



EUROPEAN
COMMISSION

Monitoring industrial
research:

**ANALYSIS of the 2006 EU
industrial R&D investment
SCOREBOARD**

Directorate General Joint Research Centre
Directorate General Research

Acknowledgments

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Foreword

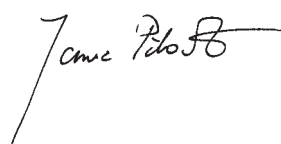
The *EU Industrial R&D Investment Scoreboard* began in 2004 as a pilot exercise to develop a deeper understanding of company-level R&D in Europe. Since then, the Scoreboard has grown to be an appreciated source of information for policy discussion on R&D and innovation. It becomes of real value in particular when it is combined with data from other sources such as official statistics and surveys, for instance, to assess the extent to which policies aimed at increasing R&D by the corporate sector can contribute to the Lisbon goals of higher growth and employment.

This third issue of the *Scoreboard* covers 2000 companies (1000 companies based in the EU and 1000 based outside the EU), up from 1400 in the previous issue and 1000 in the first issue. The *Scoreboard's* role as a benchmarking tool for companies, investors and financial analysts has already been clearly established. It also deserves the attention of policy-makers and politicians. The 2000 companies the *Scoreboard* includes invested €371 billion in R&D, equivalent to almost 80% of corporate expenditure on R&D worldwide. Learning about the investment of these companies can tell us a lot about global patterns and trends in industrial R&D.

We know from the analysis of the *Scoreboard* that worldwide R&D investment is on the increase. Although at lower pace than competitors, EU companies are also increasing their R&D investment. This is a positive sign after a period of stagnation. However, much more remains to be done to make the EU a more attractive location for firms to carry on a R&D-led growth in their business.

Moreover, increases in cross-border investment in R&D and the numbers of young PhDs in large new players such as India and China, as well as the discussions in several countries about accounting/tax treatments of R&D and patent laws, make this a period of potentially important developments. The *Scoreboard* helps policymakers think about such developments, and more importantly, the repercussions they may have.

We should take note of these trends and continue in the pursuit of our aim to make Europe a more competitive, knowledge-based economy.



Janez POTOČNIK

Trends and Reflections

Our third edition...

This report contains an analysis of the 2006 edition of the "EU Industrial R&D Investment Scoreboard"¹ (the *Scoreboard*). It is our third edition.

... now covering 2000 companies...

This year, the *Scoreboard* contains data on the top 1000 EU companies² and the top 1000 non-EU companies ranked by their investments in research and development (R&D).

... representing nearly 80% of global business expenditure on R&D.

Between them, these 2000 companies invested €371 billion in the year covered by the *Scoreboard* (i.e. 2005/6). This is equivalent to almost 80% of the total expenditure on R&D by businesses world-wide.³

Our analysis revealed the following main trends and has led to the following reflections on the future development of the *Scoreboard*.

A. Trends in Industrial R&D Investment

R&D growth

Worldwide, corporate R&D investment grows strongly...

- Corporate investment in R&D is growing strongly worldwide. The year-on-year increase in R&D investment for all the companies in the *Scoreboard* was 7.0%. This reinforces the recovery that started a year or so ago.

...also for EU companies - after a period of stagnation...

- It was particularly pleasing to see that, after a long period of stagnation, EU companies also grew their R&D investment by 5.3%. For comparison, their growth in last year's *Scoreboard* was only 0.7% and even had been negative in the previous year at -2.0%.

...but still at a lower pace than our competitors.

- Nevertheless, this encouraging trend cannot hide the fact that, on aggregate, EU companies continue to grow their R&D investment less strongly than companies in the rest of the world. This year however, as can be seen from Figure 1, that gap was far less pronounced.

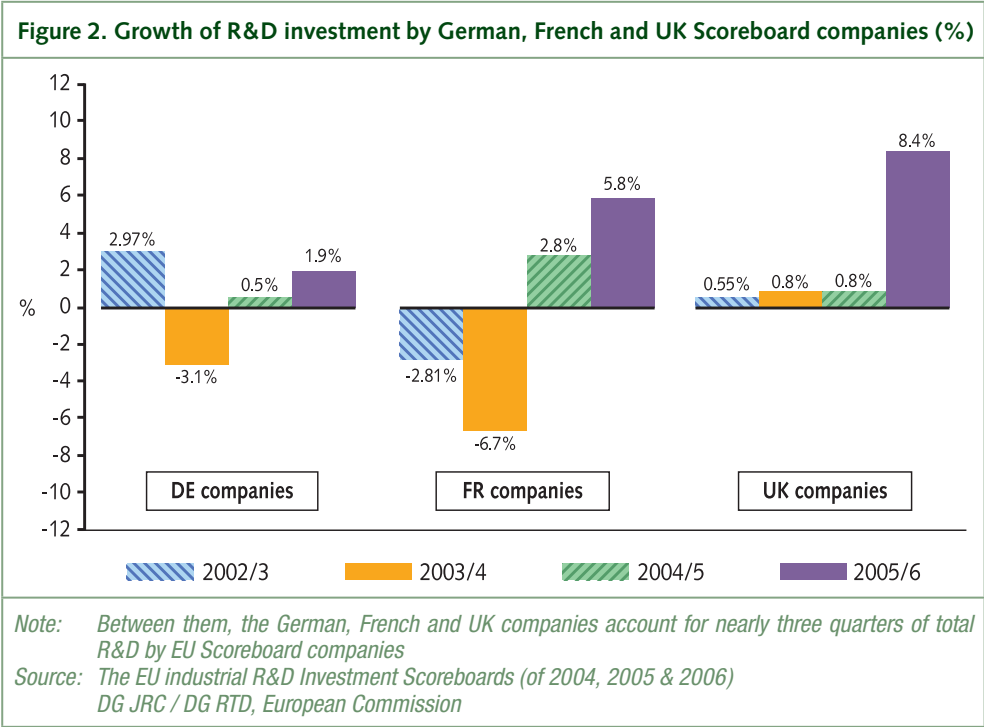
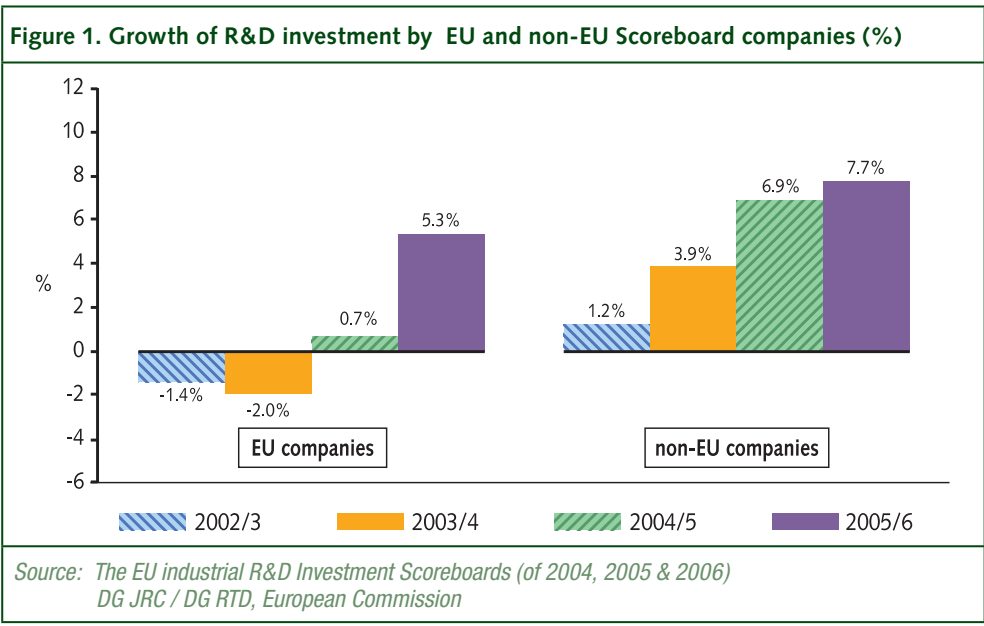
Slower recovery by German companies is holding back the EU.

- Within the EU, companies in most countries have been recovering their growth in R&D investment following the downturn in the earlier years of this decade.
- However, as can be seen from Figure 2, recovery has been slower among German companies, which account for one-third of R&D investment by all EU *Scoreboard* companies. Indeed, over 80% of the latest gap between EU and US companies in terms of R&D growth can be attributed to the slower recovery by German companies.

1 The EU Industrial R&D Investment *Scoreboard* is published annually by the European Commission (DG JRC-IPTS and DG RTD) as part of its Industrial Research Investment Monitoring (IRIM) activity. Company data have been collected by Company Reporting Ltd. This year's *Scoreboard* was released in October 2006, including key figures for the world top R&D investors and a full dataset comprising R&D, economic and financial data of the latest four financial years (see: The EU Industrial R&D Investment *Scoreboard*, Technical Report EUR 22348, October 2006, <http://iri.jrc.es/>).

2 The term "EU company" refers to companies whose ultimate parent has its registered office in a Member State of the EU. Likewise, the term "non-EU company" is applied when the ultimate parent company is located outside the EU (see also the Annex on glossary and definitions).

3 According to BERD figures reported by Eurostat. However, *Scoreboard* and BERD figures are not fully comparable (see Annex on methodological notes).



R&D intensity⁴

- The overall R&D intensity of EU companies (2.9%) is well below those in the rest of the world. By comparison, it stands at 4.4% for US companies. Similar differences were seen in earlier years.

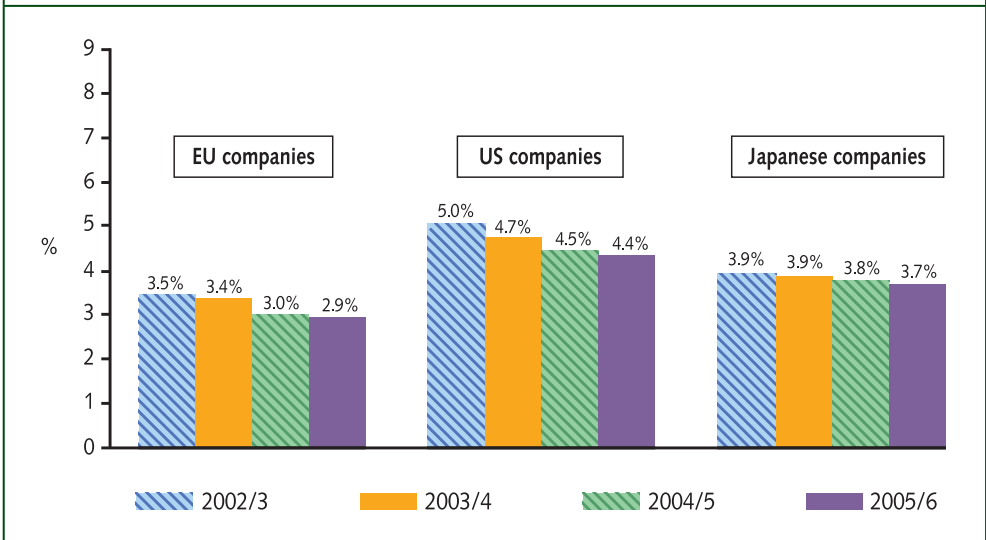
Overall, the research intensity of EU companies is well short of the US.

⁴ R&D intensity is defined in the *Scoreboard* as the percentage of R&D investment over net sales.

Corporate R&D intensity is falling worldwide.

- Interestingly, corporate R&D intensity continues to fall all round the world - as sales generally continue to grow faster than R&D investment. Figure 3 illustrates this trend for *Scoreboard* companies by the main world regions.

Figure 3. R&D intensity of Scoreboard companies

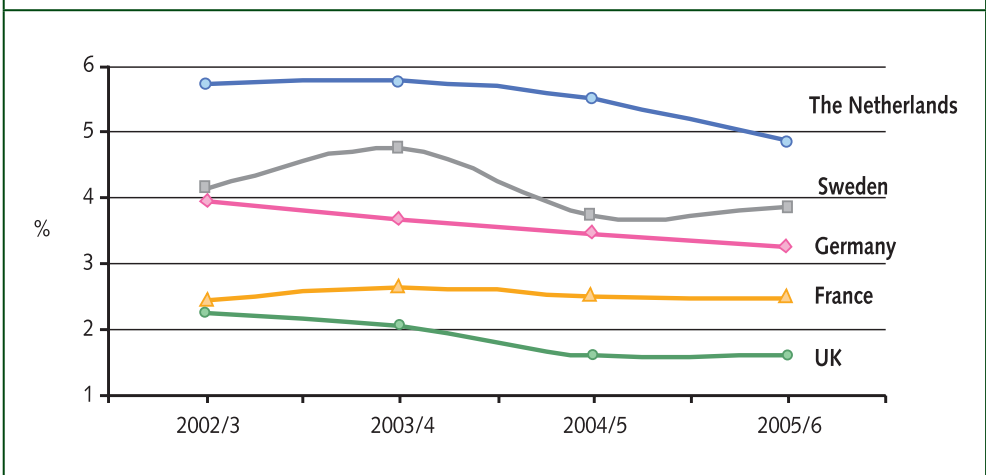


Note: To ensure comparability, only companies above a certain threshold of R&D investment are considered. For the 2006 Scoreboard, this threshold was €25 million
Source: The EU industrial R&D Investment Scoreboards (of 2004, 2005 & 2006)
DG JRC / DG RTD, European Commission

R&D intensity is falling particularly fast among German, British and Dutch-based companies.

- Within the EU, companies in most countries also tend to show this same pattern of falling R&D intensity. Figure 4 shows this to be particularly true for companies based in Germany, the UK, and the Netherlands.

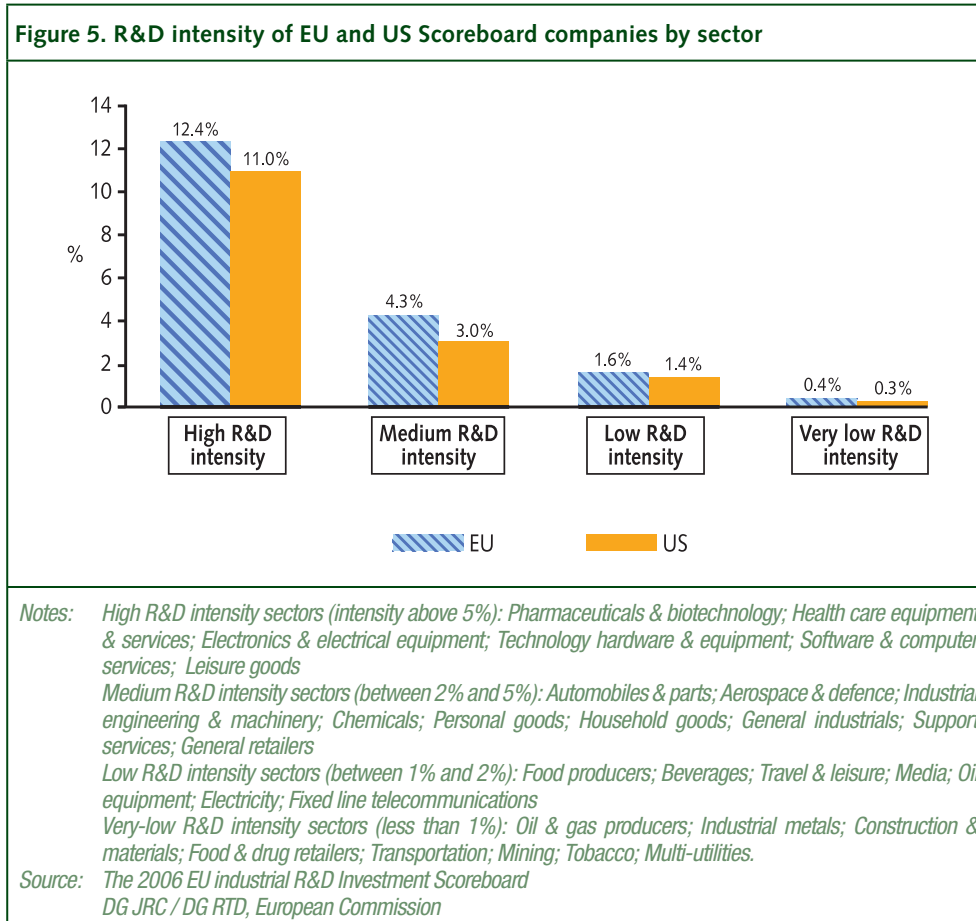
Figure 4. Evolution of R&D intensity of Scoreboard companies in certain EU Member State



Source: The EU industrial R&D Investment Scoreboards (of 2004, 2005 & 2006)
DG JRC / DG RTD, European Commission

- However, an important paradox emerges with EU companies appearing to be at least as research intensive as their direct US counterparts, for example when comparing the R&D intensity of specific industrial sectors or indeed of particular companies.
- Figure 5 illustrates this at the sector level. It groups companies into sectors of high, medium, low, and very low R&D intensity. It is striking that EU companies have a higher intensity on average in every one of these four sector groups.

**There is however a paradox, with EU companies being at least as research intensive as their US counterparts...
...both at the sectoral level...**



- Also at the individual level, EU companies appear generally to be as R&D intensive as their US counterparts in their sector. This is illustrated in Figure 6.
- The paradox can be explained by the very different industrial structure in the US and Europe. As illustrated in figure 7, 67% of US corporate R&D investment is by companies belonging to high R&D intensity sectors, compared to just 36% for EU companies.
- Figure 7 also illustrates how the ICT sector accounts for a large part of difference in the sectoral composition of R&D investment by US and EU companies.

... and individually.
**The reason for the paradox being the very different sectoral composition of EU and US companies...
 ...with the ICT sector being responsible for a large part of the difference.**

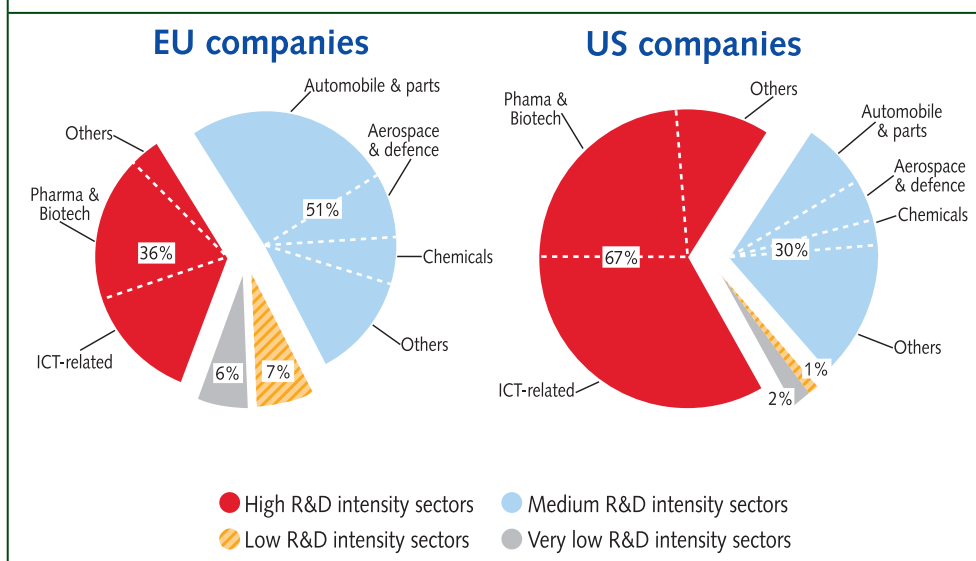
Figure 6. R&D intensity of a sample of counterpart companies in the EU and the US

| EU Company | R&D Intensity % | R&D Intensity % | US Counterpart |
|--------------------------|-----------------|-----------------|-----------------------------|
| GlaxoSmith-Kline | 14.5 | 14.5 | Pfizer |
| SAP | 12.8 | 13.0 | Oracle |
| Nokia | 11.6 | 10.0 | Motorola |
| Robert Bosch | 7.0 | 8.2 | Delphi |
| AKZO-Nobel | 6.4 | 5.0 | El du Pont de Nemours |
| EADS | 6.9 | 4.0 | Boeing |
| Volkswagen | 4.3 | 4.5 | Ford |
| Scania | 4.3 | 2.8 | Cummins |
| Michelin | 3.6 | 1.9 | Goodyear |
| Unilever | 2.4 | 3.4 | Procter & Gamble |
| Electrolux | 1.7 | 2.4 | Whirlpool |
| Saint Gobain | 0.9 | 0,9 | Owens Corning |
| Royal Dutch Shell | 0.2 | 0.2 | Exxon Mobil |

Note: For each pair, the company with the higher R&D intensity is printed in bold.

Source: The 2006 EU Industrial R&D Investment Scoreboard
DG JRC / DG RTD, European Commission

Figure 7. Sectoral composition of Scoreboard companies in the EU & US



Notes: The diagrams show the composition of Scoreboard companies in terms of their R&D investment analysed by sectors as defined in Figure 5.

Source: The 2006 EU industrial R&D Investment Scoreboard
DG JRC / DG RTD, European Commission

B. Reflections on the future development of the *Scoreboard*

By examining the financial accounts of individual companies that together are equivalent to almost 80% of the world's business expenditure on R&D, the *Scoreboard* provides an insight into the scale and dynamics of industrial R&D investment.

To become of real value for policy analysis, however, data from the *Scoreboard* needs to be combined with other sources of information on business R&D, for example, from official statistics and from surveys. Results of doing so can be found in our companion report, entitled "Industrial R&D Economic and Policy Analysis Report 2006"⁵. This year's edition of that report explores:

- the extent to which policies aimed at increasing R&D investment by the corporate sector can contribute to the Lisbon goals of higher growth and employment;
- the link between the industrial structure of an economy and the effectiveness of such policies;
- the factors determining the location of corporate R&D activities and how they might be affected by policy; and
- questions of how best to focus policy in order to influence the R&D investment behaviour of business enterprises.

Using the *Scoreboard* data in this way also helps to guide its research agenda for future exercises. With these considerations, the coming year's *Scoreboard* will aim to contribute to analyses on:

- the link between R&D investment and corporate performance;
- the dynamics, demographics and life cycle of R&D intensive firms;
- the apparent tendency of EU-companies, particularly those of medium-R&D intensity, to specialise in high quality products with a high embedded technology content; and
- the rise of new global companies from countries outside the Triad, particularly from China and India.

***Scoreboard* data becomes of real value when it is combined with data from other sources.**

The *Scoreboard's* research agenda for the coming year.

⁵ European Commission (2007) - "Industrial R&D Economic and Policy Analysis Report 2006", EUR 22695 EN, <http://iri.jrc.es/research/docs/WP5-EconomicPolicyAnalysis2006.pdf>

Chapter 1 – Introduction

The **2006 EU Industrial R&D Investment Scoreboard**⁶ (The *Scoreboard*), released in early October 2006, presents information on 2000 companies from around the world reporting major investments in R&D. The set of companies it covers comprises the top 1000 R&D investors whose registered offices are in the EU and the top 1000 registered elsewhere. The companies are broken down by sector of activity, and to give a fuller picture the data presented include R&D investments, and other economic and financial data from the last four financial years.

This report offers an analysis of the current state of R&D investment by major firms and how it has developed based on the data in the 2006 *Scoreboard* and previous editions. The company data are analysed from various perspectives to highlight the main characteristics, emerging trends and the links with some of the main factors influencing business at the level of individual firms, industries and world regions.

While building on the two previous editions, this year's *Scoreboard* includes the following new features and enhancements:

- The number of companies in both the EU and non-EU groups has been increased from 700 to 1000;
- The analysis has been developed further, in particular with respect to emerging trends, industrial sectors and examining the links between R&D and other business factors;
- The ICB (Industrial Classification Benchmark setup by FTSE and Dow Jones) has been adopted for the sector classification replacing the FTSE classification used in previous editions.
- Lists of top companies in all EU-25 countries have been improved.

This report is divided into seven chapters. Chapter 2 examines overall levels of R&D, the EU's performance, and discusses the main changes taking place since last year. Chapter 3 focuses on the performance of individual companies among the top R&D investors, in particular those undergoing R&D growth. Chapter 4 looks at the aggregate company data at sector level. Chapter 5 examines aggregate data grouped by country and main world region so as to compare the EU against its main competitors and give a profile of the EU's Member States. Chapter 6 discusses the role of R&D investment on business performance. Finally, Chapter 7 summarises the main findings of the analysis.

The following section provides background information and methodological explanations about the *Scoreboard*. Readers familiar with the *Scoreboard* from previous editions may safely skip the rest of this chapter.

New Readers' Section

The *Scoreboard* is part of the European Commission's monitoring activities to improve the understanding of trends in R&D investment by the private sector and the factors affecting it. It was created in response to the Commission's Research Investment Action Plan⁷, which aims to help close the gap between the EU's R&D investment and that of other developed economies.

⁶ The *Scoreboard* is available on-line from <http://iri.jrc.es/>

⁷ "Investing in research: an action plan for Europe", COM(2003)266, http://europa.eu.int/eur-lex/en/com/cnc/2003/com2003_0226en02.pdf.

Annual publication of the *Scoreboard* is intended to raise awareness of the importance of R&D for businesses and to encourage firms to disclose information about their R&D investments and other intangible assets.

The data for the *Scoreboard* are taken from companies' publicly available audited accounts. As in more than 99% of cases these accounts do not include information on the place where R&D is actually performed, the company's whole R&D investment in the *Scoreboard* is attributed to the country in which it has its registered office⁸. This should be borne in mind when interpreting the *Scoreboard*'s country classifications and analyses. The *Scoreboard*'s approach is, therefore, fundamentally different⁹ from that of statistical offices or the OECD when preparing Business Enterprise Expenditure on R&D (BERD) data, which are specific to a given territory. The *Scoreboard* data is primarily of interest to those concerned with benchmarking company commitments and performance (e.g. companies, investors and policymakers), while BERD data are primarily used by economists, governments and international organisations interested in the R&D performance of territorial units defined by political boundaries. In this sense, both approaches are complementary. The methodological approach of the *Scoreboard*, its scope and limitations are described in more detail in Annex I.

Scope and target audience

The *Scoreboard* is a benchmarking tool which provides reliable up-to-date information on R&D investment and other economic and financial data, with a unique EU-focus. The 2000 companies listed in this year's *Scoreboard* account for about 80%¹⁰ of worldwide business enterprise expenditure on R&D (BERD). The data in the *Scoreboard* are published as a four-year time-series to allow further trend analyses to be carried out, for instance, to examine links between R&D and business performance.

The *Scoreboard* is aimed at three main audiences.

- Companies can use the *Scoreboard* to benchmark their R&D investment and so find where they stand in the EU and global industrial R&D landscape. This information could be of value in shaping business or R&D strategy.
- Investors and financial analysts can use the *Scoreboard* to assess investment opportunities and risks.
- Policy-makers, government and business organisations can use R&D investment information as an input to their actions or policy-formulation.

Furthermore, as the *Scoreboard* dataset is freely accessible, it can encourage economic and financial analyses and research by any interested parties.

8 The registered office is the company address notified to the official company registry. It is normally the place where a company's books are kept.

9 The *Scoreboard* refers to all R&D financed by a company from its own funds, regardless of where the R&D is performed. BERD refers to all R&D activities performed by businesses within a particular sector and territory, regardless of the location of the business's headquarters, and regardless of the sources of finance. The sources of data also differ: the *Scoreboard* collects data from audited financial accounts and reports whereas the BERD typically takes a stratified sample, covering all large companies and a representative sample of smaller companies. Additional differences concern the definition of R&D intensity (BERD uses the percentage of R&D in value added, while the *Scoreboard* considers the R&D/Sales ratio) and the sectoral classification (BERD uses NACE (the European statistical classification of economic sectors), while the *Scoreboard* uses the ICB (the International Classification Benchmark)).

10 According to latest Eurostat statistics. However BERD and *Scoreboard* figures are not strictly comparable.

BOX 1. Note on methodology and terms used

- The definition of "**R&D**" is that used by companies, following accepted international accounting standards (IAS 38), in accordance with the definitions used in official statistics (as defined in the OECD's Frascati Manual).
- The term "**R&D Investment**" used in this report refers to a company's cash investment in R&D, conducted on its own behalf and funded by the company itself. It excludes R&D undertaken under contract for customers such as governments or other companies. It also excludes the company's share of R&D investment through any associated company or joint-venture. Where some or all of a company's R&D costs have been capitalised, the additions to the appropriate intangible assets are included to calculate the cash investment net of amortisation.
- The Scoreboard reports the **R&D investment levels** of companies above a minimum threshold (over €2.67 million for EU-based companies and over €24.91 million for non-EU companies).
- The Scoreboard is compiled by taking data from the latest annual report and accounts published **no later than 1 August 2006**.
- Since the Scoreboard includes companies reporting in different currencies, all currencies are converted to **euros at their year-end exchange rate on 31 December 2005**.
- The terms "**EU company, non-EU company, German company, Finnish company, US company, Japanese company, etc.**" refer to a company whose ultimate parent has its registered office in that country or region.
- The term "**world regions**" refers here to the EU, US, Japan and the rest of the world.
- **R&D intensity** refers to the ratio of company's R&D investment to its net sales (this differs from official statistics, e.g. BERD, where R&D intensity is based on value added instead of net sales).
- **Profitability** is calculated as the ratio of company's operating profits to net sales.
- Companies have been assigned to **sectors** according to the ICB (International Classification Benchmark) sector in which each company states its main activity to lie.
- All **years** mentioned refer to the financial year. As accounting standards permit the financial year to differ from the calendar year, the stated year can include accounts ending on a range of dates from the middle of the before year to the beginning of the following year.

Chapter 2 – Overview of worldwide R&D

This chapter briefly discusses overall R&D investment and related developments in the 2005 financial year and aims to answer the following questions:

- ⇒ How did industrial R&D investment in the world grow in 2005?
- ⇒ Did R&D growth exceed growth in sales, leading to increased R&D intensity?
- ⇒ How did EU firms perform in R&D terms compared to competitors in other world regions?
- ⇒ How many EU firms are among the top 50 largest R&D investors?
- ⇒ Are there differences in the demographics of EU versus non-EU *Scoreboard* companies?

The chapter highlights main changes since last year and aims to spot emerging trends. The analysis here takes into account the fact that the *Scoreboard* has been expanded from 1400 to 2000 companies.

KEY FINDINGS

Over the past year, there has been strong growth in industrial R&D investment worldwide. The *Scoreboard* companies together invested €371 billion in R&D (up by 7.0%). The 1000 EU companies invested €112.9 billion (up by 5.3%) and the 1000 non-EU companies €257.7 billion (up by 7.7%). Over the past three years, R&D investment has grown on average by 1.7% p.a. in the EU 1000 and 6.7% p.a. in the non-EU 1000.

Net sales continued to grow faster than R&D investment in all regions. Operating profits also grew strongly among companies in the EU group. As a result, among the major R&D investors worldwide, average R&D intensity (i.e. the ratio of R&D to sales) declined slightly and profitability increased.

The rise in the dollar has meant that the list of top 10 R&D investors includes more US firms than last year. However, in the top 50 there are 18 companies from the EU, 18 from the US, and 10 from Japan (two less than last year), along with 2 companies each from Switzerland and Korea.

The proportion of firms increasing their R&D investment in 2005 is higher in the non-EU group: 84%, compared with 76% in the EU group. The same is true of the preceding three-year period.

2.1 Overview of R&D investment by *Scoreboard* Companies

After a period of sluggish R&D growth, this year's *Scoreboard* shows a strong rise in worldwide R&D investment. Together the 2000 *Scoreboard* companies invested €371 billion, 7% more than in 2004. They also saw their net sales grow by 8.5%, to €11 073 billion, in the 2005 financial year.

This year, to obtain groups of 1000 companies the R&D investment threshold for the EU companies is €2.67 million and that for the non-EU companies is €24.91 million. Applying the €24.91 million threshold to the EU list to obtain a more uniform set of companies yields a subset of 338 EU companies which account for 94.4% of the R&D investment of the EU 1000 group. By combining this subset with the non-EU

The 2000 companies in the 2006 *Scoreboard* invested €371 billion, 7% more than reported in 2004.

1000 companies we obtain a group of the **world's 1338 top R&D investors**, which is examined here, and again in chapter 5.

In 2005, the total R&D investment by the top 1338 companies came to €364.3 billion, up 7.0% from the previous year. At 9%, their net sales growth was lower than in 2004, but has still outpaced the increase in R&D investments. This has led to an average R&D intensity for this group of companies that is slightly lower than that of last year.

Ranking of top R&D investors

The first three of the world's top 10 R&D investors this year are US companies (Ford, Pfizer and General Motors). The top 10 also contains 2 more US firms, but only 3 EU firms. In terms of R&D investment, the proportion of EU and Japanese companies in the top 50 is lower than in last year's *Scoreboard*, due partly to the appreciation of the US Dollar against the Euro and the Yen in 2005. However, the EU companies among the top 50 R&D investors continue to perform well. There are 18 EU companies in the top 50, the same number as last year. Five of these are among the 10 companies worldwide with the fastest R&D growth. The non-EU companies in the top 50 include 18 companies from the US, 10 from Japan (2 less than last year) and two companies each from Switzerland and South Korea¹¹. Most of the top 50 R&D investors are from the automobile & parts (13 companies), pharmaceuticals (11 companies) and IT Hardware sectors (9 companies). Daimler-Chrysler is still the biggest R&D investor among the EU companies.

EU vs non-EU R&D investors

The EU and non-EU groups of *Scoreboard* companies are compared here on the basis of the figures given in Table 2.1 for the EU 1000, the non-EU 1000 and the top 338 EU companies. The differences between the EU 1000 and EU 338 groups are small, except for R&D investment per company and average R&D intensity, which are higher in the EU 338 group.

Table 2.1. Overall Performance of the 2006 Scoreboard companies

| Factor | Non-EU1000 | EU338 | EU1000 |
|---|--------------|--------------|--------|
| R&D Investment (€bn) | 257.7 | 106.6 | 112.9 |
| R&D Investment per Company (€bn) | 0.26 | 0.32 | 0.11 |
| Change in R&D from previous year | 7.7% | 5.3% | 5.3% |
| Annual change in R&D during last 3 years (2002-2005) | 6.7% | | 1.7% |
| Net Sales (€bn) | 6566.0 | 3624.9 | 4507.0 |
| Change in net sales over previous year | 9.5% | 6.5% | 7.0% |
| R&D Investment / Employee (€) | 12607 | 8186 | 6592 |
| Change in number of employees over previous year | 3.0% | 0.9% | 1.8% |
| R&D intensity | 3.9% | 2.9% | 2.5% |
| Profitability | 11.0% | 11.0% | 10.8% |
| Change in operating earnings over previous year | 11.8% | 20.1% | 21.2% |

Note: All values are for the 2005 financial year (calculation of growth rates and ratios include only companies for which data are fully available).
*Source: The 2006 EU Industrial R&D Investment Scoreboard
 DG JRC / DG RTD, European Commission*

11 The 2006 *Scoreboard* reports very high R&D growth by South Korean companies.

The automotive, pharmaceuticals, IT hardware sectors dominate the list of the top 50 investors in R&D.

The average growth of 5.3% for the 1000 EU companies contrasts with the near stagnation reported last year. The R&D investment growth of non-EU companies in the group studied was 7.7%, one percent higher than in last year's *Scoreboard*. R&D investment by non-EU companies continues to grow faster than that of EU companies, thus widening the gap between the two groups.

Over the past three years (2002-2005), average R&D investment has grown by 1.7% p.a. for the EU companies and by about 6.7% p.a. for the non-EU ones.

Overall, 2005 was a good year for all the companies in the *Scoreboard* given that net sales, operating profits and capital expenditures increased significantly.

Net sales also grew faster among non-EU companies than EU ones, although the growth rate gap observed last year almost halved. However, it should be borne in mind that the way sales are geographically distributed can affect total net sales through exchange rate variations.

The average R&D intensity of *Scoreboard* companies decreased slightly during the year in the case of both EU and non-EU companies. This was a direct result of faster growth in net sales than in R&D investments. As a result, the average R&D intensity of the EU 338 companies remains 25% lower than that of non-EU companies.

Despite the rise in the US dollar, the R&D investment per company for the EU338 group was €0.32bn, higher than the €0.26bn figure for the non-EU companies. This implies R&D is concentrated in large EU companies at the top of the *Scoreboard*, which is also borne out by the large difference in R&D per company between the EU1000 and the EU338 groups.

The average R&D investment per employee continues to be much lower among the EU's top R&D-investing companies, at 64% of the non-EU level. However, the average ratios of overall R&D investment to various indicators such as employment, net sales or the number of companies are affected by the sector structure of the economy of the country concerned. This effect will be discussed more fully in chapters 4 and 5.

2.2 Overall trends in the world's major R&D investing firms

As can be seen in Figure 2.1, the R&D investment growth of the top 1338 *Scoreboard* companies gained pace in 2005.

Tables 2.2 and 2.3 show more detail of the three-year trends in the *Scoreboard* companies' R&D-related indicators. In the tables the data are broken down geographically according to the location of the companies' registered offices in each of the main world regions. When comparing the data on actual growth rates of R&D investment and net sales during 2002-2005, the US firms and companies in the 'Rest of the World' category reveal different trends in their patterns of growth than the EU and Japanese firms. This could be either the result of genuine differences in the economic cycles in each of the regions or simply of variations in exchange rates. The effect of exchange rates is discussed in Box 2.1 at the end of this chapter.

In contrast with the near stagnation reported in the 2005 *Scoreboard*, the 1000 EU companies included this year saw an average growth of 5.3%.

Overall, all *Scoreboard* companies enjoyed significant growth in sales, profits and capital expenditure in 2005.

Patterns of R&D investment growth in the EU and Japan differ from those in other regions of the world.

Figure 2.1. Growth rates of R&D investment and net sales from 2002-2005 for the top 1338 Scoreboard companies (%)



Source: The 2006 EU industrial R&D Investment Scoreboard
DG JRC / DG RTD, European Commission

Table 2.2. R&D growth for top Scoreboard companies in each of the main world regions (% change from previous year).

| REGIONS | 2003 | 2004 | 2005 |
|--------------|------|------|------|
| EU-338 | 1.7 | -1.2 | 5.3 |
| USA-587 | 6.0 | 7.1 | 8.1 |
| Japan-237 | 3.4 | 1.6 | 4.1 |
| RoW-176 | 10.0 | 18.0 | 12.8 |
| EU -1000 | 1.1 | -1.0 | 5.3 |
| Non-EU -1000 | 5.7 | 6.8 | 7.6 |

Source: The 2006 EU Industrial R&D Investment Scoreboard
DG JRC / DG RTD, European Commission

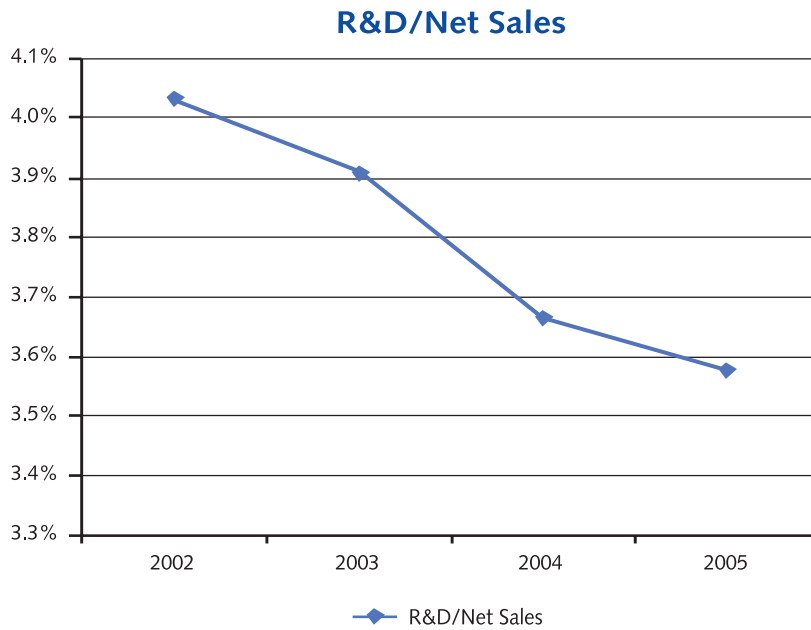
Table 2.3. Net Sales growth for top Scoreboard companies by main world region (% change from previous year).

| REGIONS | 2003 | 2004 | 2005 |
|--------------|------|------|------|
| EU-336 | 0.9 | 6.3 | 6.5 |
| USA-587 | 11.1 | 13.9 | 10.8 |
| Japan-237 | 2.4 | 3.9 | 6.1 |
| RoW-176 | 10.7 | 18.8 | 16.7 |
| EU -1000 | 1.7 | 5.7 | 7.0 |
| Non-EU -1000 | 8.1 | 11.4 | 10.4 |

Source: The 2006 EU Industrial R&D Investment Scoreboard
DG JRC / DG RTD, European Commission

Figure 2.2. shows how the average R&D intensity of the 1338 *Scoreboard* companies has changed over the period 2002-2005. A more detailed analysis of the trends in R&D intensity by groups of *Scoreboard* companies registered in different world regions is presented in chapter 5.

Figure 2.2. Change in R&D intensity over the period 2002-2005 (top 1338 *Scoreboard* companies)



Source: *The 2006 EU industrial R&D Investment Scoreboard*
DG JRC / DG RTD, European Commission

2.3 Dynamics of Scoreboard companies

In order to analyse the dynamics of the *Scoreboard* companies in different segments of the R&D ranking, the EU and non-EU lists have been divided in 4 groups according to the companies' position (top 50, top 300, 301-700 and 701-1000). The number of companies in each group has been further broken-down into those that increased their R&D investment by more than 5% and those that did not. Table 2.4 shows the figures for R&D growth last year and Table 2.5 the figures for the last three years (CAGR 2002-2005).

Table 2.4. Changes in R&D investment by *Scoreboard* companies in 2005.

| | Number of companies by R&D change in 2005 (%) | | | |
|------------------------|---|---------------|-----------------|-----------------|
| | Increase > 5% | Increase 0-5% | Total Increases | Total Decreases |
| EU Top 50 | 58 | 18 | 76 | 24 |
| Non-EU Top 50 | 64 | 20 | 84 | 16 |
| EU Top 300 | 53.7 | 15 | 68.6 | 31.4 |
| Non-EU Top 300 | 60.1 | 17.8 | 77.9 | 22.1 |
| EU 301-700 | 59.5 | 8.7 | 68.3 | 31.7 |
| Non-EU 301-700 | 55 | 17.6 | 72.6 | 27.4 |
| EU 701-1000 | 53.3 | 7.3 | 60.6 | 39.4 |
| Non-EU 701-1000 | 59 | 13 | 72 | 28 |
| EU Top 1000 | 55.9 | 10.2 | 66.1 | 33.9 |
| Non-EU Top 1000 | 57.7 | 16.3 | 74 | 26 |

*Source: The 2006 EU Industrial R&D Investment Scoreboard
DG JRC / DG RTD, European Commission*

Table 2.5. Changes in R&D investment by *Scoreboard* companies during 2002-2005.

| | Number of companies by R&D change in 2005 (%) | | | |
|------------------------|---|---------------|-----------------|-----------------|
| | Increase > 5% | Increase 0-5% | Total Increases | Total Decreases |
| EU Top 50 | 47.9 | 25 | 72.9 | 27.1 |
| Non-EU Top 50 | 63.3 | 20.4 | 83.7 | 16.3 |
| EU Top 300 | 48.1 | 20.4 | 69.5 | 31.5 |
| Non-EU Top 300 | 57.4 | 19 | 76.5 | 23.5 |
| EU 301-700 | 55.2 | 9.1 | 64.3 | 35.7 |
| Non-EU 301-700 | 57.1 | 16.9 | 74.1 | 25.9 |
| EU 701-1000 | 45.2 | 14.9 | 60.1 | 39.9 |
| Non-EU 701-1000 | 58.7 | 15.6 | 74.3 | 25.7 |
| EU Top 1000 | 50.1 | 14.3 | 64.4 | 35.6 |
| Non-EU Top 1000 | 57.7 | 17.2 | 74.9 | 25.1 |

*Source: The 2006 EU Industrial R&D Investment Scoreboard
DG JRC / DG RTD, European Commission*

Among the EU group of firms, a higher proportion of those ranked between 301 and 700 increased their R&D by more than 5% (55% compared to 48% and 45% for the

top and bottom segments, respectively). However, when looking at the total number of companies that increased their R&D in 2005, we see that the upper group of EU *Scoreboard* companies was the most dynamic, while the lower 300 group shows the highest proportion of firms which decreased their R&D investments. EU *Scoreboard* companies show thus a pattern of decreasing R&D growth the further the company is down the ranking. This seems to imply that the concentration of R&D in the hands of a few big R&D investors is increasing. This hypothesis is supported by the sector mix displayed by the companies in the EU *Scoreboard* group, as the proportion of firms operating in highly R&D-intensive sectors (e.g. sectors such as pharmaceuticals, biotechnology, semiconductors, computer hardware, and aerospace) is higher in the middle segment than in the bottom one.

Non-EU *Scoreboard* companies with rapid increases in R&D investment in 2005 are evenly spread across the upper, middle and bottom segments. However, the best performing group remains the top 50 with only 8 companies showing a decline in R&D investments in 2005. The same is true for the period 2002-2005. Therefore, there seems to be no likelihood of the degree of concentration diminishing in the non-EU *Scoreboard* list either.

In terms of R&D investment growth, non-EU companies significantly outperform EU companies, as all the proportions of firms increasing their R&D investment in 2005 or during the last three years shown in tables 2.4 and 2.5 are higher for the non-EU companies, regardless the position of the group in question on the *Scoreboard* ranking.

Smaller investors in R&D in the EU have reported slower rates of R&D investment growth than bigger investors.

Non-EU companies continue to significantly outperform EU companies in terms of R&D investment growth.

BOX 2.1 The effect of exchange rates on the *Scoreboard*

Major investors in R&D tend to operate in a global market with sales and purchases spread all around the world. This is usually the case both for their production units (including their workforce) and for their investments (including R&D). Obviously, these different markets may use different currencies and the rates of exchange between them may vary significantly from one period to the next.

Global companies' annual financial reports usually state their figures in just one currency, depending on the location of their registered offices or headquarters. Any financial indicators calculated from the numbers companies report are therefore affected by changes in exchange rates in a number of ways:

All companies' financial indicators are influenced by fluctuations in exchange rates if these indicators are the result of a consolidation over different currency areas.

For example, if we take the case of a company that obtains half of its net sales from the euro area and half from the US dollar area, assuming that no real change takes place in the two markets in a given period, a 10% rise in the US dollar against the euro will lead to a nominal increase of 10% in its net sales in the dollar area compared to its net sales in the euro area. If this company reports its net sales in euros, this will translate into an overall nominal increase of 5% in its net sales. Conversely, under the same conditions a competitor reporting its financial results in US dollars would state a drop of 5% in nominal US dollar terms. The upshot is that the exchange rate may influence the reported growth rates of several financial indicators depending on the currency used for reporting. The same also applies to fixed capital, R&D or operating profits.

When the geographical distribution of company financial indicators is different, then any ratio calculated from two indicators may be under- or over-estimated, depending on the variation in exchange rates.

As an example, taking the figures on the distribution of net sales by geographical area EADS gives in its 2005 financial report, the firm seems to have registered the following changes in net sales in each region, converted to nominal euro terms: a decrease of 6.3% in the EU area, an increase of 3.7% in the US area and an increase of 35.6% in the rest of the world, which raised the overall net sales by 7.7% worldwide. However, due to the depreciation of the euro against the US dollar and against many other currencies worldwide (Canadian dollar, Australian dollar, Chinese Renminbi, etc.) the net sales to the US in 2005 expressed in nominal local currency terms may have actually dropped (if all US sales were calculated at the end-2005 exchange rate of 1.18 US dollar per euro, the decrease would be of 10%) and the growth rate of sales to the rest of the world may have been much lower than 35%. Consequently, the real growth of EADS's net sales in 2005 may have been significantly lower, if any. EADS, which concentrates most of its R&D investment in the EU, increased its R&D in 2005 by 3.1%, and considering the possible stagnation of its real net sales we might have expected an increase in its R&D to sales ratio (R&D intensity). Given the valuation of its overseas net sales, however, the R&D intensity is reported to have declined in 2005, from 7.2% to 6.9%.

Relative positions of firms in overall world rankings (based on various financial indicators) are affected by changes in exchange rates.

If one company reports its R&D investment in euros and another one in US dollars, and if there is an appreciation of the US dollar against the euro in the period, then the relative position of the euro-reporting firm may deteriorate compared to the second firm's position in the world ranking. For example, in 2004, at a rate of 1.36 US dollar per euro and 9.03 Swedish kronor per euro on 31 December 2004, Ericsson registered an R&D investment equivalent to €2435.9 million, ranking it in 29th position on world's list, while Cisco Systems reported an R&D investment of €2348.4 million, placing it 32nd on the same list. In 2005, Ericsson reported growth of 16.5% of its R&D, while Cisco only 4.1%. However, the exchange rates on 31 December 2005 had changed to 1.18 US dollars per euro and 9.39 Swedish kronor per euro, respectively. The new positions on the world list are 30 for Cisco (at €2816.2 million) and 31 for Ericsson (at €2730 million), despite Ericsson's better performance in terms of nominal R&D investment growth.

Consequently, financial indicators representing company performance should be interpreted with caution, particularly when comparing companies reporting in different currencies, as they may be heavily influenced by variations in exchange rates.

Chapter 3 – Top R&D investors

This chapter analyses research investment and a number of related indicators for the major R&D-investing *Scoreboard* companies worldwide. The questions addressed include:

- ⇒ Who are the world's biggest investors in research?
- ⇒ Who are the fast R&D growing companies?
- ⇒ How do EU-based firms perform in R&D relative to firms elsewhere?

The chapter also reports some findings concerning the demographics of the companies in the *Scoreboard*.

KEY FINDINGS

Three US companies top the list of the world's biggest R&D investors in 2005: Ford, Pfizer and General Motors. The company in first place last year, Daimler Chrysler (EU), has dropped to fourth place. Four of the top six R&D investors worldwide are car manufacturers: Ford, General Motors, Daimler Chrysler and Toyota Motor.

The number of EU-based companies in the world top 50 by R&D investment is again 18 as in last year's *Scoreboard*. This is the same as the number of US companies. There are two Korean companies in the top 50 this year, Samsung Electronics and Hyundai Motor. These are also two of the companies with the fastest growing R&D investments.

Five of the top 10 companies with fastest R&D investment growth among the world top 50 *Scoreboard* R&D companies in 2005 were EU firms. However, only 9 out of the 50 companies with fastest R&D investment growth out of all the *Scoreboard* companies in the last three years are based in the EU, compared to 16 in the US. Many companies based in Taiwan have considerably increased their R&D investments since 2002.

Concentration of R&D investments in a few companies may remain high in coming years due to the way R&D investment drops off rapidly as you move down the ranking, especially in the case of the EU group, where companies at the top of the *Scoreboard* rankings are also those with higher growth rates.

Ranked by R&D intensity, the top US companies have higher R&D intensities on average than the equivalent EU firms.

US firms at the bottom end of the *Scoreboard* rankings appear to be much more active than their EU counterparts, having higher average levels of R&D and R&D intensities. One possible explanation for this is the existence of a core group of fast-growing US firms operating in highly R&D-intensive sectors.

3.1 R&D investment by the World *Scoreboard* Companies

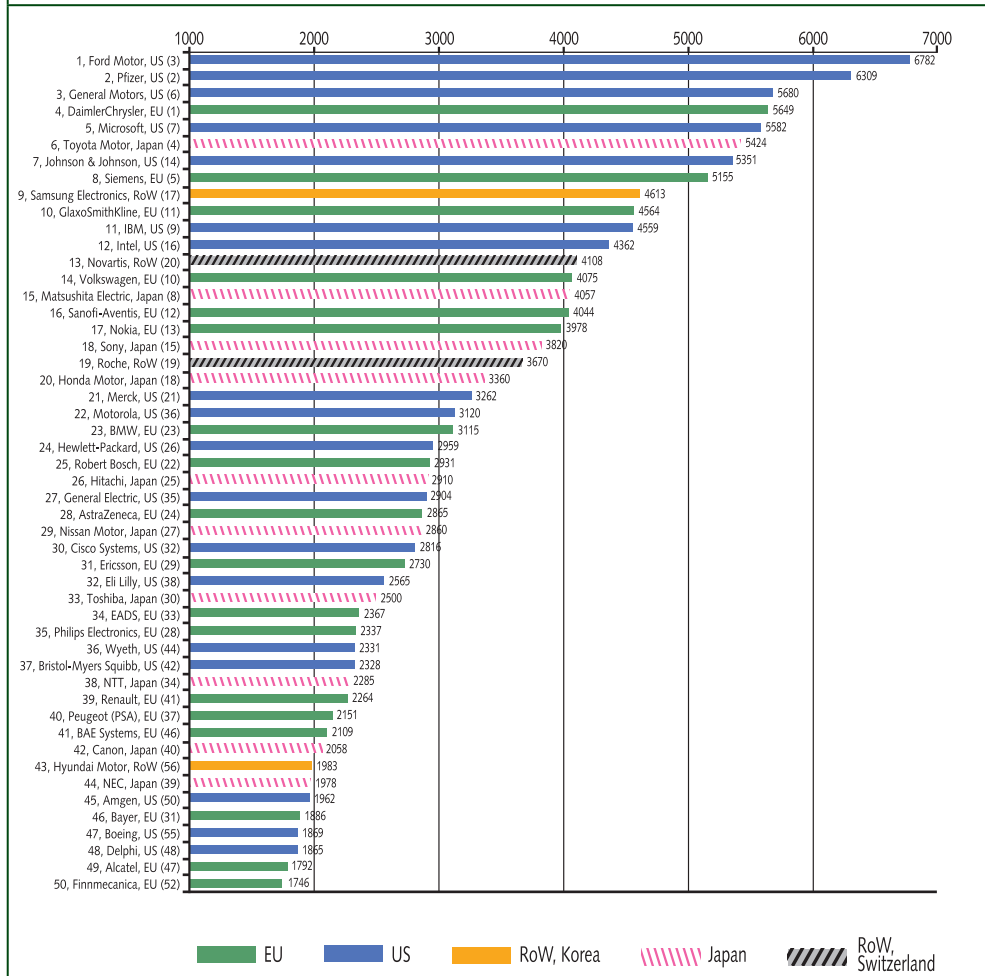
3.1.1 The 50 biggest R&D investors worldwide

Figure 3.1 shows the overall world ranking of the top 50 R&D investors in 2005. These companies invested a total of €168 billion in 2005, thus accounting for 46% of the total worldwide R&D by the top 1338 *Scoreboard* companies (i.e. those over the €24.9

million threshold, and therefore having a comparable volume of research investment). They registered overall net sales of €2 500 billion, which accounts for 25% of the top 1338 *Scoreboard* companies' total net sales, resulting in a group average R&D intensity of 6.7%. The growth rate of overall R&D investment among the top 50 companies in 2005 was 5.6% compared to 2004 while in the case of their net sales the annual growth rate was 4.1%.

The top 50 R&D investors in 2005 invested a total of €168 billion, accounting for 46% of the total worldwide R&D by the top 1338 *Scoreboard* companies.

Figure 3.1. Ranking of the worldwide top 50 companies by R&D investment (€m) in 2005



Note: The numbers in parentheses after the names of the companies refer to their rankings in last year's *Scoreboard*.

Source: The 2006 EU industrial R&D Investment *Scoreboard*
DG JRC / DG RTD, European Commission

Three US companies top this year's list and DaimlerChrysler, the top company in 2005, has dropped to fourth place.

This year, there are three US companies at the top of the list and DaimlerChrysler, the top company in 2005, is fourth. However, these changes in the ranking are more due to the effect of exchange rates on the nominal values of these companies' worldwide investments than real changes in their R&D investments (i.e. in terms of constant prices or constant exchange rates), particularly in the case of the major R&D investors with sales distributed worldwide but whose R&D is more concentrated in one region.

As in the past, firms in the automobiles & parts sector are among the major investors in research, with four out of the worldwide top 6 companies operating in this sector

(Ford, which is this year's leader, together with General Motors, Daimler-Chrysler and Toyota Motor).

Despite differences in annual growth rates and in the relative positions on the list of the worldwide top 50 R&D investing companies, the list is relatively stable, with only a few entries and exits observed over the past year.

While the overall R&D annual growth rate of the 1000 EU firms was lower than that of the 1000 non-EU firms, the number of EU companies among the top 50 R&D investors worldwide is the same as in the 2004 financial year. There are 18 EU companies in the top 50 (with one entry, Finmeccanica, and one exit, IFI), compared to 18 from the US and 10 from Japan. The remaining four companies are Swiss and South Korean (including Hyundai Motor, the strongest new entrant).

The share in both R&D investment and net sales by the top 50 *Scoreboard* companies accounted for by EU and Japanese companies declined in 2005, whereas US companies increased their share. Much of this is due to the depreciation of the euro against the US dollar (the exchange rate dropped from 1.36 in December 2004 to 1.18 in December 2005), which led to a rise in the nominal values of the R&D investments of companies reporting in US dollars. Indeed with the 2005 exchange rates, the top 50 list in 2004 would have been topped by Pfizer and Ford, with Daimler Chrysler in third position.

The world's top 50 R&D investors are mainly in the automobiles & parts, pharmaceuticals & biotechnology, technology hardware & equipment, electronics & electrical equipment and aerospace & defence sectors. Compared to last year's *Scoreboard* the best performing sector is aerospace & defence, with 2 entrants in the top 50 (Boeing, US, and Finmeccanica, EU) and showing the highest growth rates, both in R&D and net sales.

3.1.2 Highest R&D growth companies

Table 3.1 lists the top 50 companies with the highest R&D growth rates over the past three years (2002-2005) among the world *Scoreboard* R&D investors with net sales over €500 million and R&D investment over €50 million¹².

The list of 50 companies ranked by R&D growth is dominated by US companies (16), but also includes 9 EU firms and 9 Taiwanese firms. Just three sectors account for 27 of these companies: technology hardware & equipment, pharmaceuticals & biotechnology and electronics & electrical equipment. The weaker presence of EU companies in this ranking compared to the US firms and the strong presence of firms based in Taiwan could be partly explained by the sector mix of the *Scoreboard* companies from each region.

Of the top 50 fastest R&D growth companies in 2005, only 15 were present in the world top 1000 R&D investors in the 2000 financial year. Many of the companies in table 3.1 were involved in some form of merger or acquisition during the period (2002-2005) on which the compound annual growth rate (CAGR) calculation is based. Particularly in the case of large companies (such as Sanofi-Aventis, UCB or Biogen Idec) the massive increase in their R&D investment took place in the year of the acquisition (often, the acquired firm having had bigger R&D investments than the acquirer) and influenced the average growth rate of the entire three year period. However, it is difficult to differentiate between "organic investment growth" and "acquisition enhanced investment growth", as many companies in the *Scoreboard* base their growth strategies on mergers and acquisitions.

The world's top 50 R&D investors are mainly in the automobiles & parts, pharmaceuticals & biotechnology, technology hardware & equipment, electronics & electrical equipment and aerospace & defence sectors.

¹² We took into account only these companies due to the size effect, which will be discussed in chapter 6 (companies with small net sales and R&D investments may have very high growth rates for a few years in a row, while major R&D investors cannot afford to sustain the same pace).

Table 3.1. The top 50 Scoreboard Companies by growth rate over 2002-2005.

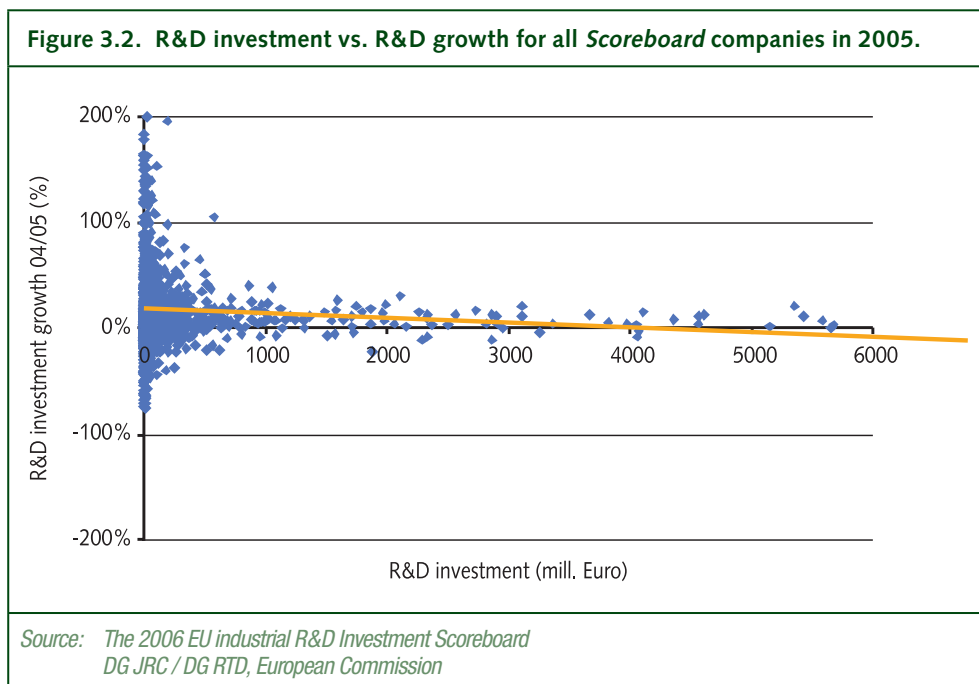
| Company, Country | Region | Sector name ICB | CAGR 3yrs (%) | World Rank in 2005 |
|-------------------------------|--------|------------------------------------|---------------|--------------------|
| Take-Two Interactive Software | US | Leisure goods | 167.4 | 319 |
| UBIsoft Entertainment | EU | Software & computer services | 159.5 | 502 |
| Google | US | Software & computer services | 145.5 | 135 |
| Pou Chen | RoW | Technology hardware & equipment | 127.8 | 486 |
| TCL Multimedia Technology | RoW | Electronics & electrical equipment | 102.2 | 800 |
| Biogen Idec | US | Pharmaceuticals & biotechnology | 101.9 | 111 |
| Abengoa | EU | General industrials | 78.1 | 791 |
| Funai Electric | Japan | Electronics & electrical equipment | 69.8 | 576 |
| MediaTek | RoW | Technology hardware & equipment | 69.1 | 320 |
| Lenovo | RoW | Technology hardware & equipment | 68.0 | 355 |
| Nidec | Japan | Technology hardware & equipment | 65.4 | 321 |
| CGI | RoW | Software & computer services | 64.4 | 782 |
| Vale Do Rio Doce | RoW | Mining | 63.5 | 261 |
| Techtronic Industries | RoW | Electronics & electrical equipment | 62.9 | 813 |
| Vestas Wind Systems | EU | Electronics & electrical equipment | 62.5 | 579 |
| Huntsman | US | Chemicals | 58.9 | 600 |
| Hyundai Motor | RoW | Automobiles & parts | 56.3 | 43 |
| Yahoo! | US | Software & computer services | 56.0 | 140 |
| Umicore | EU | Industrial metals | 55.4 | 463 |
| Benq | RoW | Technology hardware & equipment | 51.8 | 305 |
| Symantec | US | Software & computer services | 51.2 | 117 |
| Gazprom | RoW | Gas, water & multiutilities | 51.0 | 309 |
| Tata Motors | RoW | Automobiles & parts | 49.3 | 563 |
| Sanofi-Aventis | EU | Pharmaceuticals & biotechnology | 49.2 | 16 |
| Asustek Computer | RoW | Technology hardware & equipment | 48.9 | 362 |
| Hexion Specialty Chemicals | US | Chemicals | 48.1 | 825 |
| Lite-On Technology | RoW | Technology hardware & equipment | 47.2 | 533 |
| SanDisk | US | Technology hardware & equipment | 45.6 | 348 |
| eBay | US | General retailers | 44.9 | 198 |
| Lyondell Chemical | US | Chemicals | 44.8 | 630 |
| Biovail | RoW | Pharmaceuticals & biotechnology | 43.9 | 840 |
| USEC | US | Industrial metals | 43.5 | 609 |
| Invitrogen | US | Pharmaceuticals & biotechnology | 43.4 | 590 |
| UTStarcom | US | Technology hardware & equipment | 43.2 | 284 |
| Ranbaxy Laboratories | RoW | Pharmaceuticals & biotechnology | 42.9 | 542 |
| Vivendi | EU | Media | 42.7 | 181 |
| Chi Mei Optoelectronic | RoW | Electronics & electrical equipment | 41.8 | 469 |
| Compal Electronics | RoW | Electronics & electrical equipment | 41.7 | 639 |
| Research In Motion | RoW | Technology hardware & equipment | 41.3 | 410 |
| Burelle | EU | Automobiles & parts | 41.0 | 495 |
| Quanta Computer | RoW | Electronics & electrical equipment | 41.0 | 403 |
| Kos Pharmaceuticals | US | Pharmaceuticals & biotechnology | 41.0 | 496 |
| Cephalon | US | Pharmaceuticals & biotechnology | 40.4 | 205 |
| Petroleo Brasileiro | RoW | Oil & gas producers | 39.5 | 182 |
| Sunplus Technology | RoW | Technology hardware & equipment | 38.9 | 659 |
| MedImmune | US | Pharmaceuticals & biotechnology | 38.7 | 191 |
| TeliaSonera | EU | Fixed line telecommunications | 35.1 | 202 |
| UCB | EU | Pharmaceuticals & biotechnology | 33.5 | 134 |
| Orkla | RoW | General industrials | 33.4 | 695 |
| Garmin | RoW | Leisure goods | 32.5 | 723 |

Source: *The 2006 EU Industrial R&D Investment Scoreboard*
 DG JRC / DG RTD, European Commission

There are 201 companies among the worldwide top 1338 that show compound annual growth rates over the period 2002-2005 of more than 20%, but only 21% of them (42) are EU-based firms. Compared with the overall *Scoreboard* averages, more of these companies are to be found in technology hardware & equipment, software & computer services, pharmaceuticals & biotechnology, health-care equipment & services, electronic & electrical equipment and leisure goods. As these are also the most R&D-intensive sectors, we would expect the R&D position of these sectors not to change significantly in the medium term.

