‘International Comparative Performance of the UK Research Base’

A report prepared for the Department of Business, Innovation and Skills

Appendix F: Supplementary Data
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<td>R&amp;D personnel per thousand population – UK and comparator countries</td>
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<td>R&amp;D personnel per thousand labour force – UK and comparator countries</td>
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**Note:** No supplementary data included for Sections 1, 2, and 5
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<td>Citations per billion dollars GDP - UK and comparator countries</td>
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<td>Citations (government sector) per million dollars GOVERD - UK and comparator countries</td>
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<td>Citations (government sector, hospitals and research institutes) per million dollars GOVERD - UK and comparator countries</td>
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<td></td>
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<td>Citations (university sector) per million dollars HERD - UK and comparator countries</td>
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<td>Citations (university and medical schools sector) per million dollars HERD - UK and comparator countries</td>
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<td>Students per million dollars GDP - UK and comparator countries</td>
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<td>Students per million dollars GERD - UK and comparator countries</td>
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<tr>
<td>Students per million dollars HERD - UK and comparator countries</td>
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<td>Students per million dollars BERD - UK and comparator countries</td>
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<td>Citations per researcher - UK and comparator countries</td>
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<td>Patent application share (world) versus share of BERD – UK and comparator countries</td>
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<td>Cross-sector migration of researchers III – UK and comparator countries</td>
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<td>Downloads of articles from Corporate accounts by sector of article authorship</td>
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HUMAN CAPITAL
Students – UK and comparator countries

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<tr>
<th></th>
<th>2006</th>
<th>2010</th>
<th>Change 06-10</th>
<th>CAGR 06-10</th>
<th>UK rank 2006</th>
<th>UK rank 2010</th>
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<tbody>
<tr>
<td>G8</td>
<td>2,241,931</td>
<td>2,381,371</td>
<td>139,440</td>
<td>1.52%</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>EU-27</td>
<td>39,762,313</td>
<td>43,329,569</td>
<td>3,567,256</td>
<td>2.17%</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>OECD</td>
<td>16,857,873</td>
<td>17,417,512</td>
<td>559,639</td>
<td>0.82%</td>
<td>2</td>
<td>2</td>
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Source: OECD Education
PhD students (enrolled) – UK and comparator countries

G8 rankings out of 7 (of 8) countries with available data
EU27 rankings out of 18 (of 27) countries with available data
OECD rankings out of 32 (of 42) countries with available data

Source: OECD Education
PhD students (graduated) – UK and comparator countries

Source: OECD Education

G8 rankings out of 7 (of 8) countries with available data
EU27 rankings out of 18 (of 27) countries with available data
OECD rankings out of 32 (of 42) countries with available data
Students per thousand population – UK and comparator countries

Source: OECD Education and OECD MSTI

G8 rankings out of 8 (of 8) countries with available data
EU27 rankings out of 20 (of 27) countries with available data
OECD rankings out of 37 (of 42) countries with available data
PhD students (enrolled) per thousand population – UK and comparator countries

G8 rankings out of 7 (of 8) countries with available data
EU27 rankings out of 18 (of 27) countries with available data
OECD rankings out of 32 (of 42) countries with available data

Source: OECD Education and OECD MSTI
PhD students (graduated) per thousand population – UK and comparator countries

Source: OECD Education and OECD MSTI
Students per researcher – UK and comparator countries

Source: OECD Education and OECD MSTI

G8 rankings out of 8 (of 8) countries with available data
EU27 rankings out of 20 (of 27) countries with available data
OECD rankings out of 32 (of 42) countries with available data
PhD students (enrolled) per researcher – UK and comparator countries

Source: OECD Education and OECD MSTI

G8 rankings out of 7 (of 8) countries with available data
EU27 rankings out of 18 (of 27) countries with available data
OECD rankings out of 29 (of 42) countries with available data
PhD students (graduated) per researcher – UK and comparator countries

G8 rankings out of 6 (of 8) countries with available data
EU27 rankings out of 16 (of 27) countries with available data
OECD rankings out of 26 (of 42) countries with available data

Source: OECD Education and OECD MSTI
Researchers – UK and comparator countries

<table>
<thead>
<tr>
<th></th>
<th>2005</th>
<th>2009</th>
<th>Change 05-09</th>
<th>CAGR 05-09</th>
<th>UK Rank 2005</th>
<th>UK Rank 2009</th>
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<tr>
<td>UK</td>
<td>248,599</td>
<td>256,124</td>
<td>7,525</td>
<td>0.75%</td>
<td>-</td>
<td>-</td>
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<tr>
<td>G8</td>
<td>3,463,023</td>
<td>3,599,311</td>
<td>136,287</td>
<td>0.97%</td>
<td>5</td>
<td>5</td>
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<tr>
<td>EU27</td>
<td>1,369,123</td>
<td>1,544,660</td>
<td>175,537</td>
<td>3.00%</td>
<td>2</td>
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<tr>
<td>OECD</td>
<td>5,469,438</td>
<td>5,949,193</td>
<td>479,754</td>
<td>2.12%</td>
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<tr>
<td>World</td>
<td>5,605,045</td>
<td>5,991,085</td>
<td>386,040</td>
<td>1.68%</td>
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G8 rankings out of 7 (of 8) countries with available data
EU27 rankings out of 18 (of 27) countries with available data
OECD rankings out of 32 (of 42) countries with available data
World rankings out of 36 countries with available data

