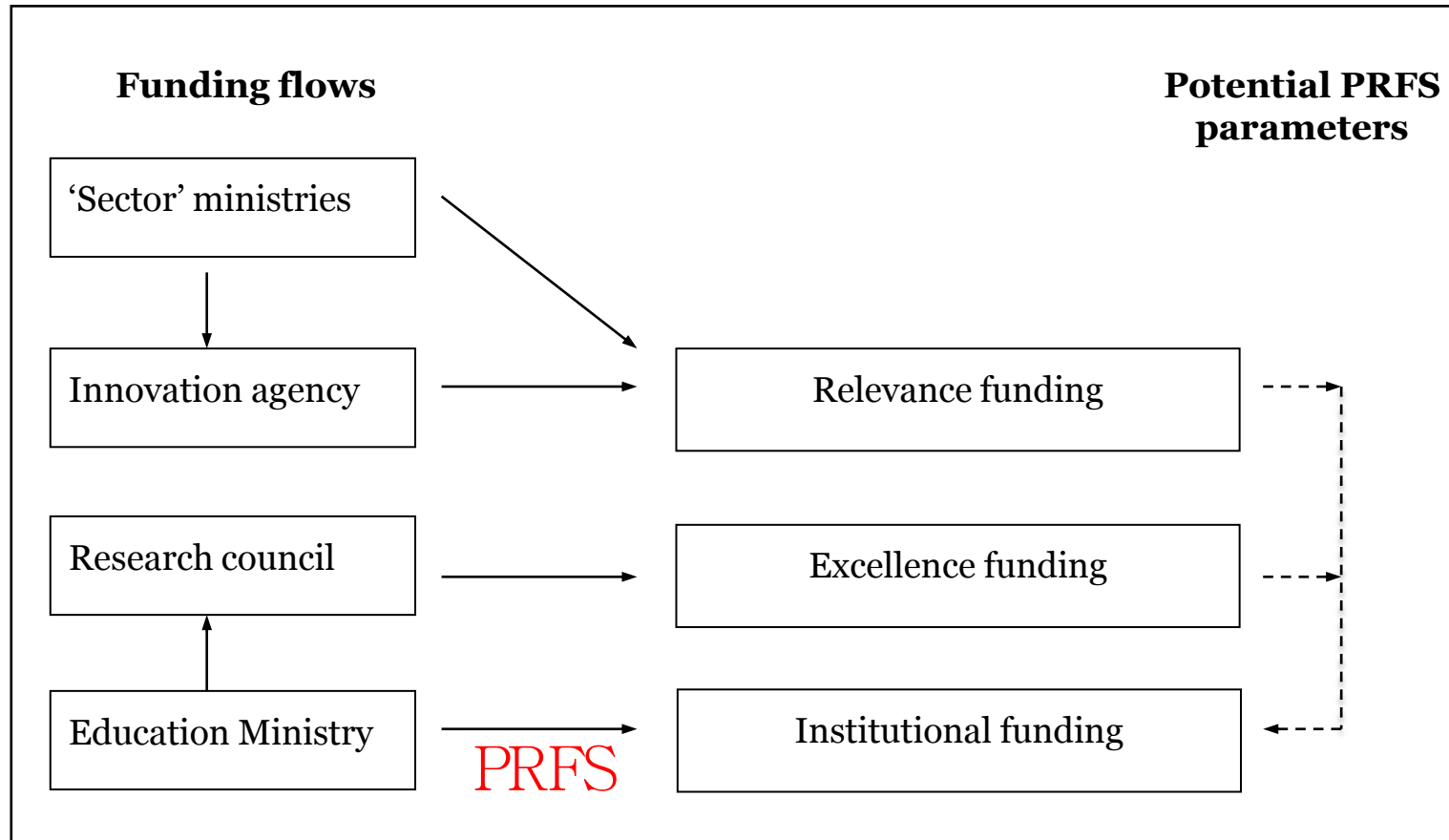


Performance-based Research Funding

Erik Arnold, Technopolis and KTH Stockholm
Beijing
November 2016

How do we fund the universities? A systems view

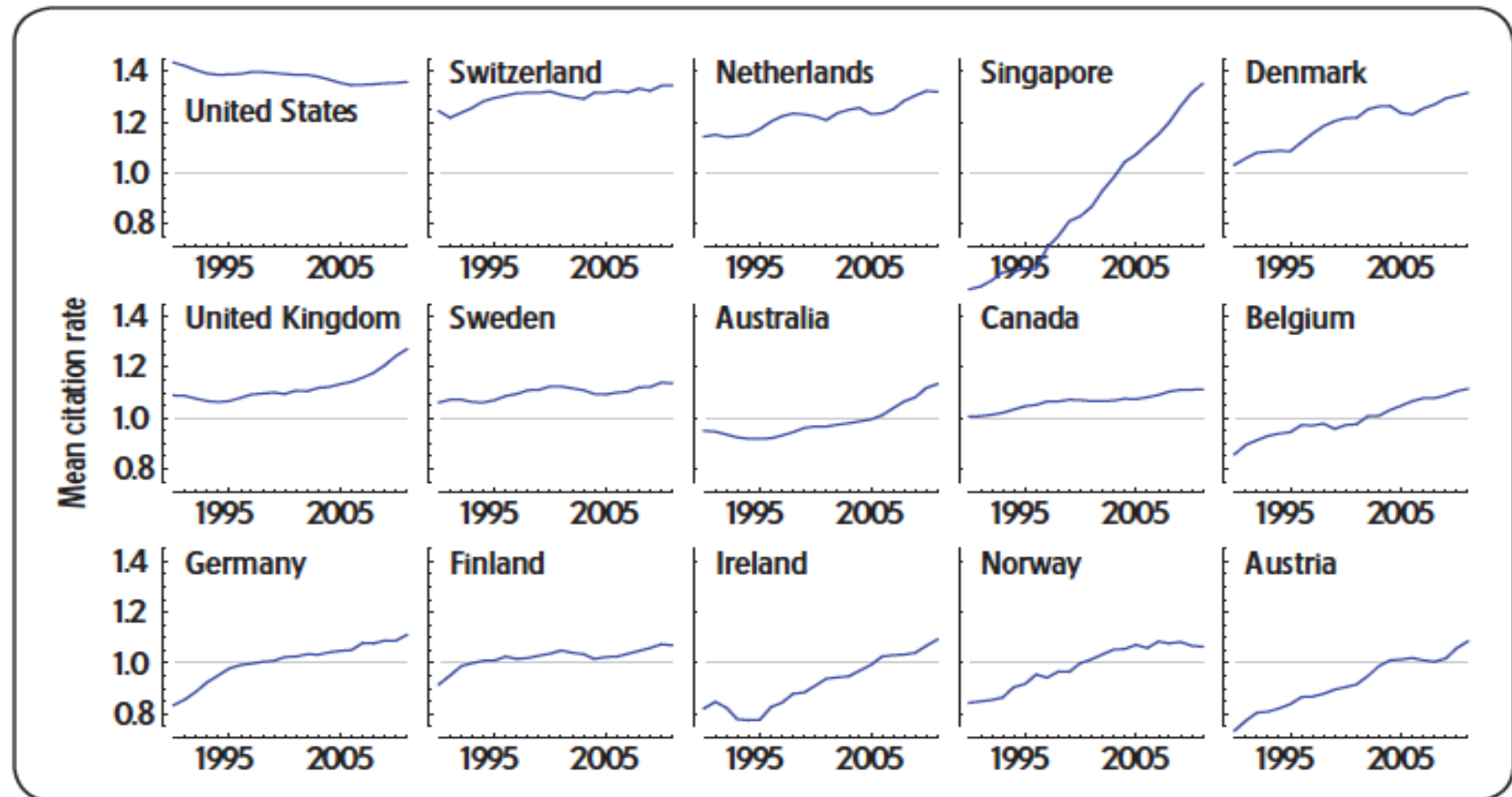


Why countries say they use Performance-Based Research Funding Systems

- To enhance the quality of research and the country's research competitiveness
- To steer behaviour in order to tackle specific failures in the research system
