5th Annual UK Research Conference

Thursday 29 September 2011

Research excellence: comparing the UK to other countries – findings from the 1994 Group research project

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Introduction

- Comparisons between the UK, USA, China, Japan, Australia and Germany

- The context of research performance in the UK

- Links between research excellence and national research policies

- Elsevier SciVal Spotlight
  - *Competencies*- identified topics of research excellence

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Summary

- Generating national research excellence
- Excellence across the disciplines
- Growing and strengthening excellence
- Contribution of research intensive institutions to national research excellence
- Conclusions

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Generating national research excellence

Country	No. Of competencies 2006-2010	Gross Expenditure on R&D ($ billion)	National Researchers (thousands)
UK	418	40.10	251.93
USA	1817	398.19	1412.64
Australia	130	18.76	91.62
Japan	398	148.72	656.68
China	885	120.61	1592.42
Germany	396	81.85	302.47

Table 1: Research competencies by GDP expenditure on R&D and national researches

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Generating national research excellence

Country	Business Enterprise Sector	HE Sector	Government Sector	Private not for profit sector
UK	62.0	26.5	9.2	2.4
USA	72.6	12.8	10.6	3.9
Australia	60.8	24.2	12.3	2.7
Japan	78.5	11.6	8.3	1.6
China	73.3	8.5	18.3	-
Germany	69.2	16.7	14.0	-
Group Average	69.4	16.7	12.1	2.7

Table 2: Gross expenditure on research by performing sector in 2008 (%)

