



EUROPEAN
COMMISSION

Monitoring industrial
research:

**The 2007 EU SURVEY
on R&D Investment
Business Trends**

Joint Research Centre
Directorate General Research

Acknowledgements

This “2007 EU Survey on R&D Investment Business Trends” is part of the Industrial Research Investment Monitoring activity run jointly by the Joint Research Centre (JRC) and the Directorate General Research (DG RTD) of the European Commission. The work was carried out by the JRC’s Institute for Prospective Technological Studies (JRC-IPTS), under the overall monitoring and guidance of Directorate C (European Research Area: Knowledge-based economy) of DG RTD.

Within JRC-IPTS the project was coordinated and carried out by the Knowledge for Growth Unit (KfG) under the leadership of the Head of Unit Xabier Goenaga Beldarrain. The main author of this report was Alexander Tübke from JRC-IPTS. Héctor Hernández and Andries Brandsma from the KfG Unit and Patrick McCutcheon and Maria Herminia Andrade DG RTD-C contributed to it.

JRC-IPTS and DG RTD-C would like to express their thanks to everyone who has contributed to this project.

Comments and inputs can be sent by email to: JRC-IPTS-IRI@ec.europa.eu

More information on Industrial Research and Innovation is available at: <http://iri.jrc.ec.europa.eu/> and http://ec.europa.eu/invest-in-research/index_en.htm

European Commission
Joint Research Centre
Institute for Prospective Technological Studies
Edificio Expo
C/ Inca Garcilaso, s/n
E-41092 Seville (Spain)
Tel.: +34 95 448 83 18, Fax: +34 95 448 83 00

IPTS e-mail: jrc-ipts-secretariat@ec.europa.eu

IPTS website: <http://ipts.jrc.ec.europa.eu/>, JRC website: <http://www.jrc.ec.europa.eu>; the DG RTD-C website: http://ec.europa.eu/invest-in-research/index_en.htm

Legal Notice:

Neither the European Commission nor any person acting on behalf of the Commission is responsible for the use which might be made of this publication.

A wide variety of further information about the European Union is available on the Internet. It can be accessed via the Europa web portal at: <http://europa.eu>

JRC44432

EUR 23416 EN

ISSN 1018-5593

Luxembourg: Office for Official Publications of the European Communities

© European Communities, 2008

Reproduction is authorised provided the source is acknowledged

Table of Contents

Key Findings	5
1 Introduction	7
2 Expectations Regarding R&D Investment.....	9
3 R&D Investment Location	10
4 Reasons for increasing R&D Investment.....	18
5 Sources of R&D Investment.....	19
6 R&D and New Products	20
7 In-house R&D, Outsourcing and Collaboration.....	21
8 “R” vs. “D”.....	23
9 The way forward.....	24
10 Annex A: The Methodology of the 2007 Survey	25
11 Annex B: The 2007 Questionnaire on R&D Investment	29

Key Findings

This document presents the findings of the third survey on trends in business R&D investment. While continuing along the same lines as past editions, it contains further insights into company expectations about future R&D investments and companies' motivations for investing in research. The results are drawn from 118 responses from the 1000 EU-based companies listed in the 2006 EU Industrial R&D Investment Scoreboard. The responding companies are responsible for R&D investment worth almost €28 billion, constituting 23% of the total R&D investment by the EU Scoreboard companies. The main findings of the survey are as follow:

R&D investment is expected to grow by more than 7%, a significant increase on the figure in last year's survey.

On average, the companies surveyed expect their R&D investment to grow by more than 7% per year over the period 2008-10. This is an increase on the figure in last year's survey (3%), mostly as a result of greatly improved expectations in medium R&D intensity sectors, particularly automobiles & parts, and chemicals.

The responding companies carry out over 25% of their R&D outside the EU ...

The responding companies, all based in the EU, carry out over 25% of their R&D outside the EU. The largest share of foreign R&D investment goes to North America, accounting for about 15%. The percentages of R&D investment carried out in China and India are 3% and 1.5%, respectively, still a relatively small share in the light of the current discussion about R&D relocation trends.

... and expectations are lowest in the EU.

Worldwide, the EU is the region with the lowest expected growth for R&D investment (6%). Expected growth was higher in North America (10%), Japan (15%), and India (17%).

Compared to the previous survey, there has been an increased outflow of R&D investment from the EU.

The main destinations are North America, other European countries, and India.

The companies surveyed gave their home country as the preferred location for R&D, but the US, China and India are the most attractive locations outside the EU.

Almost half of the companies considered their home country to be the most attractive location for R&D. This is much more than the corresponding figure of last year's survey (one third), mainly due to a decreasing preference for China and India. Among those preferring a location outside their home country, the US is most often cited as being the most attractive country for expanding R&D investment, just ahead of China and India. In the previous survey, China and India were ahead of the US.

Availability of researchers and access to specialised R&D knowledge are the main drivers of R&D location decisions.

The main drivers of R&D location decisions are again, as in earlier surveys, the availability of researchers and access to specialised R&D knowledge. The cost of employing researchers plays a small role overall, but was an important consideration for companies preferring a location outside their home country.

Market pull and technology push are the main incentives for increasing R&D investment.

The main incentives for increasing R&D investments were market pull and exploiting technological opportunities (technology push). This is in-line with the findings of previous editions of the survey, indicating that the classical motivations for technological development are still the most important.

1 Introduction

Increasing and improving Research and Development (R&D) investment in Europe is at the heart of the EU's Lisbon Strategy¹. In order to support policymakers in this field and monitor progress towards the accompanying (Barcelona) targets, the present survey has gathered information from across Europe on the factors and issues which surround and influence R&D investment by companies. R&D investment in the survey refers to the total amount of R&D financed by the company, regardless of where or by whom that R&D is performed. By definition², this excludes R&D financed by governments or other companies as well as the companies' share of any associated company or joint venture R&D investment. The survey therefore reports what each responding company states its particular financial commitment to R&D to be. This is different from the official statistical concept, Business Expenditure on R&D (BERD), which takes a geographic perspective and thus refers to all R&D performed by businesses within a particular territory, regardless of the home location of the business, and regardless of the sources of finance³.

The survey is part of the Industrial Research Investment Monitoring (IRIM) initiative⁴ and closely related to the *EU Industrial R&D Investment Scoreboard*⁵. Following the first two editions⁶ in 2005 and 2006, the present document describes the results of the 2007 survey. The questionnaire⁷ was sent to the 1000 European companies which appear in the *2006 EU Industrial R&D Investment Scoreboard*⁸. The 118 responses received from these companies yielded a response rate of 11.8%. Responses were grouped⁹ by R&D intensity¹⁰. Table 1 shows the number of responses from each sector group.

Table 1: Number of responses, by sector group

Sector group	ICB Sector	Number of responses
High R&D intensity	Biotechnology, health care equipment & services, leisure goods, pharmaceuticals, software, support services, and technology hardware & equipment	45
Medium R&D intensity	Aerospace & defence, automobiles & parts, chemicals, commercial vehicles & trucks, computer services, electrical components & equipment, electronic equipment, general industrials, industrial machinery, and personal goods	39
Low R&D intensity	Banks, construction & materials, electricity, fixed line telecommunications, food & drug retailers, food producers, forestry & paper, gas, water & multiutilities, general retailers, industrial metals, industrial transportation, oil & gas producers, and oil equipment, services & distribution	34
total		118

Source: European Commission JRC-IPTS (2008)

The largest number of responses came from the high R&D intensity sector group. In all three groups of sectors, the response rate in terms of R&D investment is higher than that in terms of number of responses¹¹. This means that compared to the Scoreboard, there is a bigger share of companies with higher-than-average R&D investment in the sample.

The 118 respondents are responsible for a total global R&D investment of almost €28 billion, which corresponds to around one fifth of the R&D spent and performed by the business sector in the EU¹² and a similar share (23.4 %) of the total R&D investment by the European Scoreboard companies.

¹ See: http://ec.europa.eu/growthandjobs/index_en.htm.

² See: Annex A: The Methodology of the 2007 Survey

³ Thus, BERD includes R&D performed by a company but funded by government, research councils, non-profit foundations, or from overseas, as well as R&D financed by the company itself. Therefore, an official BERD figure comprises R&D performed in a given country or region and carried out by those companies or parts of companies (including foreign-owned subsidiaries) that are physically located in the country, regardless of the source of funding.

⁴ See: <http://iri.jrc.ec.europa.eu/>. The activity is undertaken jointly by the Directorate General Research (DG RTD C, see: <http://ec.europa.eu/research>) and the Joint Research Centre, Institute of Prospective Technological Studies (JRC-IPTS, see: <http://ipts.jrc.ec.europa.eu/activities/research-and-innovation/iri.cfm>).

⁵ The Scoreboard is published annually and provides economic and financial data on companies from the EU and abroad investing the largest sums in R&D. The Scoreboard analysis examines the overall levels of R&D, the performance of the EU companies, and the main changes that have taken place (see: <http://iri.jrc.ec.europa.eu/research/scoreboard.htm>).

⁶ See: http://iri.jrc.ec.europa.eu/research/survey_2005.htm

⁷ See: Annex B: The 2007 Questionnaire on R&D Investment

⁸ See: http://iri.jrc.ec.europa.eu/research/scoreboard_2006.htm

⁹ See: Annex A: The Methodology of the 2007 Survey

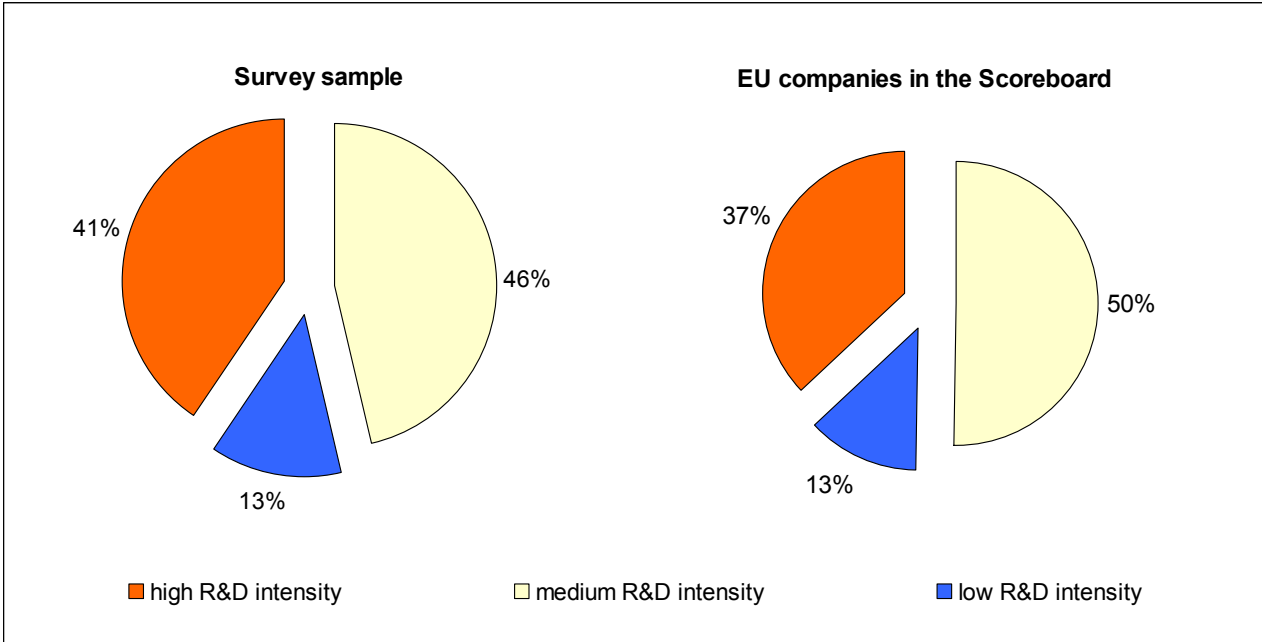
¹⁰ R&D intensity is the ratio between R&D investment and net sales. An individual company may invest a large overall amount in R&D but have a low R&D intensity if net sales are high (as is the case of many oil & gas producers, for example).

¹¹ See Table 2 in Annex A: The Methodology of the 2007 Survey

¹² The R&D spent and performed by the business sector in the EU was calculated based on the latest available Eurostat data (see: Science, Technology and Innovation in Europe 2007, http://epp.eurostat.ec.europa.eu/cache/ITY_OFFPUB/KS-AE-07-001/EN/KS-AE-07-001-EN.PDF)

As shown in Figure 1, the distribution of R&D investment in the survey is similar to that in the Scoreboard with a concentration in the medium R&D intensity sectors.

