

The changing nature of barriers to university- industry collaboration in the UK

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Overview

- Barriers to collaboration – academic and industry perspectives
- Changing perceptions of barriers over the past five years
- Surveys of academics and industry
- Potential mechanisms to reduce barriers to U-I collaboration
- Implications for policy and firms

The Republic of Science vs. The Social Function of Science



Michael Polanyi



JD Bernal

Orientation-related barriers

- Mertonian ideals – communalism, universalism, disinterestedness and organized skepticism
- Academic freedom (Grey and Behrens, 2001, Tartari and Breschi, 2009)
- Incentive systems (Dasgupta and David, 1994, Stephen, 1996)
- Scientists pay to be scientists (Stern 2004)
- Industrial engagement still a matter of individual choice
- Behaviour shaped by peer, department and university norms (Feldman and Berkovitz, 2006)
- Academics look to industry to resources, interesting problems, potential use of ideas, jobs for students, status...(D'Este and Patel, 2007, Perkmann and Walsh, 2008)
- Applied areas of research (engineering) traditionally strong engaged with practice



Closed, private world of innovation

- Capturing unique, valuable, rare and hard to imitate resources
- Separate of firm from external world – rules and regulations governing staff
- Informal methods of protection – secrecy and first-to-market
- Use of formal IP system – patents, NDAs, copyrights, registered designs (Cohen, Nelson and Walsh, 2000)
- Universities as a source of ideas, talent, and problem solving

Transaction-related barriers

- In search of income and responding to government policy
- Formation and growth of technology transfer office – manage IP portfolio, spin-off opportunities (equity shares), support spin-outs, train staff in IP issues...
- Measured by number of patents, licensing income, spin-outs...
- Changes in incentive systems – faculty promotion, income, share of rewards...
- Professional research management – client management systems, rules and regulations on research conduct, official notification of partners, conflicts of interest, ethical committees...
- Conflicts with industrial partners over IP (Shane and Somaya, 2008)
- Impact on collaboration patterns?

Data – Industry surveys

2004 survey

- EPSRC commissioned SPRU (Pari Patel and Pablo D'Este) to conduct a survey of firms collaborating on EPSRC research projects
- Survey population – all firms that collaborated on EPSRC projects between 1991-2008
- Total population 2064 firms – survey received 535 responses

2008 survey

- Survey sent out in late 2007, target population 3,109 organisations, received 643 responses
- Multiple responses, survey methods (paper vs. electronic), late and early responders, response population characteristics (size of firm), all sectors of economy

Panel covers **170 organisations**

Data – Academic surveys

2004 survey

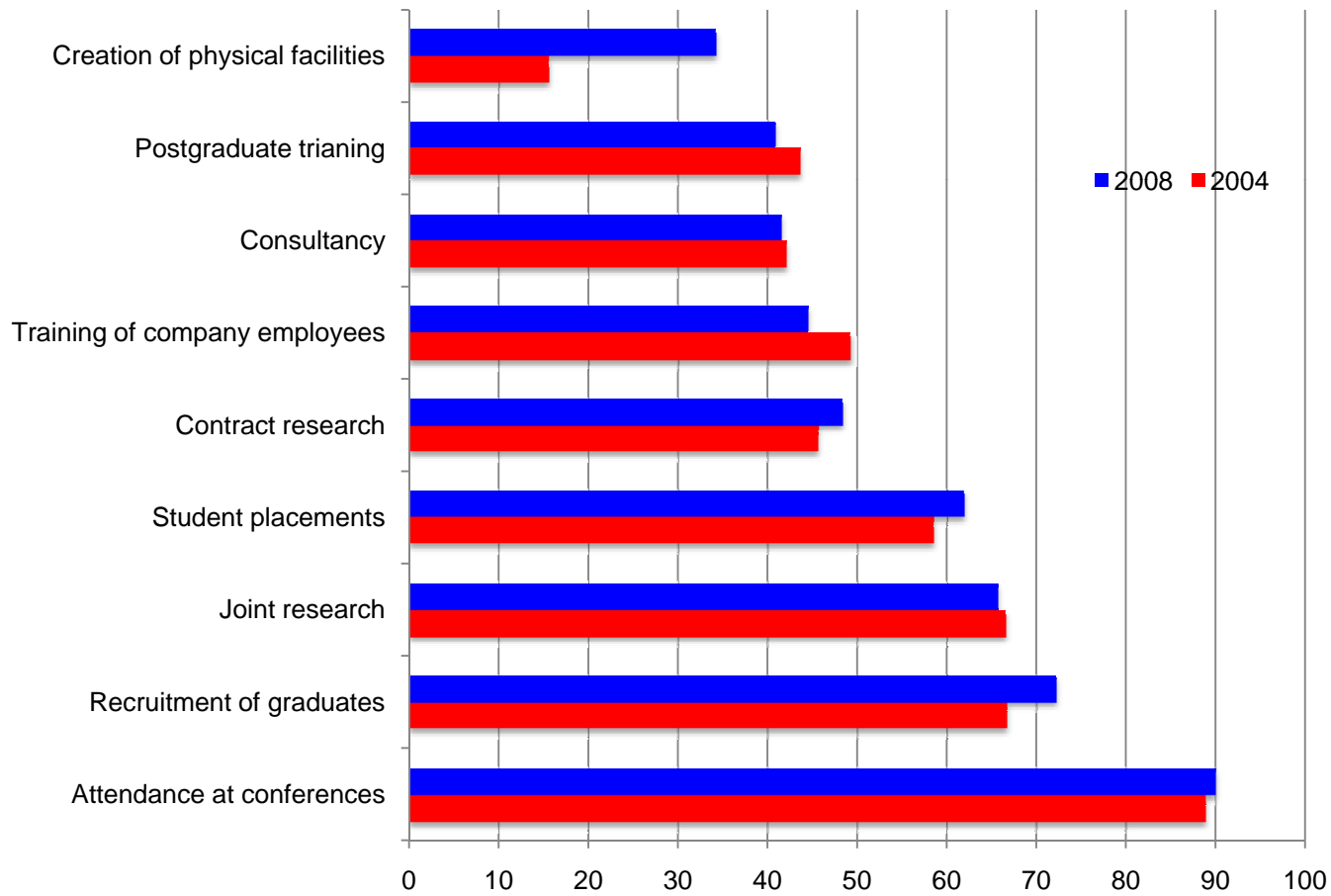
- EPSRC grant holders – Principal Investigators from 1999 to 2004 – cover years 2002-2003
- 35% response rate – 1522 respondents
- Type of engagement, frequency of interaction, barriers faced etc.