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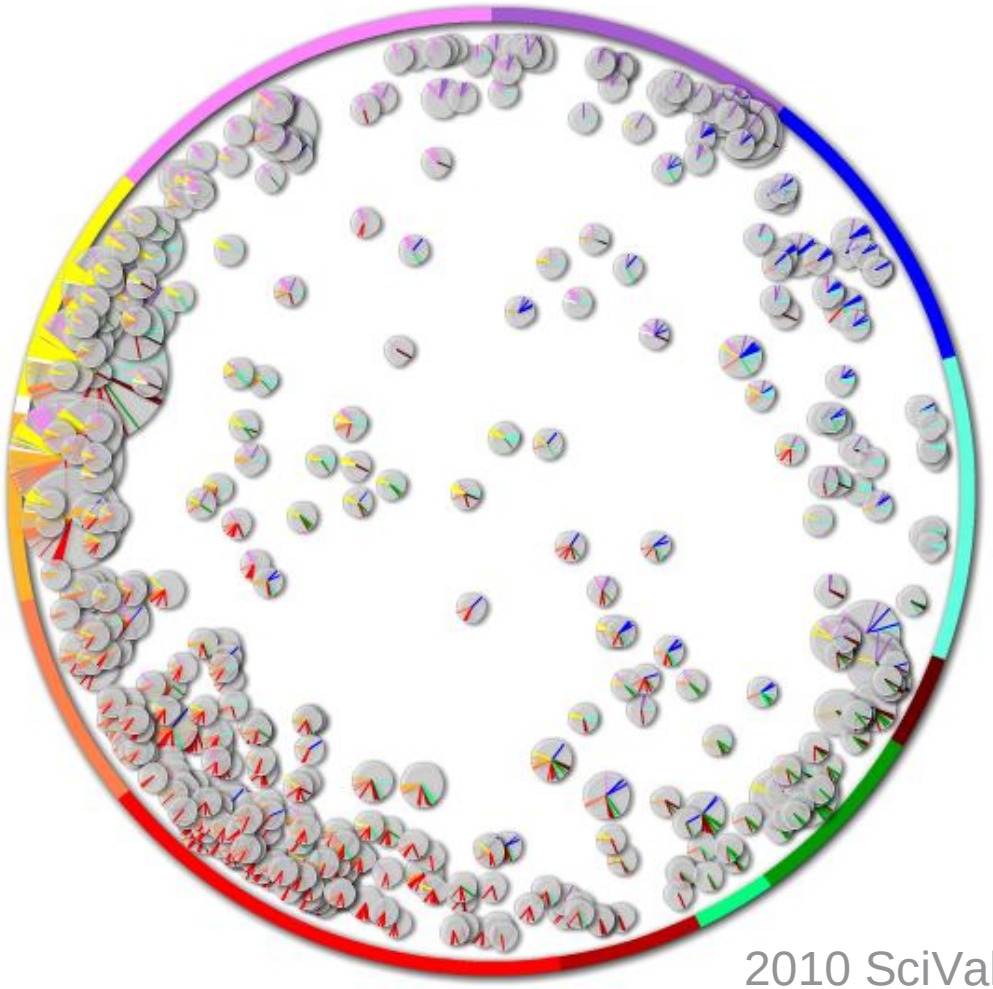
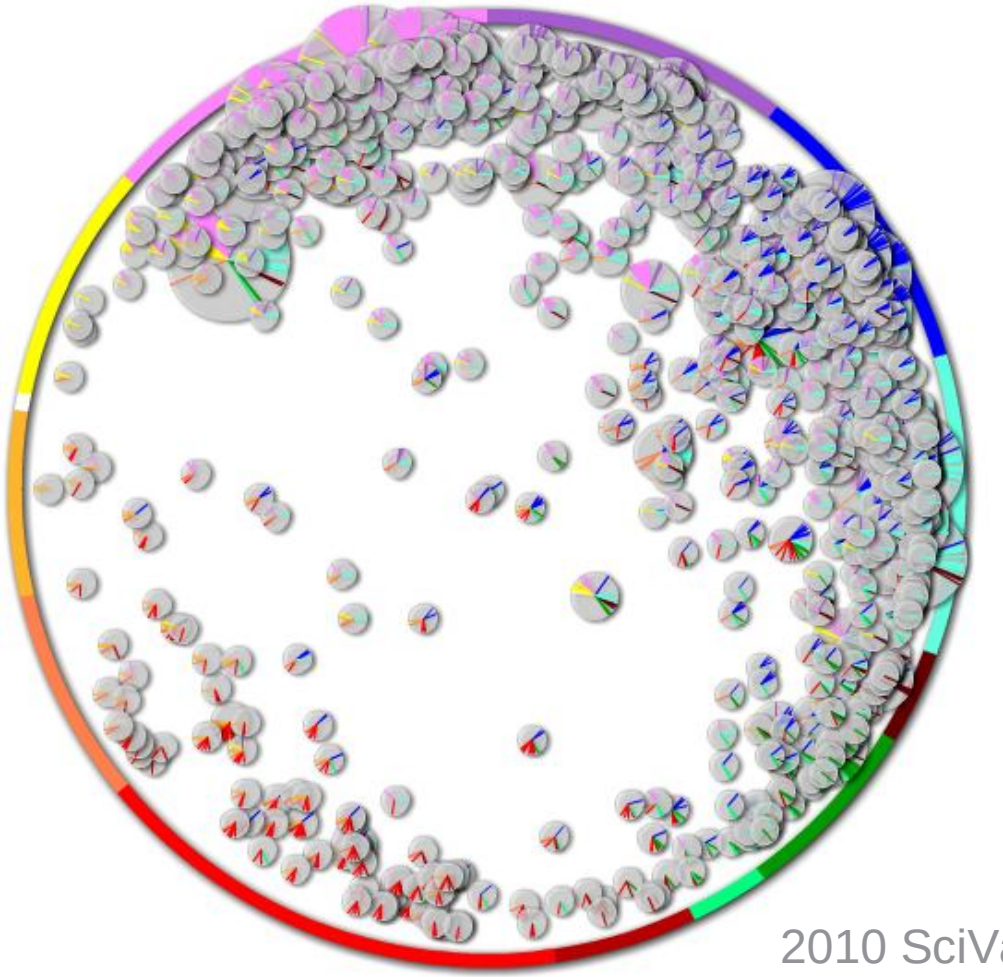
Discipline distribution of competencies in the UK



