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EU R&D SCOREBOARD

The 2012 EU Industrial R&D Investment Scoreboard

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Joint Research Centre
Directorate-General for Research and Innovation

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The 2012 EU Industrial R&D Investment SCOREBOARD

Table of Contents

Summary

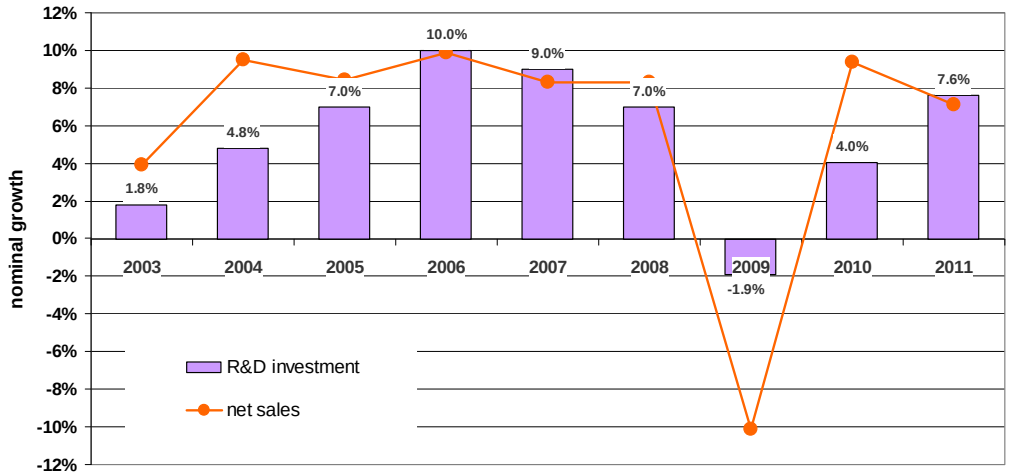
The 2012 "EU Industrial R&D Scoreboard" (the *Scoreboard*) contains economic and financial data of the world's top 1500 companies ranked by their investments in research and development (R&D). The sample consists of 405 companies based in the EU and 1095 companies based elsewhere. The *Scoreboard* data are drawn from the latest available company accounts, i.e. the fiscal year 2011[1].

Key messages

Performance of the world's top R&D investors regained pre-crisis levels in 2011

The 2011 overall growth figures for R&D investment (7.6%), sales (7.1%) and profits (9.7%) confirm the upward trend which started in 2010, following the 2008-2009 economic and financial world crisis (which led to a sharp drop of R&D and sales growth in 2009, see figure S.1). The 2011 figures do not capture the worsening of the general economic context in some regions during 2012.

Figure S1. One-year R&D investment and net sales growth of the *Scoreboard* companies



Note: The different Scoreboards are not directly comparable because of changes in the sample composition.

Source: The EU Industrial R&D Investment Scoreboards (of 2004-2012) European Commission, JRC/DG RTD.

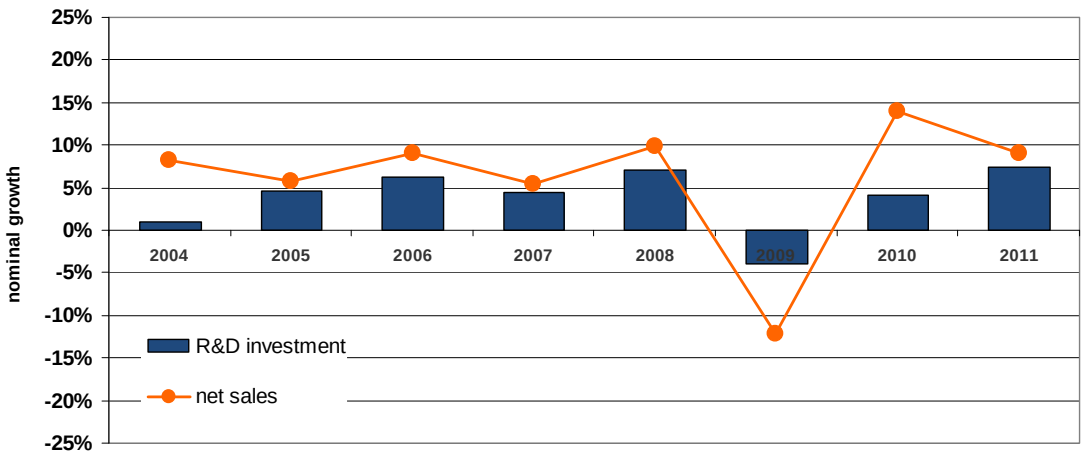
[1] However, due to differences in accounting practices, the sampling period includes a range of dates from 2010 to early 2012 (see annex 2 on methodological notes).

EU based companies increased R&D investments by 8.9%, above world average, similar than that of US companies, despite lagging behind in sales and profits growth.

EU based companies have substantially increased their total R&D investments (8.9% compared to 6.1% last year), on a par with the figures of their US based counterparts (9.0% compared to 10.0% last year). However US based companies continue to perform better than those based in the EU in terms of sales growth (12.3% versus 4.9% for EU firms) and profits growth (12.4% versus 3.5% for EU firms).

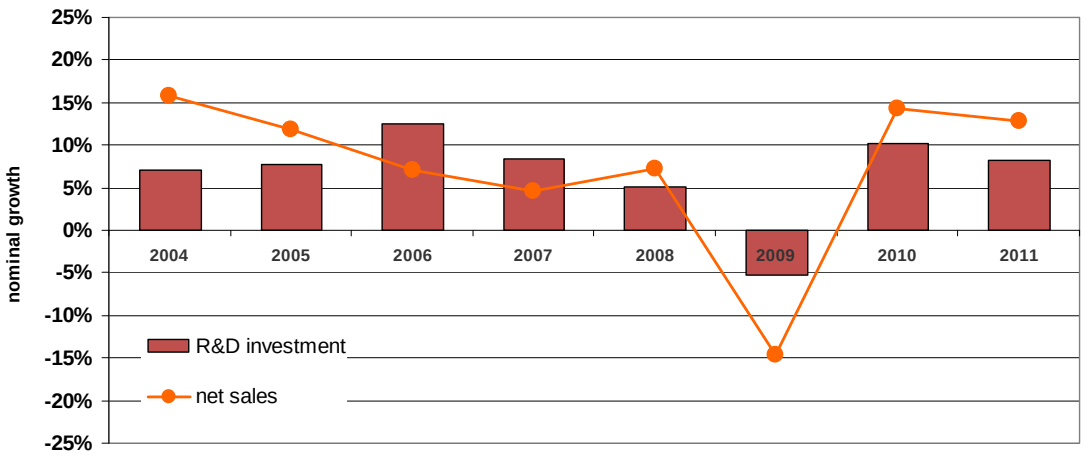
Companies based in other countries excluding Japan also show strong R&D investment growth of 11.3%. However, Japan continues to show much lower increases in R&D investments (1.7%) and in net sales (2.1%), which probably reflect the impact of the 2011 earthquake and other specific unfavorable economic circumstances, such as a strong yen.

Figure S.2. One-year R&D investment and net sales growth by EU companies



Note: for 248 EU out of the 1500 companies with R&D and net sales data for the whole period
Source: The 2012 EU Industrial R&D Investment Scoreboard
European Commission, JRC/DG RTD.

Figure S.3. One-year R&D investment and net sales growth by US companies



Note: for 358 US out of the 1500 companies with R&D and net sales data for the whole period
Source: The 2012 EU Industrial R&D Investment Scoreboard
European Commission, JRC/DG RTD.

Toyota Motor leads the R&D rankings in 2011, with Volkswagen climbing to third place from sixth last year. Companies in the ICT sector continue to show the largest R&D increases in the top ranks.

Japanese company Toyota Motor appears at the top of the ranking in the 2012 *Scoreboard* (the same as two years before). The top R&D investor based in the EU is Volkswagen, at number three in the world ranking and the only EU company in the top 10 (US has 5 companies, Switzerland 2 and South Korea 1). Pharma companies Roche, Pfizer and Merck (within the top 5 in 2010) slip down in the ranking but remain among the top 10. Most companies showing very large R&D increases among the top 100 are in the ICT sector (Huawei 48.5%, LG 47.8%, Google 37.2%, and Apple 36.3%). But other companies in the top 100 showing R&D investment increases of 20% or above are from the Automobiles and Parts sectors, such as BMW (21.6%), Aisin Seiki (20.2%) and Delphi (87.8%), as well as the Industrial Engineering sector such as Caterpillar (20.6%) and the Electronics industry such as Mitsubishi Electric (27.0%).

As in 2010, R&D growth figures of the EU *Scoreboard* sample are to a large extent driven by the automobiles sector, with BMW (21.6%) and Renault (19.4%) leading the increases.

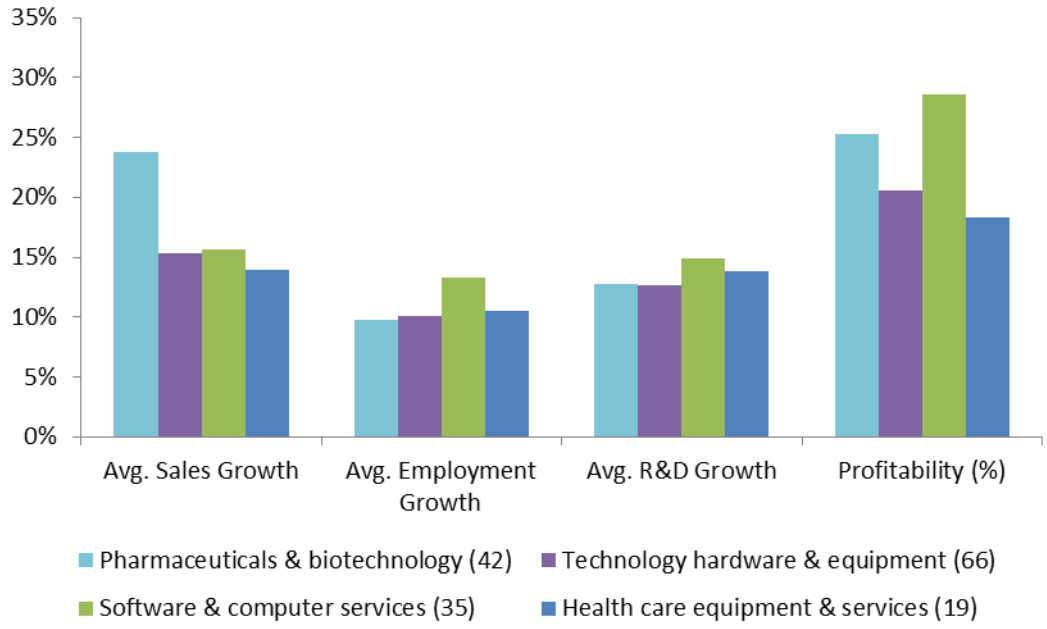
The high growth of R&D investment for EU based companies is driven by the very good performance of Germany (9.5%), which accounts for one third of the total R&D invested by EU *Scoreboard* companies. The UK and France are the other two countries home to a large proportion of companies and R&D investments. The UK showed an even higher R&D growth than Germany at 13.1% while, France also showed good growth at 7.6%. The sector showing the largest R&D investment increases in the EU is the Automobiles & Parts industry (16.2% versus 13.4% for its US counterpart). Other sectors with substantial weight in Europe, such as Pharma and Aerospace, also show R&D growth

rates above those of their US counterparts (5.8% versus 2.4% and 6% versus 1.1% respectively).

Companies showing high performance over the last decade (at least doubling sales) operate in the ICT and health related sectors, all of high R&D intensity.

An analysis of the main financial indicators over the last ten years of a sample of more than 900 top R&D investors shows that high-performance companies (in terms of sales, employment and R&D growth, as well as profitability) are concentrated in the ICT (semiconductors, software, telecom) and health (pharma, biotech, healthcare equipment) sectors. The highest average net sales growth between 2002 and 2011 corresponds to high performers operating in the pharma and biotech sector, but it is in the software & computer services sector where high performers show the highest levels of profitability (close to 30%).

Figure S.3: High-tech industries' performance indicators



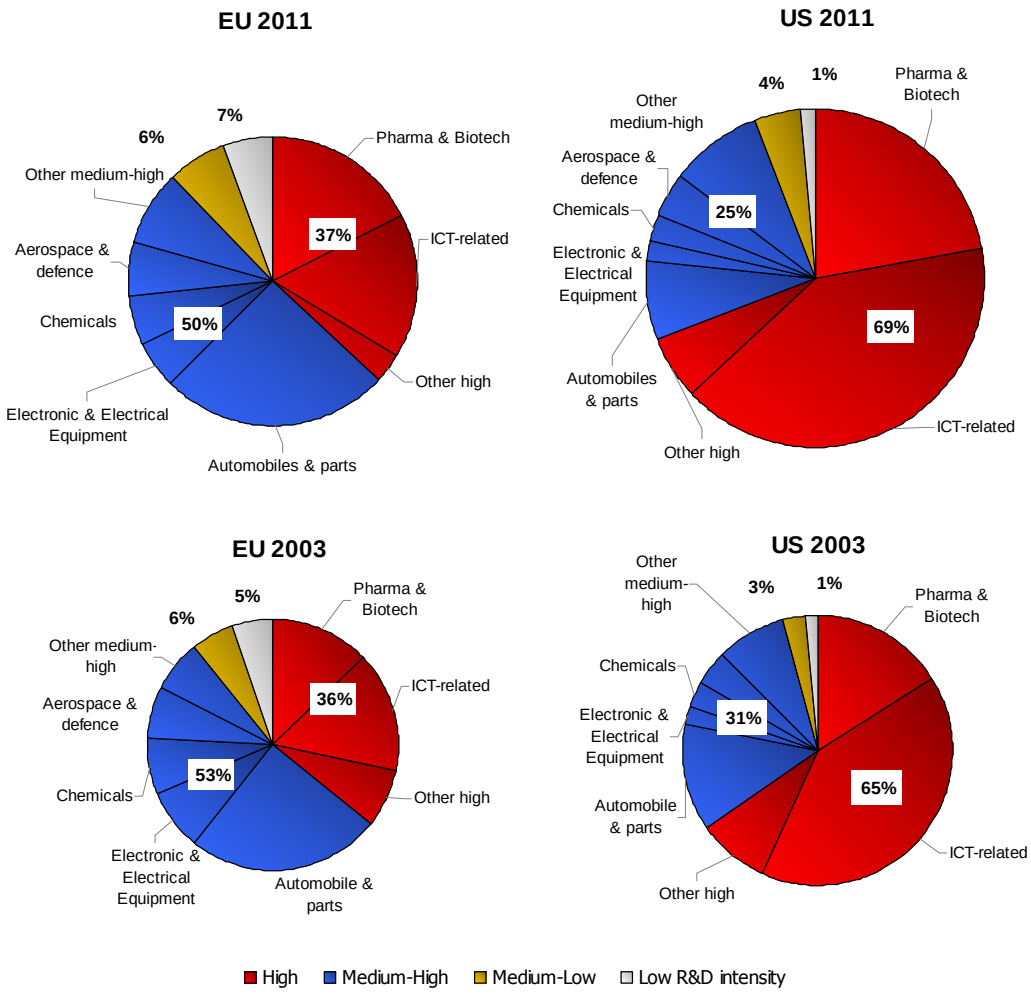
Source: The 2012EU Industrial R&D Investment Scoreboard, European Commission, JRC/DG RTD.
Note: The figure reports averages of firms' annual growth rates in the respective sectors. Numbers in brackets refer to the number of firms in the respective sectors.

The US is strengthening its relative specialisation in these high R&D intensive sectors that account for the largest amounts of R&D and the largest numbers of high performers. No significant shift of structure towards these high R&D intensive sectors is observed in the EU-based *Scoreboard* companies over the last decade.

As shown in previous *Scoreboard* editions and as confirmed in this trend analysis of the last decade, health (pharma, biotech and medical equipment) and ICT are sectors in which US companies clearly outperform EU companies (in terms of the number of companies, R&D investment and net sales). Both company data sources and official territorial statistics

confirm that the origin of the EU-US R&D intensity gap comes from the different industrial specialisation patterns of these regions, with the US dominating in the high-tech sectors. The evidence shows that these specialisation differences are being reinforced over the years. This suggests that the business environment for the creation and growth of these high R&D intensity/high value added companies needs to be markedly improved.

Figure S.4 R&D investment by main world region and sector group



For a sample of 255 EU and 376 US companies for which R&D investment data is available for all years 2003-11. The area of the pies approximately corresponds to the respective total R&D investment amount.

Sectors are split into four groups according to the R&D intensity of the sector worldwide:

High R&D intensity sectors (R&D intensity above 5%) include e.g. Pharmaceuticals & biotechnology; Health care equipment & services; Technology hardware & equipment; Software & computer services.

Medium-high R&D intensity sectors (between 2% and 5%) include e.g. Electronics & electrical equipment; Automobiles & parts; Aerospace & defence; Industrial engineering & machinery; Chemicals; Personal goods; Household goods; General industrials; Support services.

Medium-low R&D intensity sectors (between 1% and 2%) include e.g. Food producers; Beverages; Travel & leisure; Media; Oil equipment; Electricity; Fixed line telecommunications.

Low R&D intensity sectors (less than 1%) include e.g. Oil & gas producers; Industrial metals; Construction & materials; Food & drug retailers; Transportation; Mining; Tobacco; Multi-utilities.

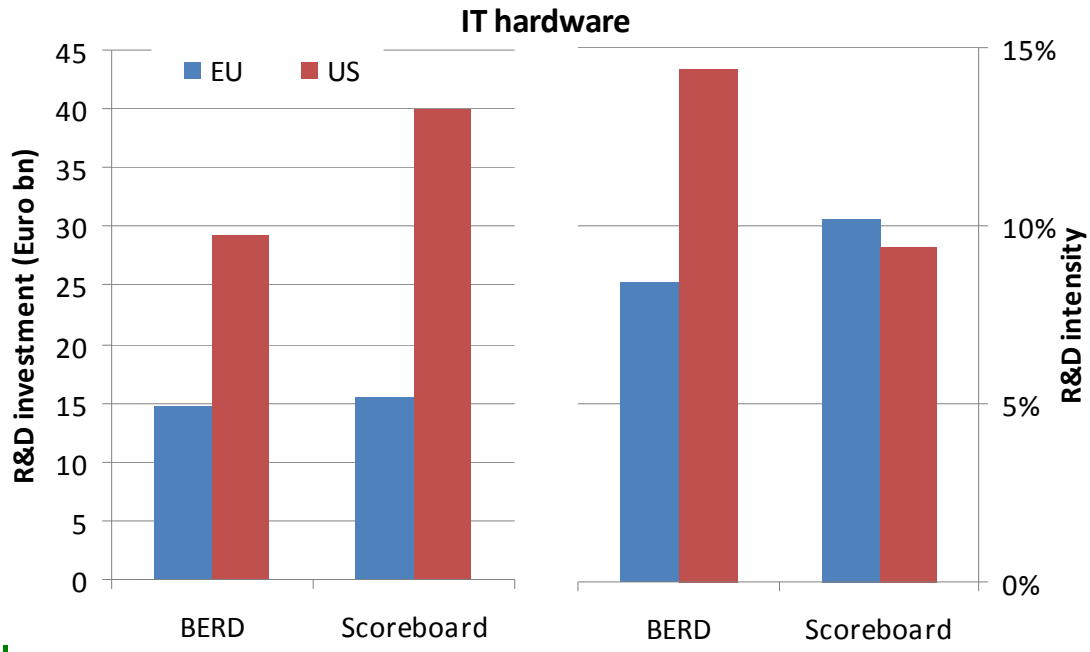
Source: The 2012 EU Industrial R&D Investment Scoreboard
European Commission, JRC/DG RTD.

Different delocalisation patterns of production and R&D in the two sectors accounting for most of the EU-US R&D intensity gap (ICT and health) raise different policy issues

A closer look at the origin of the R&D intensity gap in the main sectors concerned, namely, ICT and health, points to the importance played by the cross-border activities of individual companies (both in R&D and production/sales). Companies delocalise production and research facilities in different proportions which lead to substantial changes of the R&D intensity of source and destination countries and vary significantly from sector to sector. An important part of the EU-US R&D-intensity gap is due to a balance in favour of the US of the inward-outward research and production activities of subsidiaries of the multinational *Scoreboard* companies.

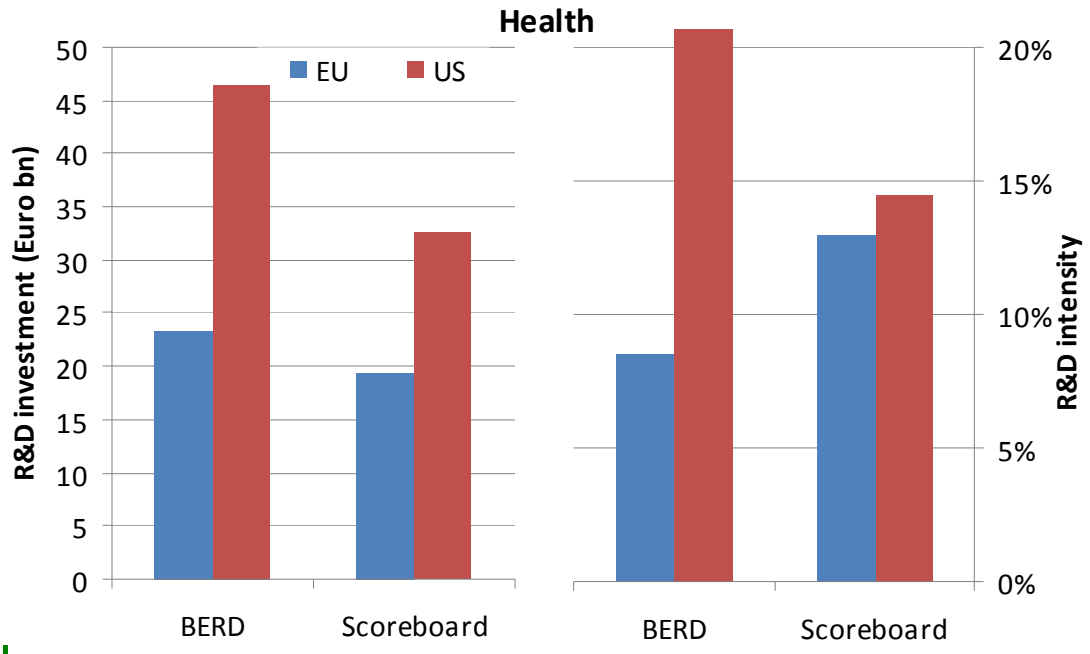
However further analysis is needed in order to look into the specificities of each sector. As shown in Figures S.5 and S.6 the situation in terms of R&D inflows and outflows in the US and in the EU for the IT-Hardware sector differs substantially from that observed in the Pharma. The evidence suggests that, while the US attracts considerable R&D from foreign companies in the Pharma and retains the great majority from their ICT companies, the EU needs to further increase its attractiveness as location for R&D FDI in both sectors.

Figure S.5 BERD vs. *Scoreboard* R&D investment and intensity in IT hardware



Source: The 2012 EU Industrial R&D Investment Scoreboard, European Commission, JRC/DG RTD.

Figure S.6 BERD vs. *Scoreboard* R&D investment and intensity in health

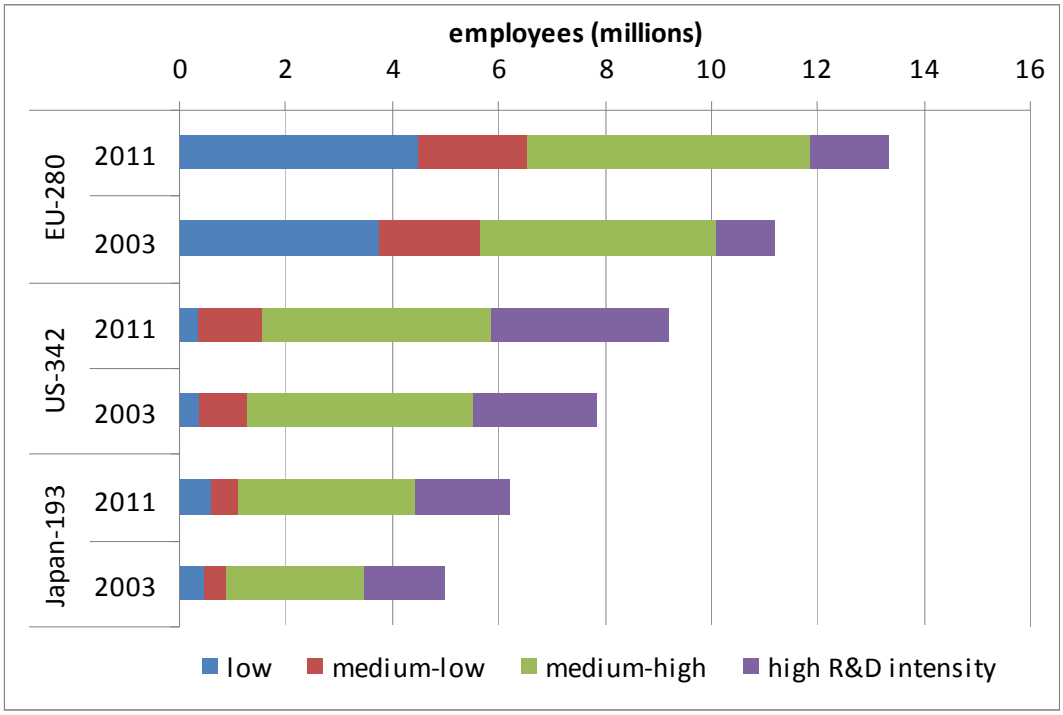


Source: The 2012 EU Industrial R&D Investment Scoreboard, European Commission, JRC/DG RTD.

Overall employment figures of *Scoreboard* companies increased by 22.3% during the period 2003-2011, led by increases in high R&D-intensive sectors (36.1%).

The distribution of this overall positive trend of employment varies for the different sectors and regions as shown in figure S.7. The figures refer to a set of companies that reported number of employees over the whole period 2003-2011. While in the EU and the US samples, employment growth was stronger in high-tech sectors (38% and 30% respectively), the evolution in the medium-high and low R&D intensive sectors differs substantially: In the EU both the medium-high and the low ones increased employment (20% and 19%); in the US the medium-high remained almost unchanged (0.8%) and the low R&D intensive one decreased sharply (-18.4%). The decline of the US car industry is the main responsible for the former (mostly due to Ford Motor and General Motors that account for 40% of the total employees by the US companies in that sector).

Figure S.7. Employment trends by the *Scoreboard* companies for main world regions.



Note: For 815 out of the top EU, US and Japanese companies in the 2012 Scoreboard that reported employment data for the whole period 2003-11.

Source: The 2012 EU Industrial R&D Investment Scoreboard
European Commission, JRC/DG RTD.

Introduction

In 2012, we started implementing changes in the "EU Industrial R&D Investment Scoreboard" (the *Scoreboard*)[2] aiming to enhance its capacity to monitor and analyse worldwide trends of industrial R&D. For background information on the *Scoreboard*, see Annex 1.

The scope of the *Scoreboard* will be improved progressively, increasing the geographic and time coverage and the number of companies. The target is to cover the world's top 2500 R&D investors so that further faster growing middle-sized companies can be captured, particularly those in key sectors such as health and ICT-related industries.

Thus far, the total R&D investment of companies included in the *Scoreboard* is equivalent to almost 90% of the total expenditure on R&D by businesses worldwide[3].

In this year's edition, the *Scoreboard* includes the **1500 companies investing the largest sums in R&D in the world** while maintaining an EU focus by complementing this coverage including the **top 1000 R&D investing companies based in the EU.**[4]

The *Scoreboard* collects key information to enable the R&D and economic performance of companies to be assessed. The main indicators (namely R&D investment, net sales, capital expenditures, operating profits and number of employees) are collected following the same methodologies, definitions and assumptions applied in previous years. This ensures comparability so that the companies' economic and financial data can be analysed over a longer period of time.

Data are now being collected by a new provider (Bureau van Dijk Electronic Publishing GmbH). The approach for collecting the *Scoreboard* data is basically the same as the one followed in previous editions. Please see the main methodological limitations summarised in Box 1 and the detailed methodological notes in Annex 2.

The capacity of data collection is further improved by gathering information about the ownership structure of the parent companies and the main indicators for their subsidiaries. This will allow for better characterisation of companies, in particular regarding the sectoral and geographic distribution of their research and production activities and the related patterns of growth and employment.

Companies' behaviour and performance can be analysed over longer time periods using our history database that contains information on the top R&D companies for the last 10 years. This will enable benchmarking analyses of companies to be carried out across sectors and countries, as a way of identifying, for example, companies showing outstanding economic or innovation results and to analyse the main factors underlying such successful dynamics.

In this year's edition of the *Scoreboard*, companies' R&D rankings are based on information taken from the companies' latest published accounts. For most companies these correspond to calendar year 2011, but a significant proportion have financial years ending in 31 March 2012. There are few companies included with financial years ending as late as end June 2012 and a few for which only accounts to end 2010 were available.

This report concentrates on the analysis of the world's top 1500 companies that invested more than approximately €35 million in R&D in 2011. The sample comprises companies based in the EU (405), the US (503), Japan (296) and other countries (296) including Switzerland, Taiwan, South Korea, China, India, Canada, Norway, Australia and a further 20 countries. A sample consisting of the top 1000 R&D investing

[2] The EU Industrial R&D Investment Scoreboard is published annually by the European Commission (JRC-IPTS/DG RTD) as part of its Industrial Research and Innovation Monitoring and Analysis activity (IRIMA). Company data were collected.

[3] According to latest figures reported by Eurostat, i.e. BERD financed by the business enterprise sector in 2008 compared with R&D figures in the 2009 Scoreboard.

[4] In this report, the term EU company refers to companies whose ultimate parent has its registered office in a Member State of the EU. Likewise, non-EU company applies when the ultimate parent company is located outside the EU (see also the glossary and definitions in Annex 2 as well as the handling of parent companies and subsidiaries).

companies based in the EU is analysed separately in chapter 6; these all have R&D investment exceeding €3.8 million.

The characteristics of the sample of 1500 companies used for most of the analysis are summarised in Table 1.

The sector and country composition of the EU 1000 sample is found in Annex 3.

In this reporting period, companies continued to face adverse market conditions due to the persistent effects of the global economic and financial crisis. These included difficulties in accessing finance because of the effects of the crisis on banks and reduced demand in countries struggling to reduce their debt burden. Nevertheless, this year's *Scoreboard* shows that company's investment in R&D continues to grow at a significant pace. However, as shown throughout the report, companies' patterns of investment and performance vary greatly across industrial sectors and between countries.

Report structure

Chapter 1 presents the overall worldwide trends of industrial R&D. It provides an overview of main indicators of the top 1500 companies ranked by level of R&D investment and the main changes that took place over the last year. The performance of companies over the period 2003-2011 is compared, looking at how the different world regions are recovering from the financial crisis.

The performance of individual companies among the top R&D investors is provided in Chapter 2. The list of the world top 100 R&D companies is examined highlighting those companies showing remarkable R&D and economic results and improvement in the R&D ranking over the last 10 years.

Chapter 3 presents an analysis of companies in the middle and low part of the R&D ranking using the *Scoreboard* history data. The objective is to identify companies that have shown outstanding trajectories in terms of sales and employment growth over the last ten years.

Chapters 4 and 5 analyse the main indicators of the company data aggregated by world regions and industrial sectors respectively, with comparisons between the EU companies and their main competitors.

Chapter 6 discusses the R&D and economic performance trends of the companies included in the extended sample consisting of the top 1000 R&D investors based in Member States of the EU.

Finally, chapter 7 presents an analysis of the difference of business R&D intensity between the EU and the US using national statistics and *Scoreboard* company data. The objective is to show industrial sectors accounting for the largest part of the EU-US R&D intensity difference and to underline the importance of taking into account companies' cross-border activities.

Annex 1 provides background and methodological information about how the *Scoreboard* is prepared. The methodological approach of the *Scoreboard*, its scope and the limitations are described in Annex 2 and the listing of companies ranked by their level of R&D investment is provided in Annex 3.

The complete data set is freely accessible online at: http://iri.jrc.ec.europa.eu/.

Our website is going to be adapted to allow a user-friendly and interactive access to the individual company data or groups of companies aggregated by industrial sector and country.

Table 1. Profile of the 2012 *Scoreboard* .	
Sample of 1500 companies with R&D investment above €34.9 million	
405 companies based in the EU	
Companies by country	DE 108; UK 81; FR 58; SE 26; NL 24; IT 22; DK 21; FI 14; ES 14; BE 12; EI 8; AU 7; PO 4; LU 4; SI 1; CZ 1
The most numerous sectors	Pharmaceuticals & Biotechnology 36; Industrial Engineering 35; Software & Computer Services 29; Automobiles & Parts 28; Electronic & Electrical Equipment 24; Chemicals 20; Aerospace & Defence 16
1095 companies based in non-EU countries	
Companies by country	US 503; Japan 296; China 56; Taiwan 47; Switzerland 40; South Korea 35; Cayman Islands 22; India 15; Australia 12, Canada 11, Brazil 7 and further 19 countries.
The most numerous sectors	Technology Hardware & Equipment 194; Pharmaceuticals & Biotechnology 119; Electronic & Electrical Equipment 96; Software & Computer Services 92; Industrial Engineering 79; Automobiles & Parts 72; Chemicals 72; Aerospace & Defence 28

Source: The 2012 EU Industrial R&D Investment Scoreboard. European Commission, JRC/DG RTD.

Box 1. Methodological caveats

The methodological limitations of the *Scoreboard* are basically the same as in previous editions. Users of the data should take into account these limitations, especially when performing comparative analyses (full description of methodology is found in Annex 2):

A typical problem arises when comparing data from different currency areas. The *Scoreboard* data are nominal and expressed in Euros with all foreign currencies converted at the exchange rate of the year-end closing date (31.12.2011). The variation in the exchange rates from the previous year directly affects the ranking of companies, favouring those based in countries whose currency has appreciated with respect to the other currencies. In this reporting period, exchange rates of the Euro against main currencies changed less than in past years. The Euro has depreciated against the US dollar, Japanese Yen and Pound Sterling by 3.5%, 7.5% and 2.3% respectively.

The growth rate of the different indicators for companies operating in markets with different currencies is affected in a different way. In fact, companies' consolidated accounts have to include the benefits and/or losses due to the appreciation and/or depreciation of their investments abroad. The result is an 'apparent' rate of growth of the given indicator that understates or overstates the actual rate of change. For example, this year the R&D growth rate of companies based in the Euro zone with R&D investments in Japan is partly overstated because the 'benefits' of their overseas investments due to the depreciation of the Euro against the Japanese yen (from ¥108.8 to ¥100.6). Conversely, the R&D growth rate of Japanese companies is partly understated due to the 'losses' of their investments in the Euro zone. Similar effects of understating or overstating figures would happen for other indicators, mainly for net sales.

The different editions of the *Scoreboard* are not directly comparable because of the year-on-year change in the composition of the sample of companies, i.e. due to newcomers and leavers. Every *Scoreboard* comprises data of several financial years allowing analysis of trends for the same sample of companies.

In most cases, the companies' accounts do not include information on the place where R&D is actually performed; consequently the approach taken in the *Scoreboard* is to attribute each company's total R&D investment to the country in which the company has its registered office. This should be borne in mind when interpreting the *Scoreboard*'s country classification and analyses.

Growth in R&D can either be organic, the outcome of acquisitions or a combination of the two. Consequently, mergers and acquisitions may sometimes underlie sudden changes in specific companies' R&D growth rates and/or positions in the rankings.

Other important factors to take into account include the difference in the various countries' (or sectors') business cycles which may have a significant impact on companies' investment decisions, and the initial adoption or stricter application of the International Financial Reporting Standards (IFRS)[5].

[5] Since 2005, the European Union requires all listed companies in the EU to prepare their consolidated financial statements according to IFRS (see: EC Regulation No 1606/2002 of the European Parliament and of the Council of 19 July 2002 on the application of international accounting standards at http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=CELEX:32002R1606:EN:HTML).

1. Overall trends in corporate R&D

This chapter provides an overview of changes in the main indicators of the 1500 companies that invested more than €35 million in R&D in 2011. Questions addressed include how companies are recovering from the financial crisis in terms of R&D, net sales and profits and how companies' behaviour compares across world regions.

In last year's *Scoreboard*, companies showed significant signs of recovery after the negative results of previous years due to the global economic and financial crisis that began in 2008.

This edition shows that companies continued to increase their R&D investments at a significant pace in 2011. This is especially important considering that in this period companies continued to face adverse market conditions and uncertainties due to the persistent effects of the crisis, in particular regarding the access to financing and reduction of demand in many countries.

On the other hand, as shown throughout this report, companies' patterns of investment and economic results greatly differ by type of company, industry and country.

Indicator change over the last year

The main economic and financial indicators for the year 2011 for the set of 1500 companies are summarised in Table 1.1.

Following the signs of recovery shown in the previous edition, this year's *Scoreboard* shows a continuation of the upward trend in worldwide R&D investment. In 2011, the 1500 *Scoreboard* companies invested €510.7 billion in R&D, 7.6% more than in 2010, compared with an increase of 4.0% in the year before. Three out of four companies showed positive R&D growth in 2011.

However, the recovery was much less pronounced in Japan which suffered from several country-specific problems. The major one was the Japanese earthquake and associated nuclear power station disaster. However, the Thai floods which affected many Japanese owned factories and the strong Yen also impacted Japanese companies. It is noticeable that 52% of the 25 Japanese companies in the top 100 had reduced sales in 2011 compared to only 18.7% of the non-Japanese companies. For this reason the EU/US comparison will be the main focus in later chapters.

The net sales of the 1500 companies increased at similar rate than R&D, 7.1%, less than the net sales increase of 9.6% in 2010. Operating profits increased by 9.7% compared with the 46% increase in the previous year.

Companies' investment in fixed capital recovered significantly (11.3%) after two consecutive years of decline (1.2% the previous year and 7.8% in the year before). The capital expenditure as percentage of net sales increased slightly from 6.5% in 2010 to 6.6% in 2011.

Table 1.1. Overall performance of the 1500 companies in the 2012 *Scoreboard.*	
Factor	***World-1500***
R&D investment, € bn *One-year change, %* *CAGR[6] 3yr, %*	510.7 7.6 3.1
Net Sales, € bn *One-year change, %* *CAGR 3yr, %*	15712.7 7.1 2.3
R&D intensity, %	3.3
Operating profits, € bn *One-year change , %* *Profitability, %*	1698.9 9.7 10.8
Capex[7], € bn Capex / net sales, % *One-year change , %*	893.1 6.6 11.3
Note: Calculation of growth rates and ratios include only companies for which data are fully available. *Source: The 2012 EU Industrial R&D Investment Scoreboard. European Commission, JRC/DG RTD.*	

Long-term performance of companies by world region

The annual growth rates of R&D investment and net sales and profitability of companies based in the EU, the US and Japan is provided respectively in Figures 1.1, 1.2 and 1.3 for the period 2003-2011. These figures are based on our history database comprising R&D and economic indicators over the whole 2003-2011 period for 1017 companies (EU 248, US 358 and Japan 241).

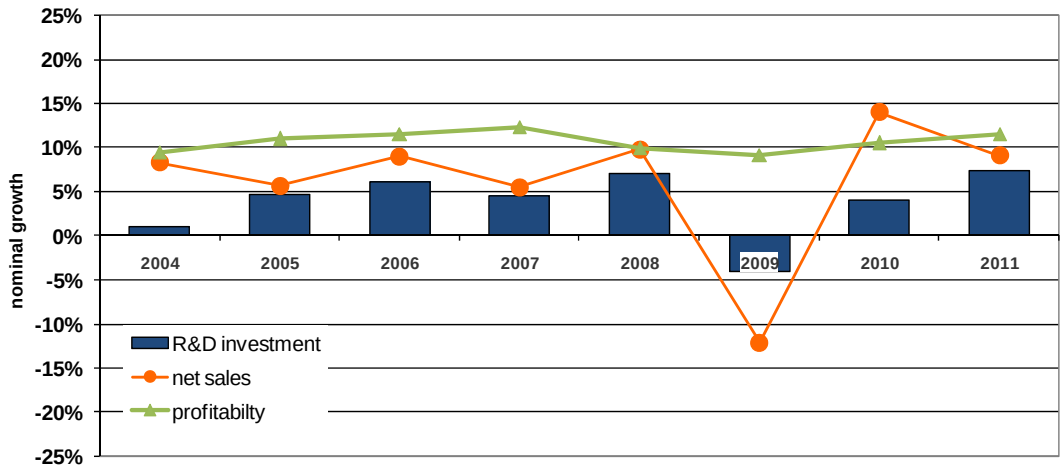
The trends observed in these figures show the behaviour of these companies including the effects of the crisis that began in 2008. The following points are observed:

- In terms of R&D growth, companies based in the EU and the US seem to have recovered to the levels prior to the crisis, whereas Japanese companies lag behind, probably because of special adverse factors such as the earthquake.
- The growth rate of net sales for companies based in the EU and the US was hit hard by the crisis in 2008-2009 but recovered strongly in 2010-2011 with the US companies outperforming the EU ones over the last year. Net sales of companies from Japan were somewhat less affected by the crisis in 2008-2009 but show a slow recovery in the past two years.

[6] Compound annual growth rate.
[7] Fixed capital investment

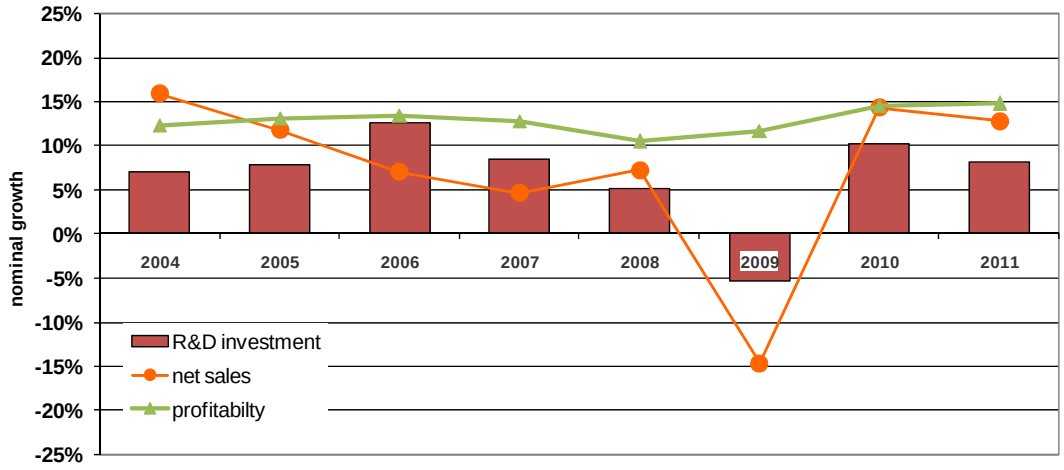
- Performance in terms of profitability show that US companies recover more rapidly from the crisis and have higher levels of profitability than EU and Japanese companies.

