

Context, Content and Effects of Competitive Research Funding

Problem: We know next to nothing about the relationships between

- conditions under which competitive funding takes place,**
- competitive funding procedures, and**
- effects of competitive funding.**

Aim: To explore some of these relationships

1. The mechanisms of competitive funding

2. The mechanisms of peer review

3. Competitive funding mechanisms under strain

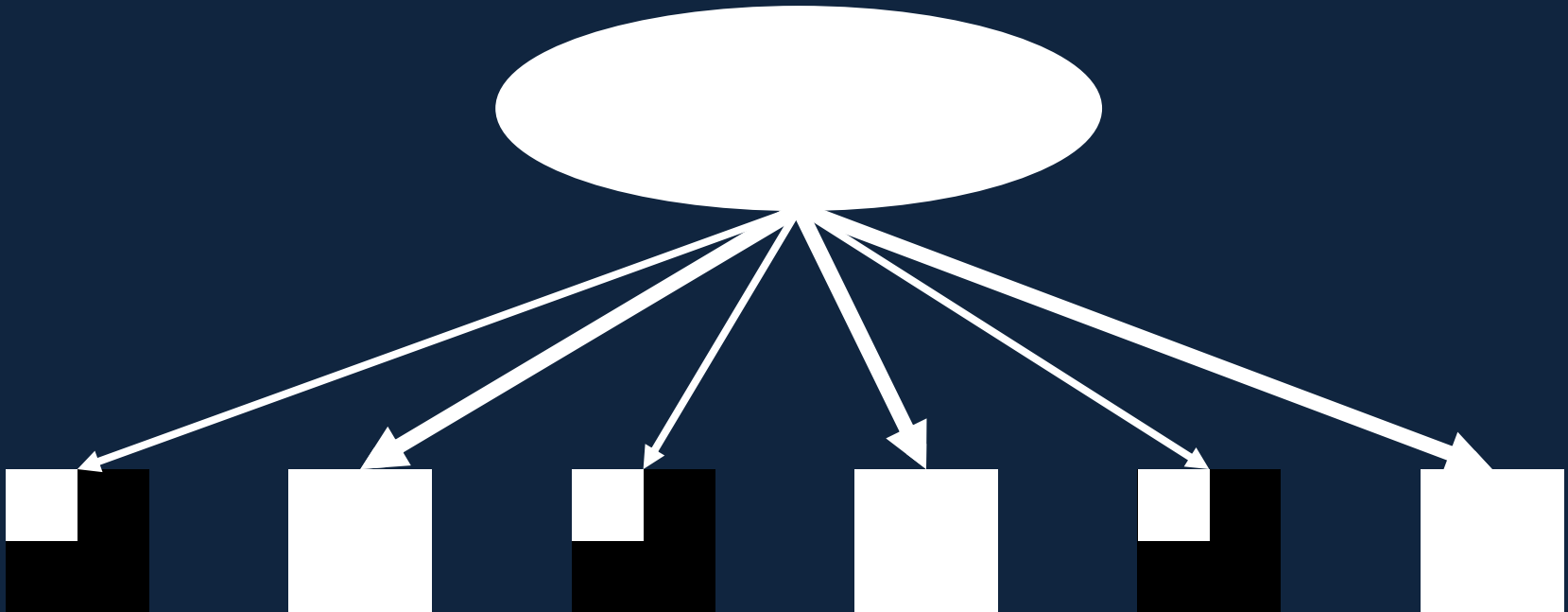
1. The mechanisms of competitive funding

**Intended effects, built-in assumptions and
properties of research**

Intended effects of competitive funding:

