



International peer review conference
Amsterdam 29-30 June 2017

**Competitive research funding processes
and an analysis of the peer review
challenges**

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Background (1)

- Countries use competitive funding mechanisms of various kinds to award research funding. The objective is :
 - To increase effectiveness (as funding is not unlimited, choices must be made)
 - To increase efficiency/excellence (give funding to best performers)
 - To provide incentives for better performance

There are however inherent conflicts between ideal operating conditions for competitive funding and properties of research, as the underpinning assumptions may not be always valid.



Background (2)

- There is heterogeneity across countries and funding agencies as to how these mechanisms are structured and carried out.
- There is very limited evidence in the published literature about the relative effectiveness of different mechanisms.
- Peer review is the traditional/preferred selection mechanism, but may implement majority opinions.
- What little is known suggests that effectiveness may vary considerably.
- Scarcity and loss of “peeriness” threaten the conditions under which competitive funding leads to effectiveness and efficiency.



Objectives of the GSF activity

- Catalogue how different mechanisms are used in different countries and different contexts
- Gather and synthesise available qualitative and quantitative evidence on performance of different mechanisms (relative to multiple objectives) in different contexts
- Make recommendations (appropriately qualified based on data quality) regarding desirability of different mechanisms in different contexts
- Make recommendations regarding ongoing data collection to improve knowledge base in this area.



Expert Group

- Co-Chairs:
 - Tateo Arimoto, Japan
 - Adam Jaffe, New Zealand
 - Kei Koizumi, USA
- 30+ other members from Australia, Belgium, China, Czech Republic, Denmark, EU, Japan, Finland, France, Israel, Korea, Netherlands, New Zealand, Norway, Poland, Portugal, South Africa, Spain, Sweden, Switzerland, and OECD Secretariat