Figure 1.1. One-year R&D investment and net sales growth by the EU companies.



Note: for 248 EU out of the 1500 companies with R&D and net sales data for the whole period
Source: The 2012 EU Industrial R&D Investment Scoreboard
European Commission, JRC/DG RTD.

Figure 1.2. One-year R&D investment and net sales growth by the US companies.



Note: for 358 US out of the 1500 companies with R&D and net sales data for the whole period
Source: The 2012 EU Industrial R&D Investment Scoreboard
European Commission, JRC/DG RTD.

Figure 1.3. One-year R&D investment and net sales growth by the Japanese companies.

Note: for 241Japanese out of the 1500 companies with R&D and net sales data for the whole period
Source: The 2012 EU Industrial R&D Investment Scoreboard
European Commission, JRC/DG RTD.

2. Top R&D investing companies

This chapter describes the performance of individual companies, with a focus on the results of the top 100 R&D investors. These companies are analysed, highlighting those presenting important changes from the previous year and those showing the best performance in terms of R&D and economic growth.

The group of top 100 R&D investors includes major industrial players in key sectors such as IT hardware & software, pharmaceuticals and automobiles & parts. Sector-specific market trends to a large extent explain changes observed in the *Scoreboard* indicators for these companies. Examples of such driving factors for those sectors are described in Box 2.1

This year's R&D ranking of the top 50 companies is presented in Figure 2.1 and Table 2.1 shows changes in the top 50 ranking since the first *Scoreboard* in 2004.

Key findings

- The top R&D investor is the Japanese company Toyota Motor, which was in 4th place last year and in 1st place in the year before. Volkswagen, in the 3rd place, remains the leading EU firm in terms of R&D investments. Five of the other companies in the top-ten are from the US, plus two from Switzerland and one from South Korea.
- Results of the top 100 companies, accounting for 57.2 % of the total R&D investment by the 1500 companies, confirm the strong recovery of industrial R&D investment. Out of these 100 companies, 75 increased R&D investment (compared to 68 in 2010), including 43 companies with double-digit R&D growth; 71 companies reported an increase in sales (compared to 70 in 2009), including 34 companies with double-digit sales growth.
- The top 100 group includes 29 EU companies of which 22 have increased R&D (3 by over 20%), 34 US companies of which 27 increased R&D (7 by over 20%), 25 from Japan of which 13 increased R&D (2 over 20%) and 12 from other countries of which 8 increased R&D (3 over 20%). The companies showing the largest increase in R&D are Vale, Brazil (96.6 %), AstraZeneca, UK (72.8 %), Petroleo Brasiliero (67.9 %) and Huawei, China (48.4 %); those showing the largest decrease in R&D are NEC, Japan (-41.3 %), Eisai, Japan (-30.1 %), Nestle, Switzerland (-23.0 %) and Hyundai Motor, South Korea (-14.3 %).
- Among the top 100 group, 21 companies have at least doubled their net sales over the past 10 years. These companies are mainly from high R&D-intensive sectors (14) and are mostly based in the US (13) and in the EU (5). In this group of high-performance companies, 12 of them have grown R&D since 2004 so to reach the group of top 100 R&D investors (8 US companies and 2 EU companies).

General trends

In the 2012 *Scoreboard* 110 companies have an R&D investment of more than € 1 bn (33 from the EU) while 51 have R&D exceeding € 2 bn (15 from the EU).

The top 10 companies each invested more than € 5 bn in R&D and account for 13.5 % of the total R&D investment by the 1500 *Scoreboard* companies, a similar proportion to last year, and somewhat less than in 2004[8] (16%).

[8] The 2004 Scoreboard contained fewer companies, however.

This year the top R&D investor is the Japanese company Toyota Motor (€ 7.75 bn) which was fourth in last year's edition but number one in 2010's. The largest EU firm in terms of R&D investment is Volkswagen (€ 7.20 bn) now in world's 3rd position. There are five US companies in the top ten: Microsoft (€ 7.58 bn), Pfizer (€ 6.81 bn), General Motors (€ 6.28 bn) and Merck US (€ 6.09 bn). The other companies in the top ten are Novartis (€ 7.0 bn) from Switzerland, Samsung Electronics (€ 6.86 bn) from South Korea and Roche (€ 6.78 bn) from Switzerland.

The top 100 companies invested € 291.59 billion, accounting for 57.2% of the total R&D investment by the 1500 *Scoreboard* companies. The EU has 29 companies among the top 100 R&D investors, the same it had in the 2011 *Scoreboard*. The US has 34 companies, one fewer than it had last year (Biogen Idec). Japan has 25 companies, the same as in last year's Scoreboard.

Seventy-five companies in the top 100 have shown positive R&D investment growth. Among them, 43 companies had double-digit R&D growth, and of these, 26 companies also showed double-digit growth in net sales.

Most of the top 100 companies showing the largest R&D increases are in the ICT sectors, e.g. Huawei (48.4%), LG (47.8%), Google (37.2 %), and Apple (36.3%). Companies from the Automobiles & parts sector also achieved remarkable results, e.g. BMW (21.6%), Aisin Seiki (20.2 %), Delphi (87.9%), Renault (19.4%).

Other companies among the top 100 group have shown double-digit R&D and net sales growth, e.g. Vale and Petroleo Brasileiro from Brazil; Intel, Monsanto and Caterpillar and Qualcomm from the US.

Twenty-four companies in the top 100 have decreases R&D investments. Among these, four companies decreased R&D investments and net sales by more than 10 %: NEC and Eisai from Japan (-41.3 % and -30.1 % respectively), Nestle from Switzerland (-23.0 %) and Hyundai Motor from South Korea (-14.3 %).

The R&D intensity of companies in the top 100 has increased slightly due to higher rate of increase for R&D (8.1 %) than for net sales (5.7 %). The EU companies in the top 100 have a higher average R&D intensity (7.0 %) than that of non-EU companies (6.3 %).

The EU companies in the top 100 are mainly from the Automobile & Parts (11), Pharmaceuticals & Biotechnology (7) and ICT-related sectors (6), whereas the non-EU companies are mainly from ICT-related sectors (28), Pharmaceuticals & Biotechnology (15), and Automobile & Parts sectors (8).

Box 2.1. Specific market conditions for key industries

In many cases, sector-specific factors explain why certain companies are going up while others are falling down or struggling to stay where they are. Examples where the top 50 R&D investors are involved are as follows:

Smartphone Market. Mobile phones were originally an EU-led market with Nokia and Ericsson leading the way and Nokia for many years having the largest global market share. Research in Motion (RIM) with its email capable Blackberry was probably the first company to produce something resembling a smartphone that sold in large numbers. The big change has been that these three companies have all lost ground to new players, namely Apple and Google/Samsung. What seems to have happened is that hardware has ceased to be the key factor and software (Android vs. iOS) has become the key differentiator. Google and Apple are better at software. Note that several of the top 50 risers are software companies – Oracle, Google, Microsoft and part of Qualcomm. The latest global market share figures for smartphone operating systems are Google/Android 75%, Apple/iOS 14.9%, RIM/Blackberry 4.3%, Nokia/Symbian 2.3%, Microsoft 2%, Linux the rest (according to the analyst firm IDC, results for the third quarter of 2012).

The other side of the coin is that some of the more traditional electronics, computing, telecoms companies are finding life more difficult – Sony, Ericsson, Nokia, Toshiba, NTT, HP, Alcatel-Lucent, Fujitsu being examples. Intel is trying to compete with ARM on low power processors for mobiles and smartphones since it sees smartphones and tablets growing much faster than its traditional PC market. HP's PC operations are suffering for the same reason.

Pharma Market. The top 50 big pharmaceutical companies are suffering from the problem of blockbuster drugs coming off patent while at the same time it is getting harder for their R&D departments to come up with new blockbusters. This had led to three trends;

- A lot of M&A activity with many of the top 50 risers from 2004-12 rising because of major acquisitions – Pfizer is a classic example (and has also suffered from Lipitor, the world's best selling drug, coming off patent in late 2011).
- The growing importance of generic drugs – at least one Big Pharma company Novartis - foresaw the growing importance of this and has built a large generics arm, Sandoz, the second largest generics company in the world.
- The growing importance of biotech companies, which Big Pharma has been using to refresh its pipelines both by acquisition and in-licensing of biotech's later stage drugs. The US has developed the world's largest biotech sector but there are a number of excellent EU biotech companies too.

Car Market. Automotive R&D is driven by stricter standards on vehicle emissions and fuel consumption; product differentiation to meet customer satisfaction and cost reduction due to tougher worldwide competition including the emergence and growth of new Asian manufacturers. Consolidation has been necessary to preserve industry profitability, i.e. an automotive company to succeed needs to be large to cope with high model development and launch costs and to get keen supplier prices or to be a smaller niche specialist in higher priced cars. Companies in this sector have been hit hard by the economic crisis in terms of sales, market capitalisation and particularly operating profit. However, under this pressure, automakers seem more reluctant to reduce R&D investment levels than capital. Indeed, in this year's *Scoreboard* top players in this industry show a substantial increase of R&D. Automotive suppliers like Robert Bosch, Continental and Johnson Matthey also show double digit increases in R&D.

R&D changes driven by Mergers and Acquisitions (M&As)

The growth in R&D investment may either be organic or driven by M&As, or it may be a combination of the two. M&As (or demergers) may take place within or between regions/sectors and can significantly impact the ranking of companies in the *Scoreboard*. While acquisitions are not systematically captured in this report, some examples that had a significant effect on companies in the top positions are provided in Table 3 below. On the other hand, it is also important to remark companies that showed significant R&D growth in 2011 without being involved in recent mergers and acquisitions. This is the case of Huawei, LG, BMW and AstraZeneca.

Table 2.1. Merger and acquisition activity involving *Scoreboard* companies.

Company (R&D in 2011, € m)	*World rank*	*Recent operations*
Toyota (€7.75 bn)	1	Acquired Kanto Auto Works and Toyota Auto Body
Microsoft (€7.58 bn)	2	Acquired Skype; Videosurf; Twisted Pixel and Prodiance
Volkswagen(€7.20 bn)	3	Acquired MAN SE; Porsche Holding Salzburg's automobile trading business
Novartis (€7.0 bn)	4	Took majority stake in Zhejiang Tianyuan Biotech and gained full control of Alcon
Samsung Electronics (€6.86 bn)	5	Acquired Grandis and Samsung Gwangju Electronics and cut stake in Samsung Techwin
Pfizer (€6.81 bn)	6	Acquired Excaliard Pharmaceuticals, King Pharmaceuticals, Icagen and Ferrosan's customer health care business
Roche (€6.78 bn)	7	Acquired Anadys Pharmaceuticals
Panasonic (€5.17 bn)	13	Acquired the business of Starling Advanced Communications, Sanyo Electric and Panasonic Electric Works. Sold Xiangnan Energy to Hunan Corun New Energy Panasonic
Sanofi (€4.79 bn)	16	Acquired Genzyme, completed acquisition of BMP Sunston and sold dermatology business to Valeant
Google (€3.99 bn)	26	Completed acquisition of ITA Software. Acquired eBook Technologies SayNow, BeatThatQuote.com, zynamics, Pushlife, ITA Software, Talkbin, Brandenburg solarpark, PostRank, Clever Sense, Apture Katango, SocialGrapple, DailyDeal, Zagat, The DealMap, PittPatt, Punchd Labs and SageTV. Google acquired Motorola Mobility in May 2012, primarily for its patent portfolio.

Source: The 2012 EU Industrial R&D Investment Scoreboard.
European Commission, JRC/DG RTD.

Long-term performance of top R&D companies

This section analyses the behaviour of the top companies over the last 10 years based on our history database containing company data for the period 2002-2011. Results of companies showing outstanding R&D and economic results are underlined.

Ranking of top 50

Table 4 shows the evolution of the R&D rankings of the top 50 companies since the first *Scoreboard* in 2004) and most important changes are highlighted. It is important to note, as stated in the previous section and in past reports, that the growth of companies is often accompanied by mergers and acquisitions.

There are 15 EU companies (18 in 2004) and 35 non-EU companies (32 in 2004). In the EU group, four companies left the top 50 (Philips, Istituto Finanziario Industriale, Renault and BAE Systems) and one company joined the top 50 (Boehringer Ingelheim). In the non-EU group, seven companies left the top 50 (Matsushita Electric, NEC, Motorola, Nortel Networks, Wyeth, Delphi and Sun Microsystems) and ten companies joined the top 50 (Panasonic, Oracle, Boeing, Google, Abbott Laboratories, Takeda Pharmaceuticals, Denso, Hewlett-Packard, LG and Qualcomm).

The EU companies that improved by at least 10 ranks are Boehringer Ingelheim (now ranked 46th) and Sanofi (now 16th). The latter was created after 2004 and is an example of R&D growth driven by M&As.

There are 15 non-EU companies that gained more than 10 ranks. They include Google, up more than 200 places (now 26th), Panasonic, up 134 (now 13th), Qualcomm, up 87 (now 50th), Huawei, up more than 50 (now 41st), Oracle, up 40 (now 27th).

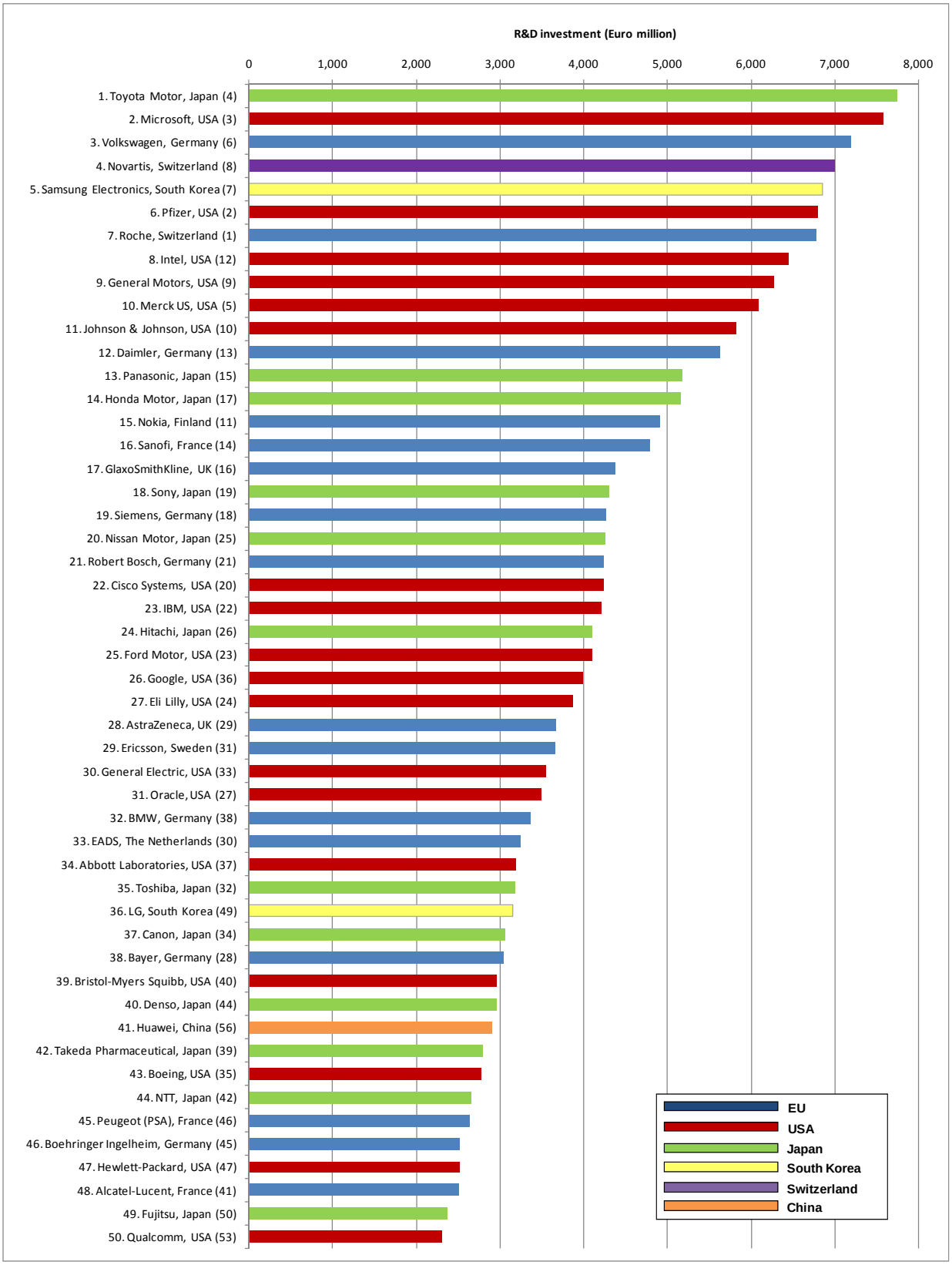
Companies which dropped ten or more ranks but remained within the top 50 are, among others, Siemens (now 19th), IBM (now 23rd), Ford Motor (now 25th), Ericsson (now 29th), NTT (now 44th), Hewlett-Packard (now 47th), and Fujitsu (now 49th).

High-performance companies among the top 100

Twenty one companies have at least doubled their net sales over the past ten years (see Chapter 3 on high-performance companies). Among these companies, 13 are based in the US, 5 in the EU and 3 in the rest of the world. Most of these companies (14) operate in high R&D intensive sectors.

Twelve out of these twenty one companies entered the list of the top 100 R&D investors in the period, rising from lower rankings in 2003. The largest proportion of these companies are based in the US, 8 out of 12 companies, with the remaining 4 companies based two each in the EU and the rest of the world (see Table 2.3).

Figure 2.1. The world's top 50 companies by their total R&D investment in the 2012 Scoreboard



Note: The number in brackets after the names of the companies indicates the rankings in the 2004 Scoreboard.
Source: The 2012 EU Industrial R&D Investment Scoreboard, European Commission, JRC/DG RTD.

Table 2.2. R&D ranking of the top 50 companies in the 2004 and 2012 *Scoreboards*.

Rank in 2011	Company	Rank change 2004-2012
1	Toyota Motor	up 4
2	Microsoft	up 11
3	Volkswagen	up 5
4	Novartis	up 16
5	Samsung Electronics	up 28
6	Pfizer	down 4
7	Roche	up 11
8	Intel	up 6
9	General Motors	down 3
10	Merck US	up 19
11	Johnson & Johnson	up 1
12	Daimler	down 9
13	Panasonic	up 134
14	Honda Motor	up 2
15	Nokia	down 5
16	Sanofi	up 39
17	GlaxoSmithKline	down 6
18	Sony	down 3
19	Siemens	down 15
20	Nissan Motor	up 14
21	Robert Bosch	up 5
22	Cisco Systems	up 9
23	IBM	down 14
24	Hitachi	nil
25	Ford Motor	down 24
26	Google	up > 200
27	Eli Lilly	up 14
28	AstraZeneca	down 3
29	Ericsson	down 12
30	General Electric	up 7
31	Oracle	up 40
32	BMW	down 4
33	EADS	up 2
34	Abbott Laboratories	up 18
35	Toshiba	down 5
36	LG	up 74
37	Canon	up 2
38	Bayer	down 6
39	Bristol-Myers Squibb	up 3
40	Denso	up 12
41	Huawei	up > 50
42	Takeda Pharmaceutical	up 30
43	Boeing	up 14
44	NTT	down 23
45	Peugeot (PSA)	down 7
46	Boehringer Ingelheim	up 16
47	Hewlett-Packard	down 24
48	Alcatel-Lucent	down 1
49	Fujitsu	down 13
50	Qualcomm	up 87

Note : Companies in "blue" went up more than 20 ranks and companies in "red" lost more than 10 ranks.

Source: The EU Industrial R&D Investment Scoreboards 2012 and 2004. European Commission, JRC/DG RTD.

Table 2.3. Companies among the top 100 R&D investors achieving high performance over the past ten years*.

Company	*Country*	*Sector*
Google	USA	Internet/software
Celgene	USA	Biotechnology
Apple	USA	Computer hardware
Amazon.com	USA	General retailers
Vale	Brazil	Mining
Broadcom	USA	Semiconductors
ZTE	China	Telecommunications equipment
Qualcomm	USA	Telecommunications equipment
Monsanto	USA	Food producers
Continental	Germany	Automobiles & parts
Novo Nordisk	Denmark	Pharmaceuticals
Caterpillar	USA	Commercial vehicles & trucks

** These companies increased net sales by more than 100 % from 2003 to 2011 and increased R&D becoming part of the group of top 100 R&D investors.*

Source: The 2012 EU Industrial R&D Investment Scoreboard. European Commission, JRC/DG RTD.

3. High-performance companies

This chapter analyses a sample of Scoreboard companies that have shown good performance over the last decade. These "high-performers" have been identified on the basis of their net sales growth (all have at least doubled net sales over this period) and their R&D intensity (companies with at least 2% of their net sales invested in R&D have been selected). The sample of these companies is analysed by region and by sector. A rank of the top-50 performing companies based on their net sales growth is also presented. Only companies with positive recent net sales growth, positive employment growth, and with positive profitability are included.

Key Findings

- One out of four companies among the top 1500 R&D performers has more than doubled their sales in the last decade, keeping at least the intensity of their R&D investments (measured as a proportion of net sales) above 2%. The sample of these "high-performers" is concentrated on high-tech sectors (accounting for two thirds). The sales increases reflect both acquisitions and organic growth and it has not been possible from the information available to identify the relative proportions of these two types of growth.
- The US has larger numbers than the EU of these high-performing companies operating in high-tech sectors. The US has 38% of companies in the entire sample but 59% of the high performers; the EU has 38% of the entire sample but 30% of the high performers. US based companies outnumber EU based ones in Semiconductors, Biotechnology, Telecommunication equipment, and Health Care equipment & Services.
- High-performing companies operating within the Pharmaceutical and Biotechnology and Software & Computer Services sectors show particularly remarkable results. Companies within the Pharmaceutical and Biotechnology sector show the highest average sales growth. Software & Computer services companies have the highest R&D and employment growth, and the highest profitability.
- Among the top 50 high-performers, Technology hardware & equipment and Pharmaceuticals and Biotechnology sectors are the most predominant ones, accounting for more than half of the total. Of these 50 companies, 33 are from the US, only 8 are from the EU with the remaining 9 based in other parts of the world.

High performing companies

The identification of "high-performers" among the R&D top investors of the Scoreboard has been made on the basis of a sample of companies for which data is available for the whole period 2002-2011.

The basic dataset consists of 1156 companies. However, in order to make the EU sample comparable with non-EU companies, the analysis only includes EU companies with R&D levels comparable to those of the non-EU companies. Therefore, all companies included had an average R&D investment over the last 10 years of at least €30m; this leaves us with a sample of 922 companies.

For the purpose of this analysis, “high-performers” have been defined as companies that have at least doubled net sales over the period (this corresponds to an average annual growth of around 8%). Companies that invest less than 2% of their net sales on R&D have been excluded. This identification exercise has resulted in a list of 242 companies (around 25% of the sample). Additional criteria have been applied to select the top 50 from these 242.

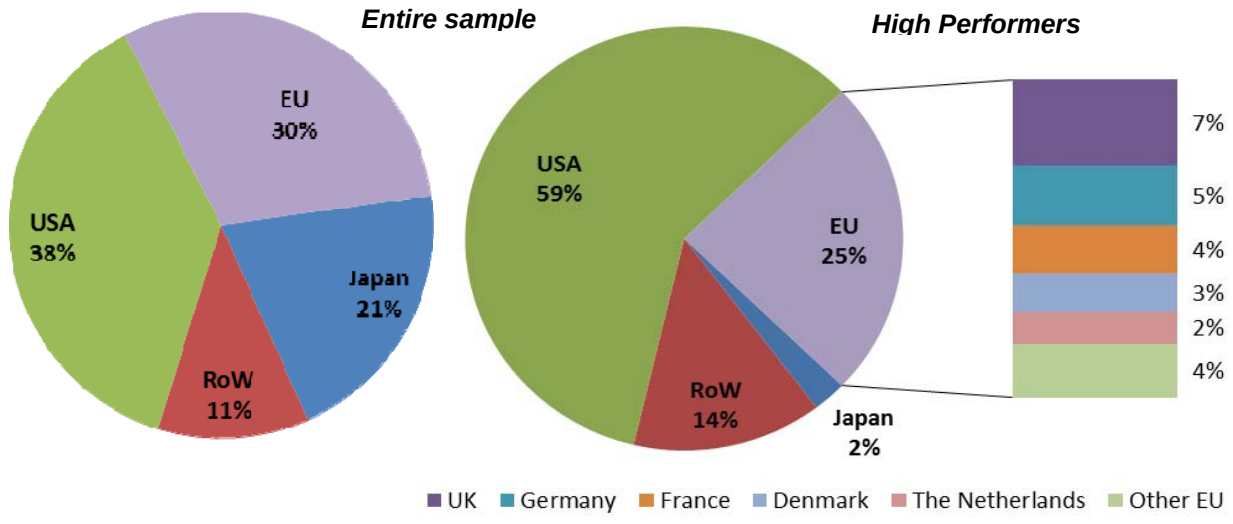
Geographical distribution

Figure 3.1 compares the geographical distribution of companies in the entire sample (left) with the distribution of high-performers (right).

It follows from the figure that Japan accounts for 21% of the companies of the entire sample, but only few of those are high-performers. In fact, they only account for 2% of the world's high-performing companies. Conversely, for the US the relation is quite the opposite. In fact, US companies represent 59% of the high-performing companies, whereas they account for just 38% of the entire sample. For the EU and the Rest of the World (RoW) the proportion of the high-performers is closer to that of the entire sample with the EU being somewhat lower and RoW somewhat higher.

The country shares of EU companies are reported in the right hand bar of Figure 3.1. For instance, UK companies account for 7% of the high-performers around the world.

Figure 3.1. ***Geographical distribution of the scoreboard companies and its high-performers***



Source: The 2012 EU Industrial R&D Investment Scoreboard, European Commission, JRC/DG RTD.

Sector distribution

Figure 3.2 shows how the sample of high performing companies is distributed among three macro sectors which group different industries according to their R&D intensity: High R&D intensity sectors, Medium-High R&D intensity sectors, and a combined category which includes Medium-Low and Low R&D intensity sectors (a precise definition of the sectors is given in Box 5.1). For comparison, on the left hand side of the figure the distribution for the entire sample is reported.

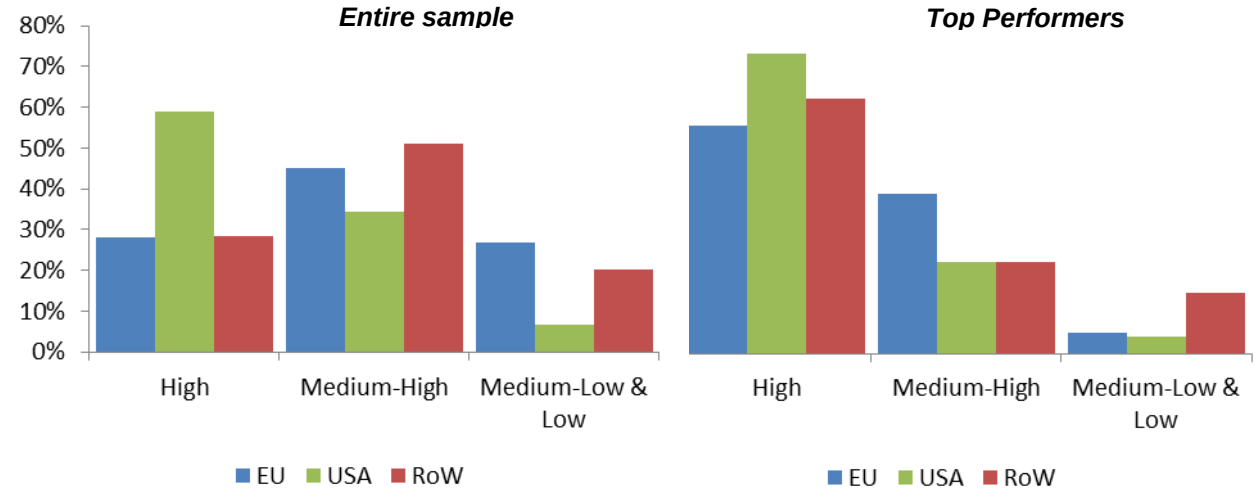
Since Japan only accounts for 2% of global high-performers, meaning 6 companies, it is included in the category Rest of the World in the following analysis of sector distribution.

The EU and RoW have relatively fewer companies in the High R&D intensity sectors compared to the US (left side), but the proportion of top performers is more similar (right side) among the different geographical regions. This is due to the fact that a relatively bigger proportion of High R&D intensity companies in the EU and the RoW are high-performers.

In all the tree regions, the High R&D intensity sector is the one with the largest share of high-performing companies.

EU and RoW show a higher concentration in the Medium-High R&D sectors compared to US. Whereas the EU has similar proportion of high-performers, a relatively low proportion of companies operating in the Medium R&D sectors in the RoW countries are high-performers.

Figure 3.2: High-performers' sectoral distribution (R&D intensity sector)

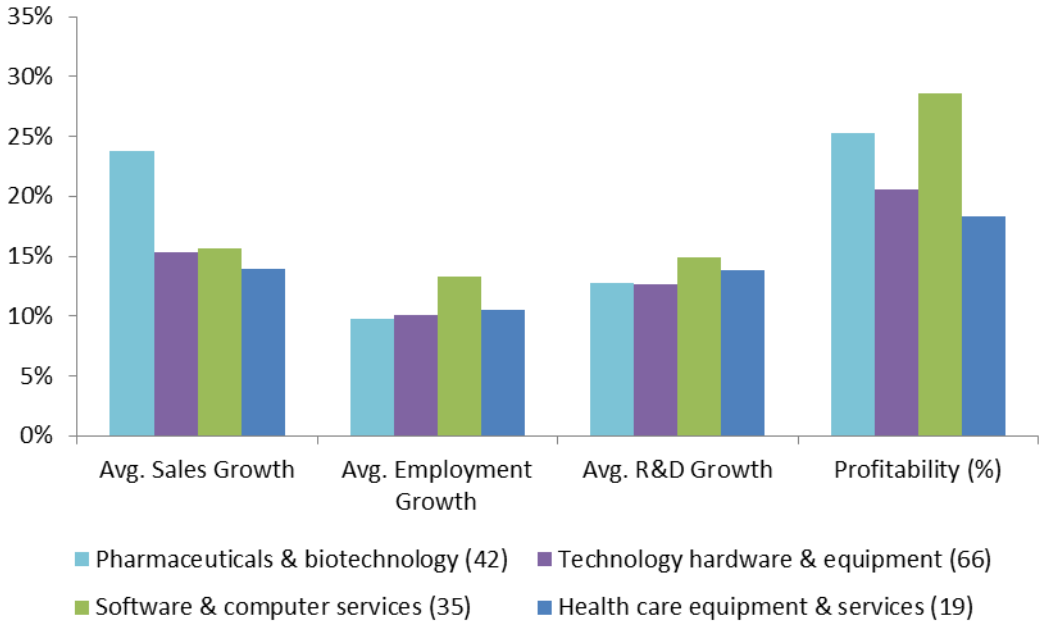


Source: The 2012EU Industrial R&D Investment Scoreboard, European Commission, JRC/DG RTD.

Figure 3.3 takes a closer look at the High R&D intensive sectors, where a larger proportion of firms show good net sales growth over the last ten years. Companies are grouped according to the 3-digit ICB classification and apart from the average annual growth rates

for sales, other performance indicators are shown: employment growth, R&D spending growth and the profitability of different industries.

Figure 3.3: High-tech industries' performance indicators (ICB 3-digit)



Note: The figure reports averages of annual growth rates over firms in the respective sectors. Numbers in brackets refer to the number of firms in the respective sectors.

Source: The 2012 EU Industrial R&D Investment Scoreboard, European Commission, JRC/DG RTD.

Companies operating within the Pharmaceutical & Biotechnology and Software & Computer Services sectors show particularly remarkable results.

Firms within the Pharmaceutical and Biotechnology sector show the highest average sales growth (23.7%). It should be noted, however, that this sector has probably had the highest proportion of M&A activity over the period. This sector also has a very high return on sales, only outperformed by Software & Computer Services firms (25.3% against 28.6%). Software & Computer Services companies combine the highest return on sales with the highest growth of both employment and R&D.

Table 3.1: Sectoral and regional distribution of high-performers

ICB 3-digit classification	ICB 4-digit classification	EU	US	ROW	Total
High R&D intensity Sectors					
Technology hardware & equipment	Semiconductors	5 (56%)	26 (48%)	8 (40%)	39 (47%)
Technology hardware & equipment	Telecommunications equipment	3 (38%)	13 (57%)	4 (57%)	20 (53%)
Technology hardware & equipment	Computer hardware	2 (67%)	5 (33%)		7 (23%)
Pharmaceuticals & biotechnology	Pharmaceuticals	7 (41%)	12 (63%)	5 (28%)	24 (44%)
Pharmaceuticals & biotechnology	Biotechnology	3 (60%)	14 (78%)	1 (50%)	18 (72%)
Software & computer services	Software	8 (57%)	18 (51%)	3 (100%)	29 (56%)
Software & computer services	Computer services	2 (33%)	1 (17%)		3 (21%)
Software & computer services	Internet		3 (100%)		3 (100%)
Health care equipment & services	Health care equipment & services	3 (25%)	13 (62%)	3 (50%)	19 (49%)
Leisure goods	Leisure goods			1 (13%)	1 (5%)
Medium-High R&D intensity Sectors					
Electronic & electrical equipment	Electronic equipment	3 (38%)	8 (50%)	3 (11%)	14 (27%)
Electronic & electrical equipment	Electrical components & equipment	3 (30%)	2 (50%)	2 (18%)	7 (28%)
Aerospace & defence	Aerospace & defence	5 (42%)	6 (35%)	1 (25%)	12 (36%)
Industrial engineering	Commercial vehicles & trucks	1 (33%)	4 (57%)		5 (33%)
Industrial engineering	Industrial machinery	3 (10%)	1 (10%)		4 (7%)
Automobiles & parts	Automobiles & parts	4 (17%)	2 (12%)	2 (8%)	8 (12%)
Household goods & home construction	Household goods & home construction	1 (14%)	3 (38%)		4 (21%)
Chemicals	Chemicals	1 (6%)	3 (16%)		4 (6%)
Support services	Support services	1 (33%)	1 (25%)		2 (22%)
Personal goods	Personal goods	1 (20%)		1 (25%)	2 (15%)
Travel & leisure	Travel & leisure		1 (25%)		1 (13%)
General industrials	General industrials		1 (13%)		1 (3%)
Medium-Low R&D intensity sectors					
Oil equipment, services & distribution	Oil equipment, services & distribution		2 (50%)	1 (100%)	3 (43%)
Food producers	Food producers	1 (13%)	1 (20%)	1 (20%)	3 (17%)
General retailers	General retailers		2 (100%)		2 (67%)
Media	Media		1 (50%)		1 (14%)
Alternative energy	Alternative energy	1 (100%)			1 (100%)
Low R&D intensity sectors					
Construction & materials	Construction & materials			2 (17%)	2 (9%)
Banks	Banks	1 (13%)		1 (100%)	2 (22%)
Mining	Mining			1 (100%)	1 (33%)
Total		**59 (25%)**	**143 (42%)**	**40 (16%)**	**242 (29%)**

Note: share of top performing firms over the total number of firms operating in the same sector are reported in brackets. Total row shares are calculated considering only sectors with high-performing firms.

Source: The 2012 EU Industrial R&D Investment Scoreboard, European Commission, JRC/DG RTD.

The Semiconductor sector is the one with the most high-performing companies, of which most are based in the USA, with 26 companies compared to 5 in the EU and a total of 39 for all regions. The Biotechnology sector has 14 out of 18 companies from the US and is by far the one with the highest share of high-performing companies (72%).

In the subsequent sectors of the table, ordered by the number of companies in each sector, the US also has the lion's share of the high-performing companies. Overall, for these sectors about 40% of US companies are high-performers, whereas EU and RoW have lower shares of high-performers within these sectors (25% and 16% respectively).

For Technology Hardware & Equipment, Pharmaceuticals & Biotechnology, Software & Computer Services, and Health Care Equipment & Services sectors the differences between the EU and the US are also big, with the US having more high-performing companies in absolute terms, with 105 compared to 33 for the EU.

However, in relative terms, the EU has a higher share of high-performing companies in the Semiconductor and Software sectors.

For EU companies with R&D spending below €30m, not included in the above analysis, the proportion of high-performing companies is almost the same as that amongst the EU higher R&D spenders. This also holds for the sectoral distribution.

Top 50 high-performers

Among the high performers, a ranking of the top 50 has been created.

The companies are ranked on the basis of average net sales growth over the last decade. Moreover, only companies with positive recent net sales growth and positive employment growth are included. They must also have positive profitability in the last year with available data, 2011. Table 3.2 reports the top 50 companies.

There are several companies in the list that have made large acquisitions. Examples include Sanofi-Aventis and Teva Pharmaceutical Industries. But all meet the inclusion criteria and many of the companies listed have achieved all or the majority of their sales growth organically.

Among the top 50 performers 15 operate in the Technology hardware & equipment sector, which consists of the Computer hardware, Semiconductors, and the Telecommunications equipment subsectors. Some 13 firms operate in the Pharmaceuticals & Biotechnology sector. These two sectors represent more than half of top performing companies.

Another highly represented group of companies operates within the Software subsector with 7 companies.

Within top 50 high performers 9 firms have an R&D investment of more than 1 billion which place them in the top 100 global R&D investors, (see Chapter 2).

Finally, 33 companies are from the US, only 8 are from the EU and the remaining 9 are based in other parts of the world (with two each from Switzerland and Taiwan).

Table 3.2: Top 50 high-performing companies over the period 2002-2011

Rank	Company	Sector	Country	Annual Sales Growth 2011/2002, (%)	Annual Employment Growth 2011/2002 (%)	Annual R&D Growth 2011/2002 (%)	R&D 2011 €m	Profitability 2011 (%)
1	Alexion Pharmaceuticals	Biotechnology	US	75.5	19.5	7.4	106	31.2
2	Cubist Pharmaceuticals	Biotechnology	US	64.4	11.4	14.9	143	19.0
3	Google	Internet	US	48.6		47.5	3989	32.0
4	Gameloft	Software	France	40.8	50.1	51.5	87	12.8
5	Celgene	Biotechnology	US	40.1	23.8	34.1	1131	26.9
6	HTC	Telecommunications equipment	Taiwan	37.5		33.8	407	14.9
7	Nuance Communications	Software	US	35.2	36.8	25.5	139	7.4
8	Apple	Computer hardware	US	34.6	20.1	18.4	1877	31.2
9	Gilead Sciences	Biotechnology	US	32.1	13.7	25.5	929	45.8
10	IMMSI	Automobiles & parts	Italy	31.8	6.2	6.3	69	5.2
11	Salix Pharmaceuticals	Pharmaceuticals	US	29.0	15.4	17.5	81	26.4
12	Red Hat	Software	US	28.2	23.3	25.5	159	17.6
13	F5 Networks	Telecommunications equipment	US	27.7		23.9	107	30.4
14	Biogen Idec	Biotechnology	US	27.7	8.5	25.3	943	34.3
15	Amazon.com	General retailers	US	27.6	21.7	24.5	1637	1.8
16	Pou Chen	Personal goods	Taiwan	25.9		24.1	141	7.4
17	Bruker	Health care equipment & services	US	25.6	21.7	20.3	133	9.8
18	Medicines	Pharmaceuticals	US	25.0	10.7	11.4	85	12.0
19	Juniper Networks	Telecommunications equipment	US	23.8	21.5	21.5	794	14.8
20	SanDisk	Semiconductors	US	23.0	20.8	22.0	357	27.0
21	Hologic	Health care equipment & services	US	23.0	23.8	25.4	90	21.0
22	ANSYS	Software	US	22.5	15.2	18.1	83	38.4
23	eBay	General retailers	US	22.4	18.7	27.1	1118	20.4
24	Garmin	Leisure goods	Switzerland	21.8	19.7	26.9	231	20.4
25	Finisar	Telecommunications equipment	US	21.4	17.2	9.1	113	4.1

26	Sun Pharmaceutical Industries	Pharmaceuticals	India	21.0		16.4	42	31.9
27	Pace	Telecommunications equipment	UK	20.7	4.4	14.9	131	3.3
28	Vale	Mining	Brazil	20.6	19.1	30.4	1190	48.6
29	Broadcom	Semiconductors	US	20.3	15.1	11.8	1533	12.9
30	Cree	Semiconductors	US	20.3	19.3	15.2	111	3.4
31	ResMed	Health care equipment & services	US	20.0	10.9	20.1	85	21.2
32	FLIR Systems	Aerospace & defence	US	19.9	22.1	18.4	114	20.3
33	Axis	Computer hardware	Sweden	19.7	12.0	15.5	54	17.2
34	Teva Pharmaceutical Industries	Pharmaceuticals	Israel	19.0	17.2	17.6	835	17.0
35	Dialog Semiconductor	Semiconductors	UK	18.9	6.8	8.8	67	11.7
36	Dr Reddy's Laboratories	Pharmaceuticals	India	18.7	9.7	17.3	84	20.1
37	Western Digital	Computer hardware	US	18.4	25.8	23.6	850	16.4
38	Imagination Technologies	Semiconductors	UK	18.2	14.3	15.3	71	18.4
39	Weatherford International	Oil equipment, services & distribution	Switzerland	17.9	15.2	11.4	189	10.2
40	Mylan	Pharmaceuticals	US	17.8	21.8	13.3	228	17.3
41	Endo Pharmaceuticals	Pharmaceuticals	US	17.4	28.8	13.1	141	21.6
42	Sanofi-Aventis	Pharmaceuticals	France	17.4	14.5	15.4	4795	17.1
43	ZTE	Telecommunications equipment	China	17.3		19.9	1130	6.3
44	Eclipsys	Software	US	17.1	11.6	7.4	127	9.5
45	Roper Industries	Electronic equipment	US	16.7	10.4	15.2	94	23.6
46	Symantec	Software	US	16.5	16.9	16.9	749	16.9
47	Brocade Communications	Telecommunications equipment	US	16.3	15.3	11.0	274	8.3
48	Ixia	Computer services	US	16.3	18.5	13.7	58	10.8
49	Citrix Systems	Software	US	16.2	15.9	20.7	299	18.9
50	Serco	Support services	UK	15.7	11.9	0.0	105	5.9

Source: The 2012 EU Industrial R&D Investment Scoreboard; European Commission, JRC/DG RTD.

