

From Risk Measures to Research Measures

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Abstract

In the recent years the evaluation of the scientists performance has become increasingly important. Governments and several institutions provide financial support for the scientific research and ask for a clear assessment of the quality and the productivity of individuals and departments.

The scope of the valuation of the scientific research is mainly twofold:

- i) Provide an updated picture of the existing research activity, in order to allocate financial resources in relation to the scientific quality and scientific production;
- ii) Determine an increase in the quality of the scientific research (of the structures)

The methodologies for the valuation can be divided into two categories:

- Content valuation, based on:
 - Internal judgments committee;
 - External reviews of peer panels.
- Context valuation, based on:
 - bibliometric indices (i.e. statistics derived from citation data);
 - features of the Journals associated to the publications.

Economic considerations strongly encourage to apply the context method on a systematic (yearly) base, while peer review is more plausible on a multiple year base and should also be finalized to check, harmonize, and tune the outcomes based on bibliometric indices.

In the paper we discuss and review the many pros and cons of both the content and context valuation and we propose a novel family of Scientific Research Measures that are:

- *Flexible* to fit peculiarities of different areas and ages
- *Calibrated* to the scientific community
- *Coherent*, as they share the same structural properties - based on an axiomatic approach.
- *Inclusive*, as they comprehend several popular indices.

We will show that our approach is germinated from the axiomatic theory of risk measures.