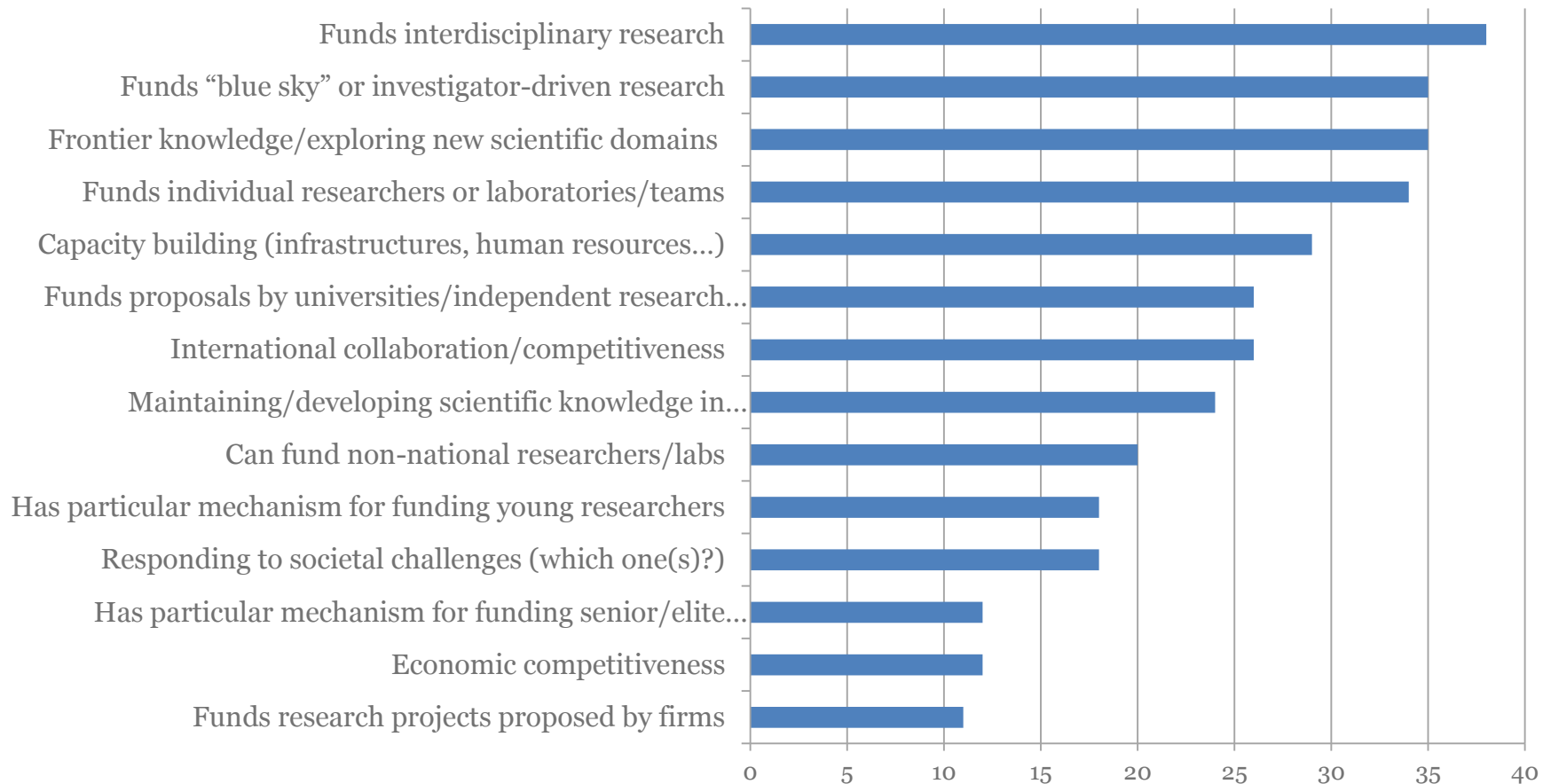
Information gathering

- Bibliographic analysis
- Generic information on research funding at country level.
- Questionnaire survey on individual competitive funding mechanisms (about 80 examples)
- Interview survey among funding managers, reviewers and grantees (ongoing)
- Two general categories of mechanisms: project/PI-oriented (but some fund individual researchers) and research centres-oriented (but can also include funds for universities).



Questionnaire feedback (1)

Goals of the funding programme

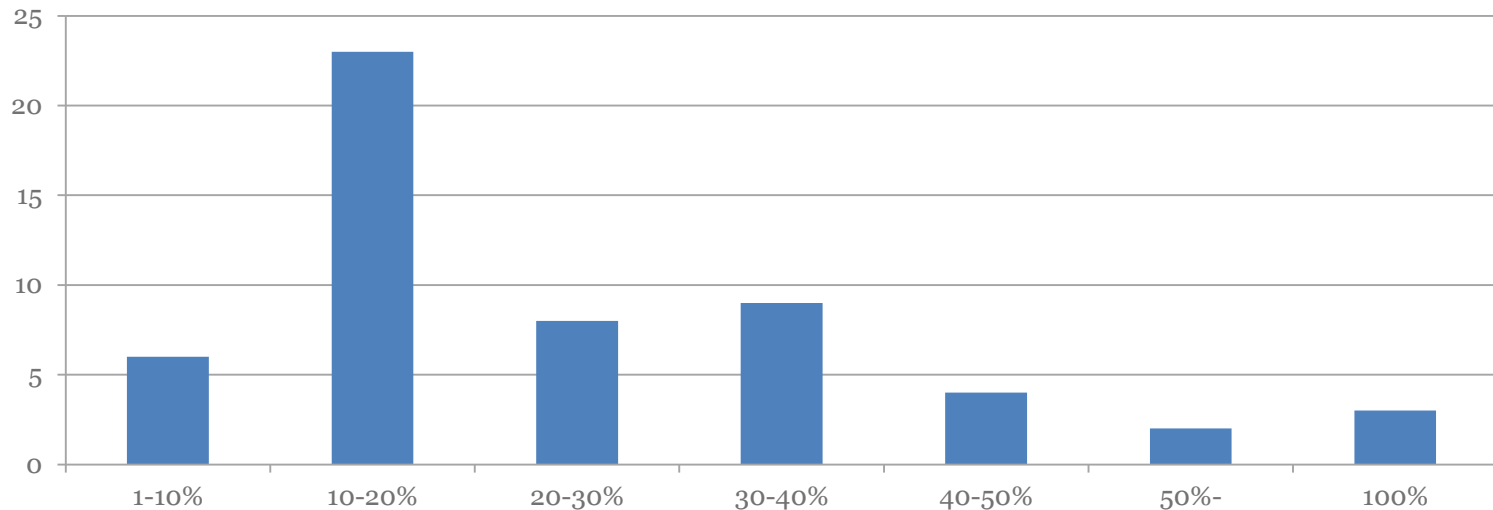




Questionnaire feedback (2)

Success Rates

- Success rate is heterogeneous:



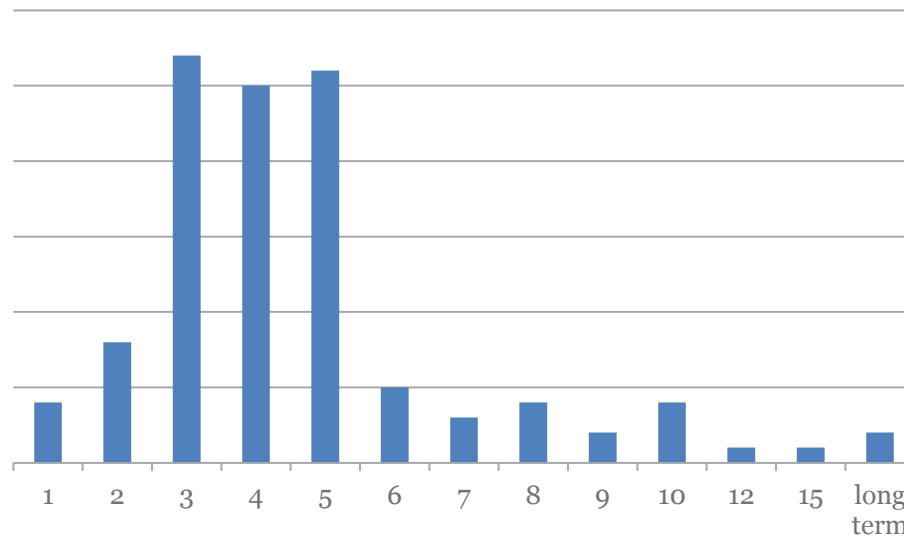
- No obvious link between size, number of applications and success rate, but two-stages screening increases final success rate
- Possibly some sense that broadly-defined funds have lower success rates
- Operation costs not always clearly defined nor use the same definition



Questionnaire feedback (3)

Nature of the funding awarded

- Grant duration usually between 3-5 years



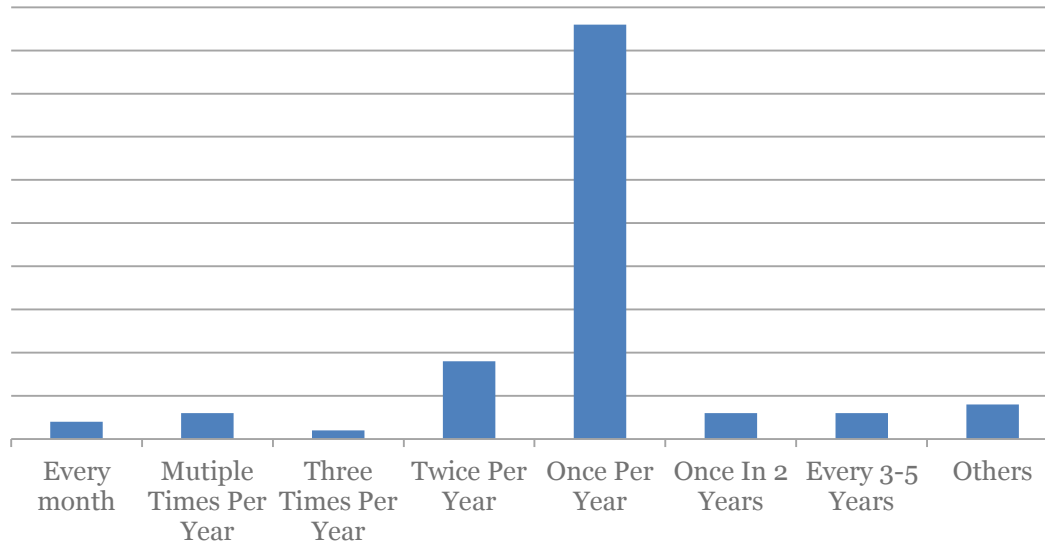
- Grant size varies a lot but PI-type projects usually provide grants of about 3-500k€ and institutions-types are more in the range of 1-3M€+
- Cofunding required for about half of the programmes, very heterogeneous requirements
- Various overheads policy



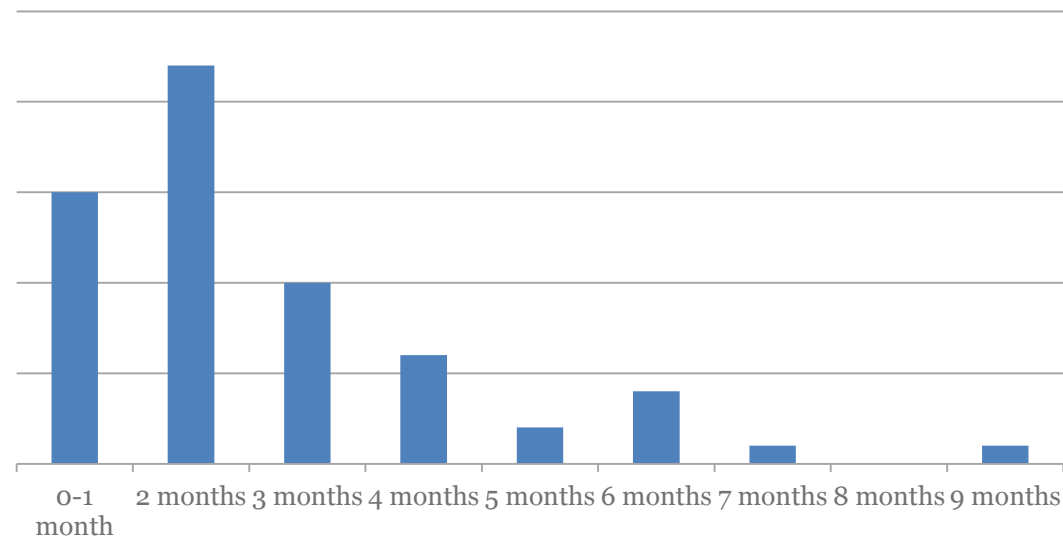
Questionnaire feedback (4)