- To strengthen accountability
- To provide strategic information for research strategy at institutional and/or national level

Performance in international comparison – what are the drivers?

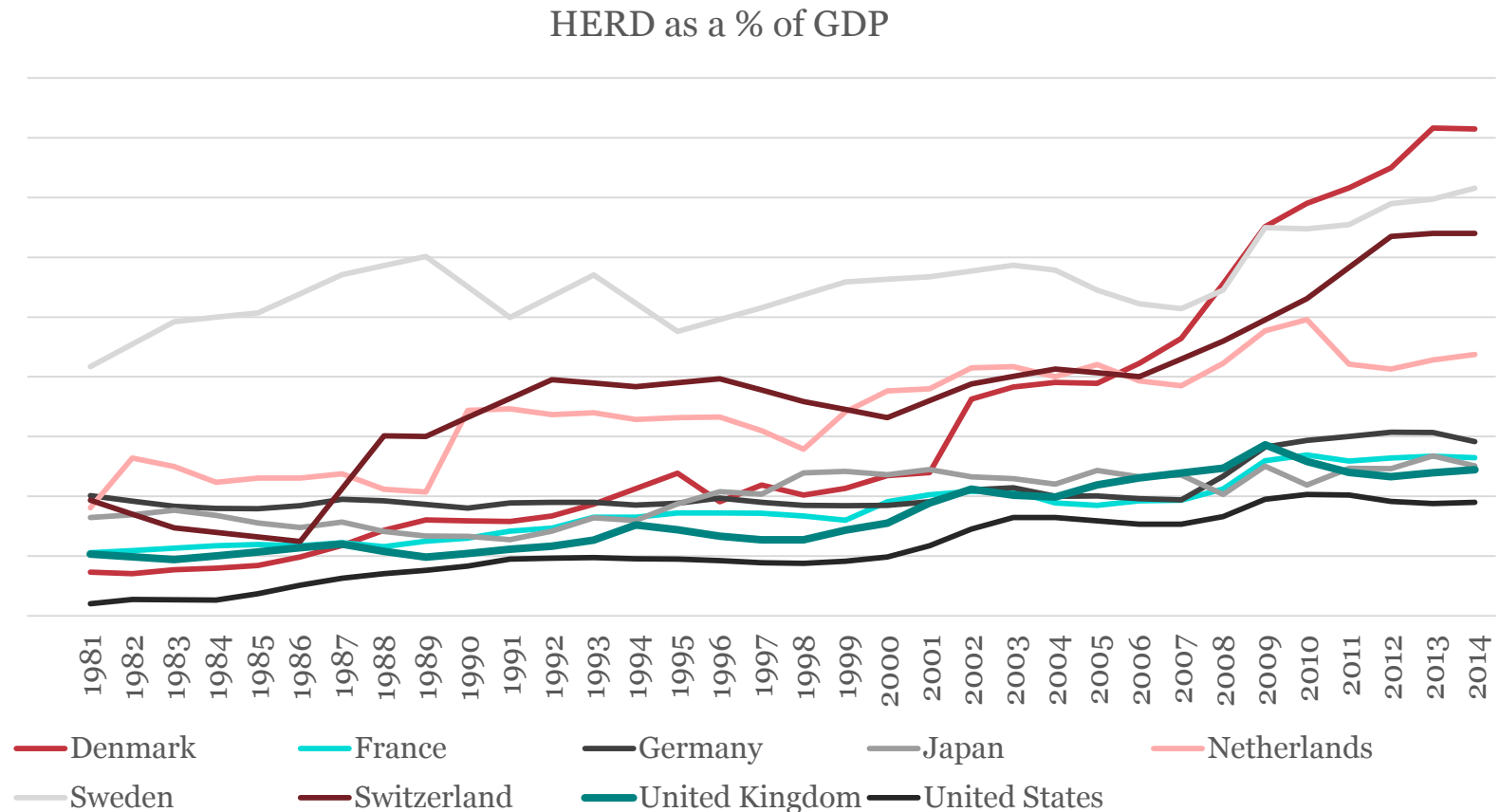
Figure 3.3. Trend of mean citation rate between 1990 and 2011 for fifteen of the currently most highly cited countries according to figure 1.



What is the funding context? What about institutions?