Figure 1: Distribution of R&D investment in the survey compared to the Scoreboard



Note: The figure refers to all 118 companies in the sample.
 Source: European Commission JRC-IPTS (2008)

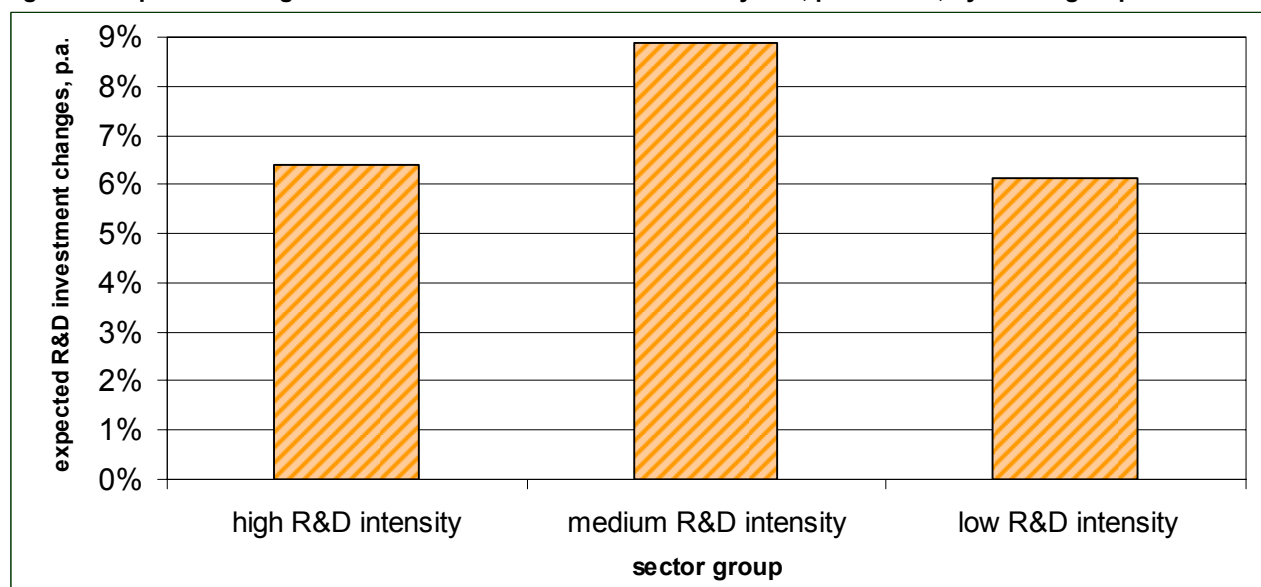
In terms of employees and turnover, the average size of the responding companies is very large¹³. In this regard, the present survey differs from other surveys in Europe such as the Community Innovation Survey (CIS), as the latter not only uses a different sampling technique but also includes Small and Medium-sized Enterprises (SMEs) with 10 employees or more¹⁴. Comparing the sample of the present survey to last year’s edition, 35 out of the 118 responding companies also participated in last year’s survey. Among these 35 companies, there is a higher concentration of R&D investment in the medium R&D intensity sectors than in the overall survey sample. More information about the methodology and details of the sample composition can be found in Annex A.

¹³ The average figures for the responding companies were a turnover of €8.8 billion and a workforce of 25,000 employees, of whom 1,275 employees work in R&D. Among the 118 respondents there are twelve medium-sized companies according to the European Commission’s definition of a SME (see: http://ec.europa.eu/enterprise/enterprise_policy/sme_definition/index_en.htm and Annex A: The Methodology of the 2007 Survey).
¹⁴ The CIS uses a stratified sampling for at least 3 size classes (small, medium and large enterprises) across all EU Member States.

2 Expectations Regarding R&D Investment

On average, the 108 companies which supplied the relevant data expect their global R&D investment to grow by over 7% a year over the period 2008-10¹⁵. This is broken down by sector group in Figure 2 below.

Figure 2: Expected changes in R&D investment in the next three years, per annum, by sector group



Note: The figure refers to 108 out of the 118 companies in the sample, weighted by R&D investment.
Source: European Commission JRC-IPTS (2008)

The biggest increases are expected in the medium R&D intensity sectors, followed by the high and low R&D intensity sectors. The expectations of the high R&D intensity sectors are similar to those reported in last year's survey, and those of the low R&D intensity sectors are slightly higher. The main difference compared to the previous survey is in the medium R&D intensity sectors, where this year's expectations are many times higher. The expectations of the medium R&D intensity sectors are dominated by the automobiles & parts and chemicals sectors, accounting for a 60% share of R&D growth. Given their weight in the total R&D investment in the sample¹⁶, the relatively high growth expectations of the medium R&D intensity sectors significantly boost the overall average.

Despite differences in the composition of the sample, the difference in expectations between this and last year's Surveys is statistically significant¹⁷. The 18 companies that responded to this question in both this and last year's Surveys doubled their growth expectations¹⁸.

¹⁵ The expectations are per annum over the next three years, weighted by R&D investment.

¹⁶ See Figure 1: Distribution of R&D investment in the survey compared to the Scoreboard

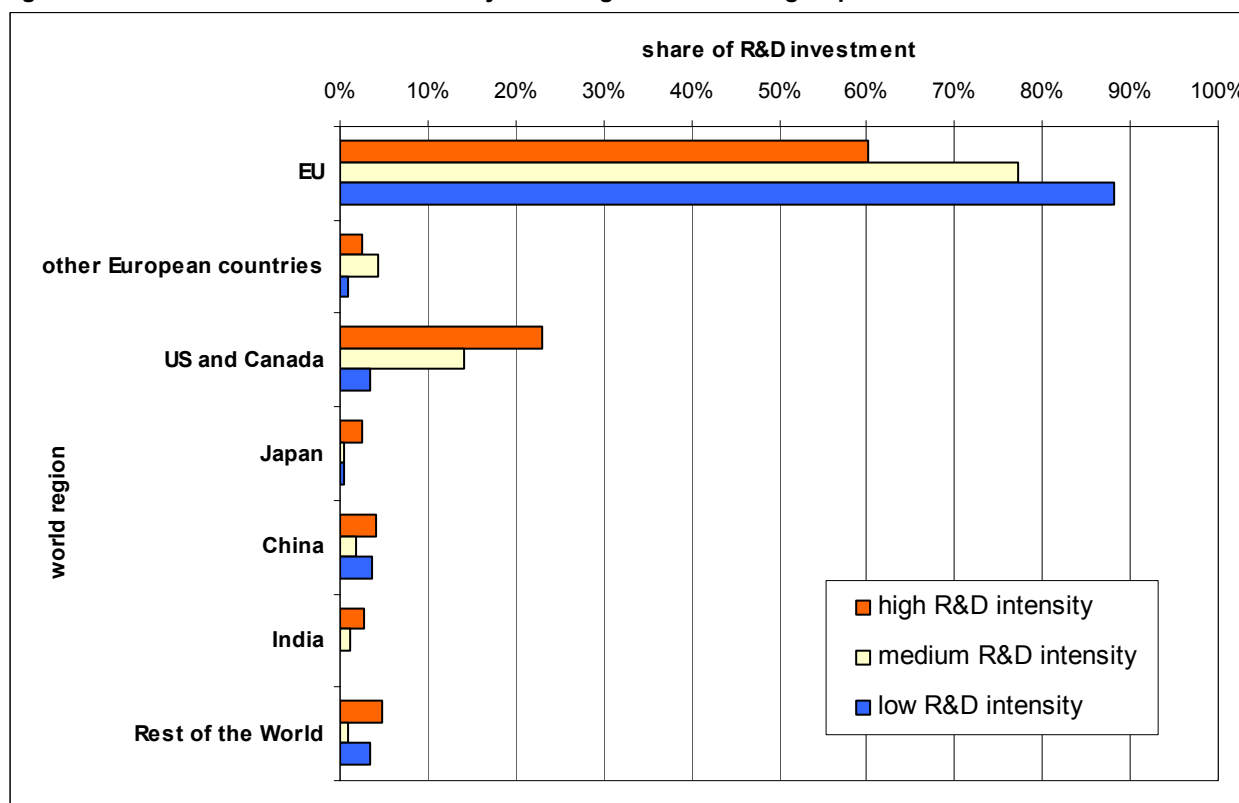
¹⁷ With the European Scoreboard companies as a basic population of the Survey, a two sample t-test was performed between the expectations of the responses from last year's and this year's Survey. With $t = -5.895$ and $df = 116.7$, the test showed the difference of the means to be statistically significant ($p=0.000$).

¹⁸ However, this is statistically insignificant.

3 R&D Investment Location

This survey tackles two aspects of R&D investment location: the actual distribution (stock) of R&D investment and the distribution of the expected changes in R&D investment (dynamics). In answer to the question about the current distribution, respondents stated how much of their total R&D investment was made in each of seven world regions (see Figure 3 below).

Figure 3: Distribution of R&D investment by world region and sector group



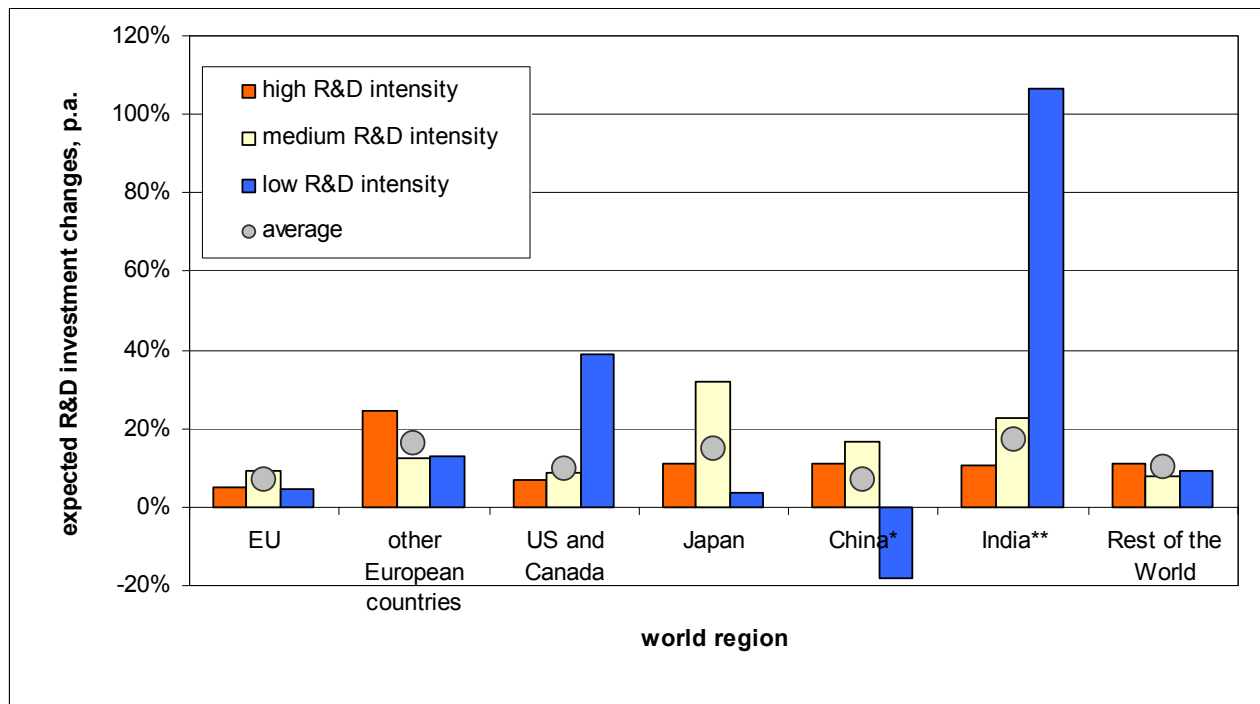
Note: The figure refers to 99 out of the 118 companies in the sample, weighted by R&D investment.
 Source: European Commission JRC-IPTS (2008)

On average, the companies in the sample (all of which are based in Europe) carry out over 25% of their R&D outside the EU. The largest share of foreign R&D investment goes to the US and Canada, accounting for about 15%. The percentages of R&D investment carried out in China and India are 3% and 1.5%, respectively, still a relatively small share in the light of the current discussion about R&D relocation trends. In terms of sector groups, the distribution of R&D investment is similar to that seen in last year's survey. The medium and low R&D intensity sectors account for the largest shares of R&D investment in the EU. The high R&D intensity sectors, where Europe is already under-represented relative to the US¹⁹, make almost a quarter of their R&D investments in the US and Canada and also have the largest shares of R&D investment in Japan, China, India and the rest of the world. This suggests that, in the current distribution of R&D investment, the high R&D intensity sectors are the most internationalised. A similar observation was made in last year's survey. More than 50% of R&D investment in the high R&D intensity sector group comes from companies in the pharmaceuticals & biotechnology sector.