RFP process

Proposal frequency



Call time duration





Questionnaire feedback (5)

Monitoring and evaluation of impact

- At this stage, it is difficult to differentiate information from monitoring and from impact analysis
- Criteria:
 - **Scientific excellence** (biblio/citations, prizes, impact on top groups, support for breakthrough research, attract additional funds...)
 - **International competition** (gap with competitors, attractiveness to overseas talents, international collaborations...)
 - **Human resources** (age distribution, proportion of post grad, outcomes of grantees/career, mobility...)
 - **Policy priorities** (meeting strategic challenges, balance between disciplines, interdisciplinarity, balance between provinces, structure of the research landscape...)
 - **Innovation, technology transfer**
 - **Socio-economic impact**



Reviewing process (1)

Initial screening:

About half of the funding schemes have an initial screening step:

- Purely administrative eligibility criteria (1-10 % rejection)
- First step/outlines of the project may be screened internally by the funder (up to 75% rejection). However, this process is not always very transparent.

Review panels/committees:

- The large majority of funding schemes have review panels/committees. In some cases, oral interviews are conducted by the panel (jury).
- They are usually advisory and not decision making (with exceptions).
- They usually propose a ranking of the proposals, often with qualitative recommendations. They can often make funding propositions.



Reviewing process (2)

Individual reviewer choice and tasks :

- Reviewers may receive very different numbers of proposals to review (3 to 20+).
- Each proposal may also be reviewed by various numbers of reviewers (usually 2 to 5).
- International reviewers are very often used in smaller countries.
- Reviewers are recruited through various means: open call, lists, previous reviewers (sometimes with a minimum % of turnover), nomination by the panel chair, recommendation by review panel, suggestion by the applicants, election by the scientific community.... There can be a mix of internal and external reviewers, and a mix of peers and experts.
- For external reviewers, there is typically a 25-45% acceptance rate.
- Proposers are rarely given the opportunity to respond to reviews.



Reviewing process (3)

Appeal system :

- Only a minority of funding schemes have an appeal system.
- Usually an administrative procedure (if applicants believe the procedure was not carried out properly),
- A few schemes also have a mechanism that allow for a review of the substance of the proposal by either the same reviewing panel or by a different group.

Innovative processes: very few!

- Reduction of prescriptive elements in the calls and funding agreements to foster flexibility.
- Mechanisms to foster innovative ideas: pilot micro-grants to support preliminary studies on new ideas; ERC proof of concept grant; mechanisms to retain a proposal based on strong novelty despite lesser ranking; flexibility in ranking criteria.
- Oral pitch + interviews for selective/narrower schemes



Peer review challenges (1)

- Matching the reviewing system with the strategic objectives of the fund:
 - Large differences in needs and project time between disciplines and projects
 - How to adapt evaluation criteria, guidelines, marks ?
 - Is the panel competent to assess all the criteria ?
- Trust:

Evaluation process, expert nomination, conflict of interests, quality...
- Quality:

Expert nomination, number of expert/project, number of project /expert, quality/competencies of the reviewers...
- Learning and teaching:

Getting feedback from the users; providing feedback to the users
- Autonomy and flexibility:

Adapting criteria, adapting funding to the needs



Peer review challenges (2)

- Managing risk :
Fostering, evaluating and selecting high risk/innovative ideas
- Managing interdisciplinarity:
Expert and panel expertise; lack of publication reference...
- Age and gender bias:
Adapting RFPs and reviewing process/criteria to foster young and female applicants
- Avoid negative side effects:
Inadequate reviewing criteria may prevent good scientists from less renowned institutions to obtain funds
- Managing low success rates:
How to avoid rejecting good proposals !
- Improve the system:
Use the right monitoring and impact assessment methodology