Source: OECD MSTI
UK researchers by sector of employment

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<th>Sector</th>
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<th>CAGR 05-09</th>
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<tr>
<td>Business Enterprise researchers</td>
<td>93,717</td>
<td>84,554</td>
<td>-9,164</td>
<td>-2.54%</td>
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<tr>
<td>Government researchers</td>
<td>9,311</td>
<td>8,701</td>
<td>-609</td>
<td>-1.68%</td>
</tr>
<tr>
<td>Higher Education researchers</td>
<td>141,762</td>
<td>158,004</td>
<td>16,242</td>
<td>2.75%</td>
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</table>

Source: OECD MSTI
Researchers per thousand population – UK and comparator countries

G8 rankings out of 8 (of 8) countries with available data
EU27 rankings out of 21 (of 27) countries with available data
OECD rankings out of 33 (of 42) countries with available data

Source: OECD MSTI
Researchers per thousand labour force – UK and comparator countries

G8 rankings out of 7 (of 8) countries with available data
EU27 rankings out of 19 (of 27) countries with available data
OECD rankings out of 30 (of 42) countries with available data

Source: OECD MSTI
R&D personnel – UK and comparator countries

G8 rankings out of 7 (of 8) countries with available data
EU27 rankings out of 18 (of 27) countries with available data
OECD rankings out of 28 (of 42) countries with available data

Source: OECD MSTI
R&D personnel per thousand population – UK and comparator countries

G8 rankings out of 7 (of 8) countries with available data
EU27 rankings out of 18 (of 27) countries with available data
OECD rankings out of 28 (of 42) countries with available data

Source: OECD MSTI
R&D personnel per thousand labour force – UK and comparator countries

G8 rankings out of 6 (of 8) countries with available data  
EU27 rankings out of 15 (of 27) countries with available data  
OECD rankings out of 24 (of 42) countries with available data

Source: OECD MSTI
R&D personnel per researcher – UK and comparator countries

G8 rankings out of 7 (of 8) countries with available data
EU27 rankings out of 22 (of 27) countries with available data
OECD rankings out of 31 (of 42) countries with available data

Source: OECD MSTI
International mobility of UK researchers

**Outflow**
- Researchers: 5.8%
- Relative Productivity: 0.91
- Relative Seniority: 1.15

**Returnees Outflow**
- Researchers: 4.2%
- Relative Productivity: 0.95
- Relative Seniority: 1.20

**Transitory (mainly non-UK)**
- Researchers: 30.8%
- Relative Productivity: 1.35
- Relative Seniority: 1.11

**Transitory (mainly UK)**
- Researchers: 13.6%
- Relative Productivity: 0.98
- Relative Seniority: 1.05

**Inflow**
- Researchers: 5.8%
- Relative Productivity: 0.89
- Relative Seniority: 1.13

**Returnees Inflow**
- Researchers: 2.6%
- Relative Productivity: 1.66
- Relative Seniority: 1.23

**Brain Outflow**
- Researchers: 10.0%
- Relative Productivity: 0.92
- Relative Seniority: 1.17

**Transitory Brain Mobility**
- Researchers: 44.4%
- Relative Productivity: 1.24
- Relative Seniority: 1.08

**Brain Inflow**
- Researchers: 8.5%
- Relative Productivity: 1.14
- Relative Seniority: 1.16

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**International mobility of UK researchers – top source/destination countries**

<table>
<thead>
<tr>
<th></th>
<th>Outflow</th>
<th>Inflow</th>
<th>Returnees Outflow</th>
<th>Returnees Inflow</th>
<th>Transitory (mainly UK)</th>
<th>Transitory (mainly non-UK)</th>
</tr>
</thead>
<tbody>
<tr>
<td>USA</td>
<td>28.2%</td>
<td>USA</td>
<td>26.6%</td>
<td>USA</td>
<td>USA</td>
<td>USA</td>
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<tr>
<td>AUS</td>
<td>10.4%</td>
<td>DEU</td>
<td>10.1%</td>
<td>AUS</td>
<td>AUS</td>
<td>DEU</td>
</tr>
<tr>
<td>CAN</td>
<td>6.9%</td>
<td>AUS</td>
<td>6.6%</td>
<td>DEU</td>
<td>AUS</td>
<td>AUS</td>
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<tr>
<td>DEU</td>
<td>4.9%</td>
<td>FRA</td>
<td>6.1%</td>
<td>CAN</td>
<td>DEU</td>
<td>CAN</td>
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<td>FRA</td>
<td>4.3%</td>
<td>ITA</td>
<td>5.2%</td>
<td>IRL</td>
<td>FRA</td>
<td>AUS</td>
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*Source: Scopus*
International mobility of German researchers

