



International Actuarial Association
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IAA Risk Book

Materiality, Proportionality and Similar Terms

Insurance Regulation
Committee

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Materiality, Proportionality and Similar Terms

**This Risk Book chapter has been developed and approved
by the Insurance Regulation Committee of the IAA**

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Comment and feedback

Comment and feedback on Risk Book chapters is welcomed.

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Introducing the IAA Risk Book

The actuarial profession has contributed significantly to the development of risk management tools and processes in insurance, pensions and related industries. Actuarial skills are also increasingly being applied in new and developing areas of knowledge.

Actuarial practice continues to improve the understanding, measurement and communication of risk and risk events and their implications through the development of tools and increasingly processes to manage the future uncertainty of risks in a sustainable and transparent way. These tools and processes trace, manage and mitigate the acceptance and transmission of the uncertain outcomes of risks.

The Risk Book is intended to provide high-quality reference materials to support a better understanding of the risks and inherently uncertain future outcomes that need to be managed when delivering financial services products – whether they involve insurance, investments or retirement incomes, or more broadly. The Risk Book is written to be accessible to a wide range of readers, many of whom may not be actuaries or experts in the areas discussed but may be decision-makers in those areas. Consequently, the Risk Book should provide insight into the ideas and concepts behind actuarial topics and concepts. It is therefore focused on being descriptive rather than being formal and mathematically precise.

All the Risk Book chapters are publicly available on the IAA website and are periodically updated. See www.actuaries.org and follow the path to *Publications* and then to *Risk Book*. A discussion of their structure and relationships is provided in the chapter *Introduction – Using the Risk Book*.

The Risk Book is intended to be a dynamic and evolving resource, updated over time, reflecting new areas where actuarial expertise can add value, experience and advances, and topics of current interest and importance. It is electronically distributed to support ongoing updates. Risk Book chapters will be reviewed periodically at least every five years, and more frequently if significant changes or developments occur.

The development and maintenance of the Risk Book is managed by the Risk Book Editorial Board of the IAA Insurance Regulation Committee.

Many people, mostly actuaries, have contributed to the Risk Book. Contributors are listed on the website.

To submit comments or questions about this Risk Book chapter, or to report any problems with the website, please email riskbookcomments@actuaries.org. To express interest in becoming involved with the Risk Book, please go to the website and provide the requested information.

1 Introduction

In many places where analysis is performed, there is a tendency to apply insofar as possible a set template or process. This is true within regulation, as well as within insurers subject to supervision or oversight (whether by supervisors/regulators, external auditors or others performing oversight analysis). Yet the use of a set template or process assumes “one size fits all”, even though it rarely does.

The solution to the “one size does not fit all” issue is generally to allow exceptions to the template based on the individual facts and circumstances. Various approaches have been developed and are in use for creating this flexibility. These include the concepts of:

- Proportionality;
- Materiality;
- Cost-benefit; and
- Risk-focused.

While many of these terms and concepts are not unfamiliar to most actuaries and others performing analysis, the understanding of them is frequently incomplete. In addition, the application of them is not without risk.

This chapter addresses these concerns by outlining the current definition(s) of these items, then discusses issues with their use and possible pitfalls. The goal is to make those applying or considering application of these concepts more aware of how they might be used, and to avoid their possible misuse.

Key findings:

1. All these concepts provide for greater flexibility in the application of rule-based templates via the application of principles for when or how much to modify a template.
2. All these include some component of a cost-benefit trade-off.
3. Being principle-based, they are all dependent on a common understanding of the ultimate objective (or desired benefit) for consistent application, and to a lesser extent on the importance of various options towards fulfillment of those objectives.
4. They are all subject to imperfect application, especially when the principle is turned into a rule.
5. As principle-based approaches, they generally require that the person applying them have a certain level of experience or expertise for best application.
6. When subject to oversight, they are also heavily dependent on a common understanding between the applier of the concept and the overseer (on items such as the overall objective and the risk inherent in various items). This creates a need for effective documentation and communication (which can be difficult if the experience levels or backgrounds of the two parties are very different).