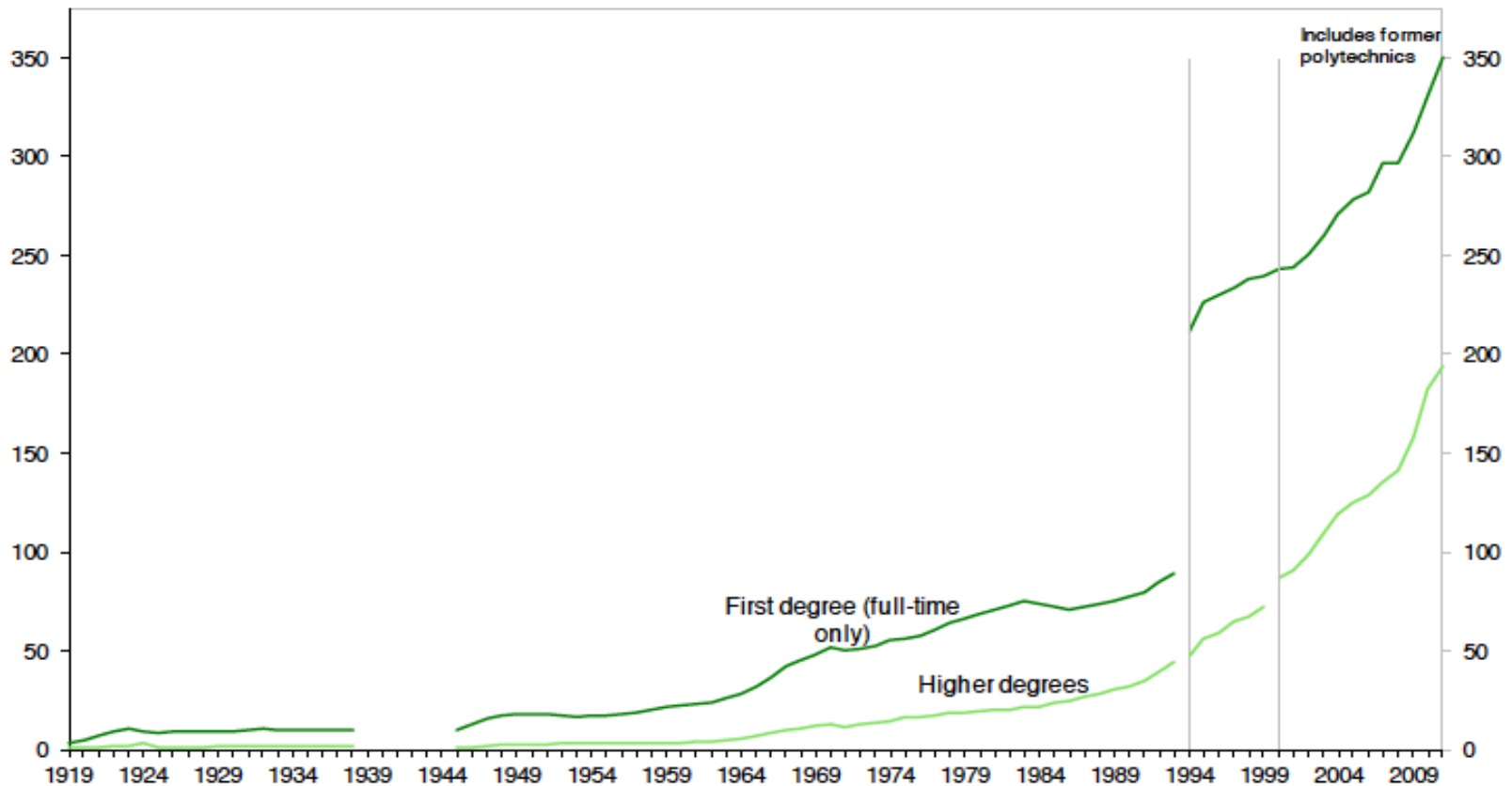
	PRFS used	Government sector funding	General university funds (GUF)	Government competitive research project funding
Austria		1,669	76%	24%
Belgium / Flanders	✓	1,117	36%	64%
Denmark	✓	1,653	72%	28%
Finland	✓	1,033	58%	42%
France		7,972	50%	50%
Germany		7,575	71%	29%
Iceland		55	51%	49%
Ireland		704	31%	69%
Italy	✓	5,204	85%	15%
Norway	✓	1,380	73%	27%
Spain	✓	3,012	66%	34%
Sweden	✓	2,041	57%	43%
Switzerland		2,000	82%	18%
United Kingdom	✓	5,545	48%	52% ⁵

UK experience: fairly low investment in HERD Background: declining GOVERD and BERD