2009 survey

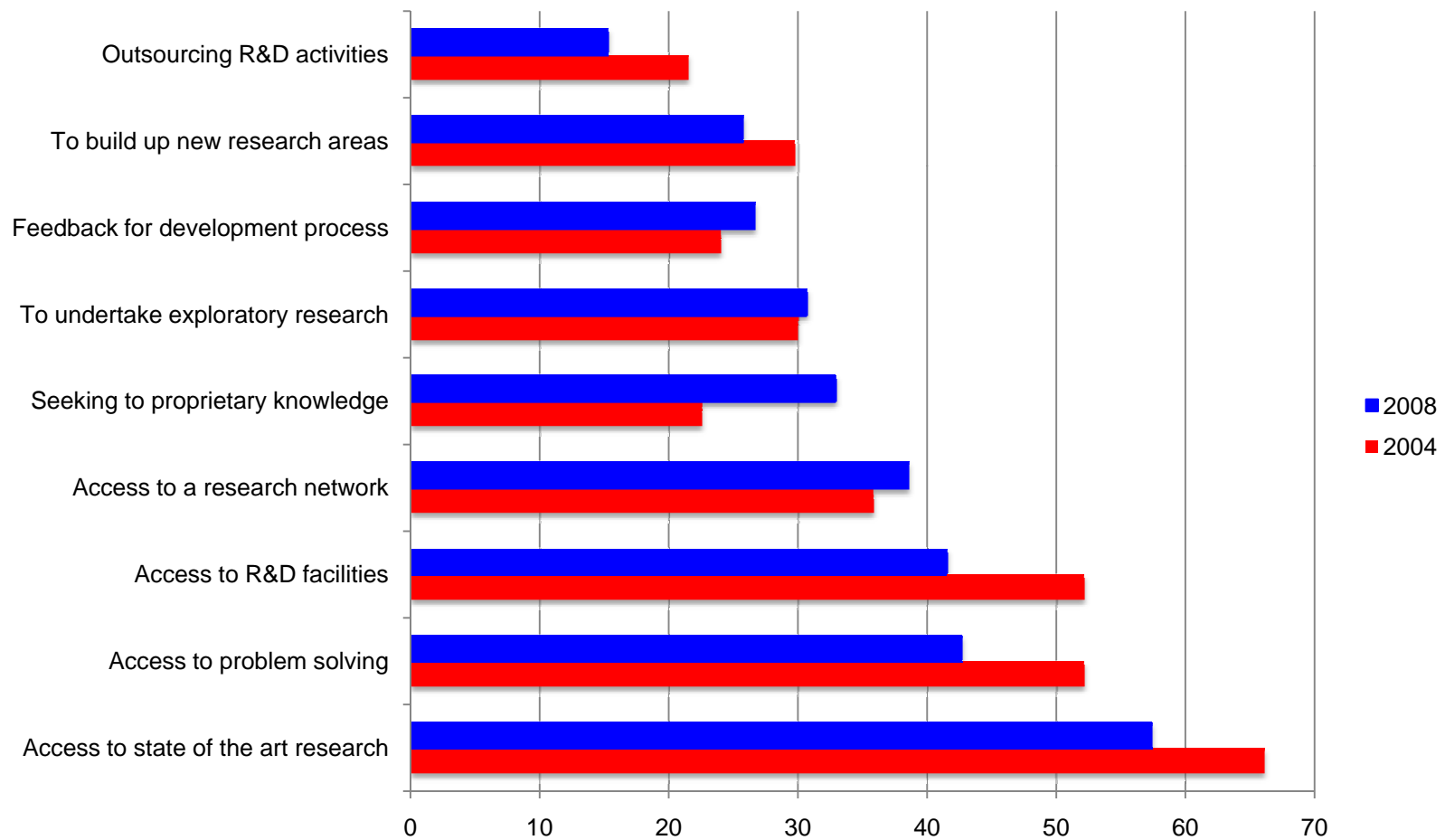
- EPSRC grant holders - Principal Investigators from 1999 to 2006 – covers years 2007-2008
- 26% response rate – 1560 respondents
- New questions – trust, academic entrepreneurship etc.