Is there any relationship between the fastest R&D growth companies and big R&D investors in the *Scoreboard* companies? Figure 3.2 plots the R&D growth rate in 2005 against the R&D investment in 2005 for all *Scoreboard* firms. The slope of the trend line is negative, showing that higher growth rates generally characterise the smaller *Scoreboard* R&D investors¹³.

The *Scoreboard* companies with compound annual growth rates of over 20% from 2002-2005 are concentrated in the technology hardware & equipment, software & computer services, pharmaceuticals & biotechnology, health-care equipment & services, electronic & electrical equipment and leisure goods sectors.



Two main points can be deduced from Figure 3.2. Firstly, the concentration of R&D in a few very large companies may have started to gradually decline and the growth performance of the biggest R&D investors may differ from that of the *Scoreboard* firms as a whole.

Table 3.2 presents the 10 companies out of the world top 50 R&D investors that had the highest R&D growth rates in the 2005 financial year and the number of positions these companies have moved up or down the ranking since the previous year.

The concentration of R&D in a few very large companies may have started to decline and the growth in R&D among the biggest R&D investors may differ from that of the *Scoreboard* firms as a whole.

13 The downward trend is more apparent for EU firms than for the non-EU ones when plotted separately.

Table 3.2. The 10 companies with fastest R&D growth among the 2006 Scoreboard worldwide top 50 R&D investors.

| Company | Region | Sector | R&D AGR (%) | Number positions upward |
|-------------------|---------------|---------------------------------|-------------|-------------------------|
| BAE Systems | EU | Aerospace & defence | 30.5 | +5 |
| Hyundai Motor | Rest of World | Automobiles & parts | 21.9 | +13 |
| Johnson & Johnson | US | Pharmaceuticals & biotechnology | 21.3 | +7 |
| Motorola | US | Technology hardware & equipment | 20.3 | +14 |
| Finmeccanica | EU | Aerospace & defence | 20.1 | +2 |
| Boeing | US | Aerospace & defence | 17.4 | +8 |
| Ericsson | EU | Technology hardware & equipment | 16.5 | -2 |
| Renault | EU | Automobiles & parts | 15.5 | +2 |
| Novartis | Rest of World | Pharmaceuticals & biotechnology | 15.2 | +7 |
| Alcatel | EU | Technology hardware & equipment | 15.1 | -2 |

Note: R&D AGR is the annual growth rate of firm's R&D investment in financial year 2005; number of positions upward refers to the rank in this year's edition compared to last year's edition of the Scoreboard.

*Source: The 2006 EU Industrial R&D Investment Scoreboard
DG JRC / DG RTD, European Commission*

The top 10 companies with fastest R&D investment growth, among the top 50 R&D investors in 2005, include 5 EU companies, demonstrating that the EU top R&D investors perform better than the EU sample as a whole relative to their competitors elsewhere. However, the positions of these firms in the worldwide top 50 did not change significantly. Indeed, Ericsson and Alcatel each dropped by two positions in the ranking, as a result of their R&D growth's being offset by depreciation of the euro against the US dollar.

Among the top 10 companies with fastest R&D investment growth there are 3 companies in aerospace & defence, 3 in technology hardware & equipment, 2 in automobiles & parts and 2 in pharmaceuticals & biotechnology. Interestingly, 10 companies out of the world top 50 registered negative growth rates in 2005, while 26 had annual growth rates of over 5%.

Among the fast growing companies in terms of R&D investments, several improved their position on the list strongly. These included Finmeccanica (Italy), Samsung Electronics, Hyundai Motors and LG Electronics (South Korea), Qualcomm and Amgen (both US) and BT Group (UK). Other companies which increased their R&D investment by more than 20% each year during 2002-2005 and succeeded at entering the very top EU and non-EU lists include Suzuki Motor (Japan), the three US internet companies (Amazon.com, Yahoo!, Google), other US companies in R&D-intensive sectors (Biogen Idec., Boston Scientific, Electronic Arts and Symantec), as well as Telia Sonera (Sweden, telecommunication services), Vivendi (France, media), Schwarz Pharma (Germany, pharma & biotech) and Hella (Germany, auto & parts). The large oil & gas producers from emerging economies such as China and Brasil (PetroChina and Petrobras) also increased their R&D by more than 20% in each year from 2002 to 2005.

3.1.3 Entries to and exits from the *Scoreboard*

The configuration of the *Scoreboard* has changed substantially due to the increase in the number of companies from 700 to 1000 for both EU and non-EU groups. In the EU group, the new entrants mostly come from the UK (+117), Germany (+32), France (+31), Finland (+27) and Sweden (+21). In the non-EU group, the new entrants are mostly from the US (+189), Japan (+39), Taiwan (+24), Canada (+13) and Switzerland (+9).

Data collection for the *Scoreboard* has improved, allowing companies with significant R&D that were not captured in the previous edition to be included, particularly in the case of the EU list. Moreover, out of the 342 new entries in the 1000 EU group, 90 can be attributed to the adoption of IFRS.

Finally, the configuration of the *Scoreboard* has also changed as a result of companies' R&D investments moving above or below the threshold. Comparing the list of this year's top 700 companies with last year's reveals a turnover of 3-4%, with 19 new entries to the EU list and 26 to the non-EU list.

Among the EU companies, the highest turnover was in the pharmaceuticals & biotechnology, food producers and industrial engineering sectors.

Among the non-EU companies, the three sectors with most new entries were semiconductors, electronic equipment and pharmaceuticals. On the other hand, most exits were from chemicals, software and semiconductors.

New entrants to the *Scoreboard* from the EU are mostly from the UK, Germany, France, Finland and Sweden. In the non-EU group, the new entrants are mostly from the US, Japan, Taiwan, Canada and Switzerland.

3.2 R&D intensity of the top R&D Investors

As will be discussed in chapter 6, R&D intensity is influenced by the size of company (size in terms of net sales and employee numbers). We have therefore selected firms of similar size when showing rankings by R&D intensity. There are 29 *Scoreboard* companies with an R&D intensity of over 20% and net sales above €500 million¹⁴ and they all come from just four sectors: technology hardware & equipment (11 firms), pharmaceuticals & biotechnology (10 firms), software & computer services (7 firms) and leisure goods (1 firm). These 4 sectors are also those with highest R&D intensities (see chapter 4).

Of the same group of companies, 22 are US firms and only 3 are EU-based firms (a further 2 companies are from Japan and 2 are in the 'Rest of the world' category). The paucity of EU companies in world rankings by R&D intensity is an important finding. Table 3.3 shows the top 10 by R&D intensity for the EU and non-EU groups, using the same exclusion criterion as above (net sales of over €500 million, R&D investment of over €50 million). All the non-EU companies are actually US-registered firms, thus the table shows a comparison between firms from these two major economies.

There are 29 *Scoreboard* companies with an R&D intensity of over 20% and net sales above €500 million and they come from just four sectors.

The firms in both the lists are mainly concentrated in the four sectors mentioned above. The ten EU companies' R&D investments are larger than those of the US ones, but the R&D intensities of the companies on the US list are significantly higher. This is explained by the much larger number of US firms operating in R&D-intensive sectors. It may also suggest that there is a core group of US firms making greater R&D efforts during their growth and maturation phases.

¹⁴ This sales criterion was used to filter out companies in their early stages of existence which may have significant R&D investment but very small net sales, and so to include mainly the major R&D investors for this specific analysis.

Table 3.3. Top 10 EU and non-EU Scoreboard Companies with more than €500m net sales by R&D intensity.

| Top 10 EU Companies | | | | | Top 10 Non-EU Companies | | | | |
|---|---|--------------------|---------------|------------------|--|-------------------------------------|--------------------|---------------|----------------------|
| No | Company name (Sector) (Country) | R&D intensity 2005 | CAGR 3yrs (%) | Rank in EU group | No | Company name (Sector) (Country) | R&D intensity 2005 | CAGR 3yrs (%) | Rank in non-EU group |
| 1 | Dassault Systemes (S) (France) | 27.7 | 5.1 | 69 | 1 | Conexant Systems (T) (USA) | 37.1 | -6.1 | 198 |
| 2 | Schwarz Pharma (P) (Germany) | 26.1 | 27.7 | 70 | 2 | Synopsys (S) (USA) | 32.3 | 12.1 | 161 |
| 3 | UCB (P) (Belgium) | 20.2 | 33.5 | 42 | 3 | Cadence Design Systems (S) (USA) | 31.8 | 3 | 118 |
| 4 | UBIsoft Entertainment (S) (France) | 19.2 | 159.5 | 133 | 4 | Biogen Idec (P) (USA) | 30.9 | 102 | 76 |
| 5 | Lundbeck (P) (Denmark) | 19.1 | 5.8 | 76 | 5 | MedImmune (P) (USA) | 30.9 | 38.7 | 132 |
| 6 | Schering (P) (Germany) | 18.6 | 0.6 | 27 | 6 | Mentor Graphics (S) (USA) | 30.2 | 9 | 237 |
| 7 | Infineon Technologies (T) (Germany) | 18.4 | 8.8 | 22 | 7 | Cephalon (P) (USA) | 29.3 | 40.4 | 143 |
| 8 | Ipsen (P) (France) | 18.3 | 3.3 | 104 | 8 | Agere Systems (T) (USA) | 27.6 | -12.6 | 110 |
| 9 | Shire (P) (UK) | 18 | 11.9 | 73 | 9 | Electronic Arts (L) (USA) | 25.7 | 23.6 | 73 |
| 10 | STMicroelectronics (T) (The Netherlands) | 17.5 | 18.0 | 21 | 10 | Cypress Semiconductor (T) (USA) | 25.6 | -7.7 | 226 |
| Total R&D investment €5.3bn | | | | | Total R&D investment €3.5bn | | | | |
| <p><i>Note: The sector of declared main activity and the country of registration are shown in brackets after the company name; CAGR stands for compound annual growth rate over the period of reference (2002-2005); the codes used for sectors are: T – technology hardware & equipment, S – software & computer services, P – pharmaceuticals & biotechnology, L – leisure goods.</i></p> <p><i>Source: The 2006 EU Industrial R&D Investment Scoreboard DG JRC / DG RTD, European Commission</i></p> | | | | | | | | | |

These companies' average annual R&D investment growth rates over the last three years were positive in the case of all 10 EU companies, but in that of the US group.

3.3 EU firms among the other Scoreboard Companies

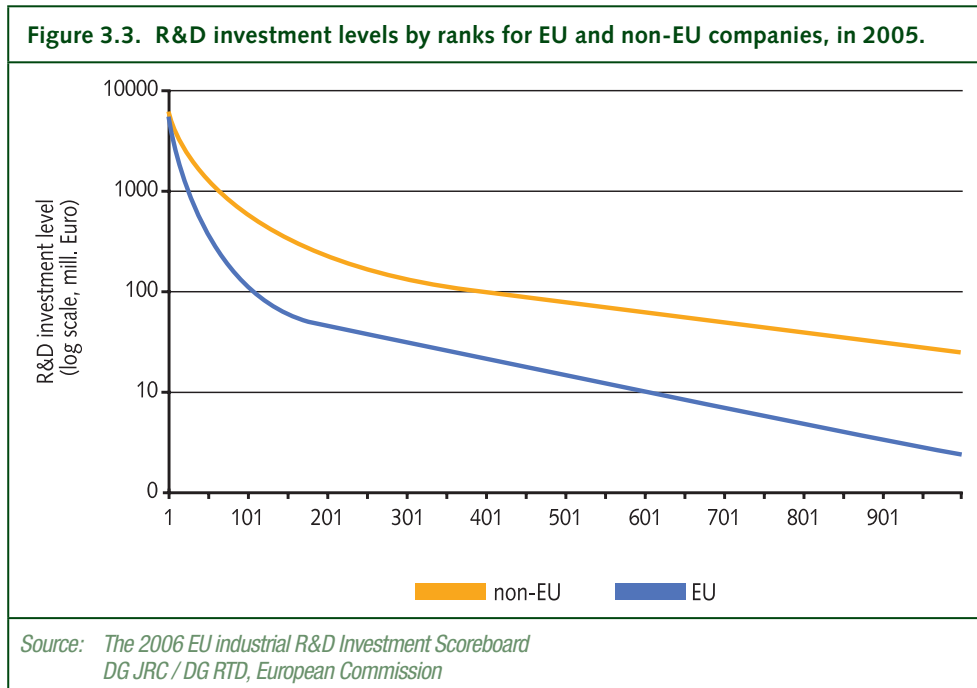
3.3.1 How concentrated is R&D investment?

The top 50 EU companies invested €80 billion in R&D, representing 70.7% of the R&D investment by the EU companies on the *Scoreboard* as a whole, while the top 50 non-EU companies invested €138 billion, 53.1% of the R&D invested by the non-EU companies. The top 50 EU firms increased their R&D investment over the last year and over the last three years by 4.1% and 2.7%, respectively; while the top 50 non-EU

firms increased their R&D investment in the last year 6.8% and over the last three years by 6.9%.

Figure 3.3 shows the rankings by R&D level for the EU and non-EU groups. The two groups have a similar profile, with R&D falling rapidly with ranking, but faster in the case of the EU companies. The two diagrams have identical logarithmic scales for their axes, clearly revealing the higher degree of concentration in the EU. On the other hand, the thicker tail in the non-EU list is indicative of the difference in size between the two economies (EU versus the rest of the world).

R&D investment is more highly concentrated in just a few companies in the EU than elsewhere in the world.



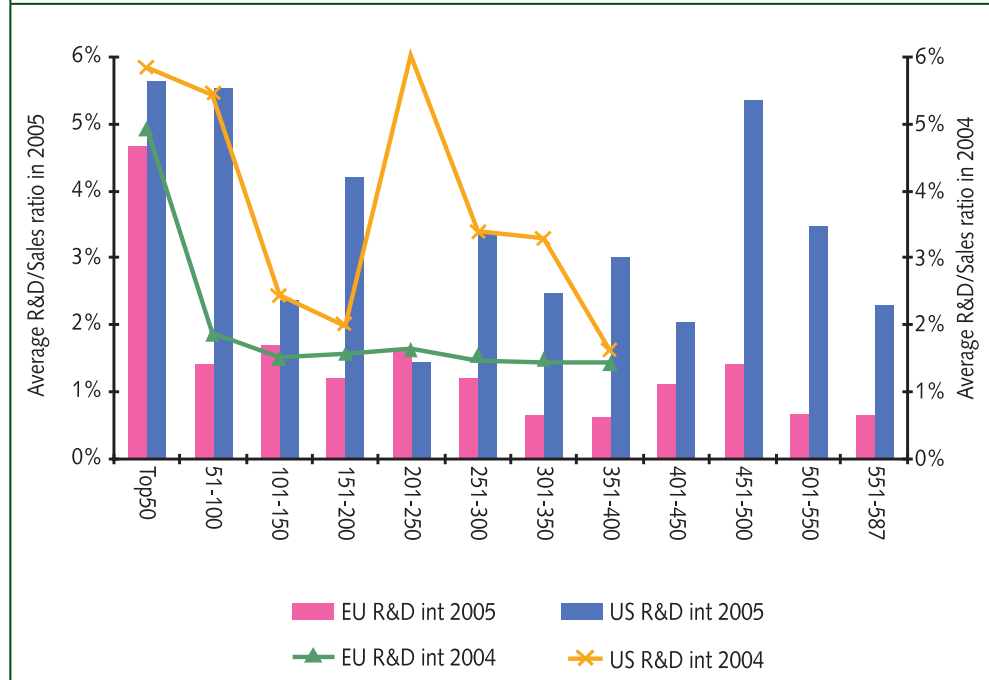
R&D investment is likely to remain concentrated in relatively few companies in the EU in the medium term, as a result of both the persistence of the investment pattern shown in Figure 3.3 and also the fact that several large EU companies show high R&D growth rates (as was pointed out in 3.1.2).

3.3.2 R&D intensity in the EU and the US.

Figure 3.4 shows the average R&D intensity for groups of 50 companies ranked by R&D investment in the two main world economies: the EU and the US, for the 2005 and 2004 financial years. Here we have chosen to compare with US companies only, instead of non-EU companies, as the size difference between EU and all the rest of the world might distort the conclusions of the comparison.

As with last year's *Scoreboard*, a striking difference can be observed between the US and the EU groups of 50 companies. The average R&D intensities for the US groups are considerably higher than those of the EU, with only one exception – group 201 to 250. Also, the total R&D investment of US groups is always consistently higher than the EU groups, as was shown in the previous section.

Figure 3.4. Average R&D intensity and shares in total R&D per groups of 50 companies ranked by R&D investment, in 2005 and 2004, EU vs US



Note: As there are only 587 US companies in the Scoreboard lists, the last group contains only 37 companies in both the EU and US sample.

*Source: The 2006 EU industrial R&D Investment Scoreboard
DG JRC / DG RTD, European Commission*

Smaller US firms appear much more active than their EU counterparts in terms of both absolute R&D levels and R&D intensity.

There is a similar pattern of R&D intensity distribution by group in the EU and US. However, the US firms in the lower-ranked groups appear to be much more active in terms of both absolute R&D levels and R&D intensity. Also, the US groups of 50 firms show higher volatility in their average R&D intensity. The major change from last year's findings is the increase in the number of breaks in the pattern¹⁵ of decreasing R&D intensity with the R&D-size of the company for the EU and US economies. Whereas last year the group 201-250 in the US had the highest average R&D intensity, this year it has the smallest one among the US groups. The explanation could be that those US companies ranked 201-250 have climbed to a higher group (i.e. the 151-200 one), replacing firms of lower R&D intensity.

Moreover, new companies with high R&D intensities seem to have entered the EU list beyond 400th position, and the same applies to the list of US companies beyond 450th position. These groups contain several companies which could well improve their current rank in the *Scoreboard* in the coming years and may be the future emerging stars in world R&D.

¹⁵ The 2004 EU Industrial R&D Investment *Scoreboard*, see <http://eu-iriscoreboard.jrc.es>, offered the first evidence for the existence of this pattern.

Chapter 4 – R&D by sector

This chapter focuses on the distribution of R&D-active companies across the different sectors of industry¹⁶, focusing particularly on those sectors with the greatest concentrations of global R&D investing companies. The main questions addressed are:

- ⇒ Which sectors account for the greatest share of R&D investment?
- ⇒ In which sectors do *Scoreboard* companies have the highest and the lowest R&D growth rates?
- ⇒ Do companies' R&D and sales worldwide show similar trends, and by how much does R&D intensity vary between sectors?
- ⇒ What is the reason for the lower average R&D intensity in the EU compared to the rest of the world?
- ⇒ Is the R&D/fixed capital ratio dependent on companies' financial performance?

KEY FINDINGS

Industrial R&D investment worldwide continues to be highly concentrated in just three sectors: automobiles & parts, technology hardware & equipment, and pharmaceuticals & biotechnology. Worldwide each of these sectors accounted for a similar share of total *Scoreboard* R&D investment, ranging from €64 to €70 billion. Together, they account for more than half of global R&D investments by the top *Scoreboard* companies in 2005. R&D is also highly concentrated in just a few companies in each sector.

EU companies are relatively strong in the automobiles & parts and chemicals sectors, while the significantly larger R&D investment in software & computer services and technology hardware & equipment by non-EU companies reflects their dominance of the world IT market. However, the main world economies also show R&D strength in pharmaceuticals & biotechnology and in electronics & electrical equipment.

The highest average annual R&D investment growth rates in 2005 and over the last five years as a whole were shown by companies operating in pharmaceuticals & biotechnology and in a number of services sectors: software & computer services, travel & leisure, media, health-care equipment & services, and support services.

The sectors with the highest R&D intensities are pharmaceuticals & biotechnology, software & computer services and technology hardware & equipment, while sectors such as telecommunications services or oil & gas appear to have relatively low R&D intensities. The R&D intensities do not appear to vary widely, which suggests similar trends in R&D investment and net sales in each sector.

The overall lower average R&D intensity among the EU *Scoreboard* companies is due to the contribution of low R&D-intensive sectors. The EU group of *Scoreboard* companies shows much higher sales in low R&D-intensive these sectors compared to the similar group of non-EU companies.

¹⁶ Companies are assigned to the sector of their main economic activity as declared in their annual reports. *Scoreboard* companies are distributed across 36 sectors according to the ICB 3-digit classification.

The *Scoreboard* companies in sectors that are generally characterised by a high ratio of market capitalisation to net sales also show high ratios of R&D investment plus fixed capital expenditure to sales. The R&D to capital expenditure ratio averages more than one in just 6 of the 32 sectors represented by firms in the *Scoreboard*, and these are also the highly R&D-intensive sectors.

4.1. Worldwide R&D Investment by Sector

4.1.1 The sectors investing most in R&D

Table 4.1 shows the proportions of the R&D by top 1338 *Scoreboard* companies¹⁷ in the 15 sectors with the highest levels of R&D investment. It also presents the proportions of overall net sales accounted for by these sectors and their average R&D intensity.

Table 4.1. The largest sectors by aggregate R&D investment from the world top 1338 *Scoreboard* companies, in the 2005 financial year

| Rank | Sector name ICB (No. of companies in Top 1338) | Share in R&D Investment 2005 | Share in Net Sales 2005 | R&D/Net Sales 2005 (%) |
|------|---|---------------------------------|----------------------------|---------------------------|
| 1 | Technology hardware & equipment (235) | 19.2% | 8.3% | 8.2 |
| 2 | Pharmaceuticals & biotechnology (164) | 18.5% | 4.4% | 14.9 |
| 3 | Automobiles & parts (79) | 17.5% | 14.9% | 4.2 |
| 4 | Electronic & electrical equipment (107) | 7.4% | 5.6% | 4.7 |
| 5 | Software & computer services (129) | 6.7% | 2.4% | 10.1 |
| 6 | Chemicals (97) | 4.6% | 5.2% | 3.2 |
| 7 | Leisure goods (29) | 4.3% | 2.2% | 7.0 |
| 8 | Aerospace & defence (35) | 4.1% | 3.2% | 4.6 |
| 9 | General industrials (41) | 2.5% | 4.1% | 2.2 |
| 10 | Industrial engineering (76) | 2.5% | 3.3% | 2.7 |
| 11 | Health care equipment & services (63) | 1.9% | 1.0% | 6.5 |
| 12 | Fixed line telecommunications (17) | 1.8% | 3.8% | 1.7 |
| 13 | Oil & gas producers (18) | 1.2% | 15.7% | 0.3 |
| 14 | Household goods (26) | 1.0% | 1.6% | 2.3 |
| 15 | Food producers (24) | 1.0% | 2.1% | 1.7 |
| | Total 15 Sectors (1140) | 93.9% | 77.7% | 4.3 |
| | Rest of 21 Sectors (198) | 6.1% | 22.3% | 1.0 |
| | TOTAL world 1338 companies (Million €) | 364 288 | 10 190 855 | 3.6 |

*Note: The 1338 companies are spread across 36 sectors.
Source: The 2006 EU Industrial R&D Investment Scoreboard
DG JRC / DG RTD, European Commission*

Technology hardware & equipment, pharmaceuticals & biotechnology, and automobiles & parts are by far the heaviest R&D-investing sectors.

Technology hardware & equipment, pharmaceuticals & biotechnology, and automobiles & parts are by far the heaviest R&D-investing sectors among the world *Scoreboard* companies of comparable size. The automobiles & parts sector has dropped from top position last year to the third place this year, mainly due to the decrease in aggregate R&D spending by the largest EU-based automotive firms.

¹⁷ Worldwide group of *Scoreboard* companies of comparable R&D size (R&D investment of more than €24.9)

As a result of the change in sector classification from FTSE to ICB, table 4.1 is not fully comparable this year to the equivalent data published in previous years. While the top three sectors cover practically the same companies as before, the change affects the sector composition. For example, there have been changes in the electronics & electrical equipment sector (this year without Matsushita Electric, Sony, Philips, which have been transferred to leisure goods), and in engineering & machinery (now distributed across industrial engineering, general industrials, leisure goods, etc.).

Although the number of companies in this year's *Scoreboard* has increased by 40%, the companies remain highly concentrated in certain sectors of activity. The number of sectors represented increased from 31 to 36, but the aggregate share of R&D accounted for by the top 15 sectors decreased only by 1.9%, compared to the previous year.

The sectors with the highest R&D intensities are still pharmaceuticals & biotechnology, software & computer services and technology hardware & equipment. Sectors such as telecommunication services, food producers or oil & gas have relatively low average R&D intensities. An important change introduced by the use of the new ICB system is the reclassification of companies in the leisure goods sector, which is among the most R&D-intensive sectors, with R&D intensities that are actually higher than the electronics & electrical equipment or health care equipment & services sectors.

Although the increase in the number of companies led to a decrease in their average size and lowered the average sector R&D investment per company in almost all sectors, the average R&D investment per company continues to vary widely between sectors, ranging from €110 million (health care equipment & services) to €800 million (automobiles & parts)¹⁸.

The top five companies in each of the six largest sectors by R&D investment are listed in Table 4.2, for both the EU and the non-EU groups in the *Scoreboard*, together with their R&D investment and annual growth rate. The table also shows the share of R&D within the sector accounted for by the top five.

These tables confirm the findings of previous editions of the *Scoreboard*, repeated here in chapter 3, namely that: (i) R&D is still highly concentrated in a small number of companies within each sector, (ii) the relative strength of EU companies is in automobiles & parts and chemicals; (iii) the significantly larger R&D investment in software & computer services and technology hardware & equipment by non-EU companies reflect their dominance of the world IT market; and (iv) electronics & electrical equipment and pharmaceuticals & biotechnology are strongly represented in both EU and non-EU regions. However, among the smaller R&D investors which entered this year's *Scoreboard* there is a larger proportion of software & computer firms than in the upper part of the list.

The *sectors* with the highest proportion of companies in the world *Scoreboard* top 1338 which increased R&D investment were: aerospace & defence (88% out of all companies for which growth figures were available), health care (85%), leisure goods (84%), electronic & electrical equipment (84%), oil & gas producers and oil equipment manufacturers (78%). Companies in automobiles & parts and in pharmaceuticals & biotechnology who decreased their R&D investment in 2005 accounted for 25% of the total number of firms in the respective sectors. However, the average annual growth rate was significantly higher (3% more) for companies in pharmaceuticals & biotechnology than in automobiles & parts. There are also some "clouds" over the IT-related sectors, as the proportion of firms decreasing their R&D investment in 2005 was over 30% in software & computer services and 33% in technology hardware & equipment.

The sectors with the highest R&D intensities are still pharmaceuticals & biotechnology, software & computer services and technology hardware & equipment.

Sectors such as telecommunication services, food producers or oil & gas have relatively low average R&D intensities.

EU companies are relatively strong in the automobiles & parts and chemicals sectors.

The electronics & electrical equipment and pharmaceuticals & biotechnology are strongly represented on the *Scoreboard* in both EU and non-EU regions.

¹⁸ In terms of sales, the size difference is even larger, as the 79 companies in automobiles & parts are on average eleven times bigger than the 63 companies in health care.

Table 4.2. Top 5 EU and non-EU Companies in the Six Largest Sectors by R&D Investment (€billion)

| A. Technology Hardware & Equipment | | | |
|---|--------------------------------------|---|-------------------------------------|
| EU | | Non-EU | |
| 1 | Nokia (€4.0bn; 3.8%) | 1 | Intel (€4.4bn; 7.7%) |
| 2 | Ericsson (€2.7bn; 16.5%) | 2 | Motorola (€3.1bn; 20.3%) |
| 3 | Alcatel (€1.8bn; 15.1%) | 3 | Hewlett-Packard (€3.0bn; -0.5%) |
| 4 | ST Microelectronics (€1.3bn; 7.3%) | 4 | Hitachi (€2.9bn; 4.2%) |
| 5 | Infineon Technologies (€1.2bn; 8.6%) | 5 | Cisco Systems (€2.8bn; 4.1%) |
| R&D share of top 5 within the sector (world 1338) = 16% | | R&D share of top 5 within the sector (world 1338) = 23% | |
| B. Pharmaceuticals & Biotechnology | | | |
| EU | | Non-EU | |
| 1 | GlaxoSmithKline (€4.6bn; 10.5%) | 1 | Pfizer (€6.3bn; -3.1%) |
| 2 | Sanofi-Aventis (€4.0bn; 2.1%) | 2 | Johnson & Johnson (€5.4bn; 21.3%) |
| 3 | AstraZeneca (€2.9bn; -11.1%) | 3 | Novartis (€4.1bn; 15.2%) |
| 4 | Boehringer Ingelheim (€1.4bn; 10.4%) | 4 | Roche (€3.7bn; 12.0%) |
| 5 | Schering (€1.0bn; 6.0%) | 5 | Merck (€3.3bn; -4.0%) |
| R&D share of top 5 within the sector (world 1338) = 21% | | R&D share of top 5 within the sector (world 1338) = 34% | |
| C. Automobiles & Parts | | | |
| EU | | Non-EU | |
| 1 | Daimler Chrysler (€5.6bn; -0.2%) | 1 | Ford Motor (€6.8bn; 8.1%) |
| 2 | Volkswagen (€4.1bn; -2.1%) | 2 | General Motors (€5.7bn; 3.1%) |
| 3 | BMW (€3.1bn; 10.5%) | 3 | Toyota Motor (€5.4bn; 10.7%) |
| 4 | Robert Bosch (€2.9bn; 1.1%) | 4 | Honda Motor (€3.4bn; 4.2%) |
| 5 | Renault (€2.3bn; 15.5%) | 5 | Nissan Motor (€2.9bn; 12.4%) |
| R&D share of top 5 within the sector (world 1338) = 28% | | R&D share of top 5 within the sector (world 1338) = 38% | |
| D. Electronic & Electrical Equipment | | | |
| EU | | Non-EU | |
| 1 | Siemens (€5.2bn; 1.8%) | 1 | Samsung (€4.6bn; 12.2%) |
| 2 | Schneider (€0.5bn; 1.3%) | 2 | Canon (€2.1bn; 4.1%) |
| 3 | Alstom (€0.3bn; -22.0%) | 3 | LG Electronics (€1.5bn; 14.9%) |
| 4 | Legrand (€0.2bn; 2.0%) | 4 | Sharp (€1.1bn; 6.7%) |
| 5 | Agfa-Gevaert (€0.2bn; 5.8%) | 5 | Sanyo Electric (€0.9bn; 5.3%) |
| R&D share of top 5 within the sector (world 1338) = 24% | | R&D share of top 5 within the sector (world 1338) = 38% | |
| E. Software & Computer Services | | | |
| EU | | Non-EU | |
| 1 | SAP (€1.1bn; 6.7%) | 1 | Microsoft (€5.6bn; 6.5%) |
| 2 | Dassault Systemes (€0.3bn; 16.7%) | 2 | IBM (€4.6bn; 4.1%) |
| 3 | Business Objects (€0.1bn; 8.0%) | 3 | Oracle (€1.6bn; 25.6%) |
| 4 | Misys (€0.1bn; -1.1%) | 4 | Computer Associates (€0.7bn; 2.8%) |
| 5 | Amdocs (€0.1bn; 14.3%) | 5 | Symantec (€0.6bn; 104.2%) |
| R&D share of top 5 within the sector (world 1338) = 7% | | R&D share of top 5 within the sector (world 1338) = 53% | |
| F. Chemicals | | | |
| EU | | Non-EU | |
| 1 | Bayer (€1.9bn; -21.5%) | 1 | El duPont de Nemours (€1.1bn; 0.2%) |
| 2 | BASF (€1.1bn; -7.4%) | 2 | Dow Chemical (€0.9bn; 5.0%) |
| 3 | AKZO Nobel (€0.8bn; 1.3%) | 3 | Syngenta (€0.7bn; 1.6%) |
| 4 | Solvay (€0.5bn; 11.7%) | 4 | Mitsubishi Chemical (€0.6bn; 0.8%) |
| 5 | DSM (€0.3bn; 1.4%) | 5 | Sumitomo Chemical (€0.6bn; 4.0%) |
| R&D share of top 5 within the sector (world 1338) = 27% | | R&D share of top 5 within the sector (world 1338) = 24% | |

Note: Company R&D and annual growth rate are shown in brackets.
*Source: The 2006 EU Industrial R&D Investment Scoreboard
 DG JRC / DG RTD, European Commission*

4.1.2 The sectors and their average R&D growth rates

2005 was a particularly good year in terms of overall growth in R&D investments worldwide, with the top 1338 *Scoreboard* companies averaging an annual growth rate of 6.2%. R&D investment decreased in only five of the 36 sectors during the 2005 financial year. In last year's *Scoreboard* we reported high growth in R&D investment by companies in services sectors other than utilities. This year's data confirm this trend, as services companies are again among the fastest growing companies in terms of R&D spending.

Table 4.3 lists the sectors ranked by average annual growth rate of the R&D investment by each sector group of *Scoreboard* companies in 2005. It also shows each sector's average compound annual growth rate of R&D investment over the last three years (CAGR 3 yrs)¹⁹.

2005 was a particularly good year in terms of overall growth in R&D investments, with a drop in investment in only five of the 36 sectors.

Table 4.3. Nominal R&D growth rates for the world's top 1338 *Scoreboard* companies, by sector

| Sector name ICB | No. comp. | R&D Investment 2005 (em) | R&D Investment Change 05/04 (%) | R&D Investment CAGR 3yr 05/02 (%) |
|--|-----------|--------------------------|---------------------------------|-----------------------------------|
| General retailers | 6 | 1025 | 39.4 | 20.0 |
| Food & drug retailers | 6 | 734 | 27.9 | -2.3 |
| Banks | 11 | 1498 | 26.1 | n.a. |
| Other financials | 6 | 302 | 17.0 | -11.6 |
| Aerospace & defence | 35 | 14768 | 13.5 | 8.2 |
| Travel & leisure | 10 | 672 | 13.4 | 13.0 |
| Health care equipment & services | 63 | 6826 | 12.3 | 11.7 |
| Oil & gas producers | 18 | 4195 | 11.7 | 7.0 |
| General industrials | 41 | 9152 | 11.1 | 8.9 |
| Mobile telecommunications | 7 | 891 | 10.3 | 4.1 |
| Media | 14 | 2043 | 9.4 | 3.2 |
| Tobacco | 4 | 1232 | 9.3 | 3.2 |
| Software & computer services | 129 | 24302 | 9.2 | 9.2 |
| Support services | 12 | 1299 | 9.1 | 3.2 |
| Industrial engineering | 76 | 9008 | 9.0 | 4.8 |
| Pharmaceuticals & biotechnology | 164 | 67395 | 8.3 | 11.8 |
| Household goods | 26 | 3684 | 7.3 | 5.2 |
| Technology hardware & equipment | 235 | 69955 | 7.2 | 0.9 |
| Oil equipment, services & distribution | 10 | 1134 | 7.2 | -0.6 |
| Fixed line telecommunications | 17 | 6417 | 6.2 | -1.1 |
| Electronic & electrical equipment | 107 | 26827 | 6.0 | 5.5 |
| Automobiles & parts | 79 | 63893 | 5.4 | 5.3 |
| Industrial metals | 26 | 2326 | 3.4 | 4.2 |
| Personal goods | 15 | 2236 | 2.3 | 3.4 |
| Food producers | 24 | 3552 | 2.1 | 2.6 |
| Leisure goods | 29 | 15532 | 1.7 | 3.7 |
| Forestry & paper | 9 | 535 | 0.5 | -3.8 |
| Electricity | 15 | 2236 | -0.3 | -1.2 |
| Chemicals | 97 | 16672 | -0.9 | 0.0 |
| Construction & materials | 22 | 1770 | -1.9 | -3.2 |
| Gas, water & multi-utilities | 8 | 732 | -3.0 | -12.8 |
| Industrial transportation | 9 | 612 | -13.3 | -0.1 |
| Grand Total | 1338 | 364288 | 6.9 | 5.2 |

Note: Sectors with less than 4 companies on the *Scoreboard* have been excluded from this ranking, as their financial results can be unduly influenced by the performance of a single company in a given year (the case of mining, for example). Consequently, only 32 out of the 36 sectors are shown. Lines shaded in light blue are "market" services sectors and in deep blue are utilities (infrastructure-related) sectors.

Source: The 2006 EU Industrial R&D Investment *Scoreboard*
DG JRC / DG RTD, European Commission

¹⁹ CAGR 3 years is defined as the compound average annual growth rate, computed over the period 2002-2005 for the group of companies operating in a given sector.

R&D investment by companies in market-oriented services sectors has been growing steadily since 2000.

R&D investment by companies in "market" services sectors continues on the upward trend visible since 2000. This group of sectors include software and computer services (including internet-service providers), support services²⁰, general retailers, media, travel and leisure, food & drug retailers, financial and insurance services²¹ and health care equipment & services²². Their cumulated proportion of total R&D investment grew further from 10.4% in 2004 to 10.9% in 2005. Except for software and health care, the services sectors still have low R&D-intensities. However, their average and aggregate R&D intensities have increased in the last few years. If we exclude the R&D-intensive sectors from this list (software and health-care), the remaining group of *Scoreboard* companies in "market" services increased their share of total R&D investment from 2.1% to 2.3% and account for 5.6% of the total number of *Scoreboard* companies (75 of 1338). The increase in their R&D investment is very often related to software or internet application development (e.g. Amadeus, e-Bay, Amazon.com). Although there are relatively few companies in each service sector in the *Scoreboard*'s list (except for the two sectors mentioned above), the upward trend seems to be generalised across all firms. In 2005, 83% of these 75 market services firms increased their R&D investment. Whereas the number of companies in this year's *Scoreboard* increased by 40%, the number of companies in the two main services sectors increased by 68%.

Except for software and health care, the services sectors still have low R&D-intensities. However, their average and aggregate R&D intensities have increased in the last few years.

On the other hand, most of the *Scoreboard* companies operating in the utilities sector reduced their R&D spending last year, as well as during 2001-2004. Consequently, their share of world R&D investment declined from 2.8% in 2004 to 2.7% in 2005.

The *Scoreboard* data contains more detailed (disaggregated) information by sectors (ICB classification, 4 digits) in the case of the five sectors in which there is a relatively large number of firms: software & computer services, technology hardware & equipment, industrial engineering, electronic & electrical equipment and pharmaceuticals & biotechnology. The highest average growth rates (above 10% in 2005) can be seen in the internet services, commercial vehicles & trucks, biotechnology, software and telecommunications equipment sectors. Among the top 10 sectors with total R&D investment close to or over €10 billion in 2005, aerospace & defence and general industrials showed annual growth rates higher than 10%.

Whereas the number of companies in this year's *Scoreboard* increased by 40%, the number of companies in the two main services sectors increased by 68%.

Figure 4.1 presents the comparative annual growth rates in 2005 for the two groups of 1 000 companies based in the EU and in the non-EU zones and compares them to the average annual growth rates computed for the sector groups out of the world top 1338 R&D investors. EU companies showed generally lower rates of growth in 2005 than the non-EU companies, despite the rise in the US dollar against the euro having boosted the value of their overseas R&D investments. EU companies show higher average growth rates in only 4 of the 10 largest R&D-investing sectors (the sectors are ranked in Figure 4.1 according to each the sector's share of the world total R&D). As the share of EU companies in these sectors (technology hardware & equipment, aerospace & defence, general industrials and industrial engineering) is below average, this growth means the EU has slightly narrowed the gap with its competitors in sectors where its position is weak.

On the other hand, the trend in several sectors in which EU companies are relatively strong is negative (automobiles & parts, chemicals, pharmaceuticals, oil & gas producers, telecommunication services). In 9 sectors, average growth rates were negative in 2005 for EU companies, while for non-EU companies there was a decline in only 5 sectors and it was not that significant. It is also a matter of concern that growth rates were lower among EU companies in emerging R&D-intensive sectors, such as health care

20 This group includes a variety of services such as: business support, delivery, education, training & employment agencies, transaction & payroll, environmental control and security & alarm services.

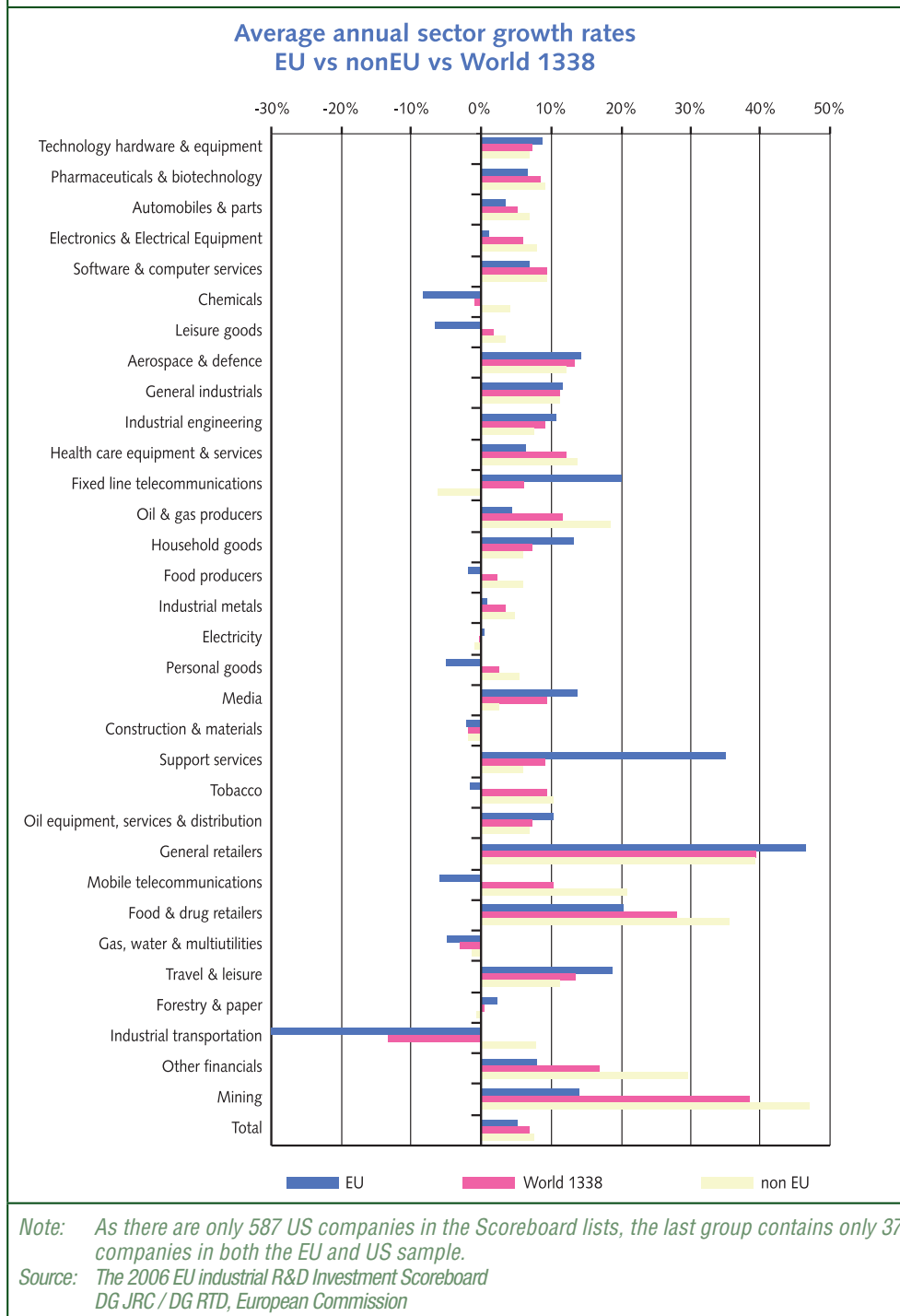
21 This category includes banks, life and non-life insurance and other financials.

22 In this sector, the companies listed in the EU Industrial R&D Investment *Scoreboard* are mainly producers of health care equipment or operating market services and not public health activities, according to the information available in their annual reports. Their share in total *Scoreboard* R&D investment is 1.86%.

equipment & services or media. On the other hand, EU companies seem to do better than companies in the rest of the world (i.e. excluding Japan and the US) in support services, travel & leisure, household goods or oil equipment. These are sectors that account for small proportions of total world R&D but have shown high growth rates lately. Detailed information on sector-average growth rates for the two groups of 1000 companies is presented in the *Scoreboard* dataset.

EU companies show higher average growth rates in only 4 of the 10 largest R&D-investing sectors.

Figure 4.1. Average annual growth rates of R&D investment by ICB sector for *Scoreboard* companies in the EU and non-EU groups (%)



The EU has slightly narrowed the gap with its competitors in sectors where its smaller share of R&D investing companies gives it a weaker position.

EU companies do well in support services, travel & leisure, household goods or oil equipment. These are sectors that account for a small but rapidly growing proportion of total world R&D.

4.1.3. R&D Investment vs Investment in Fixed Assets

There are two facets to innovation: firms/sectors developing new products and processes, and firms/sectors applying these new products and processes. Both are necessary, as innovators (e.g. pharmaceuticals & biotechnology, IT sectors, car manufacturers, etc.) need markets to which to sell their inventions (offices, transport, hospitals, etc.). Without the market, there is no profitable private R&D investment. R&D investment is often used as a proxy for the invention part of innovation and fixed investment its application (as investments generally embody some kind of innovation, although there are sectors in which capital expenditure may be driven by reasons other than the use of an existing innovation). This has two main consequences: a) the sectors dominant in inventing innovative new products have high R&D/fixed capital (Capex) ratios, while those sectors dominant in applying innovations or making intensive use of non-innovative fixed capital have low R&D/capex ratios; b) the ratio (R&D + Capex)/Sales is often a better indicator of a sector's contribution to innovation than the simple R&D/sales ratio (however, in the case of some sectors, capex/sales can be high (e.g. public utilities, related to networks infrastructure) without sectors showing a very high innovation content).

Table 4.4 provides the average total investment ratio (the sum of R&D investment and fixed capital investment) to net sales of sectors of the world 1338 *Scoreboard* companies and the average ratio between R&D investment and fixed capital expenditure.

The R&D exceeds capital expenditure ratios in only 6 of the 32 sectors, almost all of which are the most R&D intensive sectors.

The R&D to capital expenditure ratios are higher than one in only 6 of the 32 sectors. With one exception, these sectors are the same as the R&D-intensive sectors for which average R&D intensity is higher than 5% in Table 4.4; the exception is the aerospace & defence sector, which replaces electronics & electrical equipment. If we count only the companies in the EU, aerospace & defence is a highly R&D-intensive sector (8% intensity). Overall these 6 sectors account for more than 50% of *Scoreboard* R&D.

The average R&D/Capex ratio for all 1338 *Scoreboard* companies is 0.57, a figure that is similar to the average ratio for companies operating in the chemicals sector. Sectors situated in table 4.4 above the row for support services show a preference for R&D investment, while the rest of the sectors have a preference for fixed capital investment.

4.2. Why is average R&D intensity lower for EU Companies?

Table 4.5 shows the proportion of total R&D investment accounted for by, and the average R&D intensity of, the main sectors in which EU and non-EU *Scoreboard* companies operate, ranked by their share of overall R&D invested by the worldwide 1338 firms.

The average R&D intensity of EU companies is higher than that in the rest of the world in eight out of the top ten sectors.

The average R&D intensity across sectors does not differ significantly between the EU and the rest of the world, except in a few sectors, such as technology hardware & equipment, aerospace & defence or healthcare equipment & services. Moreover, the average R&D intensity of EU companies is higher than that in the rest of the world in eight out of the top ten sectors.

The non-EU 1000 group of *Scoreboard* companies continues to show a much larger R&D investment in highly R&D-intensive sectors (technology hardware & equipment and in software & computer services). This is a major reason explaining why R&D intensity is higher on average for non-EU companies. Another is the sector proportion in total net sales.

Table 4.4. Sector average total investment ratio (R&D+Capex)/Sales and R&D investment/capital expenditure ratio in 2005 for Scoreboard world 1338 R&D investors.

| Sector name ICB | (R&D + Capex) / Net sales | R&D/Capex 2005 | Change from 2004 |
|--|------------------------------|----------------|---------------------|
| Pharmaceuticals & biotechnology | 18.8% | 3.00 | ↑↑ |
| Software & computer services | 12.5% | 2.37 | ↑↑ |
| Aerospace & defence | 6.7% | 1.54 | ↑↑ |
| Technology hardware & equipment | 12.6% | 1.48 | ↓ |
| Leisure goods | 11.3% | 1.47 | ↓ |
| Health care equipment & services | 10.4% | 1.26 | ↑ |
| Support services | 5.2% | 0.90 | ↓ |
| Household goods | 5.1% | 0.69 | ↓ |
| Industrial engineering | 5.8% | 0.66 | ↓ |
| Automobiles & parts | 9.1% | 0.64 | ↓↓ |
| General retailers | 4.5% | 0.60 | ↑ |
| Chemicals | 7.4% | 0.57 | ↓↓ |
| Electronics & electrical equipment | 10.8% | 0.55 | ↓↓ |
| Personal goods | 5.5% | 0.52 | ↓ |
| Food producers | 5.1% | 0.45 | ↓ |
| Tobacco | 2.9% | 0.40 | ↔ |
| General industrials | 7.1% | 0.38 | ↔ |
| Beverages | 5.3% | 0.38 | ↑ |
| Travel & leisure | 10.8% | 0.32 | ↑ |
| Oil equipment, services & distribution | 6.0% | 0.30 | ↓↓ |
| Media | 7.4% | 0.27 | ↔ |
| Construction & materials | 4.9% | 0.20 | ↓ |
| Food & drug retailers | 2.3% | 0.16 | ↑ |
| Fixed line telecommunications | 14.2% | 0.13 | ↔ |
| Industrial metals | 5.5% | 0.13 | ↓↓ |
| Electricity | 14.6% | 0.09 | ↑ |
| Forestry & paper | 5.6% | 0.07 | ↔ |
| Mobile telecommunications | 13.9% | 0.07 | ↔ |
| Industrial transportation | 4.7% | 0.06 | ↓↓ |
| Oil & gas producers | 5.8% | 0.04 | ↔ |
| Gas, water & multiutilities | 9.5% | 0.04 | ↔ |
| Mining | 13.1% | 0.03 | ↔ |
| Total | 8.6% | 0.57 | ↓ |

Note: The total investment ratio to sales of each sector for the 1338 Scoreboard companies is shown in column 2; in column 4, ↑↑ means a significant increase in the R&D/Capex index since previous year, ↑ means an increase, ↔ no change, ↓ decrease and ↓↓ stands for a significant decrease.

*Source: The 2006 EU Industrial R&D Investment Scoreboard
DG JRC / DG RTD, European Commission*

Table 4.5. Main R&D-Investing Sectors in 2005 for EU and non-EU *Scoreboard* companies.

| Sector name ICB (ranked by the sector's proportion of world R&D investment by the top 1338 <i>Scoreboard</i> companies) | EU 1000 | | non-EU 1000 | |
|--|------------------------------------|-----------------------|------------------------------------|-----------------------|
| | Sector share in R&D investment (%) | R&Dintensity 2005 (%) | Sector share in R&D investment (%) | R&Dintensity 2005 (%) |
| Technology hardware & equipment | 11.6 | 13.5 | 22.2 | 7.6 |
| Pharmaceuticals & biotechnology | 17.3 | 12.4 | 18.9 | 14.9 |
| Automobiles & parts | 23.0 | 4.5 | 14.8 | 4.0 |
| Electronics & Electrical Equipment | 6.9 | 5.3 | 7.6 | 4.5 |
| Software & computer services | 3.2 | 10.2 | 8.4 | 10.1 |
| Chemicals | 5.7 | 3.3 | 4.1 | 3.0 |
| Leisure goods | 2.2 | 7.5 | 5.1 | 6.9 |
| Aerospace & defence | 7.6 | 8.0 | 2.4 | 2.9 |
| General industrials | 0.8 | 1.5 | 3.2 | 2.2 |
| Industrial engineering | 3.9 | 3.0 | 2.0 | 2.4 |
| Health care equipment & services | 1.3 | 4.7 | 2.2 | 7.2 |
| Fixed line telecommunications | 3.1 | 1.4 | 1.1 | 1.9 |
| Oil & gas producers | 1.7 | 0.3 | 0.9 | 0.3 |
| Household goods | 0.8 | 1.7 | 1.1 | 2.4 |
| Food producers | 1.7 | 1.4 | 0.7 | 1.7 |
| Main 15 sectors | 90.9 | 3.7 | 94.7 | 4.5 |
| Other 21 sectors | 9.1 | 0.6 | 5.3 | 1.1 |
| Total 36 sectors | 100 | 2.5 | 100 | 3.9 |

Source: *The 2006 EU Industrial R&D Investment Scoreboard*
DG JRC / DG RTD, European Commission

The low average R&D intensity of the EU *Scoreboard* companies is also illustrated by the contribution of low R&D-intensive sectors, which is higher in the EU than elsewhere.

The lower overall average R&D intensity of the EU *Scoreboard* companies is also illustrated by the contribution of low R&D-intensive sectors, which represent more than 9% of total R&D investment in the EU as compared to 5% in the case of non-EU companies. If we recalculate the overall R&D intensity of the main 15 sectors, excluding oil & gas producers and fixed line telecommunications (characterised by huge net sales worldwide and low R&D intensity), the average R&D intensity becomes practically the same for both groups. As the results are for the entire sample of 1000 *Scoreboard* companies in each region, there could be a possible bias towards lower intensity in the EU due to the effect of company size. If we consider only the group of 338 EU companies of comparable size to the non-EU group, the average R&D intensity computed for the 13 main R&D-intensive sectors listed above is higher in the EU (5.8%) than elsewhere in the rest of the world.

Consequently, the low overall average R&D/Sales ratio of EU *Scoreboard* companies can be largely attributed to the differences in sector mix and not to intrinsically lower intensities among EU than non-EU firms within sectors. This finding will be further explored in chapter 5.

4.3. Financial and employment indicators for *Scoreboard* companies by Sector

This section presents sector-average statistics for the 2005 *Scoreboard's* top 1338 companies on net sales, operating profits, employment, market capitalisation, and capital expenditure, focusing in particular on those sectors that occupy the top positions in the various rankings. We will also look at whether there any links between market capitalisation of the groups of firms in particular sectors and their total investment. A more detailed analysis of possible relationships between the financial indicators relating to these R&D investors is given in Chapter 6.

Sectors net sales

Table 4.6 shows the 6 main sectors ranked by their total net sales and average annual growth rate of sales in 2005.

Table 4.6. The 6 main sectors ranked by sector worldwide net sales of the top 1338 *Scoreboard* companies in 2005 and the sector average growth rates of net sales.

| Sector name ICB | Share in total net sales (%) | Net sales (€bn) | AGR 2005/ 2004 (%) |
|--|------------------------------|-----------------|--------------------|
| Oil & gas producers | 15.7 | 1604 | 16.5 |
| Automobiles & parts | 14.9 | 1515 | 7.6 |
| Technology hardware & equipment | 8.3 | 849 | 10.4 |
| Electronic & electrical equipment | 5.6 | 568 | 9.7 |
| Chemicals | 5.2 | 528 | 12.9 |
| Pharmaceuticals & biotechnology | 4.4 | 453 | 6.9 |
| Total 6 sectors | 54.1 | 5516 | - |

*Source: The 2006 EU Industrial R&D Investment Scoreboard
DG JRC / DG RTD, European Commission*

With the exception of the oil & gas producers (the sector with the largest sales) the other five sectors are among those making the largest overall R&D investments. The presence in a regional (or country) group of many firms belonging to these sectors will influence those indicators which depend on net sales, e.g. in the EU, the proportion of oil & gas producers in total net sales is higher than in other regions, lowering the average R&D intensity and possibly the average market capitalisation ratio for the entire population of EU *Scoreboard* companies.

The sectors that experienced the fastest rates of growth in net sales (all above 10%) were retailers, oil & gas and oil equipment producers, mining companies, banks, support services, mobile telecommunications and chemicals. None of these sectors belong to the R&D-intensive group.

Employment by sectors

Table 4.7 shows the top 10 sectors in terms of the total **number of employees**, together with their growth rate and the average R&D expenditure/employee ratio.

The table is limited to sectors for which the total number of employees in the *Scoreboard* companies was calculated to exceed a million. The sector with the largest number of employees is automobiles & parts. This is also the second largest sector by net sales and the third largest by R&D investment. Although it is not on the list of R&D-intensive sectors, these figures underscore its importance. With the exception of software

The sectors with the largest sales are in most cases also those with the largest overall R&D investments.

& computer services, all the sectors accounting for large proportions of total R&D investment are also among the top 10 in terms of employee numbers.

Table 4.7. The 10 main sectors ranked by total employment in 2005 and the sector average growth rates of employment, for top 1338 *Scoreboard* companies

| Sector name ICB | Share in total employment | Employment (thousands) | Employment AGR 2005/2004 (%) | Average Sector R&D/Employee (€) |
|--|---------------------------|------------------------|------------------------------|---------------------------------|
| Automobiles & parts | 14.3% | 4 783 | 5.0 | 13 357 |
| Electronic & electrical equipment | 8.8% | 2 930 | 0.9 | 23 879 |
| Technology hardware & equipment | 7.2% | 2 425 | 4.3 | 11 061 |
| General industrials | 5.1% | 1 691 | 1.6 | 5 413 |
| Oil & gas producers | 4.8% | 1 604 | -0.1 | 2 615 |
| Fixed line telecommunications | 4.4% | 1 479 | 0.4 | 4 339 |
| Aerospace & defence | 4.4% | 1 477 | 7.8 | 10 002 |
| Pharmaceuticals & biotechnology | 4.2% | 1 397 | 1.2 | 48 245 |
| Industrial engineering | 4.1% | 1 365 | 0.8 | 6 601 |
| Chemicals | 4.0% | 1 345 | -1.4 | 12 395 |
| Total 10 sectors | 61.2% | 20 496 | - | - |

*Source: The 2006 EU Industrial R&D Investment Scoreboard
DG JRC / DG RTD, European Commission*

All the sectors accounting for large proportions of total R&D investment are also among the top 10 in terms of employee numbers.

One positive feature in 2005 is that worldwide the *Scoreboard* companies show growth in employee numbers, with most sectors registering growth rates ranging between 1% and 4%. However, two of the top 10 sectors, namely chemicals and oil & gas producers, registered negative or zero employment growth. In the case of the chemicals sector, this was due to the restructuring at Bayer, following the acquisition of Schering.

The variation between sectors in terms of the R&D/employee ratio is wide, ranging from €500 per employee (industrial transportation) to more than €47 000 per employee (pharmaceuticals & biotechnology). Whereas nine sectors show average R&D/employee ratios above €10 000, the investment per employee decreases rapidly with sector rankings, with only technology hardware & equipment and software & computer services maintaining ratios above €20 000 per employee. Interestingly the sector average R&D/employee ratios for automobiles & parts, chemicals and aerospace is higher than in R&D intensive sectors, such as electronics & electrical equipment or health-care equipment & services.

Profitability by sector

Profitability (measured as the ratio of operating earnings to net sales) remained high in 2005 and average sector rates changed little from the levels registered in 2004 for the majority of sectors represented in the *Scoreboard*. Profitability decreased slightly in 2005 in automobiles & parts (from 5.4% to 4.3%) as well as in electronics & electrical equipment (from 6.8% to 6%) and leisure goods (from 7.5% to 4.5%). In pharmaceuticals & biotechnology, software & computer services, health care equipment & services and technology hardware & equipment the positive trend from last year

continued in 2005, but there are signs of stagnation. The sectors with the highest profitability rates (as of the 2005 financial year) in the list of top 1338 Scoreboard R&D investors are presented in table below. There are various reasons for profitability to be high, depending on the specific features of each sector: barriers to entry may impede competition in banking and the financial sector, or in fixed line telecommunications; booming world oil prices are temporarily increasing revenues of oil & gas producers and raising demand for the products of oil equipment manufacturers.

| | |
|-------------------------------------|-------|
| Banks + Other financials | 33% |
| Mining | 27% |
| Pharmaceuticals & biotechnology | 20% |
| Software & computer services | 18% |
| Fixed line telecommunications | 17% |
| Oil & gas producers + Oil equipment | 16.5% |
| Health care equipment & services | 16% |

Automobiles & parts (4.3%), electronic & electrical equipment (6%) and leisure goods (4.5%) are among the least profitable sectors, while mobile telecommunications is the only sector which registered negative total operating earnings in 2005, due to the losses made by the biggest R&D investor in this sector worldwide (Vodafone, UK).