International mobility of German researchers - top source/destination countries

| Source: Scopus | 24 |
RESEARCH OUTPUTS

PT 04
‘International Comparative Performance of the UK Research Base’
Article output

Source: Scopus
Article output – Clinical Sciences (BIS1)

Source: Scopus
Article output – Health & Medical Sciences (BIS2)

Source: Scopus
Article output – Biological Sciences (BIS3)

Source: Scopus
Article output – Environmental Sciences (BIS4)

Source: Scopus
Article output – Mathematics (BIS5)

Source: Scopus
Article output – Physical Sciences (BIS6)

Source: Scopus
Article output – Engineering (BIS7)

Source: Scopus
Article output – Social Sciences (BIS8)

Source: Scopus
Article output – Business (BIS9)

Source: Scopus
Article output – Humanities (BIS10)

Source: Scopus
Article share (world)

Source: Scopus
## Article share (world) – Clinical Sciences (BIS1)

### Table: Article Share of Clinical Sciences (BIS1)

<table>
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<tr>
<th>Country</th>
<th>2006</th>
<th>2010</th>
<th>Change 06-10</th>
<th>CAGR 06-10</th>
<th>UK Rank 2006</th>
<th>UK Rank 2010</th>
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</thead>
<tbody>
<tr>
<td>UK</td>
<td>8.03%</td>
<td>7.94%</td>
<td>-0.09%</td>
<td>-0.27%</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>G8</td>
<td>58.89%</td>
<td>57.81%</td>
<td>-1.07%</td>
<td>-0.46%</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>EU-27</td>
<td>34.80%</td>
<td>33.87%</td>
<td>-0.93%</td>
<td>-0.68%</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>OECD</td>
<td>87.53%</td>
<td>87.99%</td>
<td>0.46%</td>
<td>0.13%</td>
<td>2</td>
<td>2</td>
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<tr>
<td>World</td>
<td>100%</td>
<td>100%</td>
<td>-</td>
<td>-</td>
<td>2</td>
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</table>

Source: Scopus
Article share (world) – Health & Medical Sciences (BIS2)

Source: Scopus
Article share (world) – Biological Sciences (BIS3)

<table>
<thead>
<tr>
<th></th>
<th>2006</th>
<th>2010</th>
<th>Change 06-10</th>
<th>CAGR 06-10</th>
<th>UK rank 2006</th>
<th>UK rank 2010</th>
</tr>
</thead>
<tbody>
<tr>
<td>UK</td>
<td>7.52</td>
<td>6.98</td>
<td>-0.55%</td>
<td>-1.87%</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>G8</td>
<td>59.8%</td>
<td>55.46</td>
<td>-4.43%</td>
<td>-1.90%</td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td>EU-27</td>
<td>35.35%</td>
<td>33.07%</td>
<td>-2.28%</td>
<td>-1.65%</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>OECD</td>
<td>91.26%</td>
<td>91.36%</td>
<td>-0.06%</td>
<td>-0.16%</td>
<td>4</td>
<td>3</td>
</tr>
<tr>
<td>World</td>
<td>100%</td>
<td>100%</td>
<td>-</td>
<td>-</td>
<td>4</td>
<td>3</td>
</tr>
</tbody>
</table>

Source: Scopus
Article share (world) – Environmental Sciences (BIS4)

Source: Scopus
Article share (world) – Mathematics (BIS5)
Article share (world) – Physical Sciences (BIS6)

Source: Scopus
Article share (world) – Engineering (BIS7)
Article share (world) – Social Sciences (BIS8)

Source: Scopus
Article share (world) – Business (BIS9)

Source: Scopus
Article share (world) – Humanities (BIS10)

Source: Scopus
Citation output

Source: Scopus
Citation output – Clinical Sciences (BIS1)

Source: Scopus
Citation output – Health & Medical Sciences (BIS2)

Source: Scopus
Citation output – Biological Sciences (BIS3)

Source: Scopus
Citation output – Environmental Sciences (BIS4)

Source: Scopus
Citation output – Mathematics (BIS5)

Source: Scopus
Citation output – Physical Sciences (BIS6)

Source: Scopus
Citation output – Engineering (BIS7)

Source: Scopus
Citation output – Social Sciences (BIS8)

Source: Scopus
Citation output – Business (BIS9)

Source: Scopus
Citation output – Humanities (BIS10)

Source: Scopus
Citation share (world)

Source: Scopus
Citation share (world) – Clinical Sciences (BIS1)

Source: Scopus
Citation share (world) – Health & Medical Sciences (BIS2)

Source: Scopus
Citation share (world) – Biological Sciences (BIS3)

Source: Scopus
Citation share (world) – Environmental Sciences (BIS4)

Source: Scopus
Citation share (world) – Mathematics (BIS5)

Source: Scopus
Citation share (world) – Physical Sciences (BIS6)

Source: Scopus
Citation share (world) – Engineering (BIS7)

Source: Scopus
Citation share (world) – Social Sciences (BIS8)

Source: Scopus
Citation share (world) – Business (BIS9)

Source: Scopus
Citation share (world) – Humanities (BIS10)

Source: Scopus
World data are for 229 countries with at least 1 article in 2010. World rankings out of 89 countries (of 229) with at least 500 articles in 2010. Includes all 42 OECD countries and accounts for over 99% of the world total output.