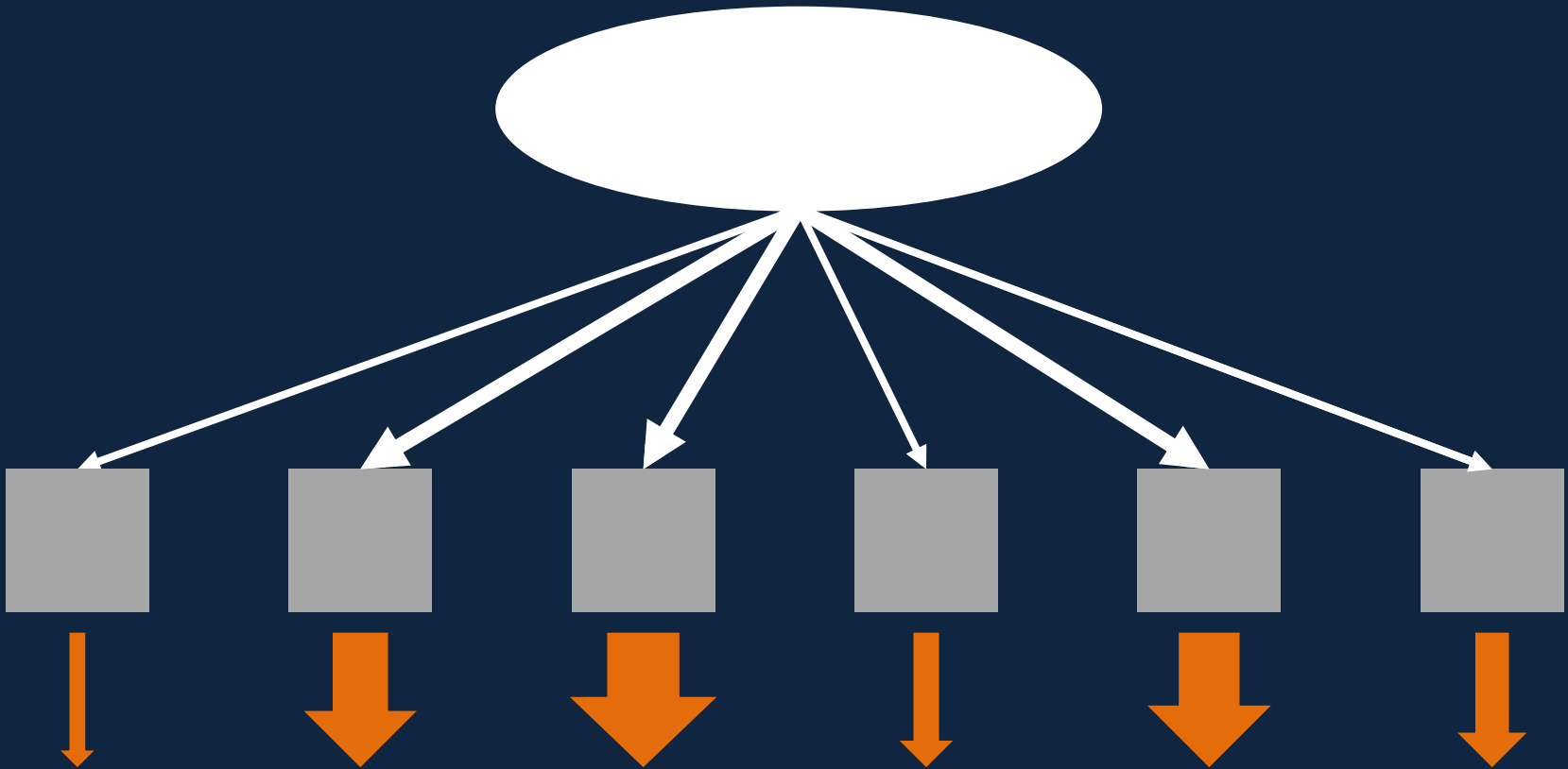
1. Increased effectiveness

If equal distribution means insufficient allocation to all, competition can create sufficient allocation to some.



2. Increased efficiency

The efficiency of a system increases if resources are taken from weak performers and given to strong performers.



3. Providing incentives for improving performance

Rewards for increased performance motivate all units to increase their performance.



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Competitive funding creates quasi-markets for research performance. In-built assumptions of such markets include the following:

Units are independent from each other.

