

The role of universities as key vectors for achieving the European Research Area

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The challenge

- Europe in difficulty
 - Economic crisis
 - Societal challenges of sustainability, long term food, energy and water security, ageing population, inequality in health
 - Reduced public confidence in public and private institutions

The pathway and the paradox

- Widespread political acceptance that innovation based economic growth is a major part of the solution but....
- Austerity measures in many European countries are restricting the ability of the research and innovation system to play its part

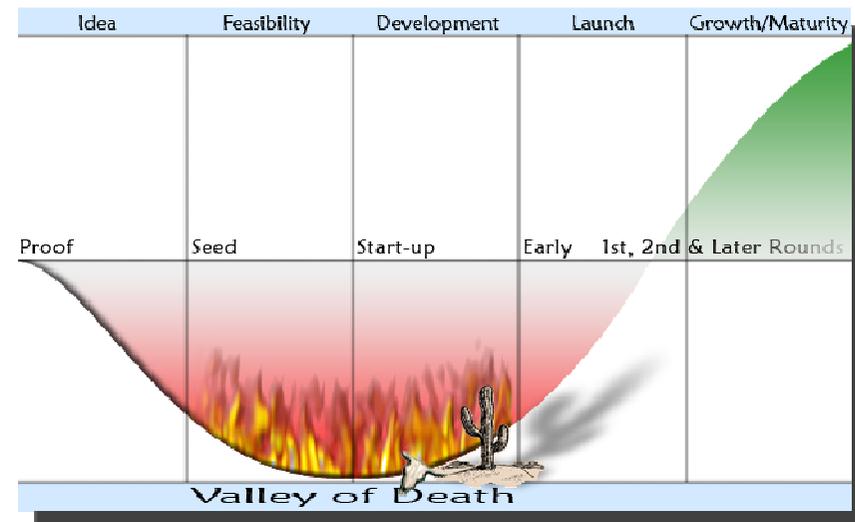
Why a European Research Area?

- It is difficult to make a case for investment if you cannot first show that existing resources are used with maximum efficiency
- The definition of the ERA is underpinned by a drive for increased efficiency and effectiveness
- “A unified research area open to the world based on the Internal Market, in which researchers, scientific knowledge and technology circulate freely and through which the Union and its Member States strengthen their scientific and technological bases, their competitiveness and their capacity to collectively address grand challenges”

