**OECD Global Science Forum**

**International Worklshop on**

**“Effective Operation of Competitive Funding Systems”**

**12 October 2016**

#### OECD, Paris

#### Draft Summary

Speakers’ presentations are available here : <https://www.innovationpolicyplatform.org/effective-operation-competitive-funding-systems-oecd-project/open-files/workshop-presentations>

***Session 1 : Current situation and challenges***

The Secretariat provided a short introductory background on the activity and its objectives.

A first presentation was given by Jochen Gläser (Technischen Universitat Berlin) on “Context, content and effects of competitive funding mechanism”.

It underlined the need to explore the relationships between the conditions under which competitive funding takes place, competitive funding procedures, and effects of competitive funding.

The presentation highlighted:

- the mechanisms of competitive research funding

- the mechanisms of peer review

- how competitive funding works under strain

The conclusions were that:

- There are unavoidable tensions between competitive funding and research practices of scientific communities. Nevertheless, there seems to be no alternative to either mechanism.

- Tensions and limitations are best countered by diverse funding landscapes, i.e. sufficient recurrent funding and multiple funding competitions with reasonably high success rates.

- Tensions and limitations are aggravated by recent financial pressures. A major problem appears to be that the research work force grows faster than its resources for conducting research.

During the discussion, the need for funding schemes with different time frames was underlined, as various scientific disciplines or projects have different requirements. The need for a diversity of models was also stressed (responsive, thematic, individual or team support etc.), but noting that this is challenging for peer review.

A potential problem identified in Japan is that, as a result from competition, very good researchers from smaller institutions have difficulties in getting funded, resulting in a loss of capacity for those institutions.

The potential limits of the peer review system were also discussed: in a research system relying heavily on competition, peer review systems are overloaded and quality is difficult to maintain. So some trust has to be introduced; for instance, in Switzerland, very good projects may get automatic funding renewal.

The question to adapt the reviewing system was thus raised: how to find the right balance between quality and simplicity, and to take into account the different requirements of scientific domains/projects/institutions.

Finally, success rates were heavily debated, their potential cause and impact. The original system set up in Australia was described as an interesting option, where a scientist may only be a Personal Investigator for 2 proposals at a time, to make researchers think about their priorities and thus avoid less solid proposals, although the efficiency gain may be limited.

A second presentation was given on behalf of the Secretariat by Frédéric Sgard, providing a summary of the preliminary results from a questionnaire survey.

Those results are also described in the annexe of the annotated agenda.

***Session 2: Can funding processes be made more efficient?***

Following an introduction by Kei Kozumi, two presentations were made on very different cases.

The first was on the international evaluation of the National Science Foundation of China’s funding and management performance, by Shi Xiaoyong (National Center for Science and Technology Evaluation).

This funding system is characterised by its exponential growth over the last 20 years, which has creating a challenging management task. A very detailed evaluation was carried out through extensive questionnaire and interviews in 20111. Among the recommendations was the need for more flexibility in the funding instruments, in both size and duration, to adapt to differential needs. As a result, the average grant size and duration was increased.

Also of importance was the need to set up dedicated funding schemes for younger researchers and female scientists. This resulted in a new instrument – the Excellent Young Scientist Fund-focusing on those with age of 35-40. Effort to manage the number of applications however, which put a heavy burden on the funding management, has been more difficult to achieve, as the number of application has continued to grow rapidly.

The second case was that of the French national funding agency (ANR) presented by Yves Fort.

The ANR budget suffered severe restrictions over recent years. Coupled with increased missions (although ANR only distributes a small percentage of public research funding in France), this led to serious difficulties, highlighted by a sharp fall in success rates of applicants (down from 25% 10 years ago to around 10%).

A critical element was that such a low success rate led to a strong distrust from the scientific community. It was also noted that the funding offer was too fragmented and lacked synergies with international priorities.

A new unique work programme was set up, built around societal challenges and complemented by more focused programmes (for young researchers, for exploratory research and for collaboration with industry). A new evaluation mechanism was also implemented in a two stages process, to reduce administrative burden and to provide more detailed/transparent information for the selection process. New sets of criteria for evaluation have been defined.

A major challenge identified is that of getting accurate assessment and match between experts and projects; This is particularly difficult for interdisciplinary projects. A matching matrix is being tested but the issue remains challenging.

In the discussion, the interest of the two steps evaluation system was debated. It appears to increase delays for attributing funds but is often well appreciated by the scientific community, although its real impact remains to be determined.

Rolling deadlines rather than fixed dates also appears to be a positive system and may decrease the total number of applications.

Time out systems (i.e. the impossibility for researchers to re-enter the competition before a certain time according to various criteria) was found to be controversial; it may increase the quality of proposals but also put younger scientists at a disadvantage.

An important question which was raised is that of the percentage of proposals that experts panel feel should be funded versus those which are effectively funded (so are all good proposals funded are all good researchers entering the competition ?).

The legitimacy and acceptability of the peer review/selection process also seems to be a major factor for the success of competitive funding mechanisms. Below a certain success rate threshold, the legitimacy of the selection process may be questioned.