Source: Scopus
Citations per article – Clinical Sciences (BIS1)

World data are for 229 countries with at least 1 article in 2010. World rankings out of 89 countries (of 229) with at least 500 articles in 2010. Includes all 42 OECD countries and accounts for over 99% of the world total output.

Source: Scopus
Citations per article – Health & Medical Sciences (BIS2)

World data are for 229 countries with at least 1 article in 2010. World rankings out of 89 countries (of 229) with at least 500 articles in 2010. Includes all 42 OECD countries and accounts for over 99% of the world total output.

Source: Scopus
Citations per article – Biological Sciences (BIS3)

World data are for 229 countries with at least 1 article in 2010. World rankings out of 89 countries (of 229) with at least 500 articles in 2010. Includes all 42 OECD countries and accounts for over 99% of the world total output.

Source: Scopus
Citations per article – Environmental Sciences (BIS4)

World data are for 229 countries with at least 1 article in 2010. World rankings out of 89 countries (of 229) with at least 500 articles in 2010. Includes all 42 OECD countries and accounts for over 99% of the world total output.

Source: Scopus
Citations per article – Mathematics (BIS5)

Source: Scopus

World data are for 229 countries with at least 1 article in 2010. World rankings out of 89 countries (of 229) with at least 500 articles in 2010. Includes all 42 OECD countries and accounts for over 99% of the world total output.
Citations per article – Physical Sciences (BIS6)

World data are for 229 countries with at least 1 article in 2010. World rankings out of 89 countries (of 229) with at least 500 articles in 2010. Includes all 42 OECD countries and accounts for over 99% of the world total output.

<table>
<thead>
<tr>
<th>Country</th>
<th>2006</th>
<th>2010</th>
<th>Change 06-10</th>
<th>CAGR 06-10</th>
<th>UK Rank 2006</th>
<th>UK Rank 2010</th>
</tr>
</thead>
<tbody>
<tr>
<td>UK</td>
<td>4.75</td>
<td>4.93</td>
<td>0.17</td>
<td>0.90%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>CHN</td>
<td>3.23</td>
<td>3.03</td>
<td>-0.19</td>
<td>-1.52%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>JPN</td>
<td>3.51</td>
<td>3.22</td>
<td>-0.29</td>
<td>-2.16%</td>
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<td>4</td>
</tr>
<tr>
<td>OECD</td>
<td>3.99</td>
<td>3.84</td>
<td>-0.15</td>
<td>-0.96%</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>EU-27</td>
<td>4.15</td>
<td>3.94</td>
<td>-0.21</td>
<td>-1.27%</td>
<td>2</td>
<td>1</td>
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</table>

Source: Scopus
Citations per article – Engineering (BIS7)

World data are for 229 countries with at least 1 article in 2010. World rankings out of 89 countries (of 229) with at least 500 articles in 2010. Includes all 42 OECD countries and accounts for over 99% of the world total output.

Source: Scopus
Citations per article – Social Sciences (BIS8)

World data are for 229 countries with at least 1 article in 2010. World rankings out of 89 countries (of 229) with at least 500 articles in 2010. Includes all 42 OECD countries and accounts for over 99% of the world total output.

Source: Scopus
Citations per article – Business (BIS9)

<table>
<thead>
<tr>
<th>Country</th>
<th>2006</th>
<th>2010</th>
<th>Change 06-10</th>
<th>CAGR 06-10</th>
<th>UK Rank 2006</th>
<th>UK Rank 2010</th>
</tr>
</thead>
<tbody>
<tr>
<td>UK</td>
<td>2.33</td>
<td>2.92</td>
<td>0.59</td>
<td>5.85%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>S8</td>
<td>2.24</td>
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<td>0.45</td>
<td>4.72%</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>EU-27</td>
<td>1.84</td>
<td>2.36</td>
<td>0.52</td>
<td>6.47%</td>
<td>4</td>
<td>5</td>
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<td>OECD</td>
<td>1.94</td>
<td>2.21</td>
<td>0.28</td>
<td>3.38%</td>
<td>5</td>
<td>6</td>
</tr>
<tr>
<td>World</td>
<td>1.47</td>
<td>1.85</td>
<td>0.38</td>
<td>5.96%</td>
<td>9</td>
<td>13</td>
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</table>

World data are for 229 countries with at least 1 article in 2010. World rankings out of 89 countries (of 229) with at least 500 articles in 2010. Includes all 42 OECD countries and accounts for over 99% of the world total output.

