

Exposure draft of the
European Actuarial Note (EAN x) on Professional Judgment

Approved by the General Assembly of the Actuarial Association of Europe
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1 INTRODUCTION

1.1 DUE PROCESS ON THIS EAN

This European Actuarial Note (EAN) is an educational document on professional judgment provided by an actuary bound by the standards of his/her profession.

This EAN is not prescriptive and therefore does not contain words such as “should” or “must”. Rather, this is descriptive and will convey meaning by the use of examples of actual practice, without suggesting that any of these examples would be expected to be used or that these examples are comprehensive.

1.2 THIS EAN IS ON PROFESSIONAL JUDGMENT

The field of work for actuaries has been broadening over the past years. In departure from their traditional roles in insurance and pensions, both in private and public fields, actuaries nowadays are professionals in high demand in all industries as experts in risk assessment and management. Hence, it is relevant to work out the distinguishing features of the professional judgment performed by an actuary.

Expert judgment is based on specific training, knowledge, experience and expertise. Professional judgment of an actuary, however, is based not only on the same requirements (i.e. specific training, knowledge and expertise) but also on standards of professionalism and on the Code of Conduct of the profession. It is believed that there is a fundamental difference between judgments provided by an expert not belonging to a profession and by an expert who belongs to a profession and therefore is bound by the standards set by that profession.

1.3 EXECUTIVE SUMMARY

This EAN has two main goals. Firstly, it aims at identifying the distinguishing features of actuarial professional judgment, which arise predominantly from the principles of professionalism laid down in the Code of Conduct for actuaries. Secondly, it argues that the soundness of the actuary’s judgement is enhanced by the suggested self-assessment questionnaire since it helps ensuring consistency of the professional judgment applied by the actuary in line with the principles in the AAE Code of Professional Conduct. In line with AAE’s Code of Professional Conduct, the high-level principles of professionalism considered in this EAN are knowledge and expertise; values and behaviour; and professional accountability. The self-assessment questionnaire is intended to help the actuary decide on the soundness of his/her professional judgement. It provides assistance for the actuary to assess whether his/her professional judgment may become impaired when performing his/her assignment and has been structured in accordance with the five principles for the work of an actuary stated in AAE’s Code of Professional Conduct (i.e., integrity, competence and care, compliance, impartiality and communication).

1.4 List of abbreviations used

AAE	Actuarial Association of Europe
EAN	European Actuarial Note
ESAP	European Standard of Actuarial Practise
FMA	Full Member Association
GDPR	General Data Protection Regulation
IAA	International Actuarial Association
IORP	Institution for Occupational Retirement Provision

2 BACKGROUND AND STANDARDS

2.1 GENERAL

Actuaries in their daily work have always been involved in processes that require their professional judgment. In pricing or reserving in insurance undertakings or making a quantitative assessment of a pension or employee benefit plan, they must assess both the quality of data and the appropriateness of methods, assumptions, parameters and models. More recently, in Europe the judgment of the Actuarial Function is explicitly required in the Solvency II framework and in the IORP-Directive.

Professional judgment is not only an issue in Europe.

The Canadian Institute of Actuaries published already in 2006 an Educational Note on the Use of Actuarial Judgment in Setting Assumptions and Margins for Adverse Deviations in the context of life insurance financial reporting.

Professional judgment is a term of wide comprehension. In any case, the result of this judgment can or will affect the outcome of calculations and influence management decisions. To enable a replicability or a posterior traceability, it is necessary to document relevant steps and assumptions underlying the judgment.

1. The exercise of judgment is not clear-cut, except perhaps in hindsight. A judgment that is reasonable at its making is not made unreasonable by later hindsight.
2. A judgment that is completely subjective would not be reasonable even though it may be based on honest belief. A reasonable judgment would be objective and demonstrably take account the code of professional conduct, standards of practice, common sense, and constraints on time and resources.

Because of the importance of this judgment, it seems to be necessary to elaborate first on a disambiguation.

What is the essence of an actuarial professional judgment? What distinguishes actuarial professional judgment from other expert judgment?

Definition

Professional judgment is the judgment of the actuary, based on actuarial (or other relevant) training and experience, bound by the Standards and Code of Conduct¹ of the profession.

2.2. PROFESSIONALISM

This very short definition of professional judgment implicitly requires compliance with the principles of professionalism and principles of professional conduct cited below.

Definitions or classifications of actuarial professionalism can be found in published Standards of Actuarial Practice, in International Actuarial Association (IAA)'s publications or in the Code of Professional Conduct of the AAE.

European Standard of Actuarial Practice 1 – General Actuarial Practice (ESAP1) uses the same definition for professional judgment as the Code of Professional Conduct i.e., it is the judgment of the actuary based on actuarial training and experience.

