

Overview

The role of the citation in the performance based allocation system in Sweden

– Indicators, impact and measures of quality

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Inspirational day about academic publishing

February 27th, 2014

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1. The citation debate: 'Quality'

- The classic debate: Do citations indicate **quality** of research?
- My perspective: The '**performative**' perspective' on citations

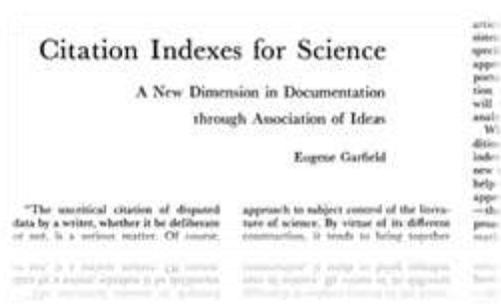
2. Bibliometric aspects of resource allocation models in the higher education system in Sweden

3. What impact does bibliometric measures have?

- At three levels: **National**, **within academia** and **individual levels**

Focus on the **citation**, but it is argued that **other measures** (e.g. **Journal Impact Factor**, **H-index**) are implied.

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Garfield, E. 1955. Citation Indexes for Science: A New Dimension in Documentation through Association of Ideas. *Science* 122 (3159):108-111

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Merton's norm system of science



- Communalism
- Universalism
- Disinterestedness
- Originality
- Scepticism

Merton, R. K. 1973 [1942]. The Normative Structure of Science. In *The sociology of science: theoretical and empirical investigations*. Chicago: The University of Chicago Press, 267-278.

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CUDOS vs. PLACE



Key arguments for using citations for evaluation

Classic debate:

- Citations as **influence vs.**
- Citations as indicator of rhetorics/**persuasion**

Citer motivations:

- Negative citations
 - Perfunctory (slentrianmässig)
 - Redundant
 - But of course also
 - Conceptual/operational
 - Evolutionary or
 - Confirmational
- (from a classification by Moravcsik and Murugusan, 1975)

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The citation as an indicator of quality

- Eugene Garfield (1963):
 - *“One purpose of this communication is to record my forewarning concerning the possible promiscuous and **careless use** of quantitative citation data for sociological **evaluations**, including personel and fellowship selection”*
 - *“**Impact** is not the same as **importance** or **significance**”*
- At the same time, he also argued SCI to be used to evaluate **Journal performance**
 - Journal Impact Factor (JIF)

Garfield, E. 1963. Citation Indexes in Sociological and Historical Research. *American Documentation* 14:289-91.

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Kessler and F. E. Heart

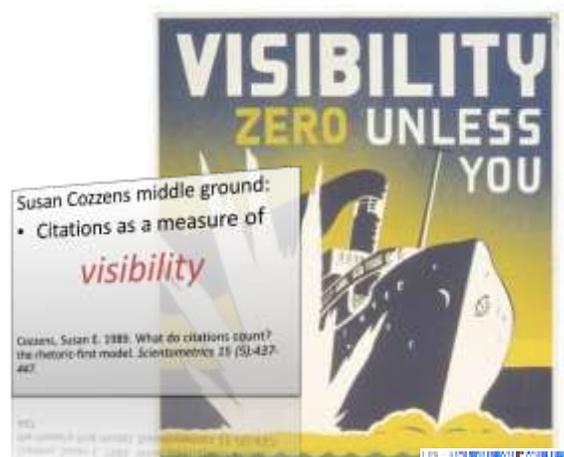
- The warning reads: **“CAUTION! Any attempt to equate high frequency of citation with worth or excellence will end in disaster**; nor can we say that low frequency of citation indicates lack of worth.”

Kessler, M.M., and F. E. Heart (1962) *Concerning the probability that a given paper will be cited*, Report (Massachusetts Institute of Technology, Cambridge).

Argument for the use of citation analysis as a quality indicator:

“The observation that citations indicate use, and therefore usefulness as well as impact, is the basic argument for using them as an indicator of quality.”

Gläser, Jochen, & Grit Laudel. 2008. The Social Construction of Bibliometric Evaluations. In *The Changing Governance of the Sciences*, edited by R. Whitley och J. Gläser. Dordrecht: Springer. 101-123.