2 Proportionality

2.1 Definition

The proportionality concept in the legal environment has been around since at least the 1800s (when German courts [introduced it as a tool for reviewing actions by police](#)), although there are those that place its origins far earlier. The definition seems to vary with the context, as seen from the following examples (with the first three from Wikipedia):

- Criminal law – “the punishment should fit the crime”;
- Warfare – “harm caused to civilians or civilian property must be proportional and not excessive in relation to the concrete and direct military advantage anticipated by an attack on a military objective”;
- U.S. civil law discovery actions – “whether the burden or expense of the proposed discovery outweighs its likely benefit”; and
- European Union treaty – “Under the principle of proportionality, the content and form of Union action shall not exceed what is necessary to achieve the objectives of the Treaties.”

In short, these definitions all concern some sort of balancing (akin to a cost vs. benefit balancing). They also frequently phrase the benefit in the context of a desired objective.

The [Insurance Core Principles](#) of the International Association of Insurance Supervisors (IAIS ICPs) do not define proportionality, although the term is discussed in the ICP Introduction section, where it is stated that “proportionality underlies all the ICPs”. (Two of the ICPs also briefly mention proportionality.)

The Solvency II directives also do not include a definition of proportionality, but they include a phrase similar to the following in many places:

[actions should be proportionate to] the nature, scale and complexity of the risks inherent in the business of an insurance or reinsurance undertaking.¹

[Solvency II directives](#) add that the above valuation should be done “regardless of the importance of the undertaking concerned for the overall financial stability of the market”, although in several other places there is specific mention that the principle should be applied so as to avoid the rules being too burdensome for small or specialty insurers.

The IAA’s first model actuarial standard, [ISAP 1](#), also references the concept of proportionality in paragraph 1.5.2 (as of March 2023) without defining the term, although it does discuss how actuarial work should be “proportionate” to the scope of the decision to which the work relates, or the benefit that is expected to be obtained.

Lastly (for the purposes of this chapter), in its discussion of actuarial services in inclusive markets, a joint IAIS–IAA group was provided with the following with regard to the definition of proportionality:

A ‘proportionate’ outcome, relative to a standard accepted approach, is a valid outcome if, from the perspective of the assessor, the proportionate outcome is attained at a lower cost (broadly

¹ Commission Delegated Regulation (EU) 2015/35 of 10 October 2014, Section 6, Article 56, 2a.

interpreted) and remains sufficiently close to the standard accepted outcome that the assessor would, under normal circumstances, not change a decision that depended on outcome.

This approach focuses on outcomes, not on the process by which they are achieved.²

2.2 Discussion

The various definitions of proportionality all relate balancing (1) the costs of an action to achieve an objective against (2) the degree to which the action accomplishes the objective. This implies that any application of proportionality must involve an understanding of the purpose or objective of the action. If the objective of the action is unclear or not sufficiently defined then it is unclear how to apply the principle of proportionality (PoP) to the action.

The PoP is also a principle, not a rule; hence, its application requires the use of judgment. The application of judgment requires a value system of some sort, as judgment generally has to weigh the value of competing options. Judgment also requires some level of experience or training.

In many places where the PoP is applied, the entity applying the principle (and hence making a judgment call) has another party reviewing that judgment. Possible reviewing parties include insurance supervisors and external auditors. This creates a need for clear communication between the party applying the principle and the party reviewing the judgment call. It also creates a documentation requirement of some degree wherever the application of the PoP leads to a third-party review.³

With regard to the IAIS ICPs, paragraph 9 of the Introduction section of the ICPs says: "A proportionate application involves ... a variety of supervisory techniques and practices ... tailored to ... achieve the outcomes of the ICPs." Per ICP 1.2, the objectives of insurance supervision include:

- Protect policyholders;
- Promote the maintenance of a fair, safe and stable insurance market; and
- Contribute to financial stability.