This rough description is enriched by two components in the definition provided by the IAA in the paper Principles of Professionalism,

Definition

Professionalism, for the actuarial profession, means

- the application of specialist actuarial knowledge and expertise;
- the demonstration of ethical behaviour, especially in doing actuarial work; and
- the actuary's accountability to a professional actuarial association or similar professional oversight organisation.

IAA's definition is more comprehensive than the short ESAP1 characterisation. Besides expertise and knowledge, it encompasses principles concerning values and behaviour and professional accountability. High-level principles of professionalism considered in this definition are:

Knowledge and expertise: An actuary shall perform professional services only if he/she is competent and appropriately experienced to do so.

Values and behaviour: An actuary shall act honestly, with integrity and competence, and in a manner that fulfils the profession's responsibility to the public and upholds the reputation of the actuarial profession.

Professional accountability: An actuary shall be accountable to a professional actuarial association or a similar professional oversight organisation.

2.3. CODE OF CONDUCT

This extended view is in line with the Code of Professional Conduct published by the Actuarial Association of Europe in 2017 becoming effective for Full Member Associations (FMA) of the AAE on 1 January 2021.

The following principles for the work of an actuary are part of this Code of Professional Conduct:

Integrity: An actuary must act honestly and with the highest standards of integrity.

Competence and Care: An actuary must perform professional services competently and with care.

Compliance: An actuary must comply with all relevant legal, regulatory and professional requirements.

Impartiality: An actuary must not allow bias, conflict of interest or the undue influence of others to override professional judgment.

Communication: An actuary must communicate in an appropriate manner and meet all applicable reporting standards.

3 THE DUTIES OF AN ACTUARY WHEN MAKING PROFESSIONAL JUDGMENT

As stated earlier, an actuary must abide the Code of Professional Conduct issued by his/her local Association, which in turn must be consistent with the five principles of AAE's Code of Professional Conduct.

Let us consider how an actuary could reasonably assess whether his/her activity is bound to develop in accordance with the principles. The following self-assessment questionnaire could be set up to help the actuary decide on the soundness of his/her professional judgment. The questionnaire is structured in accordance with the five principles.

Integrity

- Can I devote enough time and resources to perform the assignment?
- May the assignment contravene my ethical and/or moral principles?

Competence and care

- Do I enjoy the knowledge and experience required to deal with the issues involved in the assignment?

Compliance

- Does the completion of the assignment contravene any regulation or professional standard?

Impartiality

- Can I avoid undue pressure from any involved party to influence on the result of the assignment? Am I prepared to disclose actual or potential conflicts of interest to all involved parties?
- Can I guarantee the way compensation for the assignment is structured avoids bias in my judgment? Am I prepared to disclose to the party all sources of income received in relation to the assignment?
- Can I assure I can keep professional scepticism towards data provided by any party involved in the assignment?

Communication

- Do I feel confident as to communicate efficiently and clearly the results of the assignment under any circumstance or in any forum (say, in front of my principal, an individual customer, a board of directors, a court, a press conference)?

The questionnaire might provide assistance for the actuary to assess whether his/her professional judgment may become impaired when performing his/her assignment. If any answer reveals serious setbacks for the actuary to achieve an integral, competent, compliant, impartial and appropriately communicated professional judgment, he/she may consider several courses of action, e.g.

- The actuary should clearly express the factors that may hinder his/her professional judgment when dealing with the assignment.
- The actuary should communicate to the parties with a vested interest in the assignment the setbacks that affect his/her professional judgment.
- The actuary might consider abandoning the assignment should the setbacks to appropriately apply his/her professional judgment seriously contravene any principle of the Code of Professional Conduct.

Once the presence of any factors that can negatively affect the performance of the actuary has been assessed and discarded, consideration can be given to the application of professional judgment to down-to-earth items such as data, methods and models, assumptions in models, and conclusions of the assignment.

Again, assistance in the form of a self-assessment questionnaire for each item can be developed. This way the actuary could decide whether, while duly considering materiality aspects, he/she is appropriately applying his/her professional judgment.

Some other expert professionals are mainly focused on what happened in the past and the consequences these past events might have brought about. In contrast, actuaries are mainly focussed on forecasting future performance, sometimes in the very long term, using past

and current events only as input data and considering potential future possibly-weighted scenarios. This fact emphasizes the relevance of applying appropriate professional judgment in all the steps involved in an assignment.

It is also relevant to emphasize that actuaries should ensure the use of expert judgment in assessing accurate, appropriate and sufficient data for their assignment does not replace the appropriate collection, processing and analysis of data. Rather, it supplements these actions where required.

4 DATA

Data constitute the basis for all actuarial work. The quality of the data base is crucial. An assessment of this quality is an important step for the actuary. Available data sources for the particular task, quality and completeness of the required data need to be analysed. In case of non-completeness it might be necessary to find substitute for missing or incomplete data.