Understanding of role of knowledge in the economy locked into narrow concepts



Source: Guardian.co.uk

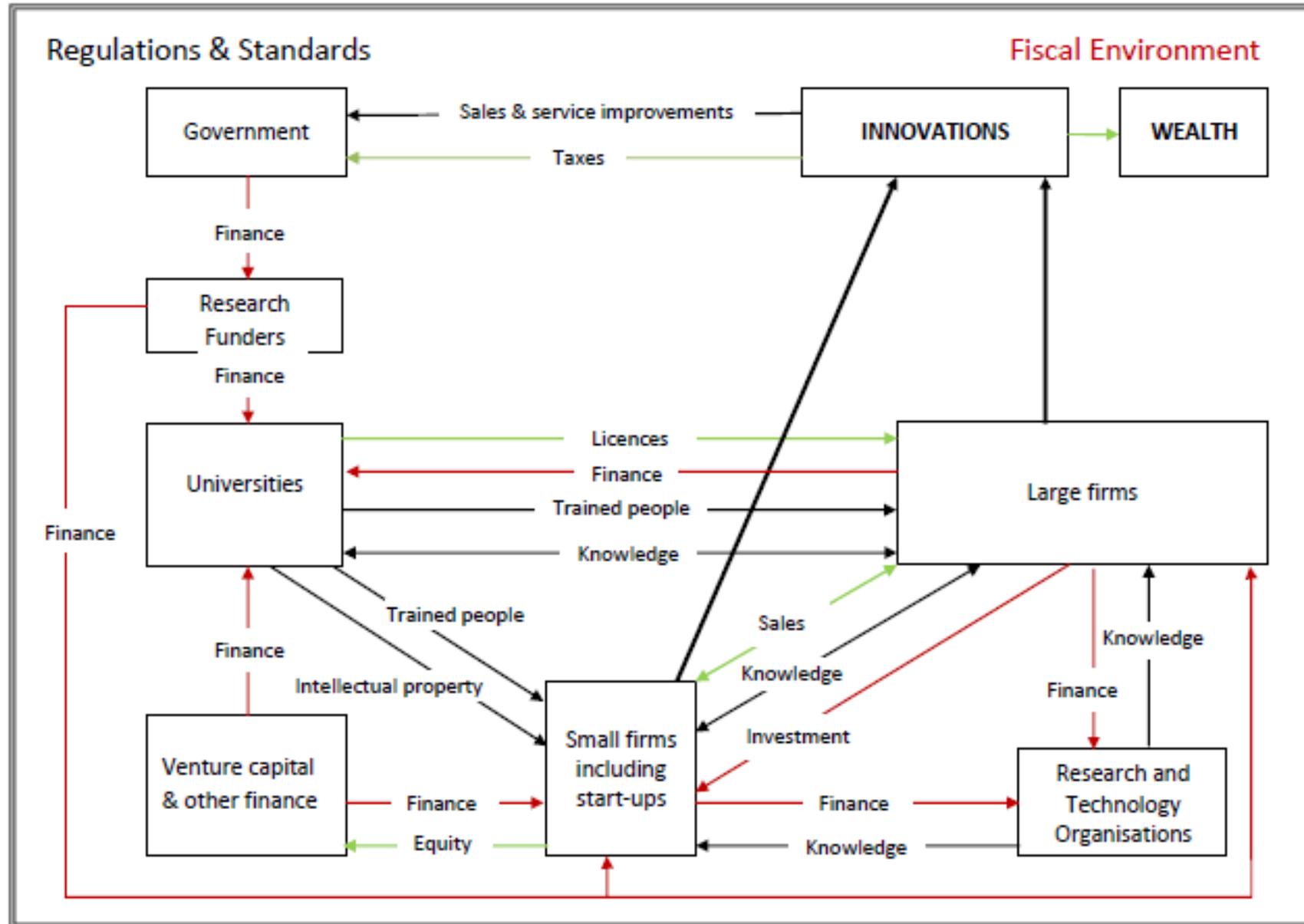


Source: Innovation Arizona

In reality innovation ecosystem rests on four key flows

- People
 - Having the right skills and talents, retaining the best graduates from our education system, critical mass in labour markets for creative people
- Finance
 - Investment in research, support from banks for growth companies, seed capital, venture funding, enabling investment in infrastructure (physical and intangible)
- Services
 - Infrastructure and associated services for innovation including incubators, science parks, digital connectivity, business support, access to equipment for testing etc.
- Knowledge
 - Flow of ideas, IPR and opportunities emerging interactively from universities, hospitals, RTOs, business R&D, creative sector