Source: Scopus
Citations per article – Humanities (BIS10)

Source: Scopus

World data are for 229 countries with at least 1 article in 2010. World rankings out of 89 countries (of 229) with at least 500 articles in 2010. Includes all 42 OECD countries and accounts for over 99% of the world total output.
Field-weighted citation impact

Source: Scopus

<table>
<thead>
<tr>
<th></th>
<th>2006</th>
<th>2010</th>
<th>Change 06-10</th>
<th>UK rank 2006</th>
<th>UK rank 2010</th>
</tr>
</thead>
<tbody>
<tr>
<td>UK</td>
<td>1.38</td>
<td>1.44</td>
<td>0.06</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>G8</td>
<td>1.22</td>
<td>1.22</td>
<td>0.00</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>EU-27</td>
<td>1.12</td>
<td>1.15</td>
<td>0.03</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>OECD</td>
<td>1.06</td>
<td>1.03</td>
<td>0.03</td>
<td>7</td>
<td>8</td>
</tr>
<tr>
<td>World</td>
<td>1.00</td>
<td>1.00</td>
<td>-</td>
<td>7</td>
<td>8</td>
</tr>
</tbody>
</table>

World data are for 229 countries with at least 1 article in 2010. World rankings out of 89 countries (of 229) with at least 500 articles in 2010. Includes all 42 OECD countries and accounts for over 99% of the world total output.
Field-weighted citation impact – Clinical Sciences (BIS1)

Source: Scopus

World data are for 229 countries with at least 1 article in 2010. World rankings out of 89 countries (of 229) with at least 500 articles in 2010. Includes all 42 OECD countries and accounts for over 99% of the world total output.
Field-weighted citation impact – Health & Medical Sciences (BIS2)

World data are for 229 countries with at least 1 article in 2010. World rankings out of 89 countries (of 229) with at least 500 articles in 2010. Includes all 42 OECD countries and accounts for over 99% of the world total output.

Source: Scopus
Field-weighted citation impact— Biological Sciences (BIS3)

World data are for 229 countries with at least 1 article in 2010. World rankings out of 89 countries (of 229) with at least 500 articles in 2010. Includes all 42 OECD countries and accounts for over 99% of the world total output.

Source: Scopus
Field-weighted citation impact – Environmental Sciences (BIS4)

World data are for 229 countries with at least 1 article in 2010. World rankings out of 89 countries (of 229) with at least 500 articles in 2010. Includes all 42 OECD countries and accounts for over 99% of the world total output.

Source: Scopus
Field-weighted citation impact – Mathematics (BIS5)

World data are for 229 countries with at least 1 article in 2010. World rankings out of 89 countries (of 229) with at least 500 articles in 2010. Includes all 42 OECD countries and accounts for over 99% of the world total output.

Source: Scopus
Field-weighted citation impact – Physical Sciences (BIS6)

World data are for 229 countries with at least 1 article in 2010. World rankings out of 89 countries (of 229) with at least 500 articles in 2010. Includes all 42 OECD countries and accounts for over 99% of the world total output.

Source: Scopus
Field-weighted citation impact – Engineering (BIS7)

World data are for 229 countries with at least 1 article in 2010. World rankings out of 89 countries (of 229) with at least 500 articles in 2010. Includes all 42 OECD countries and accounts for over 99% of the world total output.

Source: Scopus
Field-weighted citation impact – Social Sciences (BIS8)

World data are for 229 countries with at least 1 article in 2010. World rankings out of 89 countries (of 229) with at least 500 articles in 2010. Includes all 42 OECD countries and accounts for over 99% of the world total output.

Source: Scopus
Field-weighted citation impact – Business (BIS9)

World data are for 229 countries with at least 1 article in 2010. World rankings out of 89 countries (of 229) with at least 500 articles in 2010. Includes all 42 OECD countries and accounts for over 99% of the world total output.

Source: Scopus
Field-weighted citation impact – Humanities (BIS10)

World data are for 229 countries with at least 1 article in 2010. World rankings out of 89 countries (of 229) with at least 500 articles in 2010. Includes all 42 OECD countries and accounts for over 99% of the world total output.