¹⁹ In the 2006 Scoreboard, compared to EU companies, almost twice the amount of US corporate R&D investment is from companies belonging to high R&D intensity sectors. Most of the difference in the sectorial distribution is due to the ICT sector (see: The 2006 EU R&D Investment Scoreboard, p.12).

The second aspect, R&D investment dynamics, is shown in Figure 4.

Figure 4: Expected changes in R&D investment by world region and sector group

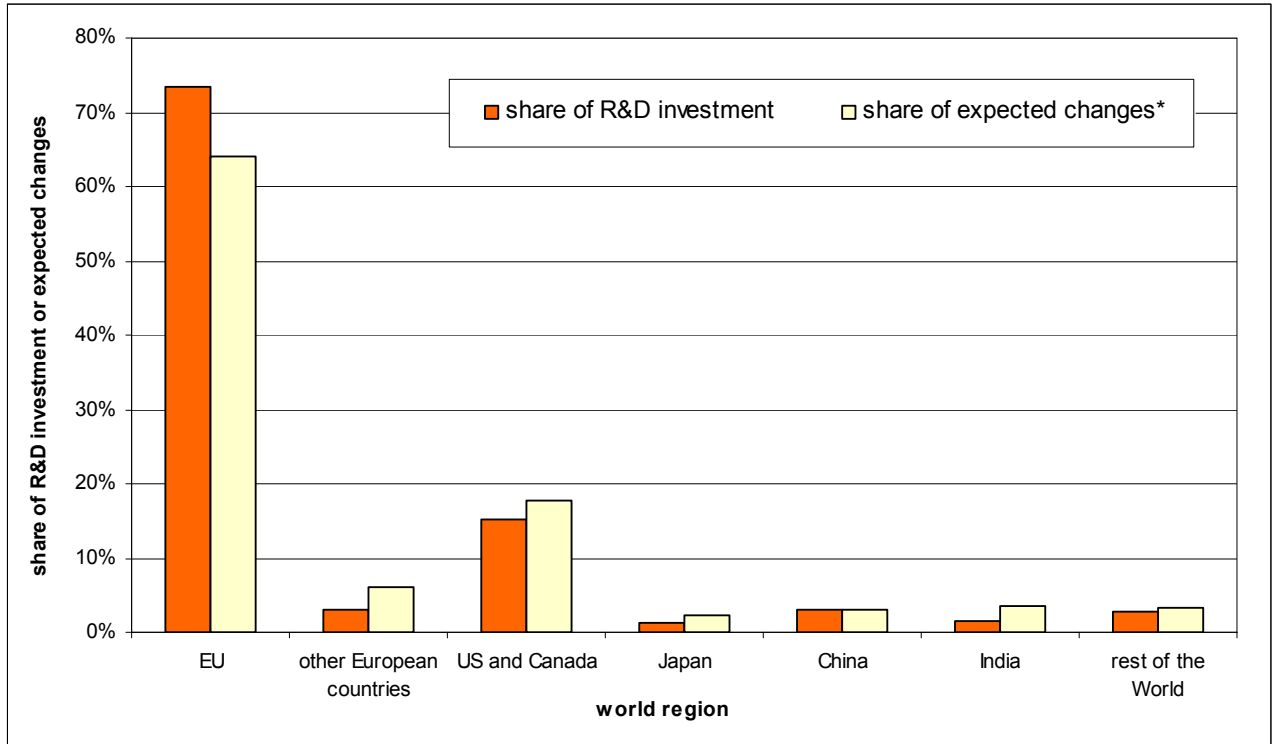


Note: * For China, the decrease in the low R&D intensity sector group is due to a single company.
 ** For India, the increase in the low R&D intensity sector group is due to two companies.
 The figure refers to 99 out of the 118 companies in the sample, weighted by R&D investment.
 Source: European Commission JRC-IPTS (2008)

As mentioned in Section 2, the biggest expected increases are in the medium R&D intensity sectors, followed by the other two sector groups. Worldwide, the EU is the region with the lowest expected growth for R&D investment (6%). Expected growth was higher in the US and Canada (10%), Japan (15%), and India (17%). It should be noted that, except for the EU and the US and Canada, expectations apply to a relatively small base, none of them exceeding 3% of the total R&D investment by the companies in the sample. The expectations for these countries generally rest on a broad sector base, although expectations for the low R&D intensity sectors in China and India are dominated by just a few individual companies.

In order to analyse R&D investment dynamics, Figure 5 compares the shares of R&D investment with the share of expected R&D investment changes in each world region.

Figure 5: Shares of R&D investment and expected changes by world region



Note: * The share of expected changes in R&D investment is the amount accounted for by the world region as a share of the total expected changes for all world regions.

The figure refers to 99 out of the 118 companies in the sample, weighted by R&D investment.

Source: European Commission JRC-IPTS (2008)

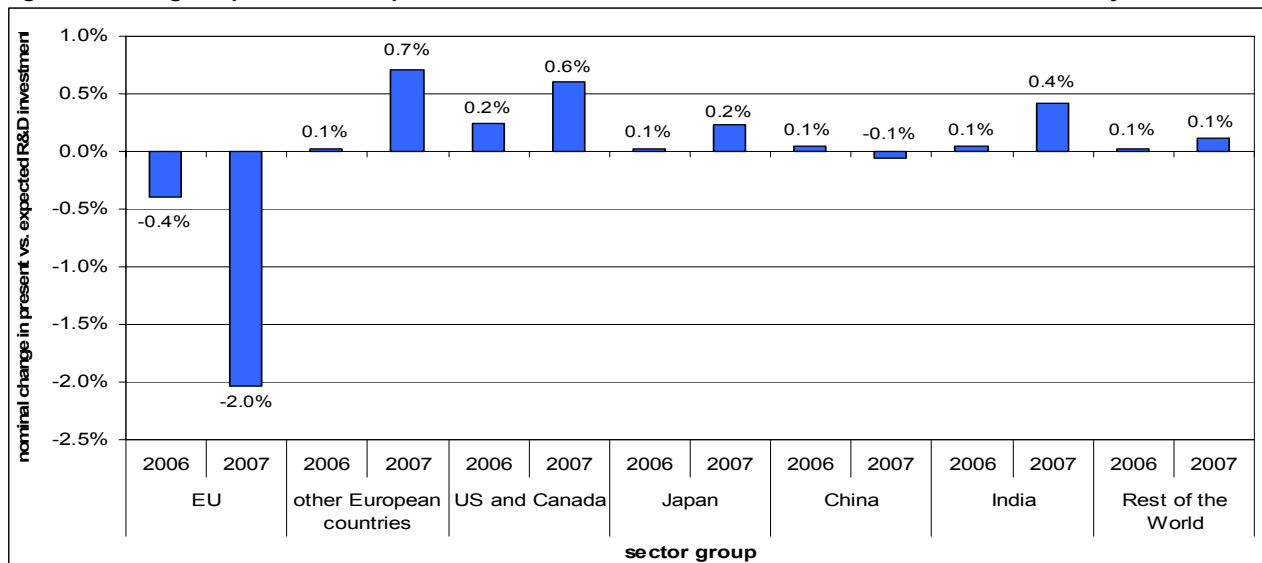
Although the shares of R&D investment and expected changes are largest in the EU, expected changes also match or exceed current shares of investment in all other world regions²⁰. These expectations point to a growth differential emerging compared to a baseline situation in which R&D investment continues to develop in line with its present distribution. This is leading to an outflow of R&D investment from the EU to the other world regions. For the 99 companies which responded to this question, it comes to almost €110 million, or 0.7% of these companies' annual R&D investment. One third of that amount each is going to the US and Canada and other European countries and almost one fifth to India. In addition, this outflow of R&D is almost twice that reported in last year's survey²¹.

Furthermore, there is a much bigger reduction in the expected share of R&D investment in the EU in this year's compared to last year's survey, as shown in Figure 6.

²⁰ This is consistent with the observation in Figure 4 that R&D investment growth is higher outside than inside the EU.

²¹ For the 89 companies in the 2006 survey, the outflow came to almost €60 million, or 0.4% of these companies' annual R&D investment.

Figure 6: Change in present vs. expected R&D investment distribution in the 2006 and 2007 surveys



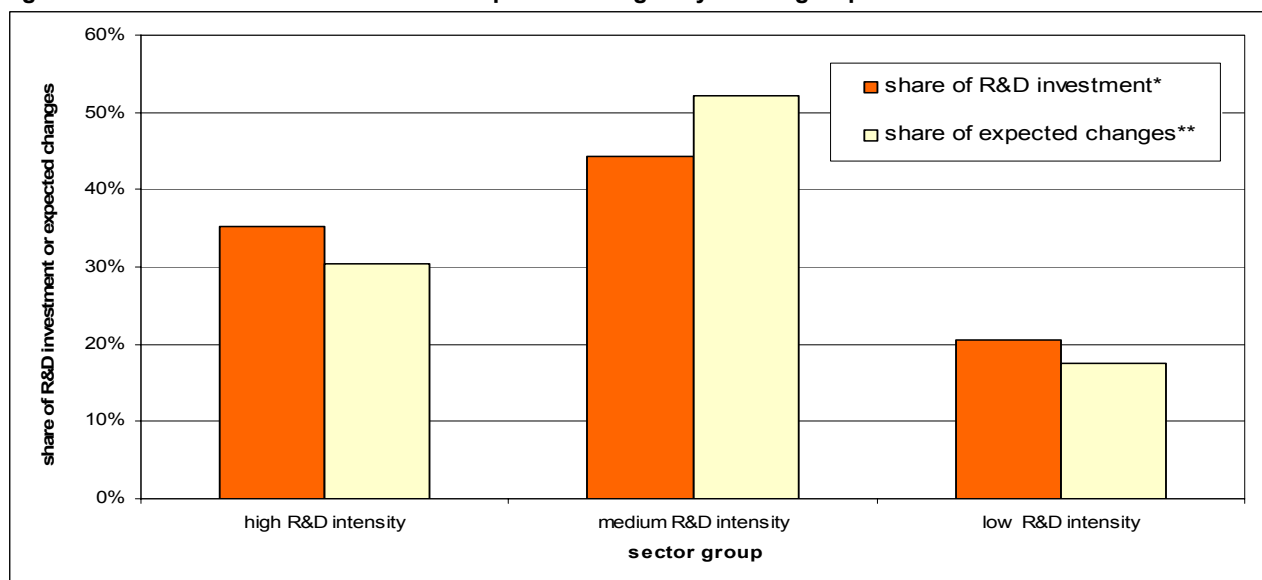
Note: For the 2007 survey the figure refers to 99 out of 118 companies in the sample, and for the 2006 survey for 89 out of 110 companies in the sample, weighted by R&D investment.

Source: European Commission JRC-IPTS (2008)

Compared to the previous survey, there has been a bigger reduction this time in the expected share of R&D investment in the EU. The main increases by volume and growth were found in the US and Canada, other European countries, and India.

Figure 7 below breaks down the information presented in Figure 5 by sector group rather than world region. Comparing the shares of R&D investment and expected changes by sector group reveals a significant expansion of R&D investment among the medium R&D intensity sectors, compared to slight reductions in the high and low R&D intensity sectors.

Figure 7: Shares of R&D investment and expected changes by sector group



Note: * The shares of R&D investment are different from those in the sample as a whole (in Figure 1) because only the shares of those companies which made a statement about the distribution of their R&D investment and its expected changes are taken into account here.

** The share of expected R&D investment changes is the amount the sector accounts for in the total amount of expected R&D investment changes for all sectors.

The figure refers to 99 out of the 118 companies in the sample.

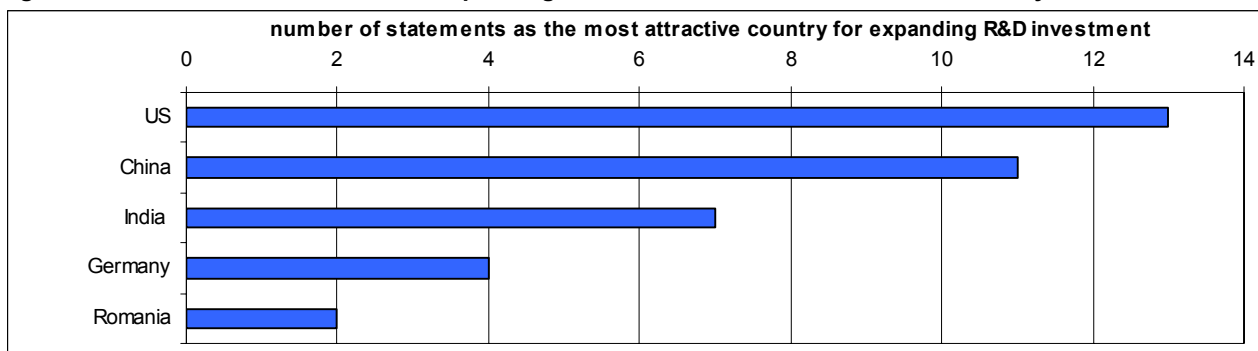
Source: European Commission JRC-IPTS (2008)

In this survey, decisions as to where to locate R&D investments concern the choice of country. Respondents (all of which were from the EU) were asked to state the most attractive country for R&D investment. Almost

half of the companies considered their home country to be the most attractive location for R&D²². This is much more than the corresponding figure of last year's survey (one third), mainly due to a decreasing preference for China and India.