The following paragraphs provide a list of questions that might help to check the quality of the data basis.

4.1 ASSESSING DATA SOURCES

- Are data sources for the assignment relevant and reliable?
- Can I check the soundness of any data source?
- Do I suspect there might be any vested interest involved in a particular data source?
- How is the data collected? ==> Detect Potential Bias
- Does it target a specific population?
- On which period has the data been collected?
- Did the recording method change during the data collection?
- Was the data collected for another purpose of my business issue?
- How can I protect the data?
- How can I assure to be compliant with the GDPR?

4.2 ASSESSING DATA COMPLETION

- Are data available for every period and every magnitude considered in the assignment?
- If data are missing for a period or magnitude, how may this fact impair the reliability of the outcome of the assignment?
- Do I have at my disposal any proxies that could reasonably substitute for any missing data?

4.3 ASSESSING DATA DISCLOSURE

- Are data in the assignment disclosed in a way that allow any independent party to check their sources, their completion and their consistency?

- Is there enough granularity in disclosed data?
- Are data sources disclosed?
- Are any setbacks in data quality, such as incompleteness or the use of proxies, appropriately disclosed?
- Was the data anonymised for disclosed purpose?

4.4 MISSING DATA OR INCOMPLETE DATA

In case any setbacks in data quality are identified, several issues may be assessed.

4.4.1 MISSING DATA

- Can I draft the assignment without the missing data?
- In case I decide to draft the assignment even though some data are missing, can I reasonably assure the quality of the outcome?
- Do I appropriately disclose which data are missing?
- Do I appropriately disclose my assessment on the effects of missing data on the outcome and conclusions of the assignment?
- Should I ask an independent party to verify the impact of missing data on the quality of the conclusions of the assignment?

4.4.2 INCOMPLETE DATA

We define 'incomplete data' as data which are not available for the desired period but can be estimated from other available data. For instance, we can be interested in assessing any given magnitude for monthly periods, but we only have annual data at our disposal. In this sense, we say no data are missing. Rather, we deem them to be just 'incomplete'.

- Can I reasonably estimate incomplete data from available data (e.g. monthly data from annual data)?
- Can I use imputation methods? What are then the confidence intervals in the imputation?
- Can I test the effect of the estimation on the outcome of the assignment?
- Can I describe in detail the model used for estimating the incomplete data?
- Are there any proxies that could be reasonably used instead of the incomplete data?
- Do I appropriately disclose which data are incomplete and how I deal with the issue?

4.4.3 SAMPLING DATA

- Was the sampling/split train/test correctly done? – Potential Bias, leading to misinterpretation of results
 - Do the sub samples train and test contains same information?
 - Can my train data contain leaks (information that embed target values)?
 - Does it make sense to have a random sampling?

5 SELECTION OF A MODEL

Several issues might be considered to assure the right use and selection of models for the further processing of the data.

In this respect, the specific questions for this section intend to address model risk:

- Inappropriate methodology
- Too much complexity with no added value
- Model knowledge concentrated on key people
- Lack of suitable documentation

All the items above involve the use of professional judgment to some extent.

- Is the chosen model fit for purpose? Does it meet its specifications?
- Are there any test/validation procedures for assessing appropriateness?
- Is the model set up in a way to avoid unnecessary (relative to performance/business objective) complexity?
- Are simplifications and limitations properly tested and documented?
- Are the model and procedures documented to properly mitigate dependency on key people?
- Does it need any complementary interpretation tools to make it explainable? Which one where used to achieve the explanations?

6 THE SETTING OF KEY ASSUMPTIONS EMBEDDED IN THE MODEL

The setting of key assumptions is of utmost importance for the outcome of models in all fields of the actuarial work, e.g.,

- Liability valuations (Best Estimate, ...)
- Capital management (Standard capital valuations or internal models)
- Firm Valuations (Embedded value, Appraisal value, ...)
- Pricing activities

The actuarial role in the assumption setting process is usually affected by the lack of experience, the lack of relevance of data or the need for new facts or external variables that could make future experience different than past behaviour of the specific assumption. The actuary should consider all series of information while assessing reliability and appropriateness of the use of this historical data.

Assumptions arise immediately when undertaking decisions on methodology (*e.g. correlations*), non-economic variables (*e.g. mortality and morbidity rates; retirement rates; lapses; expenses*) and economic ones (*e.g. interest and credit rates; inflation rate; equity and property indices*). The questions below might help the actuary to check and back test consistency in assumptions embedded both in the choice of variables and of methodology.