But in actual practice the interpretation of these objectives may differ significantly from one party to the next. For example, should an individual policyholder be protected to the same degree as a corporate policyholder? Are these objectives sufficiently defined to achieve consistent application of the PoP?

The proportionality principle is also generally thought of applying to analyses or methods, as opposed to items or amounts. The final measuring stick in applying the PoP, however, may be whether a different or more sophisticated method would produce a different end result (such as a different decision from a user or a different final outcome).

Lastly, application of the proportionality principle to a requirement or task could theoretically lead to either more or less work being performed than specified in the template. In practice, however, the PoP is generally used only to provide for possible reduction in workload from that described, rather than a potential increase in workload.

² Draft for discussion, dated 29 January 2016 by Jules Gribble.

³ Depending on the local requirements, lack of adequate documentation or communication may lead to a claim of non-compliance with the applicable standard or rule.

2.3 Potential Pitfalls

Any consistent application of the PoP requires clear understanding of the objective/purpose, and a consistent value system for those applying the concept. Where this objective is unclear or where different people have different value systems the application can be inconsistent.

When the PoP application is subject to external review, there is also the risk that the reviewer will not agree with the application due to a different value system or a different experience level. In the extreme, the reviewer may require such a high level of documentation that any savings from application of the PoP may be entirely negated.

As mentioned above, the objectives of insurance supervision (per the IAIS) include the protection of policyholders; promoting fair, safe and stable insurance markets; and contributing to financial stability, but which of the following outcomes would best fit those objectives?

- Minimizing the size of insolvencies?
- Minimizing the number of insolvencies?
- The minimization of unpaid insurance obligations?
- A viable, competitive market (which may require some level of insolvencies)?
- Some other objective?

Which of these (or combinations of these) would best illustrate the proportionate application of the ICPs? Some jurisdictions may focus mostly on avoiding large insolvencies while others may have an objective of having no insolvencies. Some of the possible objectives mentioned above may also be conflicting, as minimizing the number of insolvencies may not be consistent with a competitive market.⁴ Hence, the fact that two regimes (or two supervisors within the same regime) are both applying the PoP does not necessarily guarantee that they are consistent in their actions.

Under Solvency II⁵ the “scale” component of the phrase “nature, complexity and scale of the risks” to be considered in applying the PoP is not meant to override or dominate the other components. Complex risks of small companies may require detailed risk analysis, while simple risks of large companies may justify a simplified analysis. Too much focus on the “scale” component of that phrase could lead to a lack of supervisory/regulatory controls regarding risk management for small insurers, and unnecessarily burdensome controls for large insurers.⁶

The proper application of PoP can require a high level of experience or familiarity, but there is no guarantee that such a level of experience/familiarity will always exist. As stated above, when the PoP is applied correctly, the “action shall not exceed what is necessary to achieve the objectives”. Knowing what is necessary and what is excessive with regard to achieving an objective implies prior experience. If this does not exist, the practitioner may be “flying blind”. Given a lack of knowledge, the safest course

⁴ A competitive market usually requires some incentive for market innovation and some penalty for those firms that do not innovate. The elimination of insolvency risk can lead to stagnant markets with no incentive to innovate, and hence a less competitive market than would otherwise exist.

⁵ EIOPA-BoS-14/166 EN, “Guidelines on the valuation of technical provisions”, Guideline 47, available at: https://eiopa.europa.eu/Publications/Guidelines/TP_Final_document_EN.pdf.

⁶ An argument against relaxing risk management requirements for small firms is that a firm too small to afford a risk analysis for a certain risk is too small to take on that risk.

of action may be to require too much rather than too little. Hence, the PoP may be very dependent on an experienced regulator for the concept to work as envisioned.

