OECD SCIENCE, TECHNOLOGY AND INDUSTRY SCOREBOARD 2005

BRIEFING NOTE FOR THE UNITED KINGDOM

Science, technology and innovation hold the key to stronger growth

Science, technology and innovation are key factors contributing to economic growth in both advanced and developing economies. A growing number of OECD countries are emphasising innovation and knowledge in their quest for stronger economic growth. This process is reinforced by rapid globalisation and the emergence of new international players outside the OECD area, notably China.

The 2005 ***OECD Science, Technology and Industry Scoreboard*** points to large cross-country differences in the extent to which OECD countries are able to apply science, technology and innovation to foster stronger growth performance. It also points to large differences in the extent to which countries are able to attract and benefit from global knowledge flows. OECD data show that the United Kingdom is performing relatively well in the knowledge-based economy, although it spends relatively little on R&D.

The United Kingdom's spending on R&D is below the OECD average

OECD data show that the **United Kingdom** was the sixth-largest global spender on research and development (R&D) in 2003, spending almost 34 billion USD, or almost 5% of the OECD total. This is behind the United States (285 billion USD, or 42% of the OECD total), Japan (114 billion USD, or 17% of the OECD total), China (85 billion USD), Germany (57 billion USD) and France (38 billion USD). The **UK**'s R&D intensity, of 1.9% of GDP in 2003, is below that of its key competitors, such as Japan's (3.2%), Germany and the United States (2.6%), as well as France (2.2%), and is also below the EU-15 average (2.0%). The **United Kingdom** has had very little change in its R&D intensity over recent years, although its current level is somewhat below the levels in the early-1990s, when it spent about 2.1% of GDP on R&D.

The **United Kingdom** is the fifth-largest spender on private R&D in the OECD area, spending 22 billion USD in 2003, or just below 5% of the OECD total. Relative to business sector value added the intensity of business R&D in the **United Kingdom** has remained relatively stable in recent years, at about 1.8%. This is below Japan, at 3.2%, and behind Germany and the United States, at 2.6%, but ahead of the European Union average, at 1.7%.

The **United Kingdom** ranks 10th in the OECD area in terms of its government R&D budget as a percentage of GDP (about 0.75% in 2003), about one-third of which is devoted to defence. This is behind the United States, which devotes a substantially larger share of its budget to defence R&D, but also behind France and Germany. The **UK**'s civil government R&D budget amounts to just over 0.5% of GDP, which is approximately the same as the OECD average, but considerable behind Germany and Japan, at 0.7% of GDP, and France, at 0.8% of GDP.

The **United Kingdom's** contribution to global patenting is roughly similar to its contribution to global R&D efforts; accounting for just under 5% of all triadic patent families in 2001. The **United Kingdom** has a relatively high share of biotechnology patents among its overall patents, suggesting some specialisation in this area. This contrasts with France and Germany, that are not specialised in biotechnology.

The **United Kingdom** plays an important role in international co-operation in patenting. In terms of foreign ownership of domestic innovations, **UK** residents are the EU's main foreign owners of domestic inventions from Australia, India, Ireland, South Africa and New Zealand. Factors such as language and historical links thus play a role in foreign ownership of domestic inventions.

The **United Kingdom** also continues to be an important contributor to scientific output as measured by articles in scientific journals and accounts for over 7% of the world total. When this is compared to population, the **United Kingdom** is considerably above the OECD average and above other G7 countries, only trailing smaller countries such as Sweden and Switzerland.

The United Kingdom continues to be strong in science and engineering

Science and engineering (S&E) degrees represent 23% of total new degrees awarded in OECD countries, 28% in the **United Kingdom**, 29% in France, 31% in Germany, 27% in the European Union, 26% in Japan, but only 16% in the United States**.** The **United Kingdom,** as France and Germany, is among the OECD countries with a relatively high share of S&E degrees.

The vast majority of OECD countries are net beneficiaries of highly skilled migration. The **United Kingdom** has an above-average share of migrants; compared to its native highly-skilled, almost 8% are from OECD countries and over 11% from non-OECD countries. This is considerably higher than Germany and Japan, and also higher than France and the United States.

The United Kingdom has strong uptake of ICT

The **United Kingdom** is among the European countries that have invested most in ICT. In 2003, the share of ICT investment in GDP was almost 3% of GDP, compared with less than 2% of GDP in France and Germany. The **United Kingdom** also received a considerable boost to GDP growth from ICT capital over 1995-2003, of about 0.65 percentage points, which is considerably higher compared to 0.4% or less for France and Germany, although somewhat less than Australia, Sweden and the United States.

In terms of access to broadband, the **United Kingdom** is somewhat above the OECD average. In December 2004, more 10 out of 100 inhabitants subscribed to broadband. This is higher than Germany, and Italy, but considerably lower than Denmark, the Netherlands or Switzerland.

The access of **UK** households to computers has grown considerably in recent years. In 2004, just over 65% of all households in the **United Kingdom** had access to a home computer. This is behind Japan (78%) and Germany (69%), but considerably ahead of France (50%) and Italy (47%).

Foreign-controlled affiliates make an important contribution to the UK economy

In 2002, the share of the turnover of foreign-controlled affiliates in total manufacturing turnover ranged from 75 % in Ireland to less than 3 % in Japan. In the **United Kingdom**, almost 36% of manufacturing turnover was due to foreign-controlled affiliates, as was over 20% of manufacturing employment. Both turnover and employment of foreign affiliates have grown considerably since 1997.

In 2002, the share of the turnover of foreign affiliates in services ranged from almost 40% of total services turnover in Ireland to less than 1 % in Japan. In the **United Kingdom**, almost 17% of services turnover was due to foreign-controlled affiliates, as was almost 10 % of employment. The share of foreign affiliates in services employment is higher than in Germany (2.9%), the United States (almost 4%), Italy (5.1%) and France (5.6%).

Foreign affiliates account for 31.5% of manufacturing R&D in the **United Kingdom**, which is substantially above Japan (only 3.8%), the United States (18%), France (22%) and Germany (25.6%), but behind Canada (37.9%).

The United Kingdom has benefited from strong performance in the services sector

The **United Kingdom** is among a limited number of OECD countries where services accounted for the bulk of labour productivity growth over 1995-2003. Knowledge-intensive services, such as telecommunications, finance, insurance and business services, now account for almost 23% of **UK** value added, which is the fourth highest share in the OECD, with only Switzerland, Luxembourg and the United States having a larger share.

High-technology industries, such as pharmaceuticals, aircraft, ICT equipment and precision instruments, account for almost 35% of **UK** manufacturing exports. Only Ireland, Korea, Switzerland and the United States have a larger share of these industries in total exports. The **United Kingdom** gained a little market share in the OECD area in these industries over the past decade.

The **United Kingdom** accounted for just over 4% of worldwide value added in manufacturing in 2002, making it the sixth-largest manufacturing nation in the world. China accounted for about 8%, making it the third-largest manufacturing economy in the world, behind Japan and the United States, but ahead of Germany and France.