The least profitable sectors are automobiles & parts, electronic & electrical equipment and leisure goods.

Market capitalisation

As value added data are only available for EU companies²³, the ratio of market capitalisation to net sales (MC/Sales) is used to assess the valuation placed on *Scoreboard* companies by financial markets in this analysis. The sector average MC/Sales ratio computed for 2005 data is summarised in Table 4.8 together with the direction of change in the average sector market capitalisation over the previous year. The sectors are shown in descending order of MC/Sales ratio. The table also contains the sector average ratio of capital expenditure to net sales.

The sectors with the highest average R&D intensity (e.g. pharmaceuticals & biotechnology, software & computer services, health-care equipment & services) also have average sector MC/Sales ratios of over 3. The market capitalisation indicator for sectors with low MC/Sales ratio (below or close to 1) continued to increase in 2005 (aerospace & defence, automobiles & parts, chemicals, electronics & electrical equipment, industrial engineering, electricity, oil & gas producers). The very significant drops registered by companies in software & computer services, health care and general retailing are due to the reduction in capitalisation by several leading firms operating in these sectors (Microsoft, IBM, Medtronic, Amazon.com, eBay and Yahoo!).

Is the market capitalisation ratio related to R&D investment behaviour or to overall investment (including R&D and fixed capital)? It is possible that there may be a relationship, as a firm's real constraint is the availability of funding for its total investment, whereas the balance between R&D and fixed capital remains strictly an internal decision of the firm, as was discussed in section 4.1.3. Figure 4.2 shows the relative position of sectors in a diagram plotting market capitalisation to sales ratio against total investment to net sales ratio (R&D investment plus capital expenditure, as a percentage of net sales).

The sectors with the highest average R&D intensity also have the highest average sector ratios of market capitalisation to sales.

²³ US and Japanese companies follow US GAAP which does not require companies to disclose sufficient information to allow VA to be calculated.

Table 4.8. Market capitalisation to net sales ratio for top 1338 *Scoreboard* companies by sector, in 2005.

| Sector | MC/Sales in 2005 | Change in MC 2005/2004 | Capex/Sales in 2005 (%) |
|-----------------------------------|------------------|------------------------|-------------------------|
| Pharmaceuticals & biotechnology | 3.80 | ↑ | 5.0 |
| Software & computer services | 3.28 | ↓↓ | 4.3 |
| Health care equipment & services | 2.74 | ↓↓ | 5.2 |
| Oil equipment | 2.92 | ↑↑ | 6.1 |
| General retailers | 1,72 | ↓↓ | 3.7 |
| Personal goods | 1.70 | ↑ | 4.2 |
| Household goods | 1.67 | ↑ | 3.3 |
| Technology hardware & equipment | 1.56 | ↓ | 5.6 |
| Food producers | 1.47 | ↑ | 3.7 |
| General industrials | 1.31 | ↓ | 5.7 |
| Media | 1.31 | ↔ | 6.3 |
| Fixed line telecommunications | 1,26 | ↓ | 12.2 |
| Electronic & electrical equipment | 1.08 | ↑ | 8.5 |
| Leisure goods | 1.10 | ↓ | 4.4 |
| Oil & gas producers | 1.03 | ↓ | 6.9 |
| Chemicals | 0.99 | ↔ | 5.5 |
| Industrial engineering | 0.97 | ↑ | 4.1 |
| Aerospace & defence | 0.95 | ↔ | 3.0 |
| Electricity | 0.88 | ↑ | 11.9 |
| Automobiles & parts | 0.45 | ↑ | 6.5 |

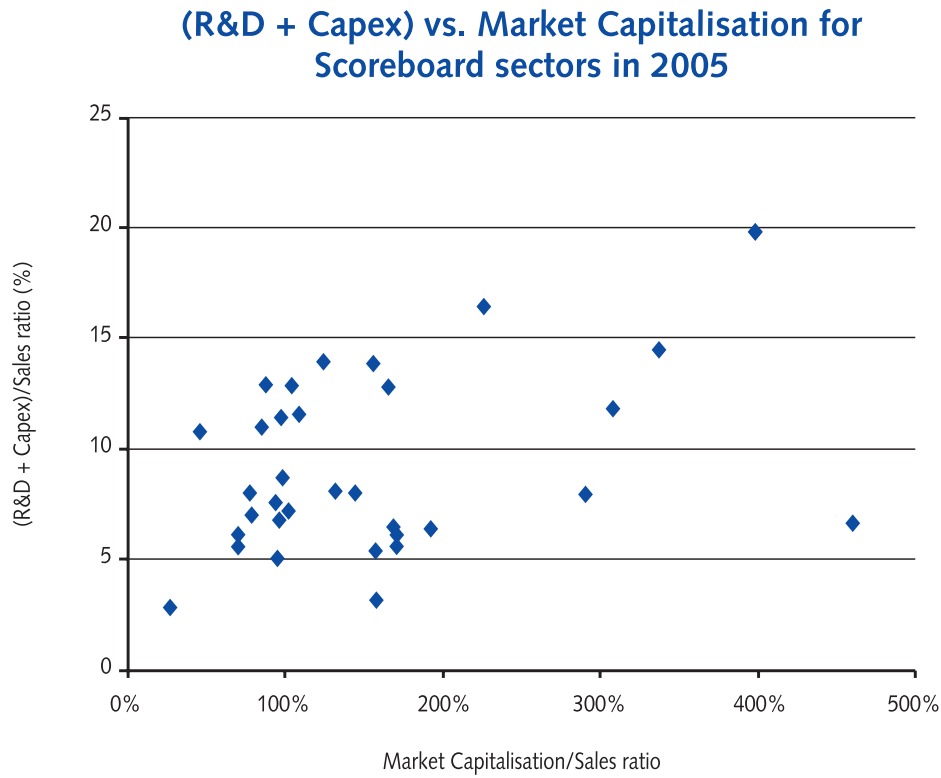
Source: *The 2006 EU Industrial R&D Investment Scoreboard*
 DG JRC / DG RTD, European Commission

The analysis shows that *Scoreboard* companies operating in sectors characterised by a high ratio of market capitalisation to net sales also have high total investment rates.

The graph shows a possible positive correlation between the market capitalisation and the (R&D + Capex)/Sales ratio, a fact which is confirmed by the correlation analysis²⁴. We may then conclude that the *Scoreboard* companies operating in sectors generally characterised by their high ratio of market capitalisation to net sales also have high total investment rates (R&D investment and fixed capital expenditure together).

24 The correlation coefficient is 0.35, all sectors being taken into account for the statistics.

Figure 4.2. Sector average (R&D investment + capital expenditure)/Sales ratio vs. sector average market capitalisation/Sales ratio in 2005



Note: The graph shows only 33 sectors (points) out of all 36 sectors which are represented among the 1338 Scoreboard firms of comparable R&D size, due to the lack of information concerning fixed capital for three sectors grouping only a few firms.

*Source: The 2006 EU industrial R&D Investment Scoreboard
DG JRC / DG RTD, European Commission*

Chapter 5 – R&D in the EU and the world

This chapter compares the overall R&D performance in 2005 of the *Scoreboard* companies according to the location of their registered office in the main world regions. As in last year's *Scoreboard*, the companies are grouped into four main world regions: the European Union, the United States, Japan, and the Rest of the World (a category that includes companies from the non-EU part of Europe, along with those from South Korea, Canada, China, Brazil, Australia, Israel, South Africa, etc.). A special section is devoted to EU *Scoreboard* companies grouped by the location of their registered offices in different EU Member States.

KEY FINDINGS

Although all regions experienced growth in the overall R&D investments by their corresponding *Scoreboard* companies in 2005 over the previous year, the share of EU and Japanese companies in the total R&D investment reported in the *Scoreboard* declined.

In all regions, the average R&D intensity dropped in 2005, due to faster growth in net sales than in R&D investments. The most significant drop in R&D intensity was noted among the group of EU companies (from 3.3% to 2.9%).

Splitting the *Scoreboard* sectors in four groups according to R&D intensity (high, medium, low and very low), it is observed that the EU companies have higher average R&D intensities than the US companies in the four groups. However, the overall average R&D intensity of firms in the EU is much lower. This is due to the presence of big companies operating in sectors that are not R&D-intensive and account for significantly higher shares of net sales than R&D investment.

There was a narrowing of the gap between the profitability (operating profit/net sales) of EU *Scoreboard* firms' and that of their competitors based in the US and the Rest of World. Average profitability for EU *Scoreboard* companies reached 11% in 2005, compared to 12% in US and 14% in the rest of the world (except Japan).

The average total investment rates (as a proportion of net sales) in all the four main regions remained almost constant (smaller in the US and higher for companies in the rest of the world), as both overall net sales and investment of *Scoreboard* companies in the main world regions grew at similarly high rates in 2005. On average, capital expenditures grew by more than R&D investment.

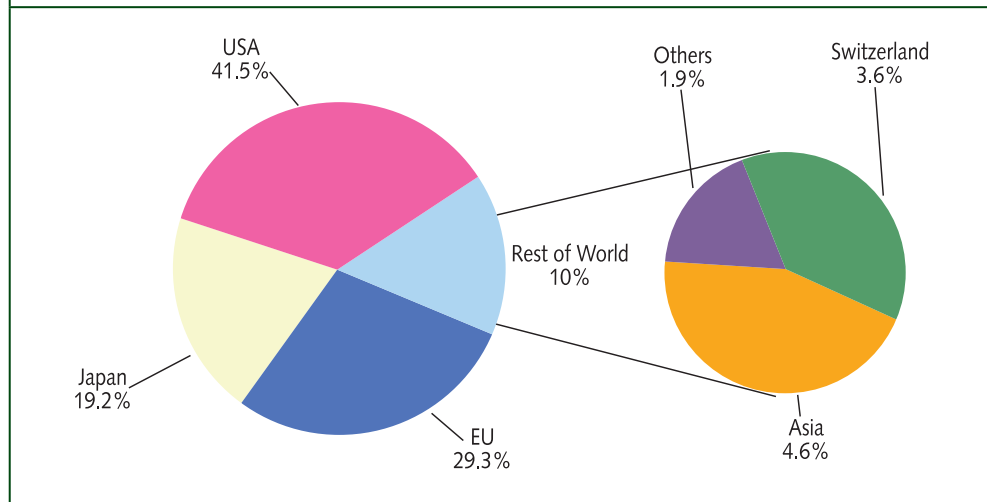
In many EU Member States (but not in Germany) the average annual growth in 2005 of both R&D and net sales by *Scoreboard* firms was higher than among their US or Japanese counterparts. Average profitability was also higher than or close to the US figure (12%) in many of the large EU Member States' economies.

More than 20% of the lower 300 EU *Scoreboard* firms operate in software & computer services; their cumulated share of the total R&D investment of these 300 firms is also close to 20%.

5.1. R&D Investment Performance of *Scoreboard* Companies by Main World Regions

The breakdown of R&D investment by the 1338 *Scoreboard* companies in the same R&D-size range (1000 non-EU and 338 EU companies), by main world region, is shown in Figure 5.1.

Figure 5.1. The breakdown by main world region of R&D investment by the top 1338 companies in 2005 (% of total €364.3bn).



Source: *The 2006 EU industrial R&D Investment Scoreboard*
DG JRC / DG RTD, European Commission

All world regions saw growth in the overall R&D investments by their *Scoreboard* companies. However, the share of EU and Japanese companies in total *Scoreboard* R&D investment decreased.

Although all world regions experienced positive growth in the overall R&D investments by their *Scoreboard* companies (compared to 2004), the share of EU and Japanese companies in total *Scoreboard* R&D investment decreased (by 2% and 2.7%, respectively). The increased share of the US (and Rest of the World) firms is a result of the higher real growth rates and the effect of the appreciation of the dollar against the euro (see Box 2.1 for details). The increased share of US companies in total R&D investment by 3.5% is also a consequence of the presence of a larger proportion of US firms at the bottom end of the enlarged *Scoreboard* list. The changes registered in 2005 in the proportions of worldwide R&D investment accounted for by regional groups of *Scoreboard* companies continue the trends of the last 5 years.

Table 5.1 provides several R&D-related indicators for the comparable groups of companies in different world regions. By increasing the number of companies in the 2006 *Scoreboard*, the average R&D investment per company decreased in each regional group by up to 20% and the average R&D intensity dropped as well. The most significant drop in R&D intensity was noted among the group of EU companies, with a decrease from 3.3% (EU242) in 2004 to 2.9% (EU338) in 2005.

The top EU R&D investors showed the weakest performance in the trend of total employee numbers (0.9%) in 2005 because several major companies (particularly in the chemicals sector) significantly reduced their workforce.

As a result of good business performance over the last two years, the compound annual growth rates of R&D investment and of net sales were positive in all regions, with double digit figures for the US and Rest of the World groups of *Scoreboard* firms.

With the increase in the number of *Scoreboard* firms, any trend analysis will be affected by a structural effect, due to the change in composition, as well as a growth effect deriving from the business performance of the individual firms. Although it is difficult to accurately separate the two effects, a detailed look at the performance of individual firms (see the tables in the *Scoreboard* dataset) can offer a better guidance in differentiating between the growth and composition effects in the case of each regional group of firms.



Table 5.1. Overall comparison of *Scoreboard* companies, by main world region, in 2005.

| FACTOR | EU | USA | Japan | Rest of World |
|---|-------|--------|--------|---------------|
| Number of companies | 338 | 587 | 237 | 176 |
| R&D Investment [R&D] (€bn) | 106.6 | 151.1 | 70.1 | 36.5 |
| Change of R&D over previous year (%) | 5.3 | 8.1 | 4.1 | 12.8 |
| R&D CAGR for Last 3 years (%) | 1.8 | 7.0 | 3.0 | 13.5 |
| R&D / Net Sales ratio (%) | 2.9 | 4.4 | 3.7 | 3.0 |
| Change of Net Sales over previous year (%) | 6.5 | 10.8 | 6.1 | 16.7 |
| (R&D + Capex)/ Net Sales (%) | 9.5 | 8.9 | 10.3 | 14.2 |
| R&D/Capex index | 0.44 | 0.97 | 0.56 | 0.27 |
| R&D / Employee (€) | 8 179 | 14 538 | 11 335 | 6 058 |
| Change in No. Employees over previous year (%) | 0.9 | 4.2 | 3.3 | 3.8 |
| Operating Profit / Net Sales (%) | 11.0 | 12.0 | 6.9 | 14.4 |
| Market Cap / Net Sales (%) | 111 | 159 | 95 | 148 |
| <i>Note: Capex = capital expenditure. Source: The 2006 EU Industrial R&D Investment Scoreboard DG JRC / DG RTD, European Commission</i> | | | | |

A clear growth effect, for example, can be seen in how profitability has changed, as this is generally less affected by size and more dependent on the business cycle. All three major economies showed a further improvement in 2005 in their average ratio of operating profits to net sales. As, at 1.1%, the average profitability increase was highest for EU companies the profitability gap with competitors based in the US and the Rest of World narrowed. The drop in the case of companies in the Rest of World is largely a consequence of the increase in the total number of companies listed, with several firms operating in sectors with lower average profitability rates.

Another finding, common to all the regions, is the increase in the fixed investment rate (i.e. the ratio of fixed capital expenditure to net sales), which was more evident for EU and Japanese firms. This increase offset the decrease in R&D intensity, resulting in almost constant average total investment rates (the sum of R&D investment and capital investment calculated for all the *Scoreboard* companies in a region) in all the four main regions. Considering the high growth rates for overall net sales in 2005, this means that the total investment grew at practically the same rate. However, capital expenditures increased by more than R&D, thus leading to a fall in the R&D/Capex index in all the regions and showing a preference on the part of *Scoreboard* companies for applying innovations during years of strong growth.

The total investment ratios shown in Table 5.1 do not differ significantly among the companies based in the three main economies (EU, US and Japan) which means that the world's largest R&D investors behave similarly towards innovation. However, when comparing the R&D/Capex index, one could say that the US *Scoreboard* companies have a stronger specialisation in producing innovation while the others have a stronger propensity to invest in fixed capital. This is the result of a larger share of companies operating in R&D intensive sectors on the US list.

All three major economies (the US, EU and Japan) showed an improvement in 2005 in their average ratio of operating profits to net sales.

Capital expenditures increased by more than R&D, thus leading to a fall in the R&D/Capex index in all the regions. This suggests *Scoreboard* companies are more likely to apply innovations during years of strong growth.

Automobiles & parts and technology hardware & equipment are sectors of specialisation for all the main world economies.

There is a clear specialisation among EU and US companies in pharmaceuticals and US firms in software & computer hardware.

5.1.1. Top Scoreboard Companies in the Main World Economies

Each world region is considered to be specialised²⁵ in a number of sectors based on its having a higher proportion of large R&D investors (with their registered offices in the region concerned) operating primarily in these sectors. Tables 5.2 to 5.4 show the top 10 companies in each of the three main world economies (EU, USA and Japan), ranked by their R&D investments. The tables show the volume of their R&D investment in 2005 and their position in the ranking 10 years ago²⁶. Automobiles & parts and technology hardware & equipment are sectors of specialisation for all the main world economies (more in the EU and Japan than in the US). We find three large firms in pharmaceuticals in the EU and the US and none in the Japanese top 10. The specialisation at top of the EU and the US companies in pharmaceuticals and of the US firms in software & computer is clear. Moreover, the presence of three firms in the electronics & electrical sector (generally showing lower R&D intensities than the firms in pharmaceuticals) and one in fixed line telecommunications could explain the lower average R&D intensity of the top 10 Japanese companies.

Table 5.2. The top 10 EU companies by their R&D investment in 2005.

| No | Company name | Country | Sector of activity | R&D investment (€bn) | Rank in 1995 |
|--|-----------------|---------|-----------------------------------|----------------------|--------------|
| 1 | DaimlerChrysler | Germany | Automobiles & parts | 5.65 | 2 |
| 2 | Siemens | Germany | Electronic & electrical equipment | 5.16 | 1 |
| 3 | GlaxoSmithKline | UK | Pharmaceuticals & biotechnology | 4.56 | 9 |
| 4 | Volkswagen | Germany | Automobiles & parts | 4.08 | 5 |
| 5 | Sanofi-Aventis | France | Pharmaceuticals & biotechnology | 4.04 | - |
| 6 | Nokia | Finland | Technology hardware & equipment | 3.98 | 30 |
| 7 | BMW | Germany | Automobiles & parts | 3.12 | - |
| 8 | Robert Bosch | Germany | Automobiles & parts | 2.93 | 11 |
| 9 | AstraZeneca | UK | Pharmaceuticals & biotechnology | 2.86 | 20 |
| 10 | Ericsson | Sweden | Technology hardware & equipment | 2.73 | 6 |
| Total R&D investment of top 10 | | | | €39.1 bn | |
| Share of top10 in total EU338 companies (comparable at world level) | | | | 36.7% | |
| <i>Note: “-” in the last column means that no data are available for 1995.</i> | | | | | |
| <i>Source: The 2006 EU Industrial R&D Investment Scoreboard DG JRC / DG RTD, European Commission</i> | | | | | |

The range of R&D investment from the first to tenth company in US list (€6.8 to 3bn) is higher than that for EU companies (€5.7 to 2.7bn) and Japanese companies (€5.4 to 2bn). The overall R&D investment by the top 10 companies also reveals differences of the same order (US on top, followed by the EU and Japan). This is partially due to the appreciation of the US dollar in 2005 thus increasing the relative value of US companies' R&D investments compared to R&D investments by companies in other currency regions.

²⁵ Specialisation in one sector means that the group of companies in one region shows a higher proportion of total R&D investment accounted for by the cumulated R&D invested by firms operating in the given sector.

²⁶ According to the figures published in the UK Department of Trade and Industry's (DTI) 1996 R&D Scoreboard.

| No | Company name | Sector of activity | R&D investment (€bn) | Rank in 1995 Scoreboard |
|--|-------------------|---------------------------------|----------------------|-------------------------|
| 1 | Ford Motor | Automobiles & parts | 6.78 | 2 |
| 2 | Pfizer | Pharmaceuticals & biotechnology | 6.31 | 8 |
| 3 | General Motors | Automobiles & parts | 5.68 | 1 |
| 4 | Microsoft | Software & computer services | 5.58 | 26 |
| 5 | Johnson & Johnson | Pharmaceuticals & biotechnology | 5.35 | 7 |
| 6 | IBM | Software & computer services | 4.56 | 4 |
| 7 | Intel | Technology hardware & equipment | 4.36 | 16 |
| 8 | Merck | Pharmaceuticals & biotechnology | 3.26 | 11 |
| 9 | Motorola | Technology hardware & equipment | 3.12 | 6 |
| 10 | Hewlett-Packard | Technology hardware & equipment | 2.96 | 5 |
| Total R&D investment of top 10 | | | €48.0 bn | |
| Share of top 10 in total USA-587 companies | | | 31.7% | |
| <i>Source: The 2006 EU Industrial R&D Investment Scoreboard DG JRC / DG RTD, European Commission</i> | | | | |

| No | Company name | Sector of activity | R&D investment (€bn) | Rank in 1995 |
|--|---------------------|-----------------------------------|----------------------|--------------|
| 1 | Toyota Motor | Automobiles & parts | 5.42 | - |
| 2 | Matsushita Electric | Electronic & electrical equipment | 4.06 | 2 |
| 3 | Sony | Electronic & electrical equipment | 3.82 | 7 |
| 4 | Honda Motor | Automobiles & parts | 3.36 | 8 |
| 5 | Hitachi | Technology hardware & equipment | 2.91 | 1 |
| 6 | Nissan Motor | Automobiles & parts | 2.86 | - |
| 7 | Toshiba | Technology hardware & equipment | 2.50 | 5 |
| 8 | NTT | Fixed line telecommunications | 2.28 | 4 |
| 9 | Canon | Electronic & electrical equipment | 2.06 | 10 |
| 10 | NEC | Technology hardware & equipment | 1.98 | 6 |
| Total R&D investment of top 10 | | | €31.2 bn | |
| Share of top 10 in total Japan-237 companies | | | 44.6% | |
| <i>Note: "-" in the last column means that no data are available for 1995. Source: The 2006 EU Industrial R&D Investment Scoreboard DG JRC / DG RTD, European Commission</i> | | | | |

The group of top 10 EU R&D investors have lower rates of growth in R&D investment last year (2.7%). Nevertheless, the EU companies at the top of their rankings still have the highest average R&D intensity (7.3%, compared to 7.2% in the US and 5% in Japan) out of all the top 10 groups of R&D investors in other major economies. The same conclusion is valid for the top 50 world R&D investors, as was already mentioned in chapter 3. This confirms that the top EU R&D investors show at least the same R&D performance as their competitors from elsewhere in the world, despite the fact that their main specialisation seems to be in automobiles & parts. We may conclude that the reason for the existing global R&D gap between the EU and the US (as the main world

research and innovation producer) is that there are fewer small companies operating in R&D intensive sectors in the EU than in the US (and generally, than in the rest of the world).

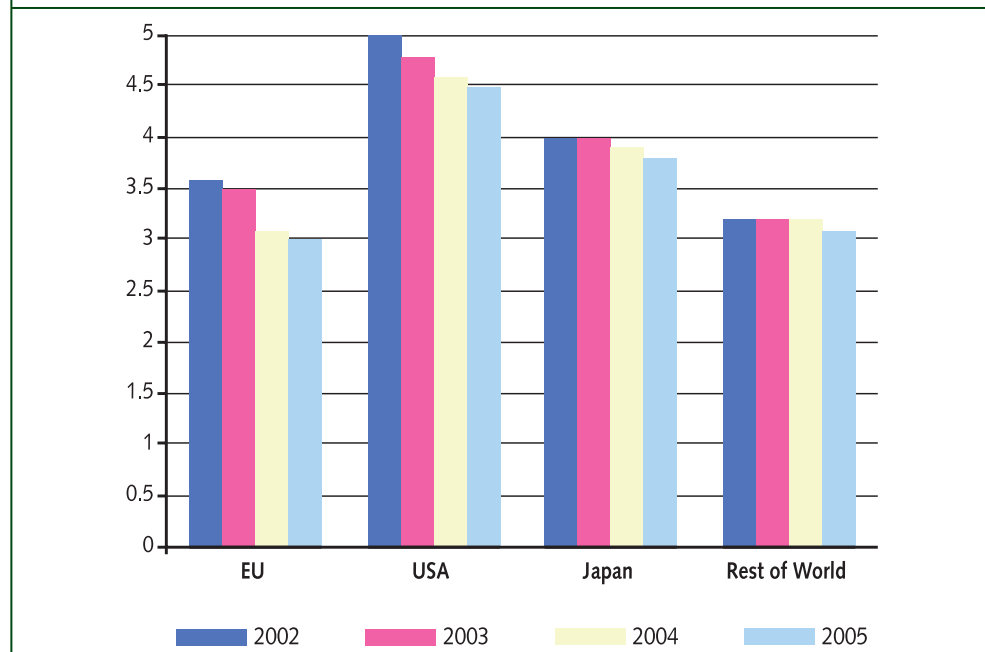
EU companies at the top of their rankings still have the highest average R&D intensity.

Net sales grew much faster than R&D investments in practically all regional groups, resulting in a clear trend towards diminishing R&D intensity.

5.1.2. Trends in R&D Intensity among *Scoreboard* Companies in each of the Main World Regions

As was mentioned in chapter 2, the last three years were particularly good for *Scoreboard* companies in terms of both net sales and R&D investment, resulting in positive growth rates for each region in all years (the only exception is the EU group of top 1000 R&D investors in 2004, with respect to their research investment). However, as net sales grew much faster than R&D investments, there is a clear trend of diminishing R&D intensity for practically all regional groups. This is shown in Figure 5.2.

Figure 5.2 The R&D intensity for the top 1338 *Scoreboard* companies, by main world region, during 2002-2005 (%)

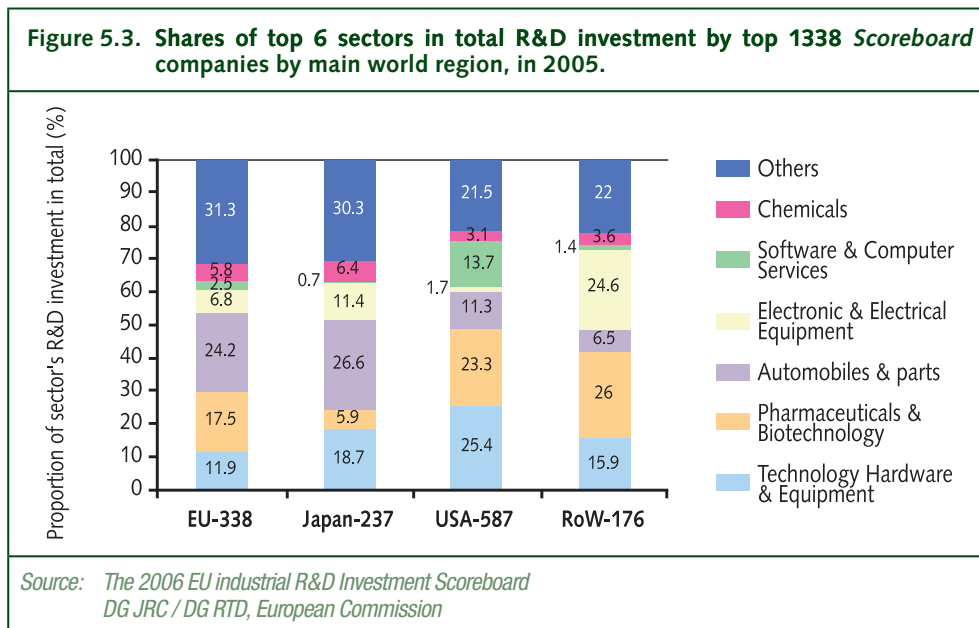


Source: *The 2006 EU industrial R&D Investment Scoreboard*
DG JRC / DG RTD, European Commission

The biggest drop in average R&D intensity in 2005 was among the EU companies, although this may be a consequence of exchange rate fluctuations. In 2005, the appreciation of the US dollar drove up the value of overseas sales by EU-based firms in euro terms. While sales outside the euro area accounted for an important proportion of their overall net sales, there was a smaller increase in their worldwide R&D investment, which is still financed to a much larger extent on the EU research market. This effect would go some way towards explaining the decrease in average R&D intensity.

5.2. R&D Investment and Related Indicators for the *Scoreboard* Companies by Main World Region and Major Sectors

Figure 5.3 looks at the aggregate figures for the top 1338 *Scoreboard* companies. It shows significant differences in the proportions of the six largest sectors in total R&D investment by the main world regions. Between two-thirds and four fifths of total R&D investment is accounted for by these six sectors, independent of region.



Between two-thirds and four fifths of total R&D investment is accounted for by the six largest sectors, independent of region.

This picture is similar to that reported last year if we take into account the change in sector classification. The EU 338 and Japanese 237 companies have a considerably higher proportion of their R&D investment outside the six largest sectors – 31% and 30%, respectively, compared to 21% for the US companies or 22% for the firms in the Rest of the World category. This suggests that R&D in the EU and in Japan is less concentrated in particular sectors than in other main world regions. This may be the consequence of the EU “running out” of the large companies operating in R&D intensive sectors (sectors like technology hardware & equipment or biotechnology are less well represented at the bottom of the EU *Scoreboard* list, leaving “room” for companies in other sectors).

Specialisation by sector in each of the regions remains unchanged since the last *Scoreboard*, and gives an image of the “strengths and weaknesses” of these main economies (in terms of the number of companies investing in research and the relative share of sector R&D investment by these firms in each region’s total R&D investment). EU and Japanese companies appear to be more specialised in automobiles & parts than US firms, with a double digit share accounted for by these companies in total R&D. Companies registered in the US are specialised in technology hardware & equipment, but also in pharmaceuticals & biotechnology. This sector also concentrates R&D investments in the Rest of World (in particular, Switzerland) and less in the EU. Asian companies (South Korea, Taiwan and Japan) tend to specialise in electronics & electrical equipment. The share of US companies operating in software & computer services is more than five times higher than the equivalent for EU firms and ten times the share in other regions.

The share of US companies operating in software & computer services is more than five times higher than the equivalent for EU firms and ten times the share in other regions.

There was an increase in the number of EU companies in software & computer services and in pharmaceuticals & biotechnology in 2005.

As might be expected, the degree of concentration has dropped as the number of *Scoreboard* companies has been increased, as this has meant more sectors are now represented on the two lists of R&D investors. However, it is worth noting the increase in the number of EU companies in software & computer services and in pharmaceuticals & biotechnology in 2005, which means there are relatively more companies from these R&D-intensive sectors in the enlarged EU *Scoreboard* list. The same is true for the US companies in pharmaceuticals & biotechnology.

5.2.1. Sector Group Analysis for the *Scoreboard* Companies by Main World Region

This section analyses the top 1338 *Scoreboard* companies by combining all sectors into four broad groups, each group containing a set of sectors that present average R&D intensities within a certain range. The content of each group is as follows:

- Group 1 - High R&D intensity sectors, having an average R&D intensity (computed for the 1338 *Scoreboard* companies) of more than 5%. These sectors are: pharmaceuticals & biotechnology, health care equipment & services, electronics & electrical equipment, technology hardware & equipment, software & computer services and leisure goods.
- Group 2 - Medium R&D intensity sectors, for which companies have an average R&D intensity of between 2% and 5%: automobiles & parts, aerospace & defence, industrial engineering & machinery, chemicals, personal goods, household goods, general industrials, support services and general retailers.
- Group 3 - Low R&D intensity sectors with an R&D intensity of between 1% and 2% (examples being food producers, beverages, travel & leisure, media, oil equipment, electricity and fixed line telecommunications).
- Group 4 - Very low R&D intensity sectors with an R&D intensity generally below 1% (examples are oil & gas, industrial metals, construction & materials, food & drug retailers, transportation, mining, tobacco and multi-utilities).

The aim of the analysis is to identify (separately for each major world economy and the Rest of the World) the proportions of R&D investment in each of the four groups and the R&D intensity of each individual group and hence to explain the reasons for the differences in R&D intensity between groups of companies in the various regions. Table 5.5 shows these proportions of total *Scoreboard* R&D investment, based on 2005 data, together with the average R&D intensity for each group.

The US companies have over two thirds of their R&D investment allocated to the high R&D-intensive group 1. Only a very small proportion of US R&D by *Scoreboard* companies is in the low and very low R&D-intensity groups (groups 3 and 4).

Companies in Japan and in the Rest of the World concentrate their overall R&D investments almost equally in Group 1 and in Group 2. They have a significantly higher R&D intensity than the US companies in Group 2. However, this is more than offset by their much lower share than the US companies in Group 1. The main weakness of the Japanese companies listed in the *Scoreboard* resides in the small proportion of companies operating in pharmaceuticals & biotechnology and software & computer & services, which lowers the Japanese average overall R&D intensity to the level of the EU companies.

Table 5.5. R&D intensity and share of R&D investment for the four Sector Groups of top 1338 Scoreboard companies by main world region*

| <i>World</i> | Group 1 | | Group 2 | | Group 3 | | Group 4 | | Overall Intensity |
|------------------|------------------|--------------|------------------|--------------|------------------|--------------|------------------|--------------|--------------------------|
| <i>region</i> | Intensity | Share | Intensity | Share | Intensity | Share | Intensity | Share | |
| EU-338 | 12.4 | 35.4 | 4.3 | 51.5 | 1.6 | 7.3 | 0.4 | 5.9 | 2.9 |
| Japan-237 | 6.0 | 40.4 | 4.0 | 50.5 | 1.6 | 6.1 | 0.9 | 3.1 | 3.7 |
| USA-587 | 11.0 | 67.5 | 3.0 | 29.3 | 1.4 | 1.3 | 0.3 | 2.0 | 4.4 |
| RoW-176 | 9.3 | 44.0 | 3.5 | 42.9 | 1.3 | 5.3 | 0.7 | 7.8 | 3.0 |

*Group 1 = High R&D-intensity (> 5%); Group 2 = Medium R&D-intensity (2% to 5%);
Group 3 = Low R&D-intensity (1% to 2%); Group 4 = Very low R&D-intensity (< 1%)
* Intensity= R&D as % of sales; Share= % of group R&D
Source: The 2006 EU Industrial R&D Investment Scoreboard
DG JRC / DG RTD, European Commission*

The EU Scoreboard companies have the lowest proportion of R&D investment in Group 1 but the highest proportion in Group 2. The EU, Rest of the World and Japan have a much higher proportion of R&D investment in Groups 3 and 4 compared to the US.

The paradox of this Scoreboard analysis is that although the EU companies have average R&D intensities that are higher than the US companies in each of the four sector groups, overall their average R&D intensity is the lowest, on aggregate, of all the top 1338 Scoreboard companies. The respective overall average ratio for the EU and the Rest of the World is considerably lowered by the very high proportions of Group 3 and 4 companies (a total of 13%), which are characterised by very low R&D intensities. This is due to the presence of big companies operating in utilities (transportation, multi-utilities, electricity), mining and oil & gas, which account for significantly higher shares of the region's aggregate net sales than of its total R&D investment.

The differences in the sector composition of R&D investment and of net sales - particularly in sectors with high R&D intensities such as technology hardware & equipment or software & computer services - account for much of the difference in the overall R&D intensity between the EU and the US Scoreboard companies of similar R&D investment size.

5.2.2. Financial and R&D-related Indicators for the Scoreboard Companies in each of the Main World Regions in the 6 Main Sectors

As discussed in the previous section, R&D specialisation in a given sector of one economy compared to other economies derives from its having a larger share of R&D investment and net sales (thus maintaining at least the same level of R&D intensity) in that sector than the world average. A large part of the R&D intensity differences between the main economies can be attributed to their relative specialisation by sector in the world economy.

Comparing the performance of Scoreboard companies is difficult when all the countries and companies are aggregated. Grouping companies by the sector of their declared main activity helps make it possible to extract more consistent findings on firms' research-investment behaviour. This section introduces some specific Scoreboard indicators computed as sector averages. Annex 5.A shows these indicators for each of the main 6 sectors in the case of each of the main world regions. A few findings are

Average R&D intensity in the EU is being held down by the presence of big companies operating in utilities (transportation, multi-utilities, electricity), mining and oil & gas, which account for significantly higher shares of the region's aggregate net sales than of its total R&D investment.

The differences in the sector composition of R&D investment and of net sales account for much of the difference in the overall R&D intensity between the EU and the US.

summarised below for each of the 6 main sectors (technology hardware & equipment, pharmaceuticals & biotechnology, automobiles & parts, electronics & electrical equipment, software & computer services and chemicals):

- As mentioned earlier in this section, the US shows a strong specialisation in technology hardware & equipment, as US *Scoreboard* companies account for more than half of the sector's overall R&D investment and almost half of the sector's total net sales. They also have the highest profitability and market capitalisation index compared to groups from other main world regions. Their average R&D intensity and R&D/employee figure is one of the highest, exceeded only by the EU group of companies, which, however, accounts for a much smaller proportion of world markets in this sector and has six times fewer firms than the US on the *Scoreboard* list. The most dynamic group in terms of growth rates in 2005 consisted of the firms in the Rest of the World category (mostly registered in Taiwan and Canada).

Average R&D intensity and R&D/employee among technology hardware & equipment companies is among the highest.

- The pharmaceuticals & biotechnology sector shows similar indicators and ratios for all main world regions. This could be a sign of a more homogeneous and competitive market worldwide. Profitability rates are very high, at around 20%, market capitalisation to sales indices are the highest of all sectors in all regions, and so are R&D intensities. US companies account for half of the *Scoreboard* companies in this sector and for half of the sector's R&D investment and net sales.

In the automobiles & parts sector, the EU firms account for the lion's share of net sales, R&D investment and employment.

- In the automobiles & parts sector, the EU firms account for the lion's share of net sales, R&D investment and employment. They also show the highest R&D intensity and capital expenditure to sales ratio compared to companies in the US, Japan or the Rest of the World. However, in terms of profitability and the market capitalisation to sales index, EU companies have recently been overtaken by Japanese and Korean companies, while their annual growth rates of R&D investment and net sales in 2005 were lower than in the other main world regions (except for the US).

- The specialisation of Japanese and South-east Asian firms (South Korea, Taiwan, Singapore, Hong-Kong) in electronics & electrical equipment is demonstrated by the fact that they account for 60% of the *Scoreboard's* overall net sales and R&D investment and their market shares are increasing, as in 2005 they registered the highest growth rates in employment, R&D and sales in these sectors. The Asian firms show the highest average fixed capital investment ratio and are increasing their market capitalisation rapidly.

The majority of the *Scoreboard* companies operating in software & computer services are based in the US.

- 93 of the 129 *Scoreboard* companies of similar R&D size operating in software & computer services are based in the US. The latter group accounts for more than 80% of the overall sector's R&D investment and for more than 70% of net sales. They have the highest average R&D intensity, the highest market capitalisation index and the highest profitability in 2005. The employment in this group of companies increased by more than 6% last year, the only economy with a better performance in terms of new jobs created in software firms being the EU.

- In 2005, US companies in the chemicals sector performed very well compared to the EU and Japanese ones. The US group now accounts for the largest share of the *Scoreboard* companies' net sales in chemicals, and is second from top (after EU firms) in overall R&D and employment. However, although their profitability improved, they still have the lowest R&D intensity.

5.3. The EU companies in the Scoreboard

This section discusses the relative weight of the groups of companies from different Member States in the overall R&D investment of the EU *Scoreboard* companies and also analyses the distribution of top R&D investors in each Member State by sector of activity.

5.3.1 Shares of Industrial R&D Investment by EU countries

The number of Member States represented in the 2006 EU Industrial R&D Investment *Scoreboard* list increased from 19 to 20 with an increase in the number of companies to 1000 from the 700 included last year. This illustrates the concentration of *Scoreboard* R&D investment in a few companies registered in a relatively small number of Member States, as only one firm from a country not previously represented on the *Scoreboard* was included in the 300 companies that were added. It may also be the consequence of a poorer disclosure of R&D for companies in the new Member States. There are only 10 Member States which account for more than 1% of total *Scoreboard* EU R&D investment, while the group of 3 main countries (Germany, United Kingdom and France) accounted for 72% of the total in 2005.

Scoreboard R&D investment is concentrated in a few companies registered in a relatively small number of Member States. Only one firm from a new country has been added to the *Scoreboard* by extending the list to 1000 companies.

Table 5.6. Proportions of R&D and sales in total by EU Member State and number of companies, in 2005

| EU Member State | Proportion of R&D in total | Proportion of sales in total | No of companies in SB06 |
|--------------------------|----------------------------|------------------------------|-------------------------|
| Germany | 34.1% | 26.3% | 167 |
| UK | 19.0% | 28.8% | 327 |
| France | 18.9% | 19.0% | 112 |
| <i>Subtotal DE+UK+FR</i> | <i>71.9%</i> | <i>74.1%</i> | <i>606</i> |
| The Netherlands | 7.5% | 3.9% | 44 |
| Sweden | 6.1% | 4.0% | 81 |
| Finland | 4.6% | 2.9% | 70 |
| Italy | 4.1% | 5.6% | 40 |
| Denmark | 1.9% | 1.3% | 37 |
| Belgium | 1.6% | 2.3% | 37 |
| Spain | 1.0% | 2.9% | 22 |
| Austria | 0.4% | 1.1% | 28 |
| Ireland | 0.35% | 0.4% | 12 |
| Luxembourg | 0.3% | 1.1% | 6 |
| Hungary | 0.1% | 0.02% | 3 |
| Greece | 0.05% | 0.04% | 6 |
| Slovenia | 0.04% | 0.01% | 1 |
| Poland | 0.02% | 0.16% | 2 |
| Portugal | 0.01% | 0.15% | 2 |
| Czech Republic | 0.01% | 0.12% | 2 |
| Slovakia | 0.01% | 0.01% | 1 |
| TOTAL EU | 100% | 100% | 1 000 |

Note: the additional 300 companies in the EU Scoreboard list account for 5.5% of total sales, but for only 1.2% of total R&D investment.
*Source: The 2006 EU Industrial R&D Investment Scoreboard
 DG JRC / DG RTD, European Commission*

Net sales are also concentrated, the *Scoreboard* companies from the three main R&D-investing countries accounting for 74% of total net sales, while a group of just 12 Member States have shares of over 1%. As a result there are large discrepancies between country averages in the case of many financial and R&D-related indicators. The average R&D investment per company also varies significantly from country to country due to the different national specialisations and different sizes of companies. Among those groups of firms registered in countries with shares of total R&D higher of over 1%, the average R&D per company ranges from €50 million (Belgium, Spain) to €230 million (Germany).

As in last year's *Scoreboard*, the UK has the largest number of companies in the top 1000. However, German companies account for a larger proportion of the total R&D investment (more than twice that of the UK) and French companies for practically the same share. This can be explained by the national disclosure rules and practices (UK firms, whether listed on the stock exchange or not, often have better disclosure than those in many continental EU countries) and by the intrinsic composition of the top list of EU R&D investors, with more companies from the UK in R&D intensive sectors. Nevertheless, there is a UK bias at the bottom end of the *Scoreboard* with 46% UK companies in the last 100²⁷. Comparing major EU economies we see that 41% of the bottom 400 EU *Scoreboard* companies are from the UK, 13% from Germany, and just 6% from France (compared to Sweden 7.5% and Finland 8%)²⁸.

The average R&D intensity also varies significantly, ranging from 0.9% for Spain to 4.8% for the Netherlands. Spain is represented in the *Scoreboard* by large firms operating in low R&D-intensive sectors, such as Telecoms services (Telefónica) or oil & gas (Repsol YPF), while the Netherlands is home to quite a few important players on world markets in R&D-intensive sectors (leisure goods, aerospace, technology hardware & equipment), such as Philips, EADS or ST Microelectronics. The highest R&D intensity is found in two new Member States, Hungary and Slovenia, due to the fact that these countries are represented by just a few firms in pharmaceuticals & biotechnology and software.

Nine companies from five new Member States (NMS) – the Czech Republic (1), Slovenia (1), Poland (2), Slovakia (1) and Hungary (3) – are included in the 2006 *Scoreboard*. These firms account for proportions of only 0.14% of total R&D investment and 0.32% of total net sales reported by the EU *Scoreboard* companies. Consequently, at 1.1%, the average R&D intensity is much lower for the NMS companies than for companies in the EU-15. However, the growth rate of R&D investment was higher in the last three years for the companies in the NMS (except for Poland) than in the EU-15.

5.3.2 Trends in R&D-related Indicators in EU member states

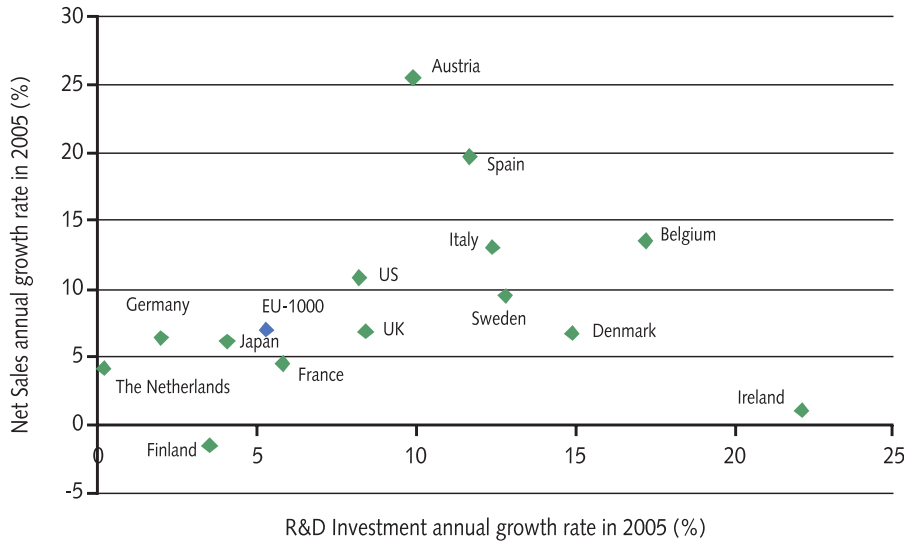
Average R&D intensity is much lower among companies from the New Member States than companies in the EU-15. However, their growth rate of R&D was higher in the last three years.

The overall lower R&D investment growth rate of EU companies in 2005, compared to the growth rates of other main economies, is mainly due to the modest performance of German firms, on aggregate. Overall R&D investment by the 167 German-based firms grew by only 2% last year. However, this average is the result of a reduction in research investment by a few large German R&D-investors, such as Daimler-Chrysler, Volkswagen, Bayer and BASF. In the case of the latter two firms, the reduction is related to business restructuring following large acquisitions. Other EU Member States have also shown impressive rates of growth in their *Scoreboard* companies' average R&D investment in 2005, some of them exceeding 8.2% (the US average), as is the case of UK (8.4%), Sweden (12.9%), Italy (12.7%), Spain (14.3%), Denmark (15%) and Belgium (18.9%).

27 Although disclosure is more difficult in some countries (e.g. Italy, France) improvements were noted this year in several countries (Malta, Slovakia, Estonia). However, data collection and disclosure still needs more work in some other countries (e.g. Poland, France).

28 The country bias means that great care must be taken with the analysis over any proposed comparison of the last 300 with an earlier 300.

Figure 5.4. Average R&D growth vs. Net sales growth in 2005 for Scoreboard companies in the EU Member States, US and Japan



Note: Only countries of registration (EU Member States) with more than 10 companies listed in the EU 2006 Scoreboard are shown.

*Source: The 2006 EU industrial R&D Investment Scoreboard
DG JRC / DG RTD, European Commission*

Some EU Member States have shown impressive rates of growth in their Scoreboard companies' average R&D investment in 2005.

Net sales also increased rapidly in 2005 in many EU Member States. Growth was above the US average in Spain (19.7%), Belgium (15%), Italy (13.1%) and Sweden (11.9%) and similar to the EU average (7.1%) in Germany, Denmark and the UK. Figure 5.4 plots the average annual growth rate of R&D against the average annual growth rate of net sales for the EU Member States represented in the *Scoreboard*, as well as for the groups of US and Japanese companies (for comparison). The figure confirms the finding that *Scoreboard* firms of several EU Member States had average annual growth (of both R&D and net sales) that was higher than that of their equivalent US or Japanese companies.

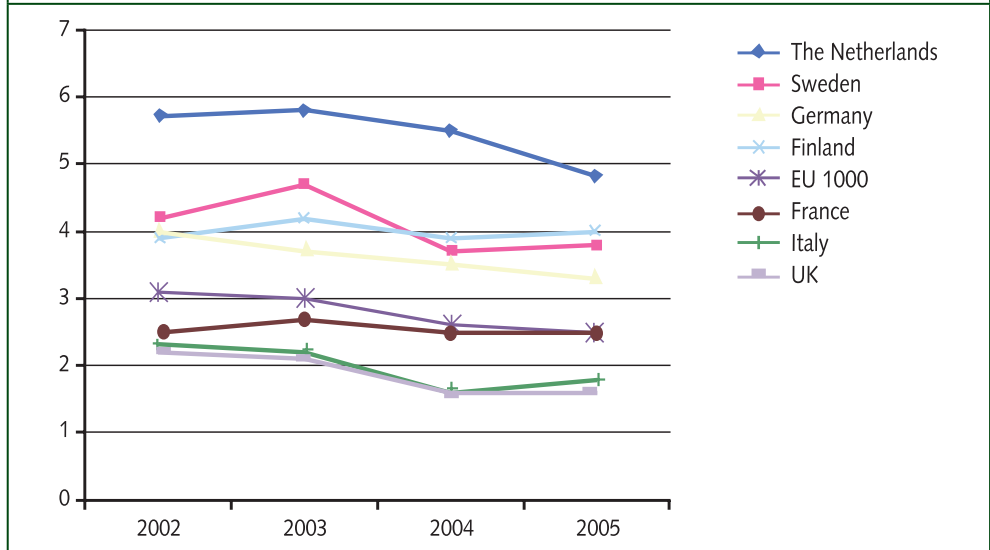
Net sales also increased rapidly in 2005 in many EU Member States. Growth was above the US average in Spain, Belgium, Italy and Sweden.

Taken together, the variation in R&D investment and net sales explains the trends in the average R&D intensity of the EU *Scoreboard* companies aggregated by country of registration. Figure 5.5 shows these trends for the EU average and for the major 7 Member States that accounted for more than 4% of total EU R&D investment in 2005.

The average R&D intensity in the EU has declined since 2002, due to sustained rates of higher growth in net sales than in R&D investment. Inside the EU, there are country groups of *Scoreboard* firms for which the average R&D intensity increased in 2005, as their R&D effort was well above the average for the EU or US companies. This is the case of the UK, Italy and Sweden. France and Finland also showed an improvement in the average R&D intensity, but the overall results – although positive – were below the *Scoreboard* average in terms of both net sales and R&D investment.

Average R&D intensity increased in 2005 in some country groups of *Scoreboard* firms as their R&D effort was well above the average for the EU or US companies.

Figure 5.5. Trends in R&D intensity for EU *Scoreboard* companies in selected Member States over the period 2002-2005 (%).



Source: *The 2006 EU industrial R&D Investment Scoreboard*
DG JRC / DG RTD, European Commission

As regards other indicators, the average profitability was higher than or close to the US figure (12%) in many Member States, namely the UK, Italy, Spain, France, Denmark and Belgium.

5.3.3 Specialisation of EU Member States by Sector

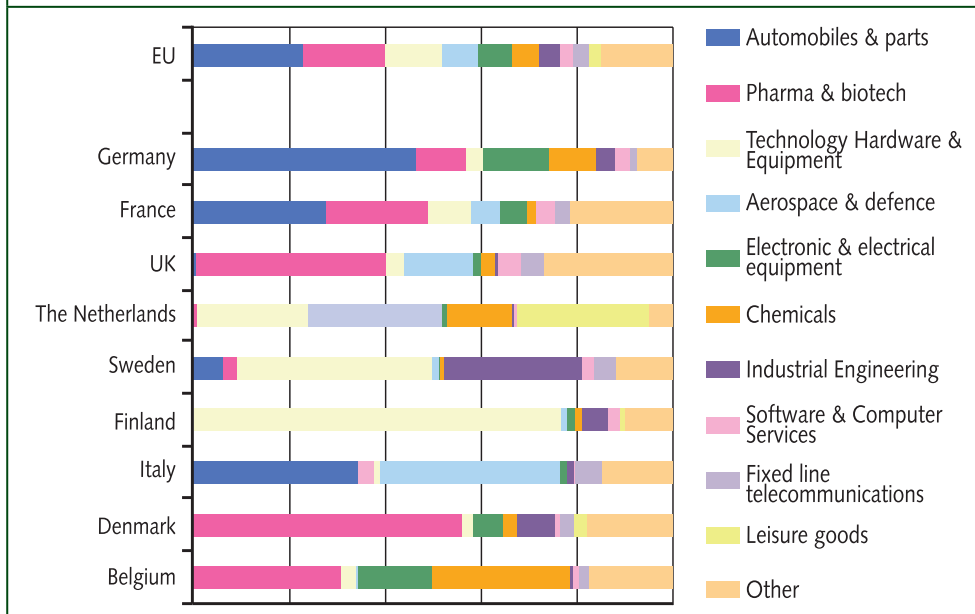
As in previous editions of the *Scoreboard* many companies grouped by Member State show at least one pronounced area of R&D investment specialisation²⁹ when compared to the overall EU distribution. This sector specialisation is illustrated by taking the country groups of companies most strongly represented in the EU list and grouping them by their main sectors of activity (Figure 5.6).

The group of German companies shows a high degree of specialisation in automobiles & parts when compared to both EU and non-EU firms.

The group of German companies shows a high degree of specialisation in automobiles & parts when compared to both EU and non-EU firms. The UK group shows a specialisation in the pharmaceuticals & biotechnology sector, but is also well above the EU average in aerospace & defence. The Swedish group shows strong R&D investment and specialisation in its traditional engineering & machinery sectors (commercial vehicles & trucks, industrial machinery) and in technology hardware & equipment. The Finnish group's R&D investment is concentrated in technology hardware & equipment (Nokia continuing to be world's number one investor in telecommunication equipment). The Italian group also shows a clear pattern of specialisation in automobiles & parts and in aerospace & defence, while Belgian and Danish companies are strong in chemicals and pharmaceuticals, respectively.

²⁹ For the purposes of the *Scoreboard*, a country is considered to have a pronounced specialisation in a sector when that sector's share of total R&D investment by the group of companies based in the country concerned is much higher than the corresponding share calculated for the overall EU sample of 1,000 companies.

Figure 5.6. The proportion of total R&D investment of the EU Scoreboard companies accounted for by major sector groups, by country of registration, in 2005 (%).



Source: *The 2006 EU industrial R&D Investment Scoreboard*
DG JRC / DG RTD, European Commission

The Finnish group's R&D investment is concentrated in technology hardware & equipment.

The Dutch and the French groups are interesting cases. The Netherlands appears to have four areas of specialisation: aerospace, chemicals, leisure goods and technology hardware & equipment. This is the consequence of the presence of several major world players registered in the Netherlands. However, two out of the four fields of specialisation (aerospace & defence and technology hardware) are not confirmed by the Dutch statistics on domestic business R&D expenditure. The difference comes from the registration of EADS and ST Microelectronics as Dutch firms despite the fact that these firms operate almost entirely outside the Netherlands.

The breakdown by sectors of R&D investments in 2004 by French *Scoreboard* companies is close to the average pattern for the EU as a whole, which explains why the French average R&D intensity in 2005 (2.5%) was equal to the EU 1000 average.

Increasing the number of EU *Scoreboard* companies from 700 to 1,000 has boosted the presence of countries with many medium-sized firms operating in R&D-intensive sectors (pharmaceuticals & biotechnology, software & computer services, health-care equipment & services, leisure goods, electronics or technology hardware & equipment), such as the United Kingdom, Denmark, Ireland, Hungary or Sweden. These Member States increased their share of overall EU R&D investment due to the composition effect more than to the direct R&D growth effect, while other country groups of firms increased their share strictly due to their stronger R&D effort (Spain, Belgium). This statement is supported by the distribution across sectors of the additional number of 300 EU companies and of their R&D investment. More than 20% of the 300 EU *Scoreboard* firms at the bottom end of the ranking declare their main activity to be in software & computer services; these 300 firms accounted for almost 20% of total R&D investment. The pharmaceuticals & biotechnology (9%), electronics & electrical equipment (9%) and the industrial engineering sectors (7% and 8%, respectively) also account for a significant share of total R&D and of the total number of companies. Two other R&D intensive sectors follow, with shares of around 6% (technology hardware

Increasing the number of EU Scoreboard companies from 700 to 1,000 has boosted the presence of countries with many medium-sized firms operating in R&D-intensive sectors.

More than 20% of the 300 EU Scoreboard firms at the bottom end of the ranking declare their main activity to be in software & computer services; these 300 firms accounted for almost 20% of total R&D investment.

The proportion accounted for by the five sectors mentioned above with R&D intensities over 5% is equal to more than half the total R&D investment of the bottom 300 EU companies.

& equipment and healthcare equipment & services). The proportion accounted for by the five sectors mentioned above with R&D intensities over 5% is equal to more than half of the total R&D investment of the bottom 300 EU companies. However, the small share these low-ranked 300 companies account for in total R&D investment by *Scoreboard* firms does not significantly change the sector specialisation in a given country, as shown in Figure 5.6.

The *Scoreboard* dataset provides a list of top (maximum of 10) companies in each EU Member State. The list also includes some foreign subsidiaries in a few EU Member States. Once again this year we acknowledge that the information on foreign subsidiaries is most probably incomplete, mainly due to the fact that R&D investment is not easy to access or not fully disclosed in publicly available financial reports published by subsidiaries of foreign companies.

Annex 5.A Financial indicators and R&D-related indicators in the main 6 sector groups of top 1338 Scoreboard companies by main world region, in 2005.

| FACTOR | Region | | | |
|---|--------|--------|---------------|--------|
| | EU | Japan | Rest of World | US |
| Automobiles & Parts | | | | |
| Number of companies | 27 | 26 | 7 | 19 |
| Employees (million) | 2144 | 1166 | n.a | 1432 |
| 1 year change (%) | 1.2% | 9.1% | n.a. | -3.0% |
| R&D Investment 2005 (€million) | 25786 | 18667 | 2382 | 17059 |
| 1 year change (%) | 3.5% | 7.9% | 16.2% | 4.2% |
| Net Sales 2005 (€million) | 572521 | 420514 | 64974 | 456987 |
| 1 year change (%) | 4.2% | 6.6% | 12.8% | 1.6% |
| R&D/Employee (€) | 12026 | 16005 | n.a. | 11915 |
| Profit/Sales | 4.5% | 7.0% | 7.2% | 1.0% |
| MarketCap/Sales | 35.2% | 87.6% | 49.8% | 15.5% |
| R&D/Sales | 4.5% | 4.4% | 3.7% | 3.7% |
| Capex/Sales | 8.1% | 7.3% | 6.4% | 4.0% |
| Chemicals | | | | |
| Number of companies | 23 | 36 | 7 | 31 |
| Employees (million) | 549 | 297 | 73 | 426 |
| 1 year change (%) | -7.9% | 0.9% | -3.1% | 3.5% |
| R&D Investment 2005 (€million) | 6205 | 4478 | 1303 | 4687 |
| 1 year change (%) | -8.3% | 2.6% | -0.3% | 6.7% |
| Net Sales 2005 (€million) | 177714 | 130039 | 30362 | 189780 |
| 1 year change (%) | 3.9% | 10.7% | 0.4% | 18.2% |
| R&D/Employee (€) | 11294 | 15086 | 15596 | 11013 |
| Profit/Sales | 9.7% | 7.3% | 5.4% | 10.6% |
| MarketCap/Sales | 93.6% | 101.6% | 91.5% | 101.6% |
| R&D/Sales | 3.5% | 3.4% | 4.3% | 2.45% |
| Capex/Sales | 5.2% | 8.2% | 4.9% | 4.1% |
| Electronics & Electrical Equipment | | | | |
| Number of companies | 19 | 30 | 27 | 31 |
| Employees (million) | 781 | 859 | n.a | 468 |
| 1 year change (%) | 3.7% | 6.5% | n.a | 1.3% |
| R&D Investment 2005 (€million) | 7256 | 7996 | 8967 | 2608 |
| 1 year change (%) | 1.1% | 6.2% | 14.6% | -5.4% |
| Net Sales 2005 (€million) | 130120 | 151494 | 213938 | 72216 |
| 1 year change (%) | 3.1% | 8.5% | 13.9% | 7.3% |
| R&D/Employee (€) | 9294 | 9309 | n.a | 5575 |
| Profit/Sales | 4.9% | 7.2% | 5.7% | 8.6% |
| MarketCap/Sales | 84.0% | 136.1% | 94.6% | 156.8% |
| R&D/Sales | 5.6% | 5.3% | 4.2% | 3.6% |
| Capex/Sales | 5.1% | 6.7% | 13.8% | 2.6% |

Annex 5.A Financial indicators and R&D-related indicators in the main 6 sector groups of top 1338 Scoreboard companies by main world region, in 2005.

| FACTOR | Region | | | |
|--|--------|--------|---------------|--------|
| | EU | Japan | Rest of World | US |
| Pharmaceuticals & biotechnology | | | | |
| Number of companies | 41 | 21 | 20 | 82 |
| Employees (million) | 474 | 74 | 204 | 645 |
| 1 year change (%) | 2.1% | 2.1% | 6.1% | 0.5% |
| R&D Investment 2005 (€million) | 18663 | 4099 | 9464 | 35170 |
| 1 year change (%) | 6.5% | 4.4% | 13.0% | 8.7% |
| Net Sales 2005 (€million) | 125712 | 40009 | 63081 | 223778 |
| 1 year change (%) | 7.6% | 3.0% | 13.4% | 5.5% |
| R&D/Employee (€) | 39408 | 55087 | 45650 | 54503 |
| Profit/Sales | 20.0% | 16.0% | 20.4% | 21.0% |
| MarketCap/Sales | 357.1% | 314.5% | 495.2% | 404.6% |
| R&D/Sales | 14.9% | 10.2% | 15.0% | 15.7% |
| Capex/Sales | 3.8% | 2.9% | 6.4% | 5.6% |
| Software & computer services | | | | |
| Number of companies | 21 | 4 | 11 | 93 |
| Employees (million) | 151 | 28 | 48 | 740 |
| 1 year change (%) | 12.9% | -0.6% | 3.9% | 6.3% |
| R&D Investment 2005 (€million) | 2651 | 515 | 495 | 20641 |
| 1 year change (%) | 6.8% | 12.1% | 14.5% | 9.4% |
| Net Sales 2005 (€million) | 26037 | 17584 | 7588 | 189347 |
| 1 year change (%) | 12.4% | 21.9% | 14.5% | 6.3% |
| R&D/Employee (€) | 17498 | 18218 | 9027 | 27892 |
| Profit/Sales | 16.2% | 8.1% | 12.5% | 20.4% |
| MarketCap/Sales | 296.5% | 281.8% | 177.7% | 355.3% |
| R&D/Sales | 10.2% | 2.9% | 6.5% | 10.9% |
| Capex/Sales | 2.3% | 9.0% | 2.5% | 4.2% |
| Technology hardware & equipment | | | | |
| Number of companies | 24 | 21 | 40 | 150 |
| Employees (million) | 336 | 1167 | 219 | 1208 |
| 1 year change (%) | 2.8% | 1.6% | 7.0% | 4.0% |
| R&D Investment 2005 (€million) | 12674 | 13099 | 5777 | 38406 |
| 1 year change (%) | 8.5% | 4.2% | 14.4% | 6.8% |
| Net Sales 2005 (€million) | 92384 | 255338 | 94889 | 406635 |
| 1 year change (%) | 9.5% | 4.3% | 26.1% | 11.0% |
| R&D/Employee (€) | 37714 | 11221 | 20055 | 31806 |
| Profit/Sales | 10.4% | 4.0% | 4.2% | 11.7% |
| MarketCap/Sales | 173.1% | 61.9% | 160.7% | 213.4% |
| R&D/Sales | 13.7% | 5.1% | 6.1% | 9.4% |
| Capex/Sales | 4.8% | 4.6% | 11.4% | 5.0% |
| <p><i>Note: the additional 300 companies in the EU Scoreboard list account for 5.5% of total sales, but for only 1.2% of total R&D investment.</i></p> <p><i>Source: The 2006 EU Industrial R&D Investment Scoreboard DG JRC / DG RTD, European Commission</i></p> | | | | |

Chapter 6 – The role of R&D for business performance

Previous editions of the *Scoreboard* and earlier chapters of this report have discussed the link between R&D and other business input/output factors. This chapter further elaborates on this issue using the *Scoreboard* data together with an additional subset of companies for which data over the period 1992-2005 were available³⁰.