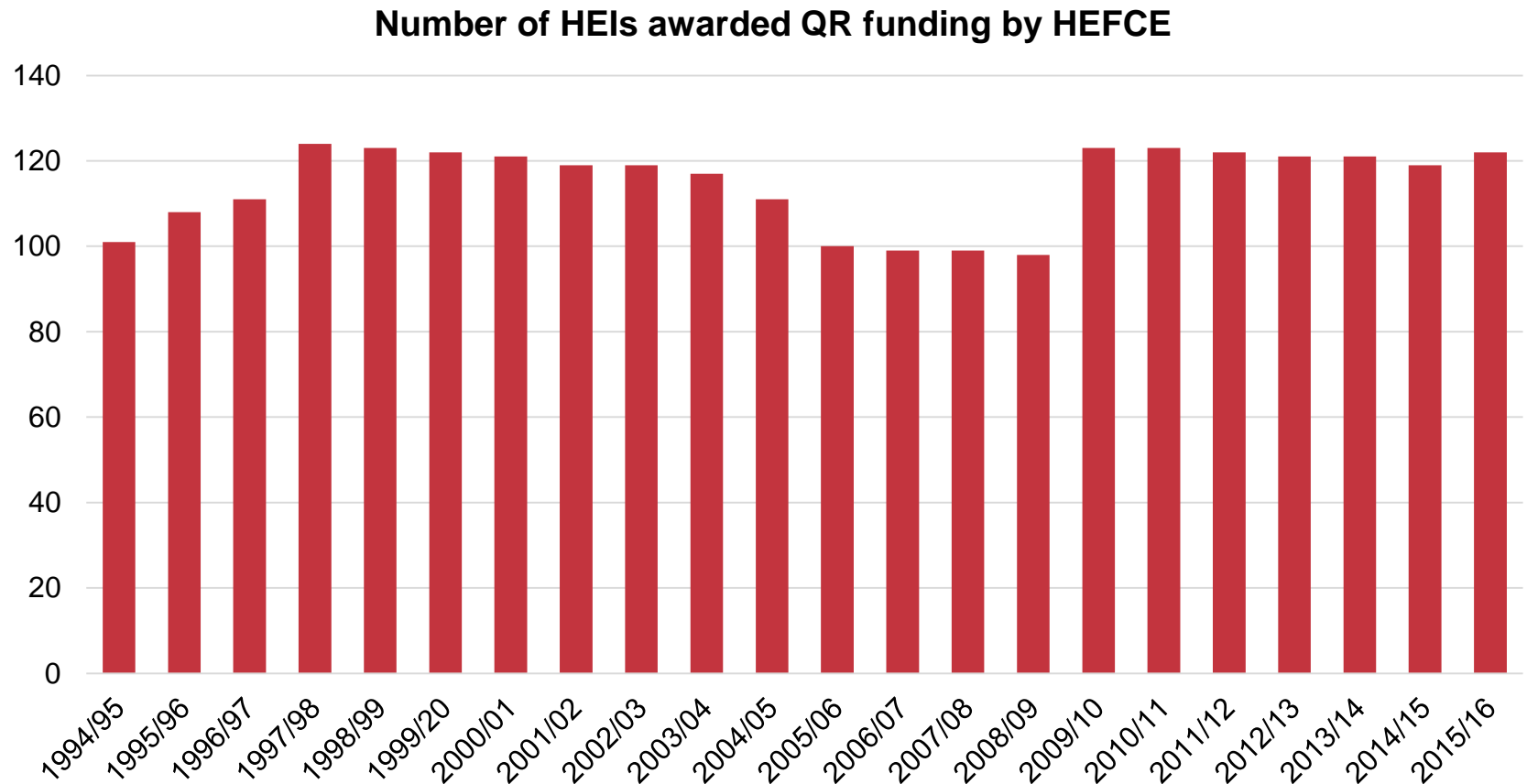


Context: massification of higher education

Students obtaining university degrees in the UK -thousands

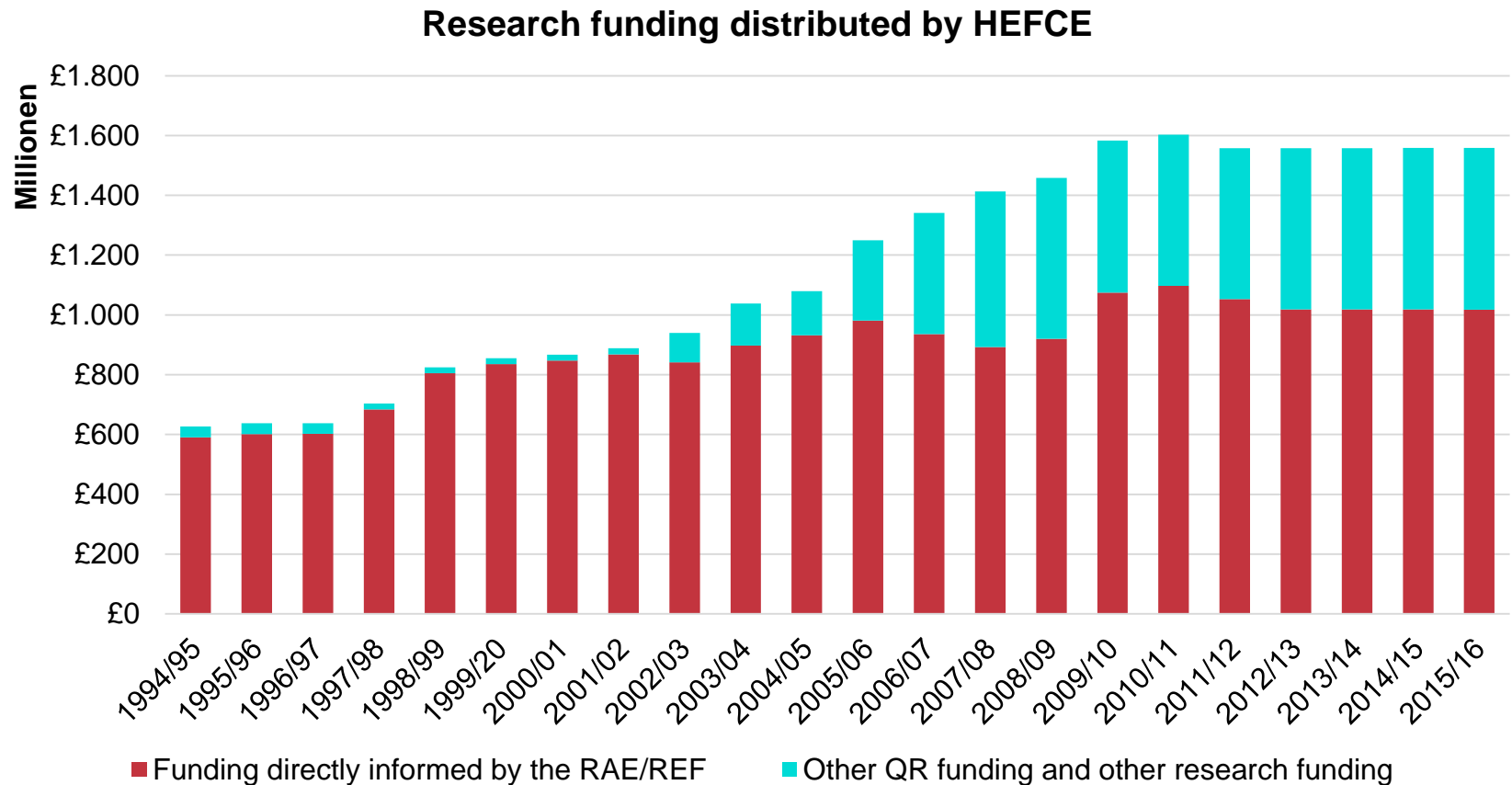


How many universities got QR money?



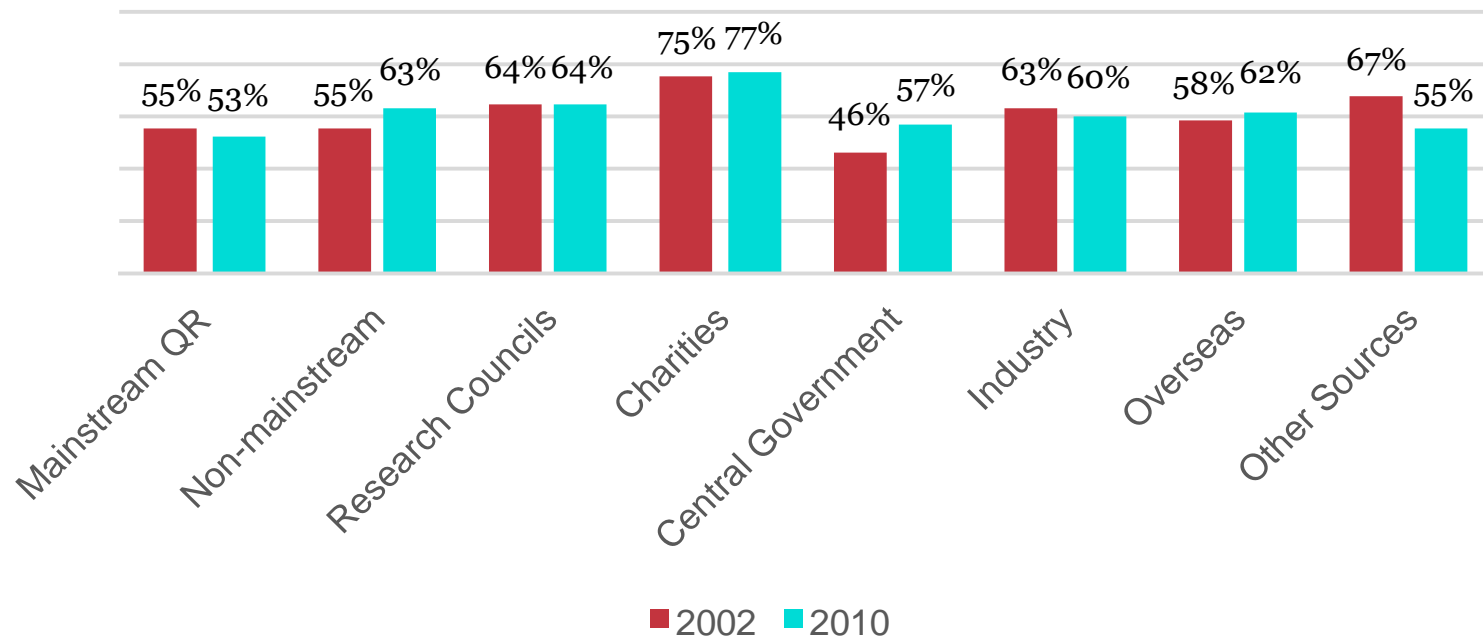
QR – quality-related – funding is the part of institutional funding controlled by the RAE/REF

