



# Funding Research to Address Global Challenges



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- Ex-post funding
  - Funds awarded retrospectively on basis of research performance
- Ex-ante funding
  - Funds allocated in advance for pre-screened applications
- Fixed funding
  - Funds allocated irrespective of research performance



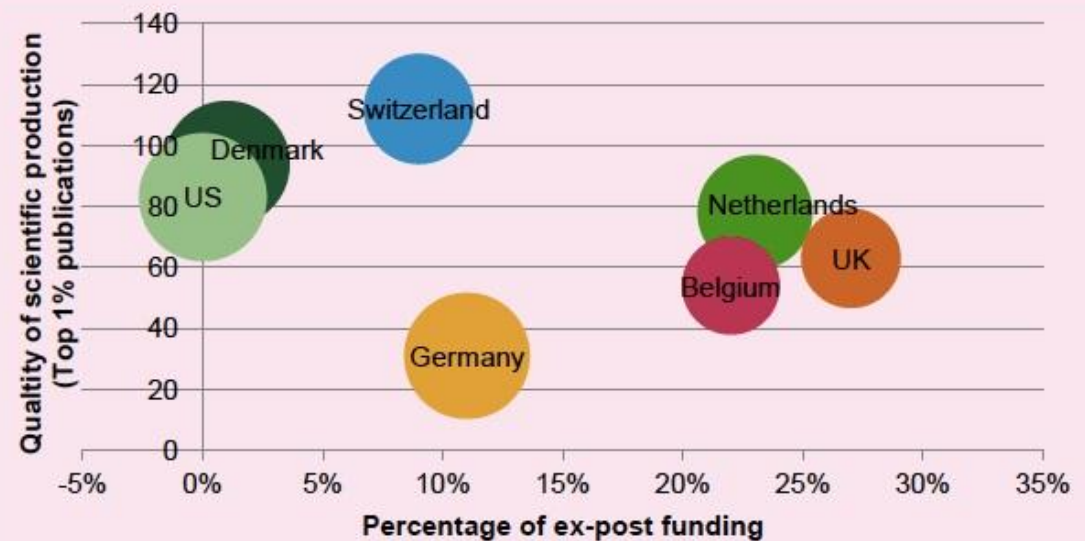
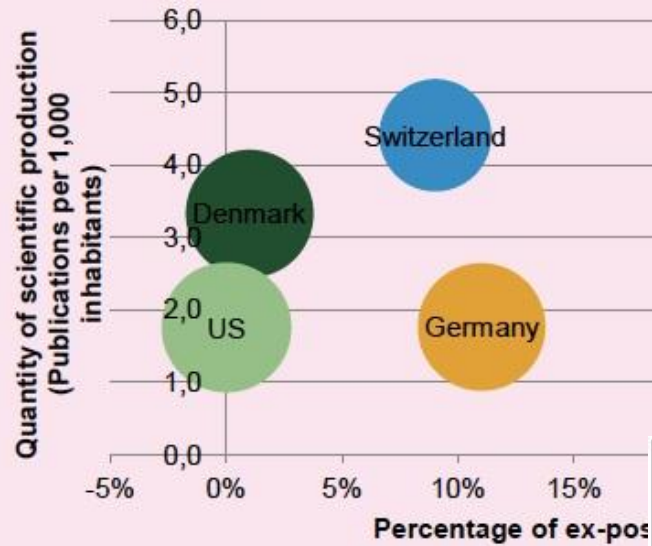
- Comparative study of science funding policy
  - Van Dalen et al. (2014)
  - CPB Netherlands Bureau for Economic Policy Analysis
- Compared UK, USA, Germany, Netherlands, Belgium, Switzerland & Denmark
  - USA: all public funds allocated ex-ante
  - UK & Belgium: dual mode but most is ex-ante
  - Germany, Switzerland & Denmark: most is fixed funding
  - Netherlands: no dominant mode