The analysis is structured in three parts:

- ⇒ First, the relationship between R&D investment and sales is illustrated using descriptive statistics for automobiles & parts and pharmaceuticals companies. The impact of R&D investment on the companies' market shares is examined for the car manufacturing sector.
- ⇒ Second, the overall link between company size in terms of employees and R&D investment is addressed.
- ⇒ Third, the relationship between R&D investment and profitability is examined.

The analysis illustrates how the *Scoreboard* is potentially a useful tool with which to compare companies' relative performance and behaviour. The potential of the *Scoreboard* becomes especially clear when comparing its findings with other sources and extending the time series of the data.

KEY FINDINGS

The *Scoreboard's* analysis shows evidence of the role of R&D in companies' performance, in particular in the case of firms in R&D-intensive sectors where R&D is an indispensable factor in maintaining or improving competitiveness. Some examples of the impact of R&D on sales are shown for the pharmaceutical sector and, on market shares, for the car manufacturers sector. Analyses of longer time-series for a sub-set of *Scoreboard* companies confirm those findings.

The optimum level of R&D for the return on investment to be maximised is a difficult question, involving many other business and market factors. **At sector level, it seems that there is a *standard* of R&D intensity set by the major players in the respective sector.** When large companies increase their R&D intensity beyond this *standard* level they risk their additional effort's becoming inefficient. On the other hand, companies with R&D intensities lower than the sector-wide *standard* R&D intensity or which decrease their R&D intensity over a longer period risk losing market share.

6.1 The longer-term linkage between R&D investment and sales

At various stages of the analysis in the preceding chapters of the *Scoreboard* there have been references to the links between R&D investment and global output performance indicators, such as net sales, profits, employment, market capitalisation and capital expenditure. One of these, the sector-specific relationship between R&D investment and sales, is further analysed here using longer-term data for a number of sectors from 1992-2004. The sector-specific role of R&D investment emerges not only from the

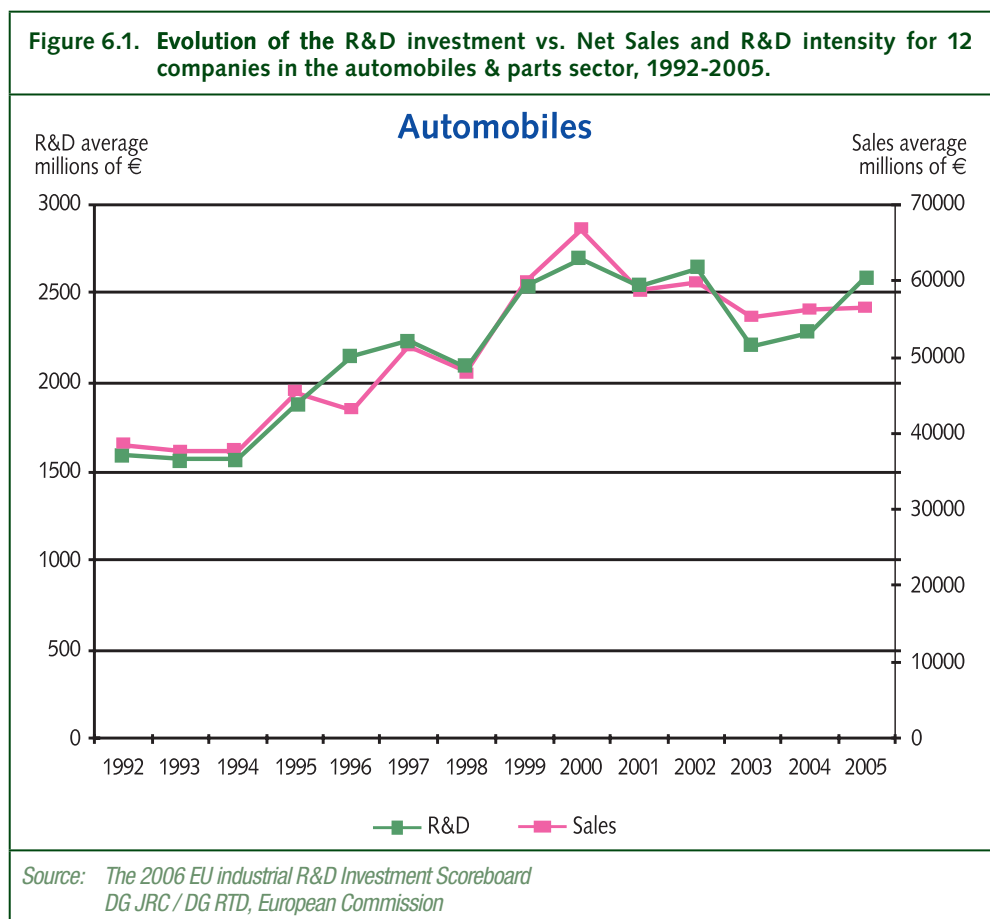
³⁰ Data is available for a total of 140 companies for the period from 1992-2005. For 2000-2005, data are from the *Scoreboard* and for 1992-1999 from "The top UK & Global companies by R&D Investment" by the UK's Department of Trade and Industry (DTI).

This chapter of the Scoreboard analyses sector specific relationships between R&D investments and sales ver time.

fact that R&D investment is highly concentrated in certain sectors of the economy, but also from other characteristics of R&D at the firm and sector level. These include, for example, the role of R&D for new product development, the impact of technological capabilities on a firm's competitiveness, or the extent to which R&D knowledge can be acquired from outside. Section 4.3 of the Scoreboard already gave an indication of the relationships at sector level between R&D investment and global output performance indicators, such net sales, profits, employment, market capitalisation and capital expenditure.

Examining the sectoral aspects of R&D investment further with the data series for three sectors from the period 1992-2005, R&D investment and sales can be seen to move in parallel over time.

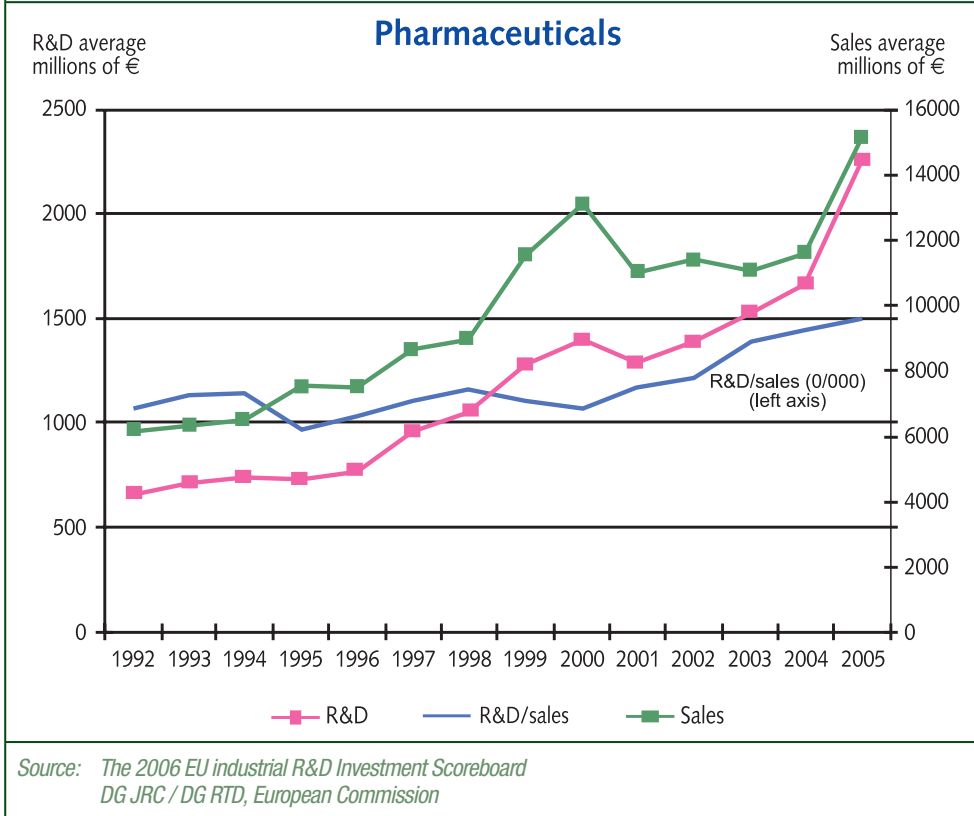
Figure 6.1 shows the example of the automobiles & parts sector, where both R&D investment and net sales run in parallel, i.e. R&D investment seems to follow the sector's economic cycle.



It is also deduced from Figure 6.1 that the R&D intensity in the automobile and parts sector is practically kept constant over the whole period. This is further discussed below through another example that disaggregates data of some companies within this sector.

The evolution of sales and R&D in the pharmaceuticals sector shows a slightly different profile (see Figure 6.2).

Figure 6.2. R&D investment vs. Net Sales for 28 companies in the pharmaceuticals sector, 1992-2005.



Changes in R&D investment paralleled sales until 2002 but grew faster afterwards. As a consequence, the R&D intensity in the pharmaceutical sector has significantly grown in the last years. This is shown in more detail in figure 6.3., which shows how R&D grew faster than sales for most of the companies in a sample of the pharmaceuticals sector (companies below the 45 degrees line).

The two sectors (automobiles & parts and pharmaceuticals) are examples where a longer-term sector-specific relationship exists between R&D investment and sales.

In order to analyse the impact of the R&D investment on competitiveness in more depth, the market share data for a number of companies in the car manufacturing sector were looked at more closely so as to examine whether past R&D investment levels have an impact on later market shares of the companies

R&D grew faster than sales in the pharmaceuticals sector in the period examined, leading to a rise in average R&D intensity.

Figure 6.3. Three-year sales growth vs. R&D investment growth for 28 companies in the pharmaceuticals sector, 1992-2005.

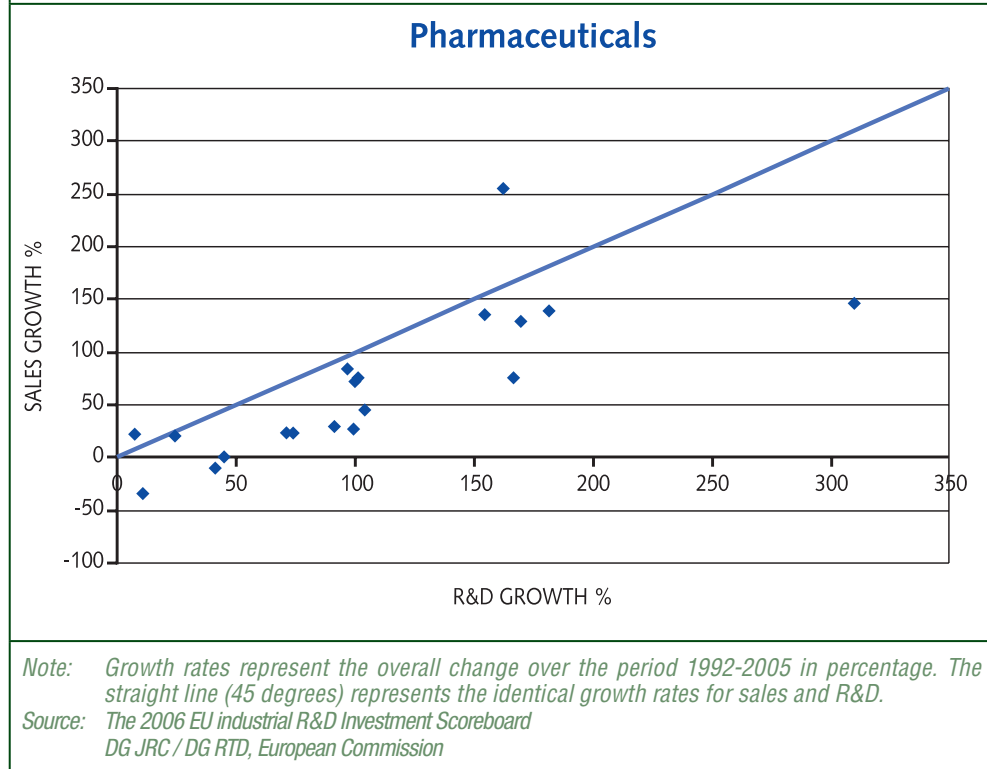


Table 6.1 contains the R&D intensity for 14 companies in the car manufacturing sector over the period 2000-2005 together with the sector's average R&D intensity³¹. Table 6.2 shows the trend in relative market shares for each of these companies during the same period. The relative market share of one firm is the proportion accounted for by the firm of the cumulative net sales of the 14 companies taken together³².

The average R&D intensity of these 14 companies is very close to the sector's worldwide average, and together these 14 car manufacturers account for over 90% of the world car market in terms of net sales.

The companies that increased their relative market share during the period either had an R&D intensity above the sector average or increased their R&D intensity significantly.

The companies that increased their relative market share during the period (marked with bold letters in Table 6.2) either had an R&D intensity above the sector average (such as Honda Motors or BMW) or increased their R&D intensity significantly (such as Hyundai Motors, BMW and Nissan Motor). A special case is Renault, which is re-enforcing its R&D investment after seeing the risk of losing market share at the beginning of the millennium when its R&D intensity decreased.

31 For Fiat, the calculations for the years 2001-2004 are based on consolidated data taken from the annual reports of Istituto Finanziario Industriale (IFI), its ultimate parent company, during that period, since separate data for Fiat as part of IFI were not available.

32 This cumulative value is a good proxy for the total worldwide car market.

| Company, Location \ Year | 2000 | 2001 | 2002 | 2003 | 2004 | 2005 |
|-----------------------------------|-------------|-------------|-------------|-------------|-------------|-------------|
| Ford Motor, US | 4.00 | 4.56 | 4.71 | 4.57 | 4.31 | 4.51 |
| General Motors, US | 3.57 | 3.50 | 3.11 | 3.07 | 3.36 | 3.48 |
| DaimlerChrysler, EU | 3.90 | 3.88 | 4.06 | 4.08 | 3.98 | 3.77 |
| Toyota Motor, Japan | 3.55 | 3.62 | 4.12 | 4.31 | 3.94 | 4.07 |
| Volkswagen, EU | 4.83 | 3.00 | 4.86 | 4.68 | 4.68 | 4.28 |
| Honda Motor, Japan | 5.48 | 5.37 | 5.37 | 5.48 | 5.50 | 5.41 |
| Nissan Motor, Japan | 3.99 | 3.80 | 4.23 | 4.40 | 4.77 | 4.64 |
| Peugeot (PSA), EU | 3.68 | 3.35 | 3.43 | 3.87 | 3.71 | 3.82 |
| Hyundai Motor, South Korea | 2.92 | 2.48 | 1.29 | 2.06 | 3.65 | 4.02 |
| BMW, EU | n.a. | 4.90 | 5.52 | 6.16 | 6.36 | 6.68 |
| <i>Fiat, EU</i> | <i>2.93</i> | <i>2.93</i> | <i>2.90</i> | <i>3.29</i> | <i>3.52</i> | <i>2.88</i> |
| Renault, EU | 5.10 | 5.32 | 4.90 | 4.63 | 4.82 | 5.60 |
| Mazda Motor, Japan | 3.52 | 4.15 | 4.53 | 3.71 | 3.01 | 3.37 |
| <i>Mitsubishi Motors, Japan</i> | <i>3.36</i> | <i>n.a.</i> | <i>n.a.</i> | <i>2.01</i> | <i>2.73</i> | <i>3.24</i> |
| <i>WORLD</i> | <i>3.85</i> | <i>3.92</i> | <i>4.03</i> | <i>4.08</i> | <i>4.15</i> | <i>4.21</i> |

*Source: The 2006 EU Industrial R&D Investment Scoreboard
DG JRC / DG RTD, European Commission*

| Company, Location \ Year | 2000 | 2001 | 2002 | 2003 | 2004 | 2005 |
|-----------------------------------|-------------|-------------|-------------|-------------|-------------|-------------|
| Ford Motor, US | 16.5 | 16.4 | 13.7 | 13.8 | 13.8 | 13.8 |
| General Motors, US | 17.9 | 17.9 | 15.7 | 15.6 | 15.6 | 15.0 |
| DaimlerChrysler, EU | 14.8 | 13.6 | 14.8 | 13.5 | 13.5 | 13.8 |
| Toyota Motor, Japan | 10.8 | 10.1 | 10.2 | 11.0 | 11.8 | 12.2 |
| Volkswagen, EU | 7.8 | 7.9 | 8.9 | 8.8 | 8.4 | 8.8 |
| Honda Motor, Japan | 5.2 | 5.7 | 5.2 | 5.7 | 5.6 | 5.7 |
| Nissan Motor, Japan | 5.1 | 4.7 | 4.4 | 4.9 | 5.1 | 5.7 |
| Peugeot (PSA), EU | 4.0 | 4.6 | 5.4 | 5.4 | 5.4 | 5.2 |
| Hyundai Motor, South Korea | 1.4 | 3.0 | 4.0 | 3.9 | 4.2 | 4.5 |
| BMW, EU | 3.2 | 3.4 | 4.2 | 4.1 | 4.2 | 4.3 |
| <i>Fiat, EU</i> | <i>5.2</i> | <i>5.6</i> | <i>6.0</i> | <i>5.3</i> | <i>4.9</i> | <i>4.2</i> |
| Renault, EU | 3.6 | 3.2 | 3.6 | 3.7 | 3.9 | 3.7 |
| Mazda Motor, Japan | 1.8 | 1.5 | 1.5 | 1.7 | 2.0 | 1.8 |
| <i>Mitsubishi Motors, Japan</i> | <i>2.8</i> | <i>2.5</i> | <i>2.3</i> | <i>2.8</i> | <i>1.7</i> | <i>1.4</i> |

*Source: The 2006 EU Industrial R&D Investment Scoreboard
DG JRC / DG RTD, European Commission*

The major players (Ford, Daimler Chrysler, General Motors, Toyota Motors and Volkswagen), each with a market share close to or above 10%, have a lower R&D intensity than their smaller competitors and yet still maintain their market share. However, with a lower than average R&D intensity throughout the entire period, General Motors is gradually losing market share. The data clearly show the R&D intensities of the major players to be within a narrow band around the sector average.

Smaller companies often have a higher than average R&D intensity. This may be because they use R&D investment as a growth strategy or because their R&D investments requirements are larger relative to their size.

Furthermore, companies with R&D intensities that are decreasing or systematically lower than the sector average (such as Fiat, Mitsubishi Motors, marked *in italics* in Table 6.2) lost market share quite rapidly.

These observations are in line with a wealth of literature on the relationship between R&D investment and market share in the car manufacturing sector and its changes over time (Mansfield, 1965).

The situation for smaller companies, however, may differ from that for large ones. Smaller companies often have a higher than average R&D intensity, for example because they may use R&D investment as a growth strategy or because the R&D investments they need to keep up with the sector standard are that much larger relative to their size. The following section therefore addresses the relationship between company size and R&D investment.

6.2 The relationship between company size and R&D investment

The previous section has outlined the role of the mayor players in a sector in setting a *standard* R&D investment level. However, the role of company size for R&D investment is far from straightforward. A number of studies have found a correlation between company size and R&D investment and R&D intensity (Schumpeter, 1961; Cooper, 1964; Acs and Audretsch, 1987; Graves and Langowitz, 1993, Jaruzelski et al. 2005). For example, large companies may benefit from economies of scale in R&D or the existence of a critical mass which makes R&D more difficult to access for smaller companies. Furthermore, company size is also an indicator of power in the marketplace, which makes it easier for larger companies to derive returns from R&D (Galende del Canto and González, 1999). Also other factors, such as access to finance or the ability to hire a pool of qualified human capital, are positively influenced by company size.

Large companies may benefit from economies of scale in R&D or the existence of a critical mass which makes R&D more difficult to access for smaller companies.

The relationship between size and R&D investment clearly depends on the type of innovation involved and the characteristics of the sector in which the company is competing. For example, Acs and Audretsch (1987) found advantages in innovation for larger companies in highly concentrated, capital intensive sectors, where advertising plays a role. Smaller companies have advantages in innovation in embryonic and growing sectors, which are less concentrated.

For companies with more than 500 employees³³, figure 6.4 plots R&D intensity against company size in terms of employees in 2005 for the EU and the non-EU group separately.

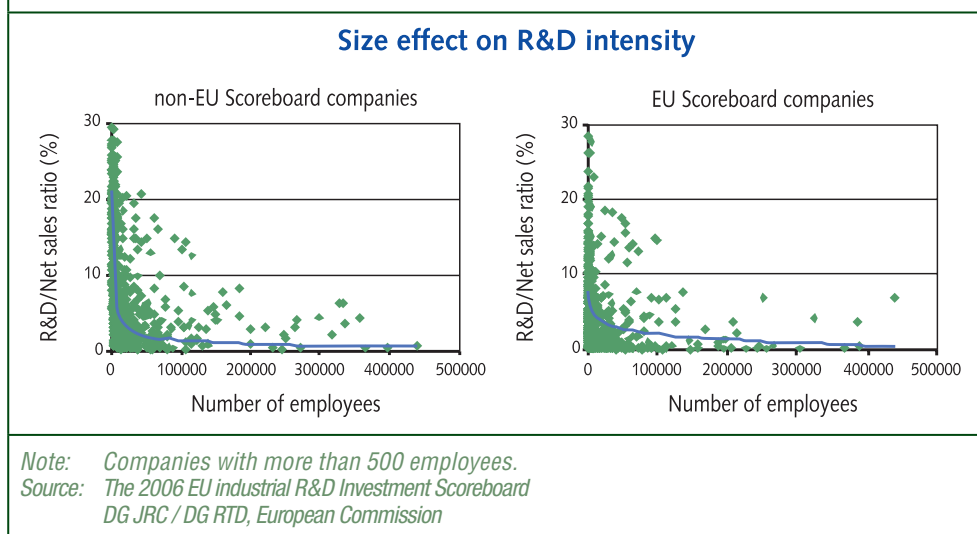
The decreasing R&D intensities among larger companies suggests that their R&D intensity tends to level off or even decline after reaching a certain size.

The figure shows that the overall R&D intensity decreases with company size in terms of number of employees. The decreasing R&D intensities among larger companies suggests that their R&D intensity tends to level off or even decline after reaching a certain size. When large companies increase their R&D intensity beyond this standard level they face the risk of any additional effort's being inefficient (for a similar observation see e.g. Jaruzelski et al. 2005).

It should be borne in mind that this observation holds for R&D intensity and not the absolute amount of R&D investment, which means that the scale effect remains important because the above average R&D intensity of smaller companies does not always compensate for the size difference. Examples of this issue in the car manufacturing industry were discussed in the previous section.

³³ Companies with less than 500 employees were omitted as outliers.

Figure 6.4. Size effect on the R&D intensities in the 2005 Scoreboard.



As regards the role of company size in R&D investment, the analysis reveals that *Scoreboard* companies with more than 500 employees seem to benefit from economies of scale in R&D, leading to an overall decrease in R&D intensity by size in terms of employee numbers. The example of the car manufacturing sector in the previous section underlines this finding for the very large companies. However, it also shows that companies have to pay attention to their R&D intensity relative to the sector-wide standard, as companies with a lower R&D intensity, or which decrease R&D intensity during a longer period of time, may lose market share.

6.3. The relationship between R&D investment and profitability

The previous sections addressed the behaviour of R&D investment vis-à-vis factors such as net sales, market share or company size. An important question at the corporate level is whether R&D investment has an impact on profitability. This question is examined in this section.

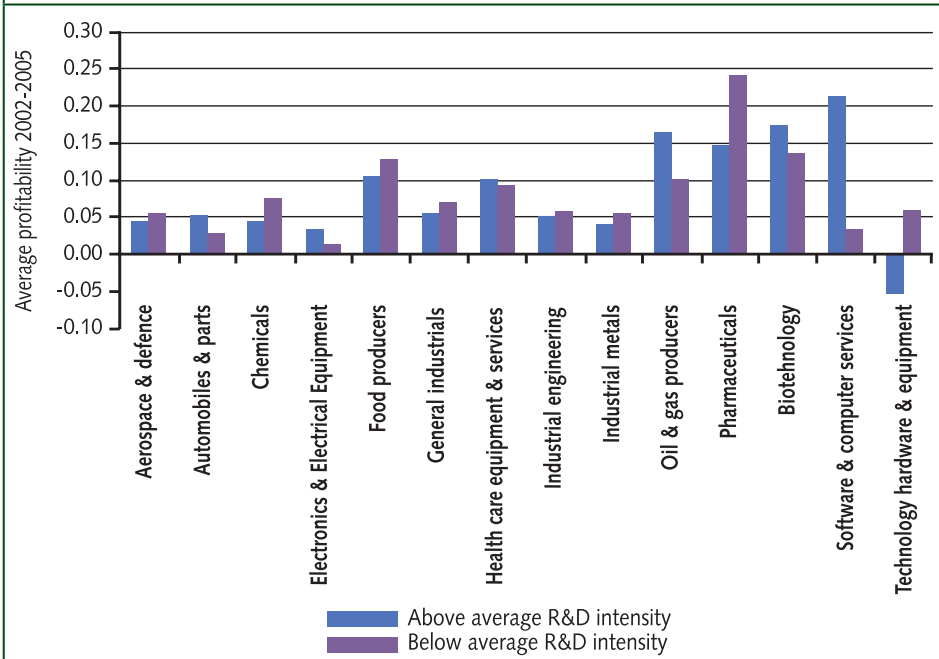
Most empirical evidence points to a R&D investment's having a positive impact of on operating earnings (Mansfield, 1965; Minasian, 1969; Bailey, 1972; Branch, 1974; Grabowski and Mueller, 1978; Sougiannis, 1994). However, other sources have found a negative relationship in some sectors of activity (Lunn and Martin, 1986), which suggests that the relationship is not straightforward.

The figures below show the results of comparing the average profitability of companies with above average R&D intensities to that of companies with below average R&D intensities. For companies with R&D over 50 million Euros and net sales over 500 million Euros, the first figure shows the case of EU companies, the second one the non-EU companies.

The figure for the EU companies suggests that above average R&D intensity does not automatically lead to greater profitability in all sectors. This is also true for the non-EU companies, which are shown in figure 6.6.

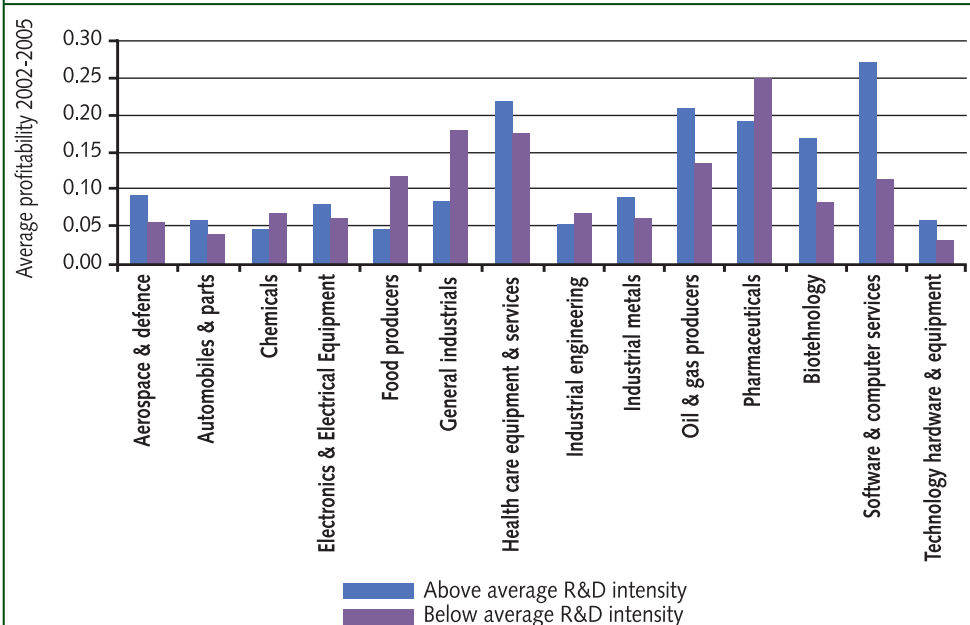
The data suggest that above average R&D intensity does not automatically lead to greater profitability in all sectors.

Figure 6.5. Average profitability of companies with above average R&D intensity vs. those with below average R&D intensity, by sector, for EU companies with R&D over 50 million Euros and net sales over 500 million Euros (2002-2005)



Source: *The 2006 EU industrial R&D Investment Scoreboard*
DG JRC / DG RTD, European Commission

Figure 6.6. Average profitability of companies with above average R&D intensity vs. those with below average R&D intensity, by sector, for non-EU companies with R&D over 50 million Euros and net sales over 500 million Euros (2002-2005)



Source: *The 2006 EU industrial R&D Investment Scoreboard*
DG JRC / DG RTD, European Commission

The two figures underline the sector-specificity of R&D investment. In 11 out of the 14 sectors, the impact pattern of R&D intensity on average profitability is the same for the EU and the non-EU companies. However, sometimes the differences are quite small, for instance in industrial engineering. In other sectors, e.g. aerospace & defence or technology hardware & equipment, differences between the EU and the non-EU occurred due to the small number of companies in the sector combined with some larger R&D investors with weaker profits in 2005.

Sectors where above-average R&D intensity clearly had a positive impact on profitability are automobiles & parts, biotechnology, electronics & electrical equipment, oil & gas producers and software & computer services (both EU and non-EU companies) and health care equipment & services (more so for non-EU companies than the EU ones). It is surprising to see that companies in the pharmaceuticals sectors with above average R&D intensities had a lower profitability than their counterparts with lower than average R&D intensity. This may be due to the fact that the two companies with very large profits just fell into the below average R&D intensity group, namely GlaxoSmithKline (UK) and Johnson & Johnson (US).

Although the findings presented in this chapter are somewhat qualitative and based on a limited number of companies and sectors, given that the *Scoreboard* companies cover a large share of the world's R&D investment, they may be valid for many other firms operating in sectors where R&D is important. A study of the literature shows that these results are in line with the findings of previous work and deserve further analysis.

Sectors where above-average R&D intensity clearly had a positive impact on profitability are automobiles & part, biotechnology, electronics & electrical equipment, oil & gas producers and software & computer services.

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Chapter 7 – Synopsis of main findings

This report comprises 6 chapters. Chapter 1 provides background information and a New Readers section. Chapter 2 presents the overall levels of R&D investment and the main changes compared to last year. Chapters 3 to 5 analyse the progress of R&D and its relation with main financial indicators, focussing on top R&D-investing companies, industrial sectors, EU countries and main world regions respectively. Chapter 6 presents a short analysis on the impact of R&D investment at company level.

In summary, the key findings are as follows:

1. After stagnation, a 5% leap in European industrial R&D spending

An average growth rate for EU companies of 5.3% contrasts with last year's growth rate of 0.7% and a contraction of 2% in 2004. The R&D investment growth of companies in the rest of the world in 2005 was 7.7%, one percent higher than the previous year. Over the past three years, the annual R&D growth was 1.7% for the EU1000 and 6.7% for the non-EU1000 companies.

Together, the 1000 companies from the EU and the 1000 from outside invested €371 billion in R&D, estimated to represent about 80% of worldwide business enterprise R&D expenditure³⁴. Almost one third (€112.9 billion) came from the 1000 EU companies and the other part (€257.7 billion) from the 1000 non-EU companies.

Net sales continued to grow in all regions at faster pace than R&D investments, as well as operating profits, which increased strongly for the EU companies. Due to the higher growth of net sales compared to R&D investment, the average R&D intensity (R&D as % sales) declined slightly worldwide.

The number of EU companies among the 50 largest R&D investors remains the same as last year. The top 50 included 18 companies each from the EU and the US, 10 from Japan (two less than last year), and 2 each from Switzerland and Korea. The two Korean companies, Samsung Electronics and Hyundai Motor, are also present among the fastest growing R&D investors in the *Scoreboard*.

2. R&D concentration likely to remain high

Just as in previous *Scoreboards*, R&D investment is concentrated in just three sectors: automobiles & parts, technology hardware & equipment and pharmaceuticals & biotechnology. The EU companies show relative strengths in automobiles & parts and chemicals and the non-EU ones in software & computer services and technology hardware & equipment. Worldwide each of these sectors account for a similar share of total *Scoreboard* R&D investment, ranging from €64 to €70 billion. Together, they account for more than half of the global R&D investment in the *Scoreboard*.

R&D concentration is likely remain high especially among the EU companies, because R&D investment levels and growth decline more sharply with ranking than among the US companies, for instance.

³⁴ According to Global BERD reported by Eurostat. However, *Scoreboard* figures and BERD are not fully comparable (see Annex on Methodological notes in "The EU Industrial R&D Investment *Scoreboard*", Technical Report EUR 22348, October 2006, <http://iri.jrc.es/>).

3. There is a considerable number of smaller and medium-sized EU companies in high R&D intensive sectors

A concern raised in previous editions of the *Scoreboard* was the relative dearth of smaller and medium-sized EU companies in highly R&D intensive sectors. The extension of this year's EU *Scoreboard* to 1000 companies has highlighted a significant number of such firms in these sectors³⁵. Many of these companies belong to R&D-intensive sectors, especially software & computer services.

Companies in the EU group have their registered office in 20 Member States. New entrants come mostly from the UK (+117), Germany (+32), France (+31), Finland (+27) and Sweden (+21). In the non-EU listing, the new entrants are mostly from the US (+189), Japan (+39), Taiwan (+24), Canada (+13) and Switzerland (+9). A few Member States have more than their proportional share of companies in R&D intensive sectors (United Kingdom, Denmark, Ireland, Hungary or Sweden).

The expansion of the *Scoreboard* also allowed the inclusion of a significant number of SMEs³⁶: 150 in the EU group and 15 in the non-EU group.

The first time adoption of IFRS³⁷ has led to a wider coverage and better homogeneity of the *Scoreboard* data.

4. Pharmaceuticals & biotechnology and service sectors play an important role for R&D investment growth

The highest R&D growth rates by sector over the last year and the previous five years are found in pharmaceuticals & biotechnology and in a number of services sectors (software & computer services, travel & leisure, media, health care equipment & services, and support services), which are covered more in detail in the present *Scoreboard* compared to previous editions. A subset of the services sectors, 'market' services³⁸, shows a positive trend since 2000 which is also reflected in the rapid growth of the number of companies from these sectors in the *Scoreboard*.

However, apart from software and health, the services sectors still show a low average R&D-intensity. Sectors with the highest R&D intensity are pharmaceuticals & biotechnology, software & computer services and technology hardware & equipment, while sectors like telecommunications services or oil & gas have relatively low R&D intensity. It is interesting to note that R&D intensities by sector vary considerably over time, which underlines that the trends of R&D investment and net sales in each sector run in parallel.

35 The minimum R&D investment to be included in the list were €2.67 million for the EU and €24.91 million for the non-EU.

36 Small-medium enterprise, independent unit with less than 250 employees and a turnover less than 50 mill Euro.

37 International financial reporting standards, compulsory for EU listed companies since 2005.

38 Including sectors such as software and computer services, support services, general retailers, media, travel and leisure, food & drug retailers, financial and insurance services and health care equipment & services.

5. R&D investment performance is better for the non-EU companies, but the EU companies hold their own among the largest R&D investors

Among the 50 fastest R&D growers in the last three years there are only 9 EU companies, compared to 16 from the US. Strong R&D investment growth has been found for Korean companies, especially Samsung Electronics and Hyundai Motor, and, since 2002, many companies based in Taiwan.

The companies with the highest R&D intensity are mainly from the US. For example, out of 29 companies with R&D intensities of over 20%, 22 are based in the US and only 3 in the EU. Furthermore, US firms in the lower ranks of the *Scoreboard* appear much more active than their EU equivalents in terms of R&D investment level and intensity. There is group of fast-growing medium to large size US firms operating in highly R&D-intensive sectors, while most of the EU companies in high R&D intensive are much smaller (see above).

However, the EU companies hold their own among the 50 largest R&D investors. Within this group, the same number as last year (18), and half of the ten companies with fastest R&D growth are from the EU. Also, there is a number of EU Member States where the average annual growth of both R&D and net sales by the *Scoreboard* firms was higher than in the US or Japan.

The list of top 50 R&D investors and the 10 fastest R&D growing companies is shown in figure S1.

6. Sectors with high levels of R&D investment are important for EU market share and employment and capital expenditure

The sectors with the highest levels of R&D investment represent those with large EU market shares and employment and market capitalisation. Five out of the six sectors with the largest sales are sectors with high overall R&D investment. These sectors are also among the biggest ones by employment.

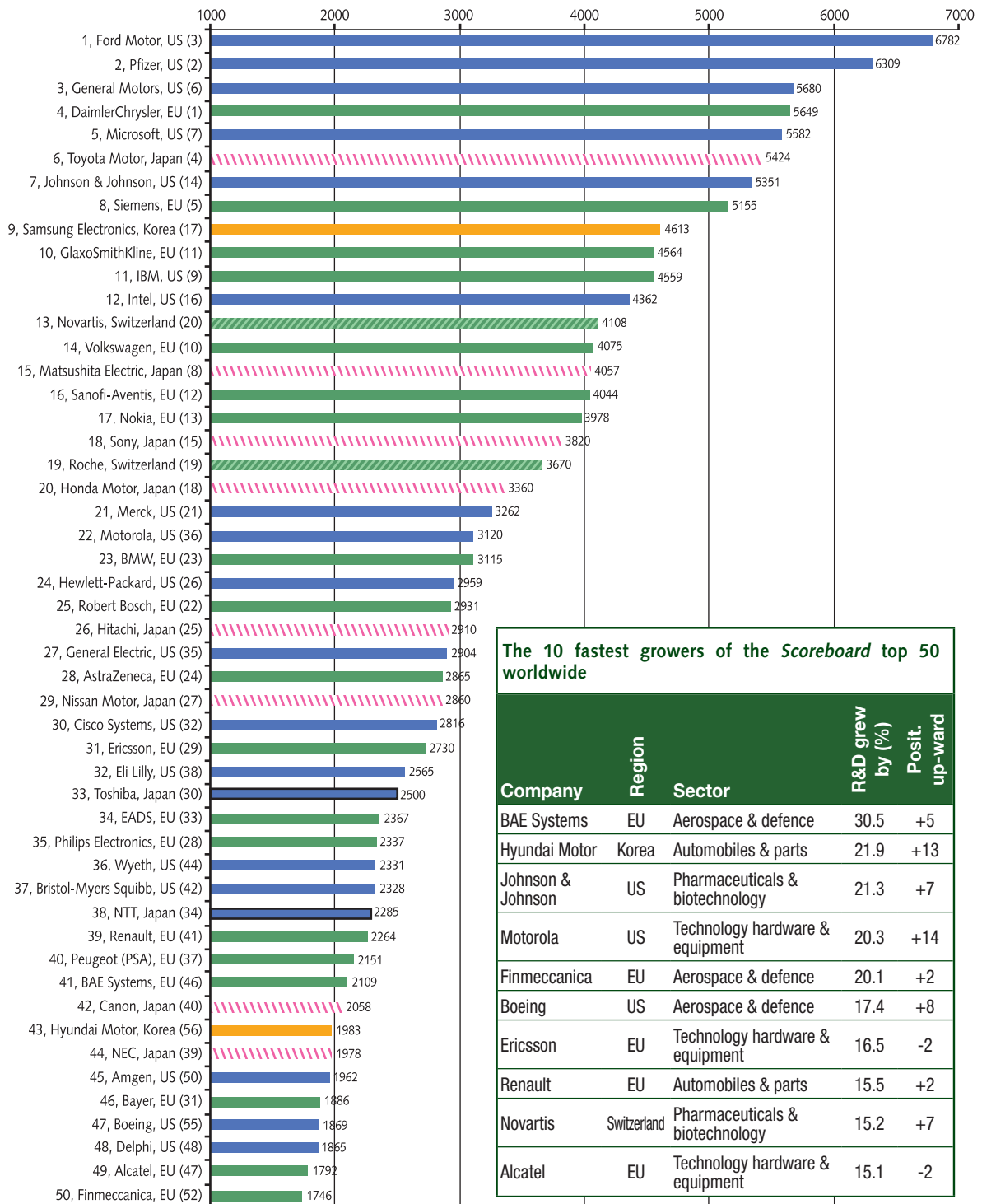
Further, many sectors with high R&D intensity (e.g. pharmaceuticals & biotechnology, software & computer services, health care equipment & services) have also a very high market capitalisation to sales ratio. This indicates the potential for value creation of R&D in these sectors.

There are no indications that R&D investment on its own is a major influence on the companies' stock market valuations. Only in those cases where R&D investment is combined with capital expenditure does there seem to be a relationship (albeit a weak one) with market capitalisation.

7. The role of R&D for business performance

The role of R&D investment as an input factor for a company and its impact on performance parameters such as profits, net sales and market share is analysed. Some descriptive statistics are presented to illustrate this issue for the case of sectors with a high reliance on R&D. The analysis shows how the *Scoreboard* may be a useful tool with which to compare companies' relative performance and behaviour. The relationship between R&D investment, sales and market shares is illustrated through descriptive statistics for automobiles & parts, pharmaceuticals and the car manufacturing sector.

Figure S1. Ranking of the world top 50 companies by their total R&D investment (million €) in 2005.



Note: The numbers in parentheses after the names of the companies refer to their ranking in the 2005 Scoreboard
 Source: The 2006 EU industrial R&D Investment Scoreboard
 DG JRC / DG RTD, European Commission

The link between R&D investment and company size and profitability is examined. Analyses of longer time-series for a sub-sample of Scoreboard companies confirm those findings.

What is the optimum level of R&D to maximise the return on investment is a difficult question for a company. At sector level, it seems that there is a *standard* which is set by the major R&D players in the sector. Large companies increasing their R&D intensity beyond this level may risk their additional effort being inefficient. Smaller firms, however, may have higher than average R&D intensity, meaning that they rely more on R&D to grow and increase market share. The analysis indicates that, at least in some sectors, companies with R&D intensity lower than such sector-wide *standard* or decreasing their R&D intensity for long time may lose market share.

Annex 1 – Methodological Notes

The analysis of the 2006 EU Industrial R&D Investment Scoreboard has been prepared on the basis of information gathered according to the standards set out below.

A. Scope of the EU Industrial R&D Investment Scoreboard

The *Scoreboard* has been prepared from companies' **annual reports and accounts** received by an independent data provider up to and including **1 August 2006**. To prepare the *Scoreboard*, a database of 5152 companies' accounts was screened.

In order to maximise completeness and avoid double counting, the **consolidated group accounts of the ultimate parent company** are used. Companies which are subsidiaries of any other company, such as Airbus (France), Ford (UK) or IBM (Germany) are not listed separately. Where consolidated group accounts of the ultimate parent company are not available, subsidiaries are included, e.g. Sorin (Italy) or Cognis Deutschland (Germany).

For some companies whose accounts are expected close to the cut-off date, **preliminary announcements** are used. Examples are Microsoft (USA), Renishaw (UK), Telent (UK) or Misys (UK).

In case of a **demerger**, the full history of the continuing entity is included. The history of the demerged company can only go back as far as the date of the demerger to avoid double counting of figures, e.g. Freescale Semiconductor (USA) or TRW Automotive (USA).

In case of an **acquisition or merger**, pro forma figures for the year of acquisition are used along with pro-forma comparative figures if available, e.g. Sanofi-Aventis.

The **first time adoption of IFRS**³⁹, for example by many listed European companies, gives rise to an information discontinuity because R&D is treated differently than before. R&D capitalisation criteria under IFRS are stricter and, where the criteria are met, the amounts must be capitalised. In some pre-IFRS jurisdictions either one or both of these conditions did not apply. The following was implemented to minimise the impact of transition to IFRS:

- a) The previous year's figures disclosed in the new IFRS accounts have been used in place of the previous year's GAAP figures disclosed in the past annual report. The effect is that the discontinuity moves back by one year so that it impacts on the three year growth statistic but not the one year growth statistic.
- b) In most cases, comparative figures are not disclosed, so the previous years' GAAP figures disclosed in the past annual report were examined to assess whether or not there appears to be a material component not disclosed. If the non disclosure appeared to be not material it was assumed to be zero and the R&D spend was calculated. If the non disclosure appeared to be material, the R&D spend was treated as unknown and the result is reported as "not available (n/a)". Companies with "n/a" results are excluded from the aggregate growth statistics.

Companies are allocated to the **country of their registered office**. In some cases this is different from the operational or R&D headquarters. This means that the results

³⁹ Since 2005, the European Union requires all listed companies in the EU to prepare their consolidated financial statements according to IFRS (International Financial Reporting Standards, see: <http://www.iasb.org/>).

are independent of the actual location of the R&D activity. Examples are EADS (the Netherlands), AstraZeneca (UK) or Royal Dutch Shell (UK).

The **data** used for the *Scoreboard* are different from data provided by statistical offices, e.g. BERD data. The *Scoreboard* refers to all R&D financed by a particular company from its own funds, regardless of where that R&D activity is performed. BERD refers to all R&D activities performed by businesses within a particular sector and territory, regardless of the location of the business's headquarters, and regardless of the sources of finance. Further, the *Scoreboard* collects data from audited financial accounts and reports. BERD typically takes a stratified sample, covering all large companies and a representative sample of smaller companies. Additional differences concern the definition of R&D intensity (BERD uses the percentage of value added, while the *Scoreboard* measures it as the R&D/Sales ratio) and the sectoral classification they use (BERD follows NACE (the European statistical classification of economic sectors), while the *Scoreboard* classifies companies' economic activities according to the ICB classification).

B. Sources

The database from which the *Scoreboard* is drawn consists of information extracted from the audited annual reports and accounts of companies, using rigorous financial reporting practice verification processes. The companies are those which are identified as having an R&D activity and which either have their accounts publicly available for free (e.g. on the internet or upon request) or at low cost (e.g. at the company registry). The source documents, annual reports & accounts, are public domain documents and so the *Scoreboard* is capable of independent replication.

The data have been gathered by an independent corporate financial reporting specialist⁴⁰. These external sources are used only to identify potential new entrants.

The database is supplemented by a feed service from Standard & Poor's Compustat Global Vantage database to identify potential new entrants to the ranking. The Amadeus and the Experian databases have been used and recognised stock exchanges are monitored also.

The database contains many times more companies than are listed in the *Scoreboard* to ensure that the top companies by R&D investment can be identified in each case.

C. Limitations

The approach used in preparing the *Scoreboard* has the following limitations:

1. Disclosure

The *Scoreboard* relies on **disclosure of R&D investment** in published annual reports and accounts. Therefore, companies which do not disclose figures for R&D investment or which disclose only figures which are not material enough are not included in the *Scoreboard*. There are few companies which disclose a significant R&D investment only as a percentage figure (often to only one significant figure), e.g. Rhoen-Klinikum, Germany. These companies are not included in the *Scoreboard*.

⁴⁰ Company Reporting Ltd (Edinburgh, Scotland), in partnership with other European organisations to expand the monitoring process in all EU economies that reflects the increase of the number of companies in the 2006 *Scoreboard*.

Due to different national accounting standards and **disclosure practice**, companies of some countries are less likely than others to disclose R&D investment consistently. Further, the facilities and possibility to acquire accounts differ considerably from country to country because the organisation of document registration varies between local and central registries as well as the information that can be obtained and the cost to acquire this data. In some countries, R&D costs are very often integrated with other operational costs and can therefore not be identified separately. For example, companies from many Southern European countries or the new Member States are under-represented in the *Scoreboard*. On the other side, UK companies are over-represented in the *Scoreboard*. For listed companies, country representation will improve with IFRS adoption.

For **highly diversified companies**, the R&D investment disclosed in their accounts relates only part of their activities, whereas sales, profit before tax and market capitalisation are in respect of all their activities. Unless such groups disclose their R&D investment additional to the other information in segmental analyses, it is not possible to relate the R&D more closely to the results of the individual activities which give rise to it. The impact of this is that some statistics for these groups, e.g. R&D as a percentage of sales, are possibly underestimated and so comparisons with non-diversified groups are limited.

The R&D investment disclosed in some companies' accounts follows the US practice of including **engineering costs** relating to product improvement. Where these engineering costs have been disclosed separately, they have been excluded from the *Scoreboard*. However, the incidence of non-disclosure is uncertain and the impact of this practice is a possible overstatement of some overseas R&D investment figures in comparison with the EU. Microsoft (USA), for example, is known to include translation expenses in its R&D expenditure. But as these have not been disclosed separately they are part of the R&D investment shown in the *Scoreboard*.

Where R&D income can be clearly identified as a result of **customer contracts** it is deducted from the R&D expense stated in the annual report, so that the R&D investment included in the *Scoreboard* excludes R&D undertaken under contract for customers such as governments or other companies. However, the disclosure practise differs and R&D income from customer contracts cannot always be clearly identified. This means a possible overstatement of some R&D investment figures in the *Scoreboard* for companies with directly R&D related income where this is not disclosed in the annual report.

As a result of these disclosure limitations, the *Scoreboard* **cannot set out to capture systematically all companies with R&D activity**. There is evidence to suggest that the distribution of R&D activity is highly skewed towards larger companies, with a "long tail" of smaller companies.

2. Measurement

In implementing the definition of R&D, companies exhibit **variability** arising from three principal sources:

- a) Natural variability arises from differing interpretations of the definition. Some companies view a process as an R&D process while other companies may view the same process as an engineering or other process.
- b) Data capture variability arises from differing information systems. Some companies have in place better systems than others for measuring the costs associated with R&D processes. This problem of data capture systems appears challenging for companies in the EU Member States.
- c) Fiscal variability arises from fiscal incentives based on the treatment of costs.

Measurement variability therefore has an impact on the extent of R&D investment disclosure.

3. Timing

The accounts of the companies included in the current year set are their **latest published accounts** and are intended to be their fiscal year 2005 accounts. Companies from most countries have discretion in the choice of accounting period end. As a result, the current year set of the 2006 *Scoreboard* can include accounts ending on a range of dates from mid 2005 to early 2006. Furthermore, the accounts of some companies are publicly available more promptly than others. Therefore, the current year set represents a heterogeneous set of timed data.

4. Availability

The accounts of companies which are **not listed** on any recognised stock exchange are significantly more difficult to capture. There is considerable variability between countries in relation to the existence of and, where they exist, the administrative procedures and costs associated with capturing accounts. This results in the smaller private companies from the “long tail” being under represented; and this is the case with a smaller number of significant private enterprises, such as Servier (France).

D. Interpretation

There are some fundamental aspects of the *Scoreboard* which affect their interpretation.

1. Funding vs. activity

The focus of the *Scoreboard* on R&D investment as reported in group accounts means that the results can be independent of the location of the R&D activity. The *Scoreboard* indicates the level of R&D funded by companies, not all of which is carried out in the country in which the company is registered. This enables inputs such as R&D and Capex investment to be related to outputs such as Sales, Profit, productivity ratios and market capitalisation. The information in the *Scoreboard* differs therefore from other information such as the Business Enterprise R&D (BERD) data generated by the OECD, Eurostat and by National Statistics Offices. The BERD data focus on R&D activity within the countries, independent of the source of funding and, at the national level, exclude R&D carried out by companies in other countries. In brief, the distinction can be seen as “funding vs activity”.

2. Growth

At the aggregate level, the growth statistics reflect the growth of the set of companies in the current year set. Companies which may have existed in the base year but which are not represented in the current year set are not part of the *Scoreboard* (a company may continue to be represented in the current year set if it has been acquired by or merged with another). These are therefore “successful efforts” aggregates rather than economic estimates of market aggregates.

3. Currency effects

All foreign currency amounts have been translated at the **Euro exchange rates ruling at 31 December 2005** as shown in the following table:

| Country | Euro exchange rate of country currency as of 31 December 2005 |
|----------------|---|
| Australia | 1.61 |
| Bermuda | 1.18 |
| Brazil | 2.75 |
| Canada | 1.38 |
| Cayman Islands | 0.98 |
| China | 9.52 |
| Croatia | 7.37 |
| Czech Republic | 29.05 |
| Denmark | 7.46 |
| Hong Kong | 9.15 |
| Hungary | 252.45 |
| Iceland | 74.60 |
| India | 53.09 |
| Israel | 5.43 |
| Japan | 139.22 |
| Liechtenstein | 1.55 |

| Country | Euro exchange rate of country currency as of 31 December 2005 |
|--------------|---|
| Malaysia | 4.46 |
| Norway | 7.99 |
| Poland | 3.84 |
| Russia | 33.90 |
| Singapore | 1.96 |
| Slovakia | 37.84 |
| Slovenia | 239.58 |
| South Africa | 7.48 |
| South Korea | 1192.37 |
| Sweden | 9.39 |
| Switzerland | 1.55 |
| Taiwan | 38.74 |
| Turkey | 1.59 |
| UK | 0.69 |
| USA | 1.18 |

The exchange rate conversion also applies to the historical data. The result is that over time the *Scoreboard* reflects the domestic currency results of the companies rather than economic estimates of current purchasing parity results. The original domestic currency data can be derived simply by reversing the translations at the rates above. Users can then apply their own preferred current purchasing parity transformation models.

E. Glossary of definitions

1. **Research and Development (R&D) investment** in the *Scoreboard* is the cash investment funded by the companies themselves. It excludes R&D undertaken under contract for customers such as governments or other companies. It also excludes the companies' share of any associated company or joint venture R&D investment. Being that disclosed in the annual report and accounts, it is subject to the accounting definitions of R&D. For example, a definition is set out in International Accounting Standard (IAS) 38 "Intangible assets" and is based on the OECD "Frascati" manual. **Research** is defined as original and planned investigation undertaken with the prospect of gaining new scientific or technical knowledge and understanding. Expenditure on research is recognised as an expense when it is incurred. **Development** is the application of research findings or other knowledge to a plan or design for the production of new or substantially improved materials, devices, products, processes, systems or services before the start of commercial production or use. Development costs are capitalised when they meet certain criteria and when it can be demonstrated that the asset will generate probable future economic benefits. Where part or all of R&D costs have been capitalised, the additions to the appropriate intangible assets are included to calculate the cash investment and any amortisation eliminated.
2. **Sales** follow the usual accounting definition of sales, excluding sales taxes and shares of sales of joint ventures & associates. For banks, sales are defined as the "Total (operating) income" plus any insurance income. For insurance companies, sales are defined as "Gross premiums written" plus any banking income.

3. **R&D intensity** is the ratio between R&D investment and net sales of a given company or group of companies. At the aggregate level, R&D intensity is calculated only by those companies for which data exist for both R&D and net sales in the specified year. The calculation of R&D intensity in the *Scoreboard* is different from that in official statistics, e.g. BERD, where R&D intensity is based on value added instead of net sales.
4. **Operating profit** is calculated as profit (or loss) before taxation, plus net interest cost (or minus net interest income) and government grants, less gains (or plus losses) arising from the sale/disposal of businesses or fixed assets.
5. **One-year growth** is simple growth over the previous year, expressed as a percentage: $1 \text{ yr growth} = 100 * ((C/B) - 1)$; where C = current year amount, and B = previous year amount. 1yr growth is calculated only if data exist for both the current and previous year. At the aggregate level, 1yr growth is calculated only by aggregating those companies for which data exist for both the current and previous year.
6. **Three-year growth** is the compound annual growth over the previous three years, expressed as a percentage: $3 \text{ yr growth} = 100 * (((C/B)^{(1/t)} - 1)$; where C = current year amount, B = base year amount (where base year = current year - 3), and t = number of time periods (= 3). 3yr growth is calculated only if data exist for the current and base years. At the aggregate level, 3yr growth is calculated only by aggregating those companies for which data exist for the current and base years.
7. **Capital expenditure (Capex)** is expenditure used by a company to acquire or upgrade physical assets such as equipment, property, industrial buildings. In accounts capital expenditure is added to an asset account (i.e. capitalised), thus increasing the asset's base. It is disclosed in accounts as additions to tangible fixed assets
8. Number of **employees** is the total consolidated average employees or year end employees if average not stated.
9. **R&D per employee** is the simple ratio of R&D investment over employees. At the aggregate level, R&D per employee and the other non-growth statistics are calculated only by aggregating those companies for which data exist for both the numerator and the denominator.
10. **R&D employees** is the number of employees engaged in R&D activities as stated in the annual report.
11. **Market capitalisation** is the share price multiplied by the number of shares issued at a given date. Market capitalisation data have been extracted from both the Financial Times London Share Service and Reuters. These reflect the market capitalisation of each company at the close of trading on 4 August 2006. The gross market capitalisation amount is used to take account of those companies for which not all the equity is available on the market. Companies not listed on a recognised stock exchange have been distinguished separately by the use of italics.
12. **Market Spread** details sales by destination, distinguishing between Europe, North America (USA and Canada) and the Rest of the World. The definition of Europe is subject to the definitions adopted by the individual companies. In cases in which companies have defined a market spread area as EMEA (Europe, Middle East, Africa), this has been allocated to Europe. When a company has not clearly disclosed the turnover region North America but Americas, this has been allocated to North America.
13. **Industry sectors** in are based on the ICB Industry Classification System. The level of dis-aggregation is generally the three-digit level unless indicated otherwise.

Annex 2 – List of EU1000 and non-EU1000 companies

The following tables provide the list of top R&D investors based in the EU and those based outside the EU ranked by the level of R&D investment.