QR and other institutional funding over time

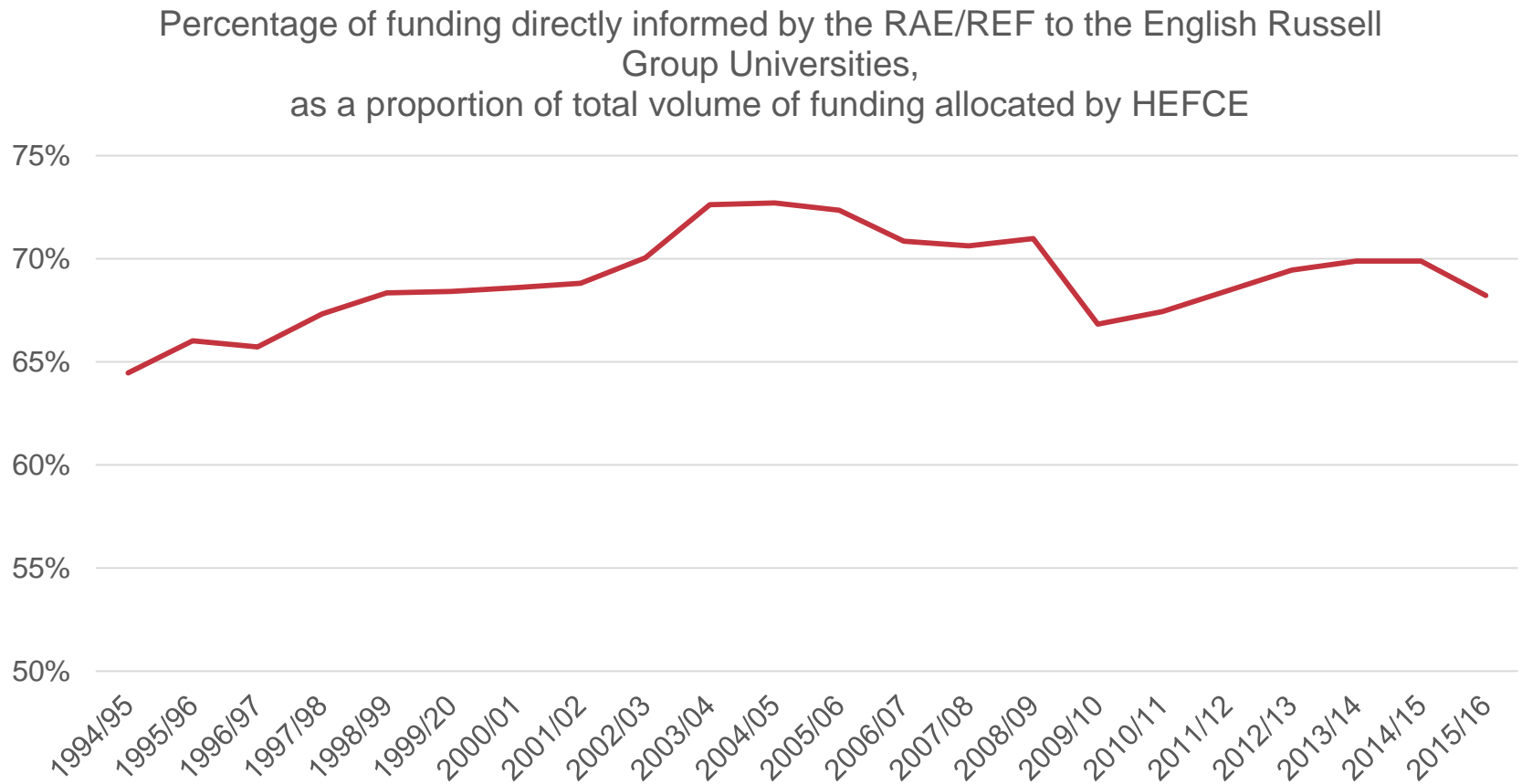


How concentrated is university funding from different sources?