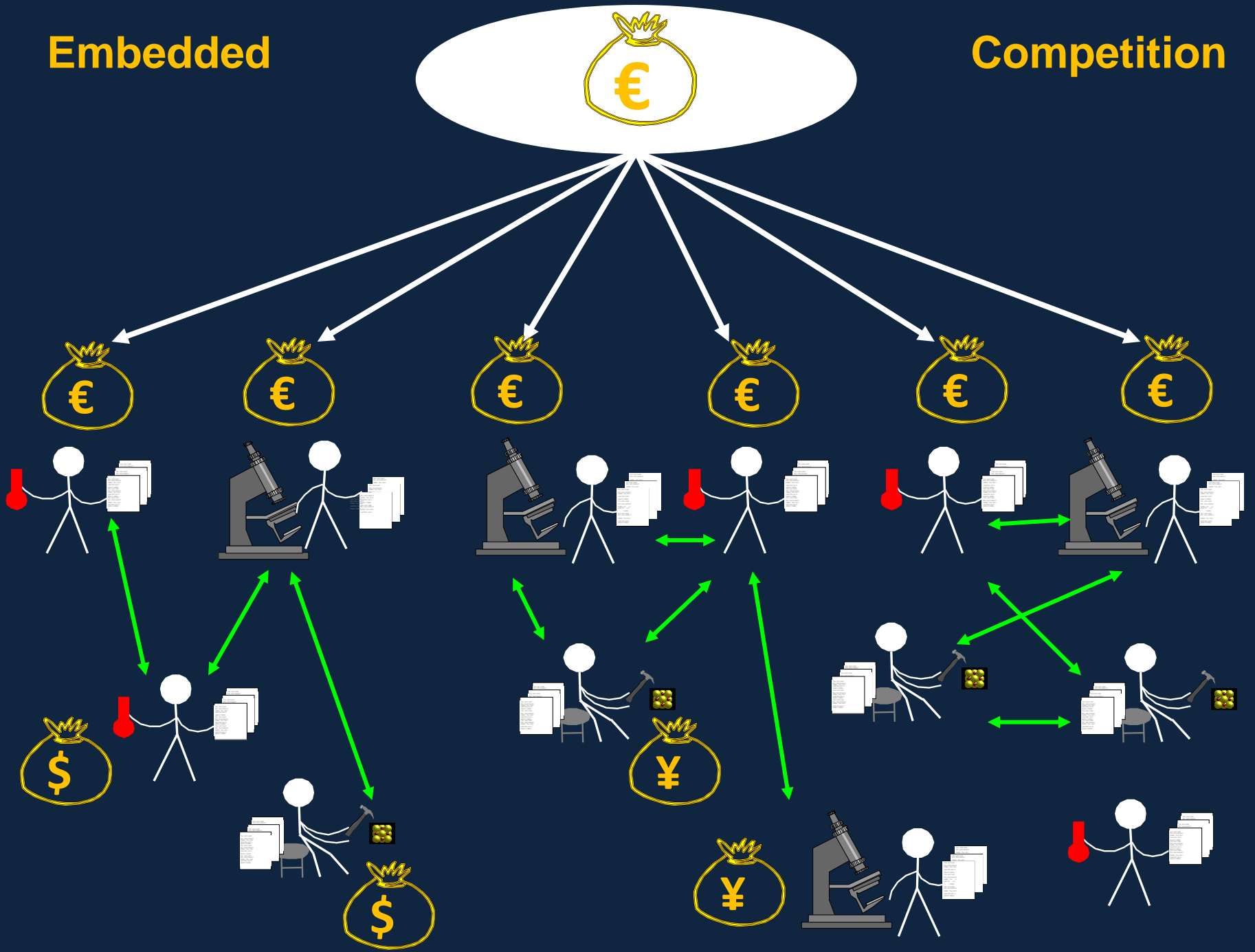
Units are in control of their performance.

Units can cease to perform (disappear).

None of this is true for researchers.