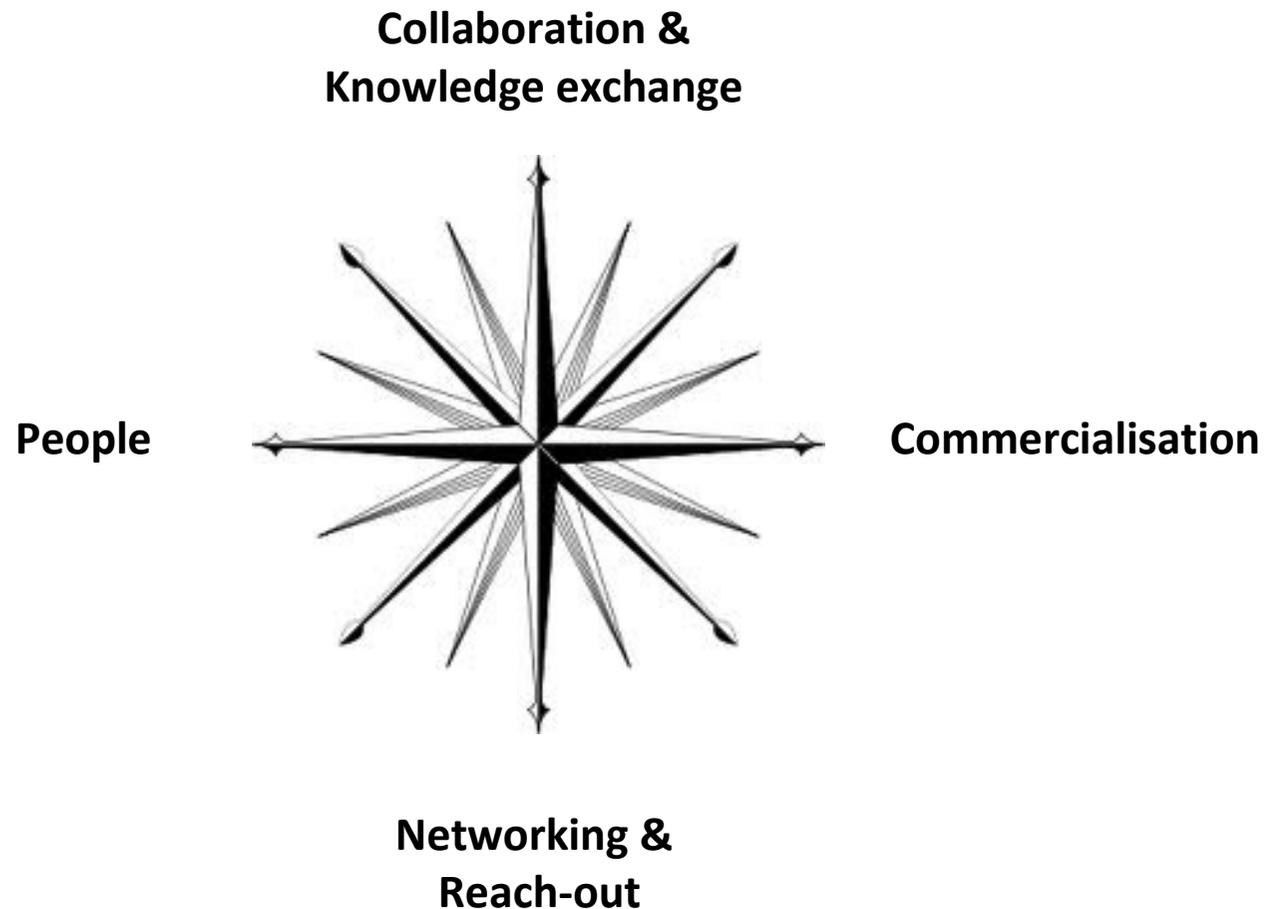
The Innovation Ecosystem



Source: L.Georghiou cited in House of Commons Select Committee on Science & Technology Report Bridging the valley of death: improving the commercialisation of Research, March 2013

Role of universities

- Key vectors in generating and channelling these flows



Rationales for ERA

1. Scale – e.g. larger labour market makes it more likely that positions can be filled with excellent candidates
2. Complementarity – e.g. reduction of barriers to cross border working makes it more feasible to programmes & teams around key challenges
3. Access to resources – e.g. capital assets such as large infrastructures can be used more efficiently and where they are indivisible cost sharing is feasible
4. Competition – e.g. exposing all to highest standards of peer review can raise level
5. Learning – e.g. spreading best practice in issues such as research careers, gender and knowledge transfer

ERA Priorities agreed in 2012

- More effective national research systems
 - increased competition within national borders and sustained or greater investment in research;
- Optimal transnational co-operation and competition
 - defining and implementing common research agendas on grand-challenges, raising quality through Europe-wide open competition, and constructing and running effectively key research infrastructures on a pan-European basis;
- An open labour market for researchers
 - removal of barriers to researcher mobility, training and attractive careers;
- Gender equality and gender mainstreaming in research
 - end the waste of talent which we cannot afford and to diversify views and approaches in research and foster excellence;
- Optimal circulation, access to and transfer of scientific knowledge including via digital ERA
 - to guarantee access to and uptake of knowledge by all.

ERA Communication Expert Group

- ‘Federation’ of specialist sub-groups on each priority
- Mandated to provide recommendations on key steps to implement the priorities
- Commission’s Progress Report published 19.09.2013
- Expert Group Report to be published first week October 2013
- 50 recommendations!