Panel between surveys of **560 academics**

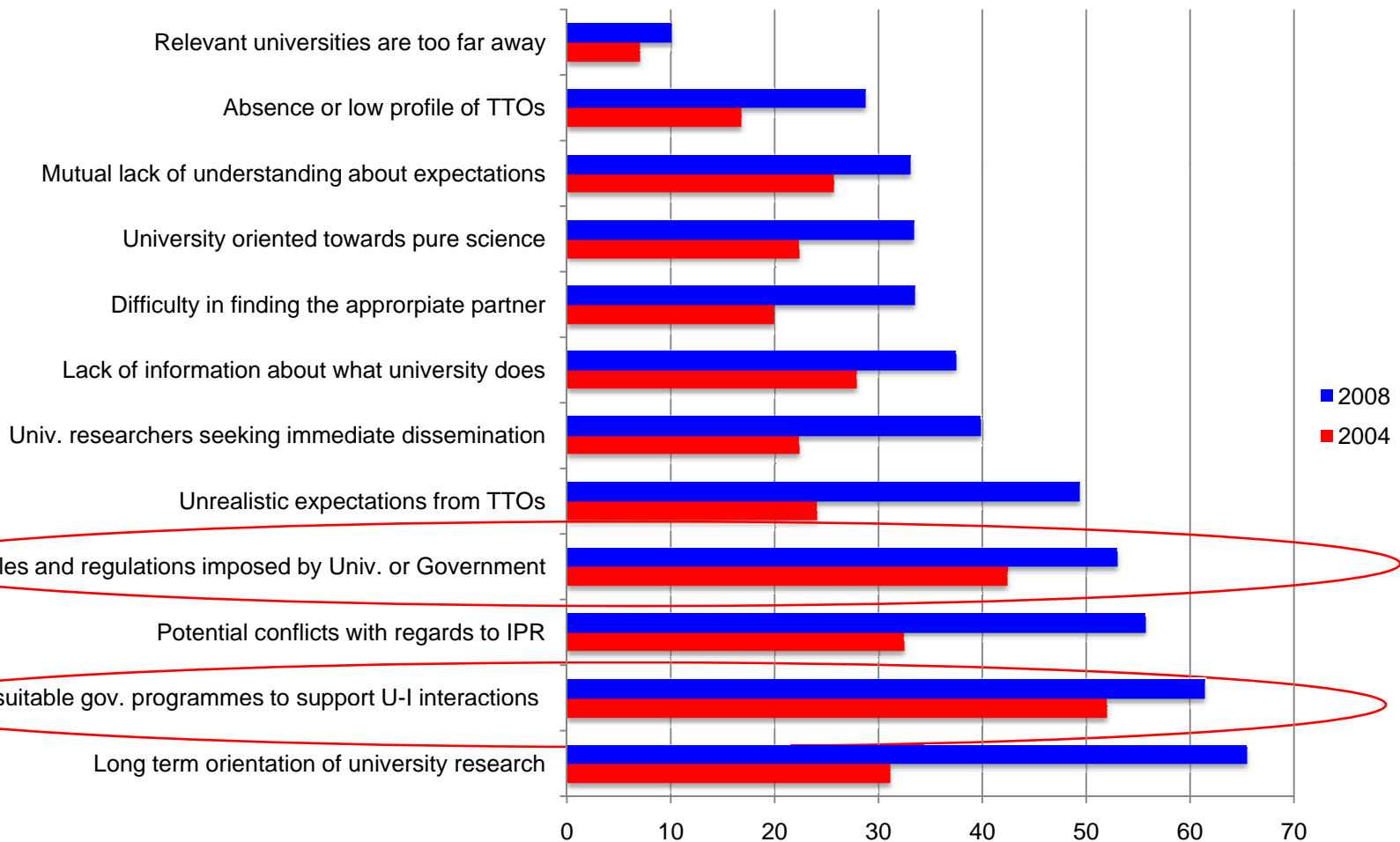
Industry survey - degree of engagement (at least once)