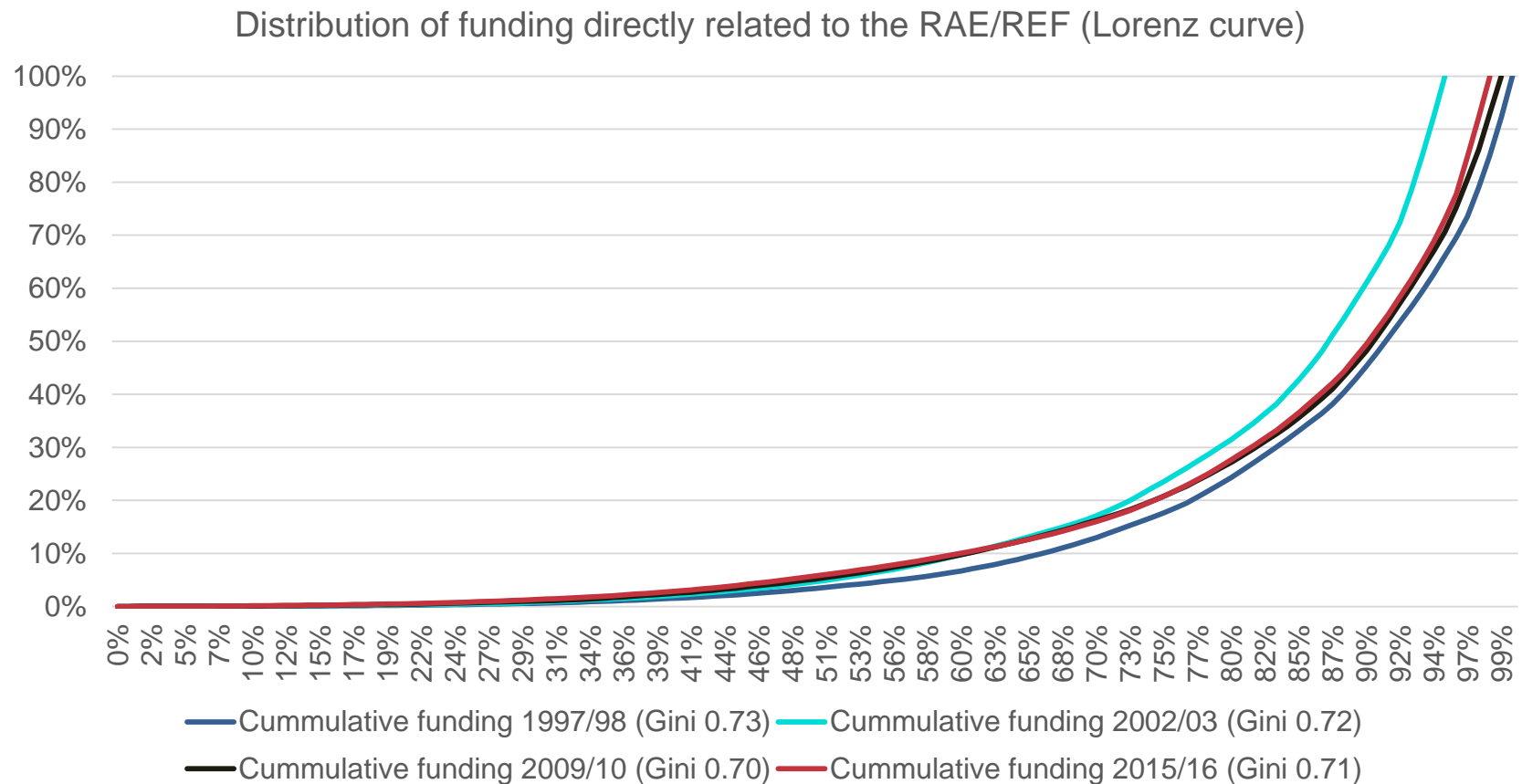
Percentage of funding going to Top-10 beneficiaries





What proportion of QR do the elite universities take?



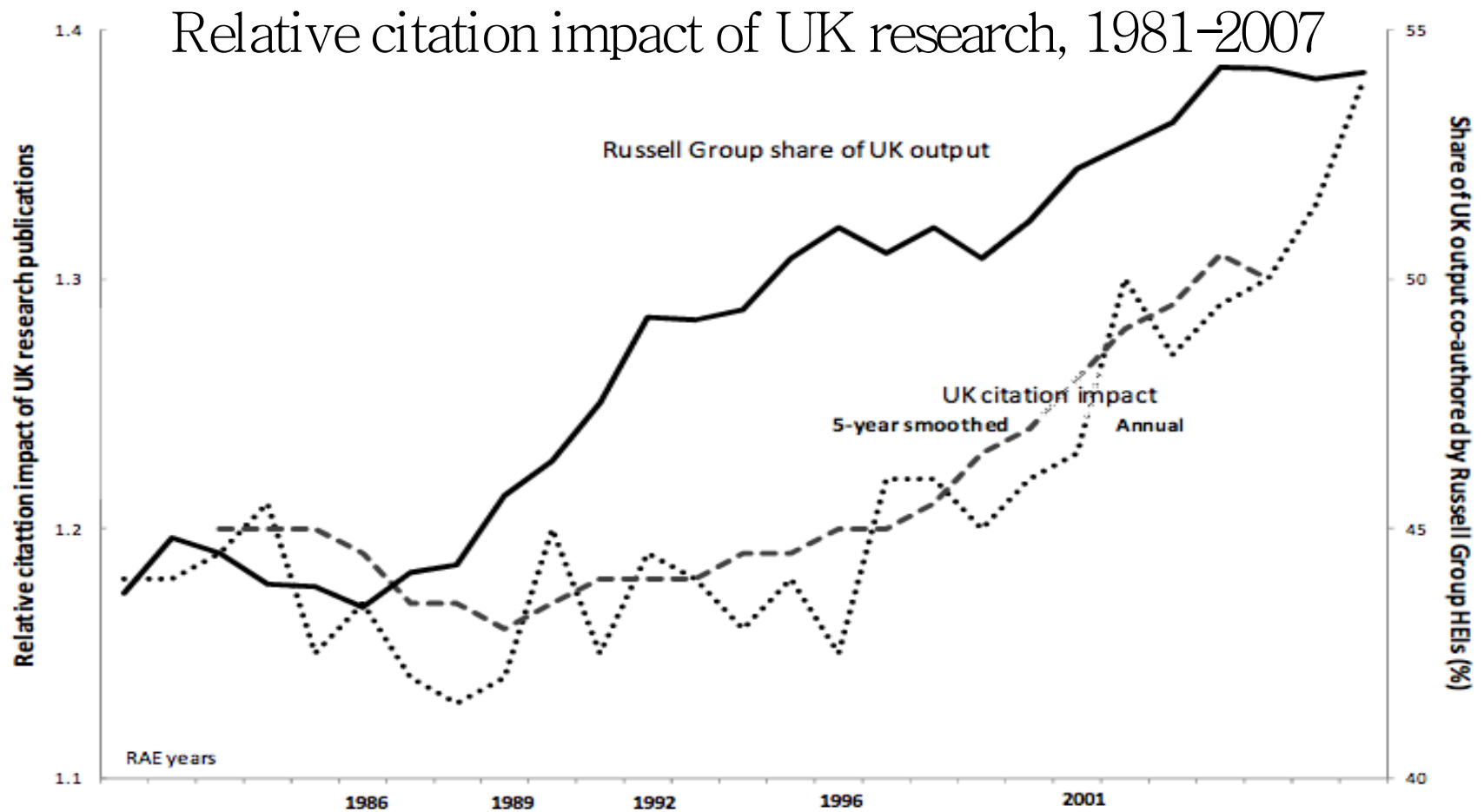
Funding distribution over time – not much overall change