Source: Scopus
Highly-cited article share (world)

![Graph showing highly-cited article share by country over time.](image)

Source: Scopus
Highly-cited article share (world) – Clinical Sciences (BIS1)

Source: Scopus
Highly-cited article share (world) – Health & Medical Sciences (BIS2)

Source: Scopus
Highly-cited article share (world) – Biological Sciences (BIS3)

Source: Scopus
Highly-cited article share (world) – Environmental Sciences (BIS4)

Source: Scopus
Highly-cited article share (world) – Mathematics (BIS5)

Source: Scopus
Highly-cited article share (world) – Physical Sciences (BIS6)

<table>
<thead>
<tr>
<th></th>
<th>2006</th>
<th>2010</th>
<th>Change 06-10</th>
<th>CAGR 06-10</th>
</tr>
</thead>
<tbody>
<tr>
<td>1st percentile</td>
<td>9.70</td>
<td>11.06</td>
<td>1.36</td>
<td>3.3%</td>
</tr>
<tr>
<td>5th percentile</td>
<td>9.23</td>
<td>9.67</td>
<td>0.44</td>
<td>1.2%</td>
</tr>
<tr>
<td>10th percentile</td>
<td>8.93</td>
<td>8.89</td>
<td>-0.05</td>
<td>-0.1%</td>
</tr>
</tbody>
</table>

Source: Scopus
Highly-cited article share (world) – Engineering (BIS7)

Source: Scopus
Highly-cited article share (world) – Social Sciences (BIS8)

Source: Scopus
Highly-cited article share (world) – Business (BIS9)

Source: Scopus
Highly-cited article share (world) – Humanities (BIS10)

Source: Scopus
National self-citation rates – UK and comparator countries

Source: Scopus
Articles per billion dollars GDP - UK and comparator countries

Source: Scopus and OECD MSTI
Articles (all sectors) per million dollars GERD - UK and comparator countries

Source: Scopus and OECD MSTI

G8 rankings out of 7 (of 8) countries with available data
EU27 rankings out of 20 (of 27) countries with available data
OECD rankings out of 34 (of 42) countries with available data
Articles (corporate sector) per million dollars BERD - UK and comparator countries

![Graph showing the number of articles (corporate sector) per million dollars BERD for various countries over the years 2006 to 2010. The graph includes data for countries such as the UK, Germany (DEU), France (FRA), Japan (JPN), USA, and China (CHN). The data shows a decrease in the number of articles over the years for most countries.

<table>
<thead>
<tr>
<th>Country</th>
<th>2006</th>
<th>2010</th>
<th>Change 06-10</th>
<th>CAGR 06-10</th>
<th>UK Rank 2006</th>
<th>UK Rank 2010</th>
</tr>
</thead>
<tbody>
<tr>
<td>UK</td>
<td>0.20</td>
<td>0.17</td>
<td>-0.03</td>
<td>-3.67%</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>EU-27</td>
<td>0.15</td>
<td>0.14</td>
<td>-0.01</td>
<td>-2.31%</td>
<td>5</td>
<td>6</td>
</tr>
</tbody>
</table>

EU27 rankings out of 19 (of 27) countries with available data

Source: Scopus and OECD MSTI
Articles (government sector) per million dollars GOVERD - UK and comparator countries

Source: Scopus and OECD MSTI
Articles (government sector, hospitals and research institutes) per million dollars GOVERD - UK and comparator countries

<table>
<thead>
<tr>
<th></th>
<th>2006</th>
<th>2010</th>
<th>Change 06-10</th>
<th>CAGR 06-10</th>
<th>UK Rank 2006</th>
<th>UK Rank 2010</th>
</tr>
</thead>
<tbody>
<tr>
<td>UK</td>
<td>8.82</td>
<td>9.10</td>
<td>0.28</td>
<td>0.79%</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>EU-27</td>
<td>6.59</td>
<td>6.34</td>
<td>-0.25</td>
<td>-0.97%</td>
<td>7</td>
<td>6</td>
</tr>
</tbody>
</table>

EU27 rankings out of 16 (of 27) countries with available data

Source: Scopus and OECD MSTI
Articles (university sector) per million dollars HERD - UK and comparator countries

Source: Scopus and OECD MSTI

EU27 rankings out of 17 (of 27) countries with available data
Articles (university and medical schools sector) per million dollars HERD - UK and comparator countries

Source: Scopus and OECD MSTI

EU27 rankings out of 17 (of 27) countries with available data
Citations per billion dollars GDP - UK and comparator countries

Source: Scopus and OECD MSTI
Citations (all sectors) per million dollars GERD - UK and comparator countries

Source: Scopus and OECD MSTI

G8 rankings out of 7 (of 8) countries with available data
EU27 rankings out of 21 (of 27) countries with available data
OECD rankings out of 34 (of 42) countries with available data
Citations (corporate sector) per million dollars BERD - UK and comparator countries

Source: Scopus and OECD MSTI

EU27 rankings out of 19 (of 27) countries with available data
Citations (government sector) per million dollars GOVERD - UK and comparator countries

Source: Scopus and OECD MSTI
Citations (government sector, hospitals and research institutes) per million dollars GOVERD - UK and comparator countries

EU27 rankings out of 16 (of 27) countries with available data

<table>
<thead>
<tr>
<th></th>
<th>2006</th>
<th>2010</th>
<th>Change</th>
<th>CAGR</th>
<th>UK Rank 2006</th>
<th>UK Rank 2010</th>
</tr>
</thead>
<tbody>
<tr>
<td>UK</td>
<td>298.68</td>
<td>363.70</td>
<td>65.02</td>
<td>5.05%</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>EU-27</td>
<td>161.59</td>
<td>189.82</td>
<td>28.23</td>
<td>4.11%</td>
<td>5</td>
<td>5</td>
</tr>
</tbody>
</table>