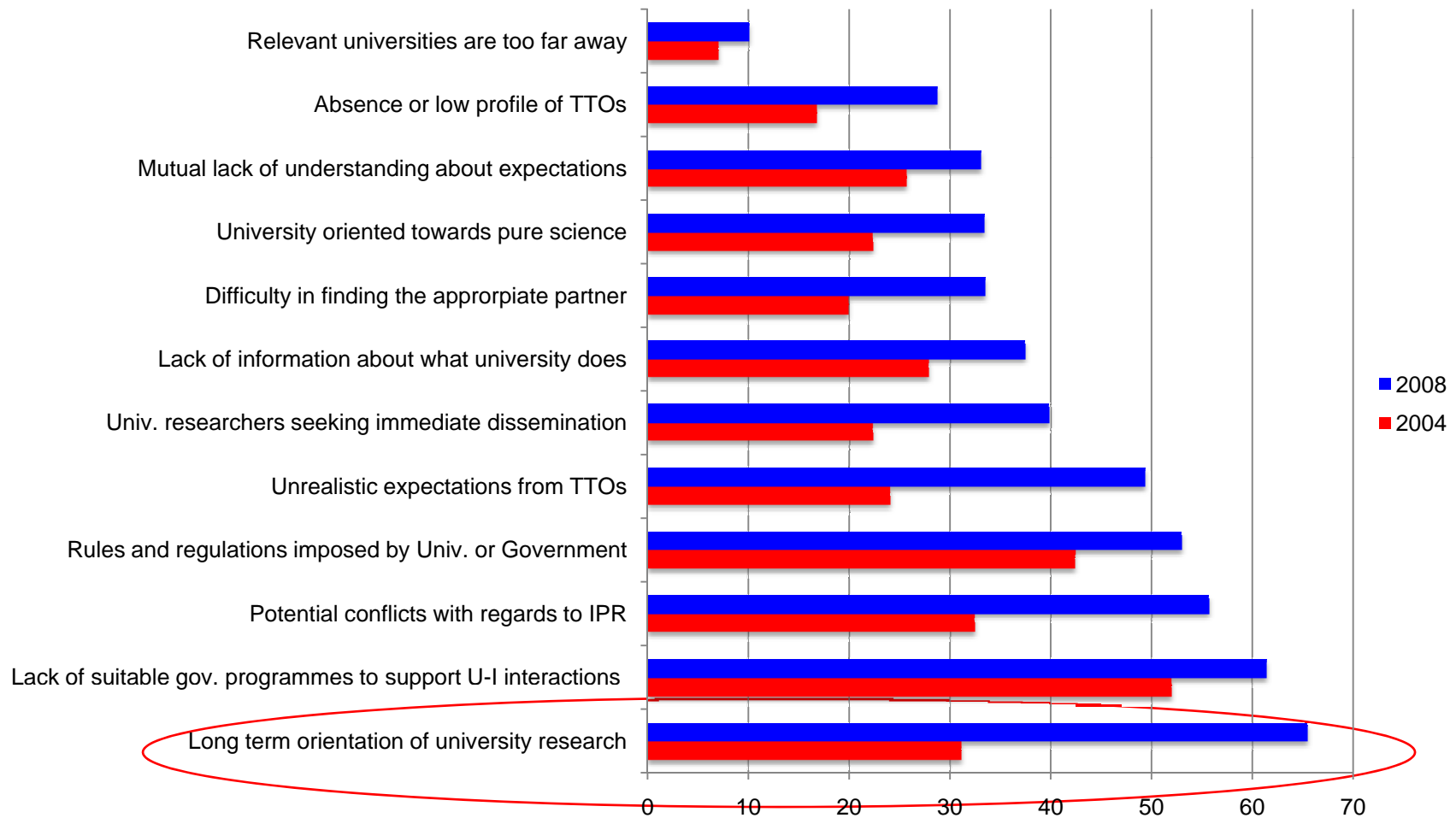
Why work with universities?