Lastly, heavy reliance on the PoP by standard-setters may lead to a standard designed for the largest and most complex situation, requiring the greatest use of resources. The standard-setter may assume that in most situations some more simplified approach may be applied, but this may rely heavily on the experience level of those applying it and those reviewing the principle's application. When those applying it and/or those reviewing are not sufficiently experienced, the result could be an expensive over-application of unnecessarily complicated approaches. Hence, over-reliance on the PoP when designing a standard could lead to significant inefficiencies in the final standard.

3 Materiality

3.1 Definition

The IFRS Conceptual Framework and the [U.S. Securities and Exchange Commission](#) have similar definitions of this concept, which is essentially that something is material if mentioning it, omitting it or misstating it would affect a decision.^{7,8}

The concept is sometimes also applied to analysis, such as when determining if a more complicated, sophisticated or resource-intensive analysis would make a material difference in the outcome. The use of a simplified approach would not make a material difference if the result of using the more involved analysis would not affect the outcome or decision.

3.2 Discussion

In practice, many applying this principle have tried relying on rules of thumb, such as by saying that amounts less than some percentage (e.g., 5%) of a certain value are deemed to be non-material.⁹ In a solvency context, the basis of this rule of thumb may be an insurer's equity.

Most standard-setters, however, have argued that these rules of thumb are only initial screens or ways of flagging issues for future evaluation, and are not definitive equivalents to the definition mentioned above. As one example, consider an apartment complex in a major city with a potential insect problem. In that environment, the sighting of even one cockroach would be considered material, regardless of how large the apartment is.

⁷ See [https://en.wikipedia.org/wiki/Materiality_\(auditing\)](https://en.wikipedia.org/wiki/Materiality_(auditing)). The US Financial Accounting Standards Board (FASB) also defines the term in its Statement of Financial Accounting Concepts No. 8, where it says: "Information is material if omitting it or misstating it could influence decisions that users make on the basis of the financial information of a specific reporting entity. In other words, materiality is an entity-specific aspect of relevance based on the nature or magnitude or both of the items to which the information relates in the context of an individual entity's financial report."

⁸ The IAA's ISAP 1 (paragraph 2.4.1) defines the term in the same way when it says that something is material if it is expected "to affect significantly either the intended user's decision making or ... reasonable expectations" (March 2023).

⁹ When applied to analysis, the rule of thumb would be that a simplified analysis is sufficient if the estimated impact of a more involved analysis is unlikely to change the answer by the rule-of-thumb amount threshold.

Application of the true definition of materiality also requires knowing who is making the decision, and for what purpose. The evaluation of materiality cannot be separated from the person/entity making the decision and the purpose of that decision. For example, an item on a firm's balance sheet may be immaterial from the view of a holder of that firm's short-term debt, but very material from the viewpoint of a long-term equity investor. Hence, the materiality of an item is not an absolute; it is a relative quality.

The materiality of an item is also a judgment call that can change over time (as the environment changes and risk preferences change).¹⁰ This change in materiality determination may not be purely rational, as markets in panic may sometimes overreact to things with no practical impact on future cash flows.

Lastly, the decisions on when or how to apply the materiality principle may be subject to oversight (e.g., by a supervisor or external auditor), similar to the oversight experienced in some applications of the PoP. This leads to the same communication and documentation issues mentioned earlier for the PoP.

3.3 Potential Pitfalls

A common danger in regard to materiality is applying it in too granular a fashion. Many times in the insurance context, individual claims or policies are unlikely to be material by themselves – it is only the portfolio of similar claims/policies that rises to the level of materiality. Hence the need to look at materiality in regard to both individual items and the aggregation of items. The aggregation of several immaterial items may be very material to the users of the information.