Embedded

Competition



Performance

**Incentives set by
competitive funding**

**Incentives set by
universities**

Task definition

Funding

**Knowledge and priorities
of scientific community**

**Researcher's knowledge
base and prior work**

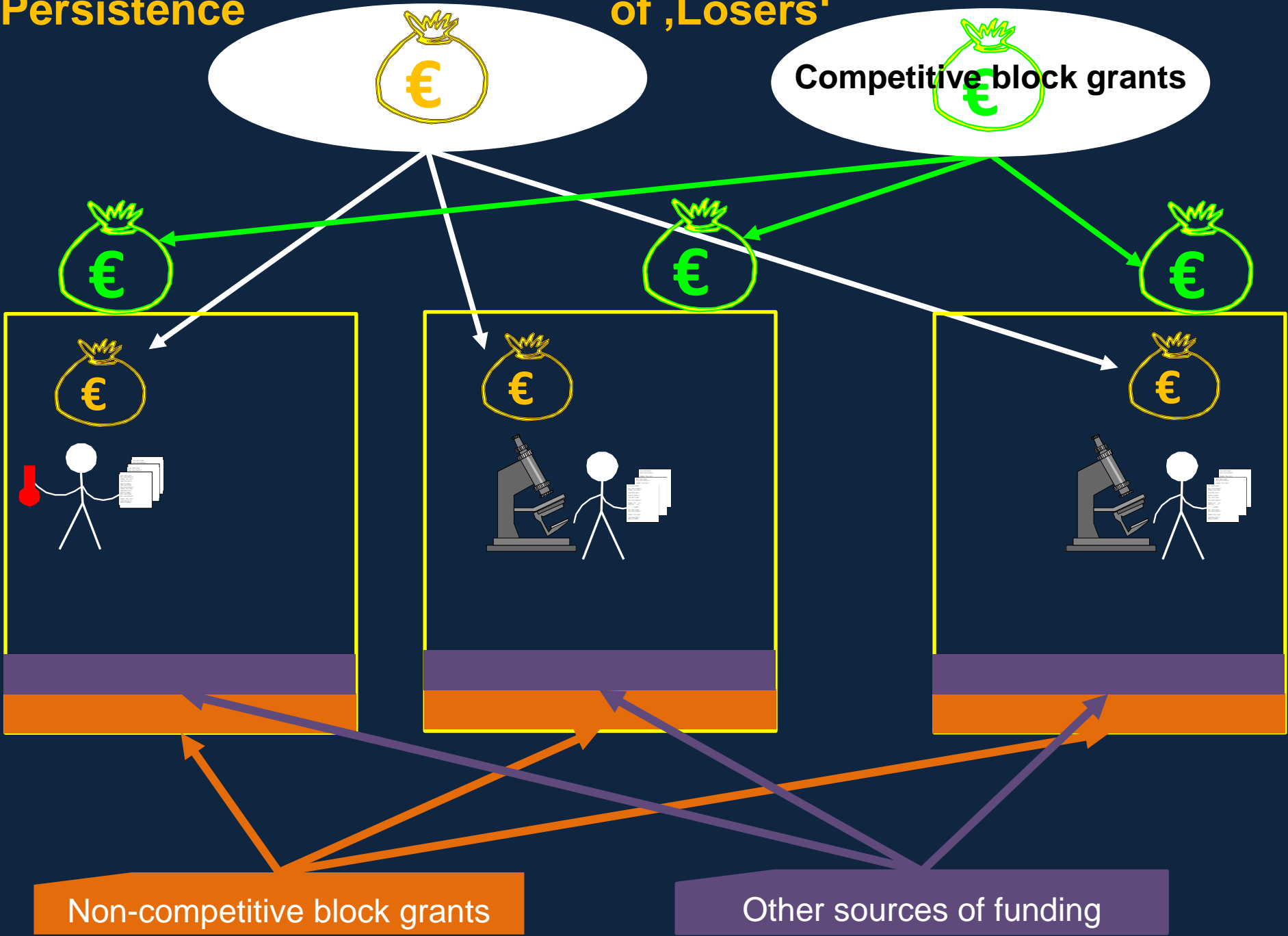
**Researcher's
creative abilities**

Developed by others

Path-dependent

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Persistence of 'Losers'



Non-competitive block grants

Other sources of funding

Assumption

Empirical observation

Units are independent from each other.

Researchers are embedded in scientific communities.

Units are in control of their performance.

Research performance is shaped by many factors beyond the control of researchers.

Units can cease to perform (disappear).

„Losers“ in competitive funding remain in the game – **with the task but without the means** to conduct research.

A further built-in assumption of competitive funding is that the ,project‘ is a suitable organisational form for all research.

Project:

- **planned time horizon (2-3 years)**
- **planned budget**

This is true less often than one would expect.

E.g. Atomic and Molecular Optics: 5 years and more to build and conduct an experiment.

Interim summary:

There are inherent tensions between ideal operating conditions for competitive funding and properties of research.

2. The mechanisms of peer review

Peer review: Assessment of research (past or proposed) by colleagues working on the same topics.

Built-in assumption:

Members of a scientific community share standards of work, agree on priorities of problems and on properties of ,good‘ solutions.

This does not hold equally for all fields:

- e.g. humanities (importance of individual perspectives)

2. The mechanisms of peer review

Constant observation of the scientific community



Design of project proposal
(anticipation of peer review)



Collective assessment



Reject



Accept



Revise



Some observations of the peer review process

- 1. Competitive funding reduces the autonomy of researchers *vis-a-vis* their scientific communities.**
- 2. The anticipation of a review by ,average‘ community members favours mainstream research and risk avoidance.**
- 3. The assessment by peers is different from research. Reviewers apply their personal scientific perspectives in the interpretation of a proposal.**
- 4. Under these conditions, the collective selection of proposals favours mainstream and low-risk research .**
- 5. Reviewers can be successfully instructed to select high-risk non-mainstream research.**