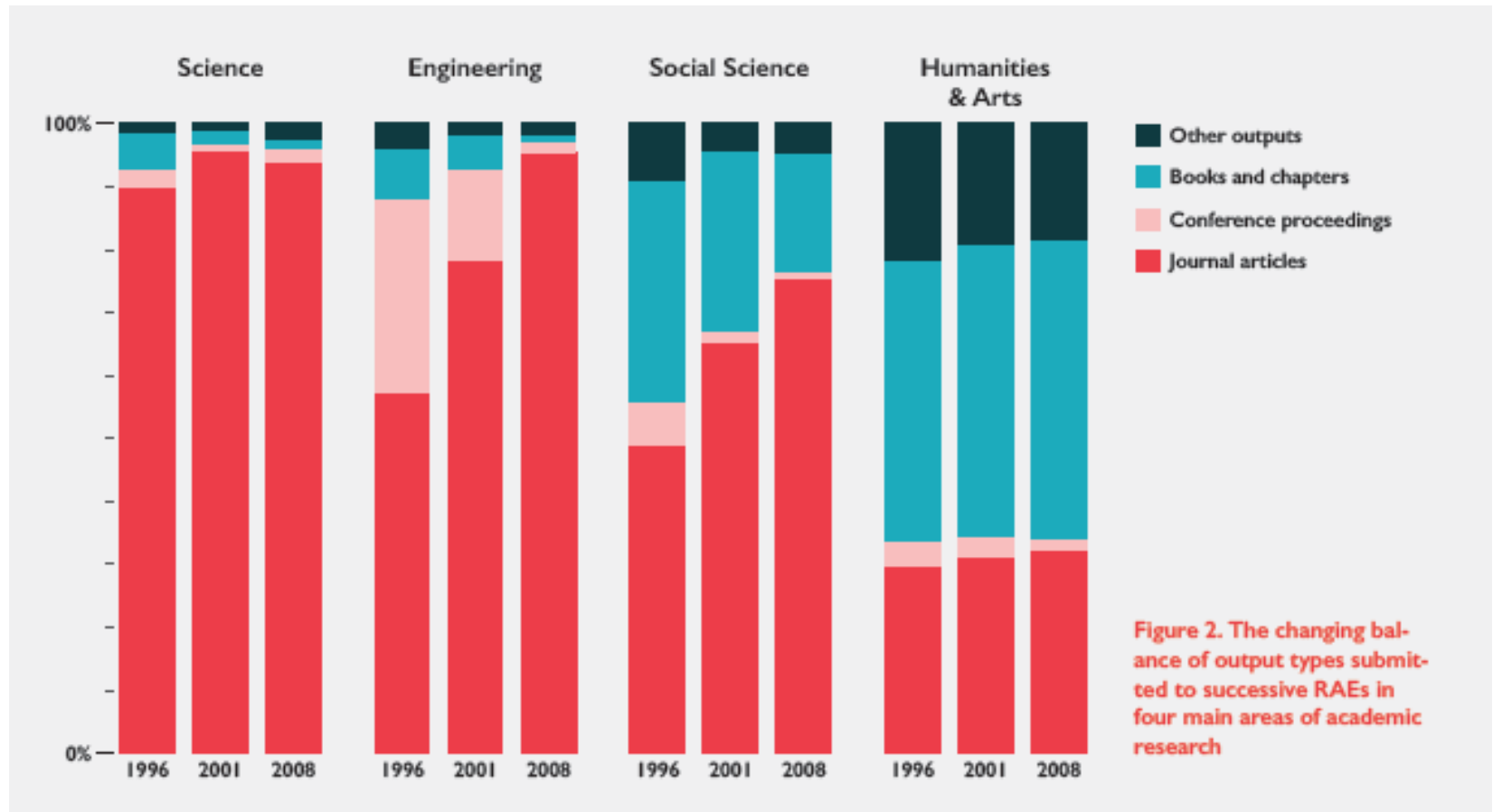
How much is redistributed at the level of individual universities?

	RAE 1996	RAE 2001	RAE 2008	REF 2014
	1997/ 98	2002/ 03	2009/ 10	2015/ 16
Total funding awarded in first year post RAE / REF	£684	£841	£1,074	£1,017
Change in volume of total QR funding allocated, compared with last year pre RAE / REF	£82	-£27	£154	-£1
Average QR funding awarded in first year	£6	£7	£9	£8
Sum of funding reallocated between HEIs in first year	£112	£94	£188	£124
 Percentage reallocated without taking into account any change in funding allocated	18.6%	10.8%	20.4%	12.1%
Sum of funding reallocated between HEIs, net of any change in total funding	£30	£67	£34	£123
 Net effect - Percentage reallocated taking into account the increase in funding allocated	4.9%	7.7%	3.6%	12.0%
Number of HEIs awarded QR funding	124	118	123	122

Did the RAE make a difference to UK performance?



Submission patterns by disciplinary groups



What does it cost? (REF 2014, £m)

Cost to funding bodies	Running cost		£4
	Programme cost		£10
Cost to HEIs	Central management costs (excluding costs related to impact assessment)	Staff details (REF1a & REF1c)	£4
		Individual staff circumstances, not including academic time (REF1b)	£5
		Research outputs (REF2)	£18
		Environment data (REF4a/b/c)	£4
		Environment template (REF5)	£5
		Time spent on other activities relevant to the REF	£7
		Central costs: non-pay (Cost of new software purchases/licences and ICT system extensions or upgrades necessitated by REF, which would not have happened otherwise and which was not included in the REF budget and costs of other REF related expenditure)	£2
	UOA costs	Reviewing / negotiating selection of staff and publications	£56
		Validating / extending bibliographic records for submitted research outputs (REF2)	£12
		Preparing environment data (REF4a/b/c)	£6
		Preparing the environment template (REF5)	£21
		Preparing special circumstances declarations (providing clarification and evidence)	£1
		Time spent on other activities relevant to the REF (other than REF academic panels)	£16
	Costs related to the Impact statement (central management and UOA time)		£55
	Panel costs, excluding cost of impact assessors		£19
Total costs			£246

Impact on research

- Some of the same weaknesses as peer review in general: undervalues interdisciplinarity, promotes mainstream ‘schools’, eschews risky research
- Discourages ‘infrastructural’ research, databasing, instrumentalities
- Rewards short- rather than long-term behaviour
- Circularity in the community of ‘peers’, with the same people dominating REF panels, Research Council assessment, journal boards, etc – so REF seems to reinforce existing quality control and authority mechanisms in science
- Most of these effects are strengthened by university research managers’ risk-minimising and income-maximising strategies

Effects on researcher careers – mixed messages

- Academic literature on the REF* is overwhelmingly critical – the positive messages come from research managers
- Key impact mechanism of the REF is via researcher careers and hence human resource management
- Younger and female researchers under greater pressure from the REF than the old guys
- Increased market power of REFable researchers
- Managers' inability to measure quality in REF terms causes use of quality proxies, not always good ones (eg JIFs, lists of journals ...)
- Researchers incentivised to prioritise short term productivity, and academic quality over the 3rd mission
- In the REF, institutions 'game'; in metrics-based systems, individuals do so

Impact on universities: is there behavioural additionality?