Cross-cutting observations in report

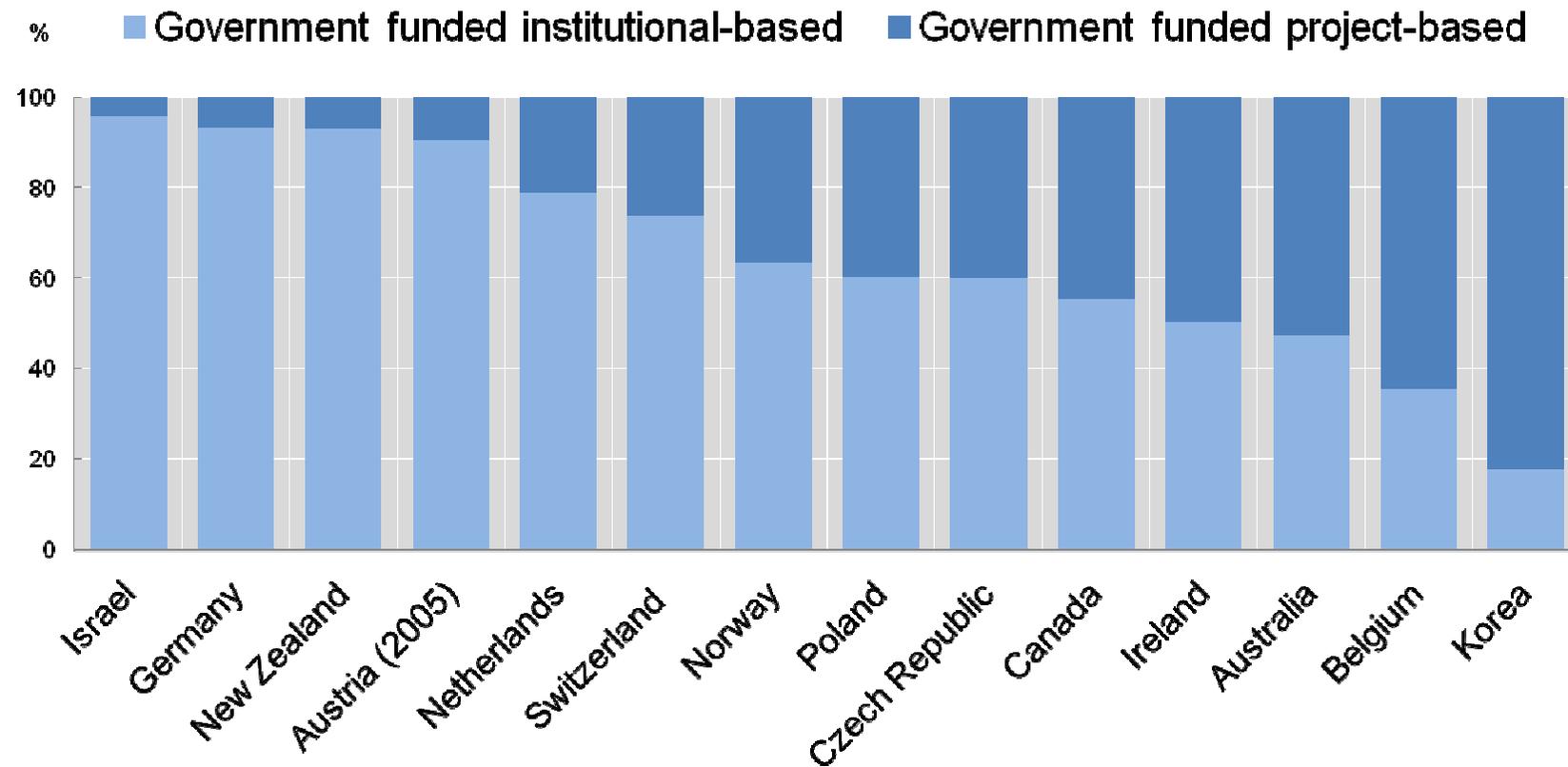
- *Using peer review effectively*
 - Quality of research and the means to achieve and assess are manifested in central role of peer
 - international peer review can drive both excellence and fairness but it is not a panacea and needs to be made free of bias
- *Reducing inequality of opportunity*
 - macro-level the growing gap between for some creates an environment where joint activities unrealistic
 - Need for minimum critical investment
 - Individual level - inequality in institutional structures and practices made visible in gender situation & in research labour
 - requires not only institutional reform but also fundamental cultural change

Cross-cutting continued

- *Ensuring knowledge flows*: including knowledge that is needed for the research system to function effectively
 - development of infrastructures hampered by lack of access portals to national roadmaps and other information
 - Insufficiency in statistics to allow effective monitoring of gender and research career issues
 - more general deficit in evaluation which has yet to catch up with a period of innovation in research policy
- *Making best use of European Structural Funds*: Need to drive synergies
 - An effective ERA enhances functioning of smart specialisation and other key drivers of regional development
 - Resources from Structural Funds should play a critical role in building the level of capacity that is needed to take full advantage of the ERA.