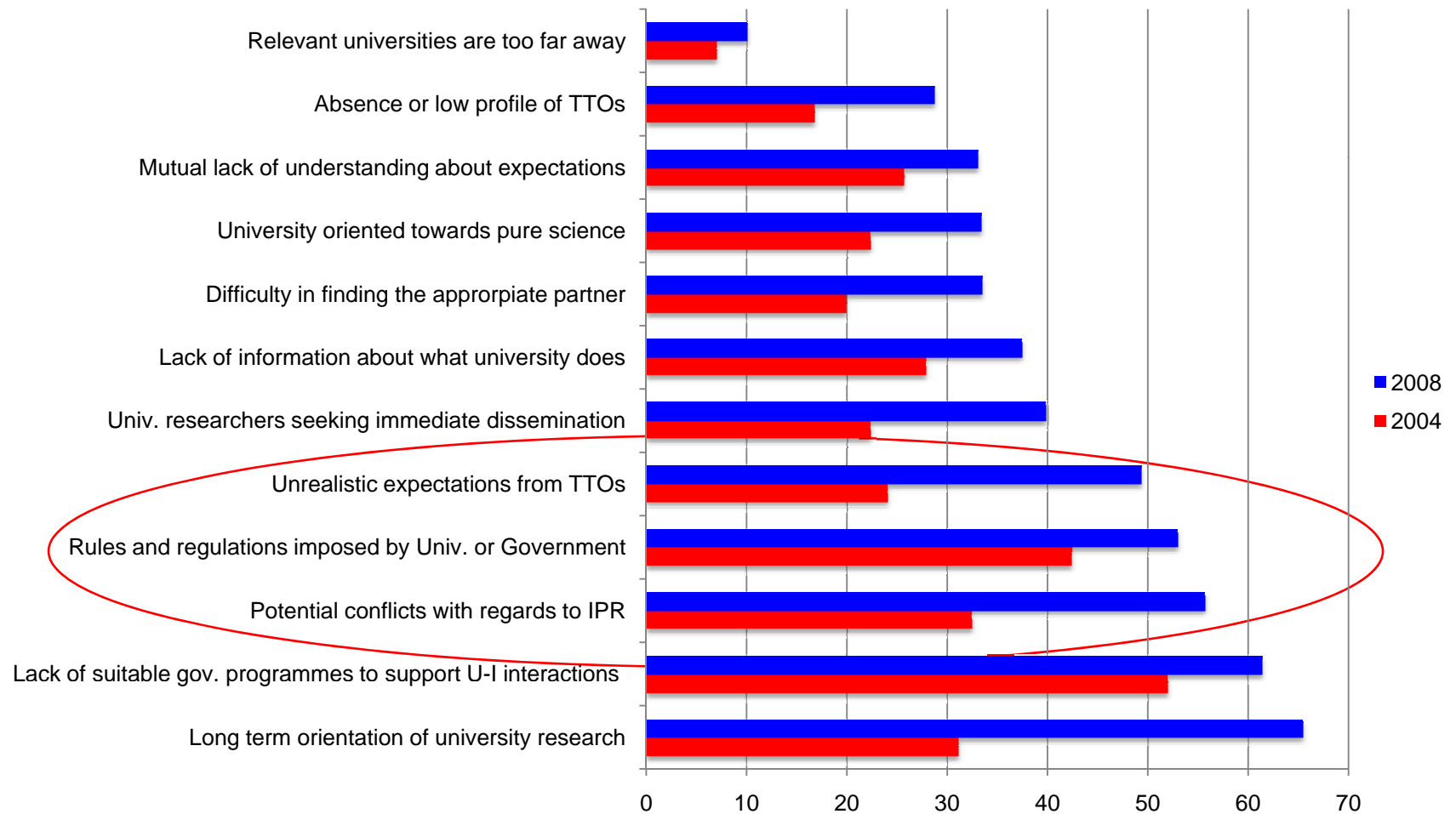
Barriers to collaboration



Barriers to collaboration



Barriers to collaboration

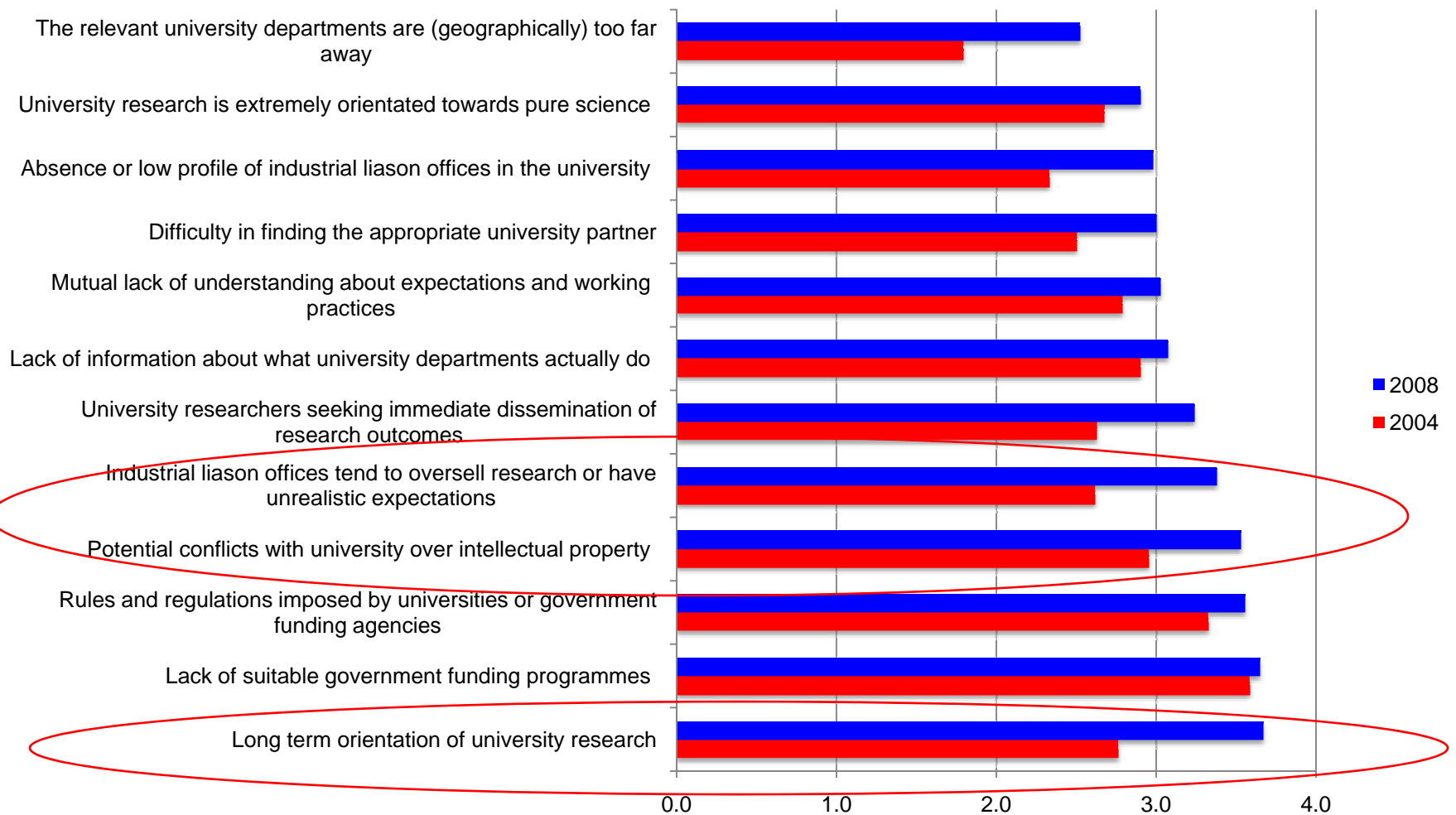


Barriers – Large and SMEs

Table 10. Barriers to interaction with universities by size, 2004 and 2008

	2004		2008	
	% responding 'agree' or 'strongly agree' SME	% responding 'agree' or 'strongly agree' Large firm	% responding 'agree' or 'strongly agree' SME	% responding 'agree' or 'strongly agree' Large firm
Long term orientation of university research	31.5	30.6	67.4	60.8
Lack of suitable gov. progr. to support U-I interactions	51.1	55.3	63.3	59.5
Potential conflicts with regards to IPR	31.9	35.5	55.9	53.2
Unrealistic expectations from TTOs	23.1	28.1	50.3	48.1
Rules and regulations imposed by Univ. or Government	41.9	45.5	57.3	42.4