Respondents' views as to the most attractive countries outside their home country are shown in Figure 8 below.

Figure 8: Most attractive countries for expanding R&D investment outside the home country



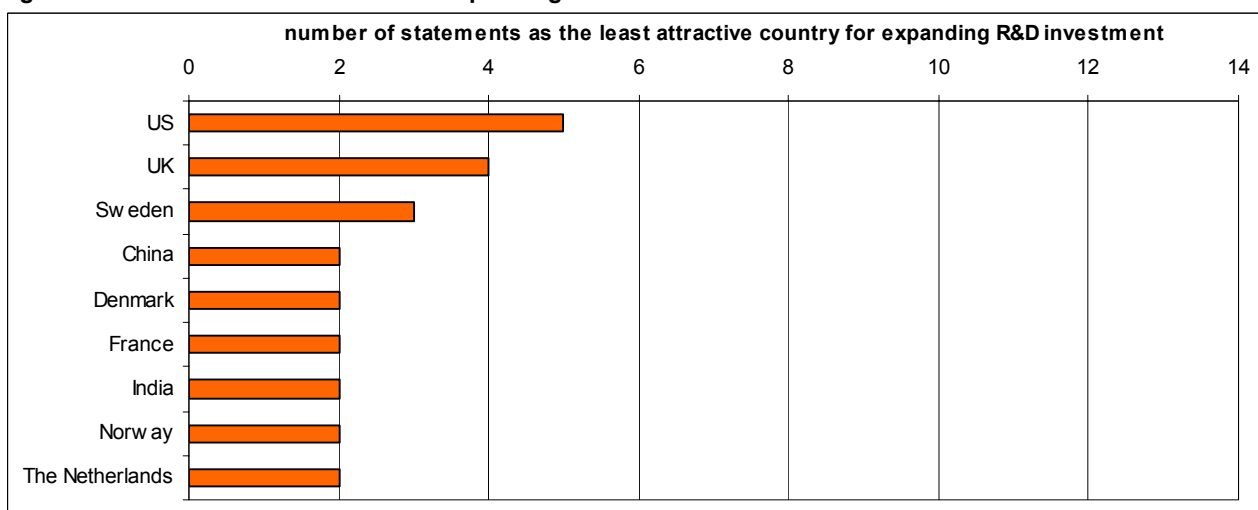
Note: Data for 45 cases (only countries mentioned at least twice are shown).

Source: European Commission JRC-IPTS (2008)

Among those preferring a location outside their home country, the US is most often cited as being the most attractive country for expanding R&D investment, just ahead of China and India. In the previous survey, China and India were ahead of the US.

Figure 9 shows the number of times various countries were mentioned as the least attractive R&D investment location.

Figure 9: Least attractive countries for expanding R&D investment



Note: Data for 37 cases (only countries mentioned at least twice are shown).

Source: European Commission JRC-IPTS (2008)

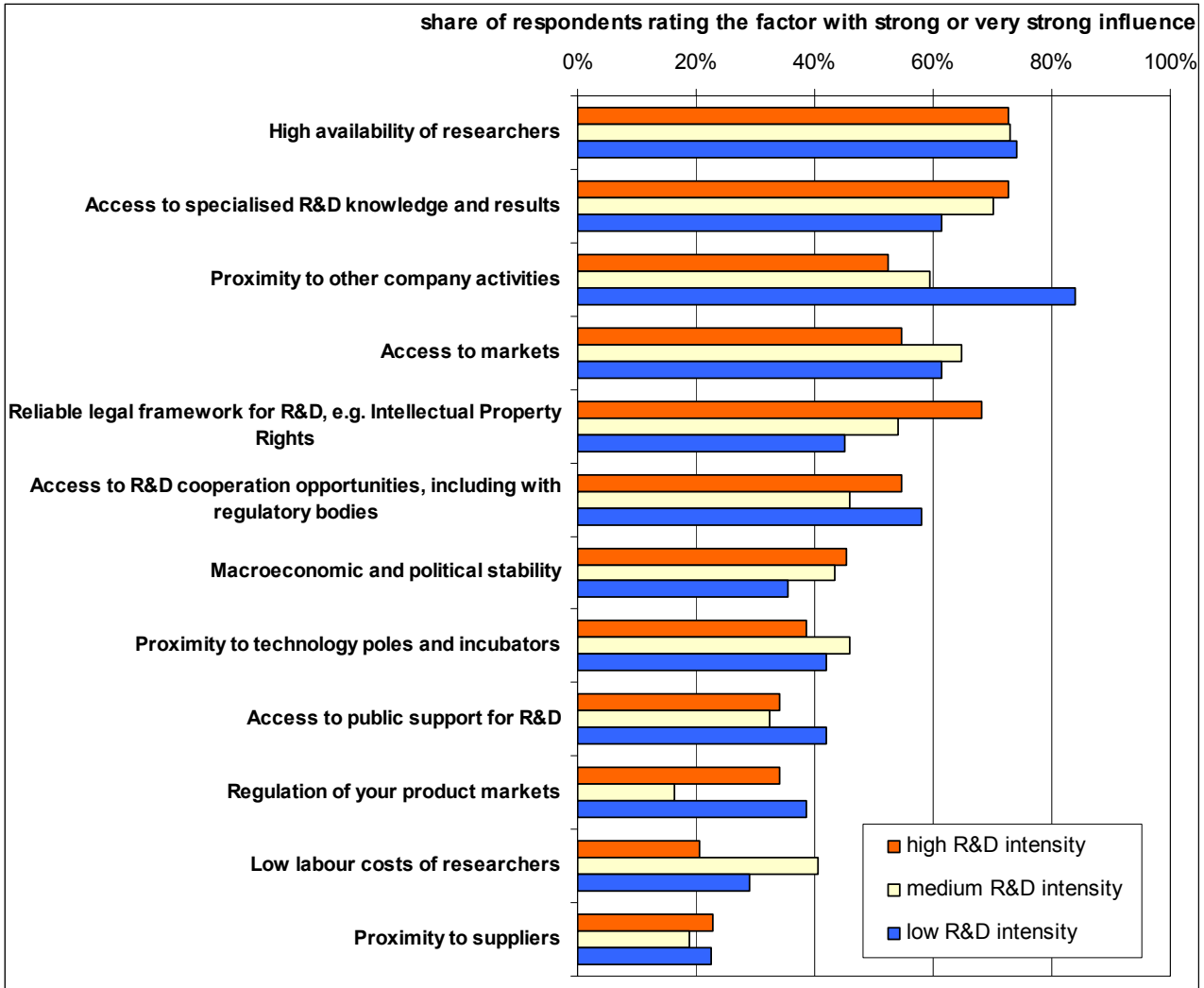
The US was mentioned most often as the least attractive country, mainly by companies in the medium and low R&D intensity sectors.

In the survey, respondents rated the factors for R&D location in the country they considered to be most attractive. As shown in Figure 10, the most important drivers are the same as in previous surveys, although their order has changed²³. More than two thirds of respondents considered availability of researchers and access to specialised R&D knowledge and results to be very or crucially important when deciding where to locate R&D investments.

²² Similar figures about country preferences were found in a study of US companies, where 57% of respondents chose the US as the preferred country. The preferred countries outside the US were China followed by Europe and India (see: "The 2008 R&D Funding Forecast", R&D Magazine, Batelle, February 2008, p.14).

²³ In last year's Survey, access to specialised R&D knowledge and results ranked ahead the high availability of researchers.

Figure 10: Factors for R&D location in the country considered the most attractive



Note: The factors are sorted by average importance. The figure refers to 112 out of the 118 companies in the sample.
 Source: European Commission JRC-IPTS (2008)

Compared to last year’s survey, proximity to other company activities has increased in importance, mainly due to its greater importance by the low R&D intensity sectors. Factors considered being of some importance²⁴ for R&D location decisions were access to markets, a reliable legal framework for R&D, access to R&D cooperation opportunities, macroeconomic and political stability, proximity to technology poles and incubators and access to public support for R&D.

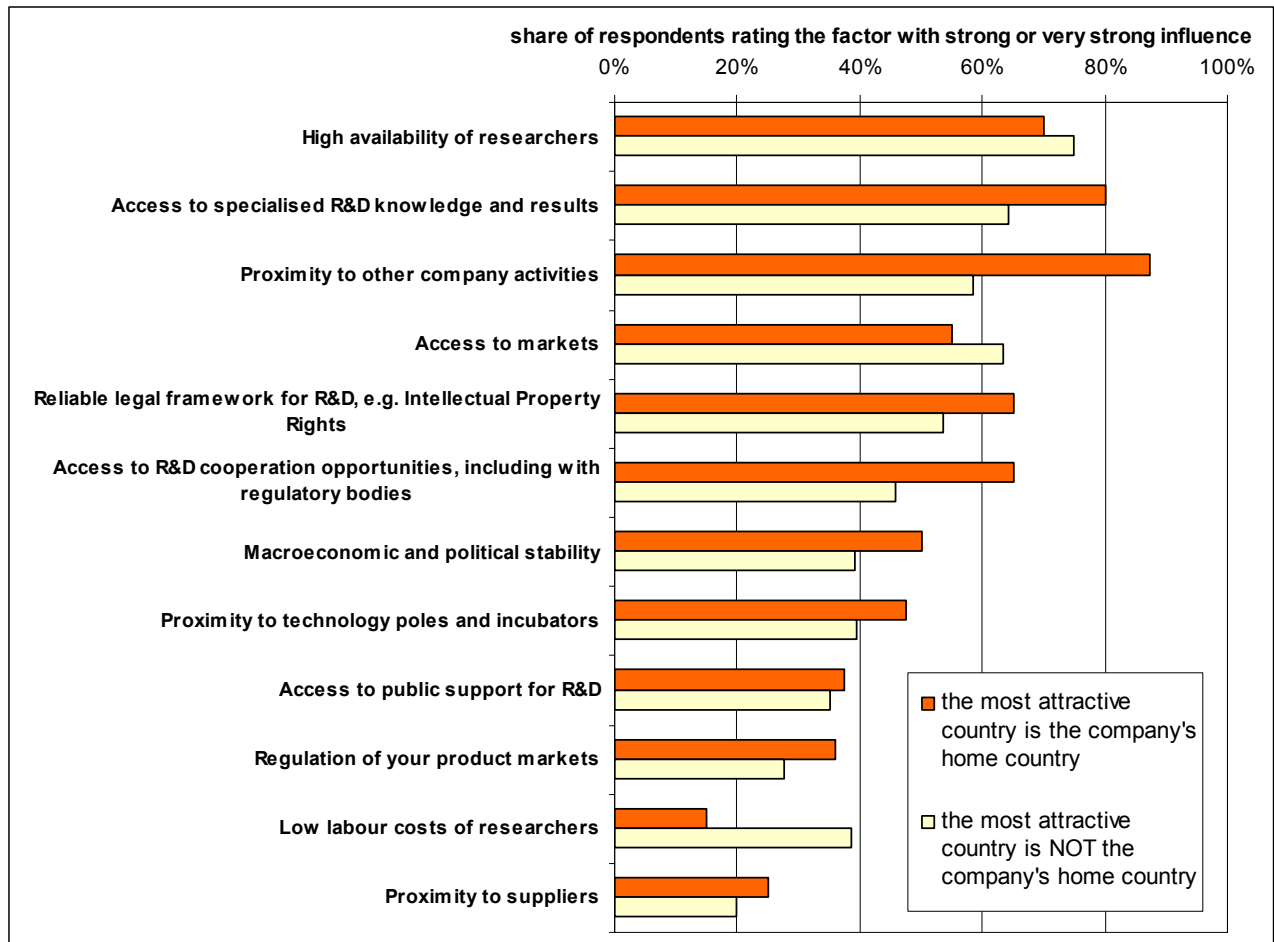
The factors which were of less importance²⁵ include regulation of the company’s product markets, low labour costs of researchers and proximity to suppliers. Just as in last year’s survey, the cost of employing researchers is ranked among the least important factors in deciding where to locate R&D.