Citations as performativity - “being cited”

Traditionally:

- Citations as **reward**, (passive)
- Citation Index as **representation** of publication patterns

My proposal: **Performativity** of “being cited”

- What research **work** do citations do?
- Citations as construction and epistemological **networking**
- The citation viewed as an outcome of active achievement or “**performance**”
- Reflexive, active actors

Citation index as a **performative arena**

- for publishers, authors, citers, publications and articles; indeed the whole “citation culture”
- Authors **actively** position themselves by **choosing journal/field to publish in** & research problems **to publish on**
- Making themselves “**cite-able**”

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Resource allocation models in Sweden

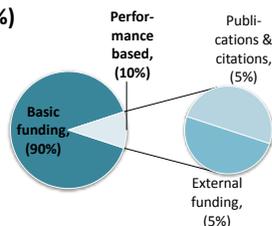
Torn between qualitatively different systems of research impact measures

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Present performance based funding model (2008)

Performance based share (10%)

- i. External funding (5 %)
- ii. **Publication performance (5 %)**
as normalized data for **publication & citation rates**



Comparable:

- Four year moving average
- Author fractionalization
- Normalization:
 - Publications: *Waring Distributions*
 - Citations: *Field Normalized Citation Level*
- Additional Weighting

Source: Prop. 2008/09:50. Ett lyft för forskning och innovation [A boost for research and innovation]. Utbildningsdepartementet [Ministry of Education and Research]. Stockholm: Fritzes. 27

Normalization of data

- Publications: *Waring Distributions*
- Citations: *Field Normalized Citation Level*
- **“By multiplying the production number with the field normalized citation level, a number is given that includes both field aligned production quantity and the relative level of quality.”**

Source: SOU 2007:81 2007. Resurser för kvalitet: Slutbetänkande av Resursutredningen [Resources for Quality: Final Report of Resource Survey]. Utbildningsdepartementet [Ministry of Education and Research]. Fritzes: Stockholm. (p 242)

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Weighting

The Ministry of education and research introduced an additional (arbitrary) weighting factor:

| Subject area | Weighting factor |
|--------------------------------|------------------|
| Medicine and engineering | 1.0 |
| Natural sciences | 1.5 |
| Humanities and social sciences | 2 |
| “Other” areas | 1.1 |

(Prop. 2008/09:50 2008, 57)

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Motives for weighting

- “We have made some runs when it comes to what effects different variants of the allocation system would give. /.../”
 - I can only say that a big problem for me was naked – would turn out negative for the humanities and social sciences.
 We introduced this doubling factor ‘to make sure to have a cupped, a protective hand, especially for the humanities.’
 - We’ll see how it goes.
 Our assessment is that **this multiplier 2 is sufficient** to protect the humanities. I can not guarantee that it is so. Of course, we will follow up on it. But I think it will turn out positive.
 - (Applause). ”



Lars Leijonborg (Minister for Education); (translated) excerpt from the transcript of the parliamentary debate before the voting of the government research bill, Prop. 2008/09:50. Internet: <http://web.archive.org/web/20100719173732/http://www.riksdagen.se/webbnav/index.aspx?nid=101&bet=2008/09:64> (accessed 2012-05-18)

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Criticism against Swedish model

Criticism from the *Swedish Research Council (VR)*

1. The bibliometric model **not robust enough**
2. The **problem of humanities and social sciences**

Does the model **represent** humanities and social science (HSS) *realistically*?

- Publication data **available** (although at low level)
- Citation data **not comparable** (in practice)
 - **Solution**: citations don't count for humanities (normalized to '1.0')
- **Additionally**: The Government arbitrarily introduced a **weighting factor** awarding **double score** for each HSS article

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The 'problem of the humanities'

Citing practices differ and are **not comparable**

- between different disciplines, e.g. natural sciences, social sciences & humanities

There is order of **magnitude**

- handled by weighting (normalization, fractionalization...)

But could these **be compensated for**?

- By **quantitative** measures?
- or **qualitative** measures?

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The 'Flodström Inquiry'

Was proposed to be introduced **2014**

Dismisses qualitative "peer review" evaluations

Introduced a **performance-based model** for distribution

1. Scientific **publishing impact** of published research (**50 %**)
2. External funding (35 %)
3. Public engagement (15 %)

Bibliometric model: national data base for publication.

- Points based on "**impact factors**" (JIF & "negotiated")
- Reminiscent of the "**Norwegian**" model:
 - **publication channel**
 - **level of the channel**

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'Norwegian system'

• **Two dimensions**:

- publication **channel**
- **level** of the channel
 - (0: **not scientific**)
 - 1: **ordinary** scientific
 - 2: **highly prestigious** publication channels

| Publication channel | Level 1 (80%) | Level 2 (20%) |
|--|------------------|------------------|
| Monograph | 5 | 8 |
| Article in journal or serial publication | 1 | 3 |
| Article in edited work | 0,7 | 1 |

Arguably

- '**Secondary peer review**'
- '**Impact factor**' based system

Research and innovation bill 2013-2016

'Research and innovation' (Prop. 2012/13:30)

Key points:

- Performance based share doubled (20 %)
- **'Peer review'** instead of *bibliometrics*?
 - Cf, the British **RAE/REF system** or
Univeritetskanslerämbetets "kvalitetsutvärderingssystem för högre utbildning"
- But, implemented **"not before 2018"**
- Meaning:
 - two general elections (2014, 2018)
 - one innovation bill (expected in 2016)
 - ...will pass before the new model is implemented.