- Universities more visibly accountable and the hand of central university management has been strengthened
- RAE/REF results have been used to inform university strategy and can drive reallocation of resources among fields
- Hence, the pattern of research development and growth in the universities is driven by REF performance
- New coordination, planning and monitoring roles have emerged
- Selective allocation of research time between staff
- Many universities have reproduced the external assessment criteria internally and organised ‘mini-RAEs’ in preparation for the HEFCE assessments
- Reduction of teaching to a secondary activity – problematic? TEF?

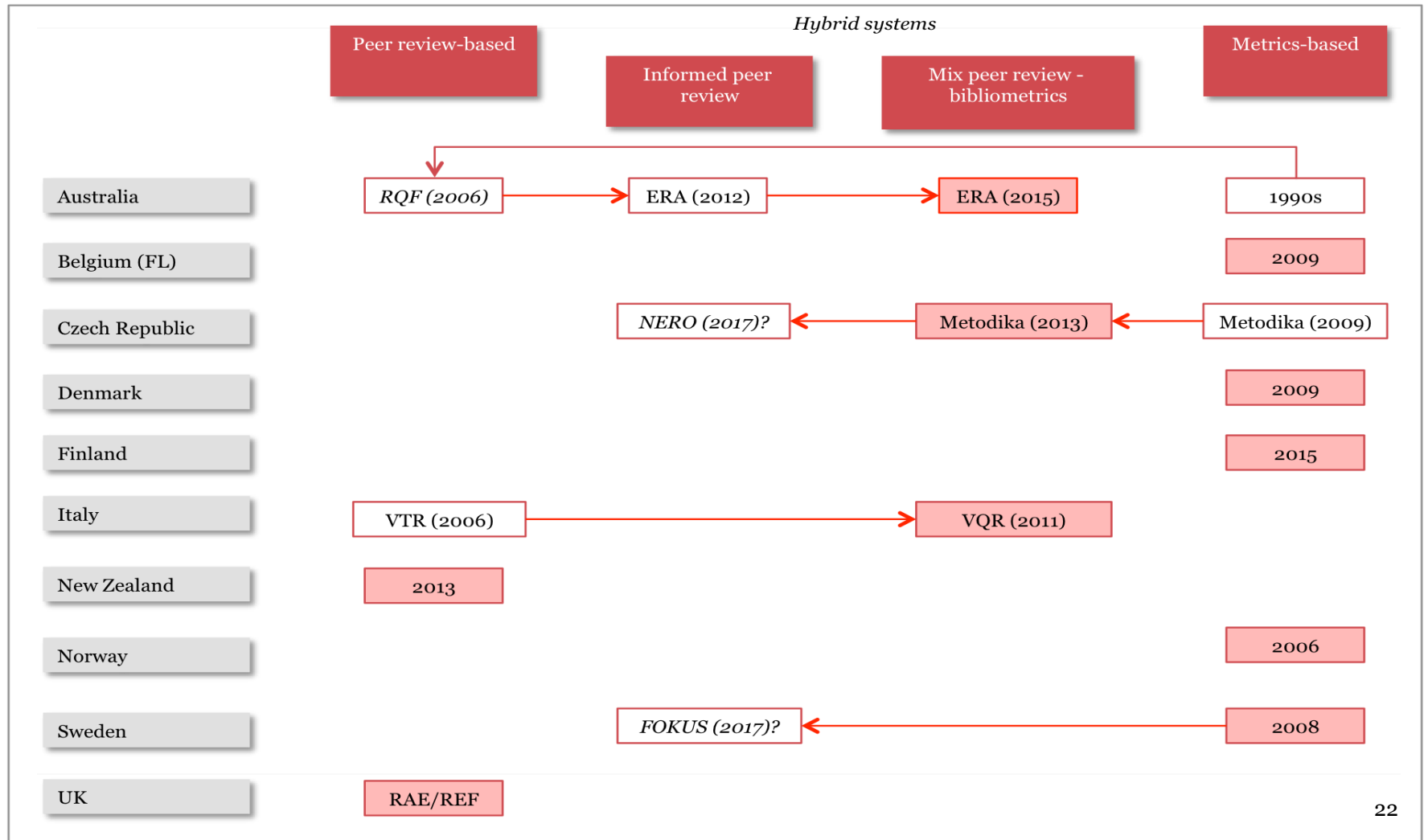
UK in summary

- The RAE is the ‘mother of all PRFS’; allocates most of the money
- Peer review – in more recent times ‘informed’ by bibliometrics
- Driven by massification and a need to justify cuts in the 1980s
- “A complex process whereby the Russell Group gives itself most of the money”
- Non-linear allocation formula intended to concentrate resources
- Bias against multidisciplinary, heterodox and transformational research caused by the submission process
- Stable outcomes; high correlation with performance in research council system (Do we need both funding systems?)
- Massive effects on recruitment, promotion, research management
- Arguably deleterious effects on research
- UK research elite firmly committed to the RAE/REF model rather than metrics, maintaining its control of resource allocation

What are the design parameters for a PRFS?

Key design parameter	Variations
Model used for the assessment of research quality	<ul style="list-style-type: none"> • Peer review-based • Informed peer review • Mix of peer review & bibliometrics • Metrics-based
Scope of research activity included	<ul style="list-style-type: none"> • Research • Innovation • Societal relevance
Type of indicators	<ul style="list-style-type: none"> • Output indicators • External funding indicators • Systemic indicators • Outcome/impact indicators
Granularity	<ul style="list-style-type: none"> • Units of analysis (grouping of scientific disciplines) • Inclusion of individual staff (inclusive/exclusive)
Periodicity	<ul style="list-style-type: none"> • Annual • Longer time frames

What models are used?



Emerging conclusions

- There's not much evidence behind the policy trend to PRFS
- Policy purposes seem rarely to be made explicit
- If you dig, you can find them
 - *UK: Matthew effect*
 - *NO: Quality of the whole system*
 - *CZ: Overcoming governance failures*
- PRFS are high-leverage interventions
 - *Behaviour change drivers are probably career and status*
 - *Possible to use them without destabilising institutional funding*
- Highly prone to gaming and unintended effects
- Longer-term risks include 'normalisation' of science and research (Kuhn), changes in cooperation behaviour and undermining academia/rest-of-society links

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