Source: Scopus and OECD MSTI
Citations (university sector) per million dollars HERD - UK and comparator countries

Source: Scopus and OECD MSTI

EU27 rankings out of 16 (of 27) countries with available data
Citations (university and medical schools sector) per million dollars HERD - UK and comparator countries

Source: Scopus and OECD MSTI

EU27 rankings out of 16 (of 27) countries with available data
Students per million dollars GDP - UK and comparator countries

<table>
<thead>
<tr>
<th>Country</th>
<th>2006</th>
<th>2010</th>
<th>Change 06-10</th>
<th>CAGR 06-10</th>
<th>UK Rank 2006</th>
<th>UK Rank 2010</th>
</tr>
</thead>
<tbody>
<tr>
<td>UK</td>
<td>1,255.85</td>
<td>1,349.66</td>
<td>93.81</td>
<td>1.82%</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>G8</td>
<td>1,605.18</td>
<td>1,725.37</td>
<td>120.19</td>
<td>1.82%</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>EU-27</td>
<td>1,417.14</td>
<td>1,447.14</td>
<td>29.99</td>
<td>0.52%</td>
<td>14</td>
<td>12</td>
</tr>
<tr>
<td>OECD</td>
<td>1,533.50</td>
<td>1,558.17</td>
<td>24.67</td>
<td>0.40%</td>
<td>24</td>
<td>22</td>
</tr>
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</table>

G8 rankings out of 8 (of 8) countries with available data
EU27 rankings out of 20 (of 27) countries with available data
OECD rankings out of 34 (of 42) countries with available data

Source: OECD Education and OECD MSTI
Students per million dollars GERD - UK and comparator countries

G8 rankings out of 7 (of 8) countries with available data
EU27 rankings out of 19 (of 27) countries with available data
OECD rankings out of 32 (of 42) countries with available data

Source: OECD Education and OECD MSTI
Students per million dollars HERD - UK and comparator countries

<table>
<thead>
<tr>
<th></th>
<th>2006</th>
<th>2010</th>
<th>Change 06-10</th>
<th>CAGR 06-10</th>
<th>UK Rank 2006</th>
<th>UK Rank 2010</th>
</tr>
</thead>
<tbody>
<tr>
<td>UK</td>
<td>275.22</td>
<td>279.20</td>
<td>3.98</td>
<td>0.36%</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>G8</td>
<td>466.92</td>
<td>450.34</td>
<td>-16.57</td>
<td>-0.90%</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>EU-27</td>
<td>354.08</td>
<td>298.02</td>
<td>-56.06</td>
<td>-4.22%</td>
<td>11</td>
<td>9</td>
</tr>
<tr>
<td>OECD</td>
<td>399.51</td>
<td>382.91</td>
<td>-16.60</td>
<td>-1.06%</td>
<td>21</td>
<td>18</td>
</tr>
</tbody>
</table>

G8 rankings out of 6 (of 8) countries with available data
EU27 rankings out of 16 (of 27) countries with available data
OECD rankings out of 29 (of 42) countries with available data

Source: OECD Education and OECD MSTI
Students per million dollars BERD - UK and comparator countries

Source: OECD Education and OECD MSTI
Students per million dollars GOVERD - UK and comparator countries

Source: OECD Education and OECD MSTI

OECD rankings out of 21 (of 42) countries with available data
Researchers per million dollars GDP - UK and comparator countries

<table>
<thead>
<tr>
<th></th>
<th>2006</th>
<th>2010</th>
<th>Change 06-10</th>
<th>CAGR 06-10</th>
<th>UK Rank 2006</th>
<th>UK Rank 2010</th>
</tr>
</thead>
<tbody>
<tr>
<td>UK</td>
<td>142.29</td>
<td>133.40</td>
<td>-8.89</td>
<td>-1.60%</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>G8</td>
<td>142.79</td>
<td>145.82</td>
<td>3.03</td>
<td>0.53%</td>
<td>3</td>
<td>5</td>
</tr>
<tr>
<td>EU-27</td>
<td>118.65</td>
<td>131.34</td>
<td>12.69</td>
<td>2.57%</td>
<td>5</td>
<td>11</td>
</tr>
<tr>
<td>OECD</td>
<td>127.54</td>
<td>137.45</td>
<td>9.92</td>
<td>1.89%</td>
<td>11</td>
<td>19</td>
</tr>
</tbody>
</table>

G8 rankings out of 8 (of 8) countries with available data
EU27 rankings out of 18 (of 27) countries with available data
OECD rankings out of 30 (of 42) countries with available data

Source: OECD MSTI
Researchers per million dollars GERD - UK and comparator countries

G8 rankings out of 7 (of 8) countries with available data
EU27 rankings out of 17 (of 27) countries with available data
OECD rankings out of 28 (of 42) countries with available data