Lack of information about what university does	27.2	25.4	35.6	40.5
Univ. researchers seeking immediate dissemination	22.3	23.0	41.4	36.7
University oriented towards pure science	24.2	20.3	31.7	35.4
Difficulty in finding the appropriate partner	20.7	15.6	33.9	32.3
Mutual lack of understanding about expectations	24.6	27.3	33.6	31.7
Absence or low profile of TTOs	17.4	13.9	28.6	30.4
Relevant universities are too far away	5.4	10.7	10.5	9.5

Panel views



Industry voices

Rik Parker, director of research and technology at Rolls-Royce, complained about the higher education sector's overemphasis on intellectual property (IP) rights.

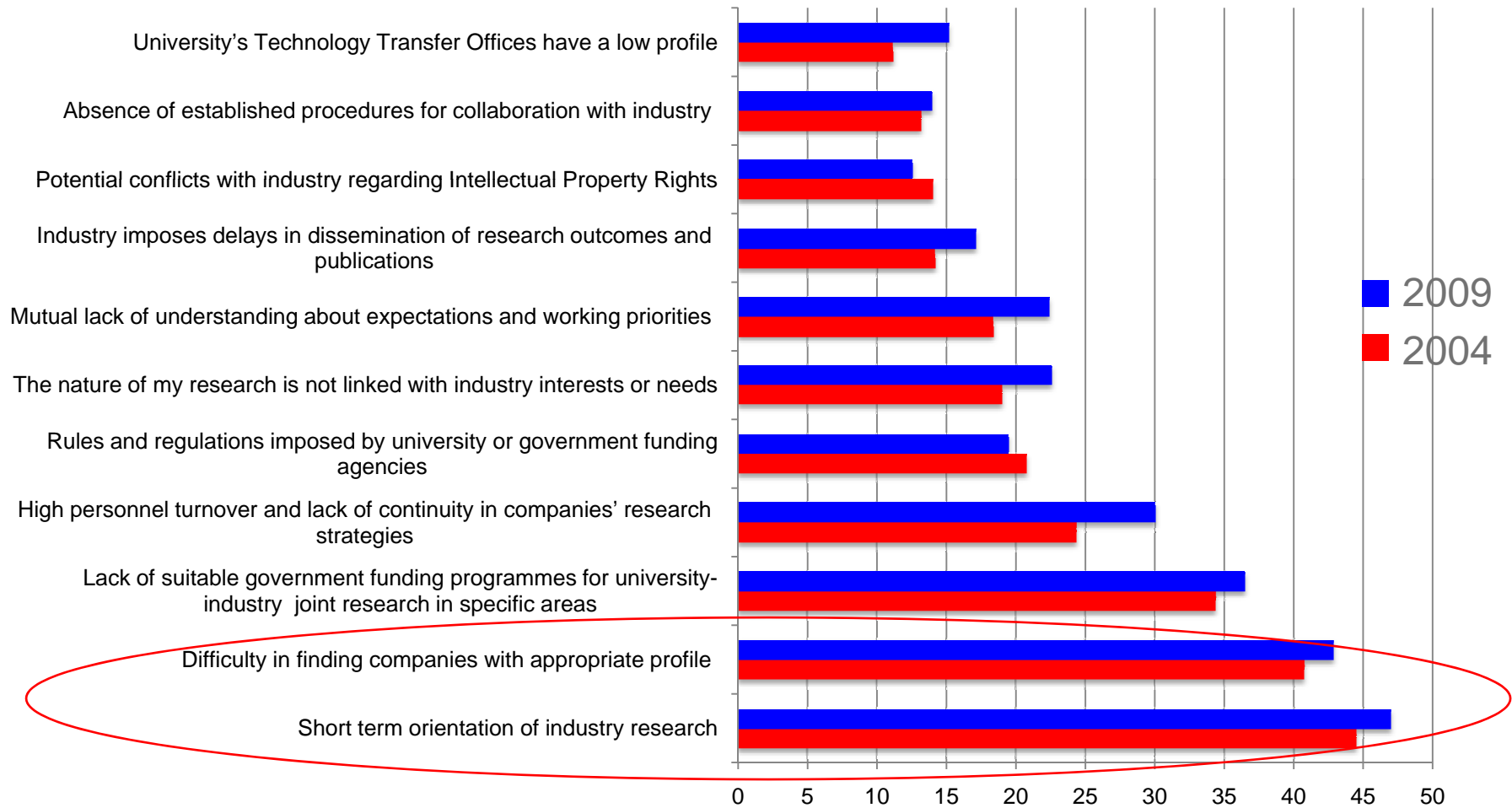
IP is important, he said, but a huge amount of time and effort is wasted on the issue, which causes "a great deal of frustration" for industry partners.