# Which is best?

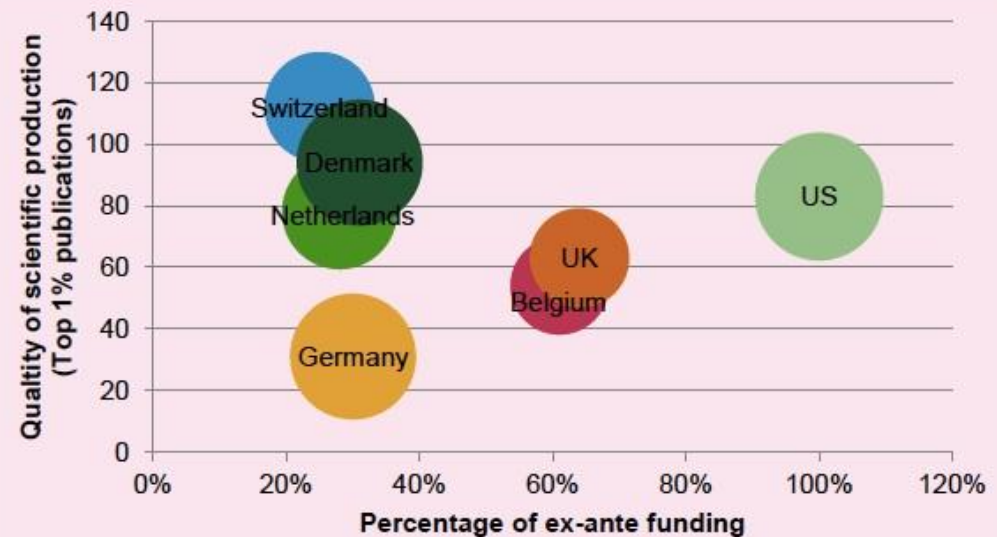
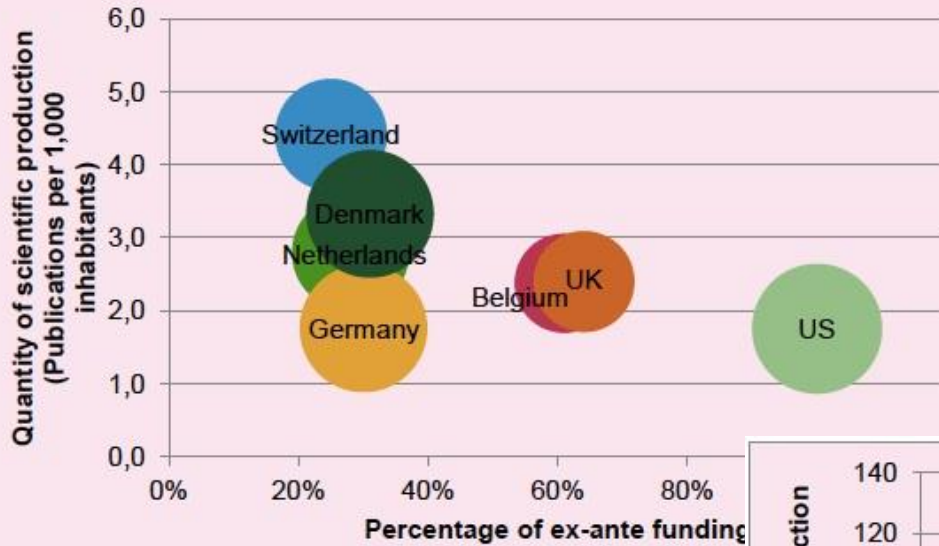


- Countries that allocate more on ex-post funding spend less per citation and publication
  - But strong incentives to focus on measurable outputs can be detrimental in terms of less measurable outputs
- No relationship between levels of ex-ante funding and scientific production or efficiency for the comparison countries
- A higher degree of fixed funding is related to higher levels of output
  - Lack of financial incentives does not necessarily lead to lower levels of output
  - Possibly explained by strong incentives to maintain reputation