Comparing location factors for companies which chose their home country as the most attractive place in which to expand R&D to those which stated a location outside their home country reveals some of the reasons for the preference for the home country as a location for R&D (see Figure 11).

²⁴ “Some importance” means that the factor is very or crucially important for more than one third but less than two thirds of the respondents.

²⁵ “Less importance” means that the factor is very or crucially important for less than one third of the respondents.

Figure 11: Location factors for companies according to whether or not they choose their home country as the most attractive place for R&D



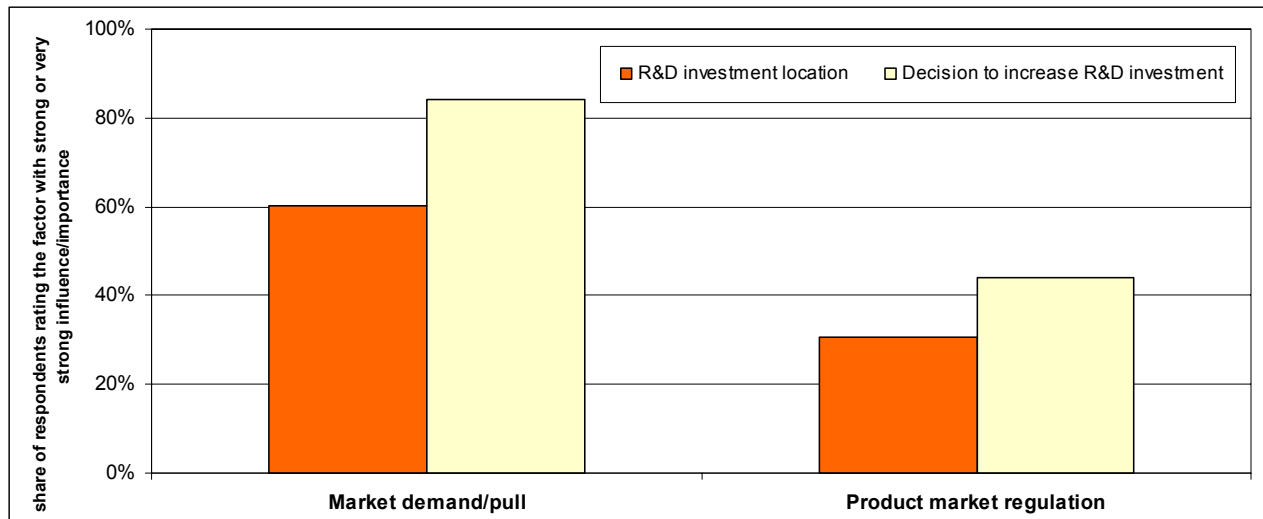
Note: The factors are sorted by average importance. The figure refers to 112 out of the 118 companies in the sample.
 Source: European Commission JRC-IPTS (2008)

For companies choosing their home country, access to specialised knowledge and results, proximity to other company activities, and access to R&D cooperation opportunities were much more important as factors in their location decisions. For those that preferred a location outside their home country, labour costs were much more important than they were for the companies that preferred their home country.

Two location factors were also analysed with respect to their impact on the company's decision to increase R&D investment²⁶. As shown in Figure 12, market demand and product market regulation are more important in the decision whether to increase R&D investment than in choosing an R&D investment location.

²⁶ See Section 4 Reasons for increasing R&D Investment

Figure 12: Factors for location vs. their impact on increasing R&D investment



Note: The factors were addressed in two different questions and the wording was therefore not always identical (see Annex B: The 2007 Questionnaire on R&D investment, question 10 for the decision to increase R&D investment and question 15 for the R&D investment location). The figure refers to 105 out of the 118 companies in the sample.

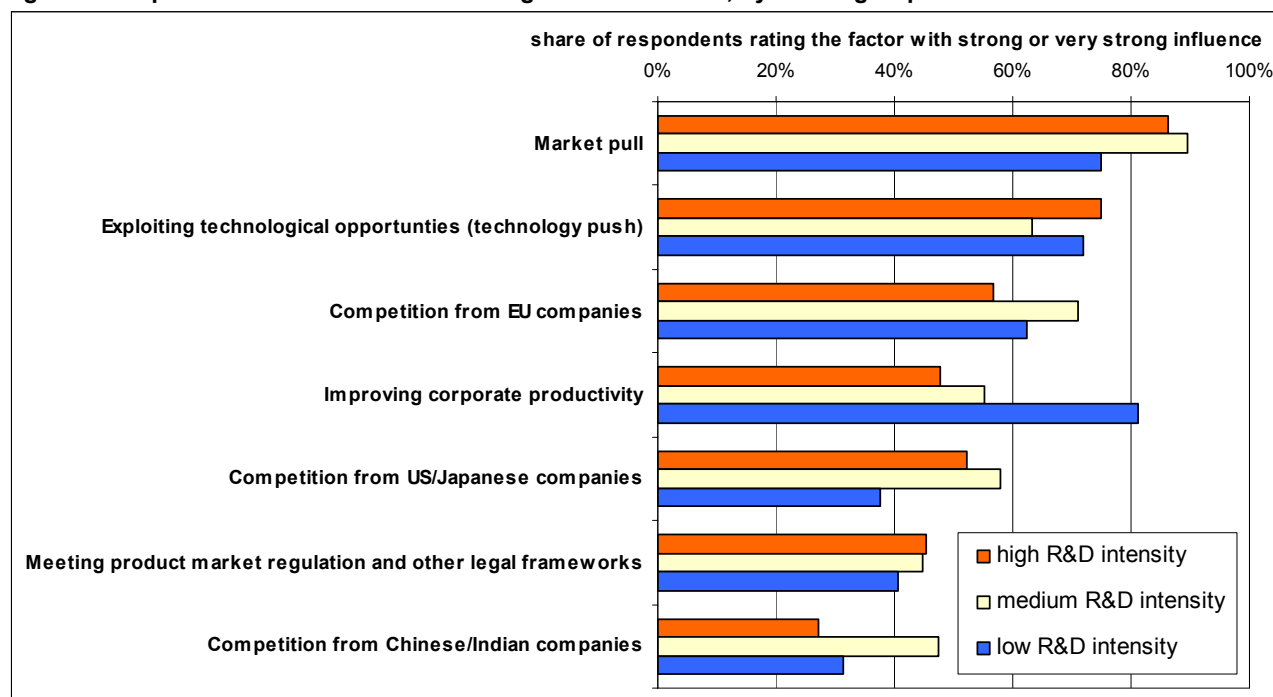
Source: European Commission JRC-IPTS (2008)

Just as observed in last year's survey, this means that these factors may be an incentive to invest more in R&D in general, but do not tend to attract R&D investment to a specific location.

4 Reasons for increasing R&D Investment

The survey also looked at factors encouraging companies to increase their overall R&D investment. As shown in Figure 13 below, the main incentives for increasing R&D investments were market pull and the possibility of exploiting technological opportunities (technology push). More than two thirds of respondents considered these factors to have a strong or very strong influence. This is in-line with the findings of previous editions of the survey, indicating that the classical motivations for technological development are still the most important.

Figure 13: Importance of factors for increasing R&D investment, by sector group



Note: The factors are sorted by average importance. The figure refers to the 118 companies in the sample.
 Source: European Commission JRC-IPTS (2008)

The other five factors were reported to have some influence²⁷ on a company's decision to increase R&D investment. Compared to the previous survey, these five factors have increased in importance. Part of this may be due to a reduction of items in the respective question of the questionnaire. However, for the companies in the medium and high R&D intensity sectors, the three competition factors and meeting product market regulation and other legal frameworks have become more important.

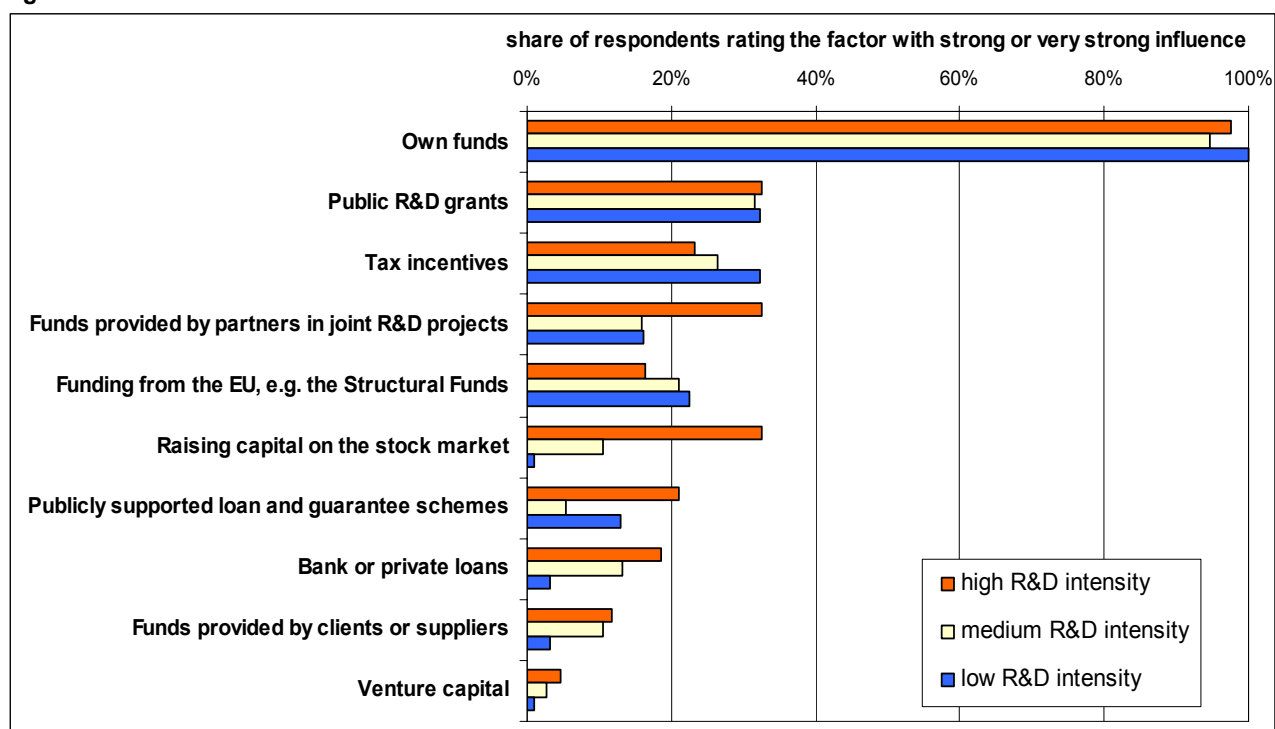
In the suggestions section of the questionnaire, some respondents mentioned that they used supply chain management to motivate suppliers to increase their R&D investment.

²⁷ "Some influence" means that the factor has a strong or very strong influence for more than one third but less than two thirds of the respondents.

5 Sources of R&D Investment

For the companies in the sample, own resources are by far the most important source of funding for R&D investments²⁸. As in past surveys, they are seen as very, or crucially, important by nine out of ten respondents. The remaining external sources are much less important²⁹. These sources include public grants, tax incentives, funds provided by partners in joint R&D projects, funding from the EU (e.g. the Structural Funds), raising capital on the stock market and publicly supported loan and guarantee schemes. Bank or private loans, funds provided by clients or suppliers and venture capital, all of which play a minor role. An overview is given in Figure 14 below.

Figure 14: Sources of R&D funds



Note: The factors are sorted by average importance. The figure refers to the 118 companies in the sample.

Source: European Commission JRC-IPTS (2008)

The observations with respect to the differences between sector groups are similar to those in last year's survey. Tax incentives were slightly more important for the low R&D intensity sectors than for other sectors. For the high R&D intensity sectors, funds provided by partners in joint R&D projects and raising capital on the stock market were much more important than for the other sectors. Similar to the findings of last year's survey, publicly supported loan and guarantee schemes and the three private sources of R&D investment ("funds provided by clients or suppliers", "bank and other private loans" and "venture capital") play a small role in the high R&D intensity sectors and virtually none in other sectors.