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Example – a focus on competition



Project versus institutional funding though both can be competitive

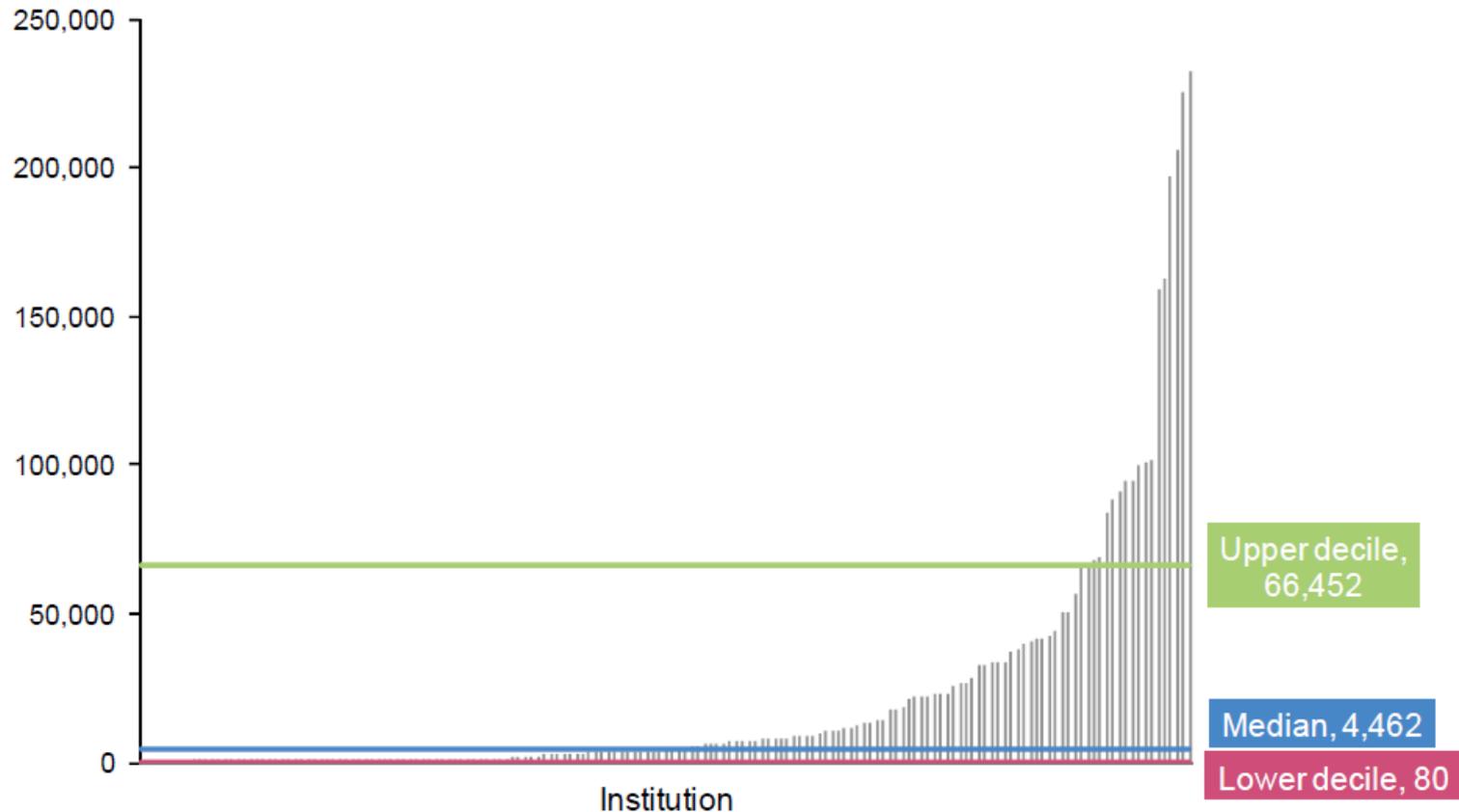
Fundamental parameters of a research system

- **Selectivity**
 - Which fields to support and how much focus to give priorities?
- **Concentration**
 - Which institutions or research teams to support and how concentrated should funding be on the best performers?
- **Sustainability**
 - Are the basic resources of people, money, infrastructure and institutions renewing themselves?