4. R&D distribution by region

This chapter compares the overall R&D performance of the *Scoreboard* companies according to the location of their registered offices in the main world regions and within the EU.

It is important to note that in 2011/12 Japanese companies suffered from the effects of the Japanese earthquake, the associated nuclear disaster, the Thai floods and a strong Yen. This combination of adverse factors is country-specific and regional comparisons this year are therefore best restricted to US vs. EU.

Key findings

- EU companies increased R&D investment and net sales by the significant figures of 8.9 % and 4.9 % respectively. The US companies reported a similar increase in R&D (9.0%), but a much higher increase in net sales (12.3 %). Japanese companies increased R&D by only 1.6% and net sales by 2.1%.
- Companies outside of the EU, US and Japan (the other countries, OC group) also increased significantly R&D and net sales, by 11.3 % and 9.4 % respectively, but much less than last year especially in terms of sales (21.8% in 2010). Swiss companies, the largest country by R&D in this group, increased R&D only by a modest 1.4%. The largest increases in R&D investment were reported by companies based in India (35.1 %), and China (28.1 %). Companies form South Korea and Taiwan increased R&D by 8.3% and 2.5% respectively.

General trends

The *Scoreboard*'s 1500 companies are grouped into four main sets: the top 405 companies from the EU, 503 companies from the US, 296 from Japan and 296 companies from other countries (OC). 'Other countries' includes companies from Switzerland, Taiwan, South Korea, China, India, Canada, Norway, Australia and further 20 countries.

Figure 4.1 and Table 4.1 summarise the companies' indicators aggregated by main world region. Table 4.2 shows the main indicators for countries included in the OC group.

The R&D investment and net sales growth rates for EU companies improved significantly in 2011, increasing by 8.9 % and 4.9 % respectively. The group of US companies increased R&D investment by 9.0 % but increased much more net sales by 12.3 %.

Japanese companies underperformed against the EU and US ones both in terms of R&D and net sales, increasing R&D investments and net sales only by 1.6% and 2.1% respectively. However, as mentioned above, Japanese companies faced specific adverse factors in this reporting period.

Companies outside the EU, US and Japan (the OC group) increased R&D and net sales, by 11.3 % and 9.4 % respectively, but much less than last year especially in terms of sales (21.8% in 2010). Swiss companies, the largest country by R&D in this group, increased R&D only by a modest 1.4%. The largest increases in R&D investment were reported by companies based in India

(35.1 %) and China (28.1 %), although the total R&D for these two countries is still modest. Companies form South Korea and Taiwan increased R&D only by 8.3% and 2.5%.

EU companies' share of total *Scoreboard* R&D investment dropped by 0.7 percentage points (from 29.0% to 28.3%, compared with 30.6% in 2009). The share held by the US companies decreased slightly by 0.2 percentage points and companies from other countries (OC) and Japanese ones increased their share by 0.7 and 0.2 respectively.

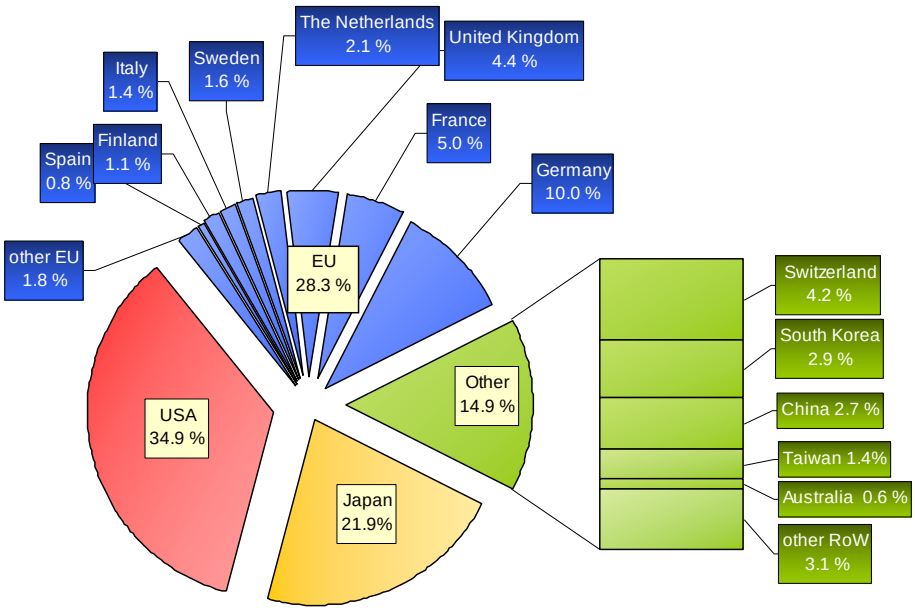
The average R&D intensity of EU and OC companies increased slightly due to the higher increase of R&D investments than net sales (compared with the previous *Scoreboard*). The opposite happens for the US companies, whereas those based in Japan kept similar average R&D intensity.

Companies' fixed capital expenditures greatly differed across countries. US companies increased their fixed capital expenditures substantially at 29.4 %, whereas EU companies decreased it by 0.8%. Companies from the OC group did better than the total *Scoreboard*'s average, at 15.6%, and Japanese companies below the total average at 4.8%.

Companies in most regions increased profits but at a more moderate rate compared with the strong increase of last year, due to the initial recovery from the crisis effects. Profitability (operating profits as percentage of net sales) remained similar than last year for EU and US companies (10.1% and 14.3 % respectively) and increased slightly for Japanese and OC companies (4.7% and 13.6% respectively).

We will see in the next chapter that many of the differences in R&D intensity and profitability between regions and countries are related to differences in sector mix. The US is by far the strongest region in the group of high R&D intensity sectors including pharmaceuticals, health, software, and technology hardware whereas the EU and Japan are stronger in medium intensity sectors like automotive.

Figure 4.1. R&D investment by the top 1500 companies, by main world regions (% of total €511bn)



Source: The 2012 EU Industrial R&D Investment Scoreboard
European Commission, JRC/DG RTD.

Table 4.1. Overall performance of companies in the 2012 *Scoreboard.*				
Factor	***EU***	***USA***	***Japan***	***Other countries (OC)***
No. of companies	405	503	296	296
R&D in 2011, € bn	144.6	178.4	111.5	76.2
World R&D share, %	28.3	34.9	21.8	14.9
Change from previous year, %	8.9	9.0	1.7	11.4
CAGR 3yr, %	3.4	4.8	-2.7	8.9
Net Sales, € bn	5478.5	3979.8	2973.1	3281.3
Change from previous year, %	4.9	12.3	2.1	9.4
CAGR 3yr, %	2.6	3.5	-5.3	8.8
R&D intensity, %	2.6	4.5	3.8	2.3
Operating Profit, € bn	545.2	568.7	138.6	446.4
Change from previous year, %	3.5	12.4	12.9	13.8
Profitability[9]	10.1	14.3	4.7	13.6
Capex, € bn	236.5	209.9	173.6	273.0
Capex intensity	6.3	5.3	5.9	9.2
Change from previous year, %	-0.9	29.4	4.8	15.6

Source: The 2012 EU Industrial R&D Investment Scoreboard. European Commission, JRC/DG RTD.

Table 4.2. Overall performance of companies based in the other countries (OC) group.

Factor	Switzerland	South Korea	China	Taiwan	total OC group
No. of companies	40	35	56	47	296
R&D in 2011, € bn	21.5	15.0	13.9	7.4	76.2
World R&D share	4.2	2.9	2.7	1.4	14.9
Change from previous year, %	1.4	8.3	28.1	2.5	11.3
CAGR 3yr, %	1.9	13.7	32.9	7.1	8.9
R&D intensity	6.9	3.1	1.4	2.5	2.3
Profitability	15.8	8.2	7.9	2.5	13.6

Source: The 2012 EU Industrial R&D Investment Scoreboard. European Commission, JRC/DG RTD.

Employment trends by the *Scoreboard* companies

The companies listed in this year's *Scoreboard* employed 45.04 million people in 2011, 2.3% more than the previous year. The distribution of employees by region was 16.93 million in EU-384 companies, 10.20 million in US-498 companies, 7.67 million in Japan-295 companies and 10.22 million in 226 companies from other countries (1403 companies out of the 1500 reported number of employees.

Trends on employment over the long term are presented in the figure 4.2 for the main world regions. The figures refer to a set of companies that reported number of employees over the whole period 2003-2011 and are divided into groups of industrial sector of characteristic R&D intensity (see definition in next chapter, Box 5.1).

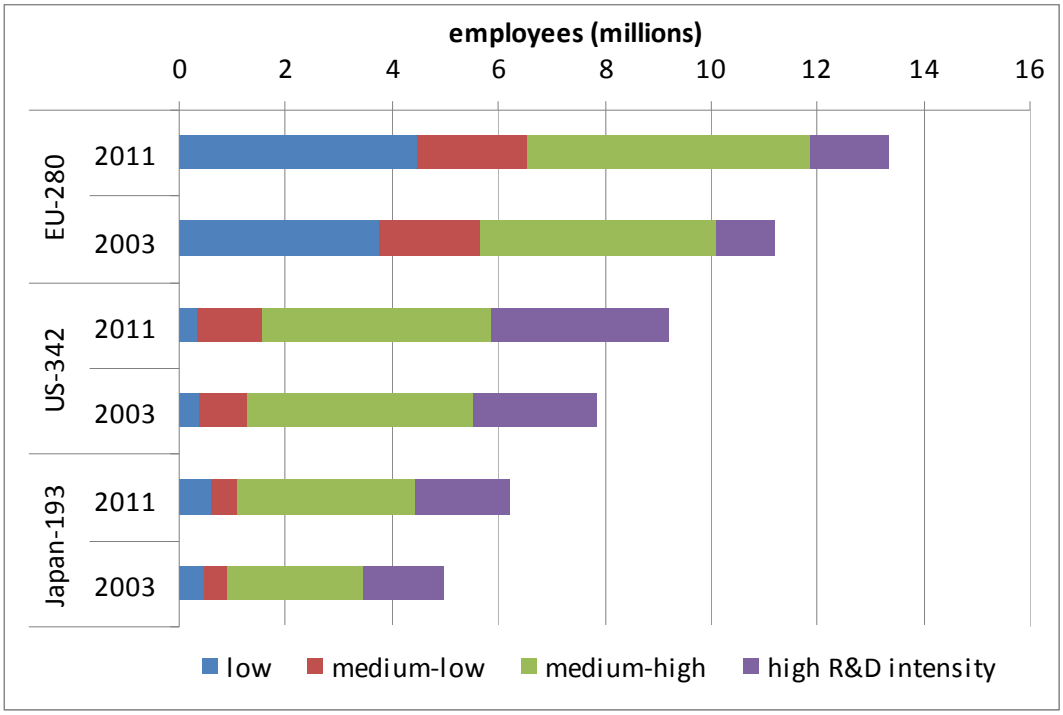
The following points can be observed:

- The overall worldwide employment increased by 22.3%, led by increases in high R&D-intensive sectors (36.1%) and medium-low ones (23.7%).
- For the EU-280 companies, the overall employment growth was 19.5%, increasing by 38.4% in high R&D-intensive sectors and by similar rates for medium-high and low sectors (19.9% and 19.3% respectively).
- For the US companies, the overall employment growth (16.8%) greatly varies by sector group: strong increase for medium and high R&D-intensive sectors (30.1% and 29.5% respectively) and sharp decrease in low and medium-high R&D-intensive sectors (-18.4% and 0.8% respectively).

- For the Japanese companies, the overall employment increase of 25.2% corresponded to an increase by 26.3% in low R&D-intensive sectors and by 18.4% in medium-high ones.

It is important to keep in mind that data reported by the *Scoreboard* companies do not inform about the actual geographical distribution of the number of employees. A detailed geographic analysis should take into account the location of subsidiaries of the parent *Scoreboard* companies as well as the location of other production activities involved in the value-chains, which is beyond the scope of this year's *Scoreboard* report.

Figure 4.2. Employment trends by the *Scoreboard* companies for main world regions.



Note: For 815 out of the top EU, US and Japanese companies in the 2012 Scoreboard that reported employment data for the whole period 2003-11.

Source: The 2012 EU Industrial R&D Investment Scoreboard
European Commission, JRC/DG RTD.

5. R&D distribution by industrial sector

This chapter presents the main R&D trends among *Scoreboard* companies aggregated by industrial sectors.[10] It comprises the ranking of sectors by their level of R&D investment, R&D intensities, rates of R&D growth and the comparison of such trends across world regions.

Key findings

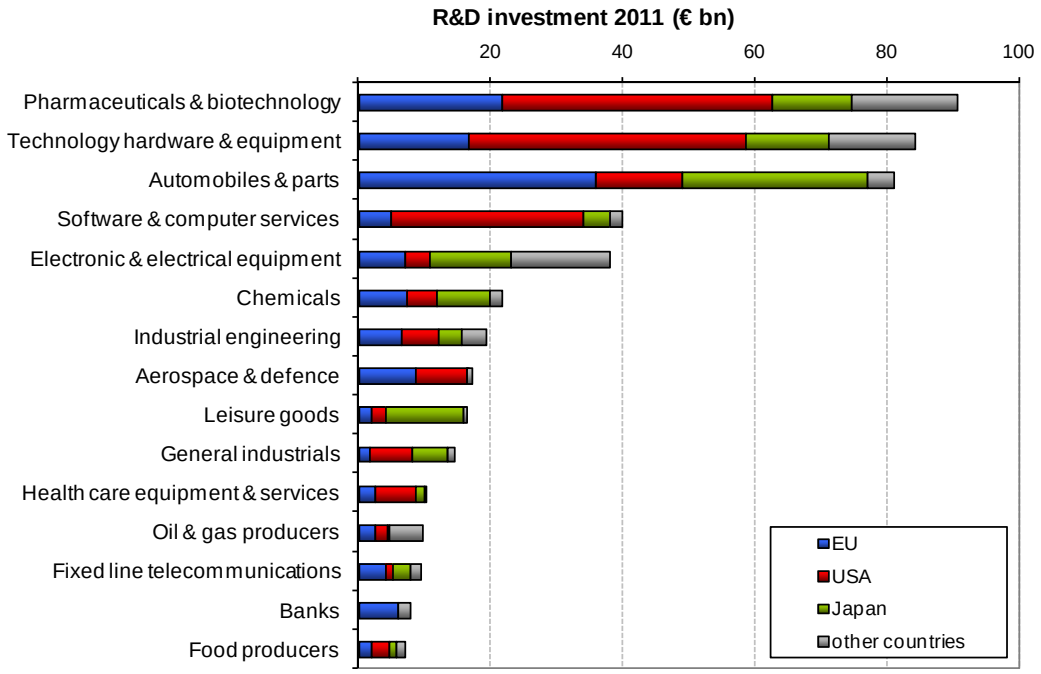
- Four out of the top five sectors by level of R&D investment increased R&D above the world's 7.6% average, mainly Automobile & Parts (13.1%) and Software and Computer Services (10.9%). The top R&D investing sector, Pharmaceuticals and Biotechnology achieved a modest 1.5% increase of R&D. Banks and Industrial Engineering sectors showed the highest R&D increase (21.8% and 16.5%, respectively).
- Trends observed in the *Scoreboard* over the last 10 years show a characteristic sector specialisation by region. Companies based in the EU specialise in medium-high R&D intensive sectors. Automobiles & Parts and Industrial Engineering account for almost 60% of the R&D invested by the EU's medium-high R&D intensity group. Those based in the US specialise in high R&D intensive sectors. Pharmaceuticals & Biotechnology, Technology Hardware & Equipment and Software & Computer Services account for 93% of the R&D invested by the US's high R&D intensity group.

5.1. General R&D trends

Figure 5.1 shows the R&D rankings of the main industrial sectors including the relative R&D share by main world region. The specialisation of the main world regions, represented by the share of sectors within the regions' total R&D investment, is given in Figure 5.2.

- R&D investment in the *Scoreboard* remains highly concentrated in certain sectors: Out of 38 industrial sectors, the top three –Pharmaceuticals & Biotechnology, Technology Hardware & Equipment and Automobiles & Parts– account for 50.1% of the total R&D investment by the *Scoreboard* companies; the top 6 and top 15 sectors constitute, respectively, 69.5% and 91.3% of the total R&D in the *Scoreboard*. Similar concentration of R&D by industrial sector has been observed over the last 10 years.
- The ranking of the top 15 sectors has changed as follows: The Industrial Engineering sector took over the 7th position from the Aerospace & Defence sector (now 8th), the Oil & Gas Producers sector took the 11th position from the Fixed Line Telecommunications sector (now 12th).
- The Pharmaceuticals & Biotechnology sector keeps the first position in the R&D ranking, decreasing its R&D share of the total R&D investment which is now 17.7%. It is followed by the Technology Hardware & Equipment sector with a share of 16.8% (similar to last year's 16.6%) and the Automobile & Parts sector with 15.8%, slightly higher than the 15.0% of last year.

Figure 5.1. R&D ranking of industrial sectors and share of main world regions for the world's top 1500 companies

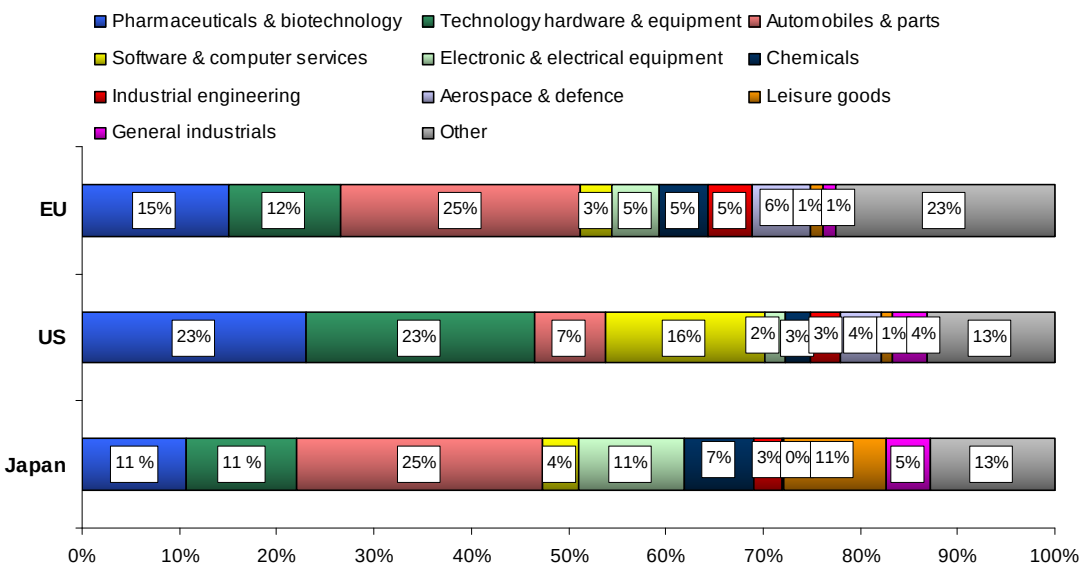


Source: The 2012 EU Industrial R&D Investment Scoreboard
European Commission, JRC/DG RTD.

- By region, companies changed their share of R&D investment in the top 6 sectors as follows: The EU companies increased their share in Automobiles & Parts but decreased its share in Pharmaceuticals & Biotechnology. The US companies increased their share in Industrial Engineering and General Industrials sectors and decreased it in Pharmaceuticals & Biotechnology and Aerospace & Defence sectors. The Japanese companies kept their share in the main sectors practically unchanged.
- As observed in previous *Scoreboards,* despite the changes due to the economic crisis, the R&D specialisation is very different in the four regional groups of companies. The contribution to the total *Scoreboard* R&D by the EU companies is 50.3% to Aerospace & Defence, 44.1% to Automobiles & Parts and 33.7% in the Industrial Engineering sectors; the US contributes 73.2% to Software and Computer Services, 49.8% to Technology Hardware & Equipment and 43.2% to Pharmaceuticals; Japan contributes 36.2% to Chemicals and 34.8% to Automobiles & Parts; and the OC companies contribute 39.3% to the Electronic & Electric Equipment sector.
- The 6 most R&D intensive sectors (Pharmaceuticals & Biotechnology, Software & Computer Services, Hardware Technology & Equipment, , Leisure Goods, Health Care Equipment & Services and Electronic & Electrical Equipment), all with an average R&D intensity of over 5%, contribute with

69.5% to the total R&D for the US, 61.1% for the OC group, 48.3 % for Japan and 37.7% for the EU companies.

Figure 5.2. R&D shares of sectors of the main world regions



Source: The 2012 EU Industrial R&D Investment Scoreboard
European Commission, JRC/DG RTD.

R&D growth by industrial sector

The actual contribution of an industrial sector to the overall R&D growth of a region depends on its rate of R&D change and the sector's share of total R&D of the region. Figures 5.1 and 5.2 show the shares of the main industrial sectors and Table 5.1 shows their ranking by R&D annual growth rate worldwide for the *Scoreboard* companies based in the EU, US and Japan.

The following points are observed for the top 15 sectors accounting for 91.3% of the total R&D investment of the *Scoreboard* companies:

- Worldwide, the Banks sector shows the highest one-year growth rate (21.8%), followed by Industrial Engineering (16.5%), Automobiles & Parts (13.1%) and Software & Computer Services (10.9%).

- Among the companies based in the EU, the Banks sector shows the highest one-year growth rate (19.5%), followed by Automobiles & Parts (16.2%) and Industrial Engineering (15.6%). Sectors showing the lowest one-year R&D growth are Fixed Line Telecom (-2.4%) and General Industrials (0.3%).
- Among the companies based in the US, the Industrial Engineering sector shows the highest one-year growth rate (20.1%) followed by Food Producers (17.5%) and Electronic & Electrical Equipment (16.6%). Sectors showing the lowest one-year R&D growth are Fixed Line Telecom (-5.6%) and Leisure Goods (-2.0%).
- For Japanese companies, the highest one-year growth rate is shown by Automobiles & Parts (9.9%) and Industrial Engineering (7.9%). The poorest performance was shown by the General Industrials (-12.5%) and Pharmaceuticals & Biotechnology (-7.6%).

Apart from the top 15 industries, there were important R&D changes in the other sectors as well:

- The alternative energy sector continued to increase considerably the R&D investment (22.5%)
- Other sectors showing considerable R&D growth are Support Services sector (40.5%) and Industrial Transportation sector (30.7%). Sector reducing significantly R&D are Industrial Metals & Mining (-9.3%) and Media sectors (-9.2%).

Table 5.1. Ranking of top 15 industrial sectors by overall one-year R&D growth for the EU, US and Japanese companies in the 2012 *Scoreboard*.

Rank	Sector	Overall one-year R&D growth (%)	EU R&D change (%)		US R&D change (%)		Japan R&D change (%)	
			1 year	3 years	1 year	3 years	1 year	3 years
1	Banks	21.8	19.5	19.8				
2	Industrial engineering	16.5	15.6	6.0	20.1	7.7	7.9	0.6
3	Automobiles & parts	13.1	16.2	4.1	13.4	-3.3	9.9	-4.0
4	Software & computer services	10.9	7.8	5.0	11.6	6.2	0.0	-12.6
5	Oil & gas producers	10.4	0.0	0.1	13.6	2.3	3.5	12.5
6	Electronic & electrical equipment	10.0	5.4	4.6	16.6	6.2	3.0	-1.0
7	Technology hardware & equipment	8.3	6.2	-1.5	10.9	3.8	1.1	-4.6
8	Health care equipment & services	7.0	6.8	4.2	6.3	5.5	6.6	1.3
9	Leisure goods	4.0	4.3	3.0	-2.0	-6.0	4.6	-2.9
10	Chemicals	4.0	0.5	1.0	10.0	7.0	3.4	1.9
11	Food producers	4.0	8.7	4.2	17.5	11.2	4.3	5.8
12	Aerospace & defence	3.9	6.1	4.8	1.1	-1.5	10.5	-4.4
13	General industrials	1.5	0.3	4.3	13.4	9.1	-12.5	-6.9
14	Pharmaceuticals & biotechnology	1.5	5.4	2.3	2.1	6.9	-7.6	2.6
15	Fixed line telecommunications	-2.1	-2.4	-4.5	-5.6	12.9	-3.7	-0.4
	top 15 industries	7.5	8.8	3.2	8.6	4.5	2.4	-2.6
	Rest of 23	8.6	9.2	5.8	15.4	8.8	-6.4	-3.6
	All 38 industries	7.6	8.9	3.4	9.0	4.8	1.6	-2.7

Source: The 2012 EU Industrial R&D Investment Scoreboard.

European Commission, JRC/DG RTD

R&D intensity by sector

Table 5.2 provides the list of industrial sectors ranked by worldwide R&D intensity of the main industrial sectors for the 1500 *Scoreboard* companies grouped by main world region.

The following points are observed:

- Some industrial sectors increased their R&D intensity as sales increased more than R&D investment in 2011, in particular the Electronic & Electrical Equipment sector (from 4.2% to 5.1%) and the Automobiles & Parts sector (from 4.1% to 4.3%). The remaining sectors maintained practically unchanged their R&D intensity.
- Six sectors have R&D intensity of more than 5.0%: Pharmaceuticals & Biotechnology, IT sectors (Software & Computer Services and Technology Hardware & Equipment), Leisure Goods, Health Care Equipment & Services and Electronic & Electrical Equipment). The sector with the lowest R&D intensity is Oil & Gas Producers (0.3%).
- Among the top 15 sectors, the R&D intensity of EU companies is larger than that of the US and Japan in 3 sectors (Technology Hardware & Equipment, Industrial Engineering, General Industrials and Automobiles & Parts). Japanese companies show higher R&D intensity than the EU and the US in sectors such as Pharmaceuticals & Biotechnology, Electronic & Electrical Equipment and Chemicals. The R&D intensity of US companies is higher than that of the EU and Japan in Leisure Goods and Health Care Equipment & Services.
- As observed in previous *Scoreboards*, the overall lower average of R&D intensity of the EU companies is due to their large share of low R&D-intensive sectors as compared to a similar group of non-EU companies. Conversely, the high average R&D intensity of the US companies is due to their considerable weight in high R&D-intensive sectors (see Figures 5.1 and 5.2)

Table 5.2. Ranking of industrial sectors by overall R&D intensity for the EU, US and Japanese companies in the 2012 *Scoreboard.*

Rank	Sector	Overall sector R&D intensity, %	EU sector R&D intensity, %	US sector R&D intensity, %	Japan sector R&D intensity, %
1	Pharmaceuticals & biotechnology	15.1	14.7	15.3	16.3
2	Software & computer services	9.5	10.6	10.6	5.0
3	Technology hardware & equipment	7.9	14.2	8.2	6.1
4	Leisure goods	6.7	7.1	7.7	6.6
5	Health care equipment & services	5.9	3.6	7.3	6.6
6	Electronic & electrical equipment	5.1	4.9	5.0	5.9
7	Automobiles & parts	4.2	4.9	3.8	4.6
8	Aerospace & defence	4.1	6.0	3.1	6.6
9	Chemicals	3.1	3.0	2.9	4.0
10	Industrial engineering	3.1	3.5	3.0	3.0
11	General industrials	2.7	4.2	3.3	2.6
12	Banks	2.2	2.0		
13	Fixed line telecommunications	1.7	1.5	1.1	2.5
14	Food producers	1.6	2.0	1.3	1.8
15	Oil & gas producers	0.3	0.3	0.2	0.2
	Top 15 industries	3.9	3.6	4.9	4.5
	Rest of 23	1.1	0.8	2.1	1.2
	All 38 industries	3.2	2.6	4.5	3.8

Source: The 2012 EU Industrial R&D Investment Scoreboard. European Commission, JRC/DG RTD

Growth of net sales and profitability by the industrial sectors

Table 5.3 shows the ranking of the top 15 industrial sectors by overall one-year growth of net sales for the companies based in the EU, the US and Japan. It also includes the sector profitability for these regions.

The following points are observed:

- Worldwide, the Oil & Gas Producers sector shows the highest one-year growth rate of net sales (23.4%), followed by Industrial Engineering (14.3%), Chemicals (11.9%), Automobiles & Parts (8.1%) and Software & Computer Services (6.7%).
- Among the companies based in the EU, the 5 sectors mentioned above also show the highest one-year growth rate of sales, in particular the Oil & Gas Producers sector (19.9%) and the Automobiles & Parts sector (14.3%). Sectors showing the lowest one-year sales growth are General Industrials (-32.7%) and Banks (-15.8%). The highest profitability of EU companies is shown in Pharmaceuticals & Biotechnology (23.3%) and Software & Computer Services (18.9%)
- Among the companies based in the US, the Oil & Gas Producers sector shows the highest sales one-year growth rate (26.2%) followed by Industrial Engineering (23.4%) and Technology Hardware & Equipment (11.7%). Sectors showing the lowest one-year R&D growth are General Industrials (-1.7%) and Fixed Line Telecom (-1.5%). The US based companies have the highest profitability in Pharmaceuticals & Biotechnology and Software & Computer Services (both 24.1%).
- For Japanese companies, the highest one-year growth rate is shown by Chemicals (14.2%), Oil & Gas Producers (13.6%) and Industrial Engineering sector (11.8%). The poorest performance is shown by the Leisure Goods (-6.0%) and Software & Computer Services (-3.5%) sectors. The profitability of companies based in Japan is generally lower than their counterparts in the EU and the US.
- The US shows higher profitability than the EU in the four key high R&D intensity sectors (pharma, technology hardware, software and health) and in all the medium-high R&D intensity sectors listed except automotive. Japanese sectors tend to have lower profitability than EU sectors.

Table 5.3. Ranking of top 15 industrial sectors by overall one-year sales growth for the EU, US and Japanese companies in the 2012 *Scoreboard.*

Rank	Sector	World-wide	EU		US		Japan	
		Sales growth, 1y (%)	Sales growth, 1y (%)	Profit.* (%)	Sales growth, 1y (%)	Profit.* (%)	Sales growth, 1y (%)	Profit.* (%)
1	Oil & gas producers	23.4	19.9	11.5	26.2	15.2	13.6	2.6
2	Industrial engineering	14.3	9.8	9.4	23.4	11.7	11.8	9.6
3	Chemicals	11.9	9.8	10.2	10.3	10.7	14.2	5.5
4	Automobiles & parts	8.1	14.3	6.5	11.4	5.2	3.7	3.5
5	Software & computer services	6.7	7.2	18.9	8.9	24.1	-3.5	2.8
6	Pharmaceuticals & biotechnology	4.1	2.3	23.3	6.3	24.1	-0.1	14.4
7	Technology hardware & equipment	3.1	-0.6	4.7	11.7	17.0	0.2	4.8
8	Health care equipment & services	2.6	-4.0	16.3	7.4	19.1	4.7	7.2
9	Fixed line telecommunications	1.4	-0.8	16.6	1.5	8.1	3.2	11.7
10	Aerospace & defence	1.1	0.7	5.1	0.9	10.9	7.8	5.7
11	Food producers	0.5	2.4	12.3	10.1	9.6	2.0	3.8
12	General industrials	-1.4	-32.7	6.9	-1.7	13.6	2.1	4.4
13	Electronic & electrical equipment	-3.5	5.1	10.0	10.9	13.5	1.8	4.5
14	Leisure goods	-5.6	-7.7	2.2	7.4	5.4	-6.0	0.3
15	Banks	-13.5	-15.8	4.4				
	Top15 industries	8.0	6.9	10.1	12.0	14.6	3.8	4.7
	Rest of 23	4.4	1.6	9.6	14.3	12.7	-2.9	4.6
	All 38 industries	7.1	4.9	10.0	12.3	14.3	2.1	4.7

** Profitability: operating profits as percentage of net sales.*

Source: The 2012 EU Industrial R&D Investment Scoreboard. European Commission, JRC/DG RTD

Indicators' changes by region and sector groups

Interesting results emerge by looking at the distribution of R&D investment of the *Scoreboard* companies across regions and sectors using an aggregation of the 38 industrial sectors into four groups of high-, medium-high-, medium-low- and low- R&D intensity (see Box 5.1).

Box 5.1. Grouping of industrial sectors according to R&D intensity (R&D as % of net sales)

High R&D intensity sectors (intensity above 5%) include e.g. Pharmaceuticals & biotechnology; Health care equipment & services; Technology hardware & equipment; Software & computer services.

Medium-high R&D intensity sectors (between 2% and 5%) include e.g. Electronics & electrical equipment; Automobiles & parts; Aerospace & defence; Industrial engineering & machinery; Chemicals; Personal goods; Household goods; General industrials; Support services.

Medium-low R&D intensity sectors (between 1% and 2%) include e.g. Food producers; Beverages; Travel & leisure; Media; Oil equipment; Electricity; Fixed line telecommunications.

Low R&D intensity sectors (less than 1%) include e.g. Oil & gas producers; Industrial metals; Construction & materials; Food & drug retailers; Transportation; Mining; Tobacco; Multi-utilities.

The worldwide and domestic distribution of the R&D investment by the 1500 *Scoreboard* companies shows clear differences by world region, illustrating respectively the weight of the region in the world and its specialisation (See Table 5.4):

- Companies based in the EU specialise in medium-high R&D intensive sectors (49.4% of total R&D of the EU companies) and contribute 34.9% of the total R&D of that sector group. Two sectors, Automobiles & Parts and Industrial Engineering, account for almost 60% of the total R&D investment of the EU's medium-high R&D intensity group.
- Those based in the US specialise in high R&D intensive sectors (67.4% of total R&D of the US companies) and contribute 49.9 % of the total R&D of that sector group. Three sectors, Pharmaceuticals & Biotechnology, Technology

Hardware & Equipment and Software & Computer Services, account for 93% of the total R&D investment of the US's high R&D intensity group.

- Japanese companies specialise in medium-high R&D intensive sectors (53.2%) while contributing 29.0% of the total R&D of that sector group. Two sectors, Automobiles & Parts and Electronics & Electric Equipment, account for 68% of the Japan's medium-high R&D intensity group.

Table 5.4. World and domestic R&D distribution of the 1500 *Scoreboard* companies by sector groups for the main regions.

Sector / Region	High Share, %		Medium-high Share, %		Medium-low Share, %		Low Share, %		Total
	world	domestic	world	domestic	world	domestic	world	domestic	domestic
EU	**19.7**	32.8	**34.9**	49.4	**34.6**	7.1	**43.5**	10.7	100
US	**49.9**	67.4	**22.7**	26	**31.2**	5.2	**7.1**	1.4	100
Japan	**17.3**	37.4	**29**	53.2	**18.8**	5	**14**	4.5	100
Other countries	**13.1**	41.5	**13.4**	36.1	**15.3**	6	**35.4**	16.4	100
Total world	**100**		**100**		**100**		**100**		

Note : Sector groups as defined in Box 5.1.

Source: The 2012 EU Industrial R&D Investment Scoreboard. European Commission, JRC/DG RTD

6. The top 1000 R&D investors in the EU

This chapter discusses R&D and economic trends of companies based in Members States of the EU. This specific analysis is based on an extended sample of companies representing the top 1000 R&D investors in the EU, i.e. the 405 EU companies included in the world top 1500 sample and 595 additional companies based in the EU (see composition of this sample in Annex 3).

Main questions addressed are first, about the one-year changes in R&D and economic indicators of companies based in the top 10 Member States of the EU by level of R&D investment. The second question addressed regards the long-term trends of companies' results, namely the rate of growth of R&D and net sales and profitability, and the effects of the financial crisis for companies from the top three Member States of the EU.

Key findings

- Companies based in Germany, the top R&D investor continued to increase substantially R&D, at 9.4 % compared with 8.1% in the previous year. UK companies increased R&D well above the EU's average, at 11.2% and France by 7.3%.
- Countries whose companies significantly increased R&D investments are Sweden (14.8%), Spain (14.7%) and Ireland (13.3%). Companies that showed the lowest R&D growth are from Denmark (-3.9%) and from Finland (1.7%). Almost all these countries have their total R&D dominated by that of a few companies, e.g. Nokia, accounting for nearly 80% of Finland's R&D in the *Scoreboard*.
- The analysis of 10 years trends of R&D and economic results of companies based in Germany, the UK and France show the effects of the crisis in 2008-2009 and the strong recovery over 2010-2011.

Trends of companies in the top 10 Member States of the EU

This section analyses the main trends of EU companies for the extended sample of 1000 companies with headquarters in Member States of the EU. Companies based in the 10 top Member States account for 97.2% of the total R&D investment in the EU (see Table 6.1).

Companies based in the three top R&D investing countries (accounting for 68.3% of the total R&D by the 1000 EU companies) increased significantly their R&D investments. Germany, the top R&D investor continued to increase substantially R&D, at 9.4 % compared with 8.1% increase in the previous year. UK companies increased R&D well above the EU's average, at 11.2% and France by 7.3%.

Countries whose companies increased R&D investments above the EU's average are Sweden (14.8%), Spain (14.7%) and Ireland (13.3%). Companies that showed the lowest R&D growth are from Denmark (-3.9%) and from Finland (1.7%).

It is important to remind that, in many countries, the aggregate country indicators depend to a large extent on the figures of a very few firms. This is due, either to the country's small number of companies in the *Scoreboard* or to the concentration of R&D in a few large firms. For example:

- The R&D growth of Novo Nordisk (-5.1%) and DONG Energy (-11.6%), accounting for 40% of the R&D of companies based in Denmark, contributed together to a significant part of the R&D growth of that country.
- Three companies based in Ireland contributed 68% of that country's R&D investment: Seagate Technology (15.0%), Covidien (23.9%) and Accenture (31.2%).
- Similar cases occur in Finland where Nokia's R&D investment accounts for almost 80% of the total R&D and in Spain where Banco Santander, Telefonica and Amadeus account for 70 % of the total R&D by the Spanish companies in the *Scoreboard*.

Table 6.1. R&D trends of companies based in the top 10 EU Member States

Country	No. of companies	R&D Share within EU (%)	One year Growth (%)	CAGR 3 yr* (%)
Germany	234	34.5	9.4	4.9
France	126	17.5	7.3	1.6
UK	248	16.2	11.2	2.3
The Netherlands	52	7.4	5.4	2.2
Sweden	85	5.9	14.8	2.2
Italy	50	5.0	5.1	2.6
Finland	46	4.1	1.7	-1.7
Spain	21	2.6	14.7	20.3
Denmark	35	2.1	-3.9	4.4
Ireland	14	1.7	13.3	2.3
Total EU-10	911	97.2	8.6	3.3

For the sample of 1000 EU companies.

* It is important to note that 3-years cagr includes one year going into the crisis and two years coming out

Source: The 2012EU Industrial R&D Investment Scoreboard; European Commission, JRC/DG RTD.

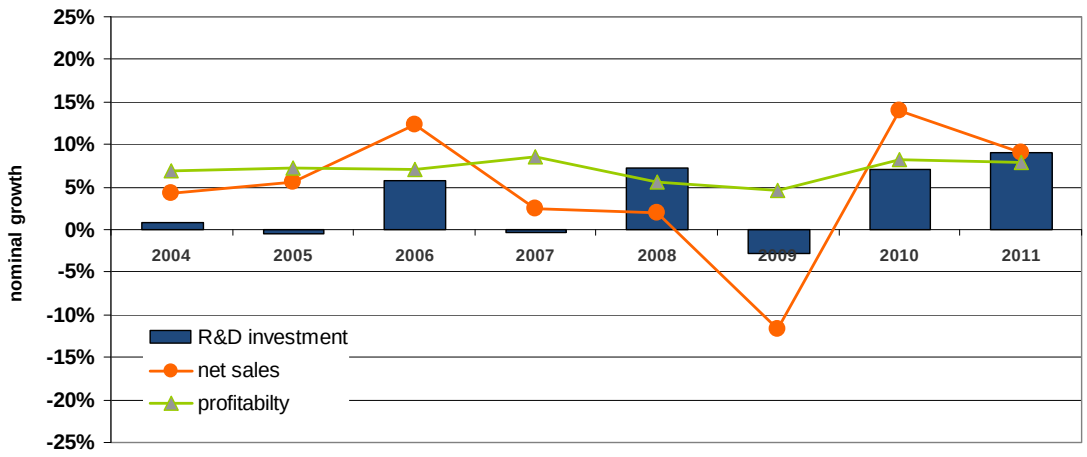
Long-term performance of companies based in the 3 top EU Member States

The annual growth rates of R&D investment and net sales and profitability of companies based in Germany, France and the UK is provided respectively in Figures 6.1, 6.2 and 6.3 for the period 2003-2011. These figures are based on our history database comprising R&D and economic indicators over the whole 2003-2011 period from the EU 1000 dataset, including 107 from Germany, 63 from France and 96 from the UK.

The trends observed in these figures show the behaviour of these companies including the effects of the crisis that began in 2008. The following points are observed:

- In terms of R&D growth, companies based in Germany, France and the UK seem to have recovered the levels prior to the crisis.
- The growth rate of net sales for companies based in Germany and the UK have recovered strongly in 2010-2011 and outperform their French counterparts.
- Sector composition of the country samples reflect to a large extent the differences observed in terms of profitability.