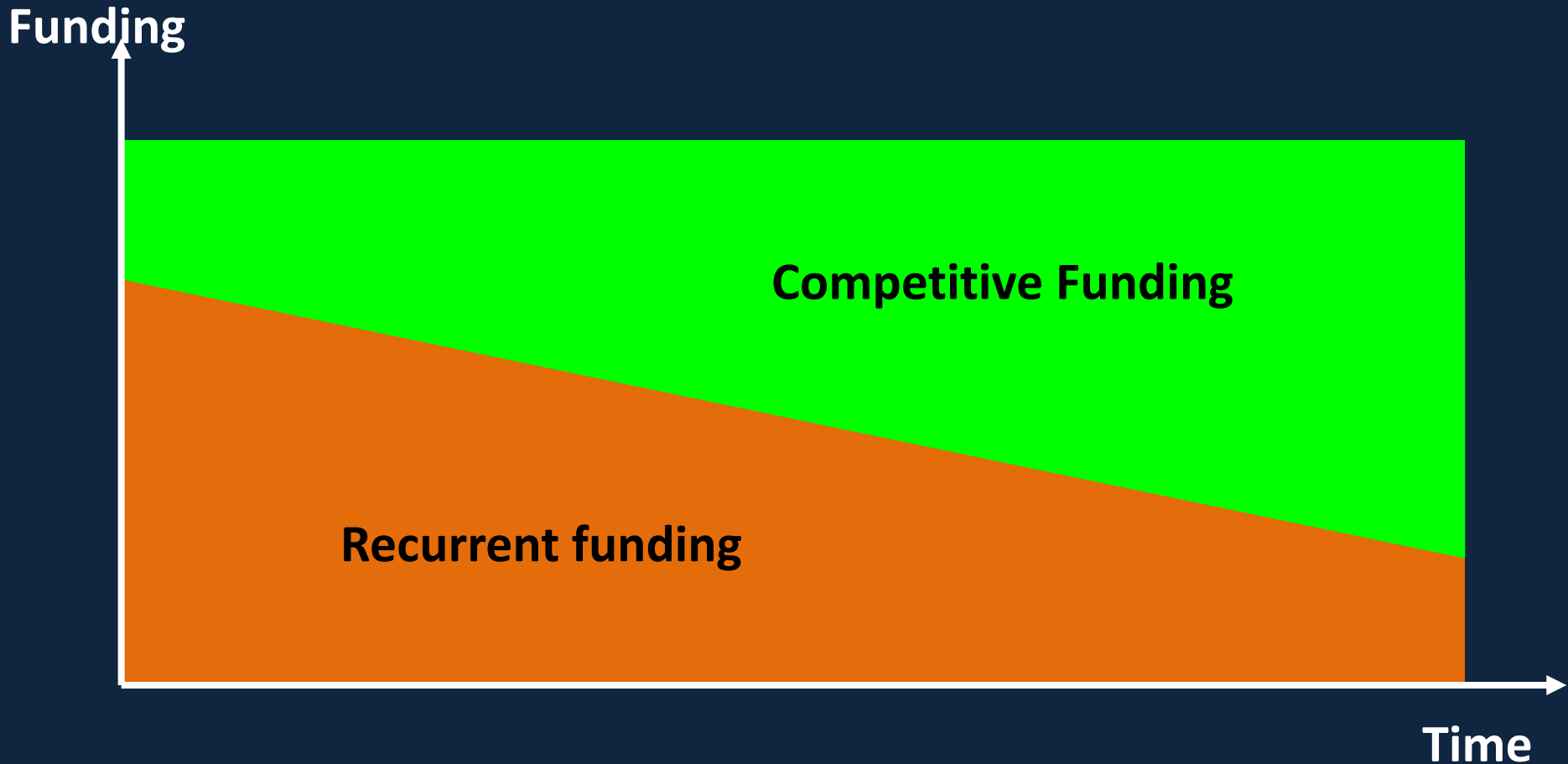
Interim summary:

Peer review implements majority opinions, which does not suit all fields and all purposes.