The enclosed CD contains the full dataset of the 2006 EU industrial R&D investment Scoreboard. The data for the EU and the non-EU groups are presented in single tables comprising rankings by companies, industrial sectors and countries. Each listing includes the following company data of the latest four financial years:

- Company identification (name, country of registration, sector of declared activity according to ICB classifications).
- R&D investment
- Net Sales
- Capital expenditure
- Operating profit or loss
- Market capitalisation
- Total number of employees

Table A2.1 R&D ranking of the top 1000 EU companies by level of R&D Investment

| Rank | Company | ICB Sector | Country | R&D Investment | | | |
|--|------------------------------|--|-----------------|-------------------|----------------------|----------------------|----------------------|
| | | | | 2005 €m | change 05/04 % | change 04/03 % | change 03/02 % |
| Top 1000 Companies | | | | 112 876.47 | 5.3 | -1.0 | 1.1 |
| <i>number of companies for calculation</i> | | | | <i>1000</i> | <i>951</i> | <i>861</i> | <i>815</i> |
| 1 | DaimlerChrysler | Automobiles & parts (335) | Germany | 5 649.00 | -0.2 | 1.6 | -8.2 |
| 2 | Siemens | Electrical components & equipment (2733) | Germany | 5 155.00 | 1.8 | -8.1 | -5.3 |
| 3 | GlaxoSmithKline | Pharmaceuticals (4577) | UK | 4 564.13 | 10.5 | 1.7 | -4.9 |
| 4 | Volkswagen | Automobiles & parts (335) | Germany | 4 075.00 | -2.1 | 0.6 | -5.3 |
| 5 | Sanofi-Aventis | Pharmaceuticals (4577) | France | 4 044.00 | 2.1 | -2.6 | 234.0 |
| 6 | Nokia | Telecommunications equipment (9578) | Finland | 3 978.00 | 3.8 | -3.6 | 14.6 |
| 7 | BMW | Automobiles & parts (335) | Germany | 3 115.00 | 10.5 | 10.1 | 9.7 |
| 8 | Robert Bosch | Automobiles & parts (335) | Germany | 2 931.00 | 1.1 | 9.4 | 6.6 |
| 9 | AstraZeneca | Pharmaceuticals (4577) | UK | 2 864.51 | -11.1 | 10.2 | 12.4 |
| 10 | Ericsson | Telecommunications equipment (9578) | Sweden | 2 729.95 | 16.5 | -24.9 | -0.1 |
| 11 | EADS | Aerospace & defence (271) | The Netherlands | 2 367.00 | 3.1 | 4.7 | 4.6 |
| 12 | Philips Electronics | Leisure goods (374) | The Netherlands | 2 337.00 | -7.8 | -3.2 | -14.0 |
| 13 | Renault | Automobiles & parts (335) | France | 2 264.00 | 15.5 | 12.9 | -2.4 |
| 14 | Peugeot (PSA) | Automobiles & parts (335) | France | 2 151.00 | 1.6 | 1.0 | 12.5 |
| 15 | BAE Systems | Aerospace & defence (271) | UK | 2 108.88 | 30.5 | 1.0 | 22.2 |
| 16 | Bayer | Chemicals (135) | Germany | 1 886.00 | -21.5 | -0.4 | -4.7 |
| 17 | Alcatel | Telecommunications equipment (9578) | France | 1 792.00 | 15.1 | -2.3 | -32.8 |
| 18 | Finmeccanica | Aerospace & defence (271) | Italy | 1 746.00 | 20.1 | 18.5 | 24.1 |
| 19 | Boehringer Ingelheim | Pharmaceuticals (4577) | Germany | 1 360.00 | 10.4 | 4.8 | -9.8 |
| 20 | Fiat | Automobiles & parts (335) | Italy | 1 318.00 | | | |
| 21 | STMicroelectronics | Semiconductors (9576) | The Netherlands | 1 317.39 | 7.3 | 24.6 | 22.8 |
| 22 | Infineon Technologies | Semiconductors (9576) | Germany | 1 243.00 | 8.6 | 5.7 | 12.3 |
| 23 | Volvo | Commercial vehicles & trucks (2753) | Sweden | 1 124.98 | 18.0 | 14.0 | 4.2 |
| 24 | SAP | Software (9537) | Germany | 1 088.63 | 6.7 | 2.4 | 9.5 |
| 25 | BASF | Chemicals (135) | Germany | 1 086.30 | -7.4 | 6.2 | -2.7 |
| 26 | BT | Fixed line telecommunications (653) | UK | 1 058.08 | 39.3 | 56.3 | -12.1 |
| 27 | Schering (now part of Bayer) | Pharmaceuticals (4577) | Germany | 989.00 | 6.0 | -1.5 | -2.4 |
| 28 | Unilever | Food producers (357) | UK | 953.00 | -8.4 | -2.3 | -8.7 |
| 29 | AKZO Nobel | Chemicals (135) | The Netherlands | 837.00 | 1.3 | -7.4 | -2.2 |
| 30 | Valeo | Automobiles & parts (335) | France | 779.00 | 11.3 | 24.1 | -2.3 |
| 31 | France Telecom | Fixed line telecommunications (653) | France | 716.00 | 27.0 | 18.0 | -17.0 |
| 32 | Merck | Pharmaceuticals (4577) | Germany | 713.00 | 19.0 | -0.9 | 1.6 |
| 33 | Novo Nordisk | Pharmaceuticals (4577) | Denmark | 681.73 | 16.8 | 3.8 | 1.3 |
| 34 | TOTAL | Oil & gas producers (53) | France | 676.00 | 6.5 | -4.8 | 0.8 |
| 35 | Continental | Automobiles & parts (335) | Germany | 590.40 | 11.4 | 6.4 | 1.4 |
| 36 | Michelin | Automobiles & parts (335) | France | 565.00 | -16.1 | -5.2 | 0.9 |
| 37 | ZF | Automobiles & parts (335) | Germany | 559.00 | 7.4 | -0.7 | -3.3 |
| 38 | MAN | Industrial machinery (2757) | Germany | 547.00 | 36.8 | -1.7 | -3.8 |
| 39 | Telefonica | Fixed line telecommunications (653) | Spain | 544.00 | 18.0 | 4.8 | -14.2 |
| 40 | Schneider | Electrical components & equipment (2733) | France | 542.10 | 1.3 | 8.3 | 4.5 |
| 41 | Rolls-Royce | Aerospace & defence (271) | UK | 512.30 | 24.8 | 0.4 | -5.4 |
| 42 | UCB | Pharmaceuticals (4577) | Belgium | 511.00 | 41.6 | 33.7 | 25.8 |
| 43 | Thales | Aerospace & defence (271) | France | 503.60 | 15.5 | 14.5 | -11.5 |
| 44 | Royal Dutch Shell | Oil & gas producers (53) | UK | 498.47 | 6.3 | -5.3 | 23.7 |
| 45 | L'Oreal | Personal goods (376) | France | 496.20 | -2.1 | 5.6 | 2.6 |
| 46 | Royal Bank of Scotland | Banks (835) | UK | 478.83 | 8.6 | | |
| 47 | Solvay | Chemicals (135) | Belgium | 477.00 | 11.7 | 1.7 | 2.4 |
| 48 | SAFRAN | Aerospace & defence (271) | France | 470.00 | | | 0.3 |
| 49 | ALTANA | Pharmaceuticals (4577) | Germany | 464.96 | 4.5 | 8.1 | 11.6 |
| 50 | Deutsche Telekom | Fixed line telecommunications (653) | Germany | 433.00 | -0.2 | -51.8 | 0.0 |

| Rank | Company | ICB Sector | Country | R&D Investment | | | |
|------|---------------------------------|--|-----------------|----------------|----------------------|----------------------|----------------------|
| | | | | 2005 €m | change 05/04 % | change 04/03 % | change 03/02 % |
| 51 | BP | Oil & gas producers (53) | UK | 425.57 | 14.4 | 25.8 | -6.4 |
| 52 | AREVA | Electricity (753) | France | 408.00 | 1.5 | 41.1 | -14.2 |
| 53 | Electricite de France | Electricity (753) | France | 402.00 | -5.4 | 11.5 | -11.8 |
| 54 | Lagardere | Media (555) | France | 379.00 | 18.1 | -2.7 | 3.8 |
| 55 | HSBC | Banks (835) | UK | 356.05 | 33.8 | | |
| 56 | Vivendi Universal (now Vivendi) | Media (555) | France | 340.00 | 75.3 | 14.1 | 45.3 |
| 57 | ASML | Semiconductors (9576) | The Netherlands | 329.01 | -0.6 | 15.4 | -3.9 |
| 58 | Autoliv | Automobiles & parts (335) | Sweden | 327.06 | 4.7 | 20.6 | 32.9 |
| 59 | Henkel | Household goods (372) | Germany | 324.00 | 19.1 | 5.8 | -0.8 |
| 60 | TeliaSonera | Fixed line telecommunications (653) | Sweden | 306.25 | 3.3 | 9.4 | 117.9 |
| 61 | Saint-Gobain | Construction & materials (235) | France | 305.00 | 0.3 | -0.7 | -1.9 |
| 62 | Vodafone | Mobile telecommunications (657) | UK | 299.81 | -5.9 | 28.1 | 4.3 |
| 63 | Scania | Commercial vehicles & trucks (2753) | Sweden | 295.60 | 20.5 | 7.0 | 4.2 |
| 64 | DSM | Chemicals (135) | The Netherlands | 290.00 | 1.4 | 6.7 | -1.1 |
| 65 | Dassault Aviation | Aerospace & defence (271) | France | 284.56 | 0.6 | | |
| 66 | Marconi (now Telent) | Telecommunications equipment (9578) | UK | 270.70 | -5.6 | -39.8 | -47.9 |
| 67 | Hella | Automobiles & parts (335) | Germany | 264.10 | 53.8 | 2.3 | 11.6 |
| 68 | ALSTOM | Electrical components & equipment (2733) | France | 262.00 | -22.0 | -29.0 | -24.0 |
| 69 | Dassault Systemes | Software (9537) | France | 258.96 | 16.7 | 2.9 | -3.3 |
| 70 | Schwarz Pharma | Pharmaceuticals (4577) | Germany | 258.93 | 30.6 | 37.7 | 15.9 |
| 71 | Thomson | Media (555) | France | 251.00 | -9.4 | -6.1 | -21.1 |
| 72 | Heidelberger Druckmaschinen | Industrial machinery (2757) | Germany | 246.79 | 1.2 | -33.3 | -6.6 |
| 73 | Shire | Pharmaceuticals (4577) | UK | 243.43 | 48.6 | -12.3 | 7.6 |
| 74 | Legrand | Electrical components & equipment (2733) | France | 238.60 | 2.0 | | |
| 75 | Electrolux | Household goods (372) | Sweden | 232.96 | 6.6 | 23.2 | -8.3 |
| 76 | Lundbeck | Pharmaceuticals (4577) | Denmark | 232.46 | 34.9 | -29.8 | 25.1 |
| 77 | Carl Zeiss | Health care equipment & services (453) | Germany | 230.00 | 10.1 | 10.0 | 2.2 |
| 78 | Linde | Chemicals (135) | Germany | 227.00 | 20.7 | 5.0 | 4.1 |
| 79 | Behr | Automobiles & parts (335) | Germany | 215.00 | 10.3 | 6.0 | 5.1 |
| 80 | ICI | Chemicals (135) | UK | 213.94 | 0.0 | -5.8 | 5.4 |
| 81 | Smiths | Aerospace & defence (271) | UK | 209.00 | 5.0 | 5.5 | 11.3 |
| 82 | Agfa-Gevaert | Electronic equipment (2737) | Belgium | 202.00 | 5.8 | -18.0 | -6.1 |
| 82 | ENI | Oil & gas producers (53) | Italy | 202.00 | -21.4 | 8.0 | 36.0 |
| 84 | Elan | Pharmaceuticals (4577) | Ireland | 198.20 | 26.4 | -27.3 | -20.1 |
| 85 | Oce | Electronic office equipment (9574) | The Netherlands | 192.71 | -6.7 | -0.8 | -2.1 |
| 86 | ThyssenKrupp | Industrial metals (175) | Germany | 186.00 | -2.6 | 4.4 | -4.2 |
| 87 | Amadeus Global Travel | Travel & leisure (575) | Spain | 182.19 | 18.9 | 5.7 | 15.5 |
| 88 | Telecom Italia | Fixed line telecommunications (653) | Italy | 180.00 | 29.5 | 0.0 | |
| 89 | JM Voith | General industrials (272) | Germany | 179.00 | 20.1 | 10.4 | -2.9 |
| 90 | Royal & Sun Alliance | Nonlife insurance (853) | UK | 177.56 | 4.3 | | |
| 91 | Reuters | Media (555) | UK | 176.10 | -5.5 | -25.1 | -14.5 |
| 92 | Deutsche Post | Industrial transportation (277) | Germany | 175.00 | -39.7 | 85.9 | -35.8 |
| 93 | Pirelli | Automobiles & parts (335) | Italy | 174.00 | -12.1 | -2.9 | -6.8 |
| 94 | Sandvik | Industrial machinery (2757) | Sweden | 169.69 | -4.7 | -0.3 | 10.5 |
| 95 | Tesco | Food & drug retailers (533) | UK | 167.37 | 35.3 | | |
| 96 | Freudenberg | General industrials (272) | Germany | 165.50 | 11.5 | 6.2 | 40.1 |
| 97 | Invensys | Electronic equipment (2737) | UK | 160.09 | -11.3 | -24.8 | -25.7 |
| 98 | Diehl Stiftung | General industrials (272) | Germany | 160.00 | -1.2 | -3.2 | 4.0 |
| 99 | Rheinmetall | Automobiles & parts (335) | Germany | 156.00 | 2.6 | -19.6 | -9.1 |
| 100 | Pierre Fabre | Pharmaceuticals (4577) | France | 154.30 | 6.3 | 7.1 | 3.5 |

| Rank | Company | ICB Sector | Country | R&D Investment | | | |
|------|---|--|-----------------|----------------|----------------------|----------------------|----------------------|
| | | | | 2005 €m | change 05/04 % | change 04/03 % | change 03/02 % |
| 101 | Fresenius | Health care equipment & services (453) | Germany | 149.00 | 12.0 | 9.9 | -12.3 |
| 102 | Reed Elsevier | Media (555) | UK | 148.45 | -7.3 | | |
| 103 | Wacker-Chemie | Chemicals (135) | Germany | 146.90 | -3.0 | -0.1 | -3.8 |
| 104 | Ipsen | Pharmaceuticals (4577) | France | 144.42 | 17.4 | -9.7 | 4.1 |
| 105 | L'Air Liquide | Chemicals (135) | France | 141.10 | -5.2 | 57.8 | 2.4 |
| 106 | Banca Intesa | Banks (835) | Italy | 141.00 | | | |
| 107 | Arcelor (now part of Arcelor Mittal Steel. The Netherlands) | Industrial metals (175) | Luxembourg | 138.00 | 2.2 | -4.9 | -9.6 |
| 108 | Business Objects | Software (9537) | France | 137.79 | 8.0 | 57.8 | 27.2 |
| 109 | Bouygues | Construction & materials (235) | France | 137.00 | 0.7 | 60.0 | -73.4 |
| 110 | Atlas Copco | Industrial machinery (2757) | Sweden | 134.33 | -1.1 | 9.4 | -3.9 |
| 111 | Rhodia | Chemicals (135) | France | 134.00 | -21.6 | -15.8 | 1.0 |
| 112 | Knorr-Bremse | Industrial machinery (2757) | Germany | 132.60 | 6.9 | 3.3 | 0.8 |
| 113 | BioMerieux | Health care equipment & services (453) | France | 130.70 | 3.1 | -3.3 | 10.8 |
| 114 | Misys | Software (9537) | UK | 130.55 | -1.1 | 2.6 | -2.2 |
| 115 | Merial | Biotechnology (4573) | UK | 128.52 | 7.0 | 6.0 | 2.1 |
| 116 | GKN | Automobiles & parts (335) | UK | 128.08 | -1.1 | 9.9 | -1.2 |
| 117 | RWE | Gas, water & multiutilities (757) | Germany | 127.00 | -0.8 | -70.6 | 0.2 |
| 118 | Danisco | Food producers (357) | Denmark | 126.43 | 69.3 | 10.1 | -1.9 |
| 119 | Danone | Food producers (357) | France | 125.00 | -4.6 | 0.8 | -2.3 |
| 120 | Kerry | Food producers (357) | Ireland | 124.74 | 12.5 | 25.5 | 12.6 |
| 121 | Amdocs | Software (9537) | UK | 122.46 | 14.3 | 6.0 | -3.9 |
| 122 | Sage | Software (9537) | UK | 118.78 | 9.7 | 28.3 | 0.3 |
| 123 | ARM | Semiconductors (9576) | UK | 116.83 | 46.8 | 13.6 | -3.7 |
| 124 | Vattenfall | Electricity (753) | Sweden | 114.72 | 32.8 | 69.7 | -1.6 |
| 125 | Essilor International | Health care equipment & services (453) | France | 113.49 | 5.9 | 3.1 | 19.5 |
| 126 | Umicore | Industrial metals (175) | Belgium | 112.00 | 25.8 | 111.9 | 40.7 |
| 127 | Tchibo | Food & drug retailers (533) | Germany | 109.00 | 7.9 | | |
| 128 | Drägerwerk | Health care equipment & services (453) | Germany | 108.35 | 4.3 | 7.3 | 24.9 |
| 129 | Trumpf | General industrials (272) | Germany | 107.00 | 9.3 | 10.4 | 65.0 |
| 130 | Novozymes | Biotechnology (4573) | Denmark | 106.32 | -2.0 | 8.0 | 5.1 |
| 131 | Burelle | Automobiles & parts (335) | France | 105.48 | 152.5 | 1.9 | 9.1 |
| 132 | Sanpaolo IMI | Banks (835) | Italy | 104.00 | | | |
| 133 | UBIsoft Entertainment | Software (9537) | France | 103.08 | 28.5 | 9.5 | 1 141.5 |
| 134 | Lanxess | Chemicals (135) | Germany | 101.00 | | | |
| 135 | ASM International | Semiconductors (9576) | The Netherlands | 100.67 | 18.6 | 7.4 | -10.5 |
| 136 | Barclays | Banks (835) | UK | 98.97 | 44.7 | | |
| 137 | Smith & Nephew | Health care equipment & services (453) | UK | 97.51 | 0.9 | -0.6 | 5.5 |
| 138 | B Braun Melsungen | Health care equipment & services (453) | Germany | 97.32 | 3.4 | -10.7 | 2.7 |
| 139 | Corus | Industrial metals (175) | UK | 96.06 | 4.8 | 1.6 | -4.6 |
| 139 | BAT | Tobacco (378) | UK | 96.06 | -1.5 | -8.2 | 17.7 |
| 141 | SNPE | Chemicals (135) | France | 94.60 | -17.0 | -0.9 | 7.5 |
| 142 | FastWeb | Fixed line telecommunications (653) | Italy | 94.42 | | | -32.1 |
| 143 | Cognis Deutschland | Chemicals (135) | Germany | 92.00 | 39.4 | 1.5 | -14.5 |
| 144 | Reckitt Benckiser | Household goods (372) | UK | 91.69 | 5.0 | 5.3 | 5.6 |
| 145 | Spirent (now Spirent Communications) | Telecommunications equipment (9578) | UK | 91.40 | -6.7 | 2.0 | -15.1 |
| 146 | SKF | Industrial machinery (2757) | Sweden | 90.44 | 6.7 | 6.1 | -2.2 |
| 147 | SAAB | Aerospace & defence (271) | Sweden | 89.90 | 4.6 | -0.1 | -1.1 |
| 148 | Stora Enso | Forestry & paper (173) | Finland | 88.00 | 7.2 | -7.5 | -22.5 |
| 148 | Metso | Industrial machinery (2757) | Finland | 88.00 | -14.6 | -18.3 | -13.7 |
| 150 | Danfoss | Industrial machinery (2757) | Denmark | 86.61 | 13.9 | -2.1 | 20.1 |

| Rank | Company | ICB Sector | Country | R&D Investment | | | |
|------|--|--|-----------------|----------------|----------------------|----------------------|----------------------|
| | | | | 2005 €m | change 05/04 % | change 04/03 % | change 03/02 % |
| 151 | Vestas Wind Systems | Electrical components & equipment (2733) | Denmark | 86.30 | 48.0 | 109.7 | 38.3 |
| 152 | Indra Sistemas | Computer services (9533) | Spain | 85.90 | 9.5 | 7.9 | 0.9 |
| 153 | Infogrames Entertainment | Software (9537) | France | 85.70 | -22.4 | 19.6 | -17.3 |
| 154 | Johnson Matthey | Chemicals (135) | UK | 85.58 | 9.1 | -1.1 | 12.6 |
| 155 | Rabobank | Banks (835) | The Netherlands | 85.00 | 26.9 | | |
| 156 | Suez | Gas, water & multiutilities (757) | France | 84.80 | -0.2 | 7.6 | -37.3 |
| 157 | Cadbury Schweppes | Food producers (357) | UK | 84.41 | -7.9 | 18.9 | 65.6 |
| 158 | Krones | Industrial machinery (2757) | Germany | 82.59 | | | |
| 159 | British Nuclear Fuels (now British Nuclear Group Sellafield) | Electricity (753) | UK | 80.05 | -6.8 | -11.9 | 24.1 |
| 160 | Orion | Food & drug retailers (533) | Finland | 79.50 | 12.8 | -17.9 | -21.6 |
| 161 | Symbian | Software (9537) | UK | 79.29 | 19.5 | 18.9 | 15.9 |
| 162 | Grundfos | Industrial machinery (2757) | Denmark | 79.06 | 3.2 | 23.2 | 2.1 |
| 163 | Gambro (now part of Investor) | Health care equipment & services (453) | Sweden | 78.93 | 20.9 | -4.2 | 19.8 |
| 164 | Wincor Nixdorf | Computer services (9533) | Germany | 78.01 | 7.0 | 10.3 | 5.2 |
| 165 | Standard Chartered | Banks (835) | UK | 74.60 | 6.0 | | |
| 166 | Barco | Electronic equipment (2737) | Belgium | 73.33 | 6.3 | -1.0 | -36.5 |
| 167 | Gaz De France | Gas, water & multiutilities (757) | France | 73.00 | -18.9 | 1.1 | -24.6 |
| 168 | Deutsche Borse | Other financials (877) | Germany | 72.30 | -13.8 | -8.8 | -25.1 |
| 169 | EPCOS | Electronic equipment (2737) | Germany | 70.30 | -0.6 | 1.9 | -26.2 |
| 170 | Trelleborg | Automobiles & parts (335) | Sweden | 70.20 | 7.0 | 27.0 | 3.2 |
| 171 | Wartsila | Commercial vehicles & trucks (2753) | Finland | 70.10 | 18.0 | -15.4 | -19.9 |
| 172 | Chiesi Farmaceutici | Pharmaceuticals (4577) | Italy | 69.56 | 5.6 | 5.7 | -4.7 |
| 173 | ZF Lenksysteme | Automobiles & parts (335) | Germany | 68.60 | 5.4 | | |
| 174 | Tomkins | General industrials (272) | UK | 67.97 | -9.0 | -12.5 | 13.9 |
| 175 | Giesecke & Devrient | Support services (279) | Germany | 67.61 | 7.9 | -15.1 | -5.4 |
| 176 | Italtel | Telecommunications equipment (9578) | Italy | 67.52 | 7.8 | -22.5 | -12.1 |
| 177 | Bang & Olufsen | Leisure goods (374) | Denmark | 67.27 | 10.0 | 28.2 | 6.8 |
| 178 | Eberspaecher | Automobiles & parts (335) | Germany | 66.40 | 1.1 | 7.0 | -5.4 |
| 179 | Avecia | Chemicals (135) | UK | 66.08 | -21.3 | -1.9 | -2.8 |
| 180 | Serco | Support services (279) | UK | 65.93 | 18.0 | | |
| 181 | SCA | Forestry & paper (173) | Sweden | 65.73 | -5.9 | 4.1 | -29.2 |
| 182 | Spectris | Electrical components & equipment (2733) | UK | 65.35 | 3.5 | 27.3 | 15.2 |
| 183 | Basell AF SCA | Chemicals (135) | Luxembourg | 65.33 | | | |
| 184 | Deutz | Industrial machinery (2757) | Germany | 63.00 | -9.4 | 26.6 | 16.6 |
| 184 | Repsol YPF | Oil & gas producers (53) | Spain | 63.00 | 10.5 | -57.5 | 2.3 |
| 184 | Adidas-Salomon | Personal goods (376) | Germany | 63.00 | -28.4 | 2.3 | 1.2 |
| 187 | Veolia Environnement | Gas, water & multiutilities (757) | France | 62.90 | 0.3 | -34.2 | |
| 188 | BOC | Chemicals (135) | UK | 62.87 | 3.8 | 4.3 | -15.1 |
| 189 | Assa Abloy | Industrial machinery (2757) | Sweden | 62.64 | 17.6 | 11.8 | 4.2 |
| 190 | Cobham | Aerospace & defence (271) | UK | 62.44 | -11.9 | 20.5 | 27.9 |
| 191 | Voest-Alpine | Industrial metals (175) | Austria | 61.50 | 2.5 | 16.3 | 12.2 |
| 192 | Biovitrum | Biotechnology (4573) | Sweden | 61.36 | 7.6 | 65.6 | -40.5 |
| 193 | Claas | Commercial vehicles & trucks (2753) | Germany | 59.93 | -17.4 | 8.0 | 6.6 |
| 194 | Chr Hansen (now ALK-Abello) | Pharmaceuticals (4577) | Denmark | 59.26 | -2.4 | -9.6 | 17.0 |
| 195 | Genmab | Biotechnology (4573) | Denmark | 59.22 | 18.3 | 7.9 | -12.7 |
| 196 | GEA | Industrial machinery (2757) | Germany | 58.96 | 0.7 | -37.4 | -10.2 |
| 197 | Axalto (now Gemalto) | Electronic equipment (2737) | The Netherlands | 58.53 | 5.3 | 13.4 | -8.5 |
| 198 | TietoEnator | Computer services (9533) | Finland | 58.30 | 32.8 | | |
| 199 | Old Mutual | Life insurance (857) | UK | 58.22 | 699.7 | | |
| 200 | Salzgitter | Industrial metals (175) | Germany | 57.50 | 0.9 | -0.9 | 22.3 |

| Rank | Company | ICB Sector | Country | R&D Investment | | | |
|------|--|--|-----------------|----------------|----------------------|----------------------|----------------------|
| | | | | 2005 €m | change 05/04 % | change 04/03 % | change 03/02 % |
| 201 | Cambridge Antibody (now part of AstraZeneca) | Biotechnology (4573) | UK | 57.01 | -11.2 | -1.9 | 43.7 |
| 202 | Gemplus International (now part of Gemalto. The Netherlands) | Electronic equipment (2737) | Luxembourg | 55.86 | -22.6 | 0.3 | -31.4 |
| 203 | Abengoa | General industrials (272) | Spain | 55.79 | 139.4 | 16.3 | 102.7 |
| 204 | Danske Bank | Banks (835) | Denmark | 55.64 | 52.6 | | |
| 205 | Koenig & Bauer | Industrial machinery (2757) | Germany | 55.40 | -4.6 | 0.9 | 16.6 |
| 206 | Lafarge | Construction & materials (235) | France | 55.00 | 1.9 | -3.6 | 1.8 |
| 206 | SNCF | Industrial transportation (277) | France | 55.00 | | | |
| 208 | TDC (now part of Nordic Telephone) | Fixed line telecommunications (653) | Denmark | 54.70 | -15.0 | | |
| 209 | Heraeus | Industrial metals (175) | Germany | 54.00 | | | |
| 210 | Nexans | Electrical components & equipment (2733) | France | 52.00 | 10.6 | 0.0 | -2.1 |
| 211 | William Demant | Health care equipment & services (453) | Denmark | 51.29 | 18.0 | 9.9 | 8.4 |
| 212 | CSR | Semiconductors (9576) | UK | 51.15 | 118.8 | 66.3 | 31.6 |
| 213 | IWKA | Industrial machinery (2757) | Germany | 51.08 | -13.9 | -0.7 | -1.0 |
| 214 | Bull | Computer hardware (9572) | France | 51.00 | -5.6 | -10.0 | -17.8 |
| 215 | Industria de Turbo Propulsores | Aerospace & defence (271) | Spain | 50.70 | -38.0 | -24.3 | 185.4 |
| 216 | Acambis | Biotechnology (4573) | UK | 50.21 | 19.4 | 45.2 | 22.1 |
| 217 | UPM-Kymmene | Forestry & paper (173) | Finland | 50.00 | 6.4 | -2.1 | 4.3 |
| 218 | Gedeon Richter | Pharmaceuticals (4577) | Hungary | 49.99 | 19.0 | 12.3 | 15.9 |
| 219 | Sorin | Health care equipment & services (453) | Italy | 49.65 | -8.1 | -11.3 | 21.3 |
| 220 | Neopost | Electronic office equipment (9574) | France | 48.90 | 25.1 | 19.2 | -1.8 |
| 221 | Ingenico | Electronic equipment (2737) | France | 48.64 | 50.0 | -5.5 | -20.2 |
| 222 | Dexia | Banks (835) | Belgium | 48.00 | 585.7 | | |
| 223 | Intentia International | Computer services (9533) | Sweden | 47.83 | -3.4 | 1.2 | -14.7 |
| 224 | Alfa Laval | Industrial machinery (2757) | Sweden | 47.70 | 10.9 | 9.7 | 3.6 |
| 225 | Patria | Aerospace & defence (271) | Finland | 47.60 | 20.8 | 46.5 | 24.5 |
| 226 | GPC Biotech | Biotechnology (4573) | Germany | 46.34 | 67.8 | 86.4 | -19.2 |
| 227 | Zeltia | Pharmaceuticals (4577) | Spain | 45.68 | 24.4 | -28.3 | 14.9 |
| 228 | Filtronic | Telecommunications equipment (9578) | UK | 45.24 | 11.4 | -1.5 | -11.8 |
| 229 | Grammer | Automobiles & parts (335) | Germany | 45.13 | 38.1 | | |
| 230 | Numico | Food producers (357) | The Netherlands | 45.00 | 36.4 | 3.1 | -25.6 |
| 231 | Bekaert | Industrial metals (175) | Belgium | 44.98 | -16.6 | 49.8 | -13.6 |
| 232 | Recordati | Pharmaceuticals (4577) | Italy | 44.96 | 20.5 | 13.9 | -6.7 |
| 233 | Meggitt | Aerospace & defence (271) | UK | 44.78 | 11.3 | 38.3 | -13.1 |
| 234 | Leoni | Electrical components & equipment (2733) | Germany | 44.59 | 1.0 | 21.0 | 12.3 |
| 235 | Belgacom | Fixed line telecommunications (653) | Belgium | 44.00 | -17.0 | -15.9 | 43.2 |
| 236 | Getinge | Health care equipment & services (453) | Sweden | 43.93 | 3.9 | 53.8 | 3.9 |
| 237 | Software | Software (9537) | Germany | 43.19 | -11.9 | -16.0 | -9.3 |
| 238 | Kemira | Chemicals (135) | Finland | 43.10 | -5.3 | -4.6 | 3.7 |
| 239 | Telekom Austria | Fixed line telecommunications (653) | Austria | 43.03 | 1.5 | -0.9 | 40.9 |
| 240 | HeidelbergCement | Construction & materials (235) | Germany | 43.00 | -2.3 | 2.3 | -2.3 |
| 241 | TTP Communications | Telecommunications equipment (9578) | UK | 42.93 | 31.3 | 4.8 | 2.6 |
| 242 | IMI | Industrial machinery (2757) | UK | 42.79 | 10.5 | -5.0 | 0.0 |
| 243 | Renishaw | Electronic equipment (2737) | UK | 42.64 | 70.9 | 10.6 | 8.8 |
| 244 | Voca | Support services (279) | UK | 42.57 | 256.5 | -66.8 | -16.3 |
| 245 | Kone | Industrial machinery (2757) | Finland | 42.34 | -37.1 | -23.9 | 39.7 |
| 246 | PUMA | Personal goods (376) | Germany | 42.00 | 13.8 | 23.4 | 23.6 |
| 247 | Groupe SEB | Household goods (372) | France | 41.50 | -1.7 | 3.9 | 8.8 |
| 248 | Borealis | Chemicals (135) | Denmark | 41.00 | 0.0 | -4.7 | 4.9 |
| 249 | Gildemeister | Industrial machinery (2757) | Germany | 40.60 | 6.4 | -8.1 | -12.7 |
| 250 | Jungheinrich | Commercial vehicles & trucks (2753) | Germany | 40.22 | 5.6 | 15.1 | 11.0 |

| Rank | Company | ICB Sector | Country | R&D Investment | | | |
|------|--|---|-----------------|----------------|----------------------|----------------------|----------------------|
| | | | | 2005 €m | change 05/04 % | change 04/03 % | change 03/02 % |
| 251 | Haldex | Automobiles & parts (335) | Sweden | 40.16 | 13.9 | 11.8 | 2.1 |
| 252 | Krka | Pharmaceuticals (4577) | Slovenia | 40.12 | 14.8 | 14.3 | 8.2 |
| 253 | Flamel Technologies | Biotechnology (4573) | France | 40.10 | 33.8 | 74.9 | 65.1 |
| 254 | Hexagon | Industrial machinery (2757) | Sweden | 39.52 | 115.7 | 22.9 | 26.1 |
| 255 | Amer Sports | Leisure goods (374) | Finland | 39.40 | 25.9 | 2.0 | 28.5 |
| 256 | BAA (now part of Airport Development and Investment) | Industrial transportation (277) | UK | 39.30 | | | |
| 256 | Compagnie Generale de Geophysique | Oil equipment, services & distribution (57) | France | 39.30 | 17.3 | 24.5 | -0.7 |
| 258 | NKT | Electrical components & equipment (2733) | Denmark | 39.12 | -4.1 | 49.9 | -15.0 |
| 259 | JCB Service | Commercial vehicles & trucks (2753) | UK | 39.00 | 18.5 | 31.4 | -11.2 |
| 260 | Seton House | General industrials (272) | UK | 38.86 | 38.3 | | |
| 261 | Vernalis | Biotechnology (4573) | UK | 38.56 | 23.7 | -31.5 | 33.3 |
| 262 | Novar (now part of Honeywell Acquisitions) | Construction & materials (235) | UK | 38.13 | -12.4 | 15.4 | -4.1 |
| 263 | Christian Dior | Personal goods (376) | France | 38.00 | -7.3 | 0.0 | -12.8 |
| 264 | SkyePharma | Pharmaceuticals (4577) | UK | 37.84 | -7.0 | 11.5 | 66.3 |
| 265 | Metsalitto | Forestry & paper (173) | Finland | 37.30 | 0.8 | 2.8 | 12.5 |
| 266 | LogicaCMG | Computer services (9533) | UK | 37.11 | -32.4 | -34.4 | -10.2 |
| 267 | Arla Foods | Food producers (357) | Denmark | 37.00 | -20.0 | -9.5 | |
| 268 | WCM | Other financials (877) | Germany | 36.46 | -1.4 | | |
| 269 | IBS | Software (9537) | Sweden | 36.10 | 8.4 | 8.3 | -7.6 |
| 270 | Beru | Automobiles & parts (335) | Germany | 36.08 | 15.3 | 5.9 | 69.0 |
| 271 | Stork | Industrial machinery (2757) | The Netherlands | 35.79 | 18.9 | -59.3 | 131.2 |
| 272 | Sartorius | Biotechnology (4573) | Germany | 35.78 | 20.6 | 8.1 | 9.4 |
| 273 | Gamesa | Industrial machinery (2757) | Spain | 35.73 | -28.5 | 22.4 | 21.6 |
| 274 | Vilmorin Clause | Food producers (357) | France | 35.60 | 2.6 | 18.0 | 1.0 |
| 275 | GN Store Nord | Telecommunications equipment (9578) | Denmark | 34.99 | -24.1 | 16.2 | -50.3 |
| 276 | Pace Micro Technology | Leisure goods (374) | UK | 34.90 | 12.4 | -21.2 | -26.5 |
| 277 | CSM | Food producers (357) | The Netherlands | 34.70 | -13.3 | 0.0 | 14.3 |
| 278 | Stada Arzneimittel | Pharmaceuticals (4577) | Germany | 34.48 | 32.2 | 25.6 | 28.8 |
| 279 | Jenoptik | Industrial machinery (2757) | Germany | 34.45 | 8.4 | 1.3 | 6.3 |
| 280 | Sud-Chemie | Chemicals (135) | Germany | 34.40 | 11.3 | 6.2 | 2.7 |
| 281 | Anglo American | Mining (177) | UK | 33.91 | -11.1 | 15.4 | 34.5 |
| 282 | Porsche | Automobiles & parts (335) | Germany | 33.66 | -29.1 | | |
| 283 | Qiagen | Biotechnology (4573) | The Netherlands | 33.15 | 14.5 | 15.5 | 8.0 |
| 284 | Outokumpu | Industrial metals (175) | Finland | 33.00 | -19.5 | -14.6 | 2.1 |
| 285 | Industrial and Financial Systems | Software (9537) | Sweden | 32.81 | 20.3 | -4.8 | 17.5 |
| 286 | Eureko | Life insurance (857) | The Netherlands | 32.80 | | | 450.0 |
| 287 | ProStrakan | Pharmaceuticals (4577) | UK | 32.64 | 118.6 | 100.1 | -44.7 |
| 288 | Cookson | General industrials (272) | UK | 32.46 | -8.2 | -24.8 | -2.1 |
| 289 | Pilkington (now part of NSG UK Enterprises) | Construction & materials (235) | UK | 32.02 | -24.1 | 0.0 | -3.3 |
| 289 | GUS | General retailers (537) | UK | 32.02 | 46.7 | -76.9 | -4.4 |
| 291 | Eramet | Industrial metals (175) | France | 32.00 | -8.6 | 29.6 | 22.7 |
| 292 | Zumtobel | Electronic equipment (2737) | Austria | 31.51 | -1.7 | 11.6 | |
| 293 | Zambon | Pharmaceuticals (4577) | Italy | 31.00 | -3.4 | 1.6 | |
| 294 | IMMSI | Automobiles & parts (335) | Italy | 30.83 | -20.3 | 2.1 | |
| 295 | Nyco | Pharmaceuticals (4577) | Denmark | 30.74 | 19.6 | -22.1 | |
| 296 | Tate & Lyle | Food producers (357) | UK | 30.56 | 10.5 | 11.8 | -5.6 |
| 296 | Rexam | General industrials (272) | UK | 30.56 | 61.5 | -18.8 | -20.0 |
| 298 | Cargotec | Industrial machinery (2757) | Finland | 30.34 | | | |
| 299 | Imagination Technologies | Semiconductors (9576) | UK | 30.05 | 7.3 | 19.5 | 24.9 |
| 300 | Barilla GeR Fratelli | Food producers (357) | Italy | 30.00 | | | |
| 300 | Sudzucker | Food producers (357) | Germany | 30.00 | 8.7 | 6.2 | 2.0 |

| Rank | Company | ICB Sector | Country | R&D Investment | | | |
|------|----------------------------------|---|-----------------|----------------|----------------------|----------------------|----------------------|
| | | | | 2005 €m | change 05/04 % | change 04/03 % | change 03/02 % |
| 302 | ELMOS Semiconductor | Semiconductors (9576) | Germany | 29.71 | 15.3 | 7.7 | 24.4 |
| 303 | Finland Post | Industrial transportation (277) | Finland | 29.50 | 51.3 | -12.9 | 16.7 |
| 304 | Tenaris | Oil equipment, services & distribution (57) | Luxembourg | 29.42 | 31.9 | 331.3 | |
| 305 | Technip | Oil equipment, services & distribution (57) | France | 29.40 | -11.4 | -0.3 | -11.0 |
| 306 | Intracom | Telecommunications equipment (9578) | Greece | 29.08 | -46.1 | -16.9 | -11.0 |
| 307 | Brembo | Automobiles & parts (335) | Italy | 28.72 | | | 25.4 |
| 308 | Coloplast | Health care equipment & services (453) | Denmark | 28.69 | 5.4 | -1.4 | |
| 309 | Indesit | Household goods (372) | Italy | 28.50 | 60.1 | | |
| 309 | Gameloft | Software (9537) | France | 28.50 | | | 19 400.0 |
| 311 | BIC | Household goods (372) | France | 28.29 | 14.3 | -17.9 | -17.5 |
| 312 | Dyson James | Household goods (372) | UK | 28.27 | 31.4 | 25.3 | 48.0 |
| 313 | Austriamicrosystems | Electrical components & equipment (2733) | Austria | 28.20 | 0.2 | -2.8 | 0.3 |
| 314 | Dialog Semiconductor | Semiconductors (9576) | UK | 28.10 | -3.3 | -5.0 | -4.8 |
| 315 | OMX | Other financials (877) | Sweden | 28.02 | 119.2 | -45.7 | -13.0 |
| 316 | KBC | Banks (835) | Belgium | 28.00 | | | |
| 316 | La Poste | Industrial transportation (277) | France | 28.00 | 21.7 | 76.9 | |
| 318 | BHP Billiton | Mining (177) | UK | 27.98 | 73.7 | -52.5 | 33.3 |
| 319 | Crucell | Biotechnology (4573) | The Netherlands | 27.74 | 73.5 | -20.3 | -9.3 |
| 320 | Aixtron | Semiconductors (9576) | Germany | 27.63 | 57.0 | 23.8 | 17.6 |
| 321 | Andritz | Industrial machinery (2757) | Austria | 27.15 | 28.6 | -17.1 | -15.5 |
| 322 | Ahlstrom | Chemicals (135) | Finland | 27.10 | -1.8 | -16.1 | 18.8 |
| 323 | Elekta | Health care equipment & services (453) | Sweden | 27.06 | 12.4 | 19.6 | 31.2 |
| 324 | Sopra | Computer services (9533) | France | 26.70 | -14.7 | 6.5 | 2.1 |
| 325 | ISOFT | Software (9537) | UK | 26.61 | 44.1 | 60.7 | 49.8 |
| 326 | Nolato | Chemicals (135) | Sweden | 26.42 | 16.4 | -13.4 | 3.8 |
| 327 | RAG | General industrials (272) | Germany | 26.40 | -23.0 | -23.1 | |
| 328 | Intercell | Biotechnology (4573) | Austria | 26.34 | 68.0 | 17.6 | 35.1 |
| 329 | Innogenetics | Biotechnology (4573) | Belgium | 26.31 | -6.2 | 10.4 | 17.0 |
| 330 | Tessenderlo | Chemicals (135) | Belgium | 26.00 | -7.8 | 2.9 | 5.4 |
| 330 | Istituto Finanziario Industriale | Other financials (877) | Italy | 26.00 | 52.9 | -99.0 | 0.1 |
| 332 | Kontron | Computer hardware (9572) | Germany | 25.60 | -10.0 | 8.1 | 1.3 |
| 332 | Paul Hartmann | Health care equipment & services (453) | Germany | 25.60 | -18.2 | | |
| 332 | Guerbet | Pharmaceuticals (4577) | France | 25.60 | 6.7 | 0.0 | 33.3 |
| 335 | Duerr | Industrial machinery (2757) | Germany | 25.51 | -21.5 | -1.7 | -6.4 |
| 336 | Ultra Electronics | Aerospace & defence (271) | UK | 25.16 | 11.7 | 22.2 | 18.6 |
| 337 | Nutreco | Food producers (357) | The Netherlands | 25.10 | 0.0 | 4.1 | 12.1 |
| 338 | Unit 4 Agresso | Software (9537) | The Netherlands | 24.93 | 5.3 | 8.9 | -3.1 |
| 339 | KSB | Industrial machinery (2757) | Germany | 24.73 | 0.9 | 2.1 | 2.5 |
| 340 | Campina | Food producers (357) | The Netherlands | 24.70 | -5.7 | -1.5 | 10.8 |
| 341 | MGI Coutier | Automobiles & parts (335) | France | 24.65 | 6.7 | 12.7 | -5.5 |
| 342 | ErlingKlinger | Automobiles & parts (335) | Germany | 24.54 | 10.5 | 12.7 | 3.7 |
| 343 | RM | Software (9537) | UK | 24.47 | 15.6 | 24.0 | -15.2 |
| 344 | Valentino Fashion | Personal goods (376) | Italy | 24.46 | | | |
| 345 | James Hardie Industries | Construction & materials (235) | The Netherlands | 24.33 | 32.9 | -4.4 | 24.9 |
| 346 | Wavecom | Telecommunications equipment (9578) | France | 24.07 | -48.9 | -24.2 | -3.1 |
| 347 | Intec Telecom Systems | Software (9537) | UK | 24.03 | 43.6 | 14.1 | 25.5 |
| 348 | Energie Baden | Electricity (753) | Germany | 24.00 | 220.0 | -29.9 | |
| 348 | E ON | Gas, water & multiutilities (757) | Germany | 24.00 | -56.4 | -20.3 | -81.8 |
| 350 | BBC | Media (555) | UK | 23.58 | -13.8 | -10.1 | 23.0 |

| Rank | Company | ICB Sector | Country | R&D Investment | | | |
|------|---|--|-----------------|----------------|----------------------|----------------------|----------------------|
| | | | | 2005 €m | change 05/04 % | change 04/03 % | change 03/02 % |
| 351 | Bollere Investissement | Industrial transportation (277) | France | 23.50 | 4.9 | 16.1 | 9.7 |
| 352 | Boots (now Alliance Boots) | General retailers (537) | UK | 23.43 | -28.8 | 6.1 | -17.1 |
| 353 | Diageo | Beverages (353) | UK | 23.29 | 45.5 | -26.7 | -46.4 |
| 353 | Laird | Electrical components & equipment (2733) | UK | 23.29 | 107.8 | 28.4 | 9.0 |
| 355 | Ilog | Software (9537) | France | 23.08 | 19.5 | 20.8 | 23.4 |
| 356 | Egis Pharmaceuticals | Pharmaceuticals (4577) | Hungary | 23.06 | 20.0 | -1.7 | 30.4 |
| 357 | ACS | Construction & materials (235) | Spain | 23.05 | | | |
| 358 | Union Fenosa | Electricity (753) | Spain | 23.04 | 73.5 | -28.1 | -81.2 |
| 359 | Deutsche Bahn | Travel & leisure (575) | Germany | 23.00 | -8.0 | | |
| 360 | Alizyme | Biotechnology (4573) | UK | 22.93 | 151.2 | -45.0 | 17.6 |
| 361 | Warner Chilcott (now Chilcott) (now part of Warner Acquisition) | Pharmaceuticals (4577) | UK | 22.88 | -5.9 | 20.1 | 50.4 |
| 362 | Rockwool International | Construction & materials (235) | Denmark | 22.66 | 5.0 | 1.5 | 7.5 |
| 363 | Clarins | Personal goods (376) | France | 22.54 | 10.1 | 1.8 | 19.6 |
| 364 | Societe Generale | Banks (835) | France | 22.00 | | | |
| 364 | Rautaruukki | Industrial metals (175) | Finland | 22.00 | 29.4 | 0.0 | 0.0 |
| 366 | Medivir | Pharmaceuticals (4577) | Sweden | 21.93 | 6.1 | 9.6 | -3.8 |
| 367 | Autostrade | Industrial transportation (277) | Italy | 21.90 | | | |
| 368 | Oberthur Card Systems | Electronic equipment (2737) | France | 21.75 | 18.3 | 4.6 | -12.2 |
| 369 | Auriga Industries | Chemicals (135) | Denmark | 21.69 | 2.6 | -7.6 | -9.2 |
| 370 | Option | Telecommunications equipment (9578) | Belgium | 21.59 | 50.6 | 59.7 | 28.5 |
| 371 | Pohjolan Voima | Electricity (753) | Finland | 21.50 | 8.6 | 59.7 | -3.1 |
| 372 | Q-Med | Biotechnology (4573) | Sweden | 21.46 | 10.3 | 19.6 | 3.3 |
| 373 | Melexis | Semiconductors (9576) | Belgium | 21.44 | 26.1 | 42.6 | 20.4 |
| 374 | Simcorp | Software (9537) | Denmark | 21.41 | 35.9 | 24.2 | -15.7 |
| 375 | Boliden | Mining (177) | Sweden | 21.20 | 17.8 | 89.9 | -6.3 |
| 376 | AMS (now BAE Systems Integrated System) | Aerospace & defence (271) | UK | 21.09 | 54.2 | -7.2 | 46.4 |
| 377 | Royal Friesland Foods | Food producers (357) | The Netherlands | 21.00 | 0.0 | 10.5 | 18.8 |
| 377 | Franz Haniel & Cie | Pharmaceuticals (4577) | Germany | 21.00 | 162.5 | 300.0 | |
| 379 | Fimalac | Support services (279) | France | 20.97 | 67.8 | 3 025.0 | 33.3 |
| 380 | Transgene | Biotechnology (4573) | France | 20.91 | 14.6 | 2.7 | 1.6 |
| 381 | Xenova (now part of Celtic Pharma Development) | Biotechnology (4573) | UK | 20.78 | -5.3 | -14.6 | 14.8 |
| 382 | Halma | Industrial machinery (2757) | UK | 20.67 | 20.7 | 4.6 | 16.8 |
| 383 | Systems Union | Software (9537) | UK | 20.63 | -4.8 | 36.3 | 3.6 |
| 384 | Fuchs Petrolub | Chemicals (135) | Germany | 20.60 | -3.7 | -5.3 | -4.4 |
| 385 | AVEVA | Software (9537) | UK | 20.30 | 24.2 | 63.7 | 15.5 |
| 386 | Ark Therapeutics | Biotechnology (4573) | UK | 20.29 | 52.4 | 70.4 | 6.8 |
| 387 | ACTIELEC Technologies | Electronic equipment (2737) | France | 20.24 | -11.3 | -24.5 | -9.9 |
| 388 | Dynea International | Chemicals (135) | Finland | 20.20 | 1.0 | 13.6 | 12.8 |
| 389 | Glen Electric | Household goods (372) | UK | 20.02 | 6.3 | 15.8 | 9.7 |
| 390 | RHI | Construction & materials (235) | Austria | 20.00 | 2.6 | 21.9 | 2.6 |
| 390 | Enel | Electricity (753) | Italy | 20.00 | 0.0 | -52.4 | -58.0 |
| 390 | KPN | Fixed line telecommunications (653) | The Netherlands | 20.00 | -16.7 | 4.3 | -28.1 |
| 393 | De La Rue | Support services (279) | UK | 19.94 | -18.4 | -21.1 | -17.1 |
| 394 | Ducati Motor | Automobiles & parts (335) | Italy | 19.86 | 250.9 | -42.2 | -10.7 |
| 395 | Micro Focus International | Software (9537) | UK | 19.84 | | | |
| 396 | Vaisala | Electronic equipment (2737) | Finland | 19.80 | -11.2 | 5.7 | -4.5 |
| 397 | Somfy International | Electrical components & equipment (2733) | France | 19.61 | | | -100.0 |
| 398 | CEGID | Software (9537) | France | 19.54 | 27.5 | 9.1 | 2.5 |
| 399 | IMA Industria Macchine Automatiche | Industrial machinery (2757) | Italy | 19.37 | 13.1 | -5.9 | -0.9 |
| 400 | Singulus Technologies | Industrial machinery (2757) | Germany | 19.35 | -17.8 | 44.6 | 0.8 |

| Rank | Company | ICB Sector | Country | R&D Investment | | | |
|------|------------------------------------|--|-----------------|----------------|----------------------|----------------------|----------------------|
| | | | | 2005 €m | change 05/04 % | change 04/03 % | change 03/02 % |
| 401 | Same Deutz-Fahr | Commercial vehicles & trucks (2753) | Italy | 19.23 | -2.9 | | |
| 402 | Oxford Instruments | Electronic equipment (2737) | UK | 19.21 | 0.7 | 4.8 | -1.4 |
| 403 | FLSmidth | Construction & materials (235) | Denmark | 19.17 | -1.4 | 29.4 | -26.3 |
| 404 | YIT | Support services (279) | Finland | 19.15 | 6.4 | 12.5 | 23.1 |
| 405 | Bohler-Uddeholm | Industrial metals (175) | Austria | 19.00 | 18.8 | 4.2 | -8.6 |
| 406 | Huhtamaki | General industrials (272) | Finland | 18.70 | 4.5 | 27.9 | 16.7 |
| 407 | Autonomy | Software (9537) | UK | 18.59 | 53.8 | 1.1 | 34.7 |
| 408 | Northgate Information Solutions | Computer services (9533) | UK | 18.56 | 67.1 | 10.8 | -6.3 |
| 409 | Funkwerk | Support services (279) | Germany | 18.51 | 6.0 | 43.3 | 41.1 |
| 410 | NSB | Software (9537) | UK | 18.46 | 9.9 | -21.6 | -15.1 |
| 411 | Torex Retail | Computer services (9533) | UK | 18.37 | 6.5 | | |
| 412 | Astex Therapeutics | Biotechnology (4573) | UK | 18.32 | 10.6 | 31.2 | 30.6 |
| 413 | Muhlbauer | Electronic equipment (2737) | Germany | 18.31 | 30.7 | 23.0 | 5.9 |
| 414 | Lectra | Software (9537) | France | 18.28 | 21.4 | 4.9 | 4.7 |
| 415 | Aliaxis | Construction & materials (235) | Belgium | 18.27 | 11.9 | 2.0 | -28.4 |
| 415 | Wanderer-Werke | Industrial machinery (2757) | Germany | 18.27 | 26.9 | 125.0 | -5.9 |
| 417 | Wolfson Microelectronics | Semiconductors (9576) | UK | 18.20 | 30.6 | 75.3 | 66.7 |
| 418 | Morgan Crucible | Electrical components & equipment (2733) | UK | 18.19 | 6.8 | -25.5 | -21.5 |
| 418 | Enodis | Industrial machinery (2757) | UK | 18.19 | -12.6 | 8.3 | -1.5 |
| 420 | Active Biotech | Biotechnology (4573) | Sweden | 18.05 | -29.2 | -15.7 | 1.0 |
| 420 | Jordan Grand Prix (now Midland F1) | Travel & leisure (575) | UK | 18.05 | 14.0 | -34.0 | -1.7 |
| 422 | EYBL International | Automobiles & parts (335) | Austria | 18.03 | 42.4 | | |
| 423 | InBev | Beverages (353) | Belgium | 18.00 | 28.6 | 0.0 | -6.7 |
| 423 | SGL Carbon | Electrical components & equipment (2733) | Germany | 18.00 | -6.3 | -8.1 | -17.7 |
| 423 | Hunter Douglas | Household goods (372) | The Netherlands | 18.00 | 5.9 | 0.0 | -19.1 |
| 423 | Lufthansa | Travel & leisure (575) | Germany | 18.00 | 200.0 | -25.0 | -44.4 |
| 427 | Teleca | Computer services (9533) | Sweden | 17.92 | 56.9 | 103.9 | 148.9 |
| 428 | Seco Tools | Industrial machinery (2757) | Sweden | 17.90 | -10.6 | -8.3 | 13.9 |
| 429 | Alliance & Leicester | Banks (835) | UK | 17.76 | 144.0 | | |
| 430 | Cardo | Construction & materials (235) | Sweden | 17.68 | 3.1 | 20.2 | -42.5 |
| 431 | Channel Four Television | Media (555) | UK | 17.61 | 33.0 | 21.2 | 5.7 |
| 432 | Miba | Automobiles & parts (335) | Austria | 17.50 | 54.9 | 8.7 | -3.7 |
| 433 | Psion | Computer hardware (9572) | UK | 17.46 | -3.5 | -1.7 | 0.1 |
| 434 | Uponor | Construction & materials (235) | Finland | 17.40 | 8.7 | 0.0 | 0.0 |
| 435 | Gyrus | Health care equipment & services (453) | UK | 17.24 | 78.5 | 2.7 | -18.2 |
| 436 | BE Semiconductor Industries | Semiconductors (9576) | The Netherlands | 17.16 | 41.9 | -8.8 | 6.3 |
| 437 | ESI | Software (9537) | France | 17.12 | 34.7 | 18.2 | 11.1 |
| 437 | Telelogic | Software (9537) | Sweden | 17.12 | -9.1 | -16.8 | -17.3 |
| 439 | Baxi | Construction & materials (235) | UK | 17.09 | 18.5 | 35.8 | 12.9 |
| 440 | Rio Tinto | Mining (177) | UK | 16.96 | -13.0 | 0.0 | -8.0 |
| 441 | LKAB | Mining (177) | Sweden | 16.94 | -32.3 | 102.5 | 14.9 |
| 442 | Delft Instruments | Health care equipment & services (453) | The Netherlands | 16.80 | -24.1 | 31.5 | -1.8 |
| 443 | Biotest | Pharmaceuticals (4577) | Germany | 16.61 | -10.3 | 0.9 | -1.6 |
| 444 | Recticel | Chemicals (135) | Belgium | 16.41 | -17.9 | 9.2 | 18.6 |
| 445 | Soitec | Semiconductors (9576) | France | 16.39 | 44.4 | 0.8 | 57.0 |
| 446 | Aldata Solution | Software (9537) | Finland | 16.37 | 7.7 | | |
| 447 | SanomaWSOY | Media (555) | Finland | 16.20 | | | |
| 447 | NicOx | Pharmaceuticals (4577) | France | 16.20 | 55.2 | -31.4 | 7.0 |
| 449 | Stallergenes | Pharmaceuticals (4577) | France | 16.11 | 31.9 | 43.3 | 46.6 |
| 450 | Beta Systems Software | Software (9537) | Germany | 16.04 | -12.5 | 60.7 | 28.9 |

| Rank | Company | ICB Sector | Country | R&D Investment | | | |
|------|---|--|-----------------|----------------|----------------------|----------------------|----------------------|
| | | | | 2005 €m | change 05/04 % | change 04/03 % | change 03/02 % |
| 451 | Wittington Investments | Food producers (357) | UK | 16.01 | 37.5 | 33.3 | 0.0 |
| 452 | Medigene | Biotechnology (4573) | Germany | 16.00 | 11.0 | -28.8 | -36.7 |
| 452 | VNU (now part of Valcon Acquisitions BV) | Media (555) | The Netherlands | 16.00 | -27.3 | | |
| 454 | Thrane & Thrane | Electronic equipment (2737) | Denmark | 15.97 | -17.3 | 85.1 | 63.2 |
| 455 | Lenzing | Chemicals (135) | Austria | 15.82 | -6.9 | 11.4 | 13.1 |
| 456 | BBA | Industrial transportation (277) | UK | 15.72 | -9.2 | 26.6 | -7.9 |
| 457 | Inmarsat | Mobile telecommunications (657) | UK | 15.68 | 47.9 | 11 677.8 | -98.1 |
| 458 | Axis | Computer hardware (9572) | Sweden | 15.62 | 15.4 | 2.3 | 5.5 |
| 459 | Carlsberg | Beverages (353) | Denmark | 15.55 | 6.4 | 142.3 | 0.0 |
| 459 | Dometic International | Electrical components & equipment (2733) | Sweden | 15.55 | -5.2 | | |
| 461 | Datalogic | Electronic equipment (2737) | Italy | 15.53 | 49.0 | 8.9 | 12.3 |
| 461 | Molnlycke Health Care | Health care equipment & services (453) | Sweden | 15.53 | 21.0 | | |
| 463 | Ureco | Support services (279) | UK | 15.52 | -16.2 | -9.6 | 8.2 |
| 464 | F-Secure | Computer services (9533) | Finland | 15.49 | 42.2 | 24.5 | -10.3 |
| 465 | Bavarian Nordic | Biotechnology (4573) | Denmark | 15.34 | -6.6 | 92.6 | 4.7 |
| 466 | Royalblue | Software (9537) | UK | 15.33 | 42.2 | 8.6 | 12.8 |
| 467 | Evotec OAI (now Evotec) | Pharmaceuticals (4577) | Germany | 15.32 | 11.1 | -10.9 | -32.8 |
| 468 | Yule Catto | Chemicals (135) | UK | 15.31 | -0.5 | -6.3 | -8.2 |
| 469 | Exact | Software (9537) | The Netherlands | 15.26 | 24.0 | -22.9 | -15.6 |
| 470 | Bioinvent | Biotechnology (4573) | Sweden | 15.17 | 13.0 | -3.8 | 113.1 |
| 471 | Innovata | Biotechnology (4573) | UK | 15.09 | -19.6 | 18.3 | 0.6 |
| 472 | Cerep | Pharmaceuticals (4577) | France | 15.08 | 26.6 | 1.0 | 8.2 |
| 473 | Elektrobit | Electronic equipment (2737) | Finland | 15.01 | 24.9 | 22.3 | 0.8 |
| 474 | Dynaction | Chemicals (135) | France | 15.00 | 0.0 | 0.0 | -10.4 |
| 475 | GW Pharmaceuticals | Pharmaceuticals (4577) | UK | 14.96 | -26.2 | 9.9 | 18.0 |
| 476 | Vectura | Pharmaceuticals (4577) | UK | 14.86 | 16.9 | 23.9 | 163.1 |
| 477 | Carraro | Automobiles & parts (335) | Italy | 14.85 | 55.8 | 15.1 | -0.4 |
| 477 | First Technology (now part of Honeywell Acquisitions) | Electronic equipment (2737) | UK | 14.85 | 36.0 | -6.2 | -2.4 |
| 479 | Vossloh | Industrial transportation (277) | Germany | 14.80 | 6.5 | 87.8 | 12.1 |
| 480 | Anite | Computer services (9533) | UK | 14.78 | -13.9 | 15.6 | 64.5 |
| 481 | SCI Entertainment | Software (9537) | UK | 14.75 | 3.6 | 19.5 | 91.0 |
| 482 | Radiall | Telecommunications equipment (9578) | France | 14.70 | 12.2 | 4.8 | 3.3 |
| 483 | LDV | Commercial vehicles & trucks (2753) | UK | 14.65 | 150.9 | 151.7 | -60.1 |
| 484 | SAES Getters | Electronic equipment (2737) | Italy | 14.63 | 8.9 | 5.0 | -6.0 |
| 485 | Ktm Powersports | Leisure goods (374) | Austria | 14.59 | 325.4 | | |
| 486 | Alliance UniChem (now part of Alliance Boots) | Food & drug retailers (533) | UK | 14.55 | 0.0 | | |
| 487 | DICOM | Software (9537) | UK | 14.39 | 24.4 | 9.1 | -2.0 |
| 488 | Telekomunikacja Polska | Fixed line telecommunications (653) | Poland | 14.31 | -19.2 | 15.2 | 0.0 |
| 489 | Anoto | Computer hardware (9572) | Sweden | 14.19 | -12.5 | -12.6 | -31.5 |
| 490 | Hoganas | Mining (177) | Sweden | 14.06 | 5.6 | -8.7 | 3.0 |
| 491 | Fortum | Electricity (753) | Finland | 14.00 | -46.2 | -25.7 | -7.9 |
| 492 | Pharmexa | Biotechnology (4573) | Denmark | 13.99 | 76.9 | -35.7 | -28.5 |
| 492 | Hikma Pharmaceuticals | Pharmaceuticals (4577) | UK | 13.99 | 70.6 | | |
| 494 | Microscience (now Microscience Investments) | Pharmaceuticals (4577) | UK | 13.97 | -6.3 | -2.9 | 155.0 |
| 495 | Gewiss | Electrical components & equipment (2733) | Italy | 13.88 | -5.0 | 4.9 | 9.6 |
| 496 | Nationwide | Other financials (877) | UK | 13.83 | 5.6 | | |
| 497 | Sanitec | Construction & materials (235) | Finland | 13.80 | -13.8 | -19.2 | -0.5 |
| 497 | Techem | Support services (279) | Germany | 13.80 | 102.9 | 94.3 | -2.8 |
| 499 | Euronext | Other financials (877) | The Netherlands | 13.77 | -63.3 | 75.2 | 20.6 |
| 500 | Photo-Me | General retailers (537) | UK | 13.74 | 33.3 | -7.4 | 54.6 |

| Rank | Company | ICB Sector | Country | R&D Investment | | | |
|------|------------------------------------|--|-----------------|----------------|----------------------|----------------------|----------------------|
| | | | | 2005 €m | change 05/04 % | change 04/03 % | change 03/02 % |
| 501 | Paion | Pharmaceuticals (4577) | Germany | 13.63 | 86.2 | | |
| 502 | Morphosys | Biotechnology (4573) | Germany | 13.61 | 9.8 | 37.7 | -54.1 |
| 503 | Oxford Biomedica | Pharmaceuticals (4577) | UK | 13.58 | 1.5 | -14.7 | -0.6 |
| 504 | IONA Technologies | Computer services (9533) | Ireland | 13.44 | -7.9 | -37.0 | -31.1 |
| 505 | Karo Bio | Biotechnology (4573) | Sweden | 13.34 | 48.4 | 3.2 | 3 687.0 |
| 506 | Avon Rubber | Automobiles & parts (335) | UK | 13.30 | 31.4 | 26.5 | -3.7 |
| 507 | Fromageries Bel | Food producers (357) | France | 13.29 | 9.3 | | |
| 508 | ComBOTS | Internet (9535) | Germany | 13.15 | -29.7 | 36.3 | 16.9 |
| 509 | K+S | Chemicals (135) | Germany | 13.10 | 2.0 | -2.4 | -0.5 |
| 509 | Lucite International | Chemicals (135) | UK | 13.10 | 0.0 | 0.0 | -10.0 |
| 511 | Arakis | Biotechnology (4573) | UK | 13.09 | | | |
| 512 | Axis-Shield | Biotechnology (4573) | UK | 13.05 | -10.5 | -22.2 | 30.1 |
| 513 | Zentiva | Pharmaceuticals (4577) | The Netherlands | 13.01 | 12.4 | -1.7 | 66.5 |
| 514 | Latecoere | Aerospace & defence (271) | France | 13.00 | 225.0 | | |
| 515 | Tecnomen | Telecommunications equipment (9578) | Finland | 12.99 | 13.0 | 22.3 | -16.1 |
| 516 | Croda International | Chemicals (135) | UK | 12.95 | 21.9 | 7.3 | 11.5 |
| 517 | Wagon | Automobiles & parts (335) | UK | 12.81 | -18.5 | -2.7 | -22.9 |
| 517 | CODASciSys | Software (9537) | UK | 12.81 | -0.2 | -1.2 | |
| 519 | TT electronics | Electrical components & equipment (2733) | UK | 12.66 | -19.5 | 25.6 | 6.2 |
| 520 | Eniro | Media (555) | Sweden | 12.57 | 24.2 | -5.0 | 2.0 |
| 521 | Villeroy & Boch | Household goods (372) | Germany | 12.55 | 15.7 | -13.3 | -5.4 |
| 522 | Genus | Biotechnology (4573) | UK | 12.43 | -4.6 | 11.3 | -6.6 |
| 523 | TUI | Travel & leisure (575) | Germany | 12.40 | -59.7 | 47.4 | -22.0 |
| 524 | Otto | General retailers (537) | Germany | 12.36 | 101.0 | 4.6 | |
| 525 | Tarkett | Household goods (372) | Germany | 12.30 | 12.8 | -3.5 | -19.3 |
| 526 | Raymarine | Electronic equipment (2737) | UK | 12.28 | 3.6 | -5.1 | 35.2 |
| 527 | Empire Interactive | Software (9537) | UK | 12.26 | -12.7 | -11.1 | 118.5 |
| 528 | NPM/CNP | Other financials (877) | Belgium | 12.24 | 20.5 | 22.4 | |
| 529 | Surrey Satellite Technology | Telecommunications equipment (9578) | UK | 12.22 | 128.8 | -16.8 | 2 818.2 |
| 530 | OMV | Oil & gas producers (53) | Austria | 12.19 | -34.8 | -17.7 | -0.4 |
| 531 | Bacou-Dalloz | General industrials (272) | France | 12.10 | -4.0 | 3.3 | -3.9 |
| 532 | Domino Printing Sciences | Electronic equipment (2737) | UK | 12.08 | -13.1 | 12.4 | 2.8 |
| 533 | SSL International | Personal goods (376) | UK | 11.93 | -4.7 | -24.5 | -12.3 |
| 534 | BTG | Biotechnology (4573) | UK | 11.79 | -48.7 | -17.3 | 23.2 |
| 535 | Plasmon | Computer hardware (9572) | UK | 11.73 | 11.1 | -14.1 | -16.7 |
| 536 | Head | Leisure goods (374) | The Netherlands | 11.70 | -11.0 | 14.0 | 23.6 |
| 537 | O2 (now part of Telefonica. Spain) | Mobile telecommunications (657) | UK | 11.64 | -20.0 | 11.1 | 12.5 |
| 538 | Punch Graphix | Media (555) | UK | 11.54 | -2.8 | | |
| 539 | Skanditek | Other financials (877) | Sweden | 11.52 | 9.6 | 1.4 | 16.5 |
| 540 | Valio | Food producers (357) | Finland | 11.50 | 9.5 | 2.9 | 5.2 |
| 540 | ASF (now part of VINCI) | Industrial transportation (277) | France | 11.50 | | | |
| 542 | Chargeurs International | Personal goods (376) | France | 11.40 | -5.0 | | |
| 542 | Nethawk | Telecommunications equipment (9578) | Finland | 11.40 | 47.3 | 46.0 | -10.2 |
| 544 | Devgen | Biotechnology (4573) | Belgium | 11.37 | 14.6 | | |
| 544 | Servier | Pharmaceuticals (4577) | UK | 11.37 | 26.9 | 8.9 | 1.6 |
| 546 | Steag Hamatech | Industrial machinery (2757) | Germany | 11.36 | -18.4 | 62.4 | -10.7 |
| 547 | Vitec | Industrial machinery (2757) | UK | 11.35 | -1.3 | -10.2 | 11.4 |
| 548 | SUESS MicroTec | Semiconductors (9576) | Germany | 11.30 | 9.0 | -1.2 | -16.3 |
| 549 | ICOS Vision Systems | Semiconductors (9576) | Belgium | 11.29 | 27.0 | 36.6 | -2.3 |
| 550 | Renovo | Biotechnology (4573) | UK | 11.24 | 26.3 | 45.4 | 23.6 |