Figure 6.1 One-year R&D investment and net sales growth by the German companies

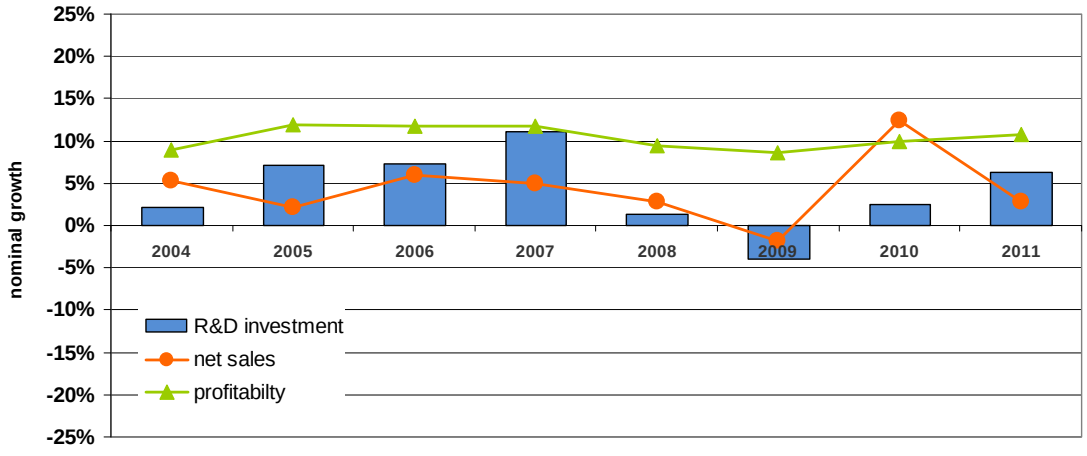


Note: for 107 German out of the EU1000 companies with R&D and net sales data for the whole period

Source: The 2012 EU Industrial R&D Investment Scoreboard

European Commission, JRC/DG RTD.

Figure 6.2 One-year R&D investment and net sales growth by the French companies

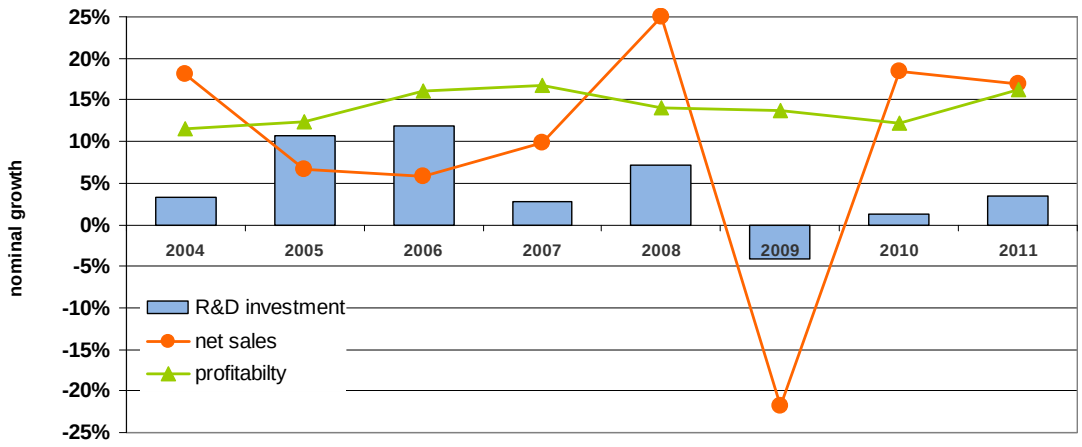


Note: for 63 French out of the EU1000 companies with R&D and net sales data for the whole period

Source: The 2012 EU Industrial R&D Investment Scoreboard

European Commission, JRC/DG RTD.

Figure 6.3 One-year R&D investment and net sales growth by the UK companies



Note: for 96 UK out of the EU1000 companies with R&D and net sales data for the whole period.

Source: The 2012 EU Industrial R&D Investment Scoreboard

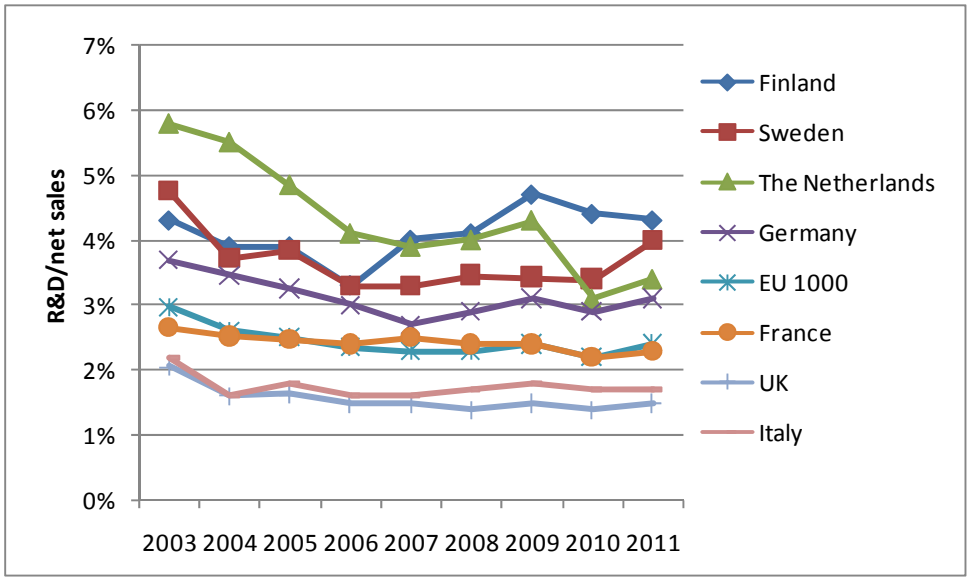
European Commission, JRC/DG RTD.

R&D intensity trends by companies based in selected Member States

In 2011, the average R&D intensity of the EU-1000 companies increased slightly because of the higher increase of R&D investments than net sales. This breaks a trend of decreasing R&D intensity observed since 2003 (see Figure 6.4).

It is important to remark that a few large but low R&D intensity companies have a big effect on some country average R&D intensities. One example is Shell and BP for the UK. In the 2009 *Scoreboard* these companies contributed approximately 43% of the UK's *Scoreboard* company sales, so practically halving the average R&D intensity UK companies would have had if they had been left out.

Figure 6.4. Trends in R&D intensities for EU Scoreboard companies in selected Member States



For the EU1000 companies in each of the nine Scoreboards 2004-2012

Source: The 2012 EU Industrial R&D Investment Scoreboard

European Commission, JRC/DG RTD.

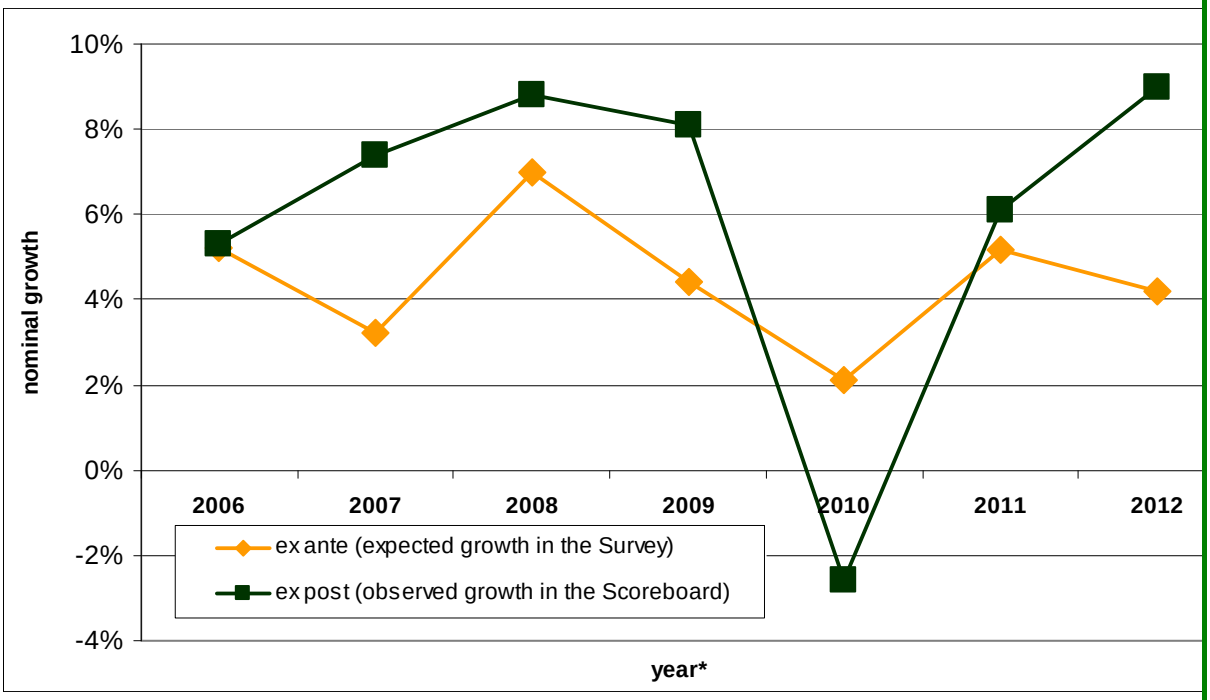
Survey on R&D investment by EU companies

The annual publication of the *Scoreboard* is complemented by a series of surveys on R&D Investment Business Trends[11] for the set of 1000 companies based in the EU, regarding their ex-ante expectations for future R&D investments and qualitative statements about their R&D behaviour.

The R&D investment growth expectations collected from these surveys are compared to the development of R&D investment in Figure 6.5.

For most years, trend expectations from past surveys have been consistent with the actual trends observed later in the *Scoreboard*, and the trends anticipated in the survey since 2007 have been statistically significant.[12]

Figure 6.5 Expected (survey) vs. observed (Scoreboard) R&D growth



Note: * Survey annual growth expectations are for the next three years following the exercise, while the *Scoreboards* refer to the latest audited accounts. The figure refers to 162 out of the 187 companies in the 2012 survey sample, weighted by R&D investment.

Source: The 2012 EU Industrial R&D Investment Scoreboard
European Commission, JRC/DG RTD.

7. EU-US R&D intensity gap: The role of companies' cross border activities

Company data from the Scoreboard has shown that one of the main reasons for the R&D intensity gap between the US and the EU comes from the different industrial composition of the EU and US Scoreboard samples. This evidence shed new light on the picture provided by the official statistics on business R&D (BERD), collected on the basis of a territorial logic that points to a lower R&D intensity of some sectors in Europe compared to the US.

For the time being, both territorial official statistics and company data from the Scoreboard fail to show the full picture, as companies' cross-border activities (production and sales on one hand and R&D investments on the other) are only partially included. This chapter illustrates how important these cross-border activities are for a complete analysis of the EU-US R&D gap. For this reason this chapter looks at company and territorial data in a complementary way, focusing on the high-tech sectors that account for most of the R&D gap: pharma, ICT manufacturing and medical precision and optical instruments. These 'sectors' are defined since data for them can be relatively easily extracted from both Scoreboard and national statistics.

Key findings

- National intramural statistics and the Scoreboard data offer two different perspectives on EU industry that convey different but complementary policy implications. The *Scoreboard* shows that, individually, EU-based companies have similar R&D intensity performance to their US counterparts because of the constraints imposed by global competition. However, according to the national statistics, industrial activities located within the boundaries of the EU are much less R&D-intensive than those located within the boundaries of the US, especially in key high tech sectors.

- The most important cause of this apparent discrepancy can be explained by the industrial activities of foreign-controlled companies. In line with the increasing globalisation of the economy, cross-border industrial activities of multinational companies account for a large share of the domestic industry, especially in high tech manufacturing sectors.

- Companies delocalise production and research facilities in different proportions which lead to substantial changes of the R&D intensity of source and destination countries and vary significantly from sector to sector. For example, in the ICT manufacturing industry, production of US companies is much larger abroad than at home but their R&D activities abroad are less than 3% of the total sector so over 97% of their R&D is carried out in the US. In the pharmaceuticals sector the situation is very different, a large proportion of research (22.4%) and production (67%) in the US is performed by foreign-controlled companies. This partly reflects the fact that the US is by far the largest high-tech healthcare market in the world.

- The analysis of the two data sources suggest that the key issue for the EU is to increase the attractiveness of the EU business environment for both production but particularly research activities. This should encourage more foreign companies to locate R&D and also production in the EU and give an incentive to EU companies to maintain a higher share of their R&D in the EU. From a research policy viewpoint, the aim is to keep in-house and develop core competencies in key industrial sectors such as health, ICT and knowledge-intensive services sectors. From the industrial viewpoint, this should also help to maximize the EU's share of value-added production and the related benefits in terms of highly skilled employment. Certain EU countries are already bringing in policies such as R&D tax credits and patent boxes to encourage more R&D and high value added production and these initiatives need to be monitored closely so that the most successful of them can be extended to more EU countries.

7.1. Evidence from the 2012 *Scoreboard*

As discussed in Chapter 5, and in previous *Scoreboard* editions, company indicators in high R&D intensity sectors show contrasting differences between companies based in the EU and the US. In particular two broad sector groups are involved: 1) health-related sectors including Pharmaceuticals & Biotechnology and Health Care Equipment and Services and 2) ICT-related sectors including Technology Hardware & Equipment and Software & Computer Services.

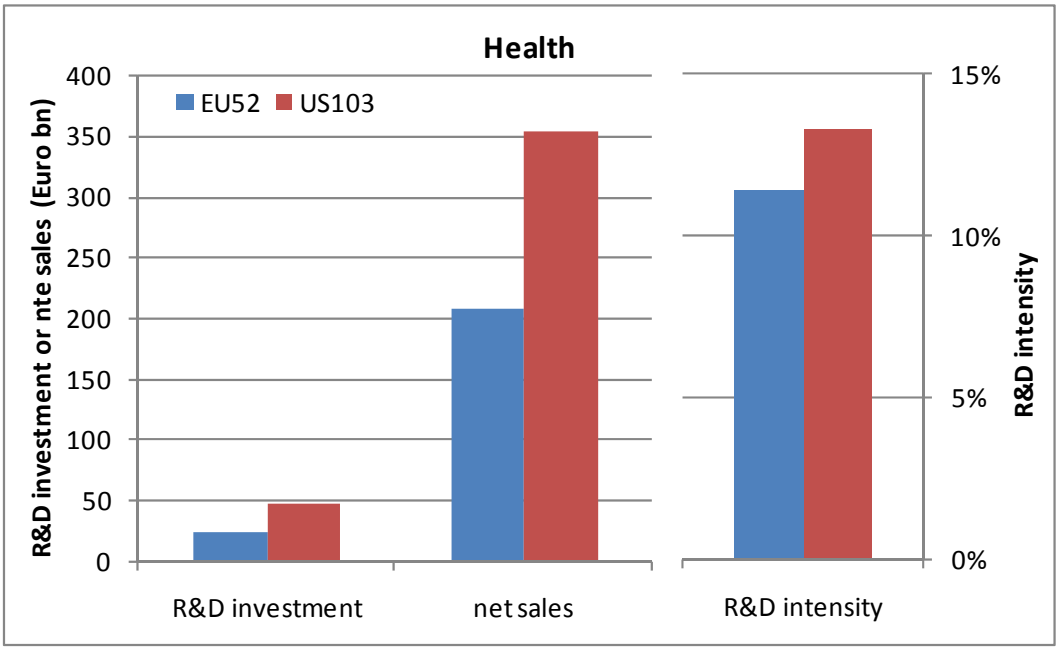
Figures 7.1 and 7.2 show the levels of R&D investment, net sales and R&D intensity for the EU and US companies operating in health and ICT related sectors.

The following points can be observed:

- The US has twice as many companies as the EU in health and 3.5 times more companies in ICT.
- In terms of R&D, the US companies outperform the EU ones in similar proportions (as by number of companies) investing 2 times more in health and 3.3 times more in ICT.
- In terms of net sales, the EU shows slightly higher average sales per company than the US but much lower in ICT.
- As a result of the R&D investment and net sales figures, the average R&D intensity of the EU companies is higher in ICT and somewhat lower in health.

The above figures clearly indicate a strong structural difference between the two samples of companies and specific differences by sector. These issues are discussed in the following sections in more detail and from different perspectives.

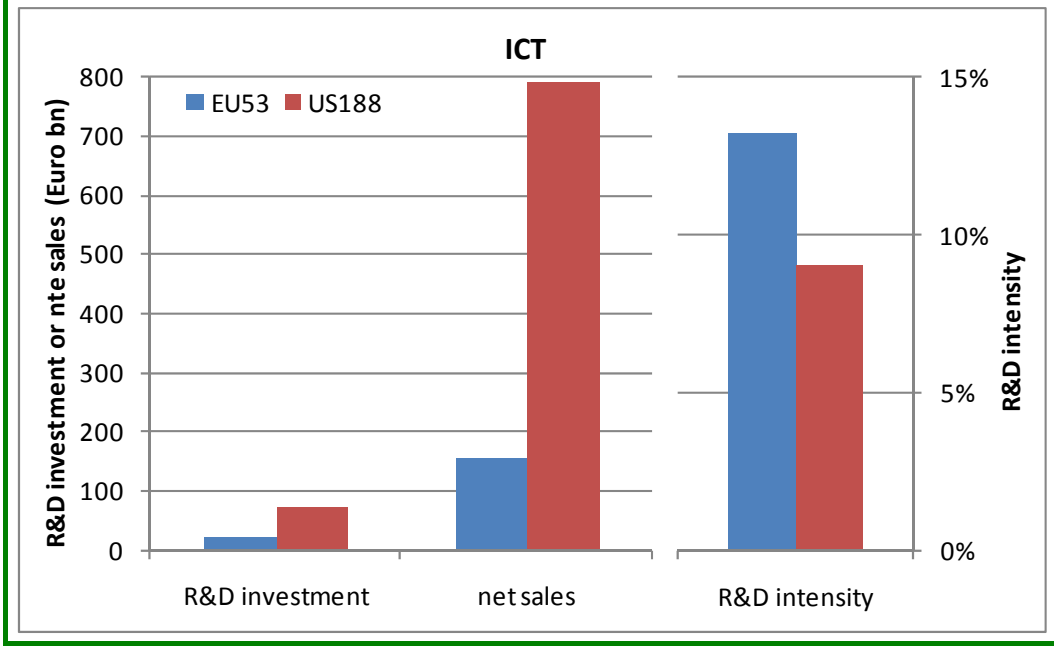
Figure 7.1 Comparison of EU & US companies in health-related sectors



Note: Health-related sectors include the Pharmaceuticals & Biotechnology and the Health Care Equipment & Services sectors.

Source: The 2012 EU Industrial R&D Investment Scoreboard
European Commission, JRC/DG RTD.

Figure 7.2 Comparison of EU & US companies in ICT-related sectors



7.2 R&D and production data from national statistics and the *Scoreboard*

This analysis is performed with figures from 2006 on business R&D and production (national statistics) or net sales (*Scoreboard*). The data sources are the OECD STAN and ANBERD databases for the intramural national statistics and the 2007 *Scoreboard*. Data for the EU comprise the 9 largest countries in terms of R&D for which data are fully available: Germany, France, UK, Netherlands, Italy, Sweden, Finland, Belgium and Spain. These countries account for 90% of the total business R&D of the EU (national statistics) and for 96% of the total R&D of the EU in the *Scoreboard*.

In order to have the most comparable data from the two data sources, an equivalent sector classification has been applied consisting of four manufacturing sectors (high-, medium-high-, medium-low- and low- tech) and one services sector. In addition, the high tech manufacturing sector is further broken-down into the following sectors: pharmaceuticals (ISIC 2423), ICT manufacturing ISIC 30+32), medical precision and optical instruments (ISIC 33) and airspace & spacecraft (ISIC 353).

Table 7.1 shows the main production and R&D data from the national statistics for the US and the EU. Table 7.2 shows the equivalent R&D and net sales data from the *Scoreboard* for the US and EU companies.

Table 7.1 National intramural data on production and R&D for the US and the EU

	US				EU			
Industrial sector	**Production**	**R&D**	**R&D intensity**	**Share**	**Production**	**R&D**	**R&D intensity**	**Share**
	(€ bn)	(€ bn)	(%)	(%)	(€ bn)	(€ bn)	(%)	(%)
High tech manufacturing	537.3	88.0	16.4	3.2	561.0	47.1	8.4	3.4
Pharmaceuticals	*130.7*	*29.5*	*22.5*	*0.8*	*155.0*	*16.8*	*10.8*	*0.9*
ICT manufacturing	*202.9*	*29.2*	*14.4*	*1.2*	*177.4*	*14.8*	*8.4*	*1.1*
Medical, precision and optical instruments	*94.2*	*17.0*	*18.0*	*0.6*	*119.8*	*6.5*	*5.4*	*0.7*
Aircraft and spacecraft	*109.5*	*12.4*	*11.3*	*0.7*	*108.8*	*9.0*	*8.2*	*0.7*
Medium-high tech manufacturing	1057.1	30.7	2.9	6.3	1769.7	43.0	2.4	10.8
Medium-low tech manufacturing	1082.8	5.2	0.5	6.5	1461.6	7.3	0.5	9.0
Low tech manufacturing	1285.2	7.0	0.5	7.7	1497.4	4.3	0.3	9.2
Services	12738.8	55.5	0.4	76.3	11036.5	19.5	0.2	67.6
Total	**16701.1**	**186.4**	**1.1**	**100.0**	**16326.2**	**121.2**	**0.7**	**100.0**

Source: OECD STAN and ANBERD databases (extracted on July 2012)

Notes: Non-euro currencies converted to Euros at the 31.12.2006 exchange rate

Table 7.2 Data from the 2007*Scoreboard* on R&D and net sales for US and EU companies

	US					EU				
Industrial sector	**Number of companies**	**Sales**	**R&D**	**R&D intensity**	**Share**	**Number of companies**	**Sales**	**R&D**	**R&D intensity**	**Share**
		(€billion)	(€billion)	(%)	(%)		(€billion)	(€billion)	(%)	(%)
High tech manufacturing	246	845.0	79.2	9.4	25.8	102	419.1	44.2	10.5	9.9
Pharmaceuticals	*37*	*185.0*	*29.0*	*15.7*	*5.6*	*30*	*122.6*	*18.4*	*15.0*	*2.9*
ICT manufacturing	*166*	*424.6*	*40.1*	*9.4*	*12.9*	*44*	*153.3*	*15.6*	*10.2*	*3.6*
Medical, precision and optical instruments	*26*	*41.0*	*3.7*	*8.9*	*1.3*	*12*	*26.4*	*1.0*	*3.9*	*0.6*
Aircraft and spacecraft	*17*	*194.4*	*6.5*	*3.3*	*5.9*	*16*	*116.8*	*9.1*	*7.8*	*2.7*
Medium-high tech manufacturing	87	761.6	22.6	3.0	23.2	100	1074.7	44.5	4.1	25.3
Medium-low tech manufacturing	16	102.7	1.0	1.0	3.1	19	244.7	2.8	1.1	5.8
Low tech manufacturing	54	885.6	9.1	1.0	27.0	61	1434.7	8.3	0.6	33.7
Services	160	684.4	35.8	5.2	20.9	118	1081.0	15.7	1.5	25.4
Total	**563**	**3279.1**	**147.7**	**4.5**	**100.0**	**400**	**4254.2**	**115.4**	**2.7**	**100.0**

Source: The 2007 EU Industrial R&D Investment Scoreboard.

Comparison EU/US national intramural data (Table 7.1)

- The EU has similar level of production than the US in high tech manufacturing sectors but much lower R&D intensity due to its lower level of R&D expenditures in most high tech sectors, e.g. less than half the R&D of the US in ICT manufacturing and medical, precision and optical instruments.

- A similar result is observed in the services sectors. However, the available information does not allow further investigation of the specific services sectors involved.

- In medium-high tech manufacturing sectors, the EU outperforms the US with a much larger R&D expenditure.

- In medium-low tech and low tech manufacturing sectors the EU/US differences are much less significant than those of the other sectors.

Comparison EU/US *Scoreboard* data (Table 7.2)

- Th
e size of the high tech manufacturing sector of the EU sample is much smaller than the US one in terms of net sales and R&D investment (also in number of companies). However, the average R&D intensity of the EU companies is similar or higher than the US ones in most high tech sectors, except in medical, precision and optical instruments where the average R&D intensity of the US companies is more than double than that of the EU ones.

- In
the services sectors, the R&D investment of the EU sample is also smaller than the US one, but sales are larger. As a result, the average R&D intensity of the EU companies is much lower than that of the US ones.

- Th
e EU sample of companies in medium-high tech manufacturing does better than the US one in terms of size (R&D investment, net sales) and R&D intensity.

- Th
e EU/US differences are much less significant in medium-low tech and low tech manufacturing sectors compared with the rest of sectors.

National intramural statistics versus *Scoreboard* data

According to the conceptual differences between national statistics and *Scoreboard* data (see Box 7.1), the comparison of the two dataset should reflect a partial coverage of R&D by the *Scoreboard* and a much less coverage of the *Scoreboard* in terms of production/sales activities. As shown in Tables 7.1 and 7.2, this is particularly true for the services sectors that are not well covered in the *Scoreboard*, especially in terms of companies' production/sales. However, there are some cases where figures from Tables 7.1 and 7.2 do not follow such a pattern:

- Net sales of the 246 US companies in the *Scoreboard* in high tech manufacturing sectors (€845 billion) are much larger than the whole US production in these sectors according to the national statistics (€537.3 billion).

- R&D investment of the 100 EU companies in medium-high tech manufacturing sectors (€44.5 billion) are slightly higher the whole EU R&D expenditure in these sectors according to the national statistics (€43 billion).

- R&D investment of the 61 EU companies in low tech manufacturing sectors (€8.3 billion) is slightly higher than the whole EU R&D expenditure in these sectors according to the national statistics (€4.3 billion).

Box 7.1 Differences between national intramural statistics and *Scoreboard* data.

The national intramural data are a statistically representative collection of production and R&D activities performed within a country/region (including the inward activities of foreign-affiliated companies). The Scoreboard captures industrial activities of companies regardless of their location. It is an unbalanced partial sample, covering well the industrial R&D (more than 85% of the worldwide business R&D) but much less representative in terms of industrial production activities.

There are other differences between the two datasets regarding methodological aspects, mainly the way of collecting the data (questionnaire-based in the case of national statistics and data taken from companies' audited accounts for the Scoreboard), the sector classification of activities (allocated to a single industrial sector in the Scoreboard and to the various sectors involved in the national statistics) and the definition of variables in the Scoreboard, e.g. companies' net sales and R&D investment, instead of production and R&D expenditure in the national statistics.

7.3. Nature of the R&D intensity gap between the US and the EU

The analysis of the EU-US intensity gap in terms of its “structural factors” (resulting from differences in the sectoral composition of the industry) and “intrinsic factors” (derived from differences in the R&D intensities, sector by sector) has been the subject of several studies (see Box 7.2). This discussion has attracted the attention of policy makers as different approaches are needed to tackle problems of under-investment at company and sector level than to take measures to address problems of industrial structure.

The split of the EU-US R&D intensity gap in to structural and intrinsic factors for the national intramural statistic data is shown in Figure 7.1. The gap for the high tech manufacturing sector

is further breakdown in Figure 7.2

Box 7.2 Decomposition of the R&D intensity difference between two regions

The difference in R&D intensity between world regions or countries can be expressed in two terms: one representing the sectoral composition effect (i.e. due to structural differences) and the other representing underinvestment in R&D (i.e. due to intrinsic differences in R&D intensities, sector by sector). The following formula can be applied:

$$RDI_X - RDI_Y = \sum_i RDI_{Y,i}(P_{X,i} - P_{Y,i}) + \sum_i P_{X,i}(RDI_{X,i} - RDI_{Y,i})$$

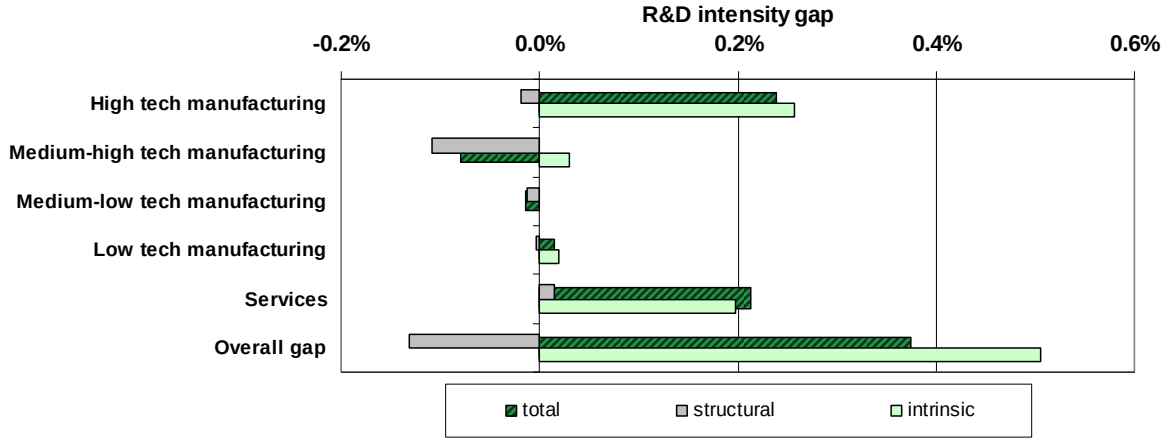
where:

- *X* and *Y* refer to the world regions/countries for which the comparison is performed;
- *RDI* = R&D intensity
- *P* is the share of sector *i* (in terms of production/turnover) within the given world region/country (*X* or *Y*)

The first term on the right side of the formula is the sectoral composition effect, taking into account the different shares of the various sectors within the compared world regions/countries. If this term is negative, it means that the share of the R&D-intensive sectors within the total economy of region/country *Y* is larger than in region/country *X*.

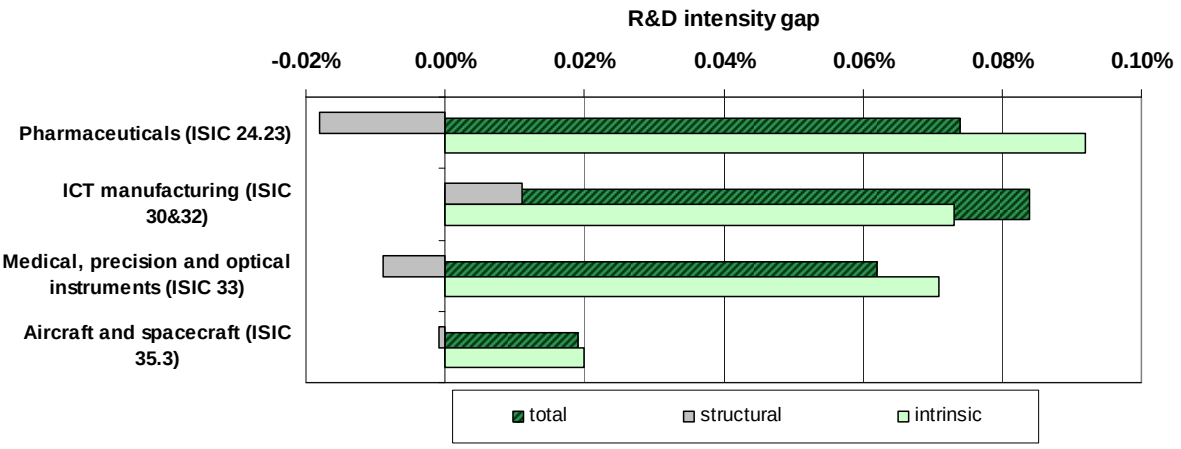
The second term on the right side of the formula is the underinvestment effect, accounting for the differences in R&D intensity sector by sector. If this term is negative, it means that the R&D intensities of sectors with high share within the total economy of region/country *X* are lower than in region/country *Y*.

Figure 7.3 Difference of R&D intensity between the US and the EU separate into structural and intrinsic factors (data from table 7.1).



Source: The 2012 EU Industrial R&D Investment Scoreboard
European Commission, JRC/DG RTD.

Figure 7.4 Difference of R&D intensity between the US and the EU separate into structural and intrinsic factors for high tech manufacturing sectors (data from table 7.1).



Source: The 2012 EU Industrial R&D Investment Scoreboard
European Commission, JRC/DG RTD.

The results in Figure 7.3 show that practically the whole R&D intensity gap of the EU against the US is due to the high tech manufacturing and services sectors and the main reason of the gap in both cases is the lower R&D intensity of the EU sectors (intrinsic factors). In medium-high tech manufacturing, the EU shows a significant surplus against the US in terms of structural factors and a small gap in terms of intrinsic factors.

The closer look into high tech manufacturing sectors in figure 7.4 shows that ICT manufacturing and pharmaceuticals contribute to most of the gap and also mainly due to much lower R&D intensities in the EU (intrinsic factors).

It would be interesting to repeat the decomposition exercise with the *Scoreboard* data; however, it would not be fully meaningful because of the lack of *Scoreboard* representativeness in terms of industrial structure. Nevertheless, the *Scoreboard* data shown in Table 7.2 are self explanatory with regard to the nature of the EU-US R&D gap. The *Scoreboard* data clearly indicate that most of the R&D intensity gap is due to structural differences in high tech manufacturing and services sectors and that the EU companies outperform the US ones in medium-high tech manufacturing sectors in terms of both structural and intrinsic factors.

7.4. Inward and outward activities of foreign-controlled companies

As mentioned above, for a given country, the national statistics include the inward industrial activities of foreign-affiliated companies whereas the *Scoreboard* includes the companies' R&D and sales activities abroad. This main difference explains, to a large

extent, the apparent discrepancies found in the analysis of the nature of the EU-US R&D intensity gap. In fact, the activities of foreign-controlled companies are of considerable magnitude, especially in the case of high tech manufacturing sectors that account for the largest part of the gap.

Inward and outward activities of foreign-controlled companies are not yet fully available[13] but a few examples in key sectors can serve to illustrate the points above.

Table 7.3 summarises the inward activities of foreign-controlled companies in the US and the outward activities of US companies abroad for the main sectors concerned with the EU-US R&D intensity gap.

Table 7.3 Activities of foreign affiliates in the US

Industrial sector	Inward* (%)	Outward* (%)
Whole manufacturing sector		
Production	21.3	36.2
R&D	14.5	13.6
Pharmaceuticals		
Production	67	77.6
R&D	22.4	14.6
Office, accounting & computing machinery		
Production	9.1	173
R&D	0	2.8

* Percentage of the total intramural activity performed within the US

Source: OECD globalization database on the activity of multinationals.

The example of Table 7.3 shows two main points:

- Companies delocalise production and research facilities in different and considerable proportions which may lead to substantial changes of the R&D intensity of both source and destination countries. The intramural R&D intensity of the US in the pharmaceuticals sector is increased by both the positive inward-outward balance of R&D activities and the negative inward-outward balance of production activities. In the office, accounting and computing machinery sector, the US R&D intensity is increased due to the very large proportion of production activities abroad by US companies.

- Off shoring of activities vary significantly from sector to sector. In the ICT manufacturing industry, production of US companies is much larger abroad than at home but their R&D activities abroad are marginal. In the pharmaceuticals sector the situation is completely different, a large proportion of research and production in the US is performed by foreign-controlled companies and also US companies have significant production and

R&D abroad. These figures also explain why the net sales of the US *Scoreboard* companies in high tech manufacturing sectors, especially in ICT manufacturing sectors, are much larger than the whole US production in these sectors.

Unfortunately, equivalent figures of Table 7.3 for the whole EU are not fully available to make an EU-US comparison[14]. However, data from some EU countries confirm the relevance of companies' inward and outward activities in pharmaceutical and ICT sectors that should likely affect the comparison of R&D intensities between the EU and the US.

Annex 1 - Background information

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 Plan[15], which aims to help close the gap between the EU's R&D investment and that of other developed economies.

The 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 office.[16] This should be borne in mind when interpreting the *Scoreboard*'s country classifications and analyses.

The *Scoreboard*'s approach is, therefore, fundamentally different[17] 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 are 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. The two approaches are therefore complementary. The methodological approach of the *Scoreboard*, its scope and limitations are further detailed in Annex 2 below.

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 1500 companies listed in this year's *Scoreboard* account for about 90%[18] 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 investments and so find where they stand in the EU and in the 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 policy formulation or other R&D-related actions.

Furthermore, the *Scoreboard* dataset has been made freely accessible so as to encourage further economic and financial analyses and research by any interested parties.

Annex 2 - Methodological notes

The data for the ranking of the 2012 EU Industrial R&D Scoreboard (the *Scoreboard*) have been collected from companies' annual reports and accounts by Bureau van Dijk Electronic Publishing GmbH (BvD). The source documents, annual reports & accounts, are public domain documents and so the *Scoreboard* is capable of independent replication. In order to ensure consistency with our previous *Scoreboards*, BvD data for the years prior to 2011 have been checked with the corresponding data of the previous *Scoreboards* adjusted for the corresponding exchange rates of the annual reports. In case of conflict, historic data from the nearest *Scoreboard* have been taken (e.g. data for 2010 from the 2011 *Scoreboard*, etc.).

Main characteristics of the data

The data correspond to companies' latest published accounts, intended to be their 2011 fiscal year accounts, although due to different accounting practices throughout the world, they also include accounts ending on a range of dates between late 2010 and early 2012. Furthermore, the accounts of some companies are publicly available more promptly than others. Therefore, the current set represents a heterogeneous set of timed data.

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 are not listed separately. Where consolidated group accounts of the ultimate parent company are not available, subsidiaries are included.

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.

In case of an acquisition or a merger, pro forma figures for the year of acquisition are used along with pro-forma comparative figures if available.

The R&D investment included in the *Scoreboard* is the cash investment which is 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 when disclosed. 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.

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 are independent of the actual location of the R&D activity.

Companies are in industry sectors according to the NACE Rev. 2[19] and the ICB (Industry Classification Benchmark).

Limitations

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*. Due to different national accounting standards and disclosure practice, companies of some countries are less likely than others to disclose R&D investment consistently.

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.

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.

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.

In implementing the definition of R&D, companies exhibit variability arising from a number of sources: i) different interpretations of the R&D 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; ii) different companies' information systems for measuring the costs associated with R&D processes; iii) different countries' fiscal treatment of costs.

Interpretation

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

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 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).

Sudden changes in R&D figures may arise because a change in company accounting standards. For example, the first time adoption of IFRS[20], may lead to information discontinuities due to the different treatment of R&D, i.e. R&D capitalisation criteria are stricter and, where the criteria are met, the amounts must be capitalised.

For many highly diversified companies, the R&D investment disclosed in their accounts relates only to part of their activities, whereas sales and profits 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.

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).

For companies outside the Euro zone, all currency amounts have been translated at the Euro exchange rates ruling at 31 December 2011, as shown in Table A3.1.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.

Table A3.1. Euro exchange rates applied to *Scoreboard* data of companies based in different currency areas (as of 31 Dec 2011).		
Country	**As of 31 Dec 2010**	**As of 31 Dec 2011**
Australia	***$ 1.3087***	**$ 1.2740**
Brazil	***2.2177 Brazilian real***	**2.4051 Brazilian real**
Canada	***$ 1.333***	**$ 1.3210**
China	***8.84 Renminbi***	**8.1526 Renminbi**
Czech Republic	***25.0889 Koruna***	**25.7998 Koruna**
Croatia	***7.3819 Kuna***	**7.5370 Kuna**
Denmark	***7.4518 Danish Kronor***	**7.4344 Danish Kronor**
Hungary	***278.337 Forint***	**314.158 Forint**
India	***59.9846 Indian Rupee***	**68.9178 Indian Rupee**
Israel	***4.75 Shekel***	**4.9439 Shekel**
Japan	***108.8013 Yen***	**100.6036 Yen**
Mexico	***16.55 Mexican Peso***	**18.10 Mexican Peso**
Norway	***7.797 Norwegian Kronor***	**7.750 Norwegian Kronor**
Poland	***3.9634 Zloty***	**4.4218 Zloty**
Russia	***40.952 Rouble***	**41.666 Rouble**
South Korea	***1522.46 Won***	**1492.54 Won**
Sweden	***9.0186 Swedish Kronor***	**8.9119 Swedish Kronor**
Switzerland	***1.2504 Swiss Franc***	**1.2174 Swiss Franc**
Turkey	***2.0646 Turkish lira***	**2.450 Turkish lira**
UK	***£ 0.8568***	**£ 0.8368**
USA	***$ 1.3415***	**$ 1.2939**
Taiwan	***$ 39.1131***	**$ 39.1696**

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. **Net 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 than 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) minus 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 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 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.

Annex 3 – Composition of the top 1000 EU sample

The analysis of chapter 6 applies an extended sample of 1000 companies based in the EU. It consists of 405 companies included in the world R&D ranking of top 1500 companies and additional 595 companies also ranked by level of R&D investment. The composition by country and industry of the EU 1000 sample is presented in the Table A3.1 below.

Table A3.1 Distribution of the sample of 1000 companies based in the EU by country and industry

Industries	EU Country codes																		
(4-digit ICB)	AU	BE	CZ	DK	FI	FR	DE	EL	EI	IT	LU	MT	PL	PO	SI	ES	SV	NL	UK	Total
Automobiles & parts	2				1	7	20			7							1		4	42
Pharmaceuticals		1		2	1	10	6		3	5				1	1	3	5	2	14	54
Telecommunications equipment		1		1	2	3	1									1	2	1	8	20
Aerospace & defence		1				6	2			2						1	1	1	11	25
Chemicals	3	5		1	4	4	11				1						2	3	9	43
Banks		2		2			6		1	2	1		1	2		1	3	2	5	28
Electrical components & equipment	1			1	1	5	5		1	2							2		9	27
Industrial machinery	4	2		3	7	7	30		1	4						2	9		10	79
Software	2	1		1	4	13	14			1							7	3	24	70
Fixed line telecommunications	1	1		1		1	1			1			1	1		1	2	1	2	14
Semiconductors	1	1				1	5										1	4	4	17
Health care equipment & services		2		2		2	14		2	1							6		5	34
Oil & gas producers	1			1	1	1				1						1			3	9
Commercial vehicles & trucks	1				1	2	5			2	1					1	2	1		16
Food producers				1	4	3	2		2		1					1		5	5	24
Leisure goods				2	1	2	1											2	1	9
Support services	1					3	22		1		1						7	2	22	59
General industrials	1			1	1		10			1						1	1	1	4	21
Media						5				1							1		6	13
Construction & materials	1	3		2	2	7	6		2	3					1	3	2	8	2	42
Electronic equipment	1	4			4	2	11			4							1	5	9	41
Electricity		1	1		2	2	1			2				1		2	1		2	15

Personal goods	1					5	6			3	2						1	1	1	20
Household goods & home construction					1	2	4			3						1	1		8	20
General retailers						1	6			1							1	1	7	17
Biotechnology	1	5		9	1	8	7										4	1	13	49
Computer hardware						1	1		1								3		3	9
Computer services				1	1	8	5			1				1		2			16	35
Industrial metals & mining	2	1			2	1	5				2						2	1	1	17
Alternative energy		1		2			6				1								1	11
Gas, water & multiutilities	1					2	3												2	8
Food & drug retailers		1				1	1										1	2	4	10
Industrial transportation			1	1		3	1			2							2	1	1	12
Travel & leisure	1				1	1	3	1		1		1					2		6	17
Mobile telecommunications					1		1												2	4
Other financials						2	4				1						3		5	15
Oil equipment, services & distribution						2					2							1	1	6
Tobacco																	1		1	2
Nonlife insurance	1						3												2	6
Forestry & paper					3	1											4		1	9
Life insurance						1												1	2	4
Mining																	2		4	6
Beverages		1		1														1	2	5
Real Estate Investment & Services		1					4										2	1	4	12
Electronic office equipment						1														1
Internet							1												2	3
Total	27	35	2	35	46	126	234	1	14	50	13	1	2	6	2	21	85	52	248	1000

Source: The 2012 EU Industrial R&D Investment Scoreboard

European Commission, JRC/DG RTD.