7 CHECKING ASSUMPTIONS

7.1 CHECKING ASSUMPTIONS ON VARIABLES

- Do I have enough information about the relevance of assumptions on variables in the model outcome, i.e., have I tested sensitivities or performed any stress and scenario testing?
- Do I have enough knowledge on sources, data quality, sample size, and any limiting factors for the choice of variables?
- Do I consider consistency with not identical but similar situations applicable to the specific assumption?
- Are data for each variable granular enough for the model outcome to be significant?
- Can I be sure about the involvement of the right people providing relevant data and feedback for each variable?
- Are the metrics used to assess the model quality relevant and in accordance to business issue?
- Once the results are obtained based on the assumptions taken, do the results make actuarial sense?

7.2 CHECKING ASSUMPTIONS ON METHODOLOGY

- Are future trends and expectations properly assessed?
- Is professional judgment involved? Does this professional judgment agree with common standard practices and relevant guidance available in the market?
- Are methodology choices based on actuarial independent view and best practices?
- Is documentation on the process of assumption setting thorough and complete? Can it be made available for a third party to understand the key steps of the process?
- How is the suitability of the methodology tested?

7.3 BACK TESTING

- Are the process and methodology robust and consistent enough to assure the relevance of the outcome and conclusions?
- Are all relevant conclusions captured?
- Are the conclusions properly escalated to provide useful information to either the Senior Management or the Board of Directors?
- Are any identified setbacks considered to improve the model?

8 THE INTERPRETATION OF THE MODEL OUTCOME

Several aspects might be tested in relation to the outcome of the model before the assignment is delivered.

8.1 RELEVANCE

- Are the results conclusive?
- Do the results answer the questions asked by the sponsors of the assignment?
- Are some post-hoc interpretation tools used to enforce the model relevance?

8.2 DISCLOSURE

- Are any caveats that may affect the conclusions appropriately disclosed?
- Are all hypotheses and scenarios used to draw conclusions appropriately disclosed?

8.3 TESTING

- Which tests have been carried out to check the credibility and reasonableness of the conclusions?
- Has an independent party with no vested interest checked the verisimilitude of the conclusions?
- Were the test run on an independent sample used for training?
- Were some tests scenario used to assess model relevance on controlled scenarios for which expected outcome can be controlled?
- Has the model been validated in real conditions?
- Has the necessary professional skepticism¹ been used in the choice of data?

9 PURPOSE AND TARGET AUDIENCE

Assistance provided in this EAN could be useful for actuaries to apply their professional judgment on several issues related to their day-to-day tasks, namely,

- The duties of the actuary when making professional judgment.
- The choice of data for an assignment.
- How to deal with missing or incomplete data.
- The selection and usage of a model for the data.
- The setting of key assumptions embedded in the model.
- The interpretation of the model outcome.

Actuaries are working in different fields of actuarial practise. The specificities of the particular role require an appropriate use of these issues and an adaptation to the concrete task. To provide support in this regard, this EAN might be extended in different ways, for instance by means of appendices dealing with the specificities in different fields of actuarial practice.

¹ **Professional scepticism:** Attitude that includes an inquisitive mindset, special attention to circumstances that may be indicative of possible inaccuracies, and a critical assessment of the evidence.

BIBLIOGRAPHY

EIOPA's guidelines: EIOPA-BoS-14/166 (Valuation of Technical Provisions); EIOPA-BoS-14/180 (Use of Internal Models); EIOPA-BoS-14/178 (Undertaking Specific Parameters).

Expert judgment. British Actuarial Journal, 21(2), 314-363. Ashcroft, M., Austin, R., Barnes, K., MacDonald, D., Makin, S., Morgan, S., . . . Scolley, P. (2016). Presented to the IFoA and the IAA in 2015.

Expert judgement and scientific humanities / Jugement d'expert et humanités scientifiques (Christian Walter, 11/06/2016)

Canadian Institute of Actuaries: Educational Note - Use of Actuarial Judgment in Setting Assumptions and Margins for Adverse Deviations (2006)

<https://www.cia-ica.ca/publications/publication-details/206147>

IAA: PG1 -Principles of Professionalism (2017)

https://www.actuaries.org/CTTEES_PROFESSION/Papers/Professionalism_Guidelines/PG1_Principles_of_Professionalism_07102017.pdf

IAA: Criteria for a Code of Professional Conduct (Approved 27 October 2007)

http://www.iaablog.org/CTTEES_ACCRED/Documents/Criteria_Code_Professional_Conduct_EN.pdf

Government of Spain (2018). Circular 1/2018, of April 17, from the General Directorate of Insurance and Pension Funds, which develops the reporting models, the action guides and the periodicity of the scope of the special report to review the situation report financial and solvency, individual and group, and responsible for its preparation.

[https://www.boe.es/diario_boe/txt.php?id=BOE-A-2018-5670]