Another danger in the application of materiality is not knowing what you do not know, and not wanting to expend the effort required to determine the boundaries of your knowledge. If one is only aware of a single instance of a certain kind of event or item, it may be easy to dismiss it as a one-off, and not material by itself. But knowledge of only one instance of an item is not proof that others do not exist. Hence, knowing about a single instance of a situation that is immaterial but could be material if larger may suggest a duty to investigate further before declaring it to be immaterial.

A third pitfall is assuming that an item considered immaterial in the past will remain immaterial. As mentioned earlier, the materiality of an item can change over time due to legal decisions, laws, investor and/or societal views, or a number of other factors.

Application of this principle has the same experience requirement that the PoP has – namely that it requires some experience to apply it effectively. It can be difficult to evaluate the materiality of an item without sufficient experience and/or research; support for an item's immateriality may be qualitative or quantitative, with qualitative arguments more likely to require prior experience in the field, and it may be difficult to obtain sign-off of a qualitative argument for immateriality from someone with no experience in the field. Furthermore, performing extensive research to prove an item's immateriality can erase or reverse any benefit to be gained by labelling it immaterial. Hence, the effective application of this principle requires some level of regulator/supervisor experience and reliance on expert judgement.

Lastly, as with the PoP, over-reliance on the application of the principle may cause a new standard to be based on the largest and most complicated situation. Such a standard may be established with the expectation that it would only be fully applied where the risk is material, but this may overestimate the

¹⁰ It is a requirement under Solvency II that where materiality calls are made, the weaknesses in the approach are identified, and triggers for when the judgment would need to be revisited.



ability of (1) users to perform this materiality analysis or (2) those performing oversight to recognize when something really is immaterial.

4 Cost-Benefit

4.1 Definition

Under cost-benefit analysis, the benefits of an action are [summed up and compared to the costs of the action](#).

4.2 Discussion

This concept is typically described in quantitative terms, but it is also applied in some principle-based concepts (such as proportionality and materiality) in qualitative or subjective terms. When applied in a subjective manner or for items not generally measured in financial terms (such as the value of a human life, the quality of life or the avoidance of a complicated process to file a claim) it requires the application of some value system. Disagreements over the results of a cost-benefit analysis can result from disagreements in the assumptions underlying the analysis or in the value systems underlying the relative weights given to the results.

4.3 Potential Pitfalls

Cost-benefit analysis is mathematically easier to apply to items that are directly quantifiable. This may lead to omission or underestimation of items that are not directly or easily quantifiable. For example, many cost-benefit analyses in an economic sense find it difficult to measure items such as convenience or peace of mind; hence, these items may be ignored or undervalued in some analyses. Given the importance of peace of mind in the insurance context, this omission may be material to some insurance solvency-related analyses as well as some analyses of pricing actions.

It is also valuable to know the source of disagreements that may arise from such analyses. Disagreements arising from the use of different assumptions can sometimes be resolved more easily than those arising from different value systems. It is also valuable to be aware of the various parties' value systems before any cost-benefit analyses are performed.

5 Risk-Focused (and Risk-Based)

5.1 Definition

This is a concept applied to U.S. insurer financial exams such that the focus of the effort will be on the risks to an insurer solvency, and not on line-by-line compliance with balance sheet rules. Hence, it includes a prospective review of risks rather than a strictly point-in-time evaluation of risks. A similar mindset can be applied to other work or projects, so as to focus on or prioritize the work in those areas where the greatest risks exist (and away from areas where the lack of additional work is least likely to impact the desired outcome).



The IAIS Insurance Core Principles use a similar term, “risk-based”. That term generally refers to focusing work on the most important or biggest risks.

5.2 Discussion

The U.S. risk-focused concept as applied to solvency financial examinations is essentially the same as the proportionality standard, but with perhaps a clearer statement of the objective. Financial exams following this concept have generally started with an identification of the largest risks inherent in the enterprise, and analyzed the degree to which those risks are mitigated via the insurer’s control environment, with additional analysis directed and performed for those items with high residual risk. It is intended to make more effective use of limited resources, and is frequently used where the level of resources is constrained or capped at a certain level.