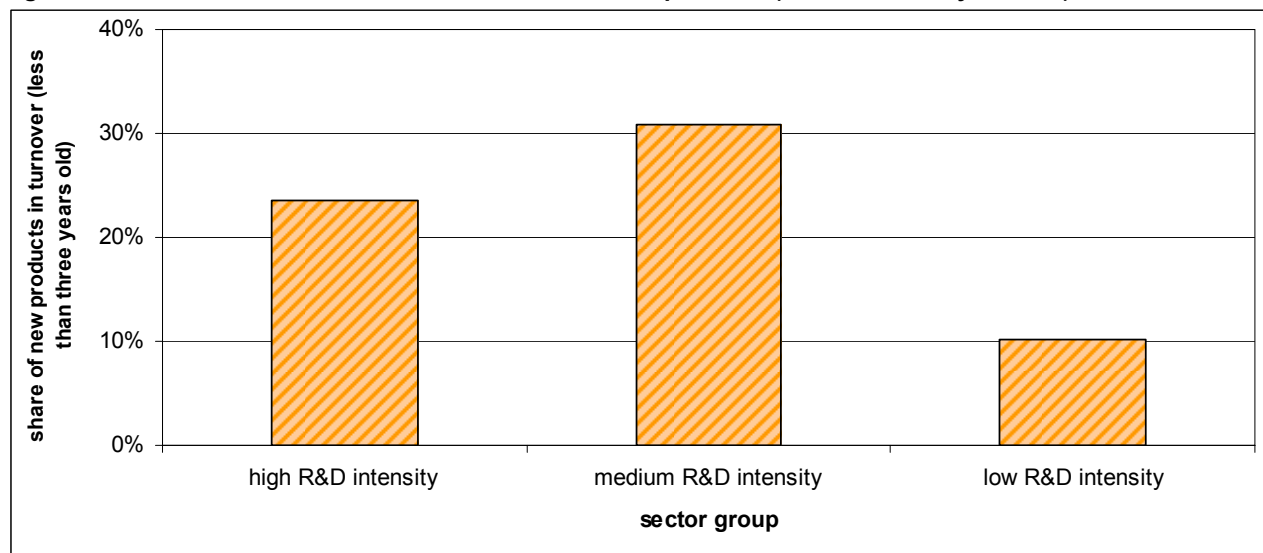
²⁸ The importance of own funds becomes even more apparent when taking into account that venture capital and raising capital on the stock market are in fact sub-categories of own funds.

²⁹ "Less importance" means that the factor is described as very or crucially important by less than one third of the respondents.

6 R&D and New Products

The average share of turnover respondents reported to be generated by new products (i.e. those less than three years old) was 20%. This share is higher than that observed in other surveys, which usually also cover smaller companies, but comparable to last year's results. It therefore indicates a continued commitment to innovation among the companies in the sample. Figure 15 shows an overview of the shares of revenues from new products by sector.

Figure 15: Share of turnover that can be attributed to new products (less than three years old)



Note: The figure refers to 84 out of the 118 companies in the sample, weighted by turnover.

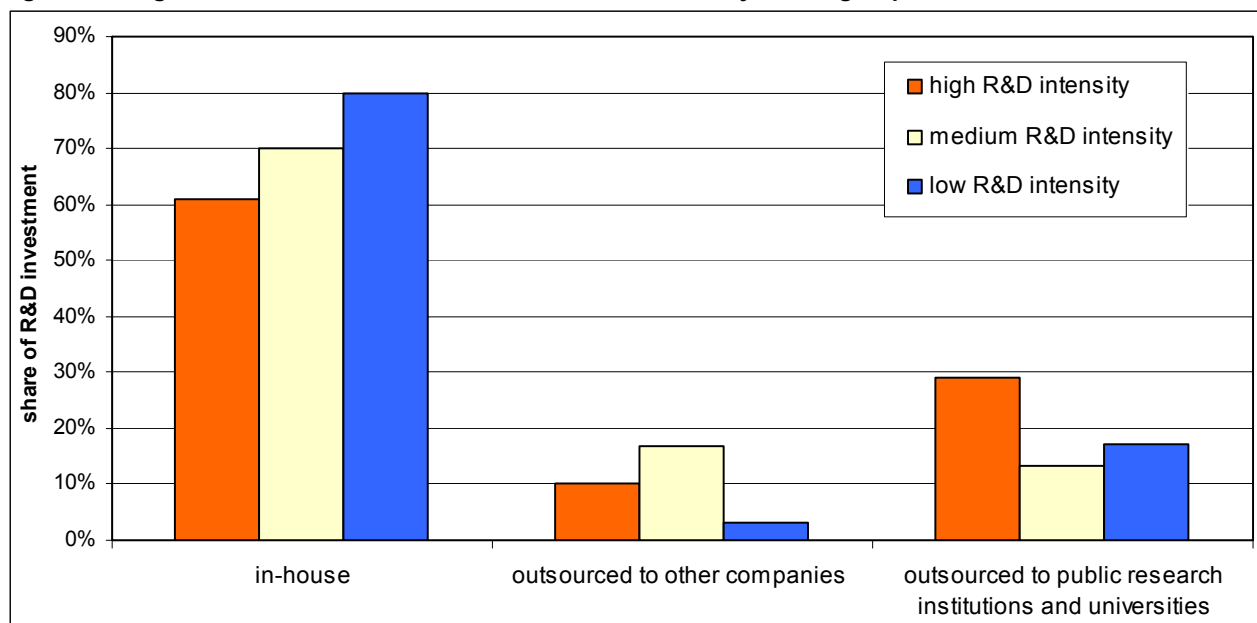
Source: European Commission JRC-IPTS (2008)

In a similar way to last year's survey, the sectors fall into two groups. The share of R&D devoted to new products is much bigger in the high and medium R&D intensity sectors than in the low R&D intensity ones. This may be partly explained by differences in product maturities. Moreover, there is also a large share of utility companies with a large proportion of mature products in the low R&D intensity sector group.

7 In-house R&D, Outsourcing and Collaboration

Most companies³⁰ in the survey use external resources to complement their internal R&D. The respondents allocated around one third of their R&D investment to outsourced activities³¹. This is twice the figure in last year's survey and that reported in similar studies. This year's high degree of outsourced R&D in the sample is due to the effect of six larger companies, which reported much higher than average levels of outsourcing³². These companies are also responsible for the sharp rise in the amount of R&D that is entirely outsourced to public research institutions. This year's survey shows two thirds of outsourced R&D being performed by public research institutions and one third by other companies (see Figure 16). This is the exact opposite of the situation reported in last year's survey.

Figure 16: Degree of in-house and outsourced R&D investment by sector group



Note: The figure refers to 114 out of the 118 companies in the sample, weighted by R&D investment.

Source: European Commission JRC-IPTS (2008)

The sample composition is also responsible for the observation that the low R&D intensity sectors execute most of their R&D in-house, followed by those from the medium R&D intensity sectors. While the shares of R&D outsourced by low R&D intensity sectors are comparable to those in last year's survey, the medium R&D intensity sectors outsource a larger share of R&D to other companies and the high R&D intensity sectors outsource more to public research institutions and universities.

On average, the respondents devoted 22% of their R&D investments to collaborative research with other companies and public research institutions. This is twice the level of last year's survey and is due to nine companies reporting higher degrees of collaboration³³. Four out of these companies are among those six with a significantly higher level of outsourcing, as above. This indicates that outsourcing and collaboration are established modes of carrying out R&D investment, which some firms use to a much larger extent than others to complement in-house R&D.

As shown in Figure 17 below, there are differences in the share of research in collaboration between the sector groups.

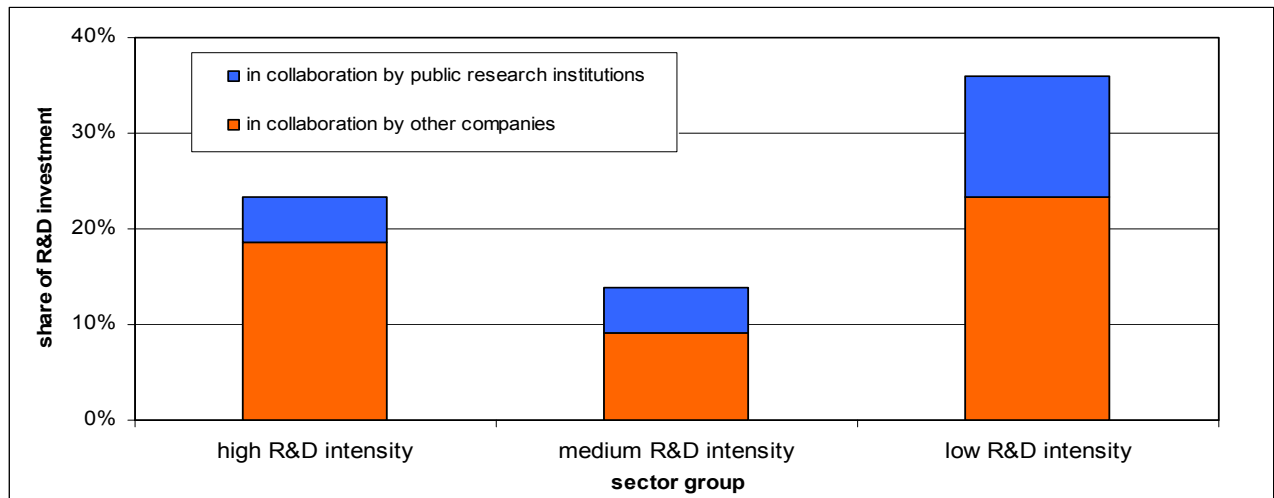
³⁰ More than 95% of the respondents outsource some R&D.

³¹ This figure does not include two outliers from the automobiles & parts sector, which had a much higher level of R&D outsourcing.

³² These six companies were in pharmaceuticals & biotechnology, automobiles & parts, chemicals and industrial machinery.

³³ These nine companies were in pharmaceuticals & biotechnology, semiconductors, automobiles & parts, chemicals, and industrial machinery.

Figure 17: Share of R&D investment devoted to collaborative research

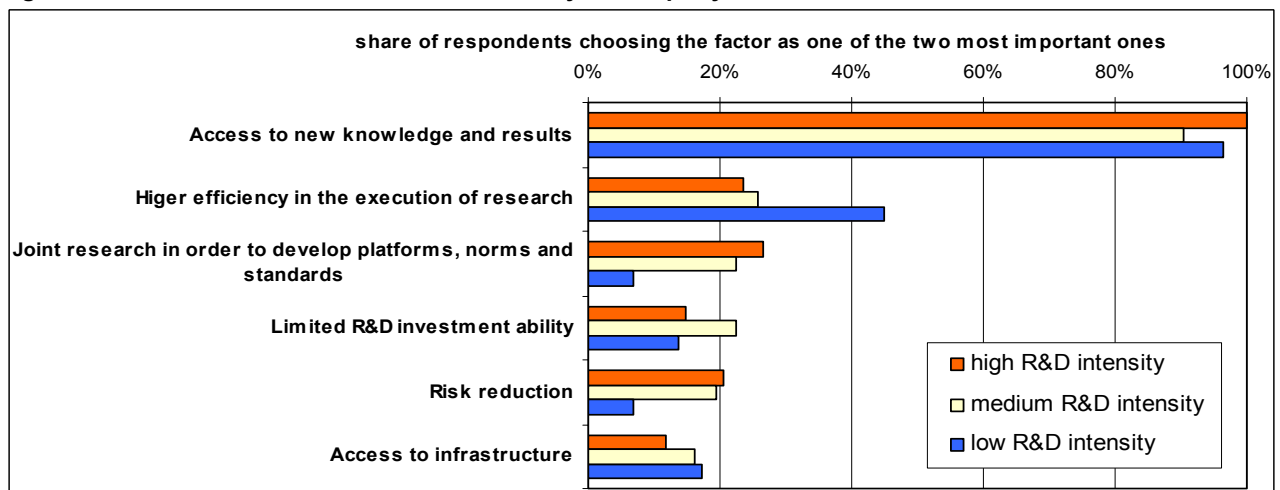


Note: The figure refers to 114 out of the 118 companies in the sample, weighted by R&D investment.
 Source: European Commission JRC-IPTS (2008)

Concerning R&D in collaboration with other companies, this year's shares are much above those in the last edition of the survey in the case of the high and medium R&D intensity sectors. This is mainly due to the sample composition. R&D in collaboration by public research institutions and universities is about a third of that in collaborations between companies. For the low R&D intensity sectors, the share is very much higher due to a number of companies performing a substantial amount of R&D in collaboration with public research institutions in fixed line telecommunications. As observed in last year's survey, the degree of collaboration varies much more from one company to another than does the degree of outsourcing.

The objective of involving third parties in R&D activities is mainly to access to new knowledge and results. On average, more than 90% of respondents chose this factor as one of the two most important reasons to invest in R&D performed by third parties (see Figure 18 below).

Figure 18: Reasons to invest in R&D carried out by a third party



Note: The factors are sorted by average importance. The figure refers to 91 out of the 118 companies in the sample.
 Source: European Commission JRC-IPTS (2008)

The five other factors (higher efficiency in the execution of research, joint research to develop platforms, norms and standards, limited R&D investment capability, risk reduction and access to infrastructure) are less important³⁴ reasons for investing in R&D performed by other parties. However, more efficient execution of research has some importance for the low R&D intensity sectors³⁵.

