The need for science management and benchmarking tools in Portugal

EuroCRIS 2013

Paulo J S G Ferreira

IEETA
Universidade de Aveiro

November 14, 2013
1 Goals

2 Research growth and rankings

3 FCT, A3ES and others

4 Faculty evaluation

5 Concluding remarks
1. Goals

2. Research growth and rankings

3. FCT, A3ES and others

4. Faculty evaluation

5. Concluding remarks
1. Goals

2. Research growth and rankings

3. FCT, A3ES and others

4. Faculty evaluation

5. Concluding remarks
1. Goals

2. Research growth and rankings

3. FCT, A3ES and others

4. Faculty evaluation

5. Concluding remarks
1 Goals

2 Research growth and rankings

3 FCT, A3ES and others

4 Faculty evaluation

5 Concluding remarks
1. **Goals**

2. **Research growth and rankings**

3. **FCT, A3ES and others**

4. **Faculty evaluation**

5. **Concluding remarks**
Goals

- To raise some questions concerning the data and procedures needed for better science management and benchmarking
- Related aspects:
  - What research is being produced?
  - How is it impacting the higher education system?
  - Who is doing it?
- Hence: research performance, study programmes, faculty evaluation
1. Goals

2. Research growth and rankings

3. FCT, A3ES and others

4. Faculty evaluation

5. Concluding remarks
Research growth in Portugal

- Research volume has been increasing
- Number of researchers with PhD, published articles...
- How does the growth compare with other EU countries?
Research growth rates

Articles 1995-2012 (Web of Science)

- DK 4.5%
- SE 3.0%
- FI 3.4%
- AT 5.5%
- CH 5.2%
- DE 3.4%
- ES 7.8%
- FR 3.0%
- PT 11.7%

Paulo J S G Ferreira (UA)
Science Management Tools
November 14, 2013 7 / 27
Data retrieved on Jan. 21, 2013
Source: Web of science
Databases: SCI-EXPANDED, SSCI, A&HCI, CPCI-S, CPCI-SSH, CCR-EXPANDED, IC
Query: by country and publication year
Portuguese research growth

- The growth rate is 11.7%
- Main acting institutions: Universities
- Have their rankings improved in proportion?
- Why, or why not?
Portuguese research growth

- We know how to stimulate scientific research
- But how does it impact the rankings?
- Missing links
- Cause-effect relation (productivity/ranking) fuzzy
- How accurate are the data used in the ranking?
- Can we duplicate / understand the results?
Portuguese research growth

- Databases: ISI, Scopus, etc.
- Raw data not useful without “cleaning up”
- Process is complex and expensive
- Examples:
  - Separate author and affiliation lists
  - Multiple affiliations
  - English / Portuguese institution names
Portuguese research growth

- Needed: a better, more accurate database
- Suited to the benchmarking needs of Portuguese institutions
- Accurate, standardized names/affiliations
- Towards fully accountable scientific production
Correlation between Expert Scores with Citation-Analysis Based Scores
THE Ranking 2004

\[ y = 53.985x^{0.005} \]

\[ R^2 = 0.005 \]
1. Goals

2. Research growth and rankings

3. FCT, A3ES and others

4. Faculty evaluation

5. Concluding remarks
Mission: to promote the advancement of scientific and technological knowledge in Portugal

FCT funds research units, project proposals, scholarships, etc.

Funding is decided after the evaluation of the merit of proposals
A3ES

- Mission: to contribute to the improvement of the quality of Portuguese higher education
- A3ES assesses higher education institutions and their study programmes
- Ensure the integration of Portugal in the European quality assurance system of higher education
Procedure

- Evaluation of:
  - Research units
  - Project proposals
  - Individual scholarships
  - Study programmes

- Support elements:
  - Workplans, progress reports, CVs, publication lists, syllabus

- Supplied by the interested party
  - A group of researchers
  - An individual
Fact checking

Should the data supplied to the evaluation agency / panel by interested parties be cross-checked?

How can this be done?

One simple solution:
- Ask for ISI/Scopus/... accession numbers in CVs or publication lists

Difficulties:
- Those noted before in connection with those databases
CVs and publication lists need to be delivered to separate agencies for different purposes...

...Or even to the same agency for different purposes

Simple solutions:
- Stick to one of the existing CV frameworks
- Allow data from other platforms to be imported

Difficulties:
- Data difficult to cross-check
- Accession numbers and similar solutions could be considered

Wanted
- Different aggregation levels for different purposes
Pitfalls

- Availability of metrics leads to “a fever of numbers”

  “The goal of computation is insight, not numbers.”
  R. Hamming (1915–1998)

- Needed: numbers \textit{and} expertise
“The fatal attraction” (van Raan, 2005)

Bibliometric methods deemed improper for research performance evaluation

Even at higher aggregation levels (large institutions, say)

Indicators are used by people without competence and experience in the quantitative study of science
More pitfalls

- Comparison between different scientific areas is difficult
- Existing studies: citation counts, citation density, authorship...
- Counting methods are important in the final ranking results
- Biased comparisons lead to poor management decisions
1. Goals

2. Research growth and rankings

3. FCT, A3ES and others

4. Faculty evaluation

5. Concluding remarks
Faculty evaluation

- Each University works with its own system
- Results of the evaluations are not comparable across institutions
- Mobility may bring a pleasant (or unpleasant) surprise
- Working data may be supplied by the interested party (faculty)
- Duplication of effort
Faculty evaluation

- Should we consider the advantages and disadvantages of more integration?
- Should we defend the adoption of a common CV framework?
1. Goals

2. Research growth and rankings

3. FCT, A3ES and others

4. Faculty evaluation

5. Concluding remarks
Concluding remarks

- Principle: scientific research and study programmes should be accountable to the public, in an independent and clear way
- Duplication of effort should be avoided to the extent possible
- Move towards better data validation
- Consider the advantages and disadvantages of integration
- Allow reports at different aggregation levels to maximise the usefulness of the data sources, rather than creating different repositories
- Treat each scientific area separately, according to its characteristics
- Supply numbers and insight so that decision-makers see beyond the numbers