Source: OECD MSTI
Researchers per million dollars HERD - UK and comparator countries

<table>
<thead>
<tr>
<th></th>
<th>2006</th>
<th>2010</th>
<th>Change 06-10</th>
<th>CAGR 06-10</th>
<th>UK Rank 2006</th>
<th>UK Rank 2010</th>
</tr>
</thead>
<tbody>
<tr>
<td>UK</td>
<td>31.18</td>
<td>27.60</td>
<td>-3.59</td>
<td>-3.01%</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>G8</td>
<td>48.92</td>
<td>43.73</td>
<td>-5.18</td>
<td>-2.76%</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>EU-27</td>
<td>29.65</td>
<td>27.05</td>
<td>-2.60</td>
<td>-2.27%</td>
<td>7</td>
<td>8</td>
</tr>
<tr>
<td>OECD</td>
<td>33.23</td>
<td>33.78</td>
<td>0.55</td>
<td>0.41%</td>
<td>12</td>
<td>13</td>
</tr>
</tbody>
</table>

G8 rankings out of 6 (of 8) countries with available data
EU27 rankings out of 14 (of 27) countries with available data
OECD rankings out of 24 (of 42) countries with available data

Source: OECD MSTI
Researchers per million dollars BERD - UK and comparator countries

EU27 rankings out of 16 (of 27) countries with available data

Source: OECD MSTI
Researchers per million dollars GOVERD - UK and comparator countries

EU27 rankings out of 14 (of 27) countries with available data

Source: OECD MSTI
Background on articles per researcher - UK and comparator countries

This chart shows the count of unique authors in 2009 (source: Scopus) as a proportion of the count of researchers in 2009 (source: OECD MSTI).

Not all researchers publish articles (e.g. those in corporate organisations are less likely to publish) and of those that do publish, not all will publish every year. It is therefore to be expected that the number of authors in any given year will be less than the total population of researchers, and so the proportion of authors to researchers will be less than 100%.

However, Italy is the only country in the comparator group for which the number of authors exceeds the number of reported researchers, giving a value of greater than 100%. This suggests that the number of researchers reported for Italy may be either underestimated or were determined on a basis that is not consistent with that for the other countries in the comparator group.

Caution is therefore required in assessing the relative performance of Italy on the number of researchers as well as productivity measures that show outputs (articles and citations) per researcher, as the latter are likely to be inflated.

Source: Scopus and OECD MSTI
Articles per researcher - UK and comparator countries

Source: Scopus and OECD MSTI
Citations per researcher - UK and comparator countries

Source: Scopus and OECD MSTI
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Patent application share (world) – UK and comparator countries

Source: WIPO Statistics Database
Patent application share (world) versus share of GERD funded by Business Enterprise sector – UK and comparator countries

Source: WIPO Statistics Database and OECD MSTI
Patent application share (world) versus share of BERD – UK and comparator countries

Source: WIPO Statistics Database and OECD MSTI
IP income and startups/spin-offs per surveyed Knowledge Transfer Office (KTO)

Source: AUTM Licensing Activity Survey and ProTon Europe Annual Survey Reports

- **USA**: $13.29 million
- **Canada**: $1.74 million
- **China**: $0.13 million
- **Japan**: $0.06 million
- **Italy**: $0.05 million
- **UK**: $0.51 million

Average IP income per surveyed KTO: $13.29 million
Average number of Startups/Spin-offs per surveyed KTO: 4.0
Cross-sector migration of researchers I – UK and comparator countries

Univ (university): degree-granting institutes that also engage in research
Hosp (hospital): organisations that provide healthcare and that may also engage in research
Resi (research institute): organisations that engage in research and that may also conduct educational activities
Meds (medical school): medical degree-granting institutes that also engage in research
Other: Comp (companies) corporate sector that engages in research; Govt government organisations that engage in research such as the Rutherford Appleton laboratory; Ngov non-governmental organisations that engage in research such as NIESR

Source: Scopus
Cross-sector migration of researchers II – UK and comparator countries

Source: Scopus
Cross-sector migration of researchers III – UK and comparator countries

Source: Scopus
Share of corporate/non-corporate co-authored articles (national) – UK and comparator countries

Source: Scopus
Patent application share (world) versus share of corporate/non-corporate co-authored articles (national) – UK and comparator countries

Source: WIPO Statistics Database and Scopus
Downloads of articles with at least one corporate author by downloading account type

Source: ScienceDirect
Downloads of articles from Corporate accounts by sector of article authorship

Source: ScienceDirect

Univ (university): degree-granting institutes that also engage in research
Hosp (hospital): organisations that provide healthcare and that may also engage in research
Resi (research institute): organisations that engage in research and that may also conduct educational activities
Meds (medical school): medical degree-granting institutes that also engage in research
Comp (companies) corporate sector that engages in research
Govt government organisations that engage in research such as the Rutherford Appleton laboratory
Ngov non-governmental organisations that engage in research such as NIESR