| Rank | Company | ICB Sector | Country | R&D Investment | | | |
|------|---|--|-----------------|----------------|----------------------|----------------------|----------------------|
| | | | | 2005 €m | change 05/04 % | change 04/03 % | change 03/02 % |
| 551 | Senior | Industrial machinery (2757) | UK | 11.21 | -2.5 | 108.0 | 0.0 |
| 552 | Biocompatibles International | Health care equipment & services (453) | UK | 11.18 | 42.1 | 18.9 | -7.5 |
| 553 | Biacore International | Health care equipment & services (453) | Sweden | 11.14 | -39.7 | 40.3 | 18.3 |
| 554 | Randox Laboratories | Biotechnology (4573) | UK | 11.13 | -23.2 | 2.0 | 23.3 |
| 555 | Portugal Telecom | Fixed line telecommunications (653) | Portugal | 11.10 | 4.7 | -25.9 | -17.8 |
| 555 | Royal Cosun | Food producers (357) | The Netherlands | 11.10 | -4.3 | 26.1 | 4.5 |
| 557 | SurfControl | Software (9537) | UK | 10.99 | 34.0 | 28.5 | 18.4 |
| 558 | FKI | Industrial machinery (2757) | UK | 10.92 | -9.6 | -25.9 | 43.6 |
| 559 | Vacon | Electrical components & equipment (2733) | Finland | 10.83 | 7.4 | 12.2 | 13.5 |
| 560 | PSI | Computer services (9533) | Germany | 10.80 | 0.0 | 20.5 | -22.4 |
| 561 | INDUS | Other financials (877) | Germany | 10.78 | 31.9 | | |
| 562 | Palfinger | Industrial machinery (2757) | Austria | 10.76 | 6.5 | 34.7 | 5.6 |
| 563 | XRT | Software (9537) | France | 10.73 | -8.6 | 2.4 | 12.9 |
| 564 | Boss Media | Travel & leisure (575) | Sweden | 10.55 | 265.1 | 66.1 | 59.6 |
| 565 | Linedata Services | Software (9537) | France | 10.50 | 32.9 | 16.2 | 28.3 |
| 565 | Veikkaus | Travel & leisure (575) | Finland | 10.50 | 20.7 | | |
| 567 | MBDA | Aerospace & defence (271) | UK | 10.48 | 10.3 | -3.3 | 84.9 |
| 568 | Teleste | Telecommunications equipment (9578) | Finland | 10.38 | 50.4 | 19.0 | -12.1 |
| 569 | Raisio | Food producers (357) | Finland | 10.30 | -27.5 | -32.7 | 3.9 |
| 570 | Switchcore | Computer hardware (9572) | Sweden | 10.23 | | | -87.7 |
| 571 | Tomtom | Electronic equipment (2737) | The Netherlands | 10.20 | 80.9 | | |
| 571 | Delhaize | Food & drug retailers (533) | Belgium | 10.20 | | | -66.7 |
| 573 | National Grid | Gas, water & multiutilities (757) | UK | 10.19 | -22.2 | -10.0 | -44.5 |
| 573 | BG | Oil & gas producers (53) | UK | 10.19 | 0.0 | -12.5 | -27.3 |
| 575 | Wavelight Laser Technologie | Health care equipment & services (453) | Germany | 10.14 | 59.9 | 50.6 | 7.7 |
| 576 | Swedish Match | Tobacco (378) | Sweden | 10.12 | -15.9 | 13.1 | 0.9 |
| 577 | LISI | Aerospace & defence (271) | France | 10.10 | -1.0 | -10.5 | -17.4 |
| 577 | Provimi | Food producers (357) | France | 10.10 | -32.7 | 0.0 | 40.2 |
| 577 | Gamma | Personal goods (376) | The Netherlands | 10.10 | -24.6 | -16.4 | |
| 577 | P&I Personal & Informatik | Software (9537) | Germany | 10.10 | 22.3 | -5.5 | 17.6 |
| 581 | Repower Systems | Industrial machinery (2757) | Germany | 10.03 | | -100.0 | |
| 582 | Rational | General industrials (272) | Germany | 10.01 | -3.7 | -8.5 | 12.1 |
| 583 | OP Bank | Banks (835) | Finland | 10.00 | | | |
| 583 | Natuzzi | Household goods (372) | Italy | 10.00 | 0.0 | 25.0 | |
| 583 | TF1 | Media (555) | France | 10.00 | 122.2 | -10.0 | |
| 586 | Ion Beam Applications | Health care equipment & services (453) | Belgium | 9.99 | 6.1 | -48.5 | -13.0 |
| 587 | Phytopharm | Biotechnology (4573) | UK | 9.98 | 8.0 | -12.2 | 20.4 |
| 588 | AGRANA | Food producers (357) | Austria | 9.96 | 122.8 | | |
| 589 | Net Insight | Telecommunications equipment (9578) | Sweden | 9.94 | 49.9 | 40.5 | -27.8 |
| 590 | Sygen International (now part of Genus) | Food producers (357) | UK | 9.90 | -5.5 | -6.5 | 11.7 |
| 590 | Randstad | Support services (279) | The Netherlands | 9.90 | | | |
| 592 | Intelligent Energy | Electrical components & equipment (2733) | UK | 9.87 | 11.0 | 46.9 | 32.7 |
| 593 | Santaris Pharma | Biotechnology (4573) | Denmark | 9.85 | 33.1 | 825.0 | |
| 594 | Matador | Automobiles & parts (335) | Slovakia | 9.83 | 18.7 | 5.3 | 12.1 |
| 595 | Protherics | Biotechnology (4573) | UK | 9.82 | 47.4 | 24.7 | 130.2 |
| 596 | Ineos | Chemicals (135) | UK | 9.80 | 0.0 | 1.0 | -16.4 |
| 597 | JCB Compact Products | Commercial vehicles & trucks (2753) | UK | 9.70 | 3.5 | 28.7 | 30.2 |
| 597 | Meda | Pharmaceuticals (4577) | Sweden | 9.70 | 448.0 | 436.4 | -37.7 |
| 599 | ADVA | Telecommunications equipment (9578) | Germany | 9.65 | -22.4 | 0.8 | 7.1 |
| 600 | Gerling-Konzern Versicherungs | Nonlife insurance (853) | Germany | 9.60 | -29.4 | -65.0 | 31.9 |
| 600 | 888 | Travel & leisure (575) | UK | 9.60 | 64.9 | | |

| Rank | Company | ICB Sector | Country | R&D Investment | | | |
|------|--|---|-----------------|----------------|----------------------|----------------------|----------------------|
| | | | | 2005 €m | change 05/04 % | change 04/03 % | change 03/02 % |
| 602 | Nedap | Electronic equipment (2737) | The Netherlands | 9.52 | 32.2 | -21.7 | |
| 602 | IDS Scheer | Software (9537) | Germany | 9.52 | 21.3 | 4.4 | 7.4 |
| 604 | ARC International | Semiconductors (9576) | UK | 9.50 | -20.4 | -34.0 | -4.7 |
| 605 | Delcam | Software (9537) | UK | 9.47 | 12.3 | 12.0 | 15.7 |
| 606 | Trinity Biotech | Health care equipment & services (453) | Ireland | 9.31 | 136.9 | -11.1 | 16.6 |
| 607 | Nokian Tyres | Automobiles & parts (335) | Finland | 9.30 | -3.1 | 15.7 | -2.4 |
| 608 | Cramer Systems | Software (9537) | UK | 9.29 | 11.0 | 39.0 | 18.7 |
| 609 | Sydsvenska Kemi | Chemicals (135) | Sweden | 9.27 | -1.1 | 23.9 | 77.5 |
| 610 | Huntleigh Technology | Health care equipment & services (453) | UK | 9.22 | 16.1 | 2.6 | -3.4 |
| 611 | Endemol | Media (555) | The Netherlands | 9.20 | 15.0 | | |
| 612 | Ubiquity Software | Software (9537) | UK | 9.17 | 98.1 | 30.4 | -13.4 |
| 613 | Teligent | Software (9537) | Sweden | 9.15 | 74.6 | -12.1 | 4.7 |
| 614 | NIBE Industrier | Household goods (372) | Sweden | 9.05 | 35.5 | 27.5 | |
| 614 | Oriflame Cosmetics | Personal goods (376) | Luxembourg | 9.05 | 41.2 | 2.9 | 18.2 |
| 616 | Elementis | Chemicals (135) | UK | 9.02 | 8.7 | | |
| 617 | Danieli | Industrial machinery (2757) | Italy | 9.00 | -10.0 | -16.7 | -25.0 |
| 617 | JC Decaux | Media (555) | France | 9.00 | 16.9 | -7.2 | -15.3 |
| 619 | Microgen | Computer services (9533) | UK | 8.97 | 45.6 | 77.0 | -3.6 |
| 620 | Nordex | Industrial machinery (2757) | Germany | 8.95 | 56.2 | 16.7 | 4.5 |
| 620 | Observer | Support services (279) | Sweden | 8.95 | -3.2 | 10.6 | |
| 622 | Pharming | Biotechnology (4573) | The Netherlands | 8.92 | 61.3 | 4.7 | 180.9 |
| 623 | Radstone Technology | Computer hardware (9572) | UK | 8.89 | 34.9 | 14.8 | 13.4 |
| 624 | BHW | Banks (835) | Germany | 8.87 | | | |
| 625 | Espirito Santo Financial | Banks (835) | Luxembourg | 8.83 | | | |
| 626 | Kyro | Industrial machinery (2757) | Finland | 8.82 | -6.2 | -4.1 | 48.5 |
| 627 | KCI Konecranes | Industrial machinery (2757) | Finland | 8.80 | 3.5 | 7.6 | -49.0 |
| 628 | Vislink | Telecommunications equipment (9578) | UK | 8.74 | 46.6 | 12.0 | -17.3 |
| 629 | Compagnie de Fives-Lille | General industrials (272) | France | 8.72 | 9.0 | -10.9 | -14.9 |
| 630 | Marlborough Stirling (now Vertex Financial Services) | Software (9537) | UK | 8.69 | 29.7 | -10.3 | 3.9 |
| 631 | Superscape | Software (9537) | UK | 8.62 | 71.0 | 13.0 | 1.6 |
| 632 | Biolipox | Pharmaceuticals (4577) | Sweden | 8.53 | 17.0 | 25.0 | |
| 633 | Gunnebo | General retailers (537) | Sweden | 8.52 | -20.0 | 0.0 | |
| 634 | Biotage | Biotechnology (4573) | Sweden | 8.44 | -10.0 | -3.5 | -30.0 |
| 635 | Sword | Computer services (9533) | France | 8.40 | | | |
| 636 | SolarWorld | Electrical components & equipment (2733) | Germany | 8.33 | 36.6 | 22.0 | -40.5 |
| 636 | Sondex | Oil equipment. services & distribution (57) | UK | 8.33 | 84.7 | 54.5 | 34.6 |
| 638 | SBM Offshore | Oil equipment. services & distribution (57) | The Netherlands | 8.24 | 39.0 | -16.7 | -37.5 |
| 639 | Grupo Empresarial ENCE | Forestry & paper (173) | Spain | 8.20 | 21.5 | 112.9 | 17.4 |
| 640 | Allergy Therapeutics | Pharmaceuticals (4577) | UK | 8.18 | 1 139.4 | -52.9 | -68.3 |
| 641 | Intercytex | Biotechnology (4573) | UK | 8.16 | 32.3 | 29.9 | 16.1 |
| 642 | Comptel | Software (9537) | Finland | 8.07 | 28.7 | 14.0 | -47.1 |
| 643 | Cez | Electricity (753) | Czech Republic | 8.02 | -49.0 | | |
| 644 | HK Ruokatalo | Food producers (357) | Finland | 8.00 | 26.0 | 4.3 | 18.3 |
| 645 | Napp Pharmaceutical | Pharmaceuticals (4577) | UK | 7.99 | 2.3 | -61.5 | -0.4 |
| 646 | Xaar | Electrical components & equipment (2733) | UK | 7.98 | 42.8 | -16.7 | 44.3 |
| 647 | Avanquest Software | Software (9537) | France | 7.96 | 69.4 | 11.9 | 35.5 |
| 647 | Txt E-Solutions | Software (9537) | Italy | 7.96 | 39.2 | 11.5 | -21.6 |
| 649 | Zetex | Semiconductors (9576) | UK | 7.93 | -22.0 | -20.1 | 17.0 |
| 650 | EL EN | Electronic equipment (2737) | Italy | 7.91 | 10.6 | 16.6 | |
| 650 | BWT | Gas. water & multiutilities (757) | Austria | 7.91 | -35.4 | 23.5 | -21.3 |

| Rank | Company | ICB Sector | Country | R&D Investment | | | |
|------|-----------------------------|--|---------|----------------|----------------------|----------------------|----------------------|
| | | | | 2005 €m | change 05/04 % | change 04/03 % | change 03/02 % |
| 652 | Sabca | Aerospace & defence (271) | Belgium | 7.90 | | | |
| 652 | Fabasoft | Software (9537) | Austria | 7.90 | 54.9 | 88.9 | |
| 654 | Basler | Electrical components & equipment (2733) | Germany | 7.86 | 1.8 | 50.5 | -9.5 |
| 654 | John Lewis | General retailers (537) | UK | 7.86 | -6.9 | | |
| 656 | Glanbia | Food producers (357) | Ireland | 7.82 | 80.6 | -7.9 | -14.2 |
| 657 | Karolin Machine Tool | Industrial machinery (2757) | Sweden | 7.81 | 51.7 | 14.2 | 15.6 |
| 657 | Spirax-Sarco Engineering | Industrial machinery (2757) | UK | 7.81 | 6.3 | 3.5 | 10.6 |
| 659 | Elexis | Electrical components & equipment (2733) | Germany | 7.80 | 50.0 | -1.9 | -3.6 |
| 659 | Ebro Puleva | Food producers (357) | Spain | 7.80 | 72.9 | | -100.0 |
| 661 | Evolutec | Biotechnology (4573) | UK | 7.78 | 710.4 | 0.0 | -42.5 |
| 661 | Trintech | Software (9537) | Ireland | 7.78 | 0.1 | 10.7 | -20.0 |
| 663 | Dialight | Electrical components & equipment (2733) | UK | 7.77 | -22.1 | -14.8 | -15.1 |
| 663 | Arup | Support services (279) | UK | 7.77 | -29.3 | -18.2 | |
| 665 | Thomas Swan | Chemicals (135) | UK | 7.74 | 41.5 | -11.1 | 195.7 |
| 666 | Charter | Industrial machinery (2757) | UK | 7.71 | -22.1 | -52.1 | 3.7 |
| 667 | Waterford Wedgwood | Household goods (372) | Ireland | 7.70 | 26.2 | -34.4 | 45.3 |
| 668 | e2v Technologies | Electronic equipment (2737) | UK | 7.69 | -2.4 | 25.3 | |
| 669 | Weir | Industrial machinery (2757) | UK | 7.63 | -4.9 | 11.2 | 21.8 |
| 670 | Greencore | Food producers (357) | Ireland | 7.62 | 22.1 | -15.7 | -5.4 |
| 670 | Lavipharm | Pharmaceuticals (4577) | Greece | 7.62 | 138.1 | 25.5 | 119.8 |
| 672 | SoftM Software und Beratung | Computer services (9533) | Germany | 7.60 | 26.7 | -6.3 | 0.0 |
| 673 | Torotrak | Automobiles & parts (335) | UK | 7.59 | 2.3 | -11.5 | 18.7 |
| 673 | Tekla | Software (9537) | Finland | 7.59 | -17.0 | -25.6 | 1.7 |
| 675 | Wolford | Personal goods (376) | Austria | 7.56 | -3.9 | -2.8 | -2.8 |
| 676 | Macro 4 | Software (9537) | UK | 7.52 | 2.6 | -13.9 | 3.0 |
| 677 | Dyson | Chemicals (135) | UK | 7.51 | 30.2 | 7.6 | 41.8 |
| 678 | Omega Pharma | Pharmaceuticals (4577) | Belgium | 7.50 | -45.5 | 102.8 | 104.5 |
| 678 | MessageLabs | Software (9537) | UK | 7.50 | 41.0 | 69.4 | 67.0 |
| 680 | Amper | Telecommunications equipment (9578) | Spain | 7.49 | 59.7 | -12.5 | 29.5 |
| 681 | NeuTec Pharma | Biotechnology (4573) | UK | 7.48 | 56.2 | 10.6 | 60.4 |
| 682 | CML Microsystems | Semiconductors (9576) | UK | 7.45 | | | 23.9 |
| 683 | Epigenomics | Biotechnology (4573) | Germany | 7.42 | 6.9 | -18.0 | -1.2 |
| 684 | Micronic Laser Systems | Semiconductors (9576) | Sweden | 7.40 | -76.4 | -1.3 | -5.4 |
| 685 | Manitou BF | Commercial vehicles & trucks (2753) | France | 7.38 | 269.0 | | |
| 686 | Proha | Software (9537) | Finland | 7.33 | 7.8 | -13.9 | -8.1 |
| 687 | Ubizen | Internet (9535) | Belgium | 7.32 | -2.1 | -25.1 | 4.9 |
| 688 | Isagro | Chemicals (135) | Italy | 7.29 | -4.7 | | |
| 689 | BBS Kraftfahrzeugtechnik | Automobiles & parts (335) | Germany | 7.28 | -13.6 | | |
| 690 | Biotie Therapies | Biotechnology (4573) | Finland | 7.15 | -13.5 | -21.6 | -50.7 |
| 691 | Foseco | Industrial machinery (2757) | UK | 7.13 | 0.0 | 172.1 | -40.1 |
| 692 | CeNeS Pharmaceuticals | Biotechnology (4573) | UK | 7.12 | 40.7 | 18.2 | -16.9 |
| 693 | Elcoteq | Electronic equipment (2737) | Finland | 7.10 | -10.1 | 5 976.9 | -96.8 |
| 694 | Amarin | Pharmaceuticals (4577) | UK | 7.05 | 139.0 | -36.0 | -18.0 |
| 695 | Hampson Industries | Aerospace & defence (271) | UK | 7.03 | 134.3 | | |
| 695 | ALTEC | Computer services (9533) | Greece | 7.03 | 29.2 | 58.1 | 60.0 |
| 697 | Orc Software | Software (9537) | Sweden | 7.01 | 4.3 | -16.8 | 7.6 |
| 698 | GfK | Support services (279) | Germany | 7.00 | -5.4 | -12.9 | 19.7 |
| 699 | Larox | Support services (279) | Finland | 6.91 | 15.2 | 71.4 | -7.9 |
| 700 | Winkler & Dunnebieer | Industrial machinery (2757) | Germany | 6.90 | -12.7 | -18.6 | -8.5 |

| Rank | Company | ICB Sector | Country | R&D Investment | | | |
|------|---|--|---------|----------------|----------------------|----------------------|----------------------|
| | | | | 2005 €m | change 05/04 % | change 04/03 % | change 03/02 % |
| 701 | MTL Instruments | Electronic equipment (2737) | UK | 6.88 | 16.8 | 9.3 | -34.9 |
| 701 | Compagnie Industriali Riunite | General industrials (272) | Italy | 6.88 | -65.6 | 11.1 | 11.1 |
| 703 | Newport Networks | Telecommunications equipment (9578) | UK | 6.87 | 0.1 | 51.1 | |
| 704 | Infor Business Solutions | Software (9537) | Germany | 6.84 | -44.7 | -15.3 | 6.1 |
| 705 | VOGT Electronic | Electronic equipment (2737) | Germany | 6.80 | -25.3 | -7.1 | |
| 705 | Sanochemia Pharmazeutika | Pharmaceuticals (4577) | Austria | 6.80 | 7.8 | 52.1 | 3.8 |
| 707 | SABMiller | Beverages (353) | UK | 6.78 | 14.3 | | |
| 708 | Fagor Electrodomesticos | Household goods (372) | Spain | 6.77 | 137.5 | 143.6 | |
| 708 | ClearSpeed Technology | Semiconductors (9576) | UK | 6.77 | 86.5 | 40.7 | 2.4 |
| 710 | Atria | Food producers (357) | Finland | 6.71 | -4.1 | 4.5 | 9.8 |
| 711 | Body Shop International (now part of L'Oreal) | General retailers (537) | UK | 6.70 | -13.1 | 8.1 | 8.9 |
| 711 | Ortivus | Health care equipment & services (453) | Sweden | 6.70 | 90.3 | 4.8 | -20.2 |
| 713 | Infovista | Software (9537) | France | 6.65 | 9.4 | -2.9 | -13.4 |
| 714 | Intrum Justitia | Other financials (877) | Sweden | 6.63 | 45.7 | -23.4 | -9.0 |
| 715 | Plethora Solutions | Pharmaceuticals (4577) | UK | 6.62 | 151.7 | | |
| 716 | Sodra | Forestry & paper (173) | Sweden | 6.60 | 0.0 | 14.8 | 1.8 |
| 717 | Lorantis | Biotechnology (4573) | UK | 6.59 | 17.3 | 2.9 | 39.6 |
| 717 | Chloride | Electrical components & equipment (2733) | UK | 6.59 | -11.7 | 0.9 | 12.5 |
| 719 | Hochtief | Construction & materials (235) | Germany | 6.56 | 56.2 | -31.8 | -36.4 |
| 720 | McBride | Household goods (372) | UK | 6.55 | -4.2 | | |
| 720 | Isra Vision Systems | Industrial machinery (2757) | Germany | 6.55 | 12.3 | -15.0 | 11.9 |
| 720 | Global Graphics | Software (9537) | France | 6.55 | 5.1 | -14.9 | -41.5 |
| 723 | Efore | Electronic equipment (2737) | Finland | 6.54 | 15.8 | 48.7 | 15.2 |
| 724 | Grupo Isolux Corsan | Construction & materials (235) | Spain | 6.52 | | | |
| 725 | Perlos | Electronic equipment (2737) | Finland | 6.50 | 62.5 | | |
| 726 | Chroma Therapeutics | Biotechnology (4573) | UK | 6.46 | 433.9 | 21.0 | 400.0 |
| 727 | Martin-Baker (Engineering) | Aerospace & defence (271) | UK | 6.45 | 23.3 | -33.8 | -28.4 |
| 728 | Pfeiffer Vacuum Technology | Household goods (372) | Germany | 6.43 | -37.3 | 14.8 | -14.1 |
| 729 | Clearswift Systems | Software (9537) | UK | 6.42 | -0.9 | -2.4 | 210.3 |
| 730 | Kingspan | Construction & materials (235) | Ireland | 6.40 | 28.8 | 0.2 | 3.3 |
| 731 | Mensch und Maschine Software | Computer services (9533) | Germany | 6.32 | -16.8 | -6.4 | -7.0 |
| 731 | ITI Scotland | Other financials (877) | UK | 6.32 | 1 115.4 | | |
| 733 | Hannover RE | Nonlife insurance (853) | Germany | 6.30 | | | |
| 734 | Prima Industrie | Industrial machinery (2757) | Italy | 6.27 | -9.1 | 16.4 | -20.7 |
| 735 | Basware | Software (9537) | Finland | 6.20 | 34.8 | 11.9 | 21.6 |
| 736 | Games Workshop | Leisure goods (374) | UK | 6.19 | -0.5 | -35.6 | 6.0 |
| 737 | Bauer | Construction & materials (235) | Germany | 6.16 | 12.2 | | |
| 738 | Redac | Software (9537) | UK | 6.12 | 84.3 | -48.1 | -58.1 |
| 739 | Aga Foodservice | Household goods (372) | UK | 6.11 | 10.5 | 15.2 | 31.9 |
| 740 | Telindus (now part of Belgacom) | Telecommunications equipment (9578) | Belgium | 6.10 | -13.8 | 36.2 | -34.3 |
| 741 | Victrix | Chemicals (135) | UK | 6.06 | 20.0 | 33.6 | 13.2 |
| 742 | Devro | Food producers (357) | UK | 6.04 | 2.7 | -0.7 | 15.9 |
| 742 | Constantia Packaging | General industrials (272) | Austria | 6.04 | -3.7 | 31.7 | 3.5 |
| 744 | Elisa | Fixed line telecommunications (653) | Finland | 6.00 | -64.7 | -29.2 | -33.3 |
| 744 | D'leteren | General retailers (537) | Belgium | 6.00 | -71.6 | 5 175.0 | -71.4 |
| 744 | Laundry Systems | Industrial machinery (2757) | Belgium | 6.00 | 33.3 | -6.3 | -2.0 |
| 747 | Rocla | Commercial vehicles & trucks (2753) | Finland | 5.97 | 38.8 | 30.3 | 3.8 |
| 747 | Luxfer | Industrial machinery (2757) | UK | 5.97 | 2.6 | -2.5 | 13.9 |
| 749 | Leifheit | Household goods (372) | Germany | 5.93 | -11.4 | -1.0 | 16.0 |
| 750 | Technotrans | Electrical components & equipment (2733) | Germany | 5.91 | 87.6 | -12.7 | 4.6 |

| Rank | Company | ICB Sector | Country | R&D Investment | | | |
|------|---------------------------------|--|---------|----------------|----------------------|----------------------|----------------------|
| | | | | 2005 €m | change 05/04 % | change 04/03 % | change 03/02 % |
| 751 | CEAG | Telecommunications equipment (9578) | Germany | 5.90 | 9.3 | 0.0 | -1.8 |
| 752 | Coop Norden | Food & drug retailers (533) | Sweden | 5.89 | 35.1 | -53.9 | -13.7 |
| 752 | Biolitec | Pharmaceuticals (4577) | Germany | 5.89 | 51.0 | -31.7 | 18.5 |
| 754 | Affibody | Biotechnology (4573) | Sweden | 5.85 | -13.2 | -8.2 | 10.5 |
| 755 | Ardana | Pharmaceuticals (4577) | UK | 5.84 | -67.7 | | |
| 755 | Systar | Software (9537) | France | 5.84 | 2.8 | -4.4 | -19.5 |
| 757 | Deceuninck | Construction & materials (235) | Belgium | 5.83 | -3.8 | -4.6 | -1.6 |
| 758 | Balfour Beatty | Construction & materials (235) | UK | 5.82 | -50.0 | -20.0 | -16.7 |
| 758 | British Energy | Electricity (753) | UK | 5.82 | -71.4 | -6.6 | -6.3 |
| 760 | Rosenbauer International | Commercial vehicles & trucks (2753) | Austria | 5.80 | -7.9 | 0.0 | 12.5 |
| 760 | IPTE | Industrial machinery (2757) | Belgium | 5.80 | 2.7 | -5.5 | 2.7 |
| 762 | Norbrook Laboratories | Pharmaceuticals (4577) | UK | 5.78 | 9.1 | 3.7 | 16.7 |
| 763 | Solexa | Health care equipment & services (453) | UK | 5.77 | 14.9 | 20.4 | 114.9 |
| 764 | Microsulis | Health care equipment & services (453) | UK | 5.73 | 183.7 | 197.1 | 100.0 |
| 764 | Umbro | Personal goods (376) | UK | 5.73 | 9.8 | 30.8 | 14.0 |
| 766 | Meridio | Software (9537) | UK | 5.72 | 80.4 | 19.6 | |
| 767 | Kaessbohrer Gelaendefahrzeug | Industrial machinery (2757) | Germany | 5.70 | 14.0 | -2.0 | 2.0 |
| 768 | Severn Trent | Gas, water & multiutilities (757) | UK | 5.68 | 5.4 | 15.7 | -18.0 |
| 769 | SDL | Software (9537) | UK | 5.64 | 52.8 | -4.2 | -20.3 |
| 770 | Ricardo | Support services (279) | UK | 5.62 | -12.6 | -13.7 | 10.4 |
| 771 | Fiskars | Household goods (372) | Finland | 5.60 | 12.0 | 25.0 | -20.0 |
| 771 | Azkoyen | Industrial machinery (2757) | Spain | 5.60 | -17.6 | 11.5 | -9.2 |
| 773 | Wustenrot & Wurttemberg | Nonlife insurance (853) | Germany | 5.58 | | | |
| 774 | SGL | Support services (279) | UK | 5.54 | 118.1 | -3.1 | -19.4 |
| 775 | Artwork Systems | Software (9537) | Belgium | 5.53 | 14.3 | 11.0 | 3.1 |
| 776 | EVS Broadcast Equipment | Electronic equipment (2737) | Belgium | 5.50 | -9.8 | 3.4 | -4.5 |
| 776 | Norddeutsche Affinerie | Industrial metals (175) | Germany | 5.50 | 10.0 | -16.7 | -13.0 |
| 776 | Sporting Exchange | Travel & leisure (575) | UK | 5.50 | 36.8 | 85.3 | 502.8 |
| 779 | Kiln | Nonlife insurance (853) | UK | 5.48 | 300.0 | -30.8 | -16.5 |
| 780 | Chemring | Aerospace & defence (271) | UK | 5.46 | -37.8 | 27.2 | 4.2 |
| 780 | TELES | Internet (9535) | Germany | 5.46 | -8.5 | 33.3 | 4.4 |
| 782 | CeWe Color | General retailers (537) | Germany | 5.45 | 34.6 | 5.2 | |
| 783 | GFT Technologies | Computer services (9533) | Germany | 5.44 | -6.2 | 25.8 | -5.7 |
| 784 | Karstadt Quelle | General retailers (537) | Germany | 5.42 | -35.2 | -60.6 | 27.6 |
| 785 | StatPro | Software (9537) | UK | 5.40 | 34.0 | 137.1 | -17.5 |
| 786 | Rentokil Initial | Support services (279) | UK | 5.39 | 27.7 | | |
| 787 | Detica | Computer services (9533) | UK | 5.31 | 25.2 | 55.9 | |
| 788 | Agrolinz Melamine International | Chemicals (135) | Austria | 5.28 | -0.6 | -13.8 | |
| 789 | Cast | Software (9537) | France | 5.26 | 37.7 | 34.0 | 15.4 |
| 789 | Augusta Technologie | Telecommunications equipment (9578) | Germany | 5.26 | -62.6 | 9.8 | -13.9 |
| 791 | AIT (now Portrait Software) | Computer services (9533) | UK | 5.25 | -17.2 | -31.2 | -33.1 |
| 792 | Norcros | Construction & materials (235) | UK | 5.24 | 9.2 | 22.1 | -6.9 |
| 792 | Beazley | Nonlife insurance (853) | UK | 5.24 | | | |
| 794 | Schouw | General industrials (272) | Denmark | 5.23 | -5.9 | -41.1 | 12.5 |
| 795 | Sondagsavisen | Media (555) | Denmark | 5.18 | 9.1 | 39.3 | 55.0 |
| 796 | Stratec Biomedical System | Health care equipment & services (453) | Germany | 5.12 | 14.0 | 83.3 | 7.5 |
| 797 | SQS Software Quality Systems | Software (9537) | Germany | 5.11 | 33.1 | | |
| 798 | Grifols | Pharmaceuticals (4577) | Spain | 5.10 | -26.0 | 11.0 | |
| 799 | Beijer Electronics | Electronic equipment (2737) | Sweden | 5.09 | 212.3 | 307.5 | 300.0 |
| 800 | Realtech | Computer services (9533) | Germany | 5.08 | 9.5 | 1.5 | 4.3 |

| Rank | Company | ICB Sector | Country | R&D Investment | | | |
|------|---|---|-----------------|----------------|----------------------|----------------------|----------------------|
| | | | | 2005 €m | change 05/04 % | change 04/03 % | change 03/02 % |
| 801 | Quantel | Health care equipment & services (453) | France | 5.05 | 29.8 | 20.8 | 38.2 |
| 802 | Graphisoft | Software (9537) | Hungary | 5.04 | 10.8 | 12.9 | -28.8 |
| 803 | Skanska | Construction & materials (235) | Sweden | 5.01 | -2.0 | | |
| 804 | Stanelco | Industrial machinery (2757) | UK | 5.00 | 129.4 | 83.2 | -3.3 |
| 805 | Boiron | Pharmaceuticals (4577) | France | 4.97 | 47.0 | 10.8 | |
| 806 | OFCOM | Media (555) | UK | 4.96 | -0.4 | 198.2 | -2.9 |
| 807 | British Vita (now part of TPG Spring) | Chemicals (135) | UK | 4.95 | -5.5 | 2.9 | 0.0 |
| 807 | Scapa | Chemicals (135) | UK | 4.95 | 3.1 | -5.7 | 2.8 |
| 807 | AEA Technology | Support services (279) | UK | 4.95 | -51.4 | -27.1 | -32.4 |
| 807 | Thomas Cook | Travel & leisure (575) | Germany | 4.95 | -44.1 | 76.1 | -4.6 |
| 811 | Linn Products | Leisure goods (374) | UK | 4.91 | -7.4 | 33.2 | 57.3 |
| 812 | Ambu | Health care equipment & services (453) | Denmark | 4.90 | 17.2 | 27.1 | 11.5 |
| 812 | Avery Weigh-Tronix | Household goods (372) | UK | 4.90 | 8.2 | 23.8 | -19.0 |
| 812 | Munters | Industrial machinery (2757) | Sweden | 4.90 | 16.4 | -4.1 | -3.9 |
| 812 | PZ Cussons | Personal goods (376) | UK | 4.90 | -16.2 | 7.3 | 3.4 |
| 816 | TTP | Computer services (9533) | UK | 4.88 | -17.7 | 1.2 | 7.9 |
| 817 | Doncasters | Industrial machinery (2757) | UK | 4.86 | 11.0 | 28.1 | 6.9 |
| 818 | FAES Farma | Biotechnology (4573) | Spain | 4.85 | -75.2 | 204.2 | 6.6 |
| 818 | Transitive | Software (9537) | UK | 4.85 | 18.9 | | |
| 820 | Fugro | Support services (279) | The Netherlands | 4.84 | 9.0 | | |
| 821 | Aspocomp | Electronic equipment (2737) | Finland | 4.83 | | | |
| 822 | RHM | Food producers (357) | UK | 4.80 | -3.0 | 6.2 | -21.9 |
| 823 | Porvair | Chemicals (135) | UK | 4.79 | 3.5 | -45.5 | -0.6 |
| 824 | IAWS | Food producers (357) | Ireland | 4.78 | 177.9 | -16.5 | 312.0 |
| 825 | Zytek | Automobiles & parts (335) | UK | 4.77 | 13.8 | -6.5 | -3.7 |
| 826 | Vetco | Oil equipment, services & distribution (57) | UK | 4.76 | | | |
| 827 | GFI Informatique | Computer services (9533) | France | 4.71 | -16.5 | 24.5 | |
| 828 | Ares | Computer services (9533) | France | 4.70 | 46.9 | -3.0 | -8.3 |
| 829 | Glunz & Jensen | Computer hardware (9572) | Denmark | 4.68 | -41.0 | -7.3 | 29.9 |
| 830 | Whatman | Health care equipment & services (453) | UK | 4.66 | 100.0 | -26.5 | -57.4 |
| 831 | Bespak | Health care equipment & services (453) | UK | 4.63 | -10.4 | -44.1 | 15.4 |
| 832 | Stonesoft | Computer services (9533) | Finland | 4.61 | -9.4 | -22.2 | -11.3 |
| 833 | EVC International (now Ineos Vinyls) | Chemicals (135) | UK | 4.60 | 15.0 | 66.7 | -33.3 |
| 833 | Lombard Medical Technologies | Health care equipment & services (453) | UK | 4.60 | 75.6 | 74.7 | -29.9 |
| 835 | Galapagos | Biotechnology (4573) | Belgium | 4.58 | 57.9 | | |
| 836 | Pharmagene (now Asterand) | Biotechnology (4573) | UK | 4.57 | -61.7 | 4.2 | -7.9 |
| 836 | Stralfors | Media (555) | Sweden | 4.57 | -2.6 | | |
| 838 | Proteome Sciences | Pharmaceuticals (4577) | UK | 4.56 | -9.9 | -2.1 | 100.4 |
| 839 | Domnick Hunter (now part of Parker Hannifin, USA) | General industrials (272) | UK | 4.54 | 6.3 | -1.2 | 27.8 |
| 840 | Dantherm | Industrial machinery (2757) | Denmark | 4.52 | 118.4 | 508.8 | -38.2 |
| 841 | XponCard | Electronic equipment (2737) | Sweden | 4.51 | 3.7 | 28.3 | 446.8 |
| 841 | World of Medicine | Health care equipment & services (453) | Germany | 4.51 | 13.9 | -13.2 | -10.8 |
| 843 | Ensto | Electrical components & equipment (2733) | Finland | 4.50 | 15.4 | -11.4 | 4.8 |
| 843 | Verbund | Electricity (753) | Austria | 4.50 | | | 145.5 |
| 845 | IRIS | Software (9537) | Belgium | 4.46 | 13.8 | | -100.0 |
| 846 | AudioDev | Computer hardware (9572) | Sweden | 4.40 | -21.7 | 15.6 | 15.4 |
| 847 | Virbac | Pharmaceuticals (4577) | France | 4.38 | -13.8 | | |
| 848 | International Power | Electricity (753) | UK | 4.37 | 0.0 | -78.6 | |
| 848 | Lindab Intressemer | Industrial metals (175) | Sweden | 4.37 | 20.7 | -15.0 | 8.1 |
| 848 | Strategic Rail Authority | Industrial transportation (277) | UK | 4.37 | 50.2 | -60.0 | |

| Rank | Company | ICB Sector | Country | R&D Investment | | | |
|------|--|---|-----------------|----------------|----------------------|----------------------|----------------------|
| | | | | 2005 €m | change 05/04 % | change 04/03 % | change 03/02 % |
| 848 | Aegis | Media (555) | UK | 4.37 | 276.7 | -96.9 | 5.3 |
| 848 | AGI Therapeutics Research (now AGI Therapeutics) | Pharmaceuticals (4577) | Ireland | 4.37 | 86.8 | | |
| 848 | SHL | Support services (279) | UK | 4.37 | 3.6 | 11.6 | 41.0 |
| 854 | Acerinox | Industrial metals (175) | Spain | 4.34 | -30.0 | 244.4 | 12.5 |
| 855 | SPI Lasers | Electronic equipment (2737) | UK | 4.31 | 1.2 | | |
| 855 | PlasmaSelect | Health care equipment & services (453) | Germany | 4.31 | 24.9 | 85.5 | -39.2 |
| 855 | Rotork | Industrial machinery (2757) | UK | 4.31 | 21.8 | 17.6 | -12.8 |
| 858 | HL Display | Household goods (372) | Sweden | 4.30 | -4.2 | 14.0 | 12.6 |
| 859 | JSG Funding | General industrials (272) | Ireland | 4.29 | -12.8 | -1.2 | 234.2 |
| 860 | Emak | Household goods (372) | Italy | 4.27 | 36.9 | | |
| 861 | Christie | Support services (279) | UK | 4.25 | 38.9 | 2.7 | 17.3 |
| 862 | Ige Plus Xao | Software (9537) | France | 4.24 | 19.1 | 14.5 | 7.2 |
| 863 | Sioen Industries | Personal goods (376) | Belgium | 4.23 | 148.8 | | |
| 864 | KGHM Polska Miedz | Mining (177) | Poland | 4.21 | 76.9 | -15.9 | 15.5 |
| 865 | Surface Technology Systems | Semiconductors (9576) | UK | 4.19 | 0.0 | -24.5 | -11.8 |
| 865 | Alphameric | Software (9537) | UK | 4.19 | -14.8 | -17.7 | -5.2 |
| 867 | Inion | Health care equipment & services (453) | Finland | 4.15 | 89.5 | 48.0 | |
| 868 | Trinecke Zelezarny | Industrial metals (175) | Czech Republic | 4.14 | 256.9 | 16.0 | -9.9 |
| 869 | Softing | Computer hardware (9572) | Germany | 4.13 | 45.9 | 18.4 | -2.1 |
| 869 | Comino (now part of Civica) | Software (9537) | UK | 4.13 | -4.2 | 3.6 | 23.8 |
| 869 | nCipher | Software (9537) | UK | 4.13 | 0.5 | -2.6 | -17.3 |
| 872 | Mania Technologie | Electronic equipment (2737) | Germany | 4.11 | 7.3 | 5.5 | -5.2 |
| 873 | Pankl Racing Systems | Automobiles & parts (335) | Austria | 4.10 | -21.6 | -2.6 | 144.1 |
| 874 | Acciona | Construction & materials (235) | Spain | 4.09 | -4.4 | 189.2 | 74.1 |
| 874 | Amino Technologies | Telecommunications equipment (9578) | UK | 4.09 | 66.3 | 33.7 | |
| 876 | Sociedade Interbancaria de Servicos | Support services (279) | Portugal | 4.06 | | | |
| 877 | Salcomp | Electronic equipment (2737) | Finland | 4.05 | 12.2 | -25.4 | |
| 878 | Energi E2 | Electricity (753) | Denmark | 4.04 | 14.4 | -38.4 | 598.8 |
| 879 | VKR | Construction & materials (235) | Denmark | 4.02 | 123.3 | | |
| 879 | Intralot | Travel & leisure (575) | Greece | 4.02 | 18.2 | 14.9 | 12.5 |
| 881 | MWV Energie | Gas, water & multiutilities (757) | Germany | 4.00 | 9.0 | 1.9 | -35.7 |
| 882 | Pricer | Electronic equipment (2737) | Sweden | 3.99 | 34.8 | 12.5 | 67.5 |
| 883 | Atoss Software | Software (9537) | Germany | 3.96 | -7.3 | 4.7 | 15.3 |
| 883 | Innovation | Software (9537) | UK | 3.96 | -29.8 | -40.5 | -18.6 |
| 883 | Maconomy | Software (9537) | Denmark | 3.96 | 5.0 | -1.6 | -18.2 |
| 886 | Apoteket | Food & drug retailers (533) | Sweden | 3.94 | 164.4 | | |
| 887 | Data Modul | Electronic equipment (2737) | Germany | 3.92 | -5.3 | 10.1 | 20.5 |
| 888 | Telit Communications | Telecommunications equipment (9578) | UK | 3.91 | -6.9 | | |
| 889 | WSP | Support services (279) | UK | 3.89 | 7.2 | 8.7 | |
| 890 | Pilat Media Global | Software (9537) | UK | 3.86 | 628.3 | -37.6 | -55.3 |
| 891 | Okmetic | Semiconductors (9576) | Finland | 3.84 | 2.1 | 10.6 | -16.3 |
| 892 | Seagull | Software (9537) | The Netherlands | 3.81 | -15.9 | 11.9 | -17.5 |
| 893 | PKC | Electronic equipment (2737) | Finland | 3.80 | -5.7 | 24.8 | 6.3 |
| 893 | Riber | Semiconductors (9576) | France | 3.80 | 8.6 | 53.5 | 16.3 |
| 895 | XP Power | Electronic equipment (2737) | UK | 3.78 | 12.8 | 20.9 | 12.1 |
| 895 | Bernard Matthews | Food producers (357) | UK | 3.78 | 18.1 | 3.6 | 4.4 |
| 895 | KBC Advanced Technologies | Oil equipment, services & distribution (57) | UK | 3.78 | 33.6 | 55.5 | |
| 895 | Studsvik | Support services (279) | Sweden | 3.78 | -0.3 | -15.6 | -9.1 |
| 899 | CAF | Commercial vehicles & trucks (2753) | Spain | 3.76 | -43.4 | 4.7 | 68.6 |
| 900 | BETonSports | Travel & leisure (575) | UK | 3.73 | 221.6 | | |

| Rank | Company | ICB Sector | Country | R&D Investment | | | |
|------|---------------------------------|---|-----------------|----------------|----------------------|----------------------|----------------------|
| | | | | 2005 €m | change 05/04 % | change 04/03 % | change 03/02 % |
| 901 | Frigoglass | Support services (279) | Greece | 3.71 | 59.2 | 26.6 | 15.7 |
| 902 | Medisys | Health care equipment & services (453) | UK | 3.70 | -8.6 | -60.7 | -51.6 |
| 903 | Inter Link Foods | Food producers (357) | UK | 3.68 | 162.9 | 112.1 | -24.1 |
| 904 | BioMar | Food producers (357) | Denmark | 3.66 | 6.4 | | |
| 904 | Chicago Bridge & Iron Company | Industrial machinery (2757) | The Netherlands | 3.66 | 4.3 | -5.9 | 44.0 |
| 904 | Amstrad | Leisure goods (374) | UK | 3.66 | 3.4 | 11.7 | 33.8 |
| 907 | Ocean Power Delivery | Electricity (753) | UK | 3.65 | -24.0 | 375.2 | |
| 907 | Utimaco Safeware | Software (9537) | Germany | 3.65 | -7.4 | -9.6 | -47.7 |
| 909 | Carmelite Capital | Other financials (877) | UK | 3.64 | -19.3 | 106.9 | -34.9 |
| 909 | Phoqus | Pharmaceuticals (4577) | UK | 3.64 | -2.7 | | |
| 911 | Raute | Industrial machinery (2757) | Finland | 3.62 | 13.1 | 18.5 | -25.0 |
| 911 | bede | Semiconductors (9576) | UK | 3.62 | 116.8 | 0.6 | 5.7 |
| 913 | Wienerberger | Construction & materials (235) | Austria | 3.60 | -40.5 | -8.2 | |
| 914 | Kewill Systems | Software (9537) | UK | 3.58 | 15.5 | 14.0 | -24.2 |
| 915 | PlusNet | Internet (9535) | UK | 3.57 | 155.0 | -4.1 | 52.1 |
| 916 | Ferraris | Health care equipment & services (453) | UK | 3.54 | 13.1 | 2.3 | -17.1 |
| 917 | XKO | Software (9537) | UK | 3.52 | 72.5 | 3.0 | 16.5 |
| 918 | Analytik Jena | Biotechnology (4573) | Germany | 3.51 | -19.9 | -9.7 | 22.8 |
| 918 | Expro | Oil equipment. services & distribution (57) | UK | 3.51 | 57.4 | 125.3 | -48.4 |
| 920 | Prayon | Chemicals (135) | Belgium | 3.50 | | | |
| 921 | ReNeuron Holdings | Biotechnology (4573) | UK | 3.49 | 13.3 | -34.1 | -13.4 |
| 922 | Esker | Software (9537) | France | 3.48 | -10.5 | -17.4 | -17.2 |
| 922 | SSH Communications Security | Software (9537) | Finland | 3.48 | -8.2 | -13.9 | -43.7 |
| 924 | Parsytec | Software (9537) | Germany | 3.43 | -7.1 | 2.5 | -24.5 |
| 925 | Investment AB Kinnevik | Forestry & paper (173) | Sweden | 3.41 | -8.6 | 0.0 | -2.9 |
| 925 | Lafuma | Personal goods (376) | France | 3.41 | 162.3 | | |
| 927 | Terna | Electricity (753) | Italy | 3.40 | 54.5 | -26.7 | |
| 928 | GeneMedix | Biotechnology (4573) | UK | 3.39 | 5.3 | -31.6 | 60.8 |
| 928 | Nexus | Software (9537) | Germany | 3.39 | 0.0 | -18.1 | -0.7 |
| 930 | Ceres Power | Electrical components & equipment (2733) | UK | 3.38 | 46.3 | 40.0 | 98.8 |
| 931 | Snia | Health care equipment & services (453) | Italy | 3.36 | 40.0 | | |
| 931 | Trio | Telecommunications equipment (9578) | Sweden | 3.36 | 26.8 | 65.6 | -45.4 |
| 933 | Northumbrian Water | Gas. water & multiutilities (757) | UK | 3.35 | -54.0 | 1.7 | -10.6 |
| 933 | Searchspace | Software (9537) | UK | 3.35 | 7.4 | -8.2 | -27.0 |
| 935 | Prosodie | Computer services (9533) | France | 3.32 | -4.9 | | |
| 936 | Pinguely-Haulotte | Commercial vehicles & trucks (2753) | France | 3.31 | -7.5 | -10.5 | 8.4 |
| 936 | Memscap | Semiconductors (9576) | France | 3.31 | 12.6 | -44.8 | -43.9 |
| 938 | Ponsse | Commercial vehicles & trucks (2753) | Finland | 3.30 | -10.8 | 23.3 | -6.3 |
| 939 | Tamfelt | Personal goods (376) | Finland | 3.29 | -8.4 | 2.0 | -40.6 |
| 939 | Workplace Systems International | Software (9537) | UK | 3.29 | -11.8 | -35.7 | -10.8 |
| 941 | Gevelot | Automobiles & parts (335) | France | 3.27 | -11.6 | -5.4 | 32.5 |
| 941 | Genesys | Fixed line telecommunications (653) | France | 3.27 | -12.8 | -10.3 | -11.6 |
| 943 | Update Software | Software (9537) | Austria | 3.25 | 12.5 | 7.0 | -2.2 |
| 944 | BioFocus | Pharmaceuticals (4577) | UK | 3.24 | 8.4 | 30.6 | 120.2 |
| 945 | Opcon | Automobiles & parts (335) | Sweden | 3.23 | -15.7 | 84.1 | -14.8 |
| 945 | Alliance Pharma | Pharmaceuticals (4577) | UK | 3.23 | 158.4 | 76.1 | |
| 947 | Flomerics | Software (9537) | UK | 3.22 | -2.7 | -3.8 | -10.4 |
| 948 | Antonov | Automobiles & parts (335) | UK | 3.20 | 75.8 | 2.2 | 19.5 |
| 948 | Nordkalk | Chemicals (135) | Finland | 3.20 | -8.6 | -22.2 | 0.0 |
| 948 | Dairy Crest | Food producers (357) | UK | 3.20 | 4.6 | 16.8 | 20.2 |

| Rank | Company | ICB Sector | Country | R&D Investment | | | |
|------|-------------------------------------|--|-----------------|----------------|----------------------|----------------------|----------------------|
| | | | | 2005 €m | change 05/04 % | change 04/03 % | change 03/02 % |
| 948 | Pescanova | Food producers (357) | Spain | 3.20 | | | |
| 948 | Surteco | Household goods (372) | Germany | 3.20 | -40.7 | 2.5 | 22.3 |
| 948 | Kensington | Other financials (877) | UK | 3.20 | -18.6 | | |
| 954 | Jeyes | Household goods (372) | UK | 3.19 | -0.9 | 77.9 | |
| 955 | Benetton | Personal goods (376) | Italy | 3.17 | | | |
| 955 | Alterian | Software (9537) | UK | 3.17 | -9.4 | -1.4 | 24.6 |
| 957 | Eckoh Technologies | Support services (279) | UK | 3.16 | 62.9 | -2.0 | 10.6 |
| 958 | LPKF Laser & Electronics | Electronic equipment (2737) | Germany | 3.13 | 11.0 | -3.1 | 11.1 |
| 959 | IBS | Software (9537) | Germany | 3.12 | -10.6 | -11.2 | |
| 960 | Osmetech | Biotechnology (4573) | UK | 3.10 | 22.1 | 27.0 | -51.8 |
| 960 | Lannen Tehtaat | Food producers (357) | Finland | 3.10 | | | |
| 960 | Alma Media | Media (555) | Finland | 3.10 | 3.3 | -9.1 | -8.3 |
| 963 | Protect Data | Computer services (9533) | Sweden | 3.09 | -12.7 | 26.0 | 8.1 |
| 964 | CENIT AG Systemhaus | Computer services (9533) | Germany | 3.08 | 14.5 | | |
| 965 | Fininfo | Media (555) | France | 3.06 | -7.3 | -9.1 | 807.5 |
| 966 | Jazztel | Fixed line telecommunications (653) | UK | 3.05 | 34.4 | 12.9 | -42.9 |
| 967 | Evalis | Food producers (357) | France | 3.04 | 1.3 | 0.0 | 0.0 |
| 967 | Fenner | Industrial machinery (2757) | UK | 3.04 | -8.4 | 33.9 | -7.5 |
| 969 | Newchurch | Computer services (9533) | UK | 3.02 | 41.8 | 8.7 | -28.5 |
| 970 | Finatis | Food & drug retailers (533) | France | 3.00 | -40.0 | | |
| 971 | Centrotec Sustainable | Chemicals (135) | Germany | 2.99 | 23.1 | 52.8 | 17.8 |
| 971 | Austria Technologie & Systemtechnik | Electrical components & equipment (2733) | Austria | 2.99 | 10.7 | -18.9 | |
| 971 | Corin | Health care equipment & services (453) | UK | 2.99 | 37.2 | 26.0 | 32.1 |
| 974 | Unisystems Information Systems | Computer services (9533) | Greece | 2.98 | 287.0 | -19.8 | -18.6 |
| 974 | NXT | Leisure goods (374) | UK | 2.98 | -59.9 | -19.6 | 2.6 |
| 974 | Blue Fox Enterprises | Software (9537) | The Netherlands | 2.98 | -25.5 | 2.0 | 3.2 |
| 977 | Epiq | Electronic equipment (2737) | Belgium | 2.96 | -6.9 | -27.1 | -12.1 |
| 978 | Bond International Software | Software (9537) | UK | 2.93 | 22.1 | 35.6 | 6.0 |
| 979 | George Wimpey | Household goods (372) | UK | 2.91 | -51.3 | | |
| 979 | UNIQA | Nonlife insurance (853) | Austria | 2.91 | -10.7 | -79.7 | |
| 981 | Evox Rifa Group | Electrical components & equipment (2733) | Finland | 2.90 | -2.7 | -1.7 | 11.4 |
| 981 | Targetti Sankey | Electrical components & equipment (2733) | Italy | 2.90 | 76.8 | -26.1 | 37.0 |
| 981 | Athlon | General retailers (537) | The Netherlands | 2.90 | 81.2 | -11.1 | |
| 984 | HITT | Electronic equipment (2737) | The Netherlands | 2.89 | -41.0 | 31.4 | 23.5 |
| 985 | Tadpole Technology | Internet (9535) | UK | 2.88 | 17.1 | -21.7 | -51.2 |
| 986 | Robotic Technology Systems | Support services (279) | UK | 2.86 | -63.5 | 13.3 | 43.9 |
| 987 | Ant | Software (9537) | UK | 2.85 | 39.7 | 134.5 | -42.0 |
| 988 | Planit | Software (9537) | UK | 2.84 | 12.7 | 950.0 | -73.6 |
| 989 | Tennants | Chemicals (135) | UK | 2.83 | 24.7 | 656.7 | 1 400.0 |
| 989 | ClinPhone | Computer services (9533) | UK | 2.83 | 19.9 | | |
| 991 | Schweizer Electronic | Electronic equipment (2737) | Germany | 2.80 | -3.4 | -3.3 | -3.2 |
| 992 | Zinc Resources | Mining (177) | UK | 2.78 | | | |
| 993 | BioProgress | Biotechnology (4573) | UK | 2.77 | 575.6 | 57.7 | |
| 993 | United Utilities | Gas, water & multiutilities (757) | UK | 2.77 | 138.8 | 0.0 | 0.0 |
| 993 | Renold | Industrial machinery (2757) | UK | 2.77 | -4.8 | -9.1 | -12.1 |
| 993 | Intershop Communications | Software (9537) | Germany | 2.77 | -33.3 | -33.7 | -13.4 |
| 997 | Benefon | Telecommunications equipment (9578) | Finland | 2.73 | 105.3 | -71.2 | -19.1 |
| 998 | Intelek | Telecommunications equipment (9578) | UK | 2.72 | -18.8 | -2.6 | 8.5 |
| 999 | Associated Weavers International | Household goods (372) | Belgium | 2.71 | 12.4 | 8.1 | -5.9 |
| 1000 | Raysearch Laboratories | Health care equipment & services (453) | Sweden | 2.67 | 10.3 | 240.8 | |