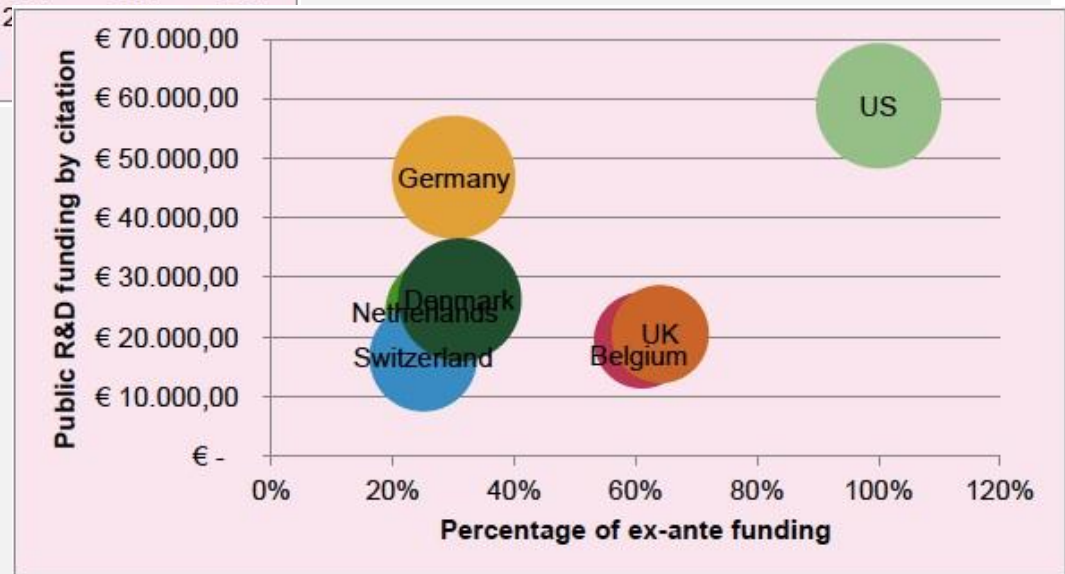
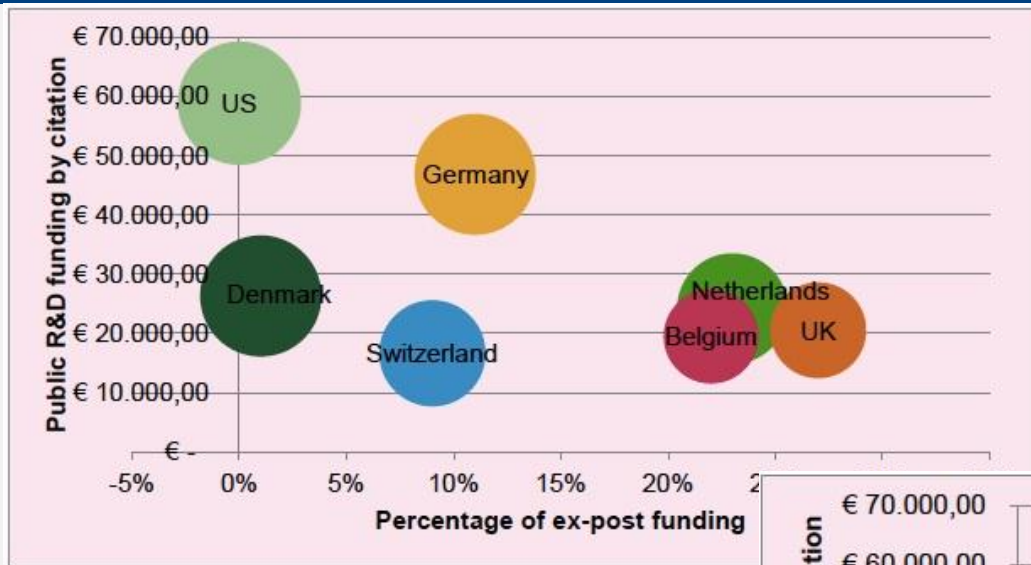
# Effects of ex-post funding