2010 SciVal Spotlight, Elsevier

Discipline distribution of competencies in China



2010 SciVal Spotlight, Elsevier

Generating national research excellence

- A strong HE sector working in a nation with an underlying core of Government support presents excellent and efficient opportunities for generating research and innovation within a nation as a whole

- There is no one ‘correct’ way to distribute research funding to produce research excellence

- High competency productivity can be achieved in different ways

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Excellence across the disciplines

- Global variations

- ***UK & USA-*** Research competencies are widespread and extend across all disciplines

- ***China, Germany, Japan & Australia-*** Research excellence is either absent in some disciplinary areas or very tightly focused in some specialised areas as a result of targeted funding allocations.

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Excellence across the disciplines

- ***UK-*** **Quality-related funding & responsive mode funding**
- ***USA-*** **'Merit based competitive awards' distributed by federal Government agencies**
- ***China-*** **National plan for science & technology development**
- ***Germany-*** **Thematic programmes in specific scientific areas**
- ***Japan-*** **Social sciences beginning to emerge**
- ***Australia-*** **Distinct clusters in sharply defined areas**

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Excellence across the disciplines

- Research funding policies do translate to areas of national research excellence, but are likely to depend upon the unique context within a given country

- Diverse variations and interesting overlaps between national funding policies

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Growing and strengthening excellence

2006-2010 Trends & Patterns

- ***China*** **- grew its article share in almost all competencies it was involved with**
- ***USA*** **- article share growth in only 20% of competencies, but still regarded as market leader in majority of competencies it was involved with**
- ***UK*** **- lowest number of competencies producing article share growth, and not the market leader in a majority of its competencies**
- ***Japan*** **- relatively high proportion of growing competencies**

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Growing and strengthening excellence

Implications

- ***UK*** has a high level of competency productivity, but should address concerns over growth and strengthening of research excellence
- ***China*** appears to be thriving, but future success is not guaranteed. Sustainability issues may emerge
- ***US*** as existing market leader has less scope to expand
- Strong correlation between gross expenditure on R & D and article share within competencies

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Contribution of research intensive institutions to national research excellence

Country	% of national competencies contributed to (top 10)
UK	92
USA	93
Australia	95
Japan	84
China	72
Germany	52

Table 3: Proportion of national competencies research intensive institutions contribute to (%)

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Contribution of research intensive institutions to national research excellence

- ***UK, USA & Australia-*** **pursue more widely distributive funding policies; research intensive institutions contribute most to national competencies**

- ***China, Japan & Germany-*** **target funding at a focused number of institutions. Has not reflected greater contribution to national research competencies; linked with inability to establish natural level of concentration**

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Contribution of research intensive institutions to national research excellence

- Funding strategically focused within a select number of institutions may limit the performance of research intensive institutions
- Widely distributive processes, within a competitive funding environment or through quality related block grants, allow funds to concentrate responsively to institutional excellence
- Must be implemented to suit unique situation of each country

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Conclusions

- No universal ‘right way’ to produce national research excellence
- Growth and sustainability of research excellence may be linked with increased research spending
- Research intensive institutions contribute most highly to national research excellence when funding concentrates according to merit
- Well supported HE sector and underlying core of Government support for research contributes to national research excellence & productivity

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The UK

➢ ***Strengths***

- Underlying core of Government support for research and HE
- HE sector playing strong role in producing national research
- Competitive funding which supports all disciplines , rewards excellence and provides value for money

➢ ***Weakness***

- Future funding & competencies growth

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The Future

- Underlying core of Government funded research and support for HE
- HE policies for distributing funding to particular disciplines which are appropriate to the country
- Continuing investment to support growth
- Competitive research funding environment which rewards excellence wherever it is found

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