Funding by evaluation and the effect on performance
Considerations on “the competitive regime”

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Some introductory remarks

Macro: differences between national science systems and their efficiency
Macro: differences between universities in one country -- Sweden

[Micro: peer/panel review/selection/decisions – everywhere in the system]
- Problems and processes
- Proximities: Nepotism, Sexism, Cognitive]

Conclusions
1. Introduction
The Issue

- Funding and evaluation:
  - Peer decision making
  - Aversion towards indicators
  - Role of researcher, for the community vs. for the university

- Remember
  - Human (peer, expert) decision making is very biased, subjective, often ill-informed

- What are the effects on the science system?
  - Functional
  - Social
Ex ante versus ex post evaluation
- Grants versus block funding (sometimes with NRES or PBRF)
- Management versus academic freedom
- Steering versus accountability

Competition on inputs or on outputs
- Competition for grants versus funding based on past performance
- Competition on promise versus competition on results
- Reputation versus performance

Impact on the performance of the system?
2. Explaining performance differences between national science systems

(Sandström & Van den Besselaar, Jol 2018)
• OECD data and their problems (not comparable, despite Frascati & Oslo)

• Structural differences between countries

• Alternative approach: From levels to change
• And an example from Sweden comparing input and output for uni:s
OUTPUT AND EFFICIENCY

• Top-cited papers: P10% (size-dependent indicator)
  ▪ Other indicators might be relevant (e.g. societal impact)

  We have used compound annual growth rate (CAGR)

• Regression

• Residual is measure
  ▪ Output grows more than expected -> more efficient
  ▪ Output grows less than expected -> less efficient
CHANGE IN FRAC PP10 BY CHANGE IN HERD
WHAT INFLUENCES PERFORMANCE: THE ACCEPTED VIEWS

• Competition
  ■ Project funding
  ■ Structural funding: PBRF or based on NRES

• Autonomy (management vs state)
  ■ Financial, organizational, academic, staffing

• Stratified system
  ■ Leads to talent concentration
  ■ And top universities

• Academic freedom (scientific staff vs management)
  ■ Avoids middle of the road research
Why?

- The data show something different
- Or data is lacking (academic freedom)
• Efficiency by
  - Share competitive funding
  - NRES/PBRF presence
  - Autonomy
  - Stratified system

• Stratification by share competitive funding and autonomy

• Academic freedom by share competitive funding and autonomy
Some Counter-Evidence (1): Competition?

Efficiency (vertical axis) by share of project funding (horizontal axis). Data is plotted according to whether there is a National Research Evaluation System (NRES). Countries plotted in red have no NRES; blue countries have an NRES, and green have an NRES but it is not linked to funding. (Graph: Author Provided)
Research efficiency (vertical axis) plotted against organisational autonomy (horizontal axis). More autonomy is correlated with a reduction in research efficiency. (Graph: Author Provided)
The ’Abramo hypotheses’:

- More competition would lead to higher stratification
  - More differences between universities’ ranking
  - Less variation within universities (field ranking)
  - Higher ranking of the top institutions

- More stratification would lead to higher performance
PERFORMANCE DIFFERENCES BETWEEN UNIVERSITIES BY COMPETITIVE FUNDING

R² = 0.00
## Stratification System: Opposite from Hypotheses

### Competitive Funding

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<thead>
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<th></th>
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<th>Data</th>
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<td>Ranking top university</td>
<td>+</td>
<td>U-curve</td>
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<tr>
<td>Between differences</td>
<td>+</td>
<td>0</td>
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<tr>
<td>Within differences</td>
<td>-</td>
<td>Inverted U-curve</td>
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### Performance

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<tr>
<td>Ranking top university</td>
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<td>-.26</td>
<td>+</td>
<td>-0.40</td>
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<td>-.13</td>
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<tr>
<td>Within differences</td>
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<td>(very small)</td>
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• Hardly good / reliable data

• What is available suggests that AF is good for performance

• And that AF is negatively influenced by autonomy (managers) and competitive funding
THE RECEIVED MODEL

- National Evaluation System (NRES)
  - Competitive project funding
    - As share of total funding
  - Stratification university system
  - Performance national research system
  - Academic freedom
  - Autonomy
    - Financial autonomy
    - Organizational autonomy
    - Academic autonomy
    - Staffing autonomy
The result of the analysis. (Illustration: Author Provided)
CONCLUSIONS

- More competitive funding does not work positively
  - Ex ante peer assessments seem not beneficial
  - Or do we generally misunderstand the concept of competition?
    - Is to often reputation confused with competition: the UK case
    - And a competitive culture (about outputs) is different from a direct competition (on inputs)

- Nor does ex ante managerial steering (but academic freedom might…)

- Ex post evaluation does work well (even if / when not related to funding)
Even without a negative correlation, the absence of a positive correlation between quality and external funding is something that may surprise. A main argument for external funding is that competition for funds favors the quality.

The relationship at the national (Swedish) level is even stronger, the linear correlation between funding of a university and the quality of publications in the form of citations are more than 98%! The higher education institutions that are included are universities as well as most of them universities.

In summary, the analysis indicates that there is a lot that points towards a negative linear correlation between how well a university is performing in research and the proportion of external resources at the university.
OUTPUT VS EXTERNAL (PROJECT) FUNDING

Quality Of Publications (citations)

Project funding

\[ y = -1.3519x + 1.7386 \]

\[ R^2 = 0.7525 \]
Efficient (NL):
- Relatively low share of project funding (*ex ante* peer evaluation)
- *Ex post* - peer and indicator based NRES - not funding related
- Equal HE system
- Moderate level of managerial autonomy -> higher academic freedom

Inefficient (UK):
- Very high share of project funding (*ex ante* peer evaluation)
- *Ex post* - peer based - national research evaluation system: funding related
- Strongly stratified HE system
- High level of managerial autonomy -> lower academic freedom
THANKS FOR YOUR ATTENTION