Table A2.2 R&D ranking of the top 1000 non-EU companies by level of R&D Investment

| Rank | Company | ICB Sector | Country | R&D Investment | | | |
|--|-------------------------|-------------------------------------|-------------|-------------------|----------------------|----------------------|----------------------|
| | | | | 2005 €m | change 05/04 % | change 04/03 % | change 03/02 % |
| Top 1000 Companies | | | | 257 699.78 | 7.6 | 6.8 | 5.7 |
| <i>number of companies for calculation</i> | | | | <i>1000</i> | <i>989</i> | <i>972</i> | <i>942</i> |
| 1 | Ford Motor | Automobiles & parts (335) | USA | 6 781.92 | 8.1 | -1.3 | -2.6 |
| 2 | Pfizer | Pharmaceuticals (4577) | USA | 6 308.88 | -3.1 | 7.8 | 37.8 |
| 3 | General Motors | Automobiles & parts (335) | USA | 5 679.86 | 3.1 | 14.0 | -1.7 |
| 4 | Microsoft | Software (9537) | USA | 5 581.52 | 6.5 | -20.5 | 67.0 |
| 5 | Toyota Motor | Automobiles & parts (335) | Japan | 5 423.93 | 10.7 | 2.1 | 13.4 |
| 6 | Johnson & Johnson | Pharmaceuticals (4577) | USA | 5 350.94 | 21.3 | 11.1 | 18.4 |
| 7 | Samsung Electronics | Electronic equipment (2737) | South Korea | 4 612.61 | 12.2 | 37.0 | 17.6 |
| 8 | IBM | Computer services (9533) | USA | 4 559.15 | 4.1 | 12.3 | -3.0 |
| 9 | Intel | Semiconductors (9576) | USA | 4 361.62 | 7.7 | 9.6 | 8.1 |
| 10 | Novartis | Pharmaceuticals (4577) | Switzerland | 4 108.15 | 15.2 | 12.0 | 14.0 |
| 11 | Matsushita Electric | Leisure goods (374) | Japan | 4 056.61 | -8.2 | 6.3 | 5.1 |
| 12 | Sony | Leisure goods (374) | Japan | 3 819.68 | 5.9 | -2.4 | 16.1 |
| 13 | Roche | Pharmaceuticals (4577) | Switzerland | 3 669.70 | 12.0 | 6.9 | 12.0 |
| 14 | Honda Motor | Automobiles & parts (335) | Japan | 3 359.70 | 4.2 | 2.8 | 10.5 |
| 15 | Merck | Pharmaceuticals (4577) | USA | 3 262.10 | -4.0 | 26.2 | 18.7 |
| 16 | Motorola | Telecommunications equipment (9578) | USA | 3 119.68 | 20.3 | -18.9 | 0.5 |
| 17 | Hewlett-Packard | Computer hardware (9572) | USA | 2 958.61 | -0.5 | -4.0 | 10.3 |
| 18 | Hitachi | Computer hardware (9572) | Japan | 2 909.53 | 4.2 | 4.5 | -1.4 |
| 19 | General Electric | General industrials (272) | USA | 2 903.51 | 10.8 | 16.4 | 19.9 |
| 20 | Nissan Motor | Automobiles & parts (335) | Japan | 2 859.75 | 12.4 | 18.0 | 14.6 |
| 21 | Cisco Systems | Telecommunications equipment (9578) | USA | 2 816.19 | 4.1 | 1.8 | -9.1 |
| 22 | Eli Lilly | Pharmaceuticals (4577) | USA | 2 564.84 | 12.4 | 14.5 | 9.3 |
| 23 | Toshiba | Computer hardware (9572) | Japan | 2 499.62 | 3.4 | 1.6 | 1.6 |
| 24 | Wyeth | Pharmaceuticals (4577) | USA | 2 330.77 | 11.7 | 17.5 | 0.6 |
| 25 | Bristol-Myers Squibb | Pharmaceuticals (4577) | USA | 2 327.89 | 9.8 | 9.7 | 2.8 |
| 26 | NTT | Fixed line telecommunications (653) | Japan | 2 284.61 | -10.4 | -10.4 | 1.3 |
| 27 | Canon | Electronic equipment (2737) | Japan | 2 057.65 | 4.1 | 6.2 | 10.9 |
| 28 | Hyundai Motor | Automobiles & parts (335) | South Korea | 1 982.69 | 21.9 | 102.2 | 54.9 |
| 29 | NEC | Computer hardware (9572) | Japan | 1 977.72 | 7.3 | -13.4 | -11.2 |
| 30 | Amgen | Biotechnology (4573) | USA | 1 961.67 | 14.1 | 22.5 | 48.3 |
| 31 | Boeing | Aerospace & defence (271) | USA | 1 869.27 | 17.4 | 13.8 | 0.7 |
| 32 | Delphi | Automobiles & parts (335) | USA | 1 865.03 | 4.8 | 5.0 | 17.6 |
| 33 | Fujitsu | Computer hardware (9572) | Japan | 1 725.42 | -4.3 | -12.2 | -18.3 |
| 34 | Denso | Automobiles & parts (335) | Japan | 1 711.20 | 10.9 | 17.5 | -1.5 |
| 35 | Texas Instruments | Semiconductors (9576) | USA | 1 708.20 | 1.9 | 13.2 | 8.0 |
| 36 | Procter & Gamble | Household goods (372) | USA | 1 644.62 | 7.7 | 8.2 | 4.0 |
| 37 | Oracle | Software (9537) | USA | 1 586.97 | 25.6 | 16.7 | 8.3 |
| 38 | Schering-Plough | Pharmaceuticals (4577) | USA | 1 581.04 | 16.1 | 9.4 | 3.1 |
| 39 | Nortel Networks | Telecommunications equipment (9578) | Canada | 1 573.41 | -5.3 | -0.1 | -12.1 |
| 40 | Abbott Laboratories | Pharmaceuticals (4577) | USA | 1 543.88 | 7.3 | -2.1 | 11.0 |
| 41 | Sun Microsystems | Computer hardware (9572) | USA | 1 513.22 | -7.3 | 4.8 | 0.3 |
| 42 | LG Electronics | Electronic equipment (2737) | South Korea | 1 487.32 | 14.9 | 40.8 | 19.3 |
| 43 | Fuji Photo Film | Leisure goods (374) | Japan | 1 308.34 | 8.4 | -3.1 | 8.9 |
| 44 | Lucent Technologies | Telecommunications equipment (9578) | USA | 1 194.47 | 10.9 | -14.7 | -35.6 |
| 45 | United Technologies | Aerospace & defence (271) | USA | 1 158.86 | 8.8 | 22.3 | -13.8 |
| 46 | El du Pont de Nemours | Chemicals (135) | USA | 1 132.58 | 0.2 | -1.2 | 6.7 |
| 47 | Sharp | Electronic equipment (2737) | Japan | 1 063.95 | 6.7 | -8.8 | 20.8 |
| 48 | Takeda Pharmaceutical | Pharmaceuticals (4577) | Japan | 1 016.00 | 9.1 | 4.4 | 23.9 |
| 49 | Freescale Semiconductor | Semiconductors (9576) | USA | 1 013.05 | 23.8 | | |
| 50 | EMC | Computer hardware (9572) | USA | 993.49 | 15.6 | 21.9 | -8.4 |

| Rank | Company | ICB Sector | Country | R&D Investment | | | |
|------|---|--|-------------|----------------|----------------------|----------------------|----------------------|
| | | | | 2005 €m | change 05/04 % | change 04/03 % | change 03/02 % |
| 51 | Advanced Micro Devices | Semiconductors (9576) | USA | 969.84 | 22.4 | 9.7 | 4.4 |
| 52 | Nestle | Food producers (357) | Switzerland | 964.22 | 6.1 | 17.3 | -0.2 |
| 53 | Sanyo Electric | Electronic equipment (2737) | Japan | 946.87 | 5.3 | 3.6 | 12.9 |
| 54 | Medtronic | Health care equipment & services (453) | USA | 943.45 | 17.0 | 11.7 | 13.6 |
| 55 | Mitsubishi Electric | Computer hardware (9572) | Japan | 937.63 | 4.2 | -22.5 | -21.0 |
| 56 | Caterpillar | Commercial vehicles & trucks (2753) | USA | 918.95 | 16.8 | 38.7 | 2.0 |
| 57 | Dow Chemical | Chemicals (135) | USA | 909.63 | 5.0 | 4.2 | -8.0 |
| 58 | Honeywell | General industrials (272) | USA | 908.78 | 16.9 | 22.1 | -0.8 |
| 59 | Mitsubishi Heavy | General industrials (272) | Japan | 890.81 | 24.6 | -9.1 | -7.7 |
| 60 | Lockheed Martin | Aerospace & defence (271) | USA | 883.35 | 8.3 | 6.5 | 8.8 |
| 61 | Qualcomm | Telecommunications equipment (9578) | USA | 857.07 | 40.4 | 37.6 | 15.8 |
| 62 | Altria | Tobacco (378) | USA | 799.42 | 16.6 | 6.2 | 11.1 |
| 63 | Applied Materials | Semiconductors (9576) | USA | 797.31 | -5.2 | 7.7 | -12.5 |
| 64 | Ricoh | Electronic office equipment (9574) | Japan | 792.85 | -0.1 | 19.4 | 10.7 |
| 65 | Eastman Kodak | Leisure goods (374) | USA | 756.18 | 4.4 | 9.3 | 2.5 |
| 66 | Tyco International | General industrials (272) | Bermuda | 708.71 | 6.6 | 16.9 | 5.9 |
| 67 | Syngenta | Chemicals (135) | Switzerland | 696.84 | 1.6 | 11.3 | 4.3 |
| 68 | Aisin Seiki | Automobiles & parts (335) | Japan | 686.26 | 7.3 | 11.2 | 18.3 |
| 69 | Visteon | Automobiles & parts (335) | USA | 681.58 | -10.3 | -0.8 | 0.1 |
| 70 | 3M | General industrials (272) | USA | 676.50 | 5.1 | 1.3 | 1.5 |
| 71 | CA | Software (9537) | USA | 662.09 | 2.8 | 7.6 | 0.3 |
| 72 | Mazda Motor | Automobiles & parts (335) | Japan | 652.48 | 3.5 | 0.0 | -7.5 |
| 73 | Electronic Arts | Leisure goods (374) | USA | 642.59 | 19.7 | 23.9 | 27.4 |
| 74 | Mitsubishi Chemical | Chemicals (135) | Japan | 640.80 | 0.8 | -2.8 | 7.6 |
| 75 | Xerox | Electronic office equipment (9574) | USA | 640.04 | -0.7 | -12.4 | -5.3 |
| 76 | Biogen Idec | Biotechnology (4573) | USA | 633.83 | 10.4 | 190.2 | 156.9 |
| 77 | Agilent Technologies | Electronic equipment (2737) | USA | 625.63 | -20.9 | -11.2 | -10.1 |
| 78 | Suzuki Motor | Automobiles & parts (335) | Japan | 623.85 | 14.6 | 25.4 | 34.3 |
| 79 | ABB | Electrical components & equipment (2733) | Switzerland | 622.24 | 6.4 | 12.6 | 11.5 |
| 80 | Exxon Mobil | Oil & gas producers (53) | USA | 603.59 | 9.7 | 5.0 | -2.1 |
| 81 | Symantec | Software (9537) | USA | 578.27 | 104.2 | 32.4 | 27.9 |
| 82 | Boston Scientific | Health care equipment & services (453) | USA | 576.46 | 19.5 | 25.9 | 31.8 |
| 83 | Deere | Commercial vehicles & trucks (2753) | USA | 574.17 | 10.7 | 5.9 | 9.4 |
| 84 | Bridgestone | Automobiles & parts (335) | Japan | 570.41 | 8.9 | 2.7 | 4.1 |
| 85 | Eisai | Pharmaceuticals (4577) | Japan | 562.59 | 13.5 | 15.6 | 8.5 |
| 86 | Sumitomo Chemical | Chemicals (135) | Japan | 561.74 | 4.0 | 3.3 | 9.2 |
| 87 | Broadcom | Semiconductors (9576) | USA | 551.56 | 17.5 | -15.3 | -8.5 |
| 88 | Automatic Data Processing | Support services (279) | USA | 529.08 | 7.4 | 16.4 | 5.1 |
| 89 | Serono | Biotechnology (4573) | Switzerland | 515.34 | -0.8 | 25.7 | 36.1 |
| 90 | Yamaha Motor | Automobiles & parts (335) | Japan | 514.39 | 4.6 | 9.1 | 12.1 |
| 91 | Micron Technology | Semiconductors (9576) | USA | 511.78 | -20.0 | 15.0 | 16.9 |
| 92 | Google | Internet (9535) | USA | 508.23 | 51.7 | 72.1 | 467.0 |
| 93 | Guidant (now part of Boston Scientific) | Health care equipment & services (453) | USA | 506.95 | 15.9 | -0.5 | 18.5 |
| 94 | Monsanto | Chemicals (135) | USA | 498.47 | 15.1 | -3.0 | |
| 95 | Yahoo! | Internet (9535) | USA | 498.07 | 51.5 | 87.1 | 34.0 |
| 96 | Mitsubishi Motors | Automobiles & parts (335) | Japan | 493.99 | -0.1 | -11.6 | |
| 97 | Konica Minolta | Leisure goods (374) | Japan | 474.01 | 34.4 | 62.0 | 3.9 |
| 98 | Amazon.com | General retailers (537) | USA | 458.63 | 65.5 | 13.8 | 3.9 |
| 99 | Northrop Grumman | Aerospace & defence (271) | USA | 456.08 | 6.7 | 26.0 | -1.5 |
| 100 | Pioneer | Electronic equipment (2737) | Japan | 455.68 | 13.5 | 8.6 | 13.4 |

| Rank | Company | ICB Sector | Country | R&D Investment | | | |
|------|---|---|-------------|----------------|--------------|--------------|--------------|
| | | | | 2005 | change 05/04 | change 04/03 | change 03/02 |
| | | | | €m | % | % | % |
| 101 | Apple Computer | Computer hardware (9572) | USA | 452.69 | 9.2 | 3.8 | 5.6 |
| 102 | Baxter International | Health care equipment & services (453) | USA | 451.85 | 3.1 | -6.5 | 10.4 |
| 103 | Schlumberger | Oil equipment, services & distribution (57) | USA | 428.54 | 8.2 | -16.0 | -14.4 |
| 104 | Raytheon | Aerospace & defence (271) | USA | 426.41 | 2.4 | 0.8 | -17.0 |
| 105 | Yamanouchi Pharmaceutical (now Astellas Pharma) | Pharmaceuticals (4577) | Japan | 422.64 | -16.0 | 4.8 | 2.6 |
| 106 | Analog Devices | Semiconductors (9576) | USA | 421.41 | -2.9 | 13.7 | 6.2 |
| 107 | Genzyme | Biotechnology (4573) | USA | 409.03 | 27.2 | 20.0 | 7.8 |
| 108 | Sumitomo Electric | Electrical components & equipment (2733) | Japan | 405.67 | 2.2 | 13.6 | 0.4 |
| 109 | Dell | Computer hardware (9572) | USA | 392.50 | 0.0 | 40.3 | 3.4 |
| 110 | Agere Systems | Semiconductors (9576) | USA | 391.66 | -6.9 | 6.2 | -32.6 |
| 111 | Kyocera | Telecommunications equipment (9578) | Japan | 390.72 | 16.7 | -1.3 | 17.0 |
| 112 | Corning | Telecommunications equipment (9578) | USA | 375.55 | 24.8 | 3.2 | -28.8 |
| 113 | Fuji Heavy Industries | Automobiles & parts (335) | Japan | 373.80 | -9.6 | -4.3 | 9.5 |
| 114 | Asahi Kasei | Chemicals (135) | Japan | 364.27 | 4.7 | -1.8 | -0.5 |
| 115 | Mitsubishi Pharma (now part of Mitsubishi Chemical) | Pharmaceuticals (4577) | Japan | 362.59 | -0.1 | 4.7 | 40.7 |
| 116 | Taiwan Semiconductor Manufacturing | Semiconductors (9576) | Taiwan | 361.80 | 12.0 | -1.5 | 8.4 |
| 117 | Komatsu | Commercial vehicles & trucks (2753) | Japan | 360.65 | 8.1 | 9.0 | 9.2 |
| 118 | Cadence Design Systems | Software (9537) | USA | 358.88 | 8.6 | 8.0 | -6.8 |
| 119 | Chiron (now part of Novartis, Switzerland) | Biotechnology (4573) | USA | 356.74 | 1.9 | 5.6 | 20.1 |
| 120 | Omron | Electronic equipment (2737) | Japan | 355.12 | 6.3 | 15.6 | -2.8 |
| 121 | Johnson Controls | Automobiles & parts (335) | USA | 351.81 | -19.4 | 6.4 | 10.3 |
| 122 | Forest Laboratories | Pharmaceuticals (4577) | USA | 347.94 | 39.8 | 19.1 | 20.3 |
| 123 | Telstra | Fixed line telecommunications (653) | Australia | 343.28 | 19.7 | -22.7 | 7.4 |
| 124 | Olympus | Electronic equipment (2737) | Japan | 342.76 | 23.4 | 11.3 | 14.0 |
| 125 | Petroleo Brasileiro | Oil & gas producers (53) | Brazil | 338.25 | 60.9 | 23.4 | 36.7 |
| 126 | LSI Logic | Semiconductors (9576) | USA | 336.82 | -5.7 | -2.6 | -5.4 |
| 127 | PetroChina | Oil & gas producers (53) | China | 335.63 | 8.8 | 21.8 | 33.5 |
| 128 | Avaya | Telecommunications equipment (9578) | USA | 334.01 | 13.2 | -4.1 | -20.9 |
| 129 | Allergan | Pharmaceuticals (4577) | USA | 331.47 | 13.1 | 13.7 | 30.4 |
| 130 | Unisys | Computer services (9533) | USA | 330.28 | -5.9 | -2.4 | 2.7 |
| 131 | Korea Electric Power | Electricity (753) | South Korea | 327.76 | 8.3 | 21.7 | -14.3 |
| 132 | MedImmune | Biotechnology (4573) | USA | 326.04 | 17.5 | 109.4 | 8.4 |
| 133 | Danaher | Electronic equipment (2737) | USA | 321.29 | 28.9 | 42.0 | 19.0 |
| 134 | Tokyo Electron | Semiconductors (9576) | Japan | 315.24 | -0.6 | -11.9 | -6.9 |
| 135 | St Jude Medical | Health care equipment & services (453) | USA | 313.01 | 31.0 | 16.9 | 20.3 |
| 136 | Teva Pharmaceutical Industries | Pharmaceuticals (4577) | Israel | 312.73 | 9.0 | 58.5 | 29.4 |
| 137 | Adobe Systems | Software (9537) | USA | 309.70 | 17.4 | 12.4 | 12.6 |
| 138 | eBay | General retailers (537) | USA | 309.67 | 29.6 | 61.3 | 45.5 |
| 139 | Goodyear | Automobiles & parts (335) | USA | 309.43 | -3.5 | 7.9 | -7.8 |
| 140 | Seiko Epson | Electronic equipment (2737) | Japan | 308.16 | 4.3 | -3.8 | 4.4 |
| 141 | LG Philips LCD | Electrical components & equipment (2733) | South Korea | 306.48 | -12.3 | 49.2 | 23.4 |
| 142 | Juniper Networks | Telecommunications equipment (9578) | USA | 301.30 | 49.1 | 35.4 | 8.8 |
| 143 | Cephalon | Pharmaceuticals (4577) | USA | 300.80 | 29.5 | 60.9 | 32.7 |
| 144 | Sega Sammy | Software (9537) | Japan | 298.73 | | | |
| 145 | Nvidia | Semiconductors (9576) | USA | 298.49 | 5.1 | 24.1 | 20.1 |
| 146 | General Dynamics | Aerospace & defence (271) | USA | 291.62 | 4.6 | 16.7 | 11.5 |
| 146 | Tellabs | Telecommunications equipment (9578) | USA | 291.62 | 37.4 | -12.5 | -14.6 |
| 148 | Japan Tobacco | Tobacco (378) | Japan | 291.19 | -4.0 | -5.1 | -15.5 |
| 149 | Kla-Tencor | Semiconductors (9576) | USA | 288.47 | 21.3 | 4.6 | -6.7 |
| 150 | Whirlpool | Household goods (372) | USA | 287.38 | 7.6 | -3.1 | 15.3 |

| Rank | Company | ICB Sector | Country | R&D Investment | | | |
|------|---|--|-------------|----------------|--------------|--------------|--------------|
| | | | | 2005 | change 05/04 | change 04/03 | change 03/02 |
| | | | | €m | % | % | % |
| 151 | Kao | Personal goods (376) | Japan | 285.61 | 3.3 | 2.1 | 0.5 |
| 152 | Intuit | Software (9537) | USA | 285.34 | -3.0 | 35.6 | 13.8 |
| 153 | Lexmark | Computer hardware (9572) | USA | 285.18 | 7.6 | 17.7 | 7.2 |
| 154 | National Semiconductor | Semiconductors (9576) | USA | 282.30 | -5.6 | -19.0 | -1.2 |
| 155 | Applera | Biotechnology (4573) | USA | 280.38 | -12.3 | 16.6 | -15.3 |
| 156 | Maxim Integrated Products | Semiconductors (9576) | USA | 278.20 | 7.1 | 12.5 | -1.2 |
| 157 | Hynix Semiconductor | Semiconductors (9576) | South Korea | 277.86 | -16.1 | 12.8 | -13.6 |
| 158 | ATI Technologies | Computer hardware (9572) | Canada | 277.23 | 21.2 | 26.7 | 29.4 |
| 159 | Xilinx | Semiconductors (9576) | USA | 276.47 | 6.1 | 24.2 | 11.5 |
| 160 | Textron | General industrials (272) | USA | 276.36 | 6.2 | 20.4 | 23.2 |
| 161 | Synopsys | Software (9537) | USA | 271.27 | 11.1 | -0.2 | 27.0 |
| 162 | Kimberly-Clark | Personal goods (376) | USA | 270.85 | 14.2 | -0.3 | -2.9 |
| 163 | NCR | Computer hardware (9572) | USA | 270.43 | -2.4 | 7.9 | 2.0 |
| 164 | Millennium Pharmaceuticals | Biotechnology (4573) | USA | 270.18 | 19.6 | -15.9 | -6.1 |
| 165 | Chevron | Oil & gas producers (53) | USA | 267.89 | 30.6 | 1.7 | 7.7 |
| 166 | JFE | Industrial metals (175) | Japan | 267.14 | 1.8 | 10.3 | |
| 167 | Marvell Technology | Semiconductors (9576) | Bermuda | 265.24 | 17.7 | 22.9 | 43.8 |
| 168 | Toray Industries | Chemicals (135) | Japan | 264.20 | 2.9 | 0.2 | -4.2 |
| 169 | PPG Industries | Chemicals (135) | USA | 261.95 | 2.0 | 4.5 | 6.2 |
| 170 | TDK | Electronic equipment (2737) | Japan | 261.07 | 5.4 | 8.3 | -17.5 |
| 171 | Emerson Electric | Electrical components & equipment (2733) | USA | 256.87 | -37.7 | -5.4 | -3.0 |
| 172 | Autodesk | Software (9537) | USA | 255.68 | 26.0 | 14.4 | 21.0 |
| 173 | Tokyo Electric Power | Electricity (753) | Japan | 252.69 | -4.8 | -8.4 | -15.9 |
| 174 | Mitsui Chemicals | Chemicals (135) | Japan | 250.54 | 6.0 | -11.4 | -4.9 |
| 175 | Maxtor (now part of Seagate Technology, Cayman Islands) | Computer hardware (9572) | USA | 248.86 | -9.2 | -8.7 | -11.7 |
| 176 | United Microelectronics | Semiconductors (9576) | Taiwan | 248.67 | 30.8 | 25.7 | -20.5 |
| 177 | Eaton | General industrials (272) | USA | 243.30 | 10.0 | 17.0 | 9.9 |
| 178 | Nikon | Semiconductors (9576) | Japan | 241.06 | 11.3 | 9.7 | 0.7 |
| 179 | McKesson | Food & drug retailers (533) | USA | 240.76 | 22.7 | 0.5 | -30.8 |
| 180 | Stryker | Health care equipment & services (453) | USA | 237.20 | 32.6 | 17.1 | 27.4 |
| 181 | Kyowa Hakko Kogyo | Biotechnology (4573) | Japan | 236.14 | 14.3 | -1.5 | -5.6 |
| 182 | Murata Manufacturing | Semiconductors (9576) | Japan | 235.91 | -3.9 | 8.7 | -0.5 |
| 183 | Cummins | Commercial vehicles & trucks (2753) | USA | 235.67 | 15.3 | 20.5 | 2.6 |
| 184 | China Petroleum & Chemical | Oil & gas producers (53) | China | 235.63 | 47.8 | -28.1 | 39.4 |
| 185 | Gilead Sciences | Biotechnology (4573) | USA | 235.44 | 24.2 | 35.6 | 22.3 |
| 186 | Vale Do Rio Doce | Mining (177) | Brazil | 234.82 | 47.0 | 76.7 | 68.2 |
| 187 | Atmel | Semiconductors (9576) | USA | 234.49 | 11.8 | -0.1 | -2.2 |
| 188 | Dana | Automobiles & parts (335) | USA | 233.13 | 2.2 | 6.7 | -12.2 |
| 189 | Samsung Electro-Mechanics | Electrical components & equipment (2733) | South Korea | 232.33 | 23.1 | | |
| 190 | Rohm | Computer hardware (9572) | Japan | 232.31 | 3.1 | -1.4 | 48.4 |
| 191 | Cerner | Software (9537) | USA | 232.26 | 18.9 | 28.1 | 20.0 |
| 192 | Rohm & Haas | Chemicals (135) | USA | 231.43 | 3.0 | 11.3 | -8.5 |
| 193 | Becton Dickinson | Health care equipment & services (453) | USA | 230.27 | 15.3 | 0.3 | -22.1 |
| 194 | Liebherr | Commercial vehicles & trucks (2753) | Switzerland | 230.00 | 15.0 | | |
| 195 | Shin-Etsu Chemical | Chemicals (135) | Japan | 229.87 | 14.6 | 6.1 | -3.5 |
| 196 | BMC Software | Software (9537) | USA | 228.30 | -5.2 | -51.5 | 19.6 |
| 197 | Asahi Glass | Construction & materials (235) | Japan | 227.73 | -1.7 | -11.5 | 18.1 |
| 198 | Conexant Systems | Semiconductors (9576) | USA | 227.19 | 11.7 | 50.6 | -50.8 |
| 199 | Goodrich | Aerospace & defence (271) | USA | 226.26 | 7.3 | 11.5 | 27.9 |
| 200 | Hon Hai Precision Industry | Electronic equipment (2737) | Taiwan | 225.45 | 23.6 | 47.4 | 25.1 |

| Rank | Company | ICB Sector | Country | R&D Investment | | | |
|------|---|---|-------------|----------------|----------------------|----------------------|----------------------|
| | | | | 2005 €m | change 05/04 % | change 04/03 % | change 03/02 % |
| 201 | Ono Pharmaceutical | Pharmaceuticals (4577) | Japan | 220.05 | -0.8 | 1.6 | 7.3 |
| 202 | Toyota Industries | Automobiles & parts (335) | Japan | 215.85 | 1.7 | -0.5 | -0.9 |
| 203 | Teijin | Chemicals (135) | Japan | 215.65 | -8.5 | 9.9 | -6.2 |
| 204 | UTStarcom | Telecommunications equipment (9578) | USA | 214.59 | 12.8 | 40.7 | 85.0 |
| 205 | SK Telecom | Mobile telecommunications (657) | South Korea | 212.62 | -7.3 | 15.9 | 21.3 |
| 206 | Shionogi | Pharmaceuticals (4577) | Japan | 211.23 | -1.3 | -4.7 | 2.2 |
| 207 | Novellus Systems | Semiconductors (9576) | USA | 209.66 | -1.9 | 10.8 | 2.3 |
| 208 | Colgate-Palmolive | Personal goods (376) | USA | 208.80 | 7.5 | 11.9 | 4.2 |
| 209 | Yokogawa Electric | Electronic equipment (2737) | Japan | 208.28 | 7.4 | 7.0 | 31.2 |
| 210 | SunGard Data Systems | Computer services (9533) | USA | 207.53 | -3.6 | 22.3 | 19.2 |
| 211 | Accenture | Support services (279) | Bermuda | 206.38 | -10.5 | 8.6 | 6.7 |
| 212 | Kirin Brewery | Beverages (353) | Japan | 206.33 | 1.9 | 6.4 | 15.1 |
| 213 | Rockwell Collins | Aerospace & defence (271) | USA | 206.00 | 11.5 | 0.9 | -14.6 |
| 214 | Network Appliance | Computer hardware (9572) | USA | 205.99 | 42.1 | 29.7 | 16.8 |
| 215 | ZTE | Telecommunications equipment (9578) | China | 205.85 | -13.5 | 47.5 | |
| 216 | Halliburton | Oil equipment, services & distribution (57) | USA | 204.31 | -3.6 | 5.1 | -2.5 |
| 217 | Ajinomoto | Food producers (357) | Japan | 204.22 | 0.9 | 6.2 | -1.8 |
| 218 | Comverse Technology | Telecommunications equipment (9578) | USA | 204.18 | 7.4 | -8.8 | -22.2 |
| 219 | Western Digital | Computer hardware (9572) | USA | 202.19 | 18.7 | 49.2 | 12.1 |
| 220 | Tanabe Seiyaku | Pharmaceuticals (4577) | Japan | 199.60 | 12.9 | 4.9 | 12.2 |
| 221 | Benq | Computer hardware (9572) | Taiwan | 198.90 | 70.4 | 30.4 | 57.5 |
| 222 | Fuji Electric | Electrical components & equipment (2733) | Japan | 195.54 | -4.7 | 6.7 | -4.6 |
| 223 | Ciba Specialty Chemicals | Chemicals (135) | Switzerland | 193.62 | 4.5 | 2.5 | -4.4 |
| 224 | Gazprom | Gas, water & multiutilities (757) | Russia | 193.02 | 12.0 | 178.4 | 10.5 |
| 225 | Alcan | Industrial metals (175) | Canada | 192.44 | -5.0 | 70.7 | 21.7 |
| 226 | Cypress Semiconductor | Semiconductors (9576) | USA | 192.23 | -13.3 | 4.1 | -12.7 |
| 227 | Dai Nippon Printing | Media (555) | Japan | 189.52 | 1.3 | 8.1 | 3.1 |
| 228 | POSCO | Industrial metals (175) | South Korea | 189.22 | -18.6 | 8.4 | 26.5 |
| 229 | Teradyne | Semiconductors (9576) | USA | 189.06 | -14.9 | 2.9 | -13.4 |
| 230 | Advantest | Semiconductors (9576) | Japan | 188.76 | 21.5 | -8.4 | -11.5 |
| 231 | Harman International Industries | Leisure goods (374) | USA | 188.71 | 2.6 | 51.6 | 30.2 |
| 232 | Calsonic Kansei | Automobiles & parts (335) | Japan | 186.71 | 1.7 | 14.2 | 8.1 |
| 233 | Take-Two Interactive Software | Leisure goods (374) | USA | 186.71 | 49.6 | 486.6 | 117.8 |
| 234 | MediaTek | Computer hardware (9572) | Taiwan | 186.59 | 98.4 | -7.7 | 164.0 |
| 235 | Nidec | Computer hardware (9572) | Japan | 186.16 | 196.2 | 28.3 | 19.1 |
| 236 | Brother Industries | Electronic equipment (2737) | Japan | 181.35 | 14.8 | 2.8 | 1.7 |
| 237 | Mentor Graphics | Software (9537) | USA | 180.29 | 5.1 | 9.5 | 12.5 |
| 238 | Altera | Semiconductors (9576) | USA | 177.83 | 16.2 | 1.1 | -2.3 |
| 239 | Human Genome Sciences | Biotechnology (4573) | USA | 177.69 | -2.8 | 17.7 | -9.2 |
| 240 | Gillette (now part of Procter & Gamble) | Personal goods (376) | USA | 177.18 | 3.5 | 9.2 | -1.1 |
| 241 | Beckman Coulter | Health care equipment & services (453) | USA | 177.09 | 4.4 | 2.9 | 5.7 |
| 242 | Daikin Industries | Electrical components & equipment (2733) | Japan | 176.57 | 3.2 | -0.4 | 2.1 |
| 243 | Toyoda Gosei | Automobiles & parts (335) | Japan | 175.99 | 7.9 | | |
| 244 | Navistar International | Commercial vehicles & trucks (2753) | USA | 175.48 | -4.2 | -0.9 | 2.3 |
| 245 | TRW Automotive | Automobiles & parts (335) | USA | 172.09 | 16.7 | 5.8 | |
| 246 | Novell | Software (9537) | USA | 170.08 | 1.0 | 8.1 | 8.6 |
| 247 | Taisho Pharmaceutical | Pharmaceuticals (4577) | Japan | 166.79 | -3.9 | -18.1 | -8.3 |
| 248 | Storage Technology (now part of Sun Microsystems) | Computer hardware (9572) | USA | 166.76 | -3.7 | -4.9 | -12.1 |
| 249 | Harley-Davidson | Automobiles & parts (335) | USA | 165.73 | 5.3 | 11.3 | 8.9 |
| 250 | Kansai Electric Power | Electricity (753) | Japan | 165.34 | -0.9 | -14.8 | -10.6 |

| Rank | Company | ICB Sector | Country | R&D Investment | | | |
|------|--|---|-------------|----------------|----------------------|----------------------|----------------------|
| | | | | 2005 €m | change 05/04 % | change 04/03 % | change 03/02 % |
| 251 | SanDisk | Semiconductors (9576) | USA | 165.15 | 55.9 | 48.4 | 33.3 |
| 252 | Sekisui Chemical | Household goods (372) | Japan | 165.01 | -3.1 | 1.3 | 3.5 |
| 253 | Yamaha | Leisure goods (374) | Japan | 164.86 | 2.0 | 0.3 | -0.4 |
| 254 | Lam Research | Semiconductors (9576) | USA | 164.56 | 13.9 | 6.2 | -10.4 |
| 255 | AlCoA | Industrial metals (175) | USA | 164.46 | 6.6 | -6.2 | -9.3 |
| 256 | Kubota | General industrials (272) | Japan | 163.27 | 3.5 | -5.6 | -11.9 |
| 257 | Dover | General industrials (272) | USA | 162.94 | 2.1 | 18.6 | -5.8 |
| 258 | Lenovo | Computer hardware (9572) | Hong Kong | 162.91 | 293.1 | -24.1 | 59.0 |
| 259 | Toppan Printing | Media (555) | Japan | 159.86 | 4.5 | 5.2 | 5.8 |
| 260 | LG Chem | Chemicals (135) | South Korea | 159.64 | 10.8 | 119.5 | |
| 261 | Baker Hughes | Oil equipment, services & distribution (57) | USA | 159.55 | 6.5 | 2.0 | 4.7 |
| 262 | Namco (now part of Namco Bandai) | Leisure goods (374) | Japan | 157.34 | 10.7 | 35.7 | -6.9 |
| 263 | Asustek Computer | Computer hardware (9572) | Taiwan | 157.16 | 83.0 | 44.3 | 25.1 |
| 264 | Scientific-Atlanta (now part of Cisco Systems) | Media (555) | USA | 156.95 | 11.1 | 6.4 | 2.1 |
| 265 | BEA Systems | Software (9537) | USA | 154.50 | 24.4 | 4.0 | 6.1 |
| 266 | Mattel | Leisure goods (374) | USA | 154.29 | 6.4 | 2.2 | 4.9 |
| 267 | Kellogg | Food producers (357) | USA | 153.44 | 21.6 | 17.5 | 19.1 |
| 268 | International Flavors & Fragrances | Personal goods (376) | USA | 152.43 | 2.6 | 10.0 | 10.6 |
| 269 | IHI | Industrial machinery (2757) | Japan | 152.32 | -5.6 | 1.8 | -12.1 |
| 270 | Winbond Electronic | Semiconductors (9576) | Taiwan | 150.85 | 22.8 | -1.8 | -17.6 |
| 271 | ITT Industries | General industrials (272) | USA | 150.56 | 13.9 | 28.5 | 6.3 |
| 272 | McAfee | Software (9537) | USA | 149.50 | 2.1 | -6.4 | 24.1 |
| 273 | Zimmer | Health care equipment & services (453) | USA | 148.78 | 5.3 | 57.6 | 31.1 |
| 274 | Bombardier | Aerospace & defence (271) | Canada | 148.35 | 38.1 | -21.3 | -33.9 |
| 274 | ArvinMeritor | Automobiles & parts (335) | USA | 148.35 | 12.2 | -6.6 | 26.5 |
| 276 | Lear | Automobiles & parts (335) | USA | 147.51 | -11.9 | 15.5 | -2.8 |
| 277 | Nintendo | Software (9537) | Japan | 147.34 | 29.6 | 8.4 | -14.1 |
| 278 | General Mills | Food producers (357) | USA | 146.66 | 3.0 | 6.3 | 6.0 |
| 279 | Sybase | Software (9537) | USA | 146.59 | 10.6 | 7.9 | -3.8 |
| 280 | Protein Design Labs (now PDL Biopharma) | Biotechnology (4573) | USA | 145.84 | 40.4 | 48.1 | 42.7 |
| 281 | Pitney Bowes | Electronic office equipment (9574) | USA | 145.65 | 6.2 | 9.9 | 4.2 |
| 282 | RF Micro Devices | Semiconductors (9576) | USA | 143.15 | 7.9 | 22.1 | 26.0 |
| 283 | Givaudan | Personal goods (376) | Switzerland | 141.51 | 5.8 | -4.1 | 5.3 |
| 284 | Kobe Steel | Industrial metals (175) | Japan | 141.50 | 16.4 | -4.9 | -19.3 |
| 285 | OKI Electric | Telecommunications equipment (9578) | Japan | 140.88 | -10.8 | 36.4 | 5.9 |
| 286 | Clariant | Chemicals (135) | Switzerland | 140.23 | -20.4 | -11.0 | -12.5 |
| 287 | Bandai (now part of Namco Bandai) | Leisure goods (374) | Japan | 140.13 | 5.8 | 23.9 | 4.0 |
| 288 | Tatung | Electrical components & equipment (2733) | Taiwan | 139.64 | 266.5 | 4.4 | -58.2 |
| 289 | Tektronix | Computer hardware (9572) | USA | 138.58 | 25.4 | 28.9 | -16.6 |
| 290 | Koito Manufacturing | Automobiles & parts (335) | Japan | 137.91 | | | -7.7 |
| 291 | Bausch & Lomb | Health care equipment & services (453) | USA | 137.76 | 8.4 | 16.7 | 5.3 |
| 292 | Ingersoll-Rand | Industrial machinery (2757) | Bermuda | 137.67 | 8.8 | -26.8 | 1.6 |
| 293 | Eastman Chemical | Chemicals (135) | USA | 137.33 | -3.6 | -10.6 | 6.2 |
| 294 | Quanta Computer | Electronic equipment (2737) | Taiwan | 137.09 | 80.8 | 15.8 | 34.0 |
| 295 | BorgWarner | Automobiles & parts (335) | USA | 136.49 | 30.8 | 4.2 | 8.3 |
| 296 | Japan Radio | Electronic equipment (2737) | Japan | 134.79 | -6.2 | -1.3 | -10.6 |
| 297 | Compuware | Software (9537) | USA | 134.63 | -8.0 | -1.3 | 13.1 |
| 298 | Research In Motion | Telecommunications equipment (9578) | Canada | 133.63 | 55.8 | 61.5 | 12.0 |
| 299 | Statoil | Oil & gas producers (53) | Norway | 133.46 | 3.8 | 2.3 | 36.4 |
| 300 | Casio Computer | Leisure goods (374) | Japan | 130.76 | 9.6 | 17.1 | 0.5 |

| Rank | Company | ICB Sector | Country | R&D Investment | | | |
|------|--|--|---------------|----------------|----------------------|----------------------|----------------------|
| | | | | 2005 €m | change 05/04 % | change 04/03 % | change 03/02 % |
| 301 | Thermo Electron | Health care equipment & services (453) | USA | 129.51 | 13.4 | -8.0 | -5.6 |
| 302 | Skyworks Solutions | Semiconductors (9576) | USA | 129.04 | -0.3 | 0.6 | 14.5 |
| 303 | Hasbro | Leisure goods (374) | USA | 127.66 | -4.2 | 9.8 | -6.9 |
| 304 | Celgene | Biotechnology (4573) | USA | 126.74 | 6.1 | 31.0 | 40.0 |
| 305 | AU Optronics | Electronic equipment (2737) | Taiwan | 126.03 | -2.6 | 48.0 | 51.6 |
| 306 | Dainippon Pharmaceutical (now Dainippon Sumitomo Pharmaceutical) | Pharmaceuticals (4577) | Japan | 125.29 | 9.5 | 4.7 | 16.0 |
| 307 | Hilti | Construction & materials (235) | Liechtenstein | 125.24 | 6.4 | 33.3 | 2.0 |
| 308 | Showa Denko | Chemicals (135) | Japan | 124.86 | -1.1 | 3.5 | 10.0 |
| 309 | Furukawa Electric | Industrial machinery (2757) | Japan | 123.49 | -9.8 | -23.4 | 7.5 |
| 310 | Brunswick | Leisure goods (374) | USA | 122.67 | 10.4 | 10.9 | 15.0 |
| 311 | Sepracor | Pharmaceuticals (4577) | USA | 122.50 | -9.7 | -27.4 | -9.7 |
| 312 | Kaneka | Chemicals (135) | Japan | 121.11 | 7.1 | 8.9 | 3.5 |
| 313 | Meiji Seika Kaisha | Food producers (357) | Japan | 121.04 | 1.0 | -5.9 | -5.8 |
| 314 | Nitto Denko | General retailers (537) | Japan | 120.23 | 5.8 | 14.2 | 6.1 |
| 315 | Dade Behring | Pharmaceuticals (4577) | USA | 119.96 | 5.6 | 14.0 | 35.0 |
| 316 | Exelixis | Pharmaceuticals (4577) | USA | 119.65 | 2.5 | 7.9 | 13.9 |
| 317 | Pantech & Curitel | Mobile telecommunications (657) | South Korea | 118.38 | 18.9 | | |
| 318 | Shiseido | Personal goods (376) | Japan | 118.17 | -1.9 | -4.7 | 1.7 |
| 319 | Hospira | Pharmaceuticals (4577) | USA | 117.70 | 16.1 | | |
| 320 | Rockwell Automation | Electronic equipment (2737) | USA | 117.50 | 13.9 | -6.4 | -0.8 |
| 321 | International Game Technology | Travel & leisure (575) | USA | 117.33 | 7.1 | 36.2 | 18.3 |
| 322 | Sumitomo Rubber Industries | Automobiles & parts (335) | Japan | 116.78 | 3.4 | 11.9 | 3.4 |
| 323 | Harris | Telecommunications equipment (9578) | USA | 116.40 | 23.4 | 11.7 | -4.1 |
| 324 | Ciena | Telecommunications equipment (9578) | USA | 116.35 | -33.2 | -3.4 | -16.8 |
| 325 | Nissan Diesel Motor | Commercial vehicles & trucks (2753) | Japan | 116.11 | 5.0 | 13.0 | 7.4 |
| 326 | Ivax (now part of Teva Pharmaceutical Industries, Israel) | Pharmaceuticals (4577) | USA | 115.46 | -3.8 | 30.7 | 42.5 |
| 327 | Palm | Computer hardware (9572) | USA | 115.26 | 51.4 | 29.5 | -37.3 |
| 328 | Medarex | Biotechnology (4573) | USA | 115.16 | 11.3 | 27.8 | 15.5 |
| 329 | JSR | Chemicals (135) | Japan | 115.13 | 6.2 | 7.6 | 5.7 |
| 330 | Chubu Electric Power | Electricity (753) | Japan | 115.07 | -9.0 | -4.3 | -8.2 |
| 331 | Dainippon Ink & Chemicals | Chemicals (135) | Japan | 114.32 | 6.2 | 16.1 | 0.7 |
| 332 | Lubrizol | Chemicals (135) | USA | 113.43 | 23.5 | 15.3 | 0.4 |
| 332 | Black & Decker | Household goods (372) | USA | 113.43 | 12.8 | 18.1 | 3.6 |
| 334 | Molex | Electronic equipment (2737) | USA | 113.25 | 12.2 | 1.8 | 4.7 |
| 335 | Federal-Mogul | Automobiles & parts (335) | USA | 112.50 | -3.2 | 11.4 | 11.3 |
| 335 | Air Products and Chemicals | Chemicals (135) | USA | 112.50 | 4.7 | 4.6 | 0.4 |
| 337 | East Japan Railway | Industrial transportation (277) | Japan | 111.90 | -1.6 | 3.4 | 13.0 |
| 338 | Activision | Leisure goods (374) | USA | 111.72 | 52.3 | -11.6 | 71.8 |
| 339 | Linear Technology | Semiconductors (9576) | USA | 111.42 | 25.6 | 14.5 | 14.5 |
| 340 | Nanya Technology | Semiconductors (9576) | Taiwan | 111.23 | 0.0 | 23.8 | 57.2 |
| 341 | Brocade Communications | Telecommunications equipment (9578) | USA | 111.00 | -12.4 | 3.0 | 9.7 |
| 342 | Chi Mei Optoelectronic | Electrical components & equipment (2733) | Taiwan | 110.97 | 55.9 | 35.2 | 35.3 |
| 343 | DST Systems | Computer services (9533) | USA | 110.88 | -43.6 | 26.2 | 25.3 |
| 344 | Parker Hannifin | Industrial machinery (2757) | USA | 110.69 | 37.9 | 1.6 | -14.6 |
| 345 | Hyundai Heavy Industries | Industrial transportation (277) | South Korea | 110.67 | 13.1 | 15.9 | 11.0 |
| 346 | Actelion | Pharmaceuticals (4577) | Switzerland | 110.30 | 25.8 | 72.1 | 32.4 |
| 347 | Barr Pharmaceuticals | Pharmaceuticals (4577) | USA | 108.84 | -24.0 | 85.3 | 20.5 |
| 348 | Fanuc | Electronic equipment (2737) | Japan | 108.72 | 5.9 | 11.5 | 12.8 |
| 349 | Illinois Tool Works | Industrial machinery (2757) | USA | 108.40 | 3.6 | 15.6 | 5.4 |
| 350 | Integrated Device Technology | Semiconductors (9576) | USA | 108.16 | 23.0 | 5.3 | -23.7 |

| Rank | Company | ICB Sector | Country | R&D Investment | | | |
|------|---|--|-------------|----------------|----------------------|----------------------|----------------------|
| | | | | 2005 €m | change 05/04 % | change 04/03 % | change 03/02 % |
| 351 | SEI Investments | Other financials (877) | USA | 107.41 | 33.4 | 67.9 | -0.5 |
| 352 | NTN | Industrial machinery (2757) | Japan | 107.40 | 10.4 | 10.5 | 4.7 |
| 353 | SMC | General industrials (272) | Japan | 107.38 | 3.1 | 10.1 | 2.2 |
| 354 | Theravance | Biotechnology (4573) | USA | 107.03 | 52.7 | 31.2 | -9.8 |
| 355 | OSI Pharmaceuticals | Biotechnology (4573) | USA | 106.78 | 14.1 | 18.6 | 3.2 |
| 356 | Pou Chen | Computer hardware (9572) | Taiwan | 106.77 | 250.2 | 0.0 | 237.7 |
| 357 | KT | Fixed line telecommunications (653) | South Korea | 106.76 | 23.9 | -64.1 | 4.2 |
| 358 | Onex | General industrials (272) | Canada | 106.68 | 219.6 | 27.7 | -68.7 |
| 359 | Tekelec | Telecommunications equipment (9578) | USA | 106.53 | 28.0 | 33.9 | 22.7 |
| 360 | Kudelski | Electronic equipment (2737) | Switzerland | 106.50 | 17.0 | 574.6 | 18.5 |
| 361 | Watson Pharmaceuticals | Pharmaceuticals (4577) | USA | 106.19 | -2.3 | 29.1 | 21.7 |
| 362 | ConocoPhillips | Oil & gas producers (53) | USA | 105.97 | -0.8 | -7.3 | 24.8 |
| 363 | Sumitomo Metal Industries | Industrial metals (175) | Japan | 105.81 | 8.4 | 0.3 | -27.3 |
| 364 | Kos Pharmaceuticals | Pharmaceuticals (4577) | USA | 104.47 | 11.0 | 112.7 | 18.7 |
| 365 | Time Warner | Media (555) | USA | 104.27 | -8.2 | -3.6 | 2.2 |
| 366 | Applied Micro Circuits | Semiconductors (9576) | USA | 103.49 | -4.7 | -36.9 | 31.1 |
| 367 | AGCO | Commercial vehicles & trucks (2753) | USA | 103.17 | 17.4 | 45.2 | 24.8 |
| 368 | NGK Spark Plug | Automobiles & parts (335) | Japan | 103.14 | 3.5 | 2.1 | 1.7 |
| 369 | Yokohama Rubber | Automobiles & parts (335) | Japan | 102.46 | 3.2 | 10.4 | 1.8 |
| 370 | Pliva | Pharmaceuticals (4577) | Croatia | 102.45 | -6.6 | 19.7 | 23.5 |
| 371 | PMC-Sierra | Semiconductors (9576) | USA | 100.64 | -1.5 | 0.9 | -13.3 |
| 372 | Abgenix (now part of Amgen) | Biotechnology (4573) | USA | 100.60 | 10.9 | 29.3 | -24.2 |
| 373 | Parametric Technology | Software (9537) | USA | 100.26 | 9.5 | -18.5 | -2.6 |
| 374 | Intersil | Semiconductors (9576) | USA | 100.25 | 5.2 | 23.1 | -30.4 |
| 375 | JS | Construction & materials (235) | Japan | 100.04 | -3.7 | 6.8 | 44.8 |
| 376 | Paccar | Commercial vehicles & trucks (2753) | USA | 99.86 | 14.1 | 27.3 | 44.8 |
| 377 | Kuraray | Chemicals (135) | Japan | 99.65 | 1.4 | 9.3 | 3.2 |
| 378 | Cardinal Health | Food & drug retailers (533) | USA | 99.36 | 107.4 | -0.7 | -12.6 |
| 379 | Delta Electronics | Electronic equipment (2737) | Taiwan | 99.24 | 19.3 | 2.6 | 13.6 |
| 380 | Terumo | Health care equipment & services (453) | Japan | 98.68 | -6.5 | 29.1 | 10.7 |
| 381 | Micronas Semiconductor | Semiconductors (9576) | Switzerland | 98.22 | 19.2 | 30.7 | 12.6 |
| 382 | Bio-Rad Laboratories | Health care equipment & services (453) | USA | 97.58 | 6.2 | 14.9 | 13.7 |
| 383 | Synthes | Health care equipment & services (453) | Switzerland | 97.35 | 4.9 | 70.1 | 14.9 |
| 384 | CR Bard | Health care equipment & services (453) | USA | 97.15 | 2.7 | 27.7 | 41.6 |
| 385 | American Standard Companies | Construction & materials (235) | USA | 96.64 | -18.6 | 9.4 | -27.2 |
| 386 | Valeant Pharmaceuticals | Pharmaceuticals (4577) | USA | 96.44 | 23.0 | 104.2 | -8.6 |
| 387 | Certegy (now Fidelity National Information) | Support services (279) | USA | 96.22 | 52.9 | 93.5 | |
| 388 | Swatch | Household goods (372) | Switzerland | 95.84 | -5.7 | -3.7 | 15.5 |
| 389 | McData | Computer hardware (9572) | USA | 95.82 | 23.5 | 3.0 | 49.7 |
| 390 | Unaxis | General industrials (272) | Switzerland | 95.20 | -17.8 | 16.9 | -1.9 |
| 391 | Expedia | Travel & leisure (575) | USA | 95.18 | 32.1 | 42.3 | |
| 392 | Lite-On Technology | Computer hardware (9572) | Taiwan | 95.08 | 26.6 | 23.9 | 103.3 |
| 393 | Kawasaki Heavy Industries | Industrial machinery (2757) | Japan | 94.69 | -10.6 | -4.9 | -6.4 |
| 394 | Avid Technology | Computer hardware (9572) | USA | 94.38 | 17.3 | 11.0 | 3.9 |
| 395 | Glory | Industrial machinery (2757) | Japan | 93.72 | 10.0 | 17.3 | -11.9 |
| 396 | Rieter | Industrial machinery (2757) | Switzerland | 93.08 | 6.9 | 5.1 | -0.1 |
| 397 | Electronics For Imaging | Computer hardware (9572) | USA | 92.85 | -1.4 | 14.9 | 7.5 |
| 398 | CV Therapeutics | Biotechnology (4573) | USA | 92.83 | 5.4 | 49.6 | -18.9 |
| 399 | Ranbaxy Laboratories | Pharmaceuticals (4577) | India | 92.76 | 21.3 | 67.5 | 43.7 |
| 400 | Midway Games | Leisure goods (374) | USA | 92.18 | 46.4 | 225.6 | -8.8 |

| Rank | Company | ICB Sector | Country | R&D Investment | | | |
|------|--|---|-------------|----------------|----------------------|----------------------|----------------------|
| | | | | 2005 €m | change 05/04 % | change 04/03 % | change 03/02 % |
| 401 | Citrix Systems | Software (9537) | USA | 92.14 | 25.9 | 34.0 | -6.5 |
| 402 | Pantech | Mobile telecommunications (657) | South Korea | 91.95 | 73.4 | | |
| 403 | Vertex Pharmaceuticals | Biotechnology (4573) | USA | 91.76 | 1.4 | -23.5 | 23.6 |
| 404 | Engelhard (now part of BASF, Germany) | Chemicals (135) | USA | 91.73 | 8.3 | 7.3 | 5.6 |
| 405 | Andrew | Telecommunications equipment (9578) | USA | 91.43 | -2.2 | 31.0 | 45.1 |
| 406 | Chunghwa Picture Tubes | Electronic equipment (2737) | Taiwan | 91.29 | 11.1 | 5.3 | 40.9 |
| 407 | Kyorin Pharmaceutical (now Kyorin) | Pharmaceuticals (4577) | Japan | 91.21 | 54.5 | | |
| 408 | Quantum | Computer hardware (9572) | USA | 91.05 | 11.1 | -6.6 | -7.5 |
| 409 | Weatherford International | Oil equipment, services & distribution (57) | USA | 91.02 | 28.5 | 0.8 | 4.2 |
| 410 | Dainippon Screen Mfg | General industrials (272) | Japan | 90.70 | 13.4 | 3.4 | 7.4 |
| 411 | Santen Pharmaceutical | Pharmaceuticals (4577) | Japan | 90.65 | 6.5 | -6.8 | 4.4 |
| 412 | CSL | Biotechnology (4573) | Australia | 90.62 | 44.0 | 10.6 | -1.9 |
| 413 | Cognos | Software (9537) | Canada | 89.81 | 16.2 | 16.8 | 4.7 |
| 414 | UBE Industries | Chemicals (135) | Japan | 89.70 | 8.6 | -4.6 | 6.1 |
| 415 | Tata Motors | Automobiles & parts (335) | India | 89.68 | 28.9 | 143.3 | 6.2 |
| 416 | Norsk Hydro | Oil & gas producers (53) | Norway | 89.64 | -5.8 | -10.6 | 4.3 |
| 417 | Symbol Technologies | Electronic equipment (2737) | USA | 89.27 | -15.8 | 15.0 | 49.4 |
| 418 | International Rectifier | Semiconductors (9576) | USA | 88.91 | 13.8 | 16.8 | 13.1 |
| 419 | Telenor | Mobile telecommunications (657) | Norway | 88.77 | 67.6 | -8.2 | -13.2 |
| 420 | NPS Pharmaceuticals | Biotechnology (4573) | USA | 88.69 | -18.8 | 19.0 | 37.5 |
| 421 | Hyperion Solutions | Software (9537) | USA | 88.26 | 8.2 | 30.5 | 1.3 |
| 422 | Regeneron Pharmaceuticals | Biotechnology (4573) | USA | 87.43 | | -100.0 | -22.2 |
| 423 | Newell Rubbermaid | Household goods (372) | USA | 87.32 | -2.9 | -14.8 | 42.2 |
| 424 | SSA Global Technologies (now part of Infor Global Solutions) | Software (9537) | USA | 87.15 | 8.0 | 127.2 | |
| 425 | Fujikura | Electrical components & equipment (2733) | Japan | 87.11 | 10.2 | -3.1 | -4.6 |
| 426 | Funai Electric | Electronic equipment (2737) | Japan | 86.83 | 3.6 | 26.7 | 273.2 |
| 427 | Mylan Laboratories | Pharmaceuticals (4577) | USA | 86.52 | 16.1 | -12.8 | 16.2 |
| 428 | Vitesse Semiconductor | Semiconductors (9576) | USA | 86.00 | -6.5 | -1.5 | -35.3 |
| 429 | National Instruments | Electronic equipment (2737) | USA | 85.83 | 12.6 | 11.5 | 26.0 |
| 430 | Silicon Laboratories | Semiconductors (9576) | USA | 85.81 | 35.1 | 55.1 | 50.9 |
| 431 | Toto | Construction & materials (235) | Japan | 84.65 | 3.7 | 0.6 | -7.8 |
| 432 | Invitrogen | Biotechnology (4573) | USA | 84.18 | 35.8 | 33.9 | 62.0 |
| 433 | Edwards Lifesciences | Health care equipment & services (453) | USA | 83.93 | 13.8 | 19.5 | 11.7 |
| 434 | Macromedia (now part of Adobe Systems) | Software (9537) | USA | 83.43 | 7.9 | -7.4 | -10.6 |
| 435 | Neurocrine Biosciences | Biotechnology (4573) | USA | 82.61 | 11.4 | 8.6 | -16.6 |
| 436 | Oji Paper | Forestry & paper (173) | Japan | 82.60 | -4.2 | -6.3 | |
| 437 | Nippon Oil | Oil & gas producers (53) | Japan | 82.17 | 18.1 | -3.5 | -3.9 |
| 438 | Osaka Gas | Gas, water & multiutilities (757) | Japan | 81.91 | -7.9 | -9.8 | -8.8 |
| 439 | Reynolds and Reynolds | Software (9537) | USA | 81.38 | 3.2 | 5.4 | -0.1 |
| 440 | Incyte | Biotechnology (4573) | USA | 81.06 | 8.3 | -24.1 | -23.7 |
| 441 | Huntsman | Chemicals (135) | USA | 80.96 | 15.1 | 26.5 | 175.6 |
| 442 | Lattice Semiconductor | Semiconductors (9576) | USA | 80.89 | 4.9 | 4.4 | 1.5 |
| 443 | Verisign | Software (9537) | USA | 80.82 | 41.6 | 20.7 | 15.4 |
| 444 | ECI Telecom | Telecommunications equipment (9578) | Israel | 80.79 | 25.4 | -8.9 | -21.3 |
| 445 | Daicel Chemical Industries | Chemicals (135) | Japan | 80.58 | 1.2 | -5.6 | 2.3 |
| 446 | Campbell Soup | Food producers (357) | USA | 80.54 | 2.2 | 5.7 | 14.3 |
| 447 | Openwave Systems | Software (9537) | USA | 80.52 | 1.8 | -19.0 | -20.1 |
| 448 | Microchip Technology | Semiconductors (9576) | USA | 80.47 | 2.0 | 9.0 | -2.9 |
| 449 | 3Com | Telecommunications equipment (9578) | USA | 80.18 | -0.6 | -15.8 | -60.4 |
| 450 | USEC | Industrial metals (175) | USA | 80.11 | 61.5 | 30.6 | 40.0 |

| Rank | Company | ICB Sector | Country | R&D Investment | | | |
|------|------------------------------------|-------------------------------------|-------------|----------------|----------------------|----------------------|----------------------|
| | | | | 2005 €m | change 05/04 % | change 04/03 % | change 03/02 % |
| 451 | FMC | Chemicals (135) | USA | 80.03 | 1.1 | 6.9 | 6.6 |
| 452 | Georg Fischer | Industrial machinery (2757) | Switzerland | 79.76 | 8.8 | 1.8 | -8.2 |
| 453 | Yue Yuen Industrial | Personal goods (376) | Hong Kong | 79.75 | 5.3 | 6.1 | 39.4 |
| 454 | ON Semiconductor | Semiconductors (9576) | USA | 79.43 | -0.7 | 10.4 | 25.9 |
| 454 | JDS Uniphase | Telecommunications equipment (9578) | USA | 79.43 | -5.8 | -35.3 | -39.7 |
| 456 | Sumitomo Bakelite | Chemicals (135) | Japan | 79.32 | 8.9 | -0.9 | 4.7 |
| 457 | EMBRAER | Aerospace & defence (271) | Brazil | 78.98 | 109.3 | -74.3 | 9.3 |
| 458 | KDDI | Fixed line telecommunications (653) | Japan | 78.74 | -17.8 | 27.6 | 16.8 |
| 459 | Hoya | Electronic equipment (2737) | Japan | 78.70 | 11.3 | 43.9 | 24.2 |
| 460 | Silicon Graphics | Computer hardware (9572) | USA | 78.59 | -14.8 | -36.4 | -6.0 |
| 461 | Credence Systems | Semiconductors (9576) | USA | 78.45 | 14.9 | 9.5 | -13.9 |
| 462 | Cell Genesys | Biotechnology (4573) | USA | 78.34 | 0.3 | 8.0 | 13.5 |
| 463 | Proton Holdings Berhad | Automobiles & parts (335) | Malaysia | 77.88 | -36.0 | 31.5 | |
| 464 | Polycom | Telecommunications equipment (9578) | USA | 77.55 | -0.7 | 26.8 | -5.4 |
| 465 | Celanese | Chemicals (135) | USA | 77.14 | -13.6 | 13.1 | 6.8 |
| 465 | Lyondell Chemical | Chemicals (135) | USA | 77.14 | 121.9 | 10.8 | 23.4 |
| 465 | Maytag (now part of Whirlpool) | Household goods (372) | USA | 77.14 | -7.3 | -8.2 | -3.3 |
| 468 | Sanken Electric | Semiconductors (9576) | Japan | 77.09 | 10.0 | 8.8 | 6.0 |
| 469 | Mitsubishi Gas Chemical | Chemicals (135) | Japan | 77.04 | 2.0 | -8.9 | -3.1 |
| 470 | American Power Conversion | Computer hardware (9572) | USA | 76.74 | 5.7 | 26.6 | 12.6 |
| 471 | Alexion Pharmaceuticals | Pharmaceuticals (4577) | USA | 76.57 | 63.5 | -21.3 | 31.2 |
| 472 | NGK Insulators | General industrials (272) | Japan | 76.52 | -15.5 | -3.1 | -16.4 |
| 473 | Qlogic | Semiconductors (9576) | USA | 76.09 | -6.4 | 9.2 | 8.0 |
| 474 | Compal Electronics | Electronic equipment (2737) | Taiwan | 76.04 | 11.9 | 69.7 | 49.9 |
| 475 | Anritsu | Telecommunications equipment (9578) | Japan | 75.53 | 6.4 | -25.2 | -13.1 |
| 476 | Zoran | Semiconductors (9576) | USA | 75.47 | 12.4 | 96.0 | 83.0 |
| 477 | Mitsubishi Materials | Industrial metals (175) | Japan | 75.05 | -7.0 | -3.2 | -24.6 |
| 478 | Macronix International | Semiconductors (9576) | Taiwan | 75.04 | 15.4 | -6.9 | -28.9 |
| 479 | Endo Pharmaceuticals | Pharmaceuticals (4577) | USA | 74.86 | 74.7 | -0.9 | -10.2 |
| 480 | Mitsubishi Rayon | Chemicals (135) | Japan | 74.63 | -6.1 | 2.7 | -0.2 |
| 481 | Clorox | General industrials (272) | USA | 74.60 | 4.8 | 10.5 | 13.4 |
| 481 | Federated Department Stores | General retailers (537) | USA | 74.60 | 8.6 | 35.0 | 1.7 |
| 483 | Logitech International | Computer hardware (9572) | Switzerland | 74.56 | 19.0 | 20.6 | 9.1 |
| 484 | Quest Software | Software (9537) | USA | 74.50 | 12.2 | 16.1 | 13.5 |
| 485 | Tohoku Electric Power | Electricity (753) | Japan | 74.28 | 8.4 | -10.9 | -7.0 |
| 486 | Endress & Hauser | Electronic equipment (2737) | Switzerland | 74.22 | 5.8 | 15.2 | |
| 487 | AMIS | Semiconductors (9576) | USA | 74.09 | 13.1 | 9.9 | 34.8 |
| 488 | PerkinElmer | Electronic equipment (2737) | USA | 74.07 | 0.4 | 4.7 | -3.8 |
| 489 | Citizen Watch | Industrial machinery (2757) | Japan | 73.39 | 8.0 | 12.5 | -20.8 |
| 490 | Tosoh | Chemicals (135) | Japan | 73.26 | -1.0 | -1.0 | 6.1 |
| 491 | Idenix Pharmaceuticals | Biotechnology (4573) | USA | 73.15 | 8.4 | 55.9 | 77.3 |
| 492 | Sunplus Technology | Semiconductors (9576) | Taiwan | 73.03 | 38.3 | 35.0 | 43.6 |
| 493 | Avery Dennison | Chemicals (135) | USA | 72.40 | 3.8 | 10.0 | 0.4 |
| 494 | Kajima | Construction & materials (235) | Japan | 72.01 | -9.7 | -2.9 | -0.2 |
| 495 | Minebea | Electronic equipment (2737) | Japan | 71.91 | 3.9 | -1.1 | |
| 496 | Advanced Semiconductor Engineering | Semiconductors (9576) | Taiwan | 71.90 | 7.8 | 9.8 | 86.4 |
| 497 | Ebara | Industrial machinery (2757) | Japan | 71.78 | -8.9 | -22.3 | -18.3 |
| 498 | Saurer | Industrial machinery (2757) | Switzerland | 71.55 | -4.9 | 0.7 | 2.5 |
| 499 | Trimble Navigation | Electronic equipment (2737) | USA | 71.44 | 8.7 | 14.7 | 10.5 |
| 500 | Thq | Leisure goods (374) | USA | 71.42 | 15.5 | 98.0 | -4.5 |