Annex 4 - Main indicators of the top 1500 R&D investors

The following tables provide the list of top R&D investors ranked by the level of R&D investment, including companies' net sales, R&D intensity and operating profits.

The full dataset of the 2012 EU industrial R&D investment *Scoreboard* is freely available in the JRC/IPTS website http://iri.jrc.ec.europa.eu/.

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
- Total number of employees

World rank	Company	Country	Industry (3-digit ICB)	R&D-2011	R&D 1-year growth	Sales-2011	Sales 1-year growth	R&D intensity
				€ m	(%)	€ m	(%)	(%)
1	Toyota Motor	Japan	Automobiles & parts	7754,5	7,6	184798,1	-1,9	4,2
2	Microsoft	USA	Software & computer services	7582,5	8,5	56977,4	5,4	13,3
3	Volkswagen	Germany	Automobiles & parts	7203,0	15,1	159337,0	25,6	4,5
4	Novartis	Switzerland	Pharmaceuticals & biotechnology	7001,3	12,1	45263,2	15,7	15,5
5	Samsung Electronics	South Korea	Electronic & electrical equipment	6857,8	8,8	110716,1	6,9	6,2
6	Pfizer	USA	Pharmaceuticals & biotechnology	6805,8	-6,4	52109,9	-0,6	13,1
7	Roche	Switzerland	Pharmaceuticals & biotechnology	6782,3	-8,0	34935,1	-10,4	19,4
8	Intel	USA	Technology hardware & equipment	6453,4	27,0	41733,5	23,8	15,5
9	General Motors	USA	Automobiles & parts	6278,7	16,7	116141,9	10,8	5,4
10	Merck US	USA	Pharmaceuticals & biotechnology	6090,1	-8,3	37133,5	4,5	16,4
11	Johnson & Johnson	USA	Pharmaceuticals & biotechnology	5833,5	10,3	50258,9	5,6	11,6
12	Daimler	Germany	Automobiles & parts	5629,0	16,0	106540,0	9,0	5,3
13	Panasonic	Japan	Leisure goods	5173,1	9,1	78023,7	5,8	6,6
14	Honda Motor	Japan	Automobiles & parts	5169,1	12,2	79036,8	-7,3	6,5
15	Nokia	Finland	Technology hardware & equipment	4910,0	-0,6	38659,0	-8,9	12,7
16	Sanofi-Aventis	France	Pharmaceuticals & biotechnology	4795,0	9,2	33389,0	3,2	14,4
17	GlaxoSmithKline	UK	Pharmaceuticals & biotechnology	4377,0	-2,4	32725,1	-3,5	13,4
18	Sony	Japan	Leisure goods	4310,5	0,4	64569,3	-10,0	6,7
19	Siemens	Germany	Electronic & electrical equipment	4278,0	0,9	73515,0	-3,2	5,8
20	Nissan Motor	Japan	Automobiles & parts	4256,3	11,1	93564,5	25,2	4,5
21	Robert Bosch	Germany	Automobiles & parts	4242,0	10,9	51494,0	9,0	8,2
22	Cisco Systems	USA	Technology hardware & equipment	4241,4	4,1	35598,6	15,0	11,9
23	IBM	USA	Software & computer services	4219,0	7,4	82630,8	7,1	5,1
24	Hitachi	Japan	Technology hardware & equipment	4102,0	10,8	96118,7	7,8	4,3
25	Ford Motor	USA	Automobiles & parts	4096,1	6,0	105312,6	5,7	3,9
26	Google	USA	Software & computer services	3989,5	37,2	29295,2	29,3	13,6
27	Eli Lilly	USA	Pharmaceuticals & biotechnology	3880,4	2,8	18770,0	5,2	20,7
28	AstraZeneca	UK	Pharmaceuticals & biotechnology	3668,0	10,4	25961,0	1,0	14,1
29	Ericsson	Sweden	Technology hardware & equipment	3656,9	19,6	25462,4	11,6	14,4
30	General Electric	USA	General industrials	3555,9	16,8	109928,9	-4,4	3,2
31	Oracle	USA	Software & computer services	3495,6	0,1	28689,2	4,2	12,2
32	BMW	Germany	Automobiles & parts	3373,0	21,6	68821,0	17,9	4,9
33	EADS	The Netherlands	Aerospace & defence	3249,0	5,4	49128,0	7,4	6,6
34	Abbott Laboratories	USA	Pharmaceuticals & biotechnology	3191,4	10,9	30026,5	10,5	10,6
35	Toshiba	Japan	General industrials	3180,8	-1,0	60661,8	-4,4	5,2
36	LG	South Korea	Electronic & electrical equipment	3153,7	47,8	6749,6	-90,0	46,7
37	Canon	Japan	Technology hardware	3060,8	-2,5	35375,6	-4,0	8,7

World rank	Company	Country	Industry (3-digit ICB)	R&D-2011	R&D 1-year growth	Sales-2011	Sales 1-year growth	R&D intensity
				€ m	(%)	€ m	(%)	(%)
			& equipment					
38	Bayer	Germany	Chemicals	3045,0	-5,2	36528,0	4,1	8,3
39	Bristol-Myers Squibb	USA	Pharmaceuticals & biotechnology	2967,0	7,7	16418,6	9,0	18,1
40	Denso	Japan	Automobiles & parts	2966,9	10,5	31370,0	6,0	9,5
41	Huawei	China	Technology hardware & equipment	2906,5	48,5	15659,3	-31,3	18,6
42	Takeda Pharmaceutical	Japan	Pharmaceuticals & biotechnology	2803,1	-4,9	15005,0	3,0	18,7
43	Boeing	USA	Aerospace & defence	2771,5	-4,8	53122,3	6,9	5,2
44	NTT	Japan	Fixed line telecommunications	2663,6	-3,7	104486,5	3,2	2,5
45	Peugeot (PSA)	France	Automobiles & parts	2634,0	9,7	59912,0	6,9	4,4
46	Boehringer Ingelheim	Germany	Pharmaceuticals & biotechnology	2516,0	2,6	13171,0	4,6	19,1
47	Hewlett-Packard	USA	Technology hardware & equipment	2514,9	10,0	98342,2	1,2	2,6
48	Alcatel-Lucent	France	Technology hardware & equipment	2514,0	-1,8	15327,0	-2,9	16,4
49	Fujitsu	Japan	Software & computer services	2370,3	6,0	44426,1	-4,5	5,3
50	Qualcomm	USA	Technology hardware & equipment	2314,7	17,5	11559,6	36,1	20,0
51	Amgen	USA	Pharmaceuticals & biotechnology	2177,1	-2,7	11820,9	1,6	18,4
52	Fiat	Italy	Automobiles & parts	2175,0	12,3	59559,0	4,1	3,7
53	Renault	France	Automobiles & parts	2064,0	19,4	42628,0	11,7	4,8
54	EMC	USA	Technology hardware & equipment	2032,2	15,0	15463,0	17,6	13,1
55	Volvo	Sweden	Industrial engineering	1965,2	7,9	34825,8	17,2	5,6
56	Finmeccanica	Italy	Aerospace & defence	1960,0	-0,4	17318,0	1,9	11,3
57	SAP	Germany	Software & computer services	1939,0	12,1	14233,0	14,2	13,6
58	Astellas Pharma	Japan	Pharmaceuticals & biotechnology	1887,8	-12,6	9639,7	1,6	19,6
59	Apple	USA	Technology hardware & equipment	1877,3	36,3	83661,0	66,0	2,2
60	Daiichi Sankyo	Japan	Pharmaceuticals & biotechnology	1840,2	-4,8	9334,3	-3,0	19,7
61	Renesas	Japan	Electronic & electrical equipment	1814,7	-9,9	8781,8	-22,4	20,7
62	Caterpillar	USA	Industrial engineering	1775,3	20,6	46478,1	41,2	3,8
63	Philips	The Netherlands	Leisure goods	1768,0	4,2	22579,0	-11,2	7,8
64	FUJIFILM	Japan	Electronic & electrical equipment	1724,0	-1,0	21830,3	0,7	7,9
65	STMicroelectronics	The Netherlands	Technology hardware & equipment	1693,3	4,0	7523,8	-5,9	22,5
66	Continental	Germany	Automobiles & parts	1693,0	11,0	30504,9	17,1	5,5
67	Amazon.com	USA	General retailers	1636,9	8,8	37156,7	40,6	4,4
68	PetroChina	China	Oil & gas producers	1622,0	11,7	245787,8	36,7	0,7
69	BASF	Germany	Chemicals	1622,0	7,6	73497,0	15,1	2,2
70	NEC	Japan	Software & computer services	1610,6	-8,2	30198,7	-2,5	5,3
71	United Technologies	USA	Aerospace & defence	1590,5	17,9	44972,6	7,1	3,5
72	Otsuka	Japan	Pharmaceuticals & biotechnology	1583,4	-3,2	11481,2	5,9	13,8
73	Procter & Gamble	USA	Household goods & home construction	1568,1	4,1	64672,7	5,0	2,4
74	Mitsubishi Electric	Japan	Electronic & electrical equipment	1551,2	27,0	36191,3	8,6	4,3

World rank	Company	Country	Industry (3-digit ICB)	R&D-2011	R&D 1-year growth	Sales-2011	Sales 1-year growth	R&D intensity
				€ m	(%)	€ m	(%)	(%)
75	Sharp	Japan	Electronic & electrical equipment	1539,3	-7,0	24421,3	-10,9	6,3
76	Broadcom	USA	Technology hardware & equipment	1532,6	12,5	5710,6	8,4	26,8
77	Merck DE	Germany	Pharmaceuticals & biotechnology	1517,1	8,6	10276,4	15,1	14,8
78	DuPont	USA	Chemicals	1511,7	18,5	29338,4	20,5	5,2
79	Banco Santander	Spain	Banks	1420,0	6,1	45297,0	7,7	3,1
80	Honeywell	USA	General industrials	1390,4	22,7	28231,7	9,5	4,9
81	Hyundai Motor	South Korea	Automobiles & parts	1386,7	-14,3	52202,3	-30,8	2,7
82	Mitsubishi Chemical	Japan	Chemicals	1377,7	1,3	31902,4	27,6	4,3
83	Texas Instruments	USA	Technology hardware & equipment	1325,5	9,2	10615,2	-1,7	12,5
84	Dow Chemical	USA	Chemicals	1272,1	-0,8	46359,8	11,8	2,7
85	Royal Bank of Scotland	UK	Banks	1254,7	41,5	28789,1	-27,6	4,4
86	Nestle	Switzerland	Food producers	1248,5	-23,0	68703,7	-23,8	1,8
87	Eisai	Japan	Pharmaceuticals & biotechnology	1244,4	-30,1	6443,6	-19,3	19,3
88	Sumitomo Chemical	Japan	Chemicals	1215,8	4,3	19370,0	20,2	6,3
89	Novo Nordisk	Denmark	Pharmaceuticals & biotechnology	1209,9	-5,1	8924,4	9,2	13,6
90	Aisin Seiki	Japan	Automobiles & parts	1207,7	20,2	22912,9	12,2	5,3
91	Research In Motion	Canada	Technology hardware & equipment	1204,9	15,4	14247,6	-7,4	8,5
92	Vale	Brazil	Mining	1190,0	96,6	45590,8	46,0	2,6
93	Ricoh	Japan	Technology hardware & equipment	1183,6	8,4	18928,4	-5,6	6,3
94	Monsanto	USA	Food producers	1172,4	25,9	10445,9	28,7	11,2
95	Medtronic	USA	Health care equipment & services	1165,5	0,0	12507,9	1,6	9,3
96	Petroleo Brasiliero	Brazil	Oil & gas producers	1149,6	67,9	101524,2	22,6	1,1
97	Celgene	USA	Pharmaceuticals & biotechnology	1130,5	30,8	3742,2	33,5	30,2
98	ZTE	China	Technology hardware & equipment	1129,8	16,2	10579,8	22,8	10,7
99	Advanced Micro Devices	USA	Technology hardware & equipment	1123,0	3,4	5076,1	1,1	22,1
100	eBay	USA	General retailers	1118,1	31,3	9005,1	27,3	12,4
101	ABB	Switzerland	Industrial engineering	1116,8	28,7	29360,8	20,3	3,8
102	Suzuki Motor	Japan	Automobiles & parts	1092,3	1,0	24981,5	1,8	4,4
103	Telefonica	Spain	Fixed line telecommunications	1089,0	20,9	62837,0	3,5	1,7
104	Porsche	Germany	Automobiles & parts	1046,0	13,2			
105	Hon Hai Precision Industry	Taiwan	Electronic & electrical equipment	1042,7	5,3	88139,7	15,2	1,2
106	China Railway Construction	China	Construction & materials	1039,2	-9,8	54148,3	-3,3	1,9
107	Unilever	The Netherlands	Food producers	1009,0	8,7	46467,0	5,0	2,2
108	Seagate Technology	Ireland	Technology hardware & equipment	1006,0	15,0			
109	Vivendi	France	Media	998,0	-10,2	28813,0	-0,2	3,5
110	Deere	USA	Industrial engineering	947,7	16,5	23123,2	15,1	4,1
111	Biogen Idec	USA	Pharmaceuticals & biotechnology	942,6	-2,3	3901,9	7,0	24,2
112	Gilead Sciences	USA	Pharmaceuticals & biotechnology	929,3	13,5	6480,7	5,5	14,3
113	Delphi	UK	Automobiles & parts	927,4	21,5	10678,6	-13,9	8,7
114	Yahoo!	USA	Software & computer	925,2	0,4	3852,1	-21,2	24,0

World rank	Company	Country	Industry (3-digit ICB)	R&D-2011	R&D 1-year growth	Sales-2011	Sales 1-year growth	R&D intensity
				€ m	(%)	€ m	(%)	(%)
			services					
115	AT&T	USA	Fixed line telecommunications	925,1	-6,5	88690,0	1,3	1,0
116	Bombardier	Canada	Aerospace & defence	915,2	36,3	13887,9	3,6	6,6
117	Mazda Motor	Japan	Automobiles & parts	912,0	7,7	20217,0	-6,0	4,5
118	Electronic Arts	USA	Leisure goods	903,5	1,4	3201,9	15,4	28,2
119	HSBC	UK	Banks	872,6	17,6	52822,5	-14,6	1,7
120	Syngenta	Switzerland	Chemicals	871,0	9,2	10254,3	14,0	8,5
121	Royal Dutch Shell	UK	Oil & gas producers	869,5	10,4	363375,1	27,7	0,2
122	Applied Materials	USA	Technology hardware & equipment	864,1	-2,2	8128,1	10,1	10,6
123	Taiwan Semiconductor	Taiwan	Technology hardware & equipment	863,6	13,9	10902,5	1,8	7,9
124	Sumitomo Electric	Japan	Electronic & electrical equipment	861,0	19,9	20478,4	12,2	4,2
125	Telstra	Australia	Fixed line telecommunications	857,1	12,3	19804,9	1,3	4,3
126	Western Digital	USA	Technology hardware & equipment	850,1	80,0	9643,7	26,7	8,8
127	Schneider	France	Electronic & electrical equipment	838,0	18,9	22387,0	14,3	3,7
128	Bridgestone	Japan	Automobiles & parts	835,1	-1,3	30074,6	5,7	2,8
129	Teva Pharmaceutical Industries	Israel	Pharmaceuticals & biotechnology	834,7	15,8	14152,6	13,6	5,9
130	Schlumberger	USA	Oil equipment, services & distribution	829,3	16,8	30558,8	44,1	2,7
131	BT	UK	Fixed line telecommunications	825,7	-16,1	22580,3	-5,9	3,7
132	France Telecom	France	Fixed line telecommunications	819,0	-3,1	45277,0	-3,2	1,8
133	Tokyo Electron	Japan	Technology hardware & equipment	810,5	56,1	6295,5	51,3	12,9
134	Exxon Mobil	USA	Oil & gas producers	806,9	3,2	360946,7	26,2	0,2
135	3M	USA	General industrials	800,7	12,7	22885,1	11,1	3,5
136	Motorola	USA	Technology hardware & equipment	799,9	-59,1	6339,7	-64,1	12,6
137	Juniper Networks	USA	Technology hardware & equipment	793,6	11,9	3438,2	8,7	23,1
138	Danaher	USA	Electronic & electrical equipment	787,2	25,8	12435,7	21,9	6,3
139	Marvell Technology	Bermuda	Technology hardware & equipment	782,9	12,9	2622,3	-6,1	29,9
140	ALSTOM	France	Industrial engineering	780,0	11,0	19934,0	-4,7	3,9
141	UCB	Belgium	Pharmaceuticals & biotechnology	780,0	11,3	2876,0	-10,6	27,1
142	Total	France	Oil & gas producers	776,0	8,5	166550,0	4,6	0,5
143	Nvidia	USA	Technology hardware & equipment	770,2	17,4	3089,8	12,8	24,9
144	Symantec	USA	Software & computer services	748,9	12,4	5201,3	8,7	14,4
145	Fiat Industrial	Italy	General retailers	742,0	13,8	24289,0	13,8	3,1
146	ZF	Germany	Automobiles & parts	732,0	17,9	15509,0	20,2	4,7
147	Baxter International	USA	Health care equipment & services	731,1	3,4	10737,3	8,2	6,8
148	SAFRAN	France	Aerospace & defence	723,0	33,9	11658,0	5,7	6,2
149	Konica Minolta	Japan	Technology hardware & equipment	721,2	6,0	7635,9	-4,5	9,4
150	L'Oreal	France	Personal goods	720,5	8,4	20343,1	4,3	3,5
151	SAIC Motor	China	Automobiles & parts	702,3	44,2	50942,8	18,6	1,4
152	Allergan	USA	Pharmaceuticals & biotechnology	697,6	12,2	4132,5	8,7	16,9

World rank	Company	Country	Industry (3-digit ICB)	R&D-2011	R&D 1-year growth	Sales-2011	Sales 1-year growth	R&D intensity
				€ m	(%)	€ m	(%)	(%)
153	Boston Scientific	USA	Health care equipment & services	691,7	-4,7	5890,7	-2,4	11,7
154	Nikon	Japan	Leisure goods	683,2	14,1	9135,2	17,0	7,5
155	Dell	USA	Technology hardware & equipment	661,6	29,5	47972,0	0,9	1,4
156	Asahi Kasei	Japan	Chemicals	659,0	5,4	15644,4	9,8	4,2
157	China Railway	China	Construction & materials	655,6	156,0	54241,4	-2,9	1,2
158	Yamaha Motor	Japan	Automobiles & parts	646,5	17,9	12690,3	-1,3	5,1
159	Gazprom	Russia	Oil & gas producers	643,0	10,9	111378,9	29,0	0,6
160	NetApp	USA	Technology hardware & equipment	640,1	27,7	4817,4	21,7	13,3
161	Thales	France	Aerospace & defence	629,2	-4,0	13028,4	-0,7	4,8
162	Rolls-Royce	UK	Aerospace & defence	621,4	2,8	13292,2	0,4	4,7
163	Valeo	France	Automobiles & parts	617,0	10,8	10868,0	12,8	5,7
164	Freescale	Bermuda	Electronic & electrical equipment	616,0	1,9	3533,5	2,6	17,4
165	Forest Laboratories	USA	Pharmaceuticals & biotechnology	615,9	11,3	3514,8	3,9	17,5
166	Micron Technology	USA	Technology hardware & equipment	611,3	26,8	6363,7	-2,9	9,6
167	Telecom Italia	Italy	Fixed line telecommunications	611,0	-12,5	29957,0	8,7	2,0
168	Olympus	Japan	Health care equipment & services	610,1	-0,8	8438,1	-3,9	7,2
169	China Petroleum & Chemicals	China	Oil & gas producers	596,4	0,6	278902,5	18,8	0,2
170	Michelin	France	Automobiles & parts	592,0	8,6	20719,0	15,8	2,9
171	ASML Holding	The Netherlands	Technology hardware & equipment	590,3	12,8	5651,0	25,4	10,4
172	Isuzu Motors	Japan	Industrial engineering	584,8	0,3	13922,5	-1,1	4,2
173	Kirin	Japan	Beverages	578,7	4,6	20602,0	-4,9	2,8
174	Hynix Semiconductor	South Korea	Technology hardware & equipment	575,2	6,0	6975,6	-13,9	8,2
175	Adobe Systems	USA	Software & computer services	570,4	8,5	3258,6	11,0	17,5
176	Shire	UK	Pharmaceuticals & biotechnology	563,8	10,3	3295,0	22,8	17,1
177	Zygna	USA	Support services	561,9	386,2	881,1	90,8	63,8
178	Intuit	USA	Software & computer services	556,5	14,5	3208,1	19,0	17,3
179	Komatsu	Japan	Industrial engineering	545,4	18,1	19706,9	38,5	2,8
180	St Jude Medical	USA	Health care equipment & services	544,9	11,7	4337,0	8,7	12,6
181	Mondelez	USA	Food producers	542,5	20,4	42016,4	10,5	1,3
182	MediaTek	Taiwan	Technology hardware & equipment	540,8	-9,1	2217,3	-23,5	24,4
183	Shionogi	Japan	Pharmaceuticals & biotechnology	533,0	3,5	2657,8	-4,0	20,1
184	Nintendo	Japan	Leisure goods	523,8	15,9	6440,3	-54,8	8,1
185	TDK	Japan	Electronic & electrical equipment	522,6	-2,5	8101,1	0,8	6,5
186	Seiko Epson	Japan	Technology hardware & equipment	518,1	-24,3	8730,9	-10,9	5,9
187	Electricite de France	France	Electricity	518,0	6,6	65307,0	-9,9	0,8
188	Japan Tobacco	Japan	Tobacco	511,7	3,7	20224,6	-66,8	2,5
189	Toray Industries	Japan	Chemicals	511,6	11,4	15797,3	16,9	3,2
190	Agilent Technologies	USA	Electronic & electrical equipment	501,6	6,0	5112,5	21,5	9,8
191	Infineon Technologies	Germany	Technology hardware & equipment	499,0	4,4	3997,0	-13,4	12,5

World rank	Company	Country	Industry (3-digit ICB)	R&D-2011	R&D 1-year growth	Sales-2011	Sales 1-year growth	R&D intensity
				€ m	(%)	€ m	(%)	(%)
192	BP	UK	Oil & gas producers	491,5	-18,5	290221,0	26,4	0,2
193	Mitsubishi Heavy	Japan	General industrials	486,8	-62,1	28051,7	-4,0	1,7
194	Chevron	USA	Oil & gas producers	484,6	19,2	188863,9	23,3	0,3
195	Raytheon	USA	Aerospace & defence	483,0	0,0	19210,9	-1,3	2,5
196	Tyco Electronics	Switzerland	Electronic & electrical equipment	482,3	6,7	11061,1	18,6	4,4
197	Cummins	USA	Industrial engineering	479,9	54,5	13948,5	36,5	3,4
198	Kao	Japan	Personal goods	479,0	7,3	12093,0	2,7	4,0
199	Fuji Heavy Industries	Japan	Automobiles & parts	478,5	29,5	15086,3	6,2	3,2
200	Deutsche Bank	Germany	Banks	476,0	50,6	33351,0	9,1	1,4
201	Thomson Reuters	Canada	Media	475,3	13,1	10670,8	9,5	4,5
202	Xerox	USA	Technology hardware & equipment	473,8	-6,1	17486,7	4,6	2,7
203	NXP Semiconductors	The Netherlands	Technology hardware & equipment	467,6	6,5	3241,4	-4,8	14,4
204	Australia & New Zealand Banking	Australia	Banks	463,9	14,1	12929,1	10,9	3,6
205	Automatic Data Processing	USA	Support services	463,6	16,7	7861,4	13,7	5,9
206	Asahi Glass	Japan	Construction & materials	461,8	17,9	12078,8	-5,7	3,8
207	Kyocera	Japan	Electronic & electrical equipment	453,0	-8,7	11842,2	10,9	3,8
208	Lockheed Martin	USA	Aerospace & defence	452,1	-8,3	35937,1	-0,8	1,3
209	Liebherr-International	Switzerland	Industrial engineering	449,6	24,4	8723,8	15,0	5,2
210	Barclays	UK	Banks	448,1	326,1	35350,4	-8,1	1,3
211	Whirlpool	USA	Household goods & home construction	446,7	12,0	14426,2	1,6	3,1
212	LSI	USA	Technology hardware & equipment	445,2	-14,0	1579,7	-20,5	28,2
213	Ono Pharmaceutical	Japan	Pharmaceuticals & biotechnology	441,3	12,8	1449,6	7,2	30,4
214	Commonwealth Bank of Australia	Australia	Banks	441,1	16,6	15283,8	5,0	2,9
215	Lloyds Banking	UK	Banks	440,9	146,9	24819,6	-51,1	1,8
216	Autodesk	USA	Software & computer services	437,8	14,2	1712,3	13,5	25,6
217	Corning	USA	Technology hardware & equipment	435,1	-6,6	6097,8	19,0	7,1
218	AREVA	France	Electricity	434,0	-16,5	8872,0	-20,2	4,9
219	Saint-Gobain	France	Construction & materials	430,0	5,9	42116,0	5,0	1,0
220	Emerson Electric	USA	Electronic & electrical equipment	428,9	17,3	18720,1	10,8	2,3
221	Covidien	Ireland	Health care equipment & services	428,2	23,9	8543,0	12,6	5,0
222	Maxim Integrated Products	USA	Technology hardware & equipment	426,9	5,2	1857,6	-2,8	23,0
223	Dongfeng Motor	China	Automobiles & parts	424,3	32,0	16122,3	7,4	2,6
224	Vertex Pharmaceuticals	USA	Pharmaceuticals & biotechnology	420,4	5,7	1090,2	883,9	38,6
225	Northrop Grumman	USA	Aerospace & defence	419,7	-9,9	20412,7	-24,0	2,1
226	Omron	Japan	Electronic & electrical equipment	418,5	11,3	6160,0	18,1	6,8
227	Regeneron Pharmaceuticals	USA	Pharmaceuticals & biotechnology	409,2	266,8	344,6	-2,9	118,8
228	Murata Manufacturing	Japan	Technology hardware & equipment	407,5	-1,6	5814,0	10,2	7,0
229	HTC	Taiwan	Technology hardware & equipment	407,4	23,3	11890,8	67,1	3,4
230	PepsiCo	USA	Beverages	405,8	7,6	51398,1	15,0	0,8

World rank	Company	Country	Industry (3-digit ICB)	R&D-2011	R&D 1-year growth	Sales-2011	Sales 1-year growth	R&D intensity
				€ m	(%)	€ m	(%)	(%)
231	Textron	USA	Aerospace & defence	405,8	30,3	8714,0	7,1	4,7
232	Navistar International	USA	Industrial engineering	404,1	12,7	10787,5	14,9	3,7
233	Kawasaki Heavy Industries	Japan	General industrials	397,2	5,0	12964,9	11,2	3,1
234	Henkel	Germany	Household goods & home construction	396,0	0,8	15605,0	3,4	2,5
235	Rohm	Japan	Technology hardware & equipment	395,4	5,6	3029,5	-9,2	13,1
236	Johnson Controls	USA	Automobiles & parts	394,2	25,0	31558,1	19,0	1,2
237	Vestas Wind Systems	Denmark	Alternative energy	393,0	9,8	5836,0	-15,7	6,7
238	Analog Devices	USA	Technology hardware & equipment	390,7	2,7	2313,4	8,4	16,9
239	Brother Industries	Japan	Technology hardware & equipment	390,1	12,9	4946,1	11,5	7,9
240	Accenture	Ireland	Support services	388,9	31,2	17848,1	0,0	2,2
241	Avaya	USA	Technology hardware & equipment	388,7	23,6	4287,0	9,6	9,1
242	Synopsys	USA	Software & computer services	382,5	9,5	1186,8	11,2	32,2
243	DSM	The Netherlands	Chemicals	381,0	-7,1	9193,0	1,6	4,1
244	National Australia Bank	Australia	Banks	377,5	100,0	12922,8	-0,6	2,9
245	McKesson	USA	Food & drug retailers	376,4	3,4	94855,9	9,5	0,4
246	Actelion	Switzerland	Pharmaceuticals & biotechnology	375,9	-5,5	1475,3	-6,9	25,5
247	Hella	Germany	Automobiles & parts	373,7	15,8	3549,5	8,1	10,5
248	Korea Electric Power	South Korea	Electricity	371,4	-17,3	29210,2	10,6	1,3
249	Becton Dickinson	USA	Health care equipment & services	368,3	-9,4	5861,4	0,6	6,3
250	Vodafone	UK	Mobile telecommunications	363,3	5,9	55464,4	1,2	0,7
251	CSR China	China	Industrial engineering	363,2	21,2	9753,4	24,0	3,7
252	CA	USA	Software & computer services	359,4	-27,5	3720,5	8,7	9,7
253	Stryker	USA	Health care equipment & services	357,1	17,3	6420,1	13,5	5,6
254	SanDisk	USA	Technology hardware & equipment	356,6	9,2	4376,0	17,3	8,1
255	Shin-Etsu Chemical	Japan	Chemicals	355,3	6,4	10418,8	14,3	3,4
256	Carl Zeiss	Germany	Health care equipment & services	354,5	24,0	4237,1	42,1	8,4
257	Evonik Industries	Germany	General industrials	349,0	5,4	51,0	-99,7	684,3
258	Mitsubishi Motors	Japan	Automobiles & parts	348,0	55,7	17971,9	25,1	1,9
259	Lenovo	Hong Kong	Technology hardware & equipment	347,7	48,3	22856,8	37,0	1,5
260	Amadeus	Spain	Software & computer services	347,5	6,7	2759,1	6,4	12,6
261	Ajinomoto	Japan	Food producers	346,4	-2,2	11906,2	2,3	2,9
262	Pioneer	Japan	Electronic & electrical equipment	344,0	-3,8	4343,1	-0,5	7,9
263	PPG Industries	USA	Chemicals	343,9	12,9	11504,0	10,9	3,0
264	Autoliv	USA	Automobiles & parts	341,2	22,2	6362,5	14,8	5,4
265	JFE	Japan	Industrial metals & mining	340,5	-5,1	31488,2	11,4	1,1
266	Kla-Tencor	USA	Technology hardware & equipment	338,9	33,1	2451,5	74,2	13,8
267	Xilinx	USA	Technology hardware & equipment	336,4	10,9	1731,8	-5,4	19,4
268	Akzo Nobel	The Netherlands	Chemicals	336,0	7,0	15697,0	1,8	2,1

World rank	Company	Country	Industry (3-digit ICB)	R&D-2011	R&D 1-year growth	Sales-2011	Sales 1-year growth	R&D intensity
				€ m	(%)	€ m	(%)	(%)
269	Lam Research	USA	Technology hardware & equipment	335,9	35,4	2059,8	24,9	16,3
270	SunGard Data Systems	USA	Software & computer services	334,6	12,5	3402,9	-14,9	9,8
271	Mitsui Chemicals	Japan	Chemicals	329,9	-13,0	14459,0	20,4	2,3
272	BAT	UK	Tobacco	329,8	52,5	18400,5	3,5	1,8
273	Tencent	Cayman Islands	Software & computer services	329,3	59,3	3495,3	45,0	9,4
274	Dassault Systemes	France	Software & computer services	329,3	2,2	1783,0	14,0	18,5
275	Daikin Industries	Japan	Construction & materials	328,0	16,9	12118,9	19,1	2,7
276	KDDI	Japan	Mobile telecommunications	326,7	6,1	35521,4	3,8	0,9
277	BYD	China	Electronic & electrical equipment	326,3	89,5	5680,6	-0,8	5,7
278	Toyota Boshoku	Japan	Automobiles & parts	323,6	0,3	9589,1	-2,0	3,4
279	MAHLE	Germany	Automobiles & parts	322,8	4,1	6002,2	14,1	5,4
280	Reed Elsevier	UK	Media	322,6	17,4	7171,9	-0,9	4,5
281	Eaton	USA	General industrials	322,3	-1,9	12403,6	17,0	2,6
282	Sandvik	Sweden	Industrial engineering	322,0	15,5	10557,0	13,8	3,1
283	Fuji Electric	Japan	Electronic & electrical equipment	320,7	32,8	6996,0	1,8	4,6
284	Sega Sammy	Japan	Travel & leisure	319,4	-22,6	3932,9	2,9	8,1
285	Philip Morris International	USA	Tobacco	319,2	5,6	59004,6	12,7	0,5
286	Teijin	Japan	Chemicals	316,7	-4,5	8496,0	11,6	3,7
287	Dai Nippon Printing	Japan	Media	315,1	-6,3	14988,1	-4,8	2,1
288	Cadence Design Systems	USA	Software & computer services	312,8	6,1	888,7	22,9	35,2
289	Kobe Steel	Japan	Industrial metals & mining	312,6	11,3	18542,7	11,6	1,7
290	Tesco	UK	Food & drug retailers	311,9	7,4	77118,6	5,9	0,4
291	Givaudan	Switzerland	Chemicals	311,3	-7,1	3215,8	-7,6	9,7
292	Halliburton	USA	Oil equipment, services & distribution	309,9	9,6	19189,3	38,1	1,6
293	UBIsoft Entertainment	France	Software & computer services	306,5	-5,2	1061,3	2,2	28,9
294	Advantest	Japan	Technology hardware & equipment	301,3	69,4	1402,6	165,1	21,5
295	Facebook	USA	Software & computer services	299,9	169,4	2868,1	88,0	10,5
296	Citrix Systems	USA	Software & computer services	299,1	6,2	1705,2	17,7	17,5
297	Nidec	Japan	Electronic & electrical equipment	298,8	21,6	6785,1	16,1	4,4
298	IHI	Japan	Industrial engineering	298,7	17,9	12150,4	-1,6	2,5
299	HBIS	China	Industrial metals & mining	298,5		15392,3	28,2	1,9
300	BSH Bosch und Siemens Hausgerate	Germany	Household goods & home construction	297,0	4,9	9654,0	6,4	3,1
301	Expedia	USA	Travel & leisure	294,5	33,7	2665,6	3,0	11,0
302	Ciena	USA	Technology hardware & equipment	293,6	15,9	1346,3	40,9	21,8
303	DNB	Norway	Banks	293,1	35,9	5410,0	6,4	5,4
304	Life Technologies	USA	Pharmaceuticals & biotechnology	292,1	0,7	2918,1	5,2	10,0
305	Wistron	Taiwan	Technology hardware & equipment	289,4	14,7	16806,7	7,0	1,7
306	Lexmark	USA	Technology hardware & equipment	289,1	1,4	3225,1	-0,6	9,0

World rank	Company	Country	Industry (3-digit ICB)	R&D-2011	R&D 1-year growth	Sales-2011	Sales 1-year growth	R&D intensity
				€ m	(%)	€ m	(%)	(%)
307	Intesa Sanpaolo	Italy	Banks	288,0	14,3	16877,0	3,6	1,7
308	General Dynamics	USA	Aerospace & defence	287,5	-26,8	25254,7	0,7	1,1
309	Diehl	Germany	General industrials	287,2	14,2	2929,3	7,5	9,8
310	China Communications Construction	China	Construction & materials	283,8	46,9	36096,0	7,9	0,8
311	Statoil	Norway	Oil & gas producers	283,4	7,4	83298,1	22,6	0,3
312	ON Semiconductor	USA	Technology hardware & equipment	280,2	46,2	2660,4	48,8	10,5
313	Alps Electric	Japan	Electronic & electrical equipment	279,4	-0,1	5235,6	-4,4	5,3
314	CSL	Australia	Pharmaceuticals & biotechnology	278,6	12,1	3479,7	-0,5	8,0
315	Kubota	Japan	General industrials	277,0	10,4	10061,1	8,8	2,8
316	Metallurgical of China	China	General industrials	275,1	25,0	28177,2	11,3	1,0
317	Rockwell Collins	USA	Aerospace & defence	274,4	2,9	3714,4	3,0	7,4
318	Brocade Communications	USA	Technology hardware & equipment	273,9	0,0	1659,7	2,5	16,5
319	BAE Systems	UK	Aerospace & defence	273,6	-15,8	21233,6	-15,8	1,3
320	Dassault Aviation	France	Aerospace & defence	273,4	36,9	3305,3	-21,1	8,3
321	Yokogawa Electric	Japan	Electronic & electrical equipment	273,2	-4,5	3328,0	5,7	8,2
322	Compal Electronics	Taiwan	Electronic & electrical equipment	270,4	7,4	17694,1	-21,9	1,5
323	China CNR	China	Industrial engineering	267,7	21,7	10818,3	43,5	2,5
324	Fresenius	Germany	Health care equipment & services	267,0	9,4	16522,0	3,4	1,6
325	Hospira	USA	Pharmaceuticals & biotechnology	265,6	14,3	3135,6	3,6	8,5
326	Chimei Innolux	Taiwan	Electronic & electrical equipment	264,5	14,1	13021,3	3,4	2,0
327	Thermo Fisher Scientific	USA	Health care equipment & services	263,2	19,6	9062,4	10,9	2,9
328	Goodyear	USA	Automobiles & parts	262,0	-0,9	17595,6	20,9	1,5
329	JX	Japan	Oil & gas producers	259,6	5,1	106639,7	11,3	0,2
330	Infosys	India	Software & computer services	258,8	234,6	4895,1	22,7	5,3
331	Harman International Industries	USA	Leisure goods	256,5	2,9	3372,8	28,4	7,6
332	Delta Electronics (Taiwan)	Taiwan	Electronic & electrical equipment	254,9	12,2	4392,2	0,4	5,8
333	Sekisui Chemical	Japan	Household goods & home construction	254,7	6,7	9597,0	12,5	2,7
334	Toyota Industries	Japan	Automobiles & parts	252,1	30,2	15347,3	12,1	1,6
335	Visteon	USA	Automobiles & parts	252,0	-7,4	6219,2	8,2	4,1
336	Kia Motors	South Korea	Automobiles & parts	251,9	0,0	28981,1	2,1	0,9
337	Baker Hughes	USA	Oil equipment, services & distribution	250,4	-24,5	15326,5	37,6	1,6
338	Parker-Hannifin	USA	Industrial engineering	248,9	8,4	10159,9	6,5	2,4
339	Nitto Denko	Japan	Chemicals	248,6	19,8	6042,4	1,0	4,1
340	ThyssenKrupp	Germany	Industrial metals & mining	248,0	-1,2	43356,0	1,7	0,6
341	Kimberly-Clark	USA	Personal goods	244,2	-0,3	16111,0	5,6	1,5
342	Deutsche Telekom	Germany	Fixed line telecommunications	243,8	-6,9	58653,0	-6,0	0,4
343	Terumo	Japan	Health care equipment & services	241,9	38,8	3845,3	22,4	6,3
344	Harris	USA	Technology hardware & equipment	241,1	-4,2	4213,1	4,7	5,7
345	Avago Technologies	Singapore	Technology hardware & equipment	240,4	15,2			

World rank	Company	Country	Industry (3-digit ICB)	R&D-2011	R&D 1-year growth	Sales-2011	Sales 1-year growth	R&D intensity
				€ m	(%)	€ m	(%)	(%)
346	United Microelectronics	Taiwan	Technology hardware & equipment	239,8	7,5	2979,2	-7,7	8,1
347	UniCredit	Italy	Banks	239,8	2,8	25651,7	0,1	0,9
348	BMC Software	USA	Software & computer services	239,4	3,1	1678,6	5,2	14,3
349	Altera	USA	Technology hardware & equipment	238,9	16,8	1595,5	5,6	15,0
350	Meiji	Japan	Food producers	236,9	5,0	11030,8	0,3	2,1
351	ArcelorMittal	Luxembourg	Industrial metals & mining	236,5	-5,0	72627,7	20,4	0,3
352	Taisho Pharmaceutical	Japan	Pharmaceuticals & biotechnology	235,5	-15,8	2568,9	0,9	9,2
353	RWE	Germany	Gas, water & multiutilities	235,0	-10,0	49153,0	-3,1	0,5
354	Quanta Computer	Taiwan	Technology hardware & equipment	234,1	1,0	28329,0	-1,3	0,8
355	Calsonic Kansei	Japan	Automobiles & parts	233,3	10,7	7779,3	26,3	3,0
356	Danone	France	Food producers	233,0	11,5	19318,0	13,6	1,2
357	Grunenthal	Germany	Personal goods	233,0	12,6			
358	Tellabs	USA	Technology hardware & equipment	232,3	0,3	993,7	-21,7	23,4
359	Mentor Graphics	USA	Software & computer services	231,4	5,1	784,2	10,9	29,5
360	GDF Suez	France	Gas, water & multiutilities	231,0	4,1	90673,0	7,3	0,3
361	Garmin	Switzerland	Leisure goods	230,8	7,7	2132,0	2,6	10,8
362	Electrolux	Sweden	Household goods & home construction	229,2	2,5	11400,1	-4,4	2,0
363	Watson Pharmaceuticals	USA	Pharmaceuticals & biotechnology	228,0	3,5	3543,1	28,5	6,4
364	Mylan	USA	Pharmaceuticals & biotechnology	227,8	4,5	4719,3	12,0	4,8
365	Sumitomo Metal Industries	Japan	Industrial metals & mining	227,1	9,8	14651,3	14,6	1,6
366	Yamaha	Japan	Leisure goods	226,9	5,0	3546,2	-14,0	6,4
367	Cerner	USA	Software & computer services	224,6	2,0	1702,7	19,1	13,2
368	Hexagon	Sweden	Industrial engineering	223,4	63,0	2169,1	38,8	10,3
369	Elbit Systems	Israel	Aerospace & defence	223,1	23,3	2177,5	5,5	10,2
370	KT	South Korea	Fixed line telecommunications	222,8	-38,2	14755,3	3,2	1,5
371	Paccar	USA	Industrial engineering	222,5	20,7	12640,2	58,9	1,8
372	AU Optronics	Taiwan	Electronic & electrical equipment	220,2	34,3	9693,2	-18,7	2,3
373	Portugal Telecom	Portugal	Fixed line telecommunications	219,0	9,5	6000,7	63,0	3,6
374	Samsung Electro-Mechanics	South Korea	Electronic & electrical equipment	217,1	54,5	4047,4	6,7	5,4
375	Behr	Germany	Automobiles & parts	216,6	3,6	3706,0	10,6	5,8
376	Hyundai Mobis	South Korea	Automobiles & parts	216,2	18,4	17643,6	18,7	1,2
377	Showa Denko	Japan	Chemicals	214,8	4,5	8493,9	7,2	2,5
378	AGCO	USA	Industrial engineering	213,3	25,7	6780,4	27,2	3,1
379	Knorr-Bremse	Germany	Industrial engineering	208,8	19,1	4240,8	14,2	4,9
380	Rheinmetall	Germany	Automobiles & parts	208,0	-2,8	4454,0	11,7	4,7
381	Parametric Technology	USA	Software & computer services	207,6	33,2	901,9	15,5	23,0
382	ConocoPhillips	USA	Oil & gas producers	206,4	16,1	189205,5	29,2	0,1
383	Ipsen	France	Pharmaceuticals & biotechnology	206,3	2,0	1159,8	-0,9	17,8
384	Rosneft	Russia	Oil equipment, services & distribution	205,2	184,6	64860,7	40,6	0,3