Concentration

- Rationale for concentration lies in the assumption that scale and critical mass increase efficiency and effectiveness
 - Studies show that critical mass of a research group not very large <10
- Clear scale benefits when dealing with indivisibilities
 - eg large equipment or doctoral training schools
- Drive to interdisciplinarity creates economies of scope
 - Ability to configure several disciplines/capabilities around a scientific or societal problem
- Concentration driven in two modes
 - Institutional assessment
 - Elite funding

Significant variation in degree of concentration in national systems



Source: HESA Finance Return 2009/10

UK highly concentrated - Funding of research through the dual support system (£ thousands) by institution 2009/10 Source: UUK

Competitive allocation of block funding

- Increasing tendency to allocate institutional funding through competition rather than by activity formula or historical precedent
- At least 16 countries operate institutional assessments but many in a state of evolution
- Main counter example of Netherlands which runs a national assessment system but does not link explicitly to resource allocation
 - Standard Evaluation Protocol
 - Country maintains relatively flat resource allocation across its universities

Examples of competitive allocation

- Long-running UK Research Assessment Exercise renamed as Research Excellence Framework with inclusion of 20% impact weighting.
- Sweden moving from partial allocation via publications and grant income to peer review in search of greater risk-taking
- French and German Excellence Initiatives provided pulse of change but leave future open
 - *“a departure from a long-cherished – and fatally wrong – conception that all universities are equal and hence should be treated equally. Instead, the Excellence Initiative pursued a path of inequality and of funding elites.” - BMBF*

Elite funding

- Recent trend among funding agencies to drive concentration of research grants in an evolutionary manner by moving to elite funding model
 - Larger, longer grants going to fewer people
 - eg European Research Council, Wellcome Trust
- Based on observation that leading researchers are more productive
- Also a response to growing burden of peer review and desire for ‘demand management’
 - In theory less frequent applications

Some concerns

- Raises questions of sustainability
- Not clear that the elite either individually or collectively have long term absorptive capacity to support sustained concentration
- May end up funding their assistants by proxy while excluding next level of highly excellent people
- Also puts focus on pathways to excellence
 - Key challenge is how to develop entry and exit paths from the elite if the system is not going to ossify
 - Further implications that many more scientists will need to work in teams led by others even at a senior level

Report recommends

- External and internal incentives should be used to help research funders improve governance models and build competence in handling competitive and selection processes
- National funders with the help of Commission should establish common funding principles for project-based and block funding of research
- No Member State should remain below the current EU average of 40% of funding allocated competitively through grant funding
- Institutional funding should be subject to periodic evaluation. To avoid shocks to the system the proportion of resources allocated via such assessments should in the first round of evaluation be partial.
- Structural funds could be a way to: a) allow less favoured players to build capacities and redress concentration of competitive funds and b) to improve the balance between cohesion and excellence.

Implications of competition for networking

- In one sense competition could be seen as an inhibitor to networking
- In practice universities have emulated trend in industry of responding to competitive pressure by building alliances
 - Microcosm of motivations listed earlier
- Structures for networking have struggled to keep up with bottom-up trend to collaborative working
 - UK now passed 50% mark for internationally co-authored outputs
 - France and Germany large partners but
 - 125,000 papers with US 2003-12 larger than sum of these despite no real institutional support

Overall toolbox to achieve ERA

- *Harmonisation*: the application of common principles for action or common approaches, or synchronisation of decision cycles to facilitate joint working;
- *Monitoring and evaluation*: Improving the measurement of the progress of the ERA, evaluating existing practices and supporting mutual learning between actors;
- *Information sharing*: greater and more effective sharing of information about national and organisational initiatives and provision of infrastructure to support this;
- *Use of funding or other incentives to change behaviour*: Funding the actions needed to progress the ERA or linking existing funding sources to compliance with core ERA principles;
- *Governance and regulation*: In exceptional cases achieving progress via agreed mandates. Also embodying key principles in Charters and Codes for good practice.

Conclusions

- Key that we understand the flows in the innovation ecosystem, what drives them and what inhibits them
 - Evaluation practice has not kept pace with the evolution of the system
- ERA programme addresses not only cross-border barriers but also issues that inhibit the effectiveness of national systems and institutions within them
 - Competition is a powerful tool but one that must be moderated
 - Most improvements involve behavioural and cultural change but many of the barriers are rooted outside the research system
- Universities have a key role not only as an actor in the system but as the source of the intelligence that is needed for it to function