the normative perspective, it is positive that, on average, the severity level has increased compared to 2015. However, at many banks it still appears to be too low[61]. As a consequence, in a real stress situation, banks could be confronted with a much more severe impact without having sufficient capital cushions or appropriate management actions at their disposal.

The observed capital depletion levels are significantly lower than those seen in 2018 EBA stress test which is based on a standard adverse scenario reflecting a severe economic downturn, but which is not tailored to banks' individual vulnerabilities. Therefore, it appears that many banks use adverse scenarios that are either not tailored to their key vulnerabilities, that the scenarios are not sufficiently severe

[61] See, for example, the ECB Guide to the ICAAP, Principle 7 (ii) and paragraph 94.

(crisis-like) or that the translation of the scenarios into capital impacts is not sound and realistic, for example, in one extreme case, compensating effects even led to a CET1 ratio that was higher under stress than at the starting point.

With regard to reverse stress-testing, more than half of the banks use a breach of the TSCR as the starting point. However, in reality, banks' business models can become unviable at capital levels clearly above the TSCR, namely, by definition, at the level of the management buffer. Therefore, banks are encouraged – as part of their reverse stress-testing exercise – to define scenarios which use capital levels as starting points that are connected to the continuity objective of their ICAAPs. Furthermore, the economic perspective is underdeveloped also in reverse stress-testing, despite the fact that numerous examples exist of banks coming into distress on account of economic value issues, rather than on account of Pillar 1 ratios.

There is still considerable room for improvement in terms of how quickly banks identify potential changes in their operating environment and how quickly they address new threats. Many banks do not systematically monitor upcoming threats and they review and apply their stress-testing scenarios, as well as report the outcomes to decision-makers at annual frequencies only. Moreover, ad hoc stress-testing capabilities appear to be underdeveloped. Overall, the stress-testing programmes at many banks do not foster a well-informed and timely response to changes in their risk situation and to upcoming threats. Finally, many banks do not draw conclusions from internal stress-testing (including reverse stress-testing) and only a small number of them derives (potential) management actions based on stress-testing results.

2.8 Deep dive: data quality

2.8.1 Supervisory expectations and focal points of the assessment

Paragraph 84 of the ICAAP Guide

"The institution is expected to deploy adequate processes and control mechanisms to ensure the quality of data. The data quality framework is expected to ensure reliable risk information that supports sound decision-making, and it is expected to cover all relevant risk data and data quality dimensions."

Supervisory expectations on risk data aggregation capabilities and risk reporting practices[62]:

"The ECB makes use of the BCBS 239[63] principles as a benchmark of the best practices in its ongoing supervisory activities to assess institutions' risk data aggregation capabilities and risk reporting practices."

[62] Supervisory expectations on risk data aggregation capabilities and risk reporting practices.

[63] BCBS Principles for effective risk data aggregation and risk reporting, January 2013.

A separate chapter on a sub-topic of Principle 6 of the ICAAP Guide is dedicated to data quality, because weak data quality poses a threat to the quality of the entire ICAAP, even if all other ICAAP-relevant aspects are sound. Reliable data quality relies on an effective data quality framework, including effective control mechanisms and a sound IT infrastructure which fully supports risk data aggregation. This chapter therefore focuses on these aspects and on the link between banks' ICAAPs and the Basel Committee for Banking Supervision Standard, BCBS 239, which the ECB uses as the benchmark of the best practices in banks' risk data aggregation and reporting capabilities.