World rank	Company	Country	Industry (3-digit ICB)	R&D-2011	R&D 1-year growth	Sales-2011	Sales 1-year growth	R&D intensity
				€ m	(%)	€ m	(%)	(%)
385	JVC KENWOOD	Japan	Leisure goods	205,1	-13,2	3190,8	-9,0	6,4
386	BioMerieux	France	Health care equipment & services	204,5	37,1			
387	Fanuc	Japan	Industrial engineering	203,6	31,8	5354,8	20,7	3,8
388	Colgate-Palmolive	USA	Personal goods	202,5	2,3	12933,0	7,5	1,6
389	Legrand	France	Electronic & electrical equipment	201,6	16,2	4250,1	9,2	4,7
390	L'Air Liquide	France	Chemicals	201,5	9,3	14456,9	7,2	1,4
391	Ingersoll-Rand	Ireland	Industrial engineering	198,9	5,5	11393,0	4,2	1,7
392	Chongoing Changan	China	Automobiles & parts	197,6	130,7	3087,9	-20,3	6,4
393	Rockwell Automation	USA	Industrial engineering	196,6	27,9	4637,5	23,5	4,2
394	Asustek Computer	Taiwan	Technology hardware & equipment	196,4	-8,6	9805,6	-10,6	2,0
395	Atlas Copco	Sweden	Industrial engineering	195,4	15,8	9111,7	16,2	2,1
396	Atmel	USA	Technology hardware & equipment	195,1	6,6	1393,5	9,7	14,0
397	Sankyo	Japan	Industrial engineering	193,9	26,6	1727,1	-13,9	11,2
398	Netflix	USA	General retailers	193,7	53,5	2476,7	48,2	7,8
399	OC Oerlikon	Switzerland	General industrials	193,0	2,6	3435,1	16,1	5,6
400	B Braun Melsungen	Germany	Health care equipment & services	192,1	13,9	4609,4	4,2	4,2
401	Sumitomo Rubber Industries	Japan	Automobiles & parts	191,5	3,0	6731,2	12,0	2,8
402	ENI	Italy	Oil & gas producers	191,0	-13,6	109589,0	11,2	0,2
403	Goodrich	USA	Aerospace & defence	190,9	0,0	6240,7	15,9	3,1
404	Edwards Lifesciences	USA	Health care equipment & services	190,4	20,5	1297,3	16,0	14,7
405	JDS Uniphase	USA	Technology hardware & equipment	190,1	40,7	1300,0	23,3	14,6
406	Weatherford International	Switzerland	Oil equipment, services & distribution	189,4	14,2	10039,4	27,1	1,9
407	Indra Sistemas	Spain	Software & computer services	189,3	2,8	2688,5	5,1	7,0
408	NCR	USA	Technology hardware & equipment	188,6	11,4	4206,7	13,0	4,5
409	Furukawa Electric	Japan	General industrials	188,4	9,8	9136,7	13,5	2,1
410	Illinois Tool Works	USA	Industrial engineering	187,8	10,2	13746,5	12,1	1,4
411	Teradata	USA	Software & computer services	187,0	64,6	1825,5	22,0	10,2
412	BorgWarner	USA	Automobiles & parts	186,0	30,1	5498,6	25,9	3,4
413	Zimmer	USA	Health care equipment & services	184,0	8,2	3440,6	5,5	5,3
414	ARM Holdings	UK	Technology hardware & equipment	183,6	12,8	587,7	21,0	31,2
415	CSR UK	UK	Technology hardware & equipment	182,6	18,0	653,2	5,6	28,0
416	SK Telecom	South Korea	Fixed line telecommunications	182,1	0,3	10694,8	3,3	1,7
417	Giant Interactive	Cayman Islands	Software & computer services	181,6	19,4	220,1	41,0	82,5
418	General Mills	USA	Food producers	181,6	0,0	12874,2	11,9	1,4
419	Kaneka	Japan	Chemicals	181,6	11,9	4666,7	13,8	3,9
420	Takata	Japan	Automobiles & parts	181,6	13,7	3806,0	-2,1	4,8
421	Sage	UK	Software & computer services	181,4	-4,5	1594,1	-7,0	11,4
422	Zodiac Aerospace	France	Aerospace & defence	181,0	29,7	2734,8	27,2	6,6
423	Kansai Electric Power	Japan	Electricity	180,9	-7,2	27957,1	7,9	0,6
424	Tognum	Germany	Industrial engineering	180,0	16,0	2972,1	15,9	6,1
425	Elan	Ireland	Pharmaceuticals & biotechnology	177,8	-1,3	510,6	-21,6	34,8

World rank	Company	Country	Industry (3-digit ICB)	R&D-2011	R&D 1-year growth	Sales-2011	Sales 1-year growth	R&D intensity
				€ m	(%)	€ m	(%)	(%)
426	Namco Bandai	Japan	Leisure goods	177,7	11,0	4516,7	15,2	3,9
427	RSA Insurance	UK	Nonlife insurance	175,7	15,8	9724,2	-0,8	1,8
428	Petroleos de Venezuela	Venezuela	Oil & gas producers	175,4	20,7	96417,0	31,4	0,2
429	Koito Manufacturing	Japan	Automobiles & parts	175,1	1,8	4285,2	5,6	4,1
430	Tokai Rika	Japan	Automobiles & parts	174,9	3,7	3177,9	-2,5	5,5
431	Mitsubishi Gas Chemical	Japan	Chemicals	173,5	7,8	4496,9	17,7	3,9
432	Burelle	France	Automobiles & parts	173,1	44,7	4222,1	29,9	4,1
433	Novozymes	Denmark	Pharmaceuticals & biotechnology	173,1	10,7	1413,7	8,1	12,2
434	PMC-Sierra	USA	Technology hardware & equipment	173,0	19,4	505,7	3,0	34,2
435	Shanghai Electric	China	Industrial engineering	173,0	-6,0	8330,7	7,9	2,1
436	Wacker Chemie	Germany	Chemicals	172,9	4,7	4909,7	3,4	3,5
437	JSR	Japan	Chemicals	172,7	-3,7	3479,9	12,9	5,0
438	GKN	UK	Automobiles & parts	172,1	24,1	6866,0	13,0	2,5
439	Wartsila	Finland	Industrial engineering	172,0	17,0	4209,0	-7,6	4,1
440	Alpine	Japan	Leisure goods	171,6	-11,6	2017,7	0,8	8,5
441	Amdocs	UK	Software & computer services	171,5	6,8	2455,9	6,5	7,0
442	Santen Pharmaceutical	Japan	Pharmaceuticals & biotechnology	171,3	22,0	1137,8	3,5	15,1
443	Invensys	UK	Software & computer services	170,9	-4,7	3033,9	2,1	5,6
444	NTN	Japan	Industrial engineering	170,6	16,9	5404,3	20,1	3,2
445	ZF Lenksysteme	Germany	Automobiles & parts	170,2	21,7	3566,3	18,8	4,8
446	Comverse Technology	USA	Technology hardware & equipment	170,0	-13,1	1232,2	-1,8	13,8
447	International Flavors & Fragrances	USA	Chemicals	169,9	0,5	2154,7	6,3	7,9
448	Pirelli	Italy	Automobiles & parts	169,7	13,1	5654,8	9,9	3,0
449	Chiesi	Italy	Pharmaceuticals & biotechnology	169,4	12,7	1056,9	4,1	16,0
450	Baidu	Cayman Islands	Software & computer services	169,1	92,0	1778,6	83,2	9,5
451	Freudenberg	Germany	General industrials	169,0	9,0	6006,5	9,6	2,8
452	Saudi Basic Industries	Saudi Arabia	Chemicals	168,9	25,7	39137,1	25,0	0,4
453	Sany Heavy Industry	China	Industrial engineering	167,3	94,7	5986,6	48,7	2,8
454	Kerry	Ireland	Food producers	167,1	6,8	5302,2	6,9	3,2
455	Linear Technology	USA	Technology hardware & equipment	166,9	8,5	978,9	8,3	17,0
456	Danfoss	Denmark	Industrial engineering	166,8	17,6	4560,5	3,5	3,7
457	SKF	Sweden	Industrial engineering	166,1	21,9	7430,0	8,5	2,2
458	Biomarin Pharmaceutical	USA	Pharmaceuticals & biotechnology	165,7	46,2	341,1	17,3	48,6
459	Toto	Japan	Construction & materials	165,5	27,0	4501,6	7,3	3,7
460	Grundfos	Denmark	Industrial engineering	164,1	13,4	729,6	-72,3	22,5
461	Agfa-Gevaert	Belgium	Electronic & electrical equipment	164,0	4,5	3023,0	2,5	5,4
462	National Instruments	USA	Electronic & electrical equipment	163,2	21,4	791,5	17,3	20,6
463	Maxingvest	Germany	General retailers	163,0	7,2	9173,0	-4,4	1,8
464	Voith	Germany	General industrials	162,4	-36,1	5593,6	7,6	2,9
465	Tesla Motors	USA	Automobiles & parts	161,5	124,7	157,8	74,9	102,3
466	Toppan Printing	Japan	Media	161,2	-33,6	15019,7	0,3	1,1
467	Solvay	Belgium	Chemicals	161,0	-14,8	8109,0	14,1	2,0
468	Kuraray	Japan	Chemicals	160,8	5,8	3669,1	10,9	4,4

World rank	Company	Country	Industry (3-digit ICB)	R&D-2011	R&D 1-year growth	Sales-2011	Sales 1-year growth	R&D intensity
				€ m	(%)	€ m	(%)	(%)
469	NGK Spark Plug	Japan	Automobiles & parts	160,4	16,0	2831,5	16,8	5,7
470	Ibiden	Japan	Electronic & electrical equipment	160,3	27,2	2991,8	9,8	5,4
471	Red Hat	USA	Software & computer services	159,4	20,5	875,7	24,6	18,2
472	Trumpf	Germany	General industrials	158,0	22,1	1340,0	-19,4	11,8
473	Teradyne	USA	Technology hardware & equipment	157,2	3,2	1104,5	-11,2	14,2
474	Umicore	Belgium	Chemicals	156,8	16,2	14480,9	49,4	1,1
475	East Japan Railway	Japan	Travel & leisure	155,1	-5,4	25180,2	-1,6	0,6
476	Kraft Foods	USA	Food producers	153,0	7,0	14417,7	4,8	1,1
477	Reckitt Benckiser	UK	Household goods & home construction	152,9	6,7	11333,8	12,2	1,3
478	Hasbro	USA	Leisure goods	152,7	-1,8	3312,1	7,1	4,6
479	JS	Japan	Construction & materials	152,6	4,1	12841,8	31,5	1,2
480	Dover	USA	Industrial engineering	152,2	1,8	6144,3	11,3	2,5
481	Illumina	USA	Pharmaceuticals & biotechnology	152,2	10,7	815,8	16,9	18,7
482	SAAB	Sweden	Aerospace & defence	152,0	12,6	2636,7	-3,8	5,8
483	Technicolor	France	Media	152,0	4,8	3450,0	-15,2	4,4
484	Gemalto	The Netherlands	Electronic & electrical equipment	151,7	19,7	2015,4	3,0	7,5
485	Koc	Turkey	General industrials	151,4	52,3	28477,1	35,1	0,5
486	Hilti	Liechtenstein	Construction & materials	151,1	-22,2			
487	Human Genome Sciences	USA	Pharmaceuticals & biotechnology	150,6	79,0	101,2	-16,8	148,8
488	International Game Technology	USA	Travel & leisure	150,5	-2,7	1512,5	-2,0	9,9
489	Tatung	Taiwan	Electronic & electrical equipment	149,8	-11,4	3733,5	-7,4	4,0
490	Idemitsu Kosan	Japan	Oil & gas producers	149,0	0,9	42862,6	17,8	0,3
491	Kellogg	USA	Food producers	148,4	2,7	10200,2	6,5	1,5
492	Semiconductor Manufacturing	Cayman Islands	Technology hardware & equipment	148,0	9,5	1022,9	-14,9	14,5
493	Salesforce.com	USA	Software & computer services	147,8	1,8	1751,7	36,8	8,4
494	Dongfang Electric	China	Industrial engineering	147,3	22,8	5176,8	12,2	2,8
495	Cypress Semiconductor	USA	Technology hardware & equipment	146,8	7,4	769,2	13,4	19,1
496	Hisamitsu Pharmaceutical	Japan	Pharmaceuticals & biotechnology	146,8	6,9	1370,2	0,4	10,7
497	Trimble Navigation	USA	Electronic & electrical equipment	146,2	26,1	1270,6	27,1	11,5
498	Johnson Matthey	UK	Chemicals	146,0	16,9	14366,7	20,4	1,0
499	Shiseido	Japan	Personal goods	145,9	1,5	6785,7	6,0	2,2
500	Hoya	Japan	Leisure goods	145,1	1,9	3586,6	-12,7	4,0
501	Linde	Germany	Chemicals	145,0	54,3	13787,0	7,1	1,1
502	Clariant	Switzerland	Chemicals	144,6	30,4	6053,7	3,5	2,4
503	Almirall	Spain	Pharmaceuticals & biotechnology	144,5	158,0	768,4	-12,9	18,8
504	Claas	Germany	Industrial engineering	144,3	18,3	3304,2	33,5	4,4
505	Advanced Semiconductor Engineering	Taiwan	Technology hardware & equipment	144,2	-8,3	4731,5	-1,8	3,0
506	Bio-Rad Laboratories	USA	Health care equipment & services	144,1	8,2	1602,5	7,6	9,0
507	Lanxess	Germany	Chemicals	144,0	24,1	8775,0	23,2	1,6
508	Swatch	Switzerland	Personal goods	143,7	7,4	5556,0	10,7	2,6

World rank	Company	Country	Industry (3-digit ICB)	R&D-2011	R&D 1-year growth	Sales-2011	Sales 1-year growth	R&D intensity
				€ m	(%)	€ m	(%)	(%)
509	Reliance Industries	India	Oil & gas producers	143,5	91,2	52026,2	34,9	0,3
510	Intersil	USA	Technology hardware & equipment	143,3	1,2	587,8	-7,5	24,4
511	CR Bard	USA	Health care equipment & services	143,3	0,0	2238,5	6,5	6,4
512	Rabobank	The Netherlands	Banks	143,0	-35,3	12781,0	13,4	1,1
513	Cubist Pharmaceuticals	USA	Pharmaceuticals & biotechnology	142,6	16,9	575,6	17,0	24,8
514	POSCO	South Korea	Industrial metals & mining	142,6	-62,3	46257,9	13,9	0,3
515	Applied Micro Circuits	USA	Technology hardware & equipment	142,3	69,3	178,4	-6,8	79,7
516	ALCOA	USA	Industrial metals & mining	142,2	5,7	19283,6	18,7	0,7
517	British Sky Broadcasting	UK	Media	142,2	12,2	7063,2	10,3	2,0
518	Metro	Germany	General retailers	142,0	389,7	66702,0	-0,8	0,2
519	Mattel	USA	Leisure goods	141,6	5,4	4842,8	7,0	2,9
520	Microchip Technology	USA	Technology hardware & equipment	141,2	7,1	1069,0	-8,5	13,2
521	Polycom	USA	Technology hardware & equipment	141,0	22,5	1156,0	22,8	12,2
522	Endo Pharmaceuticals	USA	Pharmaceuticals & biotechnology	140,9	26,1	1939,4	46,2	7,3
523	Pou Chen	Taiwan	Personal goods	140,8	7,1	5321,0	7,9	2,6
524	Toyo Seikan Kaisha	Japan	General industrials	140,1	1,2	6989,1	-0,5	2,0
525	Dragerwerk	Germany	Health care equipment & services	140,0	-3,8	2255,8	3,6	6,2
526	Molex	USA	Electronic & electrical equipment	140,0	17,6	2696,6	16,0	5,2
527	Essilor International	France	Health care equipment & services	139,9	-7,3	4189,5	7,7	3,3
528	Tomtom	The Netherlands	Electronic & electrical equipment	139,1	-15,3	1273,2	-16,3	10,9
529	Kyorin	Japan	Pharmaceuticals & biotechnology	138,9	18,3	1026,6	3,5	13,5
530	Mochida Pharmaceutical	Japan	Pharmaceuticals & biotechnology	138,8	19,9	857,2	8,7	16,2
531	Nuance Communications	USA	Software & computer services	138,6	18,0	1019,2	17,9	13,6
532	Fujikura	Japan	Electronic & electrical equipment	138,5	3,3	5062,4	1,1	2,7
533	Incyte	USA	Pharmaceuticals & biotechnology	138,1	44,3	73,0	-44,4	189,2
534	Dainippon Screen Mfg	Japan	Technology hardware & equipment	138,1	19,6	2486,9	52,4	5,6
535	UBE Industries	Japan	General industrials	137,0	5,8	6350,8	16,3	2,2
536	Iberdrola	Spain	Electricity	136,4	4,9	31648,0	4,0	0,4
537	SK	South Korea	Oil equipment, services & distribution	136,3	-5,1	74627,0	22,7	0,2
538	Nissan Chemical Industries	Japan	Chemicals	135,7	8,0	1477,5	-3,7	9,2
539	Anheuser-Busch Inbev	Belgium	Beverages	135,3	-4,9	30177,0	7,6	0,4
540	LyondellBasell Industries	The Netherlands	Chemicals	135,3	17,8			
541	Veolia Environnement	France	Gas, water & multiutilities	135,0	-3,2	29647,3	-16,8	0,5
542	Assa Abloy	Sweden	Construction & materials	134,9	18,4	4688,7	13,5	2,9
543	SMC	Japan	Industrial engineering	134,0	2,5	3399,5	54,8	3,9
544	Merz	Germany	Pharmaceuticals &	133,7	3,7	837,2	18,8	16,0

World rank	Company	Country	Industry (3-digit ICB)	R&D-2011	R&D 1-year growth	Sales-2011	Sales 1-year growth	R&D intensity
				€ m	(%)	€ m	(%)	(%)
			biotechnology					
545	Federal-Mogul	USA	Automobiles & parts	132,9	10,3	5340,4	11,1	2,5
546	Icahn Enterprises	USA	General industrials	132,9	10,3	7054,6	15,5	1,9
547	ASM International	The Netherlands	Technology hardware & equipment	132,8	68,6	1634,3	33,6	8,1
548	Bruker	USA	Health care equipment & services	132,7	24,8	1267,8	25,7	10,5
549	Arkema	France	Chemicals	132,0	7,3	5900,0	21,2	2,2
550	Varian Medical Systems	USA	Health care equipment & services	131,9	8,9	2006,9	10,2	6,6
551	Vattenfall	Sweden	Electricity	131,4	-37,4	20314,2	-15,2	0,6
552	Pace	UK	Technology hardware & equipment	131,2	-5,0	1784,8	10,8	7,3
553	ING	The Netherlands	Life insurance	131,0	-11,5	16605,0	-69,6	0,8
554	Nippon Kayaku	Japan	Chemicals	130,6	7,0	1462,9	4,4	8,9
555	OKI Electric	Japan	Technology hardware & equipment	130,4	-10,3	4257,1	-3,5	3,1
556	Skyworks Solutions	USA	Technology hardware & equipment	130,3	25,7	1096,6	32,4	11,9
557	Swisscom	Switzerland	Fixed line telecommunications	129,8	6,0	9419,0	-4,3	1,4
558	Sumitomo Bakelite	Japan	Chemicals	129,7	3,9	1842,0	8,5	7,0
559	Vilmorin	France	Food producers	129,6	10,4	1063,8	6,2	12,2
560	Huyau Automotive	China	Travel & leisure	129,3	58,8	6341,9	16,7	2,0
561	Smith & Nephew	UK	Health care equipment & services	129,1	10,6	3300,1	7,8	3,9
562	Eastman Kodak	USA	Leisure goods	129,1	-48,0	4654,1	-16,2	2,8
563	Heidelberger Druckmaschinen	Germany	Industrial engineering	129,0	6,2	2595,7	-1,3	5,0
564	Lafarge	France	Construction & materials	129,0	-15,7	15284,0	-5,5	0,8
565	Cooper Industries	Ireland	Electronic & electrical equipment	128,7	11,2	4180,7	6,8	3,1
566	Mitsumi Electric	Japan	Electronic & electrical equipment	128,4	-3,5	1662,7	-10,8	7,7
567	Quest Software	USA	Software & computer services	128,4	9,4	662,7	11,8	19,4
568	Huntsman	USA	Chemicals	128,3	9,9	8672,2	20,6	1,5
569	Tosoh	Japan	Chemicals	128,1	-6,6	6832,9	9,3	1,9
570	Lite-On Technology	Taiwan	Technology hardware & equipment	127,6	9,7	5884,7	0,4	2,2
571	Allscripts Healthcare Solutions	USA	Software & computer services	127,4	93,7	1116,1	178,1	11,4
572	CareFusion	USA	Health care equipment & services	126,7	5,8	2783,1	4,9	4,6
573	Daicel Chemical Industries	Japan	Chemicals	126,6	12,5	3400,3	6,8	3,7
574	Emulex	USA	Technology hardware & equipment	126,4	28,9	387,8	25,7	32,6
575	Seattle Genetics	USA	Pharmaceuticals & biotechnology	126,3	11,6	73,2	-11,8	172,4
576	Rovi	USA	Software & computer services	125,7	70,0	533,9	27,6	23,6
577	Itron	USA	Electronic & electrical equipment	125,6	15,9	1881,2	7,7	6,7
578	Logitech International	Switzerland	Technology hardware & equipment	125,5	3,8	1790,1	-2,0	7,0
579	Getinge	Sweden	Health care equipment & services	124,7	5,2	2452,2	-1,4	5,1
580	Nissan Shatai	Japan	Automobiles & parts	124,3	-7,5	4522,1	-10,1	2,7

World rank	Company	Country	Industry (3-digit ICB)	R&D-2011	R&D 1-year growth	Sales-2011	Sales 1-year growth	R&D intensity
				€ m	(%)	€ m	(%)	(%)
581	MTU Aero Engines	Germany	Aerospace & defence	124,2	2,9	2932,1	8,3	4,2
582	Novell	USA	Software & computer services	123,8	0,0	627,4	-5,5	19,7
583	Yakult Honsha	Japan	Food producers	123,4	29,1	3108,1	7,6	4,0
584	Krones	Germany	Industrial engineering	123,1	7,7	2480,3	14,1	5,0
585	Integrated Device Technology	USA	Technology hardware & equipment	122,7	-10,6	407,1	-15,8	30,1
586	BE Aerospace	USA	Aerospace & defence	122,6	40,6	1932,0	26,0	6,3
587	Eastman Chemical	USA	Chemicals	122,1	3,9	5547,6	7,3	2,2
588	Inventec	Taiwan	Technology hardware & equipment	121,6	-13,6	9701,3	0,8	1,3
589	Kudelski	Switzerland	Software & computer services	121,3	-38,0	717,8	-15,6	16,9
590	Commerzbank	Germany	Banks	120,0	-25,9	11815,0	-6,5	1,0
591	TRW Automotive	USA	Automobiles & parts	119,8	17,4	12554,3	12,9	1,0
592	Amylin Pharmaceuticals	USA	Pharmaceuticals & biotechnology	119,0	0,3	502,9	-2,7	23,7
593	IAI	Israel	Aerospace & defence	119,0	12,4	2655,5	9,1	4,5
594	Teknosa	Turkey	General retailers	118,8		731,3	30,5	16,2
595	Nippon Shokubai	Japan	Chemicals	118,7	11,1	3189,1	31,3	3,7
596	Fairchild Semiconductor	USA	Technology hardware & equipment	118,6	27,6	1227,9	-0,7	9,7
597	Sysmex	Japan	Health care equipment & services	118,4	6,0	1339,9	16,0	8,8
598	Metso	Finland	Industrial engineering	118,0	12,4	6646,0	19,7	1,8
599	Jack Henry & Associates	USA	Support services	118,0	102,4	793,8	24,3	14,9
600	RF Micro Devices	USA	Technology hardware & equipment	117,2	7,5	673,4	-17,2	17,4
601	Giesecke & Devrient	Germany	Support services	117,0	-3,5			
602	SNCF	France	Industrial transportation	117,0	41,0	32645,0	6,6	0,4
603	Mitsubishi Materials	Japan	Industrial metals & mining	116,8	7,8	14328,0	28,8	0,8
604	Tokuyama	Japan	Chemicals	116,4	-0,9	2808,0	3,4	4,1
605	Bouygues	France	Construction & materials	116,0	-0,9	32706,0	4,7	0,4
606	Chunghwa Picture Tubes	Taiwan	Electronic & electrical equipment	115,9	-12,4	1569,2	-24,8	7,4
607	adidas	Germany	Personal goods	115,0	12,7	13344,0	11,3	0,9
608	Ruag	Switzerland	Aerospace & defence	115,0	-26,3	1459,6	-1,1	7,9
609	Elekta	Sweden	Health care equipment & services	114,9	86,2	1015,3	22,4	11,3
610	Pitney Bowes	USA	Technology hardware & equipment	114,9	-8,6	3613,3	-13,8	3,2
611	Sanken Electric	Japan	Technology hardware & equipment	114,7	4,3	1310,7	-1,7	8,7
612	Rio Tinto	UK	Mining	114,4	-20,9	46786,5	7,0	0,2
613	Stanley Black & Decker	USA	Household goods & home construction	113,8	12,0	8019,5	23,4	1,4
614	FLIR Systems	USA	Aerospace & defence	113,7	26,5	1193,3	11,5	9,5
615	Tyco International	Switzerland	General industrials	113,6	12,2	13412,9	0,1	0,8
616	KWS SAAT	Germany	Food producers	113,5	16,4	855,4	13,4	13,3
617	Triquint Semiconductor	USA	Technology hardware & equipment	113,5	13,7	692,5	2,0	16,4
618	Arris	USA	Technology hardware & equipment	113,2	4,3	841,4	0,1	13,5
619	Finisar	USA	Technology hardware & equipment	112,8	24,5	736,2	0,4	15,3
620	Harley-Davidson	USA	Automobiles & parts	112,4	6,8	4105,2	8,2	2,7

World rank	Company	Country	Industry (3-digit ICB)	R&D-2011	R&D 1-year growth	Sales-2011	Sales 1-year growth	R&D intensity
				€ m	(%)	€ m	(%)	(%)
621	TNK-BP	UK	Oil equipment, services & distribution	112,1	88,3	33424,5	33,4	0,3
622	Chubu Electric Power	Japan	Electricity	111,9	-19,0	24356,0	9,5	0,5
623	Deutsche Borse	Germany	Other financials	111,6	12,8	2233,3	3,1	5,0
624	Yue Yuen Industrial	Bermuda	Personal goods	111,0	9,6	5445,1	21,7	2,0
625	Realtek Semiconductor	Taiwan	Technology hardware & equipment	111,0	8,5	559,0	-1,7	19,9
626	Husqvarna	Sweden	Industrial engineering	110,9	54,1	3406,3	-5,8	3,3
627	Cree	USA	Technology hardware & equipment	110,8	76,1	900,1	34,3	12,3
628	Tibco Software	USA	Software & computer services	110,7	14,9	711,2	22,0	15,6
629	LinkedIn	USA	Software & computer services	110,6	100,2	403,6	114,8	27,4
630	Zeon	Japan	Chemicals	110,4	24,1	2613,7	16,4	4,2
631	Kion	Germany	Support services	110,1	9,6	4368,4	23,6	2,5
632	Winbond Electronics	Taiwan	Technology hardware & equipment	109,9	11,3	885,7	-13,1	12,4
633	Deutz	Germany	Industrial engineering	109,8	25,8	1529,0	28,6	7,2
634	Oshkosh	USA	Industrial engineering	109,7	29,9	5861,9	-22,9	1,9
635	Galenica	Switzerland	Pharmaceuticals & biotechnology	109,4	-6,2	2618,1	2,7	4,2
636	Osaka Gas	Japan	Gas, water & multiutilities	109,1	2,9	12875,5	18,1	0,8
637	Macronix International	Taiwan	Technology hardware & equipment	108,8	31,4	720,9	0,7	15,1
638	First Solar	USA	Alternative energy	108,6	48,2	2137,9	7,9	5,1
639	Lantiq	Germany	Electronic & electrical equipment	108,5		330,9		32,8
640	Intuitive Surgical	USA	Health care equipment & services	108,4	20,9	1358,1	24,4	8,0
641	Lukoil	Russia	Oil & gas producers	108,2	-58,3	103292,4	27,3	0,1
642	E.ON	Germany	Gas, water & multiutilities	108,0	22,7	112954,0	19,6	0,1
643	Great Wall Technology	China	Technology hardware & equipment	107,7	9,6	11655,5	-9,4	0,9
644	Toyobo	Japan	Chemicals	107,6	5,1	3475,5	9,7	3,1
645	F5 Networks	USA	Technology hardware & equipment	107,4	17,4	890,2	30,6	12,1
646	Benteler International	Austria	General industrials	106,8	-2,5	20,9	-99,7	511,5
647	Qlogic	USA	Technology hardware & equipment	106,4	0,0	431,7	-6,5	24,6
648	Wm Morrison Supermarkets	UK	Food & drug retailers	106,3	-4,1	21105,8	9,7	0,5
649	Alexion Pharmaceuticals	USA	Pharmaceuticals & biotechnology	106,2	39,7	605,5	44,8	17,5
650	Korber	Germany	General industrials	106,1	12,8	1943,1	15,9	5,5
651	Denki Kagaku Kogyo	Japan	Chemicals	105,8	10,7	3626,7	12,7	2,9
652	Symrise	Germany	Chemicals	105,8	-0,5	1583,6	0,7	6,7
653	John Lewis	UK	General retailers	105,6	103,2	9270,9	5,4	1,1
654	Serco	UK	Support services	105,4	3,6	5552,1	7,4	1,9
655	voestalpine	Austria	Industrial metals & mining	105,3	-3,4	12058,2	10,1	0,9
656	DST Systems	USA	Software & computer services	105,0	-16,2	1846,1	2,6	5,7
657	NGK Insulators	Japan	General industrials	104,7	7,6	2464,3	5,3	4,2
658	Funai Electric	Japan	Electronic & electrical equipment	104,7	-21,9	2447,7	-21,8	4,3
659	International Rectifier	USA	Technology hardware & equipment	104,4	36,0	812,0	17,3	12,9

World rank	Company	Country	Industry (3-digit ICB)	R&D-2011	R&D 1-year growth	Sales-2011	Sales 1-year growth	R&D intensity
				€ m	(%)	€ m	(%)	(%)
660	Sasol	South Africa	Oil & gas producers	104,4	21,1	13518,9	16,5	0,8
661	CNOOC	Hong Kong	Oil & gas producers	104,3	3,2	29553,8	31,6	0,4
662	Industria de Turbo Propulsores	Spain	Aerospace & defence	103,4	48,0	1145,6	139,1	9,0
663	China Communications	China	Fixed line telecommunications	103,2	63,5	6563,1	17,8	1,6
664	NSK	Japan	Support services	103,2	18,0	7291,0	24,8	1,4
665	PRADA	Italy	Personal goods	103,1	6,1	2523,3	25,1	4,1
666	Alere	USA	Health care equipment & services	102,9	-0,1	1844,4	10,5	5,6
667	Tenneco	USA	Automobiles & parts	102,8	13,7	5568,4	21,4	1,8
668	Old Mutual	UK	Life insurance	102,8	10,3	3894,2	-83,5	2,6
669	Sonova	Switzerland	Health care equipment & services	102,7	20,5	1330,5	0,2	7,7
670	Keyence	Japan	Electronic & electrical equipment	102,2	45,9	1982,2	46,4	5,2
671	Gamesa	Spain	Industrial engineering	102,1	152,9	3026,6	10,6	3,4
672	Tokyo Gas	Japan	Gas, water & multiutilities	101,8	11,0	17444,5	24,0	0,6
673	Isis Pharmaceuticals	USA	Pharmaceuticals & biotechnology	101,3	-9,7	76,6	-8,7	132,3
674	Techtronic Industries	Hong Kong	Electronic & electrical equipment	101,2	12,3	2834,1	8,0	3,6
675	Qiagen	The Netherlands	Pharmaceuticals & biotechnology	101,0	3,6	904,0	7,6	11,2
676	Newell Rubbermaid	USA	Household goods & home construction	100,5	1,0	4532,5	1,8	2,2
677	Schott	Germany	Construction & materials	100,5	2,2	2881,4	1,3	3,5
678	Hamamatsu Photonics	Japan	Electronic & electrical equipment	100,2	5,6	1012,9	12,0	9,9
679	Wincor Nixdorf	Germany	Software & computer services	100,2	-1,2	2328,2	4,0	4,3
680	Horiba	Japan	Electronic & electrical equipment	100,0	6,2	1227,7	4,2	8,1
681	NHK Spring	Japan	Industrial engineering	100,0	2,7	4382,9	-3,4	2,3
682	SMA Solar Technology	Germany	Alternative energy	99,9	40,9	1676,3	-12,7	6,0
683	Kissei Pharmaceutical	Japan	Pharmaceuticals & biotechnology	99,9	-6,9	642,6	4,0	15,5
684	Anritsu	Japan	Electronic & electrical equipment	99,6	6,7	930,6	27,3	10,7
685	Meggitt	UK	Aerospace & defence	99,4	23,3	1739,0	25,2	5,7
686	Betfair	UK	Travel & leisure	99,3	71,8	465,6	-0,9	21,3
687	Nektar Therapeutics	USA	Pharmaceuticals & biotechnology	99,2	18,8	55,2	-55,1	179,6
688	Enel	Italy	Electricity	99,0	11,2	77573,0	7,8	0,1
689	Altria	USA	Tobacco	98,9	-11,1	18394,0	-2,3	0,5
690	Glory	Japan	Industrial engineering	98,8	13,2	1461,2	8,8	6,8
691	Arrium	Australia	Industrial metals & mining	98,6	-14,7	6040,0	7,9	1,6
692	Novatek Microelectronics	Taiwan	Electronic & electrical equipment	98,4	9,3	895,3	-3,4	11,0
693	Deutsche Post	Germany	Industrial transportation	98,0	-4,9	52829,0	2,6	0,2
694	Biomet	USA	Health care equipment & services	98,0	19,0	2193,4	5,2	4,5
695	Eberspaecher	Germany	Automobiles & parts	97,7	0,0	1933,8	44,1	5,1
696	DONG Energy	Denmark	Oil & gas producers	97,4	-11,6	7860,5	7,3	1,2
697	Yaskawa Electric	Japan	Electronic & electrical equipment	96,7	14,5	3053,9	36,7	3,2

World rank	Company	Country	Industry (3-digit ICB)	R&D-2011	R&D 1-year growth	Sales-2011	Sales 1-year growth	R&D intensity
				€ m	(%)	€ m	(%)	(%)
698	Campbell Soup	USA	Food producers	96,6	1,6	5956,4	0,4	1,6
699	Alibaba.com	Cayman Islands	Software & computer services	96,2	39,7	787,1	15,5	12,2
700	Sumitomo Heavy Industries	Japan	Industrial engineering	96,1	8,3	6206,1	21,0	1,5
701	TS	Japan	Automobiles & parts	95,9	0,2	3037,8	-14,5	3,2
702	NCsoft	South Korea	Software & computer services	95,1	96,0	408,6	-6,3	23,3
703	Exelixis	USA	Pharmaceuticals & biotechnology	95,1	-32,9	221,7	55,0	42,9
704	Webasto	Germany	Automobiles & parts	95,0	-1,7	2305,1	12,6	4,1
705	Riverbed Technology	USA	Technology hardware & equipment	94,8	42,5	561,5	31,6	16,9
706	Informatica	USA	Software & computer services	94,4	15,2	605,7	20,6	15,6
707	Borealis	Austria	Chemicals	94,0	6,8	6498,4	3,7	1,4
708	Smiths	UK	General industrials	93,8	-16,0	3620,7	9,4	2,6
709	Cochlear	Australia	Health care equipment & services	93,7	25,8	611,4	6,0	15,3
710	Nippon Shinyaku	Japan	Pharmaceuticals & biotechnology	93,6	11,6	669,3	7,0	14,0
711	Acciona	Spain	Construction & materials	93,6	6,2	6646,0	6,1	1,4
712	Clorox	USA	Household goods & home construction	93,5	1,7	4226,0	-1,2	2,2
713	Roper Industries	USA	Electronic & electrical equipment	93,5	18,2	2161,8	17,2	4,3
714	SCA	Sweden	Forestry & paper	93,4	15,9	9126,7	-25,5	1,0
715	Kongsberg Gruppen	Norway	Aerospace & defence	93,0	2,0	1951,9	-2,4	4,8
716	Krka	Slovenia	Pharmaceuticals & biotechnology	92,9	2,2	1075,6	6,5	8,6
717	Schindler	Switzerland	Industrial engineering	92,8	3,7	6451,3	-36,7	1,4
718	Disco	Japan	Technology hardware & equipment	92,8	20,2	887,4	44,6	10,5
719	Yokohama Rubber	Japan	Automobiles & parts	92,5	-29,9	4625,3	-0,2	2,0
720	Silicon Laboratories	USA	Technology hardware & equipment	92,4	-3,5	380,0	-0,3	24,3
721	SEI Investments	USA	Other financials	91,6	12,3	718,5	3,2	12,8
722	Kajima	Japan	Construction & materials	91,2	-8,9	14496,1	-10,9	0,6
723	Synaptics	USA	Technology hardware & equipment	91,2	12,3	423,7	-8,4	21,5
724	Oji Paper	Japan	Forestry & paper	90,9	2,6	12061,3	5,8	0,8
725	Spreadtrum Communications	Cayman Islands	Technology hardware & equipment	90,7	99,9	521,1	94,7	17,4
726	Air Products and Chemicals	USA	Chemicals	90,7	29,2	7476,4	7,2	1,2
727	Abengoa	Spain	General industrials	90,6	-2,2	7089,2	27,4	1,3
728	Spectris	UK	Electronic & electrical equipment	90,6	21,5	1321,8	22,7	6,9
729	Hologic	USA	Health care equipment & services	90,2	11,9	1382,9	6,5	6,5
730	Bekaert	Belgium	Industrial metals & mining	90,1	13,6	3340,0	2,4	2,7
731	Avid Technology	USA	Media	90,0	-3,1	523,3	-0,2	17,2
732	Chunghwa Telecom	Taiwan	Fixed line telecommunications	90,0	8,5	5552,1	7,4	1,6
733	Cobham	UK	Aerospace & defence	90,0	1,6	2215,8	-2,5	4,1
734	Allison Transmission	USA	Automobiles & parts	90,0	14,7	1671,5	12,3	5,4
735	Mettler-Toledo International	USA	Electronic & electrical equipment	89,8	19,7	1784,8	17,3	5,0

World rank	Company	Country	Industry (3-digit ICB)	R&D-2011	R&D 1-year growth	Sales-2011	Sales 1-year growth	R&D intensity
				€ m	(%)	€ m	(%)	(%)
736	Sellafield	UK	General retailers	89,6	-3,8	60,9	2,0	147,1
737	Electronics For Imaging	USA	Technology hardware & equipment	89,6	9,6	457,2	17,4	19,6
738	Rambus	USA	Technology hardware & equipment	89,4	24,8	241,4	-3,4	37,0
739	Woodward Governor	USA	Industrial engineering	89,4	40,1	1322,9	17,5	6,8
740	Shenzen Tonge	China	Construction & materials	89,3		406,2	-1,1	22,0
741	Xyratex	Bermuda	Technology hardware & equipment	89,3	24,7	1119,5	-9,6	8,0
742	Valspar	USA	Construction & materials	89,2	15,1	3055,1	22,5	2,9
743	TPK Holding	Cayman Islands	Electronic & electrical equipment	89,1	121,8	3660,0	140,6	2,4
744	PerkinElmer	USA	Electronic & electrical equipment	89,0	20,7	1484,9	-3,6	6,0
745	Asahi Breweries	Japan	Beverages	88,7	-5,1	14545,6	-1,8	0,6
746	Lion	Japan	Personal goods	88,6	0,0	3256,7	-1,1	2,7
747	CPFL Energia	Brazil	Gas, water & multiutilities	88,6	10,2	5307,1	-1,7	1,7
748	Endress & Hauser	Switzerland	Electronic & electrical equipment	88,5	-10,6	1525,0	13,1	5,8
749	Shimadzu	Japan	Electronic & electrical equipment	88,3	-1,5	2647,7	11,8	3,3
750	Microsemi	USA	Technology hardware & equipment	88,2	106,1	646,0	61,3	13,7
751	Hyosung	South Korea	General industrials	88,2	8,0	7610,6	-2,2	1,2
752	Software	Germany	Software & computer services	88,1	-4,2	1098,3	-1,9	8,0
753	American Axle & Manufacturing	USA	Automobiles & parts	87,8	37,7	1997,8	13,2	4,4
754	Altana	Germany	Chemicals	87,7	7,0	1616,7	5,3	5,4
755	Azbil	Japan	Electronic & electrical equipment	87,7	2,1	2222,5	5,4	3,9
756	Fresenius Medical Care	Germany	Health care equipment & services	87,6	-65,4	9888,8	-40,3	0,9
757	Gameloft	France	Software & computer services	86,8	11,1	164,4	16,6	52,8
758	Infinera	USA	Technology hardware & equipment	86,7	-5,4	312,9	-10,9	27,7
759	Topcon	Japan	Health care equipment & services	86,6	-15,3	982,8	-3,5	8,8
760	Shanghai Zhenhua	China	General industrials	86,3	86,4	2308,2	12,8	3,7
761	Ushio	Japan	Electronic & electrical equipment	86,2	57,0	1492,5	26,1	5,8
762	EMBRAER	Brazil	Aerospace & defence	85,9	72,8	4098,8	10,8	2,1
763	Lear	USA	Automobiles & parts	85,6	36,0	10941,0	18,4	0,8
764	Kyushu Electric Power	Japan	Electricity	85,5	-17,6	14996,6	4,4	0,6
765	Nice-Systems	Israel	Software & computer services	85,2	12,1	613,5	15,1	13,9
766	Medicines	USA	Pharmaceuticals & biotechnology	85,2	29,3	374,6	10,8	22,7
767	Obayashi	Japan	Construction & materials	85,1	0,0	12388,1	10,1	0,7
768	Mundipharma Research	UK	Support services	85,0	9,9	106,4	11,3	79,9
769	Ahold	The Netherlands	Food & drug retailers	85,0	84,8	30271,0	2,5	0,3
770	Fujitsu General	Japan	Construction & materials	85,0	10,1	2024,1	11,8	4,2
771	Taisei	Japan	Construction & materials	84,8	4,5	13161,1	-8,2	0,6