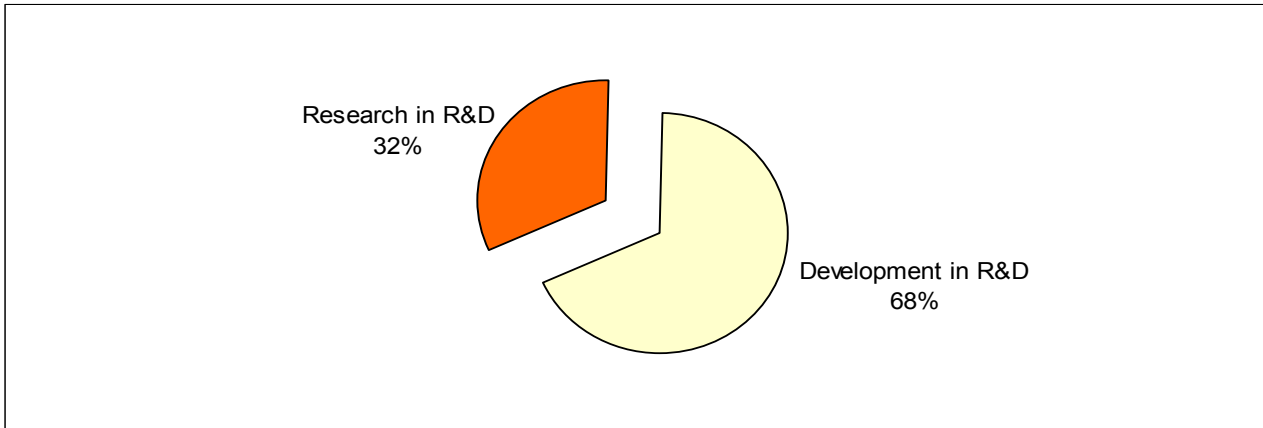
³⁴ "Less importance" means that the factor is chosen as being one of the two most important by less than one third of the respondents.

³⁵ "Some influence" means that the factor is chosen as being one of the two most important by more than one third but less than two thirds of the respondents.

8 “R” vs. “D”

Respondents were asked to state what share of their R&D investment they considered to be either “Research” or “Development” both inside and outside the EU. On average, the responding companies (all of which were from the EU) described two thirds of their R&D investment as Development and one third as Research (see Figure 19).

Figure 19: R&D broken down into the shares of Research and Development

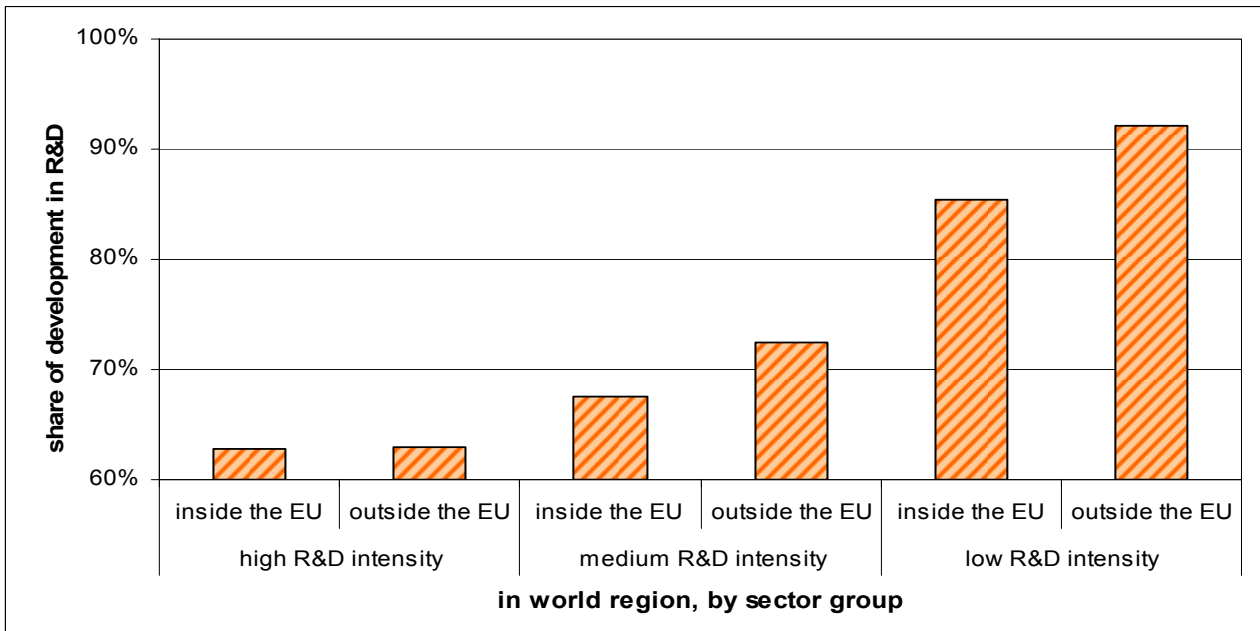


Note: The figure is based on 93 out of the 118 companies in the sample.

Source: European Commission JRC-IPTS (2008)

The share of Research in R&D in this year’s survey is higher than that in last year’s. The main reason for this is the sample composition. In Figure 20 below, the distribution of Research vs. Development per sector group and world region is examined. While the average share of development in R&D is higher outside the EU, the difference is just 5%, or half of what it was in last year’s survey. This is due to five bigger R&D investors in the pharmaceuticals & biotechnology, automobiles & parts and chemicals sectors stating similar shares of R&D content both in- and outside the EU.

Figure 20: Shares of Development in R&D by world region and sector group



Note: The figure refers to 93 out of the 118 companies in the sample.

Source: European Commission JRC-IPTS (2008)

Thus, the higher share of Development in R&D is mainly due to companies operating in the medium and low R&D intensity sectors. In the high R&D intensity sectors, there is little difference in the content of R&D in- and outside the EU.

9 The way forward

The 2007 survey offers some valuable insights into company expectations about future R&D investment and companies' motivations for investing in research.

Data collection for the 2008 survey is underway with a simplified questionnaire. The 2008 survey was addressed to the 1000 European companies of the 2007 Scoreboard. The questionnaire for the 2008 survey again comprises the present and expected distribution of R&D investment in order to provide further insights about trends in R&D. However, the content of the 2008 questionnaire was kept tightly focused as further topics are intended to be addressed through company interviews in 2008/9.

The data collection for the 2008 survey is planned to finish towards the end of 2008. After that, the analyses of the data will be undertaken and be made available at <http://iri.jrc.es/>.

10 Annex A: The Methodology of the 2007 Survey

Background and Approach

A mapping exercise on the available information on industrial R&D at individual country level³⁶ revealed the main sources of data to be the official statistics on R&D and innovation, and some occasional country-specific statistics. Private sources exist but are rarely published. In particular, there is a shortage of qualitative and prospective information on industrial R&D. Another mapping and analysis of available trans-national data sources on industrial R&D³⁷, from the European Commission, OECD and European industry associations, showed that data on business enterprise R&D essentially draws upon retrospective surveys and is based on differing approaches. Statistical offices generally collect R&D data in the form of Business Expenditure on R&D (BERD), which defines R&D from a top-down perspective. Surveys by industrial associations are undertaken sporadically, their scope is limited and the results are not often fully disclosed. The industrial R&D perspective taken in most of these surveys does not permit cross-sector comparisons at the European level.

In order to help improve research and innovation policies, while taking better account of sectoral needs and specificities, and to increase competitiveness and provide a consolidated overview and analysis of developments relevant to industrial research and innovation, together with a conduit for stakeholder views, the European Commission committed itself in October 2005 to establishing a European Industrial Research and Innovation Monitoring System "EIRIMS"³⁸. The present survey is part of EIRIMS and tackles the information gap identified above through an approach at the European level to gathering qualitative information on factors and issues surrounding and influencing companies' current and prospective R&D investment strategies.

The specificity of the information required made it necessary to generate primary data through a self-completed questionnaire under three main headings: R&D investment levels and trends; R&D location strategy and management; and outcomes of R&D investment strategy.

Following the recommendations of the EIRIMS expert group³⁹, the survey explicitly avoids duplication with other R&D investment related surveys and data collection exercises (e.g. Innobarometer, the Trend Chart on Innovation, the results from the Knowledge Economy Indicators project⁴⁰, EUROSTAT's data collection of structural indicators or other ongoing surveys).

The 2005 Pilot Survey

The pilot survey in 2005 tested three different channels for approaching firms:

- a) The 500 European companies appearing in the *2004 EU Industrial R&D Investment Scoreboard*⁴¹.
- b) Firms were also approached indirectly through five industrial associations:
 - European Industrial Research Management Association (EIRMA)
 - European Council for Automotive R&D (EUCAR)
 - European Association of Automotive Suppliers (CLEPA)
 - European Association for Bioindustries (EuropaBio)
 - European Federation of Pharmaceutical Industries and Associations (EFPIA)
- c) A quantitative sample of 6100 companies in three sectors was compiled for the 25 EU Member States according to sample composition criteria:
 - 3092 companies in pharmaceuticals & biotechnology,
 - 1499 companies in chemicals, and

³⁶ See the results of the European Science and Technology Observatory (ESTO) study: "Mapping Surveys and other data sources on Industrial R&D in the EU-25 countries", Seville, June 2004

³⁷ See the results of the JRC-IPTS study: "Description of Information Sources on Industrial R&D data : European Commission, OECD and European Industry Associations", Seville, July 2004

³⁸ See: "More Research and Innovation - Investing for Growth and Employment - a common approach", COM (2005) 488 and "Implementing the Community Lisbon Programme. A policy framework to strengthen EU manufacturing - towards a more integrated approach for industrial policy", COM (2005) 474

³⁹ See the "Report of the Expert Group investigating the Establishment of EIRIMS (European Industrial Research and Innovation Monitoring System)", European Commission, June, 2007

⁴⁰ See <http://kei.publicstatistics.net/index.html>

⁴¹ See http://iri.jrc.ec.europa.eu/research/scoreboard_2004.htm

- 1509 companies in engineering & machinery.

A total of 583 responses from 29 sectors were received in the pilot survey. Given the high concentration of responses by sector, the results for the pilot survey were drawn from 449 responses in ten sectors: Automobiles & parts, Chemicals, Electronic & electrical equipment, Engineering & machinery, Food producers & processors, Health, mainly medical equipment companies, IT hardware, Pharmaceuticals & biotechnology, Steel & other metals, and Support services. The analysis of these responses is presented in the report "The 2005 EU Survey on R&D Investment Business Trends in 10 Sectors"⁴².

The 2006 Survey

Following the experience with the pilot phase of the survey and the analysis of the different subsamples it was decided to focus on the European companies in the Scoreboard. For last year's 2006 edition, the 700 European companies on the "2005 EU Industrial R&D Investment Scoreboard" were contacted⁴³. Two rounds of reminders were sent, and responses from 110 companies were received, yielding an overall response rate of 15.7% by number and 24.3% in terms of the proportion of the total R&D by the European Scoreboard companies. The analysis of these responses is presented in the report "The 2006 EU Survey on R&D Investment Business Trends"⁴⁴.

The 2007 Survey

For this year's 2007 edition, the 1000 European companies on the "2006 EU Industrial R&D Investment Scoreboard" were contacted⁴⁵. As in the case of the 2006 survey, two rounds of reminders were sent. Responses from 118 companies were received, yielding an overall response rate of 11.8% by number and 23.1% in terms of proportion of the total R&D by the European Scoreboard companies. The response rate in the 2007 survey is thus lower in terms of number of respondents but similar in terms of the share of R&D investment represented by the responses.

The responses were not filtered by the job title of the respondent as different company cultures have different policies regarding who is considered the right person to provide the information asked for. Some may be more inclined to give the true position while in others the answer may be given on behalf of the person to whom the letter was addressed.

All responses came from independent EU companies which were identified as not being controlled by another company at the time of the survey.

R&D Investment Definition

The objective of the survey is to address R&D investment, and not R&D expenditure, due to its direct link to the Barcelona targets. In order to make the questionnaire as easy to complete as possible and so maximise the response rate, only a short definition of R&D investment, which is as close as possible to accounting standards, is provided in the questionnaire⁴⁶. The definition refers mainly to the R&D as reported in the company's most recent accounts. The definition used in the questionnaire is thus closely related to International Accounting Standard (IAS) 38 "Intangible Assets"⁴⁷, which is based on the OECD "Frascati" manual⁴⁸, and the definition used in the EU Industrial R&D Investment Scoreboard.