2.8.2 Analysis of ICAAP practices

2.8.2.1 Banks' data quality frameworks

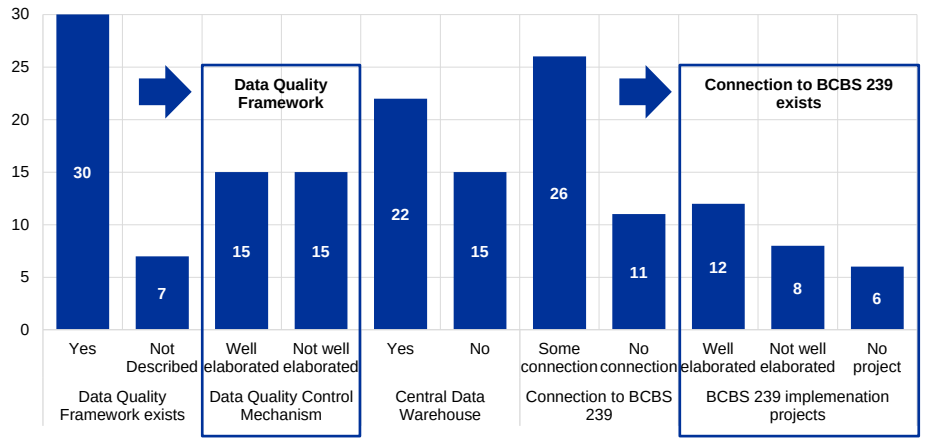
Looking at Chart 45, from the left to the right, around three quarters of banks have a data quality framework in place, out of which approximately half of banks do not have well-elaborated processes and control mechanisms in place to ensure data quality. Around one in three banks do not use central data warehouses for ICAAP-related data.

Around two in three banks demonstrate a connection between BCBS 239 and their ICAAPs. Nevertheless, only for one-half of these banks is this connection well-elaborated. Half of the banks establishes this connection in the form of a, mostly but not in all cases, well-elaborated dedicated project for implementing BCBS 239.

Chart 45

Data quality frameworks

Existence of data quality frameworks, central data warehouses and BCBS 239 implementation

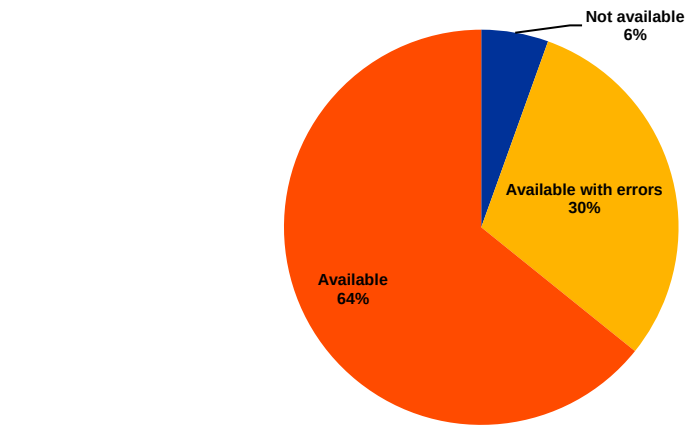


The ICAAP templates that SIs submit to the ECB on an annual basis reveal several material data quality issues. Often, cells are left blank, figures are implausible or clearly wrong, ICAAP capital figures are inconsistent with EBA ITS CoRep figures or

with other information provided in the ICAAP package. Only around two-thirds of the ICAAP templates were initially submitted in 2019 without obvious[64] errors. The rest were either not submitted in time or included errors.

Chart 46

Availability and quality of ICAAP templates received in 2019



2.8.2.2 Further evidence from other sources

Data quality is an area where the practical arrangements in place are particularly prone to be weaker than the target state described in documents and project descriptions. This is evidenced, for example, by data quality-related on-site inspections.

For example, in the context of the ECB Targeted Review of Internal Models (TRIM) exercise, it was concluded[65] that for Pillar 1 credit risk models "data quality-related findings are present in all the institutions investigated. […] nearly all on-site investigations revealed issues […]. The topic of data management and data quality processes presented the greatest share of findings with higher severity (F3/F4)".

Similar observations were made in the thematic review on effective risk data aggregation and risk reporting, in which the ECB concluded in May 2018 that "[…] the implementation status of the BCBS 239 principles within the sample of significant institutions is unsatisfactory, which is a source of concern.[66]" Similarly, and as illustrated in Chart 47[67], JSTs' ICAAP assessments in the 2019 SREP revealed that IT

64 "Obvious" errors refers to errors that could be identified by applying simple plausibility checks, i.e. without an in-depth assessment which would probably further increase the number of data quality issues identified.