| Rank | Company | ICB Sector | Country | R&D Investment | | | |
|------|---|---|----------------|----------------|----------------------|----------------------|----------------------|
| | | | | 2005 €m | change 05/04 % | change 04/03 % | change 03/02 % |
| 501 | ProMOS Technologies | Semiconductors (9576) | Taiwan | 71.24 | 16.0 | 108.9 | -26.8 |
| 502 | Kissei Pharmaceutical | Pharmaceuticals (4577) | Japan | 71.06 | 0.7 | -24.8 | 0.2 |
| 503 | Kyushu Electric Power | Electricity (753) | Japan | 70.79 | -7.7 | -2.5 | -9.9 |
| 504 | Schindler | Industrial machinery (2757) | Switzerland | 70.76 | -3.5 | -18.0 | 7.7 |
| 505 | NSK | Support services (279) | Japan | 70.43 | 12.4 | 5.0 | 3.4 |
| 506 | Pentax | Leisure goods (374) | Japan | 70.35 | 9.3 | 12.5 | 16.9 |
| 507 | Toyo Tire | Automobiles & parts (335) | Japan | 70.33 | 2.5 | 4.8 | 3.2 |
| 508 | InterMune | Biotechnology (4573) | USA | 70.14 | 1.7 | -32.2 | -7.5 |
| 509 | CheckFree | Software (9537) | USA | 69.98 | 24.5 | 16.3 | -4.4 |
| 510 | Creative Technology | Computer hardware (9572) | Singapore | 69.79 | 18.4 | 18.2 | 53.7 |
| 511 | Varian Medical Systems | Health care equipment & services (453) | USA | 69.57 | 13.8 | 21.8 | 22.2 |
| 512 | Mettler-Toledo International | Industrial machinery (2757) | Switzerland | 69.42 | -1.6 | 6.7 | 10.5 |
| 513 | Leica Geosystems | Electronic equipment (2737) | Switzerland | 69.32 | -0.6 | 1.2 | -3.3 |
| 514 | Fair Isaac | Software (9537) | USA | 68.92 | 14.4 | 5.2 | 66.6 |
| 515 | Akebono Brake Industry | Automobiles & parts (335) | Japan | 68.62 | 7.9 | 1.9 | -9.2 |
| 516 | Nippon Shokubai | Chemicals (135) | Japan | 68.44 | 1.1 | 2.1 | 0.7 |
| 517 | Nippon Kayaku | Chemicals (135) | Japan | 68.22 | 11.0 | 0.0 | -2.0 |
| 518 | Praxair | Chemicals (135) | USA | 67.82 | 3.9 | 2.7 | 8.7 |
| 519 | Emulex | Computer hardware (9572) | USA | 67.80 | 9.2 | 19.5 | 28.8 |
| 520 | Orkla | General industrials (272) | Norway | 67.73 | | -100.0 | 0.4 |
| 521 | Biomet | Health care equipment & services (453) | USA | 67.56 | 22.8 | 17.3 | 9.0 |
| 522 | Valspar | Chemicals (135) | USA | 67.21 | 4.5 | 8.9 | 5.7 |
| 523 | Semiconductor Manufacturing | Semiconductors (9576) | China | 66.86 | 0.9 | 143.7 | -14.4 |
| 524 | Chunghwa Telecom | Fixed line telecommunications (653) | Taiwan | 66.62 | 4.2 | -4.1 | -16.8 |
| 525 | Amylin Pharmaceuticals | Biotechnology (4573) | USA | 66.44 | -8.1 | 33.7 | -21.3 |
| 526 | Toyobo | Chemicals (135) | Japan | 66.09 | 1.8 | 3.2 | -2.5 |
| 527 | Affymetrix | Health care equipment & services (453) | USA | 66.04 | 5.1 | 12.5 | -7.9 |
| 528 | Varian Semiconductor Equipment | Semiconductors (9576) | USA | 65.84 | 14.7 | 11.9 | 16.7 |
| 529 | Fairchild Semiconductor | Semiconductors (9576) | USA | 65.79 | -5.4 | 9.6 | -9.0 |
| 530 | Convergys | Support services (279) | USA | 65.19 | -0.8 | -17.8 | -17.1 |
| 531 | Taisei | Construction & materials (235) | Japan | 64.60 | -4.7 | -4.8 | 0.0 |
| 532 | FileNET | Software (9537) | USA | 64.56 | -2.7 | 1.5 | 7.4 |
| 533 | Sigmatel | Semiconductors (9576) | USA | 64.38 | 125.8 | 70.5 | 64.9 |
| 534 | Zeon | Chemicals (135) | Japan | 64.37 | 5.5 | 19.2 | 11.7 |
| 535 | Sealed Air | General industrials (272) | USA | 64.26 | 3.5 | 6.1 | 16.4 |
| 536 | Ballard Power Systems | Automobiles & parts (335) | Canada | 64.00 | -17.7 | -11.7 | -8.7 |
| 537 | Tokuyama | Chemicals (135) | Japan | 63.68 | 1.3 | 12.5 | -4.2 |
| 538 | Hamamatsu Photonics | Electronic equipment (2737) | Japan | 63.55 | 0.9 | 0.4 | 11.0 |
| 539 | Garmin | Leisure goods (374) | Cayman Islands | 63.48 | 21.6 | 40.9 | 35.9 |
| 540 | Koc | General industrials (272) | Turkey | 63.19 | 4.4 | 57.7 | 19.6 |
| 541 | King Pharmaceuticals | Pharmaceuticals (4577) | USA | 62.75 | 8.9 | 54.1 | 9.7 |
| 542 | Enterasys Networks | Telecommunications equipment (9578) | USA | 62.57 | -12.3 | -1.0 | -21.1 |
| 543 | Mercury Interactive (now part of Hewlett-Packard) | Software (9537) | USA | 62.50 | 31.9 | 47.6 | 0.4 |
| 544 | American Axle & Manufacturing | Automobiles & parts (335) | USA | 62.39 | 7.3 | 13.0 | 12.4 |
| 544 | Smith International | Oil equipment, services & distribution (57) | USA | 62.39 | 9.5 | 20.9 | 9.9 |
| 546 | Nissan Chemical Industries | Chemicals (135) | Japan | 62.01 | -0.5 | 15.8 | 11.5 |
| 547 | Tibco Software | Software (9537) | USA | 62.00 | 19.7 | -5.4 | -10.7 |
| 548 | Estee Lauder | Personal goods (376) | USA | 61.29 | 7.6 | 10.5 | -0.8 |
| 549 | Eclipsys | Software (9537) | USA | 60.98 | -1.9 | -4.2 | 39.0 |
| 550 | Elbit Systems | Aerospace & defence (271) | Israel | 60.96 | 7.6 | 21.7 | -3.7 |

| Rank | Company | ICB Sector | Country | R&D Investment | | | |
|------|--|--|----------------|----------------|----------------------|----------------------|----------------------|
| | | | | 2005 €m | change 05/04 % | change 04/03 % | change 03/02 % |
| 550 | ImClone Systems | Biotechnology (4573) | USA | 60.96 | 23.7 | -34.5 | -29.3 |
| 552 | Nippon Shinyaku | Pharmaceuticals (4577) | Japan | 60.90 | 2.6 | 4.8 | 12.3 |
| 553 | ADC Telecommunications | Telecommunications equipment (9578) | USA | 60.70 | 21.2 | -45.6 | -38.4 |
| 554 | Shimano | Leisure goods (374) | Japan | 60.68 | 39.2 | -3.5 | 8.0 |
| 555 | Denki Kagaku Kogyo KK | Chemicals (135) | Japan | 60.64 | -0.4 | -2.5 | 5.8 |
| 556 | Cooper Industries | Electrical components & equipment (2733) | USA | 60.61 | 1.3 | 11.3 | 17.4 |
| 557 | Mindspeed Technologies | Semiconductors (9576) | USA | 60.49 | -10.3 | | |
| 558 | Hankook Tire | Automobiles & parts (335) | South Korea | 60.45 | 19.5 | 11.5 | 21.6 |
| 559 | JohnsonDiversey | Chemicals (135) | USA | 60.20 | -5.7 | 0.2 | 16.7 |
| 560 | Axcelis Technologies | Semiconductors (9576) | USA | 60.11 | 12.2 | -0.1 | -12.2 |
| 561 | MGI PHARMA | Pharmaceuticals (4577) | USA | 60.10 | 13.2 | 24.9 | 55.6 |
| 562 | China Motor | Automobiles & parts (335) | Taiwan | 60.07 | -15.4 | 15.5 | 11.3 |
| 563 | Realnetworks | Software (9537) | USA | 59.96 | 35.8 | 9.1 | -3.6 |
| 564 | Tokyo Gas | Gas, water & multiutilities (757) | Japan | 59.87 | -25.2 | -4.7 | |
| 565 | Chugoku Electric Power | Electricity (753) | Japan | 59.69 | -5.4 | 1.8 | -13.6 |
| 566 | Asahi Breweries | Beverages (353) | Japan | 59.56 | -0.3 | 12.2 | 7.1 |
| 567 | Nektar Therapeutics | Biotechnology (4573) | USA | 59.39 | 58.0 | -15.6 | -35.1 |
| 567 | Intergraph | Software (9537) | USA | 59.39 | 1.4 | 0.1 | 9.3 |
| 569 | Energizer | Electrical components & equipment (2733) | USA | 59.26 | -5.5 | 43.7 | 38.8 |
| 570 | Yamatake | Electronic equipment (2737) | Japan | 58.68 | 0.9 | -8.8 | 1.3 |
| 571 | Bobst | Industrial machinery (2757) | Switzerland | 58.60 | 2.9 | | |
| 572 | Cell Therapeutics | Biotechnology (4573) | USA | 58.30 | -32.0 | 13.0 | 52.4 |
| 573 | Wistron | Computer hardware (9572) | Taiwan | 58.26 | 0.0 | 14.2 | -13.2 |
| 574 | Cytec Industries | Chemicals (135) | USA | 58.07 | 71.2 | 13.6 | 4.4 |
| 575 | Ecolab | Chemicals (135) | USA | 57.96 | 11.2 | 15.6 | 6.6 |
| 576 | Polaris Industries | Automobiles & parts (335) | USA | 57.77 | 12.3 | 17.3 | 13.6 |
| 577 | Nippon Sheet Glass | Construction & materials (235) | Japan | 57.07 | 3.0 | -13.6 | 8.8 |
| 578 | Japan Aviation Electronics Industry | Aerospace & defence (271) | Japan | 56.89 | 5.0 | 10.2 | -1.5 |
| 579 | Shimadzu | Industrial machinery (2757) | Japan | 56.83 | 10.3 | 9.6 | -17.7 |
| 580 | CGI | Computer services (9533) | Canada | 56.75 | 1.8 | 248.6 | 25.1 |
| 581 | Waters | Health care equipment & services (453) | USA | 56.72 | 2.5 | 7.1 | 17.4 |
| 582 | Nabi Biopharmaceuticals | Biotechnology (4573) | USA | 56.66 | 10.1 | 109.0 | 37.7 |
| 583 | IDX Systems (now part of General Electric) | Software (9537) | USA | 56.58 | 20.4 | 5.5 | 15.4 |
| 584 | Unova (now Intermec) | Computer hardware (9572) | USA | 56.38 | 7.1 | 9.5 | 6.2 |
| 585 | LTX | Semiconductors (9576) | USA | 56.21 | -2.0 | 2.4 | -7.1 |
| 586 | Millipore | Health care equipment & services (453) | USA | 56.00 | 5.7 | 7.0 | 11.5 |
| 587 | Fortune Brands | Construction & materials (235) | USA | 55.87 | -4.1 | 18.3 | 3.9 |
| 588 | L-3 Communications | Aerospace & defence (271) | USA | 55.70 | -7.7 | 34.9 | 51.5 |
| 589 | Medicis Pharmaceutical | Pharmaceuticals (4577) | USA | 55.68 | 298.3 | -44.2 | 95.4 |
| 590 | BE Aerospace | Aerospace & defence (271) | USA | 55.61 | 19.1 | 23.3 | 9.2 |
| 591 | Yaskawa Electric | Electronic equipment (2737) | Japan | 55.58 | 2.2 | 9.0 | -9.6 |
| 592 | Wind River Systems | Software (9537) | USA | 55.57 | 7.9 | 7.2 | -24.4 |
| 593 | Newmarket | Chemicals (135) | USA | 55.44 | 0.1 | 14.8 | 12.8 |
| 594 | TCL Multimedia Technology | Electronic equipment (2737) | Cayman Islands | 55.37 | 91.5 | 364.8 | -7.2 |
| 595 | Open Text | Software (9537) | Canada | 55.22 | 49.3 | 48.8 | 21.8 |
| 596 | ICOS | Biotechnology (4573) | USA | 55.20 | 17.5 | -35.4 | 41.4 |
| 597 | Medicines | Pharmaceuticals (4577) | USA | 54.59 | 30.6 | 37.3 | -5.4 |
| 598 | Avon Products | Personal goods (376) | USA | 54.43 | 0.6 | 28.6 | 2.5 |
| 599 | Nippon Paper | Forestry & paper (173) | Japan | 54.32 | 6.2 | 5.9 | -9.3 |
| 600 | Meiji Dairies | Food producers (357) | Japan | 54.29 | 1.8 | 7.4 | |

| Rank | Company | ICB Sector | Country | R&D Investment | | | |
|------|------------------------------|--|-------------|----------------|----------------------|----------------------|----------------------|
| | | | | 2005 €m | change 05/04 % | change 04/03 % | change 03/02 % |
| 601 | Cymer | Semiconductors (9576) | USA | 54.28 | 9.5 | 0.4 | -21.0 |
| 602 | Encysive Pharmaceuticals | Pharmaceuticals (4577) | USA | 53.83 | 12.1 | 120.0 | 67.1 |
| 603 | Techtronic Industries | Electrical components & equipment (2733) | Hong Kong | 53.82 | 45.2 | 26.1 | 135.8 |
| 604 | Inventec Appliances | Computer hardware (9572) | Taiwan | 53.78 | 21.2 | | |
| 605 | Analogic | Electronic equipment (2737) | USA | 53.49 | 7.5 | -0.0 | 41.3 |
| 605 | Interdigital Communications | Semiconductors (9576) | USA | 53.49 | 23.2 | 11.5 | -1.6 |
| 607 | Progress Software | Software (9537) | USA | 53.47 | 4.0 | 19.8 | 20.3 |
| 608 | International Paper | Forestry & paper (173) | USA | 53.41 | -7.4 | -6.9 | -5.2 |
| 609 | Par Pharmaceutical Companies | Pharmaceuticals (4577) | USA | 53.38 | 24.6 | 105.5 | 37.3 |
| 610 | Plantronics | Telecommunications equipment (9578) | USA | 53.24 | 85.4 | -4.5 | 4.7 |
| 611 | Brooks Automation | Semiconductors (9576) | USA | 53.21 | -6.5 | -7.9 | -2.9 |
| 612 | ADTRAN | Telecommunications equipment (9578) | USA | 53.11 | -7.0 | 15.9 | 3.3 |
| 613 | RSA Security | Software (9537) | USA | 53.00 | 1.0 | 15.4 | -2.6 |
| 614 | Lawson Software | Software (9537) | USA | 52.69 | -4.2 | 9.8 | -11.6 |
| 615 | Hexion Specialty Chemicals | Chemicals (135) | USA | 52.56 | 214.0 | 9.7 | -5.7 |
| 616 | Advanced Medical Optics | Health care equipment & services (453) | USA | 52.26 | 35.1 | 21.9 | 25.1 |
| 617 | Shimizu | Construction & materials (235) | Japan | 52.25 | -5.6 | 3.0 | -10.1 |
| 618 | Aeroflex | Semiconductors (9576) | USA | 52.05 | 22.9 | 60.6 | 31.3 |
| 619 | Extreme Networks | Telecommunications equipment (9578) | USA | 51.94 | 5.4 | 0.2 | -5.7 |
| 620 | Vasogen | Pharmaceuticals (4577) | Canada | 51.83 | 37.9 | 138.4 | 71.4 |
| 621 | Powerwave Technologies | Electrical components & equipment (2733) | USA | 51.74 | 29.4 | 21.2 | 17.6 |
| 622 | Georgia-Pacific | Forestry & paper (173) | USA | 51.71 | -4.7 | -1.5 | |
| 622 | Weyerhaeuser | Forestry & paper (173) | USA | 51.71 | 10.9 | 7.8 | -1.9 |
| 624 | Adaptec | Computer hardware (9572) | USA | 51.62 | -46.5 | 10.7 | -12.7 |
| 625 | Taiwan Power | Electricity (753) | Taiwan | 51.54 | -3.4 | -5.8 | 6.6 |
| 626 | Cae | Software (9537) | Canada | 51.53 | -14.1 | 3.8 | -3.6 |
| 627 | High Tech Computer | Electronic equipment (2737) | Taiwan | 51.47 | 0.0 | 90.2 | |
| 628 | Biovail | Pharmaceuticals (4577) | Canada | 51.28 | 20.9 | -30.8 | 256.1 |
| 629 | Diebold | Computer hardware (9572) | USA | 51.21 | 0.6 | -0.7 | -5.4 |
| 630 | Veeco Instruments | Electronic equipment (2737) | USA | 51.19 | 3.5 | 19.4 | -9.3 |
| 631 | CuraGen | Biotechnology (4573) | USA | 51.13 | -9.2 | 15.2 | -9.1 |
| 632 | SIG | General industrials (272) | Switzerland | 51.00 | -26.1 | -9.2 | 8.6 |
| 633 | Arris | Telecommunications equipment (9578) | USA | 50.98 | -5.1 | 0.8 | -3.0 |
| 634 | FEI | Semiconductors (9576) | USA | 50.76 | 7.2 | 20.6 | 9.0 |
| 635 | Realtek Semiconductor | Semiconductors (9576) | Taiwan | 50.62 | 44.2 | -4.1 | 43.9 |
| 636 | Nippon Paint | Chemicals (135) | Japan | 50.48 | -5.2 | 9.4 | |
| 637 | WR Grace | Chemicals (135) | USA | 50.19 | 15.9 | -1.7 | 0.6 |
| 638 | Cabot | Chemicals (135) | USA | 50.02 | 11.3 | -17.2 | 33.3 |
| 639 | SPX | Electrical components & equipment (2733) | USA | 49.85 | 1.2 | -39.5 | -19.0 |
| 640 | Sauer-Danfoss | Commercial vehicles & trucks (2753) | USA | 49.74 | 13.0 | 19.5 | 14.9 |
| 641 | Nalco | Gas, water & multiutilities (757) | USA | 49.68 | 3.7 | | |
| 642 | MITAC International | Electronic equipment (2737) | Taiwan | 49.59 | 44.0 | 12.0 | 29.7 |
| 642 | Emdeon | Support services (279) | USA | 49.59 | 8.0 | 26.0 | -2.0 |
| 644 | Redback Networks | Telecommunications equipment (9578) | USA | 49.46 | 3.1 | -14.5 | -26.9 |
| 645 | Standard Microsystems | Semiconductors (9576) | USA | 49.40 | 35.6 | 10.8 | 24.5 |
| 646 | Tenneco | Automobiles & parts (335) | USA | 49.17 | 23.4 | 6.8 | 4.7 |
| 646 | Owens Corning | Construction & materials (235) | USA | 49.17 | 23.4 | 9.3 | 2.4 |
| 646 | Novelis | Industrial metals (175) | Canada | 49.17 | -6.4 | -7.5 | |
| 649 | Nuvelo | Biotechnology (4573) | USA | 48.98 | 44.6 | 20.8 | -34.0 |
| 650 | Borland Software | Software (9537) | USA | 48.90 | -15.3 | 6.0 | 26.5 |

| Rank | Company | ICB Sector | Country | R&D Investment | | | |
|------|--|---|-------------|----------------|----------------------|----------------------|----------------------|
| | | | | 2005 €m | change 05/04 % | change 04/03 % | change 03/02 % |
| 651 | Coherent | Semiconductors (9576) | USA | 48.78 | -7.9 | 23.1 | -3.5 |
| 652 | Yakult Honsha | Food producers (357) | Japan | 48.66 | 4.9 | 11.3 | 12.3 |
| 653 | deCODE genetics | Biotechnology (4573) | Iceland | 48.50 | 21.6 | -25.8 | -26.8 |
| 654 | Tokai Rubber Industries | Chemicals (135) | Japan | 48.28 | 0.9 | 4.3 | 3.4 |
| 655 | NACCO Industries | General industrials (272) | USA | 48.24 | -1.7 | 3.4 | 10.4 |
| 656 | Avocent | Computer hardware (9572) | USA | 48.22 | 25.4 | 52.2 | 12.4 |
| 657 | Orbotech | Electronic equipment (2737) | Israel | 48.08 | 18.2 | 21.6 | -6.5 |
| 658 | Pall | Industrial machinery (2757) | USA | 47.63 | -1.9 | 9.7 | -4.7 |
| 659 | Showa | Automobiles & parts (335) | Japan | 47.41 | -15.6 | 11.2 | 2.5 |
| 660 | MKS Instruments | Semiconductors (9576) | USA | 47.40 | -1.9 | 19.6 | 3.6 |
| 661 | Aspen Technology | Software (9537) | USA | 47.29 | -16.0 | -8.7 | -11.8 |
| 662 | Hyundai Mobis | Automobiles & parts (335) | South Korea | 46.82 | 47.8 | 229.2 | -45.6 |
| 663 | Sysmex | Biotechnology (4573) | Japan | 46.75 | 17.3 | 11.7 | 20.4 |
| 664 | Basilea Pharmaceuticals | Biotechnology (4573) | Switzerland | 46.57 | 5.1 | 37.8 | -12.6 |
| 665 | Kureha Chemical Industry (now Kureha) | Chemicals (135) | Japan | 46.39 | 1.4 | 1.1 | 3.3 |
| 666 | Reebok International (now part of Adidas-Salomon, Germany) | Personal goods (376) | USA | 46.32 | 7.9 | 13.1 | 7.4 |
| 667 | SPSS | Software (9537) | USA | 46.15 | -4.5 | 25.8 | -4.0 |
| 668 | BJ Services | Oil equipment, services & distribution (57) | USA | 45.95 | 14.6 | 15.9 | 180.8 |
| 668 | QLT | Pharmaceuticals (4577) | Canada | 45.95 | 38.8 | 13.3 | 12.4 |
| 670 | Ulvac | Electronic equipment (2737) | Japan | 45.84 | 31.8 | 10.6 | -12.7 |
| 671 | Electric Power Development | Electricity (753) | Japan | 45.83 | -5.5 | 6.6 | 9.1 |
| 671 | Amada | Industrial machinery (2757) | Japan | 45.83 | -10.9 | 12.9 | 4.6 |
| 673 | Varian | Health care equipment & services (453) | USA | 45.73 | 10.7 | 6.7 | 14.4 |
| 674 | Isis Pharmaceuticals | Pharmaceuticals (4577) | USA | 45.66 | -37.3 | 27.2 | 59.6 |
| 675 | Disco | Semiconductors (9576) | Japan | 45.63 | 1.6 | 135.7 | 22.9 |
| 676 | Sumitomo Heavy Industries | Industrial machinery (2757) | Japan | 45.37 | 0.8 | 8.0 | |
| 677 | Roper Industries | Electronic equipment (2737) | USA | 45.35 | 38.2 | 18.7 | 9.0 |
| 678 | Tokyo Seimitsu | Computer hardware (9572) | Japan | 45.25 | 13.9 | 68.0 | -32.3 |
| 679 | Kaken Pharmaceutical | Pharmaceuticals (4577) | Japan | 45.04 | -1.4 | 11.7 | 8.5 |
| 680 | Reynolds American | Tobacco (378) | USA | 44.93 | 10.4 | -11.1 | -34.9 |
| 681 | Timken | Industrial machinery (2757) | USA | 44.85 | 5.6 | -5.5 | 0.0 |
| 682 | Sekisui House | Household goods (372) | Japan | 44.46 | 6.8 | 10.2 | -4.8 |
| 683 | Meidensha | General industrials (272) | Japan | 44.43 | -9.0 | -3.1 | -20.0 |
| 684 | Powerchip Semiconductor | Semiconductors (9576) | Taiwan | 44.42 | 64.1 | -5.4 | 3.3 |
| 685 | Ishihara Sangyo Kaisha | Chemicals (135) | Japan | 44.37 | 4.1 | 4.8 | -10.8 |
| 685 | Leapfrog Enterprises | Leisure goods (374) | USA | 44.37 | -14.2 | 5.9 | 5.9 |
| 687 | West Japan Railway | Travel & leisure (575) | Japan | 44.32 | 2.4 | -1.1 | 13.1 |
| 688 | Diagnostic Products (now part of Siemens, Germany) | Health care equipment & services (453) | USA | 44.17 | 15.1 | 11.3 | 10.5 |
| 689 | Finisar | Telecommunications equipment (9578) | USA | 44.00 | -17.4 | 1.0 | 3.2 |
| 690 | Chemtura | Chemicals (135) | USA | 43.94 | 4.5 | -3.7 | -37.1 |
| 691 | Pixelworks | Semiconductors (9576) | USA | 43.93 | 70.4 | 28.5 | -7.9 |
| 692 | Nissin Kogyo | Automobiles & parts (335) | Japan | 43.74 | 9.7 | 21.1 | 29.0 |
| 693 | FLIR Systems | Aerospace & defence (271) | USA | 43.67 | 12.5 | 49.3 | 14.0 |
| 694 | Alliant Techsystems | Aerospace & defence (271) | USA | 43.66 | 35.8 | 31.1 | 7.8 |
| 694 | FMC Technologies | Oil equipment, services & distribution (57) | USA | 43.66 | 2.2 | 11.3 | -5.2 |
| 696 | Kronos | Software (9537) | USA | 43.53 | 29.2 | 22.9 | 10.9 |
| 697 | Imation | Computer hardware (9572) | USA | 43.49 | -9.8 | -0.2 | 12.6 |
| 698 | Foundry Networks | Telecommunications equipment (9578) | USA | 43.48 | 16.8 | 8.5 | 15.9 |
| 699 | Dr Reddy's Laboratories | Pharmaceuticals (4577) | India | 43.27 | 25.8 | 37.9 | 38.0 |
| 700 | Ibiden | Electrical components & equipment (2733) | Japan | 42.95 | 20.6 | -3.1 | 2.0 |

| Rank | Company | ICB Sector | Country | R&D Investment | | | |
|------|---|--|-------------|----------------|----------------------|----------------------|----------------------|
| | | | | 2005 €m | change 05/04 % | change 04/03 % | change 03/02 % |
| 701 | NetIQ (now part of Attachmate) | Software (9537) | USA | 42.87 | -25.7 | -4.3 | 16.5 |
| 702 | Check Point Software Technologies | Internet (9535) | Israel | 42.85 | 26.2 | 36.6 | 2.1 |
| 703 | Hillenbrand Industries | Health care equipment & services (453) | USA | 42.81 | -9.8 | 0.0 | 11.1 |
| 704 | WMS Industries | Travel & leisure (575) | USA | 42.64 | 12.3 | 11.2 | 55.1 |
| 705 | Central Glass | Construction & materials (235) | Japan | 42.54 | 8.7 | -2.6 | 19.2 |
| 706 | Mercury Computer Systems | Computer hardware (9572) | USA | 42.45 | 29.6 | 0.7 | 11.7 |
| 707 | NOVA Chemicals | Chemicals (135) | Canada | 42.39 | 4.2 | 6.7 | 15.4 |
| 707 | MeadWestvaco | General industrials (272) | USA | 42.39 | -32.4 | 4.2 | -22.0 |
| 707 | Snap-On | Household goods (372) | USA | 42.39 | -17.8 | 1.7 | 4.7 |
| 707 | Fiserv | Support services (279) | USA | 42.39 | 4.6 | -8.8 | 16.7 |
| 707 | GTECH | Travel & leisure (575) | USA | 42.39 | -18.0 | 6.4 | 33.7 |
| 712 | Woodward Governor | Electrical components & equipment (2733) | USA | 42.38 | 24.8 | -3.7 | 13.4 |
| 713 | Nihon Unisys | Computer services (9533) | Japan | 42.27 | -14.9 | 4.6 | 2.8 |
| 714 | Taiheiyō Cement | Construction & materials (235) | Japan | 42.26 | -2.2 | -19.4 | 0.0 |
| 715 | Mitsui Mining & Smelting | Industrial metals (175) | Japan | 42.24 | 98.8 | 25.5 | 3.0 |
| 716 | Sigma-Aldrich | Chemicals (135) | USA | 42.22 | 16.9 | -0.0 | 5.3 |
| 717 | CNOOC | Oil & gas producers (53) | China | 42.19 | 49.6 | 61.9 | -0.9 |
| 718 | Aruze | Travel & leisure (575) | Japan | 42.15 | 20.4 | 2.8 | 1.1 |
| 719 | Quanta Display | Electrical components & equipment (2733) | Taiwan | 41.81 | | | |
| 720 | Tokyo Ohka Kogyo | Chemicals (135) | Japan | 41.66 | -14.0 | 11.9 | 3.9 |
| 721 | Silicon Storage Technology | Semiconductors (9576) | USA | 41.57 | 4.6 | 8.7 | -8.3 |
| 722 | Cubist Pharmaceuticals | Biotechnology (4573) | USA | 41.51 | -12.5 | 3.6 | 21.5 |
| 723 | Artesyn Technologies (now part of Emerson Electric) | Electrical components & equipment (2733) | USA | 41.45 | 18.8 | 19.9 | -0.0 |
| 724 | Komag | Computer hardware (9572) | USA | 41.43 | 19.8 | -3.1 | 128.7 |
| 725 | Toyama Chemical | Pharmaceuticals (4577) | Japan | 41.39 | 11.7 | 1.4 | 4.0 |
| 726 | Inventec | Computer hardware (9572) | Taiwan | 41.32 | 13.4 | 5.3 | 40.6 |
| 727 | Hannstar Display | Leisure goods (374) | Taiwan | 41.25 | | | |
| 728 | Vishay Intertechnology | Electrical components & equipment (2733) | USA | 41.23 | -4.6 | 12.4 | 22.3 |
| 729 | Phelps Dodge | Industrial metals (175) | USA | 41.20 | 49.5 | 7.6 | 16.2 |
| 730 | Modine Manufacturing | Automobiles & parts (335) | USA | 41.15 | 51.7 | 1.9 | 5.2 |
| 731 | Armstrong | Household goods (372) | USA | 41.12 | 4.1 | 5.0 | -20.6 |
| 732 | Daiwa House Industry | Household goods (372) | Japan | 41.03 | 0.8 | 1.0 | 2.5 |
| 733 | Aristocrat Leisure | Travel & leisure (575) | Australia | 40.91 | 11.4 | -6.9 | -2.5 |
| 734 | Actel | Semiconductors (9576) | USA | 40.84 | 6.2 | 14.5 | 0.6 |
| 735 | Myriad Genetics | Pharmaceuticals (4577) | USA | 40.83 | 29.0 | 108.0 | 93.4 |
| 736 | Bucher Industries | Commercial vehicles & trucks (2753) | Switzerland | 40.78 | 17.2 | 7.1 | -10.9 |
| 737 | Micro-Star International | Computer hardware (9572) | Taiwan | 40.72 | -2.2 | 20.4 | 47.7 |
| 738 | Tanox | Biotechnology (4573) | USA | 40.61 | 76.1 | 29.3 | -7.1 |
| 739 | Mitsui | General industrials (272) | Japan | 40.56 | -6.2 | 76.2 | 15.8 |
| 740 | Phonak | Health care equipment & services (453) | Switzerland | 40.55 | 29.4 | 7.7 | -7.5 |
| 741 | Lonza | Chemicals (135) | Switzerland | 40.52 | -11.3 | -13.4 | -19.6 |
| 742 | Atheros Communications | Semiconductors (9576) | USA | 40.51 | 11.9 | 39.2 | 31.2 |
| 743 | Horiba | Electronic equipment (2737) | Japan | 40.48 | 9.9 | 26.8 | -6.7 |
| 744 | York International (now part of Johnson Controls) | General industrials (272) | USA | 40.44 | 12.8 | 0.2 | -8.7 |
| 745 | DRS Technologies | Aerospace & defence (271) | USA | 40.35 | 22.3 | 37.0 | 97.2 |
| 746 | NOF | Chemicals (135) | Japan | 40.23 | -2.8 | 0.9 | 6.5 |
| 747 | Steelcase | Household goods (372) | USA | 40.18 | 15.3 | -4.4 | -5.5 |
| 748 | Shikoku Electric Power | Electricity (753) | Japan | 40.13 | -5.7 | -5.3 | -15.8 |
| 749 | Msc Software | Software (9537) | USA | 40.06 | 12.2 | 3.4 | -1.5 |
| 750 | Ariba | Software (9537) | USA | 40.02 | -12.7 | 0.5 | -16.7 |

| Rank | Company | ICB Sector | Country | R&D Investment | | | |
|------|---|--|-----------|----------------|----------------------|----------------------|----------------------|
| | | | | 2005 €m | change 05/04 % | change 04/03 % | change 03/02 % |
| 751 | Alltel | Mobile telecommunications (657) | USA | 40.01 | 46.1 | -43.0 | -52.3 |
| 752 | Antigenics | Biotechnology (4573) | USA | 39.91 | 14.7 | -13.7 | 171.7 |
| 753 | Crown | General industrials (272) | USA | 39.84 | 0.0 | 6.8 | 2.3 |
| 753 | Dentsply International | Health care equipment & services (453) | USA | 39.84 | 5.4 | 3.0 | 4.1 |
| 753 | Sprint Nextel | Mobile telecommunications (657) | USA | 39.84 | 46.8 | 100.1 | |
| 756 | Nippon Light Metal | Industrial metals (175) | Japan | 39.78 | 15.3 | 8.5 | -5.5 |
| 757 | Kansai Paint | Chemicals (135) | Japan | 39.75 | -7.1 | 2.7 | -4.0 |
| 758 | TriQuint Semiconductor | Semiconductors (9576) | USA | 39.60 | -23.2 | -6.5 | 11.1 |
| 759 | Itron | Electronic equipment (2737) | USA | 39.44 | 4.8 | 3.2 | 17.0 |
| 760 | DoubleClick | Software (9537) | USA | 39.39 | 18.6 | -1.5 | -25.6 |
| 761 | Sonus Networks | Telecommunications equipment (9578) | USA | 39.32 | 27.4 | 9.1 | -40.0 |
| 762 | Terex | Commercial vehicles & trucks (2753) | USA | 39.25 | 20.0 | 56.3 | 298.1 |
| 763 | Nexen | Oil & gas producers (53) | Canada | 39.19 | 54.3 | 74.9 | 233.8 |
| 764 | Crane | Industrial machinery (2757) | USA | 39.08 | -12.0 | 12.0 | 1.7 |
| 765 | Ichikoh Industries | Automobiles & parts (335) | Japan | 39.05 | 7.9 | -3.8 | 12.4 |
| 766 | Pentair | Household goods (372) | USA | 39.03 | 46.4 | -28.4 | 18.9 |
| 767 | Gen-Probe | Biotechnology (4573) | USA | 39.00 | 11.2 | -53.0 | 88.5 |
| 767 | Zebra Technologies | Computer hardware (9572) | USA | 39.00 | 24.0 | 16.8 | 8.7 |
| 769 | Magma Design Automation | Software (9537) | USA | 38.94 | 10.1 | 59.9 | 39.6 |
| 770 | Ariad Pharmaceuticals | Pharmaceuticals (4577) | USA | 38.93 | 65.7 | 86.1 | -35.3 |
| 771 | Genesis Microchip | Semiconductors (9576) | USA | 38.90 | 37.6 | -1.6 | -11.1 |
| 772 | AptarGroup | General industrials (272) | USA | 38.77 | 9.2 | 20.7 | 25.2 |
| 773 | Webex Communications | Software (9537) | USA | 38.75 | 33.1 | 37.2 | 7.3 |
| 774 | S1 | Software (9537) | USA | 38.71 | -8.1 | 10.1 | 14.6 |
| 775 | Respironics | Health care equipment & services (453) | USA | 38.68 | 54.8 | -10.3 | 89.8 |
| 776 | Tsumura | Pharmaceuticals (4577) | Japan | 38.59 | -0.9 | 2.0 | 19.0 |
| 777 | Nippon Soda | Chemicals (135) | Japan | 38.33 | 5.7 | | |
| 778 | Internet Security Systems | Software (9537) | USA | 38.30 | 5.1 | 2.7 | 18.6 |
| 779 | Kinpo Electronics | Computer hardware (9572) | Taiwan | 38.25 | 12.6 | 5.2 | 43.9 |
| 780 | Cirrus Logic | Semiconductors (9576) | USA | 38.23 | -32.5 | -12.3 | -20.1 |
| 781 | Micrel | Semiconductors (9576) | USA | 38.21 | 8.0 | -11.1 | -11.9 |
| 782 | Ashland | Chemicals (135) | USA | 38.15 | 4.7 | 19.4 | -5.2 |
| 783 | Teledyne Technologies | Aerospace & defence (271) | USA | 38.06 | 37.7 | 16.9 | 6.5 |
| 784 | Silicon Image | Semiconductors (9576) | USA | 38.03 | -42.5 | 79.8 | 8.0 |
| 785 | Bookham | Telecommunications equipment (9578) | USA | 38.00 | -11.5 | -17.5 | -10.1 |
| 786 | TCL Communication Technology | Telecommunications equipment (9578) | Hong Kong | 37.92 | 61.3 | 836.7 | |
| 787 | Retalix | Software (9537) | Israel | 37.88 | 31.0 | 85.9 | 7.7 |
| 788 | Aspect Communications (now Aspect Software) | Software (9537) | USA | 37.70 | -9.7 | -13.4 | -40.8 |
| 789 | Andrx | Food & drug retailers (533) | USA | 37.69 | 9.8 | -22.4 | 1.5 |
| 790 | JDA Software | Software (9537) | USA | 37.60 | -16.0 | 8.8 | 16.1 |
| 791 | Fisher Scientific International | Health care equipment & services (453) | USA | 37.47 | 20.4 | 211.1 | 53.1 |
| 792 | Biomarin Pharmaceutical | Biotechnology (4573) | USA | 37.10 | -12.1 | 16.5 | |
| 793 | Suzuken | Pharmaceuticals (4577) | Japan | 37.03 | 12.1 | -8.5 | 16.1 |
| 794 | Aastra Technologies | Telecommunications equipment (9578) | Canada | 36.96 | 115.8 | 14.6 | -6.9 |
| 795 | Moog | Aerospace & defence (271) | USA | 36.93 | 46.5 | -2.5 | -7.7 |
| 796 | Sycamore Networks | Telecommunications equipment (9578) | USA | 36.86 | -10.3 | -12.7 | -53.6 |
| 797 | Noritz | Household goods (372) | Japan | 36.82 | 20.9 | -4.6 | -7.0 |
| 798 | Parexel International | Biotechnology (4573) | USA | 36.79 | 15.1 | 30.4 | |
| 799 | Alliance Gaming (now Bally Technologies) | Travel & leisure (575) | USA | 36.76 | 18.4 | 83.5 | 13.3 |
| 800 | Alkermes | Pharmaceuticals (4577) | USA | 36.61 | -33.6 | -20.2 | 52.2 |

| Rank | Company | ICB Sector | Country | R&D Investment | | | |
|------|--------------------------------------|--|-------------|----------------|----------------------|----------------------|----------------------|
| | | | | 2005 €m | change 05/04 % | change 04/03 % | change 03/02 % |
| 801 | Cabot Microelectronics | Semiconductors (9576) | USA | 36.46 | -2.3 | 6.0 | 23.3 |
| 802 | Pharmion | Pharmaceuticals (4577) | USA | 36.41 | 51.3 | | |
| 803 | Cooper Companies | Health care equipment & services (453) | USA | 36.35 | 560.9 | 16.5 | 29.0 |
| 804 | MDS | Health care equipment & services (453) | Canada | 36.29 | -12.3 | 3.6 | -8.3 |
| 805 | Cree | Semiconductors (9576) | USA | 36.25 | 15.9 | 18.2 | -1.6 |
| 806 | Verifone | Computer hardware (9572) | USA | 36.19 | 17.7 | 20.3 | |
| 807 | Toagosei | Chemicals (135) | Japan | 36.14 | -4.3 | -1.3 | -0.8 |
| 808 | Informatica | Software (9537) | USA | 36.10 | -17.0 | 8.6 | 3.6 |
| 809 | Wm Wrigley Jr | Food producers (357) | USA | 36.09 | 23.0 | 22.5 | 25.6 |
| 810 | Advanced Digital Information | Computer hardware (9572) | USA | 36.02 | 12.0 | -6.6 | 26.0 |
| 810 | Swisscom | Fixed line telecommunications (653) | Switzerland | 36.02 | -15.1 | -27.5 | 46.8 |
| 812 | GS Yuasa | Electrical components & equipment (2733) | Japan | 35.95 | | | |
| 813 | Ferro | Chemicals (135) | USA | 35.94 | 15.5 | 18.0 | 3.3 |
| 814 | Esterline Technologies | Aerospace & defence (271) | USA | 35.81 | 52.4 | 42.0 | 26.5 |
| 815 | Biosite | Health care equipment & services (453) | USA | 35.79 | 18.3 | 45.8 | 49.7 |
| 816 | Daifuku | Industrial machinery (2757) | Japan | 35.70 | 17.4 | -0.5 | -11.4 |
| 817 | McCormick | Food producers (357) | USA | 35.69 | 7.1 | 18.4 | 5.7 |
| 818 | Macdonald Dettwiler & Associates | Computer services (9533) | Canada | 35.59 | 13.3 | -4.1 | 644.3 |
| 819 | Sanden | Automobiles & parts (335) | Japan | 35.50 | 11.5 | 6.4 | 1.3 |
| 820 | Cray | Computer hardware (9572) | USA | 35.36 | -7.6 | 19.5 | -22.0 |
| 821 | Albemarle | Chemicals (135) | USA | 35.33 | 33.3 | 69.8 | 11.7 |
| 822 | Daewoo Shipbuilding & Marine | Industrial transportation (277) | South Korea | 34.88 | 42.7 | -48.2 | 76.7 |
| 823 | Juki | Household goods (372) | Japan | 34.84 | 4.0 | -7.3 | -7.1 |
| 824 | TiVo | Leisure goods (374) | USA | 34.83 | 9.2 | 69.8 | 7.0 |
| 825 | Altiris | Software (9537) | USA | 34.79 | 30.3 | 29.0 | 46.9 |
| 826 | Kulicke & Soffa | Semiconductors (9576) | USA | 34.78 | 18.5 | -11.2 | -26.4 |
| 827 | Solutia | Chemicals (135) | USA | 34.76 | 2.5 | -13.1 | 18.0 |
| 828 | Rambus | Semiconductors (9576) | USA | 34.73 | 25.6 | 34.3 | 8.9 |
| 829 | IDEXX Laboratories | Health care equipment & services (453) | USA | 34.71 | 15.7 | 9.5 | 10.2 |
| 830 | Hercules | Chemicals (135) | USA | 34.67 | -4.9 | 10.3 | -7.2 |
| 831 | Red Hat | Software (9537) | USA | 34.66 | 25.9 | 22.6 | 18.0 |
| 832 | Sumitomo Metal Mining | Industrial metals (175) | Japan | 34.56 | 12.2 | 13.9 | -11.2 |
| 833 | Keyence | Electronic equipment (2737) | Japan | 34.47 | 13.3 | 6.5 | 14.0 |
| 834 | Nihon Kohden | Health care equipment & services (453) | Japan | 34.42 | 2.5 | 5.8 | 4.9 |
| 835 | OmniVision Technologies | Semiconductors (9576) | USA | 34.40 | 59.2 | 63.7 | 33.1 |
| 836 | Sonic Solutions | Software (9537) | USA | 34.38 | 28.3 | 60.2 | 85.7 |
| 837 | Lennox International | Construction & materials (235) | USA | 34.16 | 7.2 | -1.0 | -0.5 |
| 837 | DSP | Semiconductors (9576) | USA | 34.16 | 25.4 | 25.6 | 29.6 |
| 839 | Trizetto | Software (9537) | USA | 34.13 | 3.2 | 3.3 | 72.2 |
| 840 | Portal Software (now part of Oracle) | Software (9537) | USA | 34.12 | 33.1 | -15.3 | -40.3 |
| 841 | webMethods | Software (9537) | USA | 34.08 | -9.7 | -1.2 | -5.2 |
| 842 | Formula Systems (1985) | Computer services (9533) | Israel | 34.02 | 60.3 | 44.2 | 8.7 |
| 843 | United Online | Internet (9535) | USA | 33.92 | 45.8 | 19.1 | -7.0 |
| 844 | Nichias | General industrials (272) | Japan | 33.86 | 1.9 | 0.2 | |
| 845 | Plug Power | Electrical components & equipment (2733) | USA | 33.73 | 5.1 | -10.1 | 11.1 |
| 846 | Advanced Energy Industries | Semiconductors (9576) | USA | 33.67 | -22.9 | -0.2 | 5.4 |
| 846 | Hummingbird | Software (9537) | Canada | 33.67 | 4.6 | 0.4 | 37.4 |
| 848 | Curtiss-Wright | Aerospace & defence (271) | USA | 33.64 | 17.3 | 53.0 | 90.3 |
| 848 | Transaction Systems Architects | Software (9537) | USA | 33.64 | 4.4 | 7.4 | 1.0 |
| 850 | Neurochem | Biotechnology (4573) | Canada | 33.46 | 57.1 | 122.6 | 32.9 |

| Rank | Company | ICB Sector | Country | R&D Investment | | | |
|------|--|--|--------------|----------------|----------------------|----------------------|----------------------|
| | | | | 2005 €m | change 05/04 % | change 04/03 % | change 03/02 % |
| 851 | ev3 | Health care equipment & services (453) | USA | 33.30 | 0.9 | -13.8 | |
| 852 | Brucker Biosciences | Health care equipment & services (453) | USA | 33.28 | -9.2 | 13.6 | 83.4 |
| 853 | Stoneridge | Automobiles & parts (335) | USA | 33.23 | 8.5 | 25.9 | 13.3 |
| 854 | Scansoft (now Nuance Communications) | Software (9537) | USA | 33.22 | 48.5 | 72.3 | -44.6 |
| 855 | SeeBeyond Technology (now part of Sun Microsystems) | Software (9537) | USA | 33.17 | -4.5 | 18.4 | 17.1 |
| 856 | Aloka | Health care equipment & services (453) | Japan | 32.98 | -13.6 | 7.4 | -2.0 |
| 857 | Inamed (now part of Allergan) | Health care equipment & services (453) | USA | 32.89 | 34.7 | 34.0 | 72.0 |
| 858 | Church & Dwight | Household goods (372) | USA | 32.81 | 17.3 | 22.6 | 0.1 |
| 859 | Arbitron | Media (555) | USA | 32.69 | 15.8 | 28.8 | 4.5 |
| 860 | Sumco | Chemicals (135) | Japan | 32.68 | 6.7 | | |
| 861 | Heiwa | Leisure goods (374) | Japan | 32.59 | -0.5 | 0.5 | 18.5 |
| 862 | M-Systems Flash Disk Pioneers (now M-Systems) (now part of SanDisk, USA) | Computer hardware (9572) | Israel | 32.57 | 54.7 | 68.8 | 22.9 |
| 862 | Perrigo | Pharmaceuticals (4577) | USA | 32.57 | 38.6 | 18.9 | 17.3 |
| 864 | Mosel Vitelic | Electrical components & equipment (2733) | Taiwan | 32.45 | 382.9 | -91.6 | -43.2 |
| 865 | Harmonic | Telecommunications equipment (9578) | USA | 32.36 | 7.3 | 1.4 | -14.0 |
| 866 | Berna Biotech | Biotechnology (4573) | Switzerland | 32.35 | -4.0 | 1.6 | 31.4 |
| 867 | MEMC Electronic Matials | Semiconductors (9576) | USA | 32.19 | | | |
| 868 | Secom | Support services (279) | Japan | 32.11 | 9.4 | -18.3 | -2.3 |
| 869 | C-Cor | Telecommunications equipment (9578) | USA | 32.05 | 75.9 | -20.4 | -0.3 |
| 870 | Semtech | Semiconductors (9576) | USA | 31.82 | 12.1 | 10.3 | -3.1 |
| 871 | Amphenol | Electrical components & equipment (2733) | USA | 31.80 | 15.6 | 23.1 | 9.0 |
| 872 | Zarlink Semiconductor | Semiconductors (9576) | Canada | 31.79 | -42.5 | -13.2 | -15.4 |
| 872 | Axiom | Support services (279) | USA | 31.79 | 5.1 | -25.5 | -11.7 |
| 874 | Amkor Technology | Semiconductors (9576) | USA | 31.66 | 1.7 | 42.4 | -17.3 |
| 875 | I2 Technologies | Software (9537) | USA | 31.65 | -47.2 | -12.5 | -53.3 |
| 876 | Investment Technology | Other financials (877) | USA | 31.62 | 18.4 | 8.2 | 4.3 |
| 877 | Hirose Electric | Electronic equipment (2737) | Japan | 31.43 | 23.3 | 20.0 | -14.1 |
| 878 | China Steel | Industrial metals (175) | Taiwan | 31.36 | 14.2 | 9.1 | 8.7 |
| 879 | Hutchinson Technology | Computer hardware (9572) | USA | 31.22 | 30.3 | 89.1 | -15.4 |
| 880 | Novatek Microelectronics | Electronic equipment (2737) | Taiwan | 30.95 | | | |
| 881 | Optimax Technology | Electrical components & equipment (2733) | Taiwan | 30.85 | 17.7 | | |
| 882 | Photon Dynamics | Electronic equipment (2737) | USA | 30.75 | 22.1 | 30.3 | 21.1 |
| 883 | Datascope | Health care equipment & services (453) | USA | 30.70 | 11.6 | -32.3 | 86.5 |
| 884 | Verint Systems | Software (9537) | USA | 30.65 | 30.0 | 25.7 | 14.5 |
| 885 | United Therapeutics | Biotechnology (4573) | USA | 30.56 | 17.8 | -13.6 | 32.2 |
| 886 | AO Smith | Electronic equipment (2737) | USA | 30.52 | 0.3 | 3.8 | 13.8 |
| 887 | SEZ | Semiconductors (9576) | Switzerland | 30.50 | 6.5 | 19.8 | -1.0 |
| 888 | Newport | Electronic equipment (2737) | USA | 30.48 | 37.8 | 43.8 | -25.6 |
| 889 | Kurita Water Industries | Industrial machinery (2757) | Japan | 30.37 | -1.4 | -4.3 | -11.6 |
| 890 | Sasol | Oil & gas producers (53) | South Africa | 30.34 | -42.5 | -41.0 | -34.6 |
| 891 | Shindengen Electric Manufacturing | Semiconductors (9576) | Japan | 30.28 | -15.0 | -17.6 | -3.0 |
| 892 | D-Link | Computer services (9533) | Taiwan | 30.20 | -6.5 | 33.6 | 13.8 |
| 893 | Mabuchi Motor | Electrical components & equipment (2733) | Japan | 30.14 | 4.0 | 8.6 | 5.0 |
| 894 | Jack Henry & Associates | Software (9537) | USA | 30.10 | 26.4 | 33.4 | 68.1 |
| 895 | Netflix | General retailers (537) | USA | 30.00 | 100.7 | -19.3 | 23.9 |
| 896 | Ushio | Electronic equipment (2737) | Japan | 29.98 | 24.3 | 0.1 | -5.7 |
| 897 | Accton Technology | Computer hardware (9572) | Taiwan | 29.76 | -14.4 | 27.0 | -3.7 |
| 897 | Micromuse (now part of IBM) | Software (9537) | USA | 29.76 | 11.7 | 6.9 | -10.6 |
| 899 | Geron | Biotechnology (4573) | USA | 29.74 | 16.6 | 18.1 | -19.3 |
| 900 | Gentex | Automobiles & parts (335) | USA | 29.72 | 13.7 | 15.9 | 15.8 |

| Rank | Company | ICB Sector | Country | R&D Investment | | | |
|------|---|--|-------------|----------------|--------------|--------------|--------------|
| | | | | 2005 | change 05/04 | change 04/03 | change 03/02 |
| | | | | €m | % | % | % |
| 901 | Inco | Industrial metals (175) | Canada | 29.67 | 20.7 | 7.4 | 58.8 |
| 902 | EMS-Chemie | Chemicals (135) | Switzerland | 29.66 | 4.2 | 6.7 | -35.9 |
| 903 | Asyst Technologies | Semiconductors (9576) | USA | 29.58 | -4.1 | -9.2 | -0.0 |
| 904 | Ametek | Electronic equipment (2737) | USA | 29.50 | 36.4 | 9.0 | -1.2 |
| 905 | Hitachi Zosen | Industrial machinery (2757) | Japan | 29.49 | 0.4 | -24.6 | -15.8 |
| 906 | Silicon Integrated Systems | Semiconductors (9576) | Taiwan | 29.48 | 3.2 | -32.6 | -19.9 |
| 907 | Makita | Household goods (372) | Japan | 29.34 | -0.0 | 6.0 | 2.9 |
| 908 | Neurogen | Biotechnology (4573) | USA | 29.30 | 55.6 | -21.8 | -4.9 |
| 909 | Salix Pharmaceuticals | Biotechnology (4573) | USA | 29.29 | 69.6 | -13.9 | 31.6 |
| 910 | Sanyo Chemical Industries | Chemicals (135) | Japan | 29.28 | 4.9 | -6.2 | 0.3 |
| 911 | Macrovision | Software (9537) | USA | 29.14 | 20.0 | 66.4 | 45.0 |
| 911 | SeaChange International | Software (9537) | USA | 29.14 | 16.8 | 13.0 | -0.2 |
| 913 | Xoma | Biotechnology (4573) | Bermuda | 29.13 | -32.0 | -2.9 | 76.1 |
| 914 | Manhattan Associates | Software (9537) | USA | 28.94 | 18.5 | 5.3 | 31.6 |
| 915 | Ess Technology | Semiconductors (9576) | USA | 28.81 | -9.3 | 12.9 | 23.1 |
| 916 | NDCHealth (now part of Per-Se Technologies) | Health care equipment & services (453) | USA | 28.80 | -3.2 | -6.9 | 99.6 |
| 917 | Terayon Communication Systems | Telecommunications equipment (9578) | USA | 28.79 | -20.7 | -27.0 | -26.6 |
| 918 | CSG Systems International | Software (9537) | USA | 28.77 | -42.5 | -6.2 | -14.6 |
| 919 | Komori | Industrial machinery (2757) | Japan | 28.64 | 2.4 | 9.3 | |
| 920 | Steris | Health care equipment & services (453) | USA | 28.48 | -5.5 | 25.0 | 11.5 |
| 921 | Briggs & Stratton | Household goods (372) | USA | 28.40 | 29.3 | -1.9 | 11.4 |
| 922 | Hokkaido Electric Power | Electricity (753) | Japan | 28.39 | -3.9 | -8.7 | -9.1 |
| 923 | Exedy | Automobiles & parts (335) | Japan | 28.34 | -1.2 | 0.0 | 2.7 |
| 924 | Oshkosh Truck | Commercial vehicles & trucks (2753) | USA | 28.31 | 21.1 | 22.7 | 25.7 |
| 925 | ISEKI | Commercial vehicles & trucks (2753) | Japan | 28.29 | 3.1 | -1.1 | |
| 925 | Advent Software | Software (9537) | USA | 28.29 | 3.4 | -9.3 | -10.2 |
| 927 | Inter-Tel | Telecommunications equipment (9578) | USA | 28.19 | 15.4 | 31.1 | 13.6 |
| 928 | Vignette | Software (9537) | USA | 28.16 | -35.8 | 26.4 | -22.0 |
| 929 | Micros Systems | Computer hardware (9572) | USA | 28.10 | 21.8 | 45.2 | -3.0 |
| 929 | Universal Scientific Industrial | Electronic equipment (2737) | Taiwan | 28.10 | 10.0 | 22.3 | 44.5 |
| 931 | Avanex | Telecommunications equipment (9578) | USA | 28.08 | -21.3 | 160.4 | -32.8 |
| 932 | Gigabyte Technology | Electrical components & equipment (2733) | Taiwan | 28.05 | 21.8 | 26.8 | 3.5 |
| 933 | Geberit | Construction & materials (235) | Switzerland | 27.98 | 0.2 | 21.6 | 18.6 |
| 933 | Pactiv | General industrials (272) | USA | 27.98 | 0.0 | 3.1 | -8.6 |
| 933 | Yum! Brands | Travel & leisure (575) | USA | 27.98 | 27.0 | 0.0 | 13.0 |
| 936 | Westinghouse Air Brake Technologies | Industrial transportation (277) | USA | 27.81 | -2.9 | 2.7 | -2.1 |
| 937 | Sulzer | Industrial machinery (2757) | Switzerland | 27.79 | 5.4 | 2.5 | -4.8 |
| 938 | Herman Miller | Household goods (372) | USA | 27.72 | -5.5 | 3.9 | -14.4 |
| 939 | QAD | Software (9537) | USA | 27.68 | -1.7 | -13.7 | 10.5 |
| 940 | Nice Systems | Software (9537) | Israel | 27.56 | 24.2 | 13.5 | 2.4 |
| 941 | Nisshin Steel | Industrial metals (175) | Japan | 27.51 | 11.3 | 3.9 | -28.3 |
| 942 | Ixia | Computer services (9533) | USA | 27.47 | 28.4 | 8.3 | 0.2 |
| 943 | Microstrategy | Software (9537) | USA | 27.46 | 11.0 | 1.1 | -3.1 |
| 944 | DnB NOR | Banks (835) | Norway | 27.42 | | | |
| 944 | China Telecom | Fixed line telecommunications (653) | China | 27.42 | 51.7 | 36.5 | -26.7 |
| 946 | Sherwin-Williams | Construction & materials (235) | USA | 27.41 | -5.8 | -0.2 | -4.5 |
| 946 | Cytac | Health care equipment & services (453) | USA | 27.41 | 55.3 | 41.4 | 3.9 |
| 946 | Thoratec | Health care equipment & services (453) | USA | 27.41 | 12.8 | 10.0 | 3.2 |
| 949 | Viasys Healthcare | Health care equipment & services (453) | USA | 27.37 | 37.7 | -11.4 | -1.6 |
| 950 | Donaldson | Industrial machinery (2757) | USA | 27.33 | -8.9 | 16.2 | 8.2 |

| Rank | Company | ICB Sector | Country | R&D Investment | | | |
|------|--|--|-------------|----------------|----------------------|----------------------|----------------------|
| | | | | 2005 €m | change 05/04 % | change 04/03 % | change 03/02 % |
| 951 | Photronics | Semiconductors (9576) | USA | 27.26 | 5.4 | 1.9 | -0.6 |
| 952 | Cochlear | Health care equipment & services (453) | Australia | 27.21 | -1.6 | 20.0 | -13.8 |
| 953 | Dupont Photomasks (now Toppan Photomasks) (now part of Toppan Printing, Japan) | Electronic equipment (2737) | USA | 27.19 | 8.2 | -2.1 | -6.0 |
| 954 | Sun Pharmaceutical Industries | Pharmaceuticals (4577) | India | 27.12 | 13.6 | 31.2 | 187.1 |
| 955 | Connetics | Pharmaceuticals (4577) | USA | 27.04 | 48.1 | -28.5 | 16.6 |
| 956 | Sirius Satellite Radio | Media (555) | USA | 27.01 | -11.1 | 46.1 | -18.5 |
| 956 | Axcan Pharma | Pharmaceuticals (4577) | Canada | 27.01 | 70.9 | 87.0 | 45.2 |
| 958 | PalmSource (now part of Access, Japan) | Software (9537) | USA | 26.87 | -6.5 | | |
| 959 | Fujirebio | Pharmaceuticals (4577) | Japan | 26.82 | 21.6 | -15.9 | 31.6 |
| 960 | Gemstar-TV Guide International | Media (555) | USA | 26.79 | 22.9 | -4.8 | 28.6 |
| 961 | Nabtesco | Industrial machinery (2757) | Japan | 26.62 | -14.9 | | |
| 962 | CommScope | Electrical components & equipment (2733) | USA | 26.58 | 6.9 | 375.5 | 0.2 |
| 962 | F5 Networks | Internet (9535) | USA | 26.58 | 28.7 | 26.5 | 7.0 |
| 962 | Neopharm | Pharmaceuticals (4577) | USA | 26.58 | -29.6 | 29.9 | 18.2 |
| 965 | Softbank | Internet (9535) | Japan | 26.56 | -9.8 | 223.2 | |
| 966 | Interwoven | Software (9537) | USA | 26.51 | 1.5 | 25.2 | -7.2 |
| 967 | XM Satellite Radio | Media (555) | USA | 26.47 | 32.8 | 91.5 | 13.3 |
| 968 | Infospace | Internet (9535) | USA | 26.45 | 34.8 | -2.2 | -36.9 |
| 969 | Safenet | Software (9537) | USA | 26.44 | 22.1 | 56.2 | 85.1 |
| 970 | Manugistics | Software (9537) | USA | 26.29 | -4.3 | -30.0 | -37.9 |
| 971 | Inverness Medical Innovations | Health care equipment & services (453) | USA | 26.27 | -3.0 | 31.1 | 68.0 |
| 972 | Gennum | Semiconductors (9576) | Canada | 26.26 | 4.5 | 23.5 | 1.3 |
| 973 | Seikagaku | Pharmaceuticals (4577) | Japan | 26.25 | -23.3 | 15.3 | 10.6 |
| 974 | Eizo Nanao | Computer hardware (9572) | Japan | 26.17 | 9.8 | | |
| 975 | Cosmo Oil | Oil & gas producers (53) | Japan | 26.11 | 2.2 | -8.0 | 1.6 |
| 976 | ANSYS | Software (9537) | USA | 26.02 | 14.4 | 12.7 | 17.6 |
| 977 | Tecumseh Products | Electrical components & equipment (2733) | USA | 25.94 | -10.0 | 7.9 | 2.3 |
| 978 | Scotts Miracle-Gro | Chemicals (135) | USA | 25.86 | -11.3 | 13.2 | -51.0 |
| 979 | Quadramed | Computer services (9533) | USA | 25.84 | 8.7 | 21.5 | 21.8 |
| 980 | Land O'Lakes | Food producers (357) | USA | 25.69 | 2.4 | 2.1 | -12.9 |
| 981 | Westaim | Health care equipment & services (453) | Canada | 25.66 | 3.3 | 33.3 | -0.1 |
| 981 | Mori Seiki | Industrial machinery (2757) | Japan | 25.66 | 9.8 | 0.5 | 7.5 |
| 983 | Maxygen | Biotechnology (4573) | USA | 25.60 | 3.4 | 38.0 | -14.9 |
| 984 | American Pharmaceutical Partners | Pharmaceuticals (4577) | USA | 25.57 | 16.9 | 14.6 | 55.5 |
| 985 | ResMed | Health care equipment & services (453) | USA | 25.44 | 14.6 | 27.5 | 37.7 |
| 986 | Kayaba Industry | Automobiles & parts (335) | Japan | 25.38 | 4.1 | -11.8 | 9.3 |
| 987 | Anadigics | Semiconductors (9576) | USA | 25.35 | -10.2 | 3.9 | 7.9 |
| 988 | Owens-Illinois | General industrials (272) | USA | 25.26 | 17.3 | -46.6 | 15.8 |
| 988 | EchoStar Communications | Media (555) | USA | 25.26 | -25.5 | 23.4 | 91 466.7 |
| 990 | Radsys | Computer hardware (9572) | USA | 25.25 | 5.6 | 23.5 | -24.4 |
| 990 | COHU | Semiconductors (9576) | USA | 25.25 | 6.8 | 12.8 | -23.8 |
| 992 | Sanmina-SCI | Electronic equipment (2737) | USA | 25.20 | 1.1 | 96.6 | 73.5 |
| 993 | Arrow International | Health care equipment & services (453) | USA | 25.17 | -2.3 | 7.8 | 7.7 |
| 994 | Tecan | Biotechnology (4573) | Switzerland | 25.16 | 8.8 | -14.1 | 7.1 |
| 995 | Peregrine Systems | Software (9537) | USA | 25.13 | 8.9 | 1.8 | |
| 996 | Mro Software | Software (9537) | USA | 25.11 | 4.0 | 7.6 | -1.5 |
| 997 | Centillum Communications | Semiconductors (9576) | USA | 25.10 | -44.9 | 16.4 | -9.1 |
| 998 | Israel | General industrials (272) | Israel | 25.04 | -5.6 | 12.5 | -5.2 |
| 999 | Vicor | Electrical components & equipment (2733) | USA | 24.98 | 12.4 | 11.8 | 14.5 |
| 1000 | Toshiba Ceramics | Semiconductors (9576) | Japan | 24.91 | | | |

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Title: Analysis of the 2006 EU Industrial R&D Investment Scoreboard

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Abstract:

This report presents a detailed analysis of the 2006 edition of the “EU Industrial R&D Investment Scoreboard” (*Scoreboard*). This year’s *Scoreboard* contains data on the top 1000 EU companies and top 1000 non-EU companies making the largest investments in Research and Development (R&D). Between them, these 2000 companies invested €371 billion in 2005. This report offers some reflections on developments in corporate R&D over the last year and tries to set those developments in the wider context of changes taking place in the first half of the decade. The company data are analysed from different perspectives, showing R&D characteristic parameters, emerging trends and relations with other business factors at individual, sector and world region levels. Furthermore, the role of R&D for business performance is examined.



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