Mr Parker said that the first 18 months of a contract with a university are often spent thrashing out IP rights, although universities cannot afford to protect them properly.

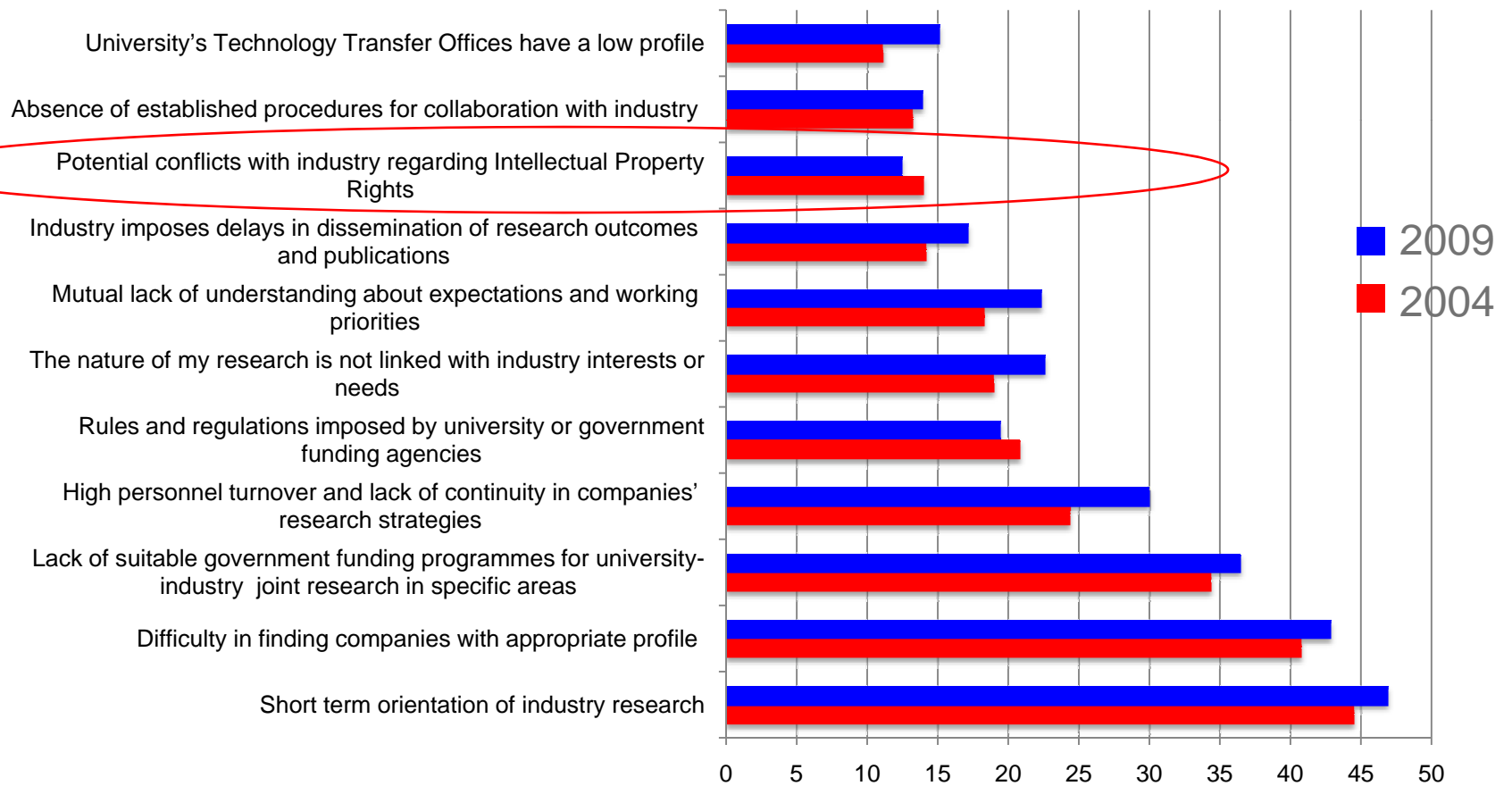
He added that Rolls-Royce has 19 university technology centres in the UK and ten overseas, but is considering shutting down many of the UK sites.