World rank	Company	Country	Industry (3-digit ICB)	R&D-2011	R&D 1-year growth	Sales-2011	Sales 1-year growth	R&D intensity
				€ m	(%)	€ m	(%)	(%)
772	ResMed	USA	Health care equipment & services	84,8	45,9	1057,7	25,3	8,0
773	Fiberhome Telekommunications Technologies	China	Fixed line telecommunications	84,8	19,9	840,5	23,1	10,1
774	Sohu.com	USA	Software & computer services	84,6	44,8	658,5	39,1	12,9
775	Aruba Networks	USA	Technology hardware & equipment	84,6	30,8	399,4	30,3	21,2
776	VeriFone Systems	USA	Technology hardware & equipment	84,4	41,3	1007,7	30,2	8,4
777	Dr Reddy's Laboratories	India	Pharmaceuticals & biotechnology	84,4	14,5	1361,1	30,7	6,2
778	GEA	Germany	Industrial engineering	84,3	26,5	5416,5	22,6	1,6
779	Takasago International	Japan	Chemicals	84,2	3,1	1130,4	-1,0	7,5
780	Amcor	Australia	Forestry & paper	84,2	0,8	9570,4	-1,8	0,9
781	Leoni	Germany	Electronic & electrical equipment	84,1	13,9	3701,5	25,2	2,3
782	Infinity Pharmaceuticals	USA	Pharmaceuticals & biotechnology	83,9	9,4	71,7	30,1	117,0
783	Galapagos	Belgium	Pharmaceuticals & biotechnology	83,9	2,8	115,3	-18,6	72,8
784	Meidensha	Japan	General industrials	83,8	23,3	1800,9	4,7	4,7
785	Energizer	USA	Household goods & home construction	83,7	11,5	3590,5	9,4	2,3
786	Red Bull Technology	UK	Household goods & home construction	83,6	18,2	257,2	20,8	32,5
787	FMC	USA	Chemicals	83,4	7,4	2610,6	8,4	3,2
788	Onyx Pharmaceuticals	USA	Pharmaceuticals & biotechnology	83,4	-41,9	345,6	37,8	24,1
789	Barco	Belgium	Electronic & electrical equipment	83,3	15,5	1041,2	16,1	8,0
790	ANSYS	USA	Software & computer services	83,2	20,9	534,4	19,2	15,6
791	Shanda Games	Cayman Islands	Leisure goods	83,0	48,9	647,9	17,3	12,8
792	Check Point Software Technologies	Israel	Software & computer services	83,0	1,6	963,7	13,6	8,6
793	OmniVision Technologies	USA	Technology hardware & equipment	83,0	21,3	693,8	-6,1	12,0
794	Misys	UK	Software & computer services	82,8	-8,7	563,6	-39,8	14,7
795	Stora Enso	Finland	Forestry & paper	82,8	3,8	10964,9	6,5	0,8
796	Ingenico	France	Electronic & electrical equipment	82,7	-7,7	1001,1	10,4	8,3
797	Toyo Tire	Japan	Automobiles & parts	82,7	0,0	3187,8	11,5	2,6
798	Kone	Finland	Industrial engineering	82,5	16,4	5225,2	4,8	1,6
799	Babcock & Wilcox	USA	Electronic & electrical equipment	82,2	53,8	2281,5	9,8	3,6
800	Moog	USA	Aerospace & defence	82,2	3,7	1801,3	10,2	4,6
801	Orion Oyj	Finland	Pharmaceuticals & biotechnology	82,1	3,7	917,9	8,0	8,9
802	Repsol YPF	Spain	Oil & gas producers	82,0	15,5	60122,0	12,0	0,1
803	Sealed Air	USA	General industrials	81,9	20,5	4076,0	17,5	2,0
804	Perrigo	USA	Pharmaceuticals & biotechnology	81,7	28,2	2452,5	35,5	3,3
805	TiVo	USA	Leisure goods	81,5	29,2	184,1	8,5	44,3
806	Wabco	USA	Automobiles & parts	81,2	22,4	2159,4	28,4	3,8
807	Polaris Industries	USA	Leisure goods	81,0	23,4	2053,4	33,4	3,9
808	Sick	Germany	Electronic & electrical equipment	81,0	21,8	902,7	20,5	9,0

World rank	Company	Country	Industry (3-digit ICB)	R&D-2011	R&D 1-year growth	Sales-2011	Sales 1-year growth	R&D intensity
				€ m	(%)	€ m	(%)	(%)
809	Newmarket	USA	Chemicals	81,0	14,9	1661,3	19,6	4,9
810	Sinohydro	China	Construction & materials	80,9		13378,9	11,3	0,6
811	Salix Pharmaceuticals	USA	Pharmaceuticals & biotechnology	80,6	42,3	417,7	60,4	19,3
812	Qisda	Taiwan	Technology hardware & equipment	80,3	-11,4	3115,8	-10,9	2,6
813	Taiyo Yuden	Japan	Technology hardware & equipment	80,2	-4,8	1827,7	-12,6	4,4
814	Warner Chilcott	Ireland	Pharmaceuticals & biotechnology	80,2	-29,2	2108,4	-8,3	3,8
815	William Demant	Denmark	Health care equipment & services	80,2	5,1	1081,6	16,7	7,4
816	Perfect World	Cayman Islands	Software & computer services	80,0	55,5	365,9	20,8	21,8
817	CAE	Canada	Industrial transportation	79,9	57,4	1378,6	11,7	5,8
818	Citizen	Japan	Electronic & electrical equipment	79,7	-5,6	2782,2	10,9	2,9
819	LFB	France	Pharmaceuticals & biotechnology	79,3	4,4	412,9	9,9	19,2
820	Aristocrat Leisure	Australia	Travel & leisure	79,2	-8,1	552,8	3,5	14,3
821	Elster	Germany	Electronic & electrical equipment	79,1	17,0	1444,5	6,2	5,5
822	Nippon Sheet Glass	Japan	Construction & materials	79,1	-34,1	5491,4	-6,1	1,4
823	Nippon Steel	Japan	Industrial metals & mining	79,1	-68,0	26575,5	-1,3	0,3
824	HeidelbergCement	Germany	Construction & materials	78,9	16,7	12901,9	9,7	0,6
825	Salzgitter	Germany	Industrial metals & mining	78,9	0,6	9839,5	18,5	0,8
826	Teledyne Technologies	USA	Aerospace & defence	78,8	66,2	1500,8	18,1	5,2
827	Constellation Software	Canada	Software & computer services	78,6	19,9	597,7	22,0	13,2
828	Aveo Pharmaceuticals	USA	Pharmaceuticals & biotechnology	78,6	17,8	127,4	268,9	61,7
829	Heiwa	Japan	Industrial engineering	78,4	-19,3	945,9	10,8	8,3
830	Ishihara Sangyo Kaisha	Japan	Chemicals	78,4	23,1	1018,1	-2,0	7,7
831	Gen-Probe	USA	Pharmaceuticals & biotechnology	78,0	4,6	445,3	6,1	17,5
832	Georg Fischer	Switzerland	Industrial engineering	78,0	5,6	2988,3	5,5	2,6
833	Great Wall Motor	China	Automobiles & parts	77,9	42,0	3475,3	27,8	2,2
834	Hankook Tire	South Korea	Automobiles & parts	77,8	17,4	4354,1	26,3	1,8
835	Powerchip Technology	Taiwan	Technology hardware & equipment	77,6	1,2	1064,9	-50,8	7,3
836	Standard Microsystems	USA	Technology hardware & equipment	77,6	4,1	318,5	0,6	24,4
837	Harmonic	USA	Technology hardware & equipment	77,5	30,0	424,6	29,8	18,3
838	Cymer	USA	Technology hardware & equipment	77,3	12,2	459,2	11,2	16,8
839	MasterCard	USA	Other financials	77,3	15,2	5189,0	25,7	1,5
840	Xylem	USA	Industrial engineering	77,3	35,1	2939,2	18,8	2,6
841	Zumtobel	Austria	Electronic & electrical equipment	77,2	36,7	1280,3	4,1	6,0
842	ADTRAN	USA	Technology hardware & equipment	77,1	10,5	554,3	18,4	13,9
843	PUMA	Germany	Personal goods	77,0	118,1	3009,0	11,2	2,6
844	CSG Systems	USA	Software & computer	76,8	27,3	567,8	33,7	13,5

World rank	Company	Country	Industry (3-digit ICB)	R&D-2011	R&D 1-year growth	Sales-2011	Sales 1-year growth	R&D intensity
				€ m	(%)	€ m	(%)	(%)
	International		services					
845	Alnylam Pharmaceuticals	USA	Pharmaceuticals & biotechnology	76,7	-5,0	64,0	-17,3	120,0
846	Sunplus Technology	Taiwan	Technology hardware & equipment	76,6	-9,5	236,2	-27,5	32,4
847	Exelis	USA	Electronic & electrical equipment	76,5	-16,8	4512,7	-0,9	1,7
848	Rinnai	Japan	Household goods & home construction	76,2	10,5	2452,6	3,0	3,1
849	Heraeus	Germany	Industrial metals & mining	76,1	15,0	26182,8	18,9	0,3
850	Akamai Technologies	USA	Software & computer services	76,1	79,7	895,4	13,2	8,5
851	Norsk Hydro	Norway	Industrial metals & mining	75,7	-14,1	11798,5	20,7	0,6
852	Vaillant	Germany	Support services	75,7	8,8	2314,0	4,4	3,3
853	Brunswick	USA	Leisure goods	75,7	6,4	2896,7	10,1	2,6
854	Makita	Japan	Household goods & home construction	75,6	12,2	2940,6	20,3	2,6
855	Prysmian	Italy	Electronic & electrical equipment	75,0	63,0	7583,0	65,9	1,0
856	Jiangling Motors	China	Automobiles & parts	75,0	10,3	2054,4	9,4	3,6
857	Experian	UK	Support services	75,0	30,6	3467,8	9,7	2,2
858	Estee Lauder	USA	Personal goods	74,6	21,4	7507,2	24,6	1,0
859	Minebea	Japan	Industrial engineering	74,5	-10,9	2499,5	10,1	3,0
860	Bally Technologies	USA	Travel & leisure	74,3	19,8	679,9	8,3	10,9
861	Celanese	USA	Chemicals	74,2	37,1	5226,8	14,3	1,4
862	Ecolab	USA	Chemicals	74,2	9,1	5254,3	11,6	1,4
863	Sanden	Japan	Automobiles & parts	73,9	36,6	2130,8	10,1	3,5
864	Ctrip.com International	China	Travel & leisure	73,8	32,5	429,1	21,4	17,2
865	Japan Aviation Electronics Industry	Japan	Aerospace & defence	73,8	10,5	1117,3	7,8	6,6
866	Casio Computer	Japan	Leisure goods	73,7	-45,8	2999,7	-29,5	2,5
867	Mannkind	USA	Pharmaceuticals & biotechnology	73,6	-15,2	0,0	-46,2	190517,3
868	Tata Steel	India	Industrial metals & mining	73,4	-20,8	19271,4	11,9	0,4
869	Aisan	Japan	Automobiles & parts	73,3	0,9	1490,5	-0,6	4,9
870	Esterline Technologies	USA	Aerospace & defence	73,0	35,5	1327,8	11,3	5,5
871	WMS Industries	USA	Travel & leisure	73,0	-10,8	533,0	-9,9	13,7
872	Buhler	Switzerland	Industrial engineering	72,9	12,4	1750,2	11,7	4,2
873	West Japan Railway	Japan	Travel & leisure	72,5	12,5	12804,8	8,2	0,6
874	Dalian Huarui Heavy	China	Industrial metals & mining	72,3	1,0	1525,7	-6,3	4,7
875	Alfa Laval	Sweden	Industrial engineering	71,9	4,2	3215,0	15,9	2,2
876	Fiserv	USA	Support services	71,9	8,1	3351,9	4,9	2,1
877	SAIC	USA	Software & computer services	71,9	69,1	8182,2	-3,1	0,9
878	Mellanox Technologies	Israel	Technology hardware & equipment	71,5	62,8	200,4	67,6	35,7
879	Mead Johnson Nutrition	USA	Food producers	71,5	17,8	2841,8	17,0	2,5
880	Guangzhou Automobile	China	Automobiles & parts	71,5	241,5	1347,3	25,6	5,3
881	Lonza	Switzerland	Chemicals	71,5	-38,3	2211,2	0,4	3,2
882	Avery Dennison	USA	Chemicals	71,4	-3,3	4657,5	-7,5	1,5
883	Tekelec	USA	Technology hardware & equipment	71,4	0,0	327,7	-9,4	21,8
884	Imagination Technologies	UK	Technology hardware & equipment	71,3	33,4	152,4	30,0	46,8

World rank	Company	Country	Industry (3-digit ICB)	R&D-2011	R&D 1-year growth	Sales-2011	Sales 1-year growth	R&D intensity
				€ m	(%)	€ m	(%)	(%)
885	CGGVeritas	France	Oil equipment, services & distribution	71,2	24,9	2267,7	3,7	3,1
886	Veeco Instruments	USA	Electronic & electrical equipment	71,0	28,8	756,7	-4,5	9,4
887	Nexans	France	Electronic & electrical equipment	71,0	0,0	6920,0	12,0	1,0
888	Grifols	Spain	Pharmaceuticals & biotechnology	70,8	96,9	1795,6	81,2	3,9
889	Mahindra & Mahindra	India	Automobiles & parts	70,8	-60,3	7551,1	67,9	0,9
890	China National Materials	China	Construction & materials	70,7	14,3	6219,1	14,6	1,1
891	Shimizu	Japan	Construction & materials	70,6	-7,5	13287,3	-15,9	0,5
892	Adeka	Japan	Chemicals	70,6	-3,2	1698,6	-4,1	4,2
893	Tohoku Electric Power	Japan	Electricity	70,5	-20,8	16755,3	1,3	0,4
894	Mindray Medical International	Cayman Islands	Health care equipment & services	70,3	50,8	680,7	25,1	10,3
895	TCL Communication Technology	Cayman Islands	Technology hardware & equipment	70,3	186,4	1060,2	22,4	6,6
896	Sorin	Italy	Health care equipment & services	70,1	-6,6	743,4	-0,4	9,4
897	Belgacom	Belgium	Fixed line telecommunications	70,0	4,5	6361,0	-2,9	1,1
898	FMC Technologies	USA	Oil equipment, services & distribution	69,9	33,1	3940,8	23,6	1,8
899	Amada	Japan	Industrial engineering	69,8	28,7	1845,0	36,5	3,8
900	MSCI	USA	Other financials	69,8	1154,2	696,3	1142,3	10,0
901	Praxair	USA	Chemicals	69,6	13,9	8696,2	11,2	0,8
902	Transmissions And Engineering Services Netherlands	The Netherlands	Industrial engineering	69,5	32,9	3250,0	38,4	2,1
903	Aeroflex	USA	Electronic & electrical equipment	69,4	4,1	520,1	-7,7	13,3
904	Toyo Ink Manufacturing	Japan	Chemicals	69,1	-3,2	2439,7	-0,2	2,8
905	Zebra Technologies	USA	Electronic & electrical equipment	69,1	-12,3	760,1	2,8	9,1
906	KBC	Belgium	Banks	69,0	19,0	7092,0	-15,3	1,0
907	Ashland	USA	Chemicals	68,8	3,5	5025,1	-27,9	1,4
908	Groupe SEB	France	Household goods & home construction	68,7	0,9	3963,3	8,5	1,7
909	Amphenol	USA	Electronic & electrical equipment	68,7	14,6	3044,9	10,9	2,3
910	Genmab	Denmark	Pharmaceuticals & biotechnology	68,6	42,8	47,2	-39,7	145,4
911	ACI Worldwide	USA	Software & computer services	68,6	19,8	359,5	11,2	19,1
912	THQ	USA	Leisure goods	68,6	11,8	642,1	24,9	10,7
913	IMMSI	Italy	Automobiles & parts	68,5	8,9	1616,5	0,8	4,2
914	China Telecom	China	Fixed line telecommunications	68,4	3,3	30056,3	11,5	0,2
915	Telenor	Norway	Mobile telecommunications	68,4	-23,7	12711,0	-1,1	0,5
916	Amyris	USA	Chemicals	68,3	56,4	113,6	83,0	60,2
917	Lupin	India	Pharmaceuticals & biotechnology	68,1	-22,9	1009,9	6,2	6,7
918	Vallourec	France	Industrial engineering	68,1	0,0	5295,9	17,9	1,3
919	Spirent Communications	UK	Technology hardware & equipment	68,1	9,9	408,2	9,5	16,7
920	Rackspace Hosting	USA	Software & computer services	68,1	72,4	792,2	31,3	8,6
921	Coretronic	Taiwan	Leisure goods	67,7	0,6	1967,3	-16,5	3,4

World rank	Company	Country	Industry (3-digit ICB)	R&D-2011	R&D 1-year growth	Sales-2011	Sales 1-year growth	R&D intensity
				€ m	(%)	€ m	(%)	(%)
922	Hitachi Zosen	Japan	Industrial engineering	67,7	-3,1	3013,4	5,5	2,2
923	MEMC Electronic Materials	USA	Technology hardware & equipment	67,6	57,4	2098,7	21,3	3,2
924	Swedish Road Administration	Sweden	Industrial transportation	67,5	52,0	841,6	-40,1	8,0
925	GN Store Nord	Denmark	Technology hardware & equipment	67,4	10,1	748,4	8,1	9,0
926	Accuray	USA	Health care equipment & services	67,3	109,0	314,7	85,8	21,4
927	Israel	Israel	General industrials	67,2	13,0	8971,3	17,7	0,7
928	NOF	Japan	Food producers	67,2	7,8	1515,1	6,3	4,4
929	Samsung C&T	South Korea	Electronic & electrical equipment	67,1	-5,3	14457,0	-5,7	0,5
930	Dialog Semiconductor	UK	Technology hardware & equipment	67,0	56,7	407,5	77,8	16,4
931	Fuji Machine Manufacturing	Japan	Electronic & electrical equipment	66,7	31,7	857,7	-7,2	7,8
932	Ironwood Pharmaceuticals	USA	Pharmaceuticals & biotechnology	66,5	11,2	50,9	50,2	130,7
933	ConAgra Foods	USA	Food producers	66,5	5,7	10250,1	7,8	0,6
934	Pantech	South Korea	Technology hardware & equipment	66,1	13,1	2000,9	48,9	3,3
935	Frieslandcampina International Holding	The Netherlands	Food producers	66,0	8,2	5042,0	-43,8	1,3
936	Anthera Pharmaceuticals	USA	Pharmaceuticals & biotechnology	65,9	189,5			
937	Avichina Industry & Technology	China	Industrial transportation	65,7	4,9	1688,4	-20,5	3,9
938	Andritz	Austria	Industrial engineering	65,6	24,9	4596,0	29,3	1,4
939	Kaken Pharmaceutical	Japan	Pharmaceuticals & biotechnology	65,6	-16,2	875,1	3,5	7,5
940	Energias de Portugal	Portugal	Electricity	65,5	79,3	15120,9	6,7	0,4
941	Nippon Paint	Japan	Media	65,4	-80,6	2210,1	-86,0	3,0
942	Technip	France	Oil equipment, services & distribution	65,3	15,4	6813,0	12,0	1,0
943	Daiwa House Industry	Japan	Household goods & home construction	65,2	-9,1	18384,7	14,9	0,4
944	Orbotech	Israel	Electronic & electrical equipment	65,1	7,5	436,9	4,5	14,9
945	Roland	Japan	Leisure goods	65,0	-3,9	744,1	-4,4	8,7
946	NeuroSearch	Denmark	Pharmaceuticals & biotechnology	64,9	41,1			
947	Cooper-Standard Holdings	USA	Automobiles & parts	64,8	22,0	2205,4	18,2	2,9
948	Central Japan Railway	Japan	Travel & leisure	64,6	-72,6	14999,0	0,3	0,4
949	Daifuku	Japan	Industrial engineering	64,5	6,8	1969,5	28,5	3,3
950	Nippon Paper	Japan	Forestry & paper	64,5	-7,1	10366,1	-4,8	0,6
951	Nippon Electric Glass	Japan	Electronic & electrical equipment	64,3	42,0	3363,2	-13,3	1,9
952	MiTAC International	Taiwan	Electronic & electrical equipment	64,2	-9,1	1182,0	-17,0	5,4
953	Daewoo Shipbuilding & Marine	South Korea	Industrial engineering	64,1	52,8	9329,1	6,7	0,7
954	Wustenrot & Wurttembergische	Germany	Nonlife insurance	64,1	-4,4	1544,4	-71,7	4,2
955	Pall	USA	Industrial engineering	64,1	10,7	2064,8	11,2	3,1
956	Sika	Switzerland	Construction & materials	63,8	4,4	3742,6	3,2	1,7
957	NOK	Japan	Automobiles & parts	63,7	0,4	4924,8	-0,7	1,3
958	Sierra Wireless	Canada	Technology hardware & equipment	63,5	-6,7	446,9	-11,1	14,2

World rank	Company	Country	Industry (3-digit ICB)	R&D-2011	R&D 1-year growth	Sales-2011	Sales 1-year growth	R&D intensity
				€ m	(%)	€ m	(%)	(%)
959	Bang & Olufsen	Denmark	Leisure goods	63,4	7,7	404,6	8,9	15,7
960	Federalnaya Setevaya	Russia	Electronic & electrical equipment	63,4	102,6	3350,4	23,2	1,9
961	Marks & Spencer	UK	General retailers	63,2	25,7	11870,6	4,4	0,5
962	IDEXX Laboratories	USA	Health care equipment & services	63,2	7,0	941,9	10,5	6,7
963	Gentex	USA	Automobiles & parts	63,1	27,4	791,2	25,4	8,0
964	Dolby Laboratories	USA	Media	63,0	-22,3	738,5	3,6	8,5
965	Christian Dior	France	Personal goods	63,0	37,0	24628,0	16,6	0,3
966	LVMH	France	Personal goods	63,0	37,0	23659,0	16,4	0,3
967	Phoenix Contact	Germany	Electronic & electrical equipment	62,9	15,8	1363,3	40,6	4,6
968	Waters	USA	Health care equipment & services	62,9	-3,5	1430,7	12,6	4,4
969	Amer Sports	Finland	Leisure goods	62,8	12,5	1880,8	8,1	3,3
970	Hyundai Engineering & Construction	South Korea	Construction & materials	62,7	-50,9	7998,4	6,3	0,8
971	Pinafore	The Netherlands	Automobiles & parts	62,7	-5,6	3548,0	255,7	1,8
972	Yamazaki Baking	Japan	Food producers	62,6	3,6	9275,8	0,5	0,7
973	Nissin Kogyo	Japan	Automobiles & parts	62,5	7,9	1582,1	9,5	3,9
974	Kaspersky Labs	UK	Software & computer services	62,4	7,8	416,3	18,4	15,0
975	Swedish Orphan Biovitrum	Sweden	Pharmaceuticals & biotechnology	62,4	19,2	214,4	0,2	29,1
976	Manitowoc	USA	Industrial engineering	62,3	11,6	2822,4	16,2	2,2
977	GS Yuasa	Japan	Electronic & electrical equipment	62,2	40,8	2838,4	15,5	2,2
978	Nexter	France	Aerospace & defence	62,1	30,8	686,1	-23,6	9,0
979	Advantech	Taiwan	Technology hardware & equipment	61,9	31,2	674,8	14,8	9,2
980	Kcc	South Korea	Chemicals	61,8	-2,1	2261,8	-21,7	2,7
981	Blue Coat Systems	USA	Software & computer services	61,8	-5,9	376,5	-1,8	16,4
982	Fujishoji	Japan	Household goods & home construction	61,5	47,1	427,9	81,5	14,4
983	Progress Software	USA	Software & computer services	61,3	-12,4	412,4	0,8	14,9
984	Tokyo Ohka Kogyo	Japan	Chemicals	61,2	-11,4	795,6	13,4	7,7
985	Cargotec	Finland	Industrial engineering	61,2	73,9	3138,7	21,9	1,9
986	LINTEC	Japan	Chemicals	61,2	2,3	1997,8	-5,6	3,1
987	Bucher Industries	Switzerland	Industrial engineering	61,1	1,6	1918,8	14,9	3,2
988	Himax Technologies	Cayman Islands	Technology hardware & equipment	61,1	3,4	489,2	-1,5	12,5
989	ITT	USA	General industrials	61,1	-68,8	1637,7	-81,0	3,7
990	SPX	USA	Electronic & electrical equipment	61,0	13,5	3517,6	-7,0	1,7
991	Secom	Japan	Support services	60,9	3,0	6753,8	1,3	0,9
992	Hager	Germany	Support services	60,9	7,2	1263,4	8,4	4,8
993	Cytec Industries	USA	Chemicals	60,8	8,6	2375,1	-8,2	2,6
994	Nisshinbo	Japan	Personal goods	60,7	16,0	3772,2	16,5	1,6
995	Microstrategy	USA	Software & computer services	60,7	48,9	434,5	23,7	14,0
996	Coherent	USA	Electronic & electrical equipment	60,7	8,5	620,5	32,7	9,8
997	Totvs	Brazil	Software & computer services	60,5	-3,0	531,9	13,3	11,4
998	ADVA	Germany	Technology hardware & equipment	60,5	20,5	310,9	6,6	19,4
999	Pentair	USA	Industrial engineering	60,4	16,4	2671,5	14,1	2,3

World rank	Company	Country	Industry (3-digit ICB)	R&D-2011	R&D 1-year growth	Sales-2011	Sales 1-year growth	R&D intensity
				€ m	(%)	€ m	(%)	(%)
1000	Diebold	USA	Technology hardware & equipment	60,4	5,2	2191,7	0,4	2,8
1001	Ametek	USA	Electronic & electrical equipment	60,3	37,3	2310,8	21,0	2,6
1002	AOL	USA	Software & computer services	60,3	-9,2	1636,4	-8,2	3,7
1003	Samsung Corning Precision Materials	South Korea	General industrials	60,1	16,1	3095,4	-17,9	1,9
1004	Avon Products	USA	Personal goods	60,1	7,0	8588,0	2,3	0,7
1005	Medicis Pharmaceutical	USA	Pharmaceuticals & biotechnology	59,8	32,7	557,3	3,0	10,7
1006	Kontron	Germany	Technology hardware & equipment	59,7	2,9	589,6	15,7	10,1
1007	Albemarle	USA	Chemicals	59,6	32,0	2217,3	21,4	2,7
1008	Stada Arzneimittel	Germany	Pharmaceuticals & biotechnology	59,5	-0,8	1715,4	5,4	3,5
1009	Rembrandt Holdings	Luxembourg	Support services	59,5	19,5	1329,1	9,6	4,5
1010	Owens Corning	USA	Construction & materials	59,5	1,3	4123,2	6,8	1,4
1011	A123 Systems	USA	Electronic & electrical equipment	59,5	26,7	123,0	63,5	48,3
1012	JDA Software	USA	Software & computer services	59,4	6,6	534,2	12,0	11,1
1013	Chugoku Electric Power	Japan	Electricity	59,4	-7,5	11747,5	13,8	0,5
1014	Seikagaku	Japan	Pharmaceuticals & biotechnology	59,4	-11,2	269,3	-0,1	22,0
1015	Thoratec	USA	Health care equipment & services	59,3	10,8	326,7	-7,9	18,2
1016	Magnachip Semiconductor	USA	Electronic & electrical equipment	59,3	-11,7	597,3	0,3	9,9
1017	Nipro	Japan	Health care equipment & services	59,2	19,7	2108,3	8,2	2,8
1018	Investment Technology	USA	Other financials	59,2	-12,6	430,3	-2,5	13,8
1019	Zeltia	Spain	Pharmaceuticals & biotechnology	59,0	3,0	152,5	-0,7	38,7
1020	Richemont	Switzerland	General retailers	59,0	268,8	8867,0	28,7	0,7
1021	Affymax	USA	Pharmaceuticals & biotechnology	59,0	-18,5	36,9	-57,6	159,9
1022	Sulzer	Switzerland	Industrial engineering	58,9	22,6	2938,9	12,4	2,0
1023	Singapore Technologies Engineering	Singapore	Aerospace & defence	58,9	0,9	3559,7	0,1	1,7
1024	China Shipbuilding	China	Industrial engineering	58,8	18,6	6891,3	7,0	0,9
1025	Unisys	USA	Software & computer services	58,8	-3,5	2978,4	-6,3	2,0
1026	Lottomatica	Italy	Travel & leisure	58,8	7,3	2973,7	28,5	2,0
1027	Smithfield Foods	USA	Food producers	58,7	61,5	10120,0	7,3	0,6
1028	Hannstar Display	Taiwan	Leisure goods	58,6	14,6	1152,3	-21,7	5,1
1029	Nordex	Germany	Alternative energy	58,6	83,4	920,8	-5,3	6,4
1030	Pearson	UK	Media	58,6	22,4	7004,6	0,7	0,8
1031	Shutterfly	USA	Software & computer services	58,5	56,5	365,8	53,8	16,0
1032	Showa	Japan	Automobiles & parts	58,5	7,0	2146,8	-7,5	2,7
1033	FEI	USA	Technology hardware & equipment	58,3	13,8	638,7	30,3	9,1
1034	McCormick	USA	Food producers	58,3	14,2	2857,7	10,8	2,0
1035	Tessera Technologies	USA	Technology hardware & equipment	58,1	1,5	196,8	-15,5	29,5
1036	Ixia	USA	Software & computer services	58,0	3,6	238,3	11,4	24,4

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				€ m	(%)	€ m	(%)	(%)
1037	Dexia	Belgium	Banks	58,0	-22,7			
1038	BHP Billiton	UK	Mining	58,0	15,4	55820,4	36,8	0,1
1039	Intermune	USA	Pharmaceuticals & biotechnology	57,9	11,1	19,8	-5,0	292,5
1040	Koenig & Bauer	Germany	Industrial engineering	57,9	25,9	1167,2	-1,0	5,0
1041	Vestel Elektronik	Turkey	Leisure goods	57,9	101,3	2847,7	31,9	2,0
1042	Suzuken	Japan	Food & drug retailers	57,7	-9,8	18495,2	7,2	0,3
1043	Sumco	Japan	Technology hardware & equipment	57,7	-24,1	2458,0	13,3	2,3
1044	BIAL	Portugal	Pharmaceuticals & biotechnology	57,5	-3,8			
1045	Basilea Pharmaceutica	Switzerland	Pharmaceuticals & biotechnology	57,5	26,2	54,8	-42,6	105,0
1046	Williams Grand Prix	UK	Travel & leisure	57,5	9,4	127,6	20,1	45,0
1047	Quantum	USA	Technology hardware & equipment	57,5	1,9	504,2	-3,0	11,4
1048	Trelleborg	Sweden	General industrials	57,5	0,2	3265,9	1,1	1,8
1049	Dendreon	USA	Pharmaceuticals & biotechnology	57,4	-2,2			
1050	Netease.com	Cayman Islands	Software & computer services	57,1	46,4	894,3	32,4	6,4
1051	IAC/InterActiveCorp	USA	Software & computer services	57,1	13,5	1591,7	25,8	3,6
1052	NPS Pharmaceuticals	USA	Pharmaceuticals & biotechnology	57,1	21,4	78,6	13,7	72,6
1053	Nippon Soda	Japan	Chemicals	57,1	2,6	1204,4	-8,5	4,7
1054	KPN	The Netherlands	Fixed line telecommunications	57,0	5,6	13022,0	-2,3	0,4
1055	China National Chemical Engineering	China	Construction & materials	57,0		5187,4	33,6	1,1
1056	Impax Laboratories	USA	Pharmaceuticals & biotechnology	57,0	-14,5	396,4	-41,7	14,4
1057	Terex	USA	Industrial engineering	57,0	23,0	5027,1	42,2	1,1
1058	Bobst	Switzerland	Industrial engineering	56,8	-9,4	1043,4	-0,8	5,4
1059	Unit4	The Netherlands	Software & computer services	56,8	27,0	454,6	7,5	12,5
1060	Medivation	USA	Pharmaceuticals & biotechnology	56,8	2,4	46,7	-3,4	121,6
1061	Shanghai Mechanical & Electrical Industry	China	Industrial engineering	56,7	13,1	1736,9	9,2	3,3
1062	Scottish and Southern Energy	UK	Electricity	56,5	425,6	37907,4	12,0	0,1
1063	L-3 Communications	USA	Aerospace & defence	56,4	7,4	11723,5	-3,3	0,5
1064	NYSE Euronext	USA	Other financials	56,4	11,3	3351,9	1,6	1,7
1065	ArvinMeritor	USA	Automobiles & parts	56,4	7,4	3572,1	-5,3	1,6
1066	Theravance	USA	Pharmaceuticals & biotechnology	56,2	11,5	18,9	1,2	296,9
1067	Weg	Brazil	Industrial engineering	56,0	33,7	2157,7	18,2	2,6
1068	ACS	Spain	Construction & materials	56,0	19,7	28471,9	85,1	0,2
1069	Recordati	Italy	Pharmaceuticals & biotechnology	56,0	-18,7	762,0	4,7	7,3
1070	Sigma-Aldrich	USA	Chemicals	55,6	9,1	1936,0	10,3	2,9
1071	Xinjiang Bayi Iron & Steel	China	Industrial metals & mining	55,6	81,9	3391,5	18,2	1,6
1072	National Federation Of Fisheries Cooperatives	South Korea	Banks	55,6	0,7			
1073	Lattice Semiconductor	USA	Technology hardware & equipment	55,5	19,1	246,1	6,9	22,6
1074	Nihon Kohden	Japan	Health care	55,5	26,4	1200,4	12,9	4,6

World rank	Company	Country	Industry (3-digit ICB)	R&D-2011	R&D 1-year growth	Sales-2011	Sales 1-year growth	R&D intensity
				€ m	(%)	€ m	(%)	(%)
			equipment & services					
1075	Coloplast	Denmark	Health care equipment & services	55,4	8,7	1368,3	6,7	4,1
1076	Pacific Biosciences Of California	USA	Pharmaceuticals & biotechnology	55,4	-35,9	26,2	1922,9	211,7
1077	LEGO	Denmark	Leisure goods	55,3	-4,0	2519,6	17,2	2,2
1078	Italcementi	Italy	Construction & materials	55,2	-10,7	4720,5	-1,5	1,2
1079	Aston Martin Holdings	UK	Automobiles & parts	55,2	20,9	605,6	6,9	9,1
1080	China Sinoma International Engineering	China	Construction & materials	55,2	20,8	3041,2	4,7	1,8
1081	Central Glass	Japan	Construction & materials	55,1	-9,1	1665,4	8,4	3,3
1082	Fincantieri	Italy	Industrial engineering	55,1	24,1	2316,6	-11,3	2,4
1083	Digital River	USA	Software & computer services	55,1	17,1	307,7	9,6	17,9
1084	Pilatus Aircraft	Switzerland	Aerospace & defence	55,0	36,7	641,5	13,5	8,6
1085	Electric Power Development	Japan	Electricity	55,0	-7,0	6509,4	12,0	0,8
1086	TeliaSonera	Sweden	Fixed line telecommunications	55,0	-35,3	11709,4	-2,1	0,5
1087	Caixa General de Depositos	Portugal	Banks	54,9	-5,4	3045,3	5,3	1,8
1088	Owens-Illinois	USA	General industrials	54,9	14,5	5686,7	8,8	1,0
1089	Cemex	Mexico	Construction & materials	54,6	80,0	10437,3	6,0	0,5
1090	Telenav	USA	Leisure goods	54,5	22,1	168,9	3,8	32,3
1091	Verisign	USA	Software & computer services	54,5	-8,9	596,6	-16,9	9,1
1092	Aker Solutions	Norway	Oil equipment, services & distribution	54,4	168,8	4706,0	-21,2	1,2
1093	CJ Cheiljedang	South Korea	Food producers	54,4	149,8	4387,1	15,3	1,2
1094	Realnetworks	USA	Software & computer services	54,3	-30,5	259,4	-16,4	20,9
1095	Modine Manufacturing	USA	Automobiles & parts	54,3	4,8	1218,9	8,9	4,5
1096	Axis	Sweden	Technology hardware & equipment	54,0	19,8	401,4	22,0	13,4
1097	Dyson James	UK	Household goods & home construction	53,9	5,1	931,4	19,2	5,8
1098	Stanley Electric	Japan	Automobiles & parts	53,9	8,8	2417,5	-2,0	2,2
1099	Plantronics	USA	Technology hardware & equipment	53,8	10,3	551,3	4,4	9,8
1100	Gs Engineering & Construction	South Korea	Construction & materials	53,7	16,0	6074,0	8,8	0,9
1101	Hugo Boss	Germany	Personal goods	53,7	16,9	2058,8	19,0	2,6
1102	Fonterra Co-operative	New Zealand	Food producers	53,6	-8,2	11845,2	18,8	0,5
1103	Rigel Pharmaceuticals	USA	Pharmaceuticals & biotechnology	53,6	-89,2	3,7	-96,2	1460,0
1104	Danske Bank	Denmark	Banks	53,5	-83,9	6056,4	-38,4	0,9
1105	Reynolds American	USA	Tobacco	53,3	-2,8	6601,0	-0,1	0,8
1106	Metall Zug	Switzerland	Household goods & home construction	53,2	14,4	692,0	4,0	7,7
1107	Geron	USA	Pharmaceuticals & biotechnology	53,1	11,4	1,9	-31,6	2818,8
1108	Nichias	Japan	General industrials	53,1	9,6	1434,5	12,7	3,7
1109	Gildemeister	Germany	Industrial engineering	53,0	18,8	1687,7	22,6	3,1
1110	Advanced Digital Broadcast	Switzerland	Technology hardware & equipment	52,9	40,0	308,3	11,9	17,2
1111	W R Grace	USA	Chemicals	52,9	13,6	2482,3	20,1	2,1
1112	Tenaris	Luxembourg	Oil equipment,	52,9	10,7	7707,3	29,3	0,7

World rank	Company	Country	Industry (3-digit ICB)	R&D-2011	R&D 1-year growth	Sales-2011	Sales 1-year growth	R&D intensity
				€ m	(%)	€ m	(%)	(%)
			services & distribution					
1113	Danieli	Italy	Industrial engineering	52,9	25,0	2283,7	13,2	2,3
1114	Eizo Nanao	Japan	Technology hardware & equipment	52,8	12,4	592,3	-23,1	8,9
1115	Zeria Pharmaceutical	Japan	Pharmaceuticals & biotechnology	52,8	0,5	528,7	7,5	10,0
1116	Micro-Star International	Taiwan	Technology hardware & equipment	52,7	-15,1	2008,2	-12,2	2,6
1117	Compuware	USA	Software & computer services	52,7	-1,4	780,4	8,7	6,8
1118	Seiko Holdings	Japan	Technology hardware & equipment	52,6	-92,3	2952,8	-69,9	1,8
1119	Ceske drahy	Czech Republic	Industrial transportation	52,6	538,1	431,5	-58,6	12,2
1120	Hirose Electric	Japan	Electronic & electrical equipment	52,6	6,8	942,6	2,5	5,6
1121	Cavium Networks	USA	Technology hardware & equipment	52,5	12,0	200,3	25,5	26,2
1122	Calix	USA	Technology hardware & equipment	52,3	22,2	266,4	20,1	19,6
1123	Aeolus Tyre	China	Automobiles & parts	52,3	49,1	1228,0	25,8	4,3
1124	Kingfa Science & Technology	China	Chemicals	52,2	34,3	1413,1	12,7	3,7
1125	Fagor Electrodomesticos	Spain	Household goods & home construction	52,0	28,8	1277,2	-8,5	4,1
1126	Noritz	Japan	General industrials	52,0	-11,4	1833,2	5,3	2,8
1127	Arques Industries	Germany	Other financials	52,0	65,8	520,6	-48,4	10,0
1128	Oclaro	USA	Technology hardware & equipment	51,8	2,3	297,9	-17,4	17,4
1129	AptarGroup	USA	General industrials	51,8	30,4	1806,3	12,5	2,9
1130	Nabtesco	Japan	Industrial engineering	51,7	38,9	1974,2	57,3	2,6
1131	Sarepta Therapeutics	USA	Pharmaceuticals & biotechnology	51,7	85,9	36,3	59,7	142,3
1132	IMI	UK	Industrial engineering	51,6	3,1	2546,4	11,5	2,0
1133	Cegedim	France	Software & computer services	51,6	29,0	911,5	-1,6	5,7
1134	Active Network	USA	Software & computer services	51,6	9,2	260,8	20,7	19,8
1135	Kansai Paint	Japan	Chemicals	51,6	-6,0	2551,6	15,4	2,0
1136	Dentsply International	USA	Health care equipment & services	51,5	35,0	1961,3	14,3	2,6
1137	Ashok Leyland	India	Industrial engineering	51,5	646,3	1831,4	14,3	2,8
1138	Intermec	USA	Technology hardware & equipment	51,5	-1,0	655,5	24,9	7,9
1139	Silicon Image	USA	Technology hardware & equipment	51,4	20,3	170,8	15,5	30,1
1140	Viropharma	USA	Pharmaceuticals & biotechnology	51,4	67,8	420,7	24,0	12,2
1141	Alliant Techsystems	USA	Aerospace & defence	51,3	2,2	3565,5	-4,7	1,4
1142	Posten Norden	Sweden	Industrial transportation	51,2	130,7	4428,4	-4,2	1,2
1143	ElringKlinger	Germany	Automobiles & parts	51,1	11,7	1032,8	29,8	4,9
1144	Siliconware Precision Industries	Taiwan	Technology hardware & equipment	51,1	30,1	1563,2	-4,1	3,3
1145	Delta Electronics (Thailand)	Thailand	Technology hardware & equipment	51,0	20,2	937,3	8,2	5,4
1146	Telekom Austria	Austria	Fixed line telecommunications	51,0	4,0	4454,6	-4,2	1,1
1147	Hill-Rom	USA	Health care equipment & services	50,9	4,4	1230,2	8,3	4,1
1148	Hong Leong Asia	Singapore	Construction & materials	50,9	0,5	2748,7	-9,4	1,9