3. Competitive funding mechanisms under strain

- Over-reliance on competitive funding**
- Hyper-competition**
- Loss of ,peeriness‘**

Over-reliance on competitive funding

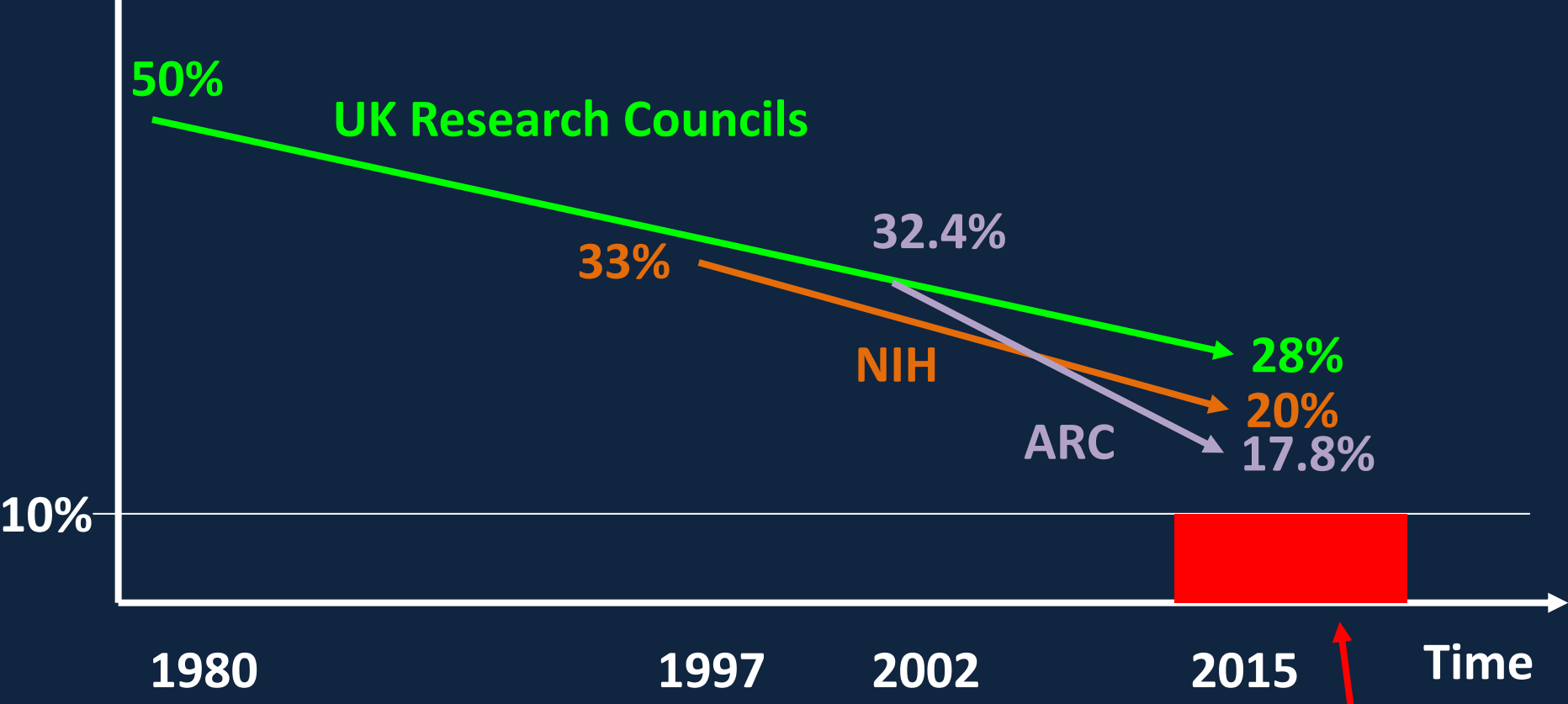


➔ **Competitive funding must be used for an increasing number of tasks for which it is not designed.**

➔ **Competitive funding drains and orients recurrent funding.**

Hyper-competition

Success rates



Many competitions

- ➔ Self-reinforcing effect;
- ➔ *Existential* dependency on success;
- ➔ Strengthens conservatism of peer review;
- ➔ Competitive project funding increasingly wastes resources.

Loss of ‚Peerness‘

= Reviewers are increasingly forced to assess proposals outside their zone of expertise

Main cause: Rapid differentiation of science.

The loss of 'Peerness' is particularly prevalent for

interdisciplinary
research

Small science
systems



➔ ,Thin assessment' (amateur bibliometrics).

➔ Increasing difficulties to find reviewers.

Interim summary:

Scarcity and loss of peeriness threaten the conditions under which competitive funding leads to effectiveness and efficiency.

Conclusions

There are unavoidable tensions between competitive funding and research practices of scientific communities.

There are unavoidable limitations to peer review.

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.