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Bibliometric "issues" by stakeholders 2013

Proposed alternatives:

1. **Qualitative peer review** model (VR)
2. **Impact factor** instead of *citation based metrics*
 - Consequences for Humanities and Social Science
3. **"Field normalization"** of impact factor measures
4. **Combining** citation & impact-factor based models
 1. "combining the citation data of the WoS with SwePub data with negotiated weighting factors" (KB)
 2. Proposed **multiplex model** (Lund University)
5. **Open access** 0.2 bonus for "freely available research" (KB)

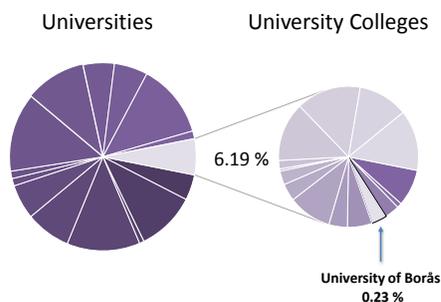
Transparency vs. Obfuscation?

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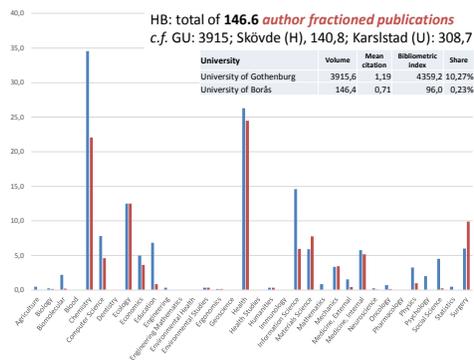
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Renegotiated shares of Gov't performance based funding (2014)



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HB publications 2009-2012



Part 4: Performance based allocation models on three levels

Torn between qualitatively different systems of research impact measures

At the departmental level

- National level:
 - Field normalized publication and citation measures
- Within universities
 - Norwegian "impact factor" model based on secondary peer review
- Individual level
 - H-Index
- A large number of universities within higher education sector have adopted a system based on the 'Norwegian model'
- Allocation and re-allocation:
 - at the faculty level
 - department level
 - (individual level)

Comparison Sw/No model

Swedish model

- Transparency:
 - Variables in the calculated model are relative
- Selection:
 - Only published material that is indexed in WoS ISI
- Measure of quality
 - Citation measures, field normalized
- Source of data:
 - Already available data (WoS ISI)

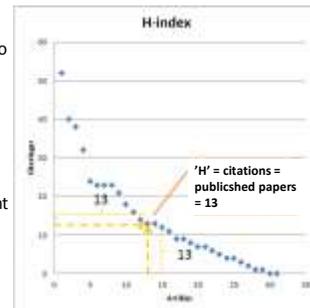
Norswegian modell

- Transparency
 - Pre determined 'point system'
- Selection
 - More research channels (Monographs, conf. Proc, journal articles)
- Measure of quality
 - "Secondary peer review"
- Sources of data:
 - An authorization index must be created (Cristin, NSB) and publication lists must be updated..

Individual level

H-index

- Introduced as "an index to quantify an individual's scientific research output" (Hirsch, 2005)
- Measure of *individual performance*
- Calculated as the break point value for an individual's publications where No. of published papers meets frequency of citations



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What are the results

'curriculum vitae AND h-index'



'Gaming the system'

Techniques

- self (colleague) citation
- editor coercion
- citation cartels

Research policy advice:

Division of Analysis and Evaluation, GU
In response to university rankings:

- "another way of advancing on the list would be to appoint highly cited researchers, since they 'bring with them' their earlier citations..."

(2012, my literal translation)

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Conclusion

- Bibliometrics in research evaluation:
 - Quantitative or
 - Qualitative solutions?
 - Prevalent both in 'citation' & 'impact factor' based models.
- "Field normalization" and other bibliometric techniques solves quantitative aspects, but what about qualitative differences in citation practices?
- Policy focus on question of individual performativity
 - E.g. "being cited" – how well researchers make themselves cite-able in citation based metrics

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Workshop: Bibliometric assessment and mapping of research

Is it possible to measure research quality with quantitative methods and, if so, which aspects are valued? *Publication* and *citation* counts are currently used to evaluate research on national, institutional and individual levels. Measures such as *impact factor* of journals or the *h-index* of individual scholars, are regularly used for assessing research. Thus, being visible in bibliometric terms has in itself become an important addition to intra-scientific achievements as such performance is linked to resource allocation and financial incentives. The workshop provides an introduction to bibliometric measures and their use in evaluating research. The participants will also gain an understanding in using bibliometric tools to survey and map published research based on data from bibliometric databases such as *Web of Science* or *Google Scholar*.

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Literature

- Cozzens, S.E. 1989. What do citations count? the rhetoric-first model. *Scientometrics* 15 (5):437-447.
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Nelhans, G. 2013. *Citeringens praktiker. Det vetenskapliga publicerandet som teori, metod och forskningspolitik*. Diss: Göteborgs universitet <http://hdl.handle.net/2077/33516>.

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