World rank	Company	Country	Industry (3-digit ICB)	R&D-2011	R&D 1-year growth	Sales-2011	Sales 1-year growth	R&D intensity
				€ m	(%)	€ m	(%)	(%)
1149	Valeant Pharmaceuticals	Canada	Pharmaceuticals & biotechnology	50,8	-3,8	1903,9	108,6	2,7
1150	Karl Storz	Germany	Health care equipment & services	50,7	23,3	1037,1	19,7	4,9
1151	Sina	Cayman Islands	Fixed line telecommunications	50,6	92,5	373,2	19,9	13,6
1152	Kureha	Japan	Chemicals	50,5	-18,6	1276,4	-4,6	4,0
1153	Pegasystems	USA	Software & computer services	50,5	18,3	322,0	23,8	15,7
1154	Transgene	France	Pharmaceuticals & biotechnology	50,4	68,0	5,6	0,0	892,4
1155	Kulicke & Soffa	USA	Technology hardware & equipment	50,3	15,0	641,8	8,9	7,8
1156	Saxa Holdings	Japan	Technology hardware & equipment	50,3	-1,4	387,7	-9,1	13,0
1157	Qihoo 360 Technology	Cayman Islands	Software & computer services	50,3	165,5	129,7	191,1	38,8
1158	Cabot	USA	Chemicals	50,2	-7,1	2397,4	7,2	2,1
1159	Advanced Energy Industries	USA	Electronic & electrical equipment	50,2	11,0	399,4	1,2	12,6
1160	Metaswitch Networks	UK	Software & computer services	50,2	27,1	112,6	8,4	44,6
1161	Zoomlion Heavy Industry Science And Technology	China	Industrial engineering	50,2	47,1	5681,9	43,9	0,9
1162	JGC	Japan	Industrial engineering	50,1	0,9	5538,5	24,5	0,9
1163	Showa Shell Sekiyu	Japan	Oil & gas producers	50,1	7,3	27559,3	18,1	0,2
1164	UPM-Kymmene	Finland	Forestry & paper	50,0	11,1	10068,0	12,8	0,5
1165	ImmunoGen	USA	Pharmaceuticals & biotechnology	50,0	15,1	12,6	-15,3	395,4
1166	Momenta Pharmaceuticals	USA	Pharmaceuticals & biotechnology	50,0	25,0	218,8	142,4	22,8
1167	Faw Car	China	Automobiles & parts	49,9	7,9	3523,6	-13,7	1,4
1168	Sonus Networks	USA	Technology hardware & equipment	49,8	2,6	200,7	4,2	24,8
1169	Renishaw	UK	Electronic & electrical equipment	49,7	39,9	396,6	82,8	12,5
1170	Crane	USA	Industrial engineering	49,6	-2,6	1967,6	14,8	2,5
1171	Take-Two Interactive Software	USA	Software & computer services	49,6	-7,8	638,2	-27,4	7,8
1172	Beiqi Fu Tian Vehicle	China	Industrial engineering	49,6	-25,2	6128,5	-3,6	0,8
1173	Mitsui Engineering & Shipbuilding	Japan	Industrial engineering	49,6	-22,5	5686,6	-2,9	0,9
1174	Furuno Electric	Japan	Electronic & electrical equipment	49,6	11,9	768,7	4,9	6,4
1175	Mitsubishi	Japan	General industrials	49,5	9,6	55347,3	6,9	0,1
1176	Biotest	Germany	Pharmaceuticals & biotechnology	49,3	0,9	422,0	-13,2	11,7
1177	Cheng Shin Rubber Industry	Taiwan	Automobiles & parts	49,3	21,4	3062,3	20,0	1,6
1178	Interdigital	USA	Technology hardware & equipment	49,3	-10,8	233,2	-23,5	21,1
1179	Shanghai Tunnel Engineering	China	Construction & materials	49,3		1683,7	-6,6	2,9
1180	Amore Pacific	South Korea	Personal goods	49,2	24,5	2052,3	14,4	2,4
1181	Sophos	UK	Software & computer services	49,2	12,4	273,3	19,5	18,0
1182	Lm Wind Power	Denmark	Alternative energy	49,2	42,9	707,5	-3,6	7,0
1183	Fortinet	USA	Software & computer services	49,2	27,7	335,1	33,5	14,7
1184	Norddeutsche Landesbank	Germany	Banks	49,0	-5,8	2496,0	19,4	2,0

World rank	Company	Country	Industry (3-digit ICB)	R&D-2011	R&D 1-year growth	Sales-2011	Sales 1-year growth	R&D intensity
				€ m	(%)	€ m	(%)	(%)
	Girozentrale							
1185	Quintiles	UK	Pharmaceuticals & biotechnology	49,0	10,1	620,1	8,7	7,9
1186	Harvest Natural Resources	USA	Oil & gas producers	49,0	690,5			
1187	Ogel	Germany	Support services	49,0	1,1	412,5	-6,3	11,9
1188	Miraca	Japan	Pharmaceuticals & biotechnology	49,0	8,9	1744,1	5,8	2,8
1189	Allied Nevada Gold	USA	Mining	49,0	89,4	117,5	16,1	41,7
1190	Deltek	USA	Software & computer services	48,9	20,4	263,2	21,8	18,6
1191	Nihon Unisys	Japan	Software & computer services	48,8	15,0	2537,0	-5,8	1,9
1192	Shikoku Electric Power	Japan	Electricity	48,8	-4,4	5888,3	8,6	0,8
1193	Nippon Light Metal	Japan	Industrial metals & mining	48,7	-3,6	4007,6	-12,5	1,2
1194	NKT	Denmark	Electronic & electrical equipment	48,6	0,4	2098,9	8,0	2,3
1195	Aixtron	Germany	Technology hardware & equipment	48,4	15,4	611,0	-22,0	7,9
1196	Bollore	France	Industrial transportation	48,2	-29,9	8490,5	21,1	0,6
1197	Silicon Graphics International	USA	Technology hardware & equipment	48,2	15,3	582,0	19,6	8,3
1198	Morinaga Milk Industry	Japan	Food producers	48,1	-0,7	5750,7	-0,8	0,8
1199	Laird	UK	Electronic & electrical equipment	48,0	-4,7	700,2	3,3	6,9
1200	Komori	Japan	Industrial engineering	48,0	-16,2	718,9	5,3	6,7
1201	Curtiss-Wright	USA	Aerospace & defence	48,0	14,7	1587,5	8,5	3,0
1202	Powerwave Technologies	USA	Technology hardware & equipment	48,0	-0,6	343,5	-24,9	14,0
1203	Nippon Suisan Kaisha	Japan	Food producers	47,8	6,9	5350,2	8,8	0,9
1204	Fair Isaac	USA	Software & computer services	47,8	-16,0	478,9	2,3	10,0
1205	Makino Milling Machine	Japan	Industrial engineering	47,7	0,2	1098,4	16,1	4,3
1206	Shield Bidco	UK	Software & computer services	47,7	44,6	252,8	93,2	18,8
1207	Ulvac	Japan	Electronic & electrical equipment	47,5	-40,3	1219,8	-44,7	3,9
1208	BTG	UK	Pharmaceuticals & biotechnology	47,4	23,7	235,4	76,8	20,2
1209	Somfy	France	Electronic & electrical equipment	47,4	1,8	952,4	11,7	5,0
1210	NACCO Industries	USA	Industrial engineering	47,4	26,1	2574,5	24,0	1,8
1211	Hyster-Yale Materials Handling	USA	Automobiles & parts	47,4	26,1	1963,7	41,0	2,4
1212	centrotherm photovoltaics	Germany	Alternative energy	47,3	11,6	698,5	11,9	6,8
1213	Hanmi Pharm	South Korea	Pharmaceuticals & biotechnology	47,3	111,3	406,8	79,7	11,6
1214	Codexis	USA	Chemicals	47,2	16,5	93,0	16,8	50,7
1215	Affymetrix	USA	Pharmaceuticals & biotechnology	47,2	-10,1	202,0	-15,9	23,3
1216	MKS Instruments	USA	Technology hardware & equipment	47,2	-2,6	635,7	-4,9	7,4
1217	Unicharm	Japan	Personal goods	47,1	-4,4	4260,0	13,6	1,1
1218	Auxilium Pharmaceuticals	USA	Pharmaceuticals & biotechnology	47,0	26,7	204,3	25,0	23,0
1219	F-Secure	Finland	Software & computer services	47,0	39,6	146,0	12,2	32,2

World rank	Company	Country	Industry (3-digit ICB)	R&D-2011	R&D 1-year growth	Sales-2011	Sales 1-year growth	R&D intensity
				€ m	(%)	€ m	(%)	(%)
1220	TravelSky Technology	China	Technology hardware & equipment	47,0	16,1	450,4	24,7	10,4
1221	Vinci	France	Construction & materials	47,0	17,5	37646,1	10,7	0,1
1222	Eramet	France	Industrial metals & mining	47,0	6,8	3603,0	0,8	1,3
1223	Oil and Natural Gas	India	Oil equipment, services & distribution	47,0	-9,6			
1224	Cookson	UK	General industrials	47,0	3,2	3377,3	11,0	1,4
1225	Snap-On	USA	Household goods & home construction	46,9	18,8	2205,9	9,0	2,1
1226	Oncotherapy Science	Japan	Pharmaceuticals & biotechnology	46,9	-0,8	61,9	16,1	75,8
1227	Cameron International	USA	Oil equipment, services & distribution	46,8	9,8	5378,3	13,4	0,9
1228	Sartorius	Germany	Electronic & electrical equipment	46,8	6,7	733,1	11,2	6,4
1229	Ariba	USA	Software & computer services	46,7	31,3	343,0	22,9	13,6
1230	Visma	Norway	Software & computer services	46,7	10,1	663,4	24,1	7,0
1231	Bharat Heavy Electricals	India	Industrial engineering	46,6	-11,1	6074,5	14,5	0,8
1232	Marel	Iceland	Industrial engineering	46,5	77,8	668,4	11,3	7,0
1233	Sanyo Chemical Industries	Japan	Chemicals	46,4	-7,6	1402,5	18,4	3,3
1234	Sk Chemicals	South Korea	Oil equipment, services & distribution	46,3	27,3	5948,4	11,6	0,8
1235	LG Life Sciences	South Korea	Pharmaceuticals & biotechnology	46,2	4,8	256,0	11,9	18,1
1236	Novatel Wireless	USA	Technology hardware & equipment	46,1	22,0	311,4	18,9	14,8
1237	Donaldson	USA	Industrial engineering	46,1	7,8	1926,9	8,7	2,4
1238	Japan Steel Works	Japan	Industrial metals & mining	46,0	3,1	2201,3	4,0	2,1
1239	Dowa	Japan	Mining	46,0	8,4	3902,8	3,3	1,2
1240	KUKA	Germany	Industrial engineering	45,9	63,6	1435,6	33,1	3,2
1241	Cepheid	USA	Electronic & electrical equipment	45,9	39,7	205,2	28,3	22,4
1242	Latecoere	France	Aerospace & defence	45,8	47,7	575,6	23,9	8,0
1243	Aastra Technologies	Canada	Technology hardware & equipment	45,8	-12,8	524,6	-3,9	8,7
1244	Micros Systems	USA	Technology hardware & equipment	45,8	15,2	856,0	9,9	5,3
1245	Toagosei	Japan	Chemicals	45,8	0,5	1521,5	-0,5	3,0
1246	Rockwood	USA	Chemicals	45,7	19,9	2835,8	15,0	1,6
1247	FLSmidth	Denmark	Industrial engineering	45,6	20,6	2959,0	9,0	1,5
1248	China Motor	Taiwan	Automobiles & parts	45,6	32,5	1143,6	8,5	4,0
1249	Asiainfo-Linkage	USA	Software & computer services	45,5	62,8	371,8	40,1	12,2
1250	Seiren	Japan	Personal goods	45,5	2,4	855,8	-0,3	5,3
1251	Standard Life	UK	Life insurance	45,4	-13,5	3877,5	-82,2	1,2
1252	Tsumura	Japan	Pharmaceuticals & biotechnology	45,4	21,1	949,2	5,0	4,8
1253	Mitel Networks	Canada	Technology hardware & equipment	45,3	8,3	472,8	3,8	9,6
1254	Ultra Electronics	UK	Aerospace & defence	45,2	-4,7	874,4	3,1	5,2
1255	Shinko Electric Industries	Japan	Technology hardware & equipment	45,2	11,3	1251,2	-10,7	3,6
1256	Websense	USA	Software & computer services	45,0	7,2	281,5	9,4	16,0

World rank	Company	Country	Industry (3-digit ICB)	R&D-2011	R&D 1-year growth	Sales-2011	Sales 1-year growth	R&D intensity
				€ m	(%)	€ m	(%)	(%)
1257	Ancestry.com	USA	Software & computer services	45,0	37,7	308,9	32,8	14,6
1258	E Ink	Taiwan	Technology hardware & equipment	45,0	12,2	981,0	52,6	4,6
1259	Nufarm	Australia	Chemicals	45,0	48,8	1635,4	-3,9	2,8
1260	Cabot Microelectronics	USA	Technology hardware & equipment	44,9	12,0	344,3	9,1	13,0
1261	Effem Holdings	UK	Food & drug retailers	44,8	50,1	3210,5	9,9	1,4
1262	Nisshin Steel	Japan	Industrial metals & mining	44,7	-10,6	5547,5	26,4	0,8
1263	THK	Japan	Industrial engineering	44,6	3,4	1957,7	3,3	2,3
1264	Lubrizol	UK	Chemicals	44,6	-62,4	122,9	-97,0	36,3
1265	Computershare	Australia	Other financials	44,6	4,1	1393,2	12,7	3,2
1266	China Steel	Taiwan	Industrial metals & mining	44,6	9,1	10237,4	14,5	0,4
1267	Ascom	Switzerland	Technology hardware & equipment	44,5	-4,7	421,4	-10,2	10,6
1268	Ezaki Glico	Japan	Food producers	44,4	-3,5	2883,6	2,1	1,5
1269	Analogic	USA	Electronic & electrical equipment	44,2	15,4	399,2	22,0	11,1
1270	VTech	Bermuda	Technology hardware & equipment	44,2	0,7	1379,2	4,2	3,2
1271	Stats ChipPAC	Singapore	Technology hardware & equipment	44,1	20,1	1318,9	1,7	3,3
1272	Toro	USA	Industrial engineering	44,1	6,9	1456,0	11,5	3,0
1273	Deutsche Bahn	Germany	Travel & leisure	44,0	25,7	37979,0	26,4	0,1
1274	Biocryst Pharmaceuticals	USA	Pharmaceuticals & biotechnology	44,0	-32,2	15,2	-68,5	289,7
1275	Akka Technologies	France	Support services	44,0	34,4	474,1	18,4	9,3
1276	Cipla	India	Pharmaceuticals & biotechnology	43,9	6,3	1018,8	11,0	4,3
1277	First Tractor	China	Industrial engineering	43,9	34,7	1389,5	10,4	3,2
1278	Exedy	Japan	Automobiles & parts	43,9	-4,0	2008,0	2,8	2,2
1279	Arena Pharmaceuticals	USA	Pharmaceuticals & biotechnology	43,9	-24,8	9,8	-23,4	446,2
1280	Neopost	France	Technology hardware & equipment	43,8	-1,4	1002,6	3,8	4,4
1281	Novomatic	Austria	Travel & leisure	43,8	15,6			
1282	Ford Otomotiv	Turkey	Automobiles & parts	43,7	29,7	4263,4	36,5	1,0
1283	Kobayashi Pharmaceutical	Japan	Pharmaceuticals & biotechnology	43,6	7,8	1304,3	0,3	3,3
1284	Nissin Food Holdings	Japan	Food producers	43,6	7,4	3785,5	1,5	1,2
1285	JEOL	Japan	Industrial engineering	43,6	-0,7	827,3	10,5	5,3
1286	Morningstar	USA	Media	43,6	14,5	488,0	13,7	8,9
1287	Demand Media	USA	Software & computer services	43,5	17,5	251,1	28,4	17,3
1288	Octapharma	Switzerland	Pharmaceuticals & biotechnology	43,5	4,4	732,2	-1,2	5,9
1289	Aspen Technology	USA	Software & computer services	43,4	14,9	187,9	46,2	23,1
1290	Sekisui House	Japan	Household goods & home construction	43,4	-6,2	15220,2	2,9	0,3
1291	Sbm Offshore	The Netherlands	Oil equipment, services & distribution	43,4	85,8	2439,8	3,3	1,8
1292	Daido Steel	Japan	Industrial metals & mining	43,4	2,5	4864,2	3,6	0,9
1293	Anacor Pharmaceuticals	USA	Pharmaceuticals & biotechnology	43,4	87,8	15,7	-27,0	276,3
1294	Mando	South Korea	Automobiles & parts	43,3	36,6	3059,8	25,8	1,4
1295	Lexicon Pharmaceuticals	USA	Pharmaceuticals & biotechnology	43,3	-28,6	1,4	-62,3	3030,2

World rank	Company	Country	Industry (3-digit ICB)	R&D-2011	R&D 1-year growth	Sales-2011	Sales 1-year growth	R&D intensity
				€ m	(%)	€ m	(%)	(%)
1296	Archer Daniels Midland	USA	Food producers	43,3	-6,7	68813,7	10,4	0,1
1297	Nuvoton Technology	Taiwan	Electronic & electrical equipment	43,2	-7,0	187,4	-7,5	23,1
1298	AMAG Pharmaceuticals	USA	Pharmaceuticals & biotechnology	43,2	2,7	47,3	-7,5	91,3
1299	Vishay Intertechnology	USA	Electronic & electrical equipment	43,1	9,5	2004,8	-4,8	2,2
1300	Hershey	USA	Food producers	43,1	6,4	4699,6	7,2	0,9
1301	Morphosys	Germany	Pharmaceuticals & biotechnology	43,1	-18,7	100,8	15,8	42,7
1302	Belden	USA	Industrial metals & mining	43,1	30,8	1531,8	22,6	2,8
1303	Poste Italiane	Italy	Industrial transportation	43,0	27,5	9526,4	-55,9	0,5
1304	Sawai Pharmaceutical	Japan	Pharmaceuticals & biotechnology	42,9	10,6	672,3	5,9	6,4
1305	CompuGROUP Medical	Germany	Software & computer services	42,9	41,7	396,6	27,0	10,8
1306	Xinyu Iron & Steel	China	Industrial metals & mining	42,8		4605,7	9,2	0,9
1307	Mindspeed Technologies	USA	Technology hardware & equipment	42,8	7,8	125,3	-9,0	34,2
1308	Church & Dwight	USA	Household goods & home construction	42,6	2,6	2124,8	6,2	2,0
1309	Logica	UK	Software & computer services	42,5	17,1	4685,6	6,1	0,9
1310	Blackboard	USA	Software & computer services	42,5	19,7	345,7	18,7	12,3
1311	Gigabyte Technology	Taiwan	Technology hardware & equipment	42,5	0,0	1160,2	-18,6	3,7
1312	Orkla	Norway	General industrials	42,4	-11,6	7871,7	-5,7	0,5
1313	Guerbet	France	Pharmaceuticals & biotechnology	42,4	26,4	377,8	7,2	11,2
1314	Cadila Healthcare	India	Pharmaceuticals & biotechnology	42,4	46,9	738,6	14,0	5,7
1315	Glenmark Pharmaceuticals	India	Pharmaceuticals & biotechnology	42,3	111,3	583,4	36,3	7,3
1316	KSB	Germany	Industrial engineering	42,3	2,9	2091,0	7,8	2,0
1317	Boliden	Sweden	Mining	42,2	31,9	4524,6	9,8	0,9
1318	Opnext	USA	Technology hardware & equipment	42,2	-12,1	231,7	-16,2	18,2
1319	Pharmacyclics	USA	Pharmaceuticals & biotechnology	42,1	107,8	63,4	895,9	66,5
1320	Pangang	China	Industrial metals & mining	42,1	19,7	6146,6	22,6	0,7
1321	Chr Hansen	Denmark	Pharmaceuticals & biotechnology	42,1	68,4	635,6	10,4	6,6
1322	Kurita Water Industries	Japan	Gas, water & multiutilities	42,1	6,1	1927,1	8,6	2,2
1323	Tsubakimoto Chain	Japan	Industrial engineering	42,1	2,1	1440,9	4,8	2,9
1324	Neste Oil	Finland	Oil & gas producers	42,0	2,4	15420,0	29,7	0,3
1325	China Erzhong Deyang	China	Industrial engineering	42,0		870,6	7,1	4,8
1326	Lonking Holdings	Cayman Islands	Industrial engineering	42,0	41,8	1560,4	5,8	2,7
1327	Hunan Nonferrous Metals	China	Industrial metals & mining	41,8	114,3	3010,8	13,7	1,4
1328	ICAP	UK	Other financials	41,8	49,3	2026,6	-0,3	2,1
1329	AZ Electronic Materials	Luxembourg	Chemicals	41,7	28,6	611,9		6,8
1330	Hanmi Science	South Korea	Pharmaceuticals & biotechnology	41,7	22,9	11,6	-97,3	358,5

World rank	Company	Country	Industry (3-digit ICB)	R&D-2011	R&D 1-year growth	Sales-2011	Sales 1-year growth	R&D intensity
				€ m	(%)	€ m	(%)	(%)
1331	Entropic Communications	USA	Technology hardware & equipment	41,7	10,8	186,0	14,5	22,4
1332	Harbin Power Equipment	China	Industrial engineering	41,7	-47,8	3494,3	-1,1	1,2
1333	Simcorp	Denmark	Software & computer services	41,6	-3,2	194,8	5,1	21,4
1334	Shindengen Electric Manufacturing	Japan	Electronic & electrical equipment	41,5	0,3	821,0	-5,5	5,1
1335	Soitec	France	Technology hardware & equipment	41,5	73,3	323,4	15,1	12,8
1336	ATMI	USA	Technology hardware & equipment	41,5	10,4	301,5	6,2	13,8
1337	Sun Pharmaceutical Industries	India	Pharmaceuticals & biotechnology	41,5	27,6	566,1	-8,7	7,3
1338	Sequenom	USA	Health care equipment & services	41,4	23,4	43,2	17,8	95,8
1339	Dong-A Pharmaceutical	South Korea	Pharmaceuticals & biotechnology	41,4	-44,1	708,4	11,4	5,8
1340	Ikanos Communications	USA	Technology hardware & equipment	41,4	-11,9	105,6	-28,7	39,2
1341	Kose	Japan	Personal goods	41,3	0,8	1655,8	-2,7	2,5
1342	DSP	USA	Technology hardware & equipment	41,3	-3,8	149,8	-14,0	27,6
1343	SGL Carbon	Germany	Chemicals	41,3	-0,2	1540,2	11,5	2,7
1344	Sirius Xm Radio	USA	Media	41,3	17,7	2117,7	7,5	2,0
1345	Nemetschek	Germany	Software & computer services	41,2	14,5	164,0	9,5	25,1
1346	Braskem	Brazil	Chemicals	41,2	25,8	13794,1	30,1	0,3
1347	Progenics Pharmaceuticals	USA	Pharmaceuticals & biotechnology	41,1	2,5	65,5	966,3	62,7
1348	Vitesse Semiconductor	USA	Technology hardware & equipment	41,1	4,0	102,6	-19,9	40,0
1349	Convergys	USA	Support services	41,0	-14,1	1748,2	-2,1	2,3
1350	Volcano	USA	Health care equipment & services	41,0	34,1	265,5	16,8	15,5
1351	TDC	Denmark	Fixed line telecommunications	41,0	10,1	3538,2	-25,4	1,2
1352	ZyXEL Communications	Taiwan	Technology hardware & equipment	41,0	128,2	435,0	123,9	9,4
1353	Chicony Electronics	Taiwan	Technology hardware & equipment	40,8	14,4	1549,2	0,4	2,6
1354	Rodi Giyim Sanayi	Turkey	Leisure goods	40,7	-27,3	135,9	-94,7	30,0
1355	Rexchip Electronics	Taiwan	Electronic & electrical equipment	40,7	128,6	748,8	-38,7	5,4
1356	Micro Focus International	UK	Software & computer services	40,7	-27,2	336,1	0,5	12,1
1357	Dongbu Hitek	South Korea	Chemicals	40,6	-23,2	370,5	-21,2	11,0
1358	Barry Callebaut	Switzerland	Food producers	40,6	241,3	3741,0	0,7	1,1
1359	Epicor Software	USA	Software & computer services	40,6	6,6	340,3	7,5	11,9
1360	Towa Pharmaceutical	Japan	Pharmaceuticals & biotechnology	40,5	25,0	484,5	5,6	8,4
1361	Tieto	Finland	Software & computer services	40,5	-8,4	1828,1	6,7	2,2
1362	Sakata Seed	Japan	Food producers	40,4	4,0	467,3	-0,4	8,6
1363	Xiamen Jinglong Motor	China	Automobiles & parts	40,4	60,8	2245,3	16,5	1,8
1364	TI Fluid Systems	UK	Automobiles & parts	40,4	188,5	2147,9	14,4	1,9
1365	Kofax	UK	Software & computer services	40,4	60,2	313,6	20,0	12,9
1366	Eniro	Sweden	Media	40,3	-3,5	485,1	-18,8	8,3
1367	Dana	USA	Automobiles & parts	40,2	4,0	5867,5	24,3	0,7

World rank	Company	Country	Industry (3-digit ICB)	R&D-2011	R&D 1-year growth	Sales-2011	Sales 1-year growth	R&D intensity
				€ m	(%)	€ m	(%)	(%)
1368	Kolon	South Korea	Chemicals	40,2	93,7	3636,9	6,1	1,1
1369	Green Cross Holdings	South Korea	Pharmaceuticals & biotechnology	40,2	7,7	548,8	-54,3	7,3
1370	Kayaba Industry	Japan	Industrial engineering	40,1	25,4	3352,7	5,3	1,2
1371	Shoretel	USA	Technology hardware & equipment	40,1	14,0	190,6	23,2	21,0
1372	Zhejiang Chint Electrics	China	Electronic & electrical equipment	40,0	52,0	991,6	31,1	4,0
1373	Cheng Uei Precision Industry	Taiwan	Industrial metals & mining	40,0	28,4	2083,0	43,2	1,9
1374	A&D	Japan	Health care equipment & services	39,9	-1,6	307,9	1,0	13,0
1375	Unitika	Japan	Personal goods	39,9	11,0	1736,9	-3,3	2,3
1376	Semtech	USA	Technology hardware & equipment	39,9	-25,9	371,4	5,7	10,7
1377	Csm	The Netherlands	Food producers	39,8	-15,3	3112,6	4,1	1,3
1378	Acme Packet	USA	Technology hardware & equipment	39,8	44,8	237,5	32,9	16,8
1379	Integra Lifesciences	USA	Health care equipment & services	39,8	7,2	602,9	6,6	6,6
1380	Geberit	Switzerland	Construction & materials	39,8	9,5	1534,1	-1,7	2,6
1381	Ultimate Software	USA	Software & computer services	39,7	21,6	208,1	18,2	19,1
1382	Dynavax Technologies	USA	Pharmaceuticals & biotechnology	39,7	-4,4	16,7	-9,8	237,4
1383	United Online	USA	Software & computer services	39,5	-20,9	693,8	-2,5	5,7
1384	Aac Technologies Holdings	Cayman Islands	Electronic & electrical equipment	39,4	67,6	498,0	21,2	7,9
1385	Nippon Chemi-Con	Japan	Electronic & electrical equipment	39,4	8,9	997,3	-21,5	4,0
1386	Megmilk Snow Brand	Japan	Food producers	39,4	10,9	5065,7	1,0	0,8
1387	EchoStar	USA	Technology hardware & equipment	39,4	10,6	2134,2	17,5	1,8
1388	COFIDE	Italy	General industrials	39,3	30,2	4522,7	-5,9	0,9
1389	Scotts Miracle-Gro	USA	Chemicals	39,3	7,6	2191,6	-2,1	1,8
1390	Amicus Therapeutics	USA	Pharmaceuticals & biotechnology	39,3	30,3	16,6	2224,7	237,3
1391	Sogefi	Italy	Automobiles & parts	39,3	42,6	1158,4	25,3	3,4
1392	Orbital Sciences	USA	Aerospace & defence	39,3	-58,5	1040,2	4,0	3,8
1393	Riso Kagaku	Japan	Technology hardware & equipment	39,2	-11,6	641,7	-2,3	6,1
1394	Vectura	UK	Pharmaceuticals & biotechnology	39,2	-13,0	39,4	-23,1	99,4
1395	China Cssc Holdings	China	Industrial engineering	39,2	-2,4	3440,4	-4,4	1,1
1396	Yamabiko	Japan	Industrial engineering	39,0	8,8	864,2	4,2	4,5
1397	Guidewire Software	USA	Software & computer services	39,0	45,1	179,4	34,5	21,7
1398	Ceragon Networks	Israel	Technology hardware & equipment	39,0	100,9	344,1	78,2	11,3
1399	Amkor Technology	USA	Technology hardware & equipment	38,9	6,0	2145,7	-5,5	1,8
1400	Lennox International	USA	Construction & materials	38,9	1,6	2553,2	6,7	1,5
1401	De Longhi	Italy	Household goods & home construction	38,8	3,0	1406,2	-12,1	2,8
1402	Advent Software	USA	Software & computer services	38,8	-6,2	252,1	15,1	15,4
1403	Sirona Dental Systems	USA	Health care equipment & services	38,8	8,2	706,3	18,6	5,5

World rank	Company	Country	Industry (3-digit ICB)	R&D-2011	R&D 1-year growth	Sales-2011	Sales 1-year growth	R&D intensity
				€ m	(%)	€ m	(%)	(%)
1404	Heartware International	USA	Health care equipment & services	38,8	51,5	64,0	50,0	60,6
1405	Triumph	USA	Aerospace & defence	38,7	-0,7	2633,8	17,3	1,5
1406	Halozyme Therapeutics	USA	Pharmaceuticals & biotechnology	38,7	16,1	43,3	311,7	89,3
1407	Sumitomo Osaka Cement	Japan	Construction & materials	38,6	2,0	2158,3	7,9	1,8
1408	Micrel	USA	Technology hardware & equipment	38,6	8,0	200,2	-12,9	19,3
1409	Gt Advanced Technologies	USA	Electronic & electrical equipment	38,5	110,0	738,6	6,3	5,2
1410	LTX-Credence	USA	Technology hardware & equipment	38,5	1,9	102,1	-39,7	37,7
1411	Lite-On It	Taiwan	Technology hardware & equipment	38,5	-66,9	1564,4	-73,3	2,5
1412	Aska Pharmaceutical	Japan	Pharmaceuticals & biotechnology	38,4	-12,4	404,1	-11,4	9,5
1413	ISEKI	Japan	Industrial engineering	38,4	-0,6	1444,4	-1,7	2,7
1414	Trius Therapeutics	USA	Pharmaceuticals & biotechnology	38,3	112,3	31,7	410,6	120,7
1415	Netscout Systems	USA	Software & computer services	38,2	21,8	238,6	6,2	16,0
1416	Cray	USA	Technology hardware & equipment	38,2	13,4	182,4	-26,1	21,0
1417	Kingsoft	Cayman Islands	Software & computer services	38,2	22,6	125,2	5,1	30,5
1418	Hanwha Chemical	South Korea	Chemicals	38,2	11,0	5329,5	10,6	0,7
1419	Extreme Networks	USA	Technology hardware & equipment	38,1	-0,1	249,4	4,3	15,3
1420	Timken	USA	Industrial engineering	38,1	1,9	3995,8	27,5	1,0
1421	Valueclick	USA	Media	38,1	40,6	432,9	30,0	8,8
1422	Ebara	Japan	Industrial engineering	38,1	-23,1	4097,7	-15,2	0,9
1423	Plx Technology	USA	Electronic & electrical equipment	38,1	37,7	89,5	-0,7	42,5
1424	Fortum	Finland	Electricity	38,0	26,7	6161,0	-2,1	0,6
1425	Munich Re	Germany	Nonlife insurance	38,0	-51,3	47996,0	-7,0	0,1
1426	Grammer	Germany	Automobiles & parts	38,0	15,1	1093,5	17,6	3,5
1427	STEC	USA	Technology hardware & equipment	37,9	11,2	238,1	10,0	15,9
1428	Sigma Designs	USA	Technology hardware & equipment	37,9	-36,5	141,1	-36,4	26,9
1429	House Foods	Japan	Food producers	37,8	1,9	2131,2	-1,1	1,8
1430	Cosmo Oil	Japan	Oil & gas producers	37,7	-1,1	30923,7	12,2	0,1
1431	Alpha Networks	Taiwan	Technology hardware & equipment	37,7	-7,6	650,2	-1,5	5,8
1432	Teleflex	USA	Electronic & electrical equipment	37,7	14,3	1181,6	6,7	3,2
1433	Netgear	USA	Fixed line telecommunications	37,6	21,8	912,8	30,9	4,1
1434	Nihon Nohyaku	Japan	Chemicals	37,6	-3,6	402,2	0,1	9,4
1435	Array BioPharma	USA	Pharmaceuticals & biotechnology	37,6	-23,4	65,8	18,4	57,1
1436	Jungheinrich	Germany	Industrial engineering	37,6	3,6	2116,3	16,5	1,8
1437	Sudzucker	Germany	Food producers	37,6	6,5	6991,9	13,5	0,5
1438	Renewable Energy	Norway	Alternative energy	37,5	0,3	1724,5	-3,0	2,2
1439	EnBW Energie Baden-Wurttemberg	Germany	Electricity	37,5	10,9	18789,7	7,3	0,2
1440	Orica	Australia	Chemicals	37,4	6,5	4852,6	-5,5	0,8
1441	China Yuchai	Bermuda	Industrial engineering	37,3	0,7	1894,4	-4,7	2,0
1442	Wintek	Taiwan	Electronic & electrical equipment	37,3	60,7	2374,9	45,6	1,6

World rank	Company	Country	Industry (3-digit ICB)	R&D-2011	R&D 1-year growth	Sales-2011	Sales 1-year growth	R&D intensity
				€ m	(%)	€ m	(%)	(%)
1443	Juki	Japan	Industrial engineering	37,2	-30,1	649,6	14,7	5,7
1444	Super Micro Computer	USA	Technology hardware & equipment	37,2	28,7	783,6	7,6	4,7
1445	T Hasegawa	Japan	Personal goods	37,2	-0,9	440,0	-2,0	8,4
1446	Power One	USA	Electronic & electrical equipment	37,2	32,1	785,8	-2,9	4,7
1447	Zhengzhou Yutong Bus	China	Automobiles & parts	37,1	36,2	1983,2	25,4	1,9
1448	Wistron Neweb	Taiwan	Technology hardware & equipment	37,1	-85,3	867,5	-94,5	4,3
1449	Entegris	USA	Technology hardware & equipment	37,1	9,2	579,1	8,8	6,4
1450	Exfo	Canada	Technology hardware & equipment	37,0	26,6	208,5	33,0	17,8
1451	Fuji Oil	Japan	Food producers	37,0	2,8	2352,7	6,2	1,6
1452	Rohto Pharmaceutical	Japan	Pharmaceuticals & biotechnology	37,0	0,5	1196,2	4,2	3,1
1453	Tecan	Switzerland	Household goods & home construction	36,9	22,8	309,6	1,7	11,9
1454	Fosun International	Hong Kong	Industrial metals & mining	36,9	51,1	6969,0	27,3	0,5
1455	Viasat	USA	Technology hardware & equipment	36,9	66,1	667,5	7,7	5,5
1456	Blackbaud	USA	Software & computer services	36,8	4,8	280,1	13,3	13,2
1457	Egis	Hungary	Pharmaceuticals & biotechnology	36,8	6,9	408,9	8,4	9,0
1458	Unimicron Technology	Taiwan	Electronic & electrical equipment	36,8	23,1	1688,6	1,7	2,2
1459	Bavarian Nordic	Denmark	Pharmaceuticals & biotechnology	36,6	31,4	70,4	66,7	52,0
1460	Taiheiyo Cement	Japan	Construction & materials	36,6	-20,2	7237,8	-0,1	0,5
1461	Kemira	Finland	Chemicals	36,5	-6,9	2207,2	-2,7	1,7
1462	Agennix	Germany	Pharmaceuticals & biotechnology	36,5	24,3			
1463	Axcelis Technologies	USA	Electronic & electrical equipment	36,5	19,4	246,9	16,1	14,8
1464	Sim Technology	Bermuda	Technology hardware & equipment	36,5	20,6	331,8	-17,4	11,0
1465	RBC Dexia Investor Services	UK	Other financials	36,4	37,6	856,7	10,1	4,2
1466	Hanesbrands	USA	Personal goods	36,4	-0,1	3583,8	7,2	1,0
1467	Renesola	UK	Electronic & electrical equipment	36,4	29,8	761,5	-18,3	4,8
1468	Meadwestvaco	USA	Forestry & paper	36,3	14,6	4683,5	6,4	0,8
1469	LKAB	Sweden	Mining	36,2	55,3	3492,1	9,1	1,0
1470	Nomura Research Institute	Japan	Software & computer services	36,2	2,2	3336,8	2,8	1,1
1471	Pola Orbis	Japan	Personal goods	36,1	-0,6	1657,3	0,8	2,2
1472	Osi Systems	USA	Electronic & electrical equipment	36,1	14,7	612,9	20,9	5,9
1473	Comba Telecom Systems Holdings	Cayman Islands	Technology hardware & equipment	36,0	71,6	632,4	22,4	5,7
1474	Wockhardt	India	Pharmaceuticals & biotechnology	36,0	87,8	669,5	23,0	5,4
1475	Par Pharmaceutical Companies	USA	Pharmaceuticals & biotechnology	36,0	-7,6	685,9	-9,5	5,2
1476	Sino Biopharmaceutical	Cayman Islands	Pharmaceuticals & biotechnology	36,0	57,3	575,5	41,5	6,2
1477	Ldk Solar	Cayman Islands	Electronic & electrical equipment	35,9	330,5	1667,7	-14,0	2,2

World rank	Company	Country	Industry (3-digit ICB)	R&D-2011	R&D 1-year growth	Sales-2011	Sales 1-year growth	R&D intensity
				€ m	(%)	€ m	(%)	(%)
1478	Active Biotech	Sweden	Pharmaceuticals & biotechnology	35,7	207,3	26,3	1965,8	135,8
1479	Wanxiang Qianchao	China	Automobiles & parts	35,7	9,2	933,3	4,0	3,8
1480	Daikoku Denki	Japan	Industrial engineering	35,7	43,3	468,3	36,6	7,6
1481	Wolfson Microelectronics	UK	Technology hardware & equipment	35,6	6,8	121,3	-0,3	29,4
1482	Mercury Computer Systems	USA	Technology hardware & equipment	35,5	3,3	189,3	7,1	18,8
1483	Kikkoman	Japan	Food producers	35,5	1,0	2816,6	-0,1	1,3
1484	Whiting Petroleum	USA	Oil & gas producers	35,4	39,6	1437,6	26,1	2,5
1485	Fidessa	UK	Software & computer services	35,4	12,6	332,5	6,1	10,6
1486	Golden Minerals	USA	Mining	35,3	57,0	1,4	-83,6	2489,3
1487	Solazyme	USA	Oil & gas producers	35,3	33,3	30,1	2,6	117,1
1488	Tokyo Seimitsu	Japan	Electronic & electrical equipment	35,2	11,2	574,0	16,2	6,1
1489	Emergent BioSolutions	USA	Pharmaceuticals & biotechnology	35,2	-48,9	211,3	-4,5	16,7
1490	AVEVA	UK	Software & computer services	35,2	5,0	234,1	12,6	15,0
1491	Hoshizaki Electric	Japan	Construction & materials	35,2	2,2	1683,5	0,0	2,1
1492	Greatbatch	USA	Health care equipment & services	35,2	1,1	439,6	6,6	8,0
1493	Melco Holdings	Japan	Software & computer services	35,1	17,4	1166,6	-5,2	3,0
1494	Rpm International	USA	Construction & materials	35,1	11,0	2919,4	11,7	1,2
1495	TASNEE	Saudi Arabia	Chemicals	35,1	-16,5	4049,5	22,9	0,9
1496	Avg Technologies	The Netherlands	Software & computer services	35,0	49,8	272,4	25,4	12,9
1497	Delhaize	Belgium	Food & drug retailers	35,0	-18,6	21119,0	1,3	0,2
1498	Bank Of Ireland	UK	Banks	35,0		2126,0	-33,4	1,6
1499	Wall Street Systems Sweden	Sweden	Software & computer services	35,0	203,9	77,2	5,5	45,3
1500	Yingli Green Energy Holding	Cayman Islands	Electronic & electrical equipment	35,0	117,2	1802,4	23,1	1,9

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Abstract

The EU Industrial R&D Investment Scoreboard is published annually by the European Commission (DG Research and Innovation and Joint Research Centre). The 2012 Scoreboard is based on a sample of 1500 companies, the world's top investors in R&D and representing equivalent to almost 90% of the total expenditure on R&D by businesses worldwide. It measures the total value of their global R&D investment financed with their own funds, irrespective of the location where the relevant R&D takes place. Out of the 1500 companies, 405 are based in the EU, 503 in the US, 296 in Japan and 296 in the rest of the world including Switzerland, South Korea, China, India and 23 other countries. Each of the Scoreboard companies invested more than EUR 35 million in R&D in 2011.

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