65 See pages 10 and 11 in the Update on the Targeted Review of Internal Models (TRIM), ECB, November 2019.

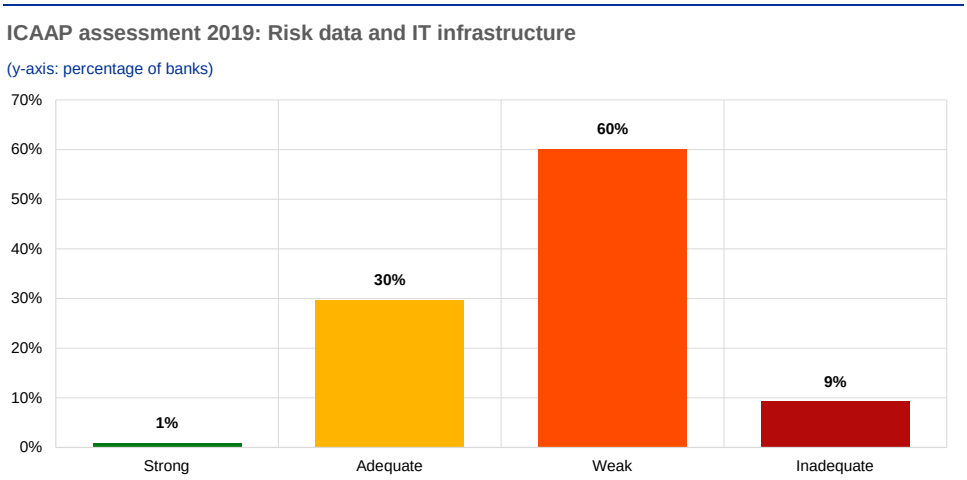
66 See the Report on the Thematic Review on effective risk data aggregation and risk reporting, ECB, May 2018.

67 Note that the chart refers to all banks that were subject to an ICAAP assessment in the SREP in 2019.

infrastructure and risk data aggregation capabilities were the most problematic ICAAP/ILAAP assessment areas. Around two in three banks revealed severe data quality issues.

Chart 47

Result of the ICAAP assessments in the SREP 2019, ICAAP assessment category "Risk data, IT infrastructure"



2.8.2.3 Observed good practices

A good observed practice that could help to maintain and improve data quality is a consistent and well-structured data quality framework that is described in a separate document. The content comprises clear data quality principles, assigned responsibilities, a description of data quality monitoring and control processes, an assessment of related risks and negative effects of poor data quality. This document is enriched with direct references to other, more detailed documents, such as a data governance document that refers to internal and external standards (such as BCBS 239), as well as concrete data quality working instructions and a document on data standards, defining common tools and instruments to be used within the bank for managing data quality overall.

2.8.3 Conclusions regarding data quality

This analysis revealed that several banks do not have elaborated data quality frameworks in place, including data quality controls. The lack of specific internal requirements regarding accuracy and integrity, completeness, timeliness and adaptability of risk data, possibly in combination with weak data quality controls and a fragmented IT infrastructure, may lead to weak risk data and thus potentially bad management decisions. Linked to this finding is the analysis outcome that at many banks, there is no strong connection between their ICAAPs and BCBS 239.

As mentioned previously, central data warehouses for ICAAP-related data are not yet implemented at a significant number of banks. Banks should consider the implementation of this technical solution, as this can, in practice, greatly reduce manual workarounds in the risk data aggregation process, as well as reconciliation efforts needed to ensure integrity and completeness of risk data.

Banks' capability to quickly and flexibly produce reliable risk data has a significant impact on their ability to successfully manage their risks, particularly during global crises such as the recent financial crisis and the COVID-19 crisis. Taking the strong evidence regarding data quality from other ECB sources into account as well, data quality in banks, in conjunction with the underlying IT infrastructure and risk data aggregation capabilities, is therefore one of the most serious concerns of the ECB, also in the context of the ICAAP.

Therefore, banks are encouraged to accelerate the improvement of their data quality frameworks and underlying IT infrastructures, by, for example, taking into account the BCBS 239 principles, particularly given that experience shows that material improvements in data quality may take some time.

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For specific terminology please refer to the SSM glossary (available in English only).

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