Source: THES, 12 March 2009

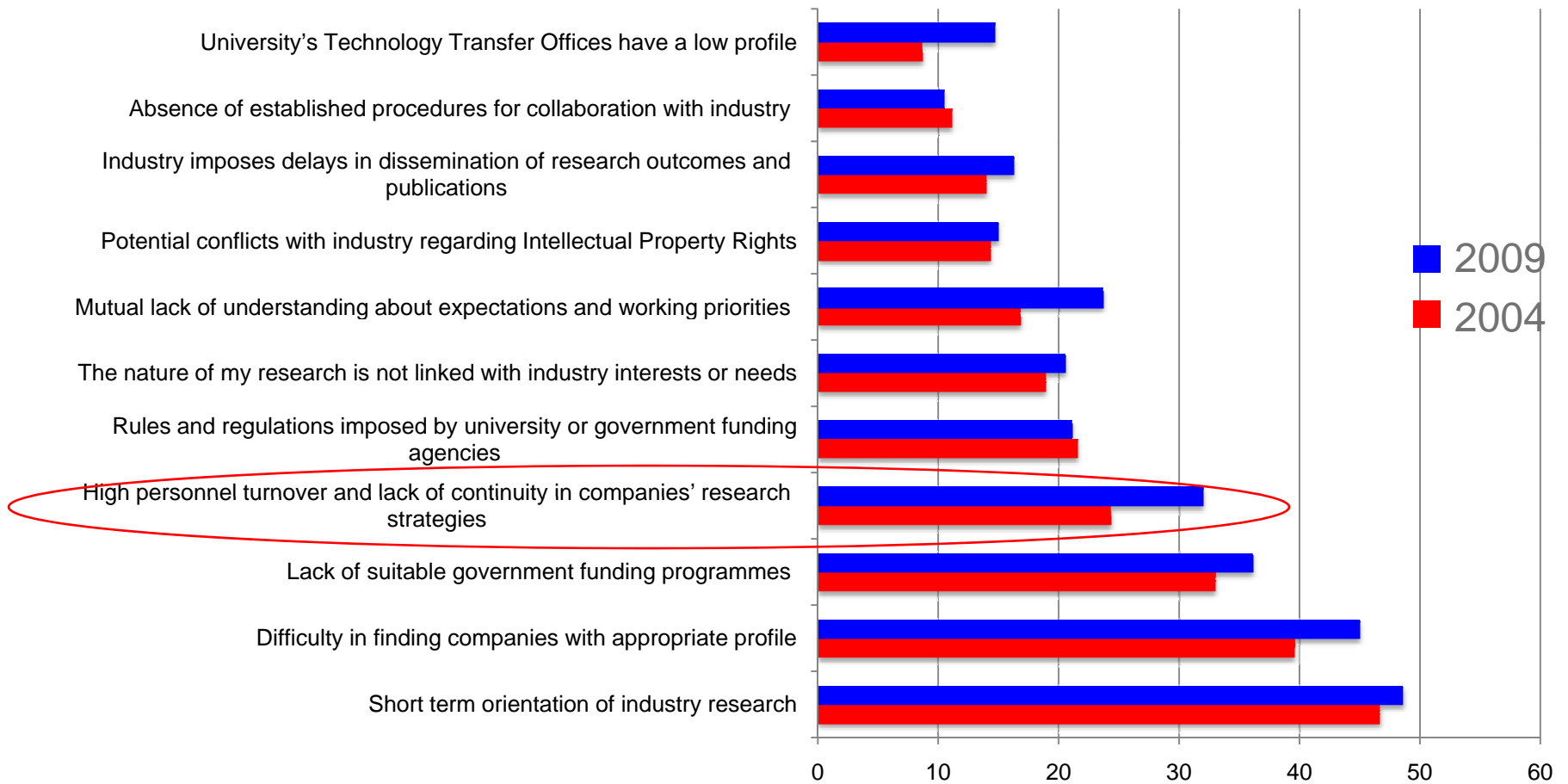
Academic views of barriers



Academic views of barriers



Panel results



Mitigating perceived barriers – the firm side

	Orientation barriers	IP and admin. barriers
Prior collaboration experience	(***)	
Inter-organizational trust	(***)	(***)
Breadth of interaction	(***)	**

Controls: Size, R&D intensity, Ownership, Level of education of respondent, Industry

Implications

- Increasing divergence between industry and academics views of barriers
- Classic barrier of 'orientation' remains – seen from both sides as main barrier and may be increasing
- Heightened barriers related to IP and regulations perceived by industry (large and small, experience and inexperienced collaborators)
- Lowering industry barriers
 - Orientation-related barriers relatively easy to mitigate, whereas Transaction-related barriers are difficult to lower

Implications

- Informal patterns of exchange transformed to formal systems – contractual
- Higher monitoring and reporting costs
- Increase set up costs to U-I collaboration
- Wider number of actors involved on university side (researcher, research services, IP department, Technology Transfer Office)
- U-I collaboration becoming like I-I collaboration?
- Importance of trust



More information on industry survey can be found in the report ‘Searching for Talent and Technology’ available at www.aimresearch.org