# Effects of ex-ante funding



# Relative costs of each model





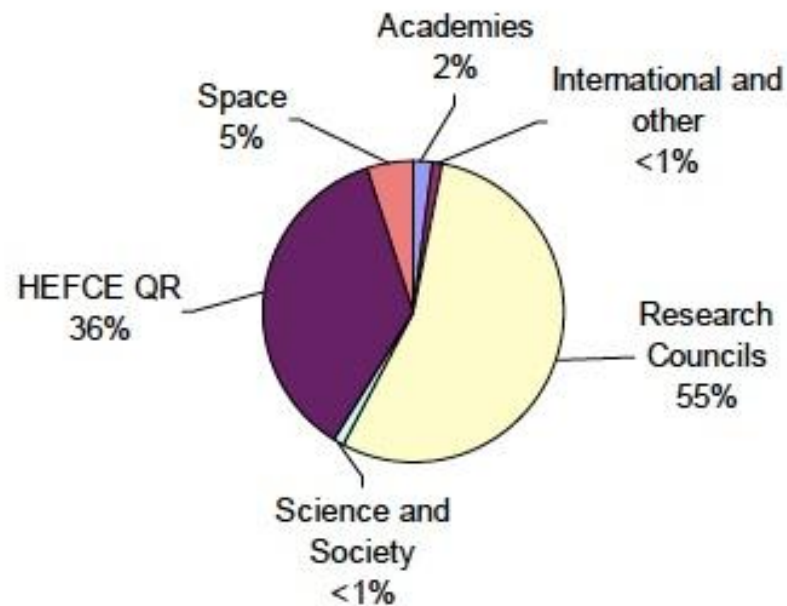
# UK Dual Funding Model



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**Science Resource budget maintained in cash terms  
with broadly the same balance between areas (Total ~  
£4.6 bn)**





# UK Research Councils



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Council	% total RC funds
Engineering & Physical Sciences Council	24%
Medical Research Council	24%
Science Technology & Facilities Council	16%
Biotechnology and Biological Sciences Research Council	15%
Natural Environment Research Council	12%
Economic & Social Research Council	6%
Arts & Humanities Research Council	3%



- Directed mode
  - Funding in defined areas, usually following Government strategic challenges
- Responsive (open) mode
  - Not usually constrained by RC priorities (but do have to demonstrate impact and to some extent make reference to national importance...)
- Others include
  - Large facilities & research institutes
  - Partnerships with industry
  - Doctoral training centres and Postdoctoral fellowships

# Cross-Council Priorities



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Theme	% total RC funds
Digital Economy	1.2%
Global Uncertainties	1.2%
Energy	5.2%
Living with Environmental Change	5.4%
Global Food Security	4.2%
Lifelong Health & Wellbeing	1.9%



# Institutional strategy





- Focus and incentivise around a limited set of research priorities
  - Reflect institution's strengths across all campuses and recognising unique 'local' foci (e.g., Malaysia and Food Security)
  - Oriented to some extent towards national priorities and global challenges
- 'Open' calls for new initiatives for pump-priming
- Form strategic partnerships
  - With industry, other UK HEIs (e.g., Nottingham-Birmingham Alliance), other international partners (*increasingly important*)
- Support early career and research leadership potential
  - E.g., Nottingham Advanced Research Fellows; Nottingham Research Leadership Programme



- Increasing emphasis on this
- Refresh of research priorities around global challenges
- Building on strengths and potential in overseas campuses
- Strategic partnerships through networks
  - e.g., Universitas 21 international network of research intensive universities
- Links to high level Government strategies
  - e.g., China, India, Brazil, Indonesia
- Aligning strategies for teaching & learning, research and business engagement and internationalisation
- Target setting and monitoring
  - E.g., international co-authorship of papers; mobility

# Some notes of caution...



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- The best and most productive collaborations probably require a long term strategy and multiple instruments
  - E.g., from networking to joint PhDs, co-supervision, postdoctoral exchanges & mentoring, leading to grant applications, MoUs, etc.
  - But need aligning so not to lose focus
- They depend to some extent on individuals' interests and personal relationships and not just high-level agreements
- They require mutual respect and that each partner gets value from the collaboration
  - Synergy, complementarity, interdisciplinarity





Questions?