When applied to other areas the intent is similar; i.e., to make the most effective use of limited existing resources.

The risk-based concept is somewhat ambiguous as it does not clarify whose risks are being evaluated for relative size – the individual insurer being supervised, the overall insurance industry or the financial system as a whole.

5.3 Potential Pitfalls

In the regulatory financial exam context, the evaluation of an insurer’s risks in a risk-focused environment may require a higher level of sophistication and resources than the available resources can provide. One approach sometimes taken is to translate the risk-focused (principle-based) examination tasks into a checklist that the current resources can address. This can eliminate the potential benefits of the original principle (sometimes even at greater expense than the compliance-based system it replaced), while misleading those applying it by convincing them that the original benefits are being met. As such, it can lead to a false sense of security that fails to uncover true risks that exist, or the creation of new inefficiencies to replace the old inefficiencies of the old process.

Outside the regulatory context a similar issue exists in that it requires some pre-existing knowledge about where the largest risks are, or the experience/ability to quickly make such a determination. Hence, it generally requires more than entry-level experience in the area of application. Attempts to apply it to less experienced staff may lead to a series of rules or checklists that can defeat any efficiencies.

With regard to the risk-based concept, a focus on systemic risks (i.e., the biggest risks to the financial system as a whole) may lead to fewer resources being available for basic policyholder protection. A similar focus on the biggest insurers in the industry may lead to reduced oversight (and greater risk to policyholders) of smaller insurers.

6 Commonalities and Differences

Three of these concepts/approaches (proportionality, materiality, risk-focused) clearly rely on judgment. The other (cost-benefit) may seem to be an exception, but this can be deceiving as the valuation of many costs or benefits can be highly judgmental. Cost-benefit analyses can also be subject

to less-than-transparent manipulation, as the details underlying the cost-benefit analysis may be buried within the underlying analysis and various implicit assumptions.

Regarding controls on the use of these concepts/approaches, materiality applications may face the most external scrutiny. This may be because of the potential for abuse if insurers are not required to justify their decisions that something is immaterial. PoP applications may face similar scrutiny when applied at the insurer level.

It is not clear that the same scrutiny is applied to the application of the proportionality or materiality concepts when they are applied by a supervisor, external auditor or other reviewing party (unless they themselves are also subject to external review). One reason for this may be that when an overseer applies the PoP or materiality to a situation, it results in less work for both the overseer and the subject of the oversight. It is unlikely that the parties benefiting from the reduced workload would complain.

Proportionality and materiality are typically discussed in terms of reducing workload rather than justifying an increased workload, although there is conceptually no reason why they could not apply in that other direction (i.e., in justifying an increased workload above the normal requirement).

Where oversight or review exists for the application of the PoP or materiality, there is need for clear communication and documentation of the application to the overseer. This requires that both parties involved (applier and reviewer) have sufficient levels of experience and similar understandings of the overall objective. Otherwise, the documentation effort can be more onerous than full application of the original requirement or standard template.

The risk-focused and risk-based concepts are somewhat different from proportionality and materiality in that they are designed to provide a focus among potentially competing alternatives or areas of focus, as opposed to increasing or decreasing the effort required for a particular focus.

7 Concluding Comments

The concepts or principle-based approaches discussed in this chapter all attempt to provide for needed flexibility in applying various standards or rules. Unfortunately, even the best concepts can fail in implementation; hence, how the concept is applied is as important as how the concept is defined.

These concepts/approaches also require a greater level of sophistication or experience in their application than rules-based approaches; hence, they are dependent on sufficiently experienced (and generally better-compensated) individuals for their successful application. These resources may or may not currently exist in sufficient numbers where these concepts are to be applied.

Lastly, given that the application of these concepts can affect how actuarial work is performed, it might be beneficial to include a discussion of how they were applied, when producing an actuarial report.





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