***Session 3: How to anticipate the potential impact of proposals?***

The session was introduced by Yasushi Sato, underlining the diversity of meanings of “impact”.

A first presentation was given by Danielle Li (Harvard Business School) on the effectiveness of NIH funding.

The focus was on two main issues:

- the efficacy of the selection/peer review process, and

- the impact of the research carried out

Regarding the first point, an analysis was carried out to see whether proposals having obtained the best scores led to high impact. This showed that high scores tend to correlate with high citations; however whether the selection process do contribute to finding good quality but more risky projects that would otherwise not be funded is not obvious.

For the second point, impact on patenting or other innovation indicators was more difficult to evaluate due to indirect effects and time scale. Although some correlation between funding and impact on the health system or on innovation was detected, the path from evaluating grant application to commercial innovation is complicated and uncertain. Much of this research has required the collection and analysis of new large scale data linking funding inputs (scores, funding) to outputs (patents, publications, drugs).

This work also highlighted the need for long-time series of indicators to be collected by funders.

The second presentation was provided by Ruth Freeman (Science Foundation Ireland) and focused on anticipating the potential impact of research proposals.

Funding in SFI is largely distributed over two main criteria:

1. Excellence (Quality/excellence both of the person and of the proposed programme via International Peer/Merit Review);
2. Impact, described as “the demonstrable contribution that excellent research makes to the economy and society”.

SFI has developed an impact framework, based upon a series of main impact categories. Impact is measured based upon an original impact statement and the process can be adjusted according to the size and objectives of the project.

During the evaluation process, ex ante impact evaluation is carried out based upon the impact statement and guidelines are provided for understanding the various elements taken into account.

Annual reporting and mid-term reviews are carried out, using a simplified set of 10 impact statements, to assess impact and evaluate matching between the original impact statement and output. As quantitative impact assessment is not straightforward, a number of case studies are used, from very diverse areas of research, to build a more robust assessment policy and help to deal with the political level.

During the discussion, the need for more input data from funding agencies was highlighted, to conduct assessments. This raises the question of minimal requirements for collecting data in a realistic manner. It was underlined that data on decision-making process would be very informative. In the NIH case, data from individual experts were not available. It was no possible to determine what would have happen to good scored proposals that were not funded.

***Session 4: Is the traditional peer-reviewed evaluation process the best or only way to select the best projects?***

The session was introduced by Luis Sanz who underlined the different criteria that can be used to allocate limited resources, the need to take into account the context in which research funding is developed, and hence the need to find innovative funding mechanisms adapted to those elements.

A first presentation was given by Marta Lazarowicz-Kowalik (**Foundation for Polish Science) on alternatives to** to peer review and novel approaches to research evaluation.

Poland is experiencing a rapid transition of its research system, from a traditional academic institution-based funding to a more competitive system. Many Polish researchers have yet to adapt to this transition and also show strong reservation towards bibliometric-based evaluation systems. It appears that bibliometric indicators cannot substitute for peer review, although careful use of quantitative indicators is useful.

In a context of financial pressure as in Poland, competitive funding based on selective criteria is often perceived as unfair/biased and subjective. Key elements for improving the acceptability of the competition were identified as: Transparency; Reviewers’ responsibility (anonymous reviews?); Feedback/discussion with panels; Rebuttal process. New expectations from society towards research and researchers should also lead to applying new criteria in research funding and innovative selection process.

The second presentation was provided by Peter Kolarz (Technopolis Group) on the ESRC Transformative Research Scheme.

One of the main issues when dealing with transformative research, i.e. new topics inherently different from traditional/mainstream research, is the difficulty to select proposal using traditional peer review system that may be inherently conservative. The ESRC transformative research scheme was set up in the UK for research in social sciences using an innovative two stages proposal; the first step was a selection based on anonymous 2 pages proposals, with the second stage being conducted as ‘pitch-to-peers’ presentation in person to reviewers and fellow applicants.

A thorough analysis of the programme showed that this ESRC’s scheme successfully identified and funded transformative research, and that funded projects produced outputs that were comparable in quality, but more transformative by a range of criteria, than standard grant counterparts. However, some “learning” was required from the panel members to achieve a successful result. The notion of transformative research may has multiple different meanings and balancing transformative scope, scholarly quality, risk, etc. needs to be done deliberatively and collaboratively for each application.

In the discussion, the question whether good scientists can still obtain enough resources to do quality research in systems where financial pressure is important was raised. In Poland, one of the main issues was to successfully fund more risky research through existing grants.

Regarding transformative research, one of the questions discussed was on how to weigh the various criteria used for selection, between innovation, quality and robustness of the proposals. Using anonymity in a first stage was found to be an interesting option but which probably requires a large pool of applicants, and knowing the impact on gender balance would be interesting.

A critical element still appears to be the acceptability of the selection procedure for any funding system to work properly, and then funding schemes clearly have to be context-specific. Training the peer reviewers also seems an important element to avoid bias towards mainstream research.

One element why originality is often dropped is linked to questions on previous research achievements, so there is a need of balance between capacity and originality.

Oral/pitch/interview mechanisms certain seem to provide added value but can also be extremely labour-intensive and time consuming for most funding mechanisms.