Composition of the Responses

The 118 responses were subsequently classified according to the ICB sector⁴⁹ stated in the questionnaire. Sector classifications of individual companies were cross-checked with information appearing in the "2007

⁴² See: <http://ipts.jrc.ec.europa.eu/publications/pub.cfm?prs=1454>

⁴³ See http://iri.jrc.ec.europa.eu/research/scoreboard_2005.htm

⁴⁴ See: http://iri.jrc.ec.europa.eu/research/survey_2006.htm

⁴⁵ See http://iri.jrc.ec.europa.eu/research/scoreboard_2006.htm

⁴⁶ See Annex B

⁴⁷ See <http://www.iasplus.com/standard/ias38.htm>

⁴⁸ See "Proposed Standard Practice for Surveys on Research and Experimental Development: Frascati Manual", OECD, Paris, 2002, <http://www1.oecd.org/publications/e-book/9202081E.PDF>

⁴⁹ ICB Industry Classification Benchmark (see: http://www.icbenchmark.com/docs/ICB_StructureSheet_120104.pdf)

EU Industrial R&D Investment Scoreboard". The sectors were combined into three groups according to their average R&D intensities in the 2007 Scoreboard⁵⁰:

- ⇒ **High (more than 5%) R&D intensity:** biotechnology, health care equipment & services, leisure goods, pharmaceuticals, software, support services, technology hardware & equipment.
- ⇒ **Medium (between 2 and 5%) R&D intensity:** aerospace & defence, automobiles & parts, chemicals, commercial vehicles & trucks, computer services, electrical components & equipment, electronic equipment, general industrials, industrial machinery, personal goods.
- ⇒ **Low (less than 2%) R&D intensity:** banks, construction & materials, electricity, fixed-line telecommunications, food & drug retailers, food producers, forestry & paper, gas, water & multiutilities, general retailers, industrial metals, industrial transportation, oil & gas producers, oil equipment, services & distribution.

Table 2 shows the distribution of the responses among the sectors with their respective R&D investment shares.

Table 2: Distribution of the responses by sectors

ICB Sector	Number of responses	Number of Scoreboard companies	Response rate by sector	Total R&D investment share compared to the Scoreboard*	R&D intensity sector group**
Biotechnology	9	58	15.5%	between 20 and 40 %	High
Health care equipment & services	3	36	8.3%	below 20 %	High
Leisure goods	1	9	11.1%	above 40 %	High
Pharmaceuticals	12	59	20.3%	above 40 %	High
Software	10	95	10.5%	below 20 %	High
Support services	3	26	11.5%	below 20 %	High
Technology hardware & equipment	7	64	10.9%	below 20 %	High
Other high R&D intensive sectors	0	7	0.0%		High
Subtotal high R&D intensity sectors	45	354	12.7%	25.7%	
Aerospace & defence	2	26	7.7%	below 20 %	Medium
Automobiles & parts	7	40	17.5%	between 20 and 40 %	Medium
Chemicals	9	46	19.6%	above 40 %	Medium
Commercial vehicles & trucks	2	14	14.3%	between 20 and 40 %	Medium
Computer services	1	32	3.1%	below 20 %	Medium
Electrical components & equipment	2	33	6.1%	below 20 %	Medium
Electronic equipment	4	46	8.7%	between 20 and 40 %	Medium
General industrials	4	22	18.2%	below 20 %	Medium
Industrial machinery	7	66	10.6%	below 20 %	Medium
Personal goods	1	18	5.6%	below 20 %	Medium
Other medium R&D intensive sectors	0	62	0.0%		Medium
Subtotal medium R&D intensity sectors	39	405	9.6%	21.6%	
Banks	1	19	5.3%	below 20 %	Low
Construction & materials	5	24	20.8%	below 20 %	Low
Electricity	5	21	23.8%	below 20 %	Low
Fixed line telecommunications	2	15	13.3%	between 20 and 40 %	Low
Food & drug retailers	1	9	11.1%	below 20 %	Low
Food producers	3	36	8.3%	below 20 %	Low
Forestry & paper	1	7	14.3%	between 20 and 40 %	Low
Gas, water & multiutilities	2	9	22.2%	below 20 %	Low
General retailers	1	16	6.3%	below 20 %	Low
Industrial metals	6	13	46.2%	between 20 and 40 %	Low
Industrial transportation	2	10	20.0%	above 40 %	Low
Oil & gas producers	3	9	33.3%	below 20 %	Low
Oil equipment, services & distribution	2	10	20.0%	between 20 and 40 %	Low
Other low R&D intensive sectors	0	43	0.0%		Low
Subtotal low R&D intensity sectors	34	241	14.1%	23.4%	
Total	118	1000	11.8%	23.4%	

Note: * For confidentiality, R&D investment shares of individual sectors are shown in ranges.

** Sector group according to the average Scoreboard R&D intensity of each sector.

Source: European Commission JRC-IPTS (2008)

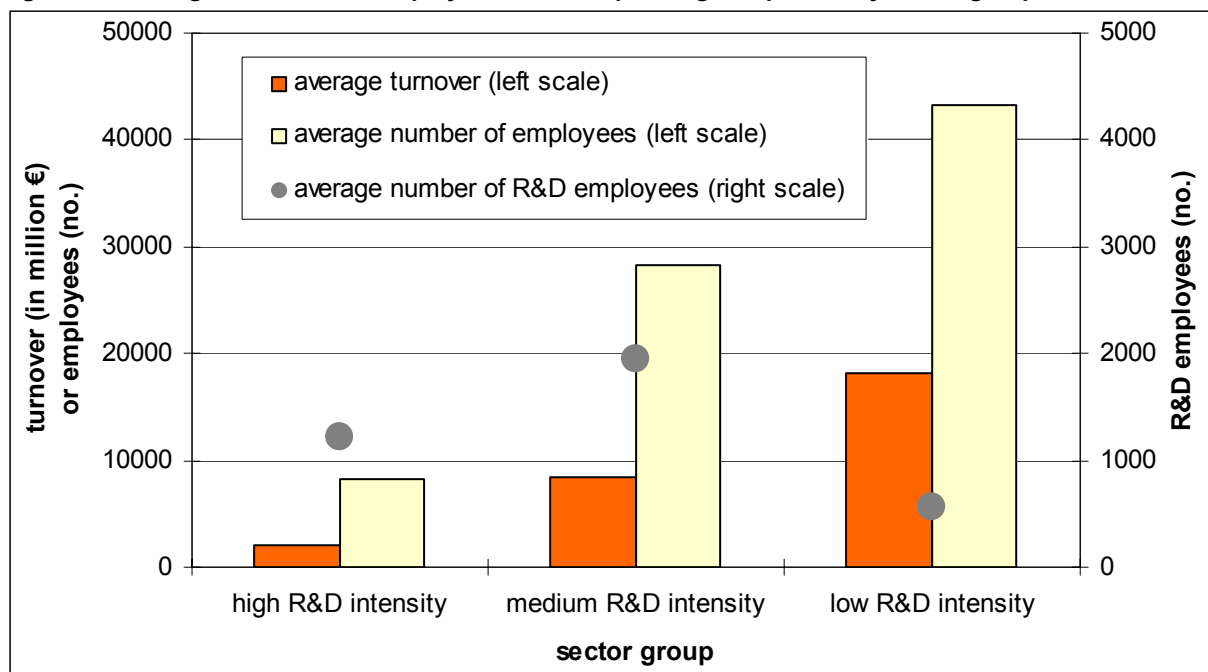
The largest number of responses came from the high and medium R&D intensity sector groups. Compared to the R&D investment in the Scoreboard, between 20 and 25% is represented in the survey. As explained in

⁵⁰ See: The 2007 EU Industrial R&D Investment Scoreboard

Figure 1 of Section 0, the survey reflects the distribution of R&D investment of the EU in the Scoreboard with a concentration of R&D investment in the medium R&D intensity sectors.

As shown in Figure 21, the average respondent to the present survey is a very large company⁵¹. However, there are differences of company size among the sector groups.

Figure 21: Average turnover and employees of the responding companies, by sector group



Note: The figure refers to all 118 companies in the sample.

Source: European Commission JRC-IPTS (2008)

The figure above shows how average turnover and employee numbers are inversely proportional to the R&D intensity of the sector group. However, the average number of R&D employees is much higher in the medium R&D intensity sectors than in the others. This reflects the high share in overall R&D employees of sectors such as automobiles, chemicals, or industrial machinery⁵².

Unless otherwise stated, the weighted figures presented in this report are weighted by R&D investment.

⁵¹ The average figures for the responding companies were a turnover of €8.8 billion, and a workforce of 25 000 employees, of whom 1 275 employees work in R&D. Among the 118 respondents there are twelve medium-sized companies according to the European Commission's SME definition (see: http://ec.europa.eu/enterprise/enterprise_policy/sme_definition/index_en.htm).

⁵² See also: "Industrial R&D Employment in the United States and in U.S. Multinational Corporations", table 2, <http://www.nsf.gov/statistics/infbrief/nsf05302/>

11 Annex B: The 2007 Questionnaire on R&D Investment

We would appreciate your response by **deadline**, preferably by using the questionnaire on our website at: <http://iri-survey.jrc.es/2007/>. Alternatively, you may return this completed form by e-mail (Alexander.Tuebke@ec.europa.eu), fax (+34.95.448.83.26), or post¹.

Your response will be treated as **confidential**. The information will only be used within this study and aggregated for analysis. The European Commission is committed to data protection and privacy².

It will take about **30 minutes** to complete the questionnaire.

We will automatically inform you of the results of the survey when they are available (please ensure that you have provided your e-mail address below).

Thank you very much for your contribution!

Name of the company you are responding for: _____
Its primary sectors of activity: _____
Your name: _____
Job title: _____
E-mail: _____
Phone number: _____

The European Commission plans to clarify trends revealed in the analysis, which may involve short follow-up interviews. Please **tick here** if you *do not* wish to be approached for this purpose.

Definition of R&D investment

For the purposes of this questionnaire, **'R&D investment' is the total amount of R&D financed by your company** (as typically reported in its accounts, exclusive of R&D from public sources).

¹ European Commission, Institute for Prospective Technological Studies (IPTS), Attn.: Alexander Tübke, Edificio Expo, Calle Inca Garcilaso s/n, E-41092 Seville, Spain, Tel : +34.95.448.83.80

² see the Disclaimer on page 6

A. Corporate background

1. How many employees are working in your company?
About _____.
2. How many employees are working on R&D in the company?
About _____.
3. What was its turnover in the last financial year?
About € _____ million in the financial year ending _____.
4. How much of this turnover can be attributed to new products (less than three years old)?
About _____ %.

B. R&D investment levels and trends

5. What was your company's R&D investment in the last financial year?
About € _____ million in the financial year ending _____.
6. How much of your R&D investment is in research³ and how much is in development⁴?

	research	development
(a) R&D carried out <i>inside the EU</i>	_____ %	_____ %
(b) R&D carried out <i>outside the EU</i>	_____ %	_____ %
7. How much of the company's R&D investment is carried out in-house, in collaboration and fully outsourced?

_____ %	in-house
_____ %	in collaboration by other companies
_____ %	in collaboration by public research organisations and universities
_____ %	fully outsourced to other companies
_____ %	fully outsourced to public research organisations and universities
8. If applicable, what are the main reasons for your company to invest in R&D carried out by other parties? *Please select up to two reasons.*
 - Limited R&D investment ability
 - Access to new knowledge and results
 - Access to infrastructure
 - Risk reduction
 - Higher efficiency in the execution of the research
 - Joint research in order to develop platforms, norms and standards
 - other: _____

³ Research is undertaken primarily to acquire new knowledge of the underlying foundation of phenomena and facts, with or without any particular application or use in view.

⁴ Development draws on existing knowledge to produce new, or to improve substantially, products, processes and services.

9. How important are the following sources of funds for financing your R&D activities? *Please rate on a scale from 1 (unimportant) to 5 (critically important).*

	Un- important 1	2	3	4	Critically important 5
(a) The company's or group's own funds	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
(b) Venture capital	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
(c) Raising capital on the stock market	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
(d) Bank or private loans	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
(e) Funds provided by clients or suppliers	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
(f) Funds provided by partners in joint R&D projects	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
(g) Public sources:					
(g1) public R&D grants	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
(g2) publicly supported loan and guarantee schemes	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
(g3) funding from the EU, e.g. the Structural Funds	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
(g4) tax incentives	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
(h) Other:	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

10. How relevant are the following drivers for *increasing* the company's overall R&D investment? *Please rate on a scale from 1 (irrelevant) to 5 (highly relevant).*

	Irrelevant 1	2	3	4	Highly relevant 5
(a) Market pull	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
(b) Exploiting technological opportunities (technology push)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
(c) Facing competition from companies located in:					
(c1) the European Union	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
(c2) other developed countries, e.g. the US or Japan	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
(c3) emerging countries, e.g. China or India	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
(d) Improving corporate productivity	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
(e) Meeting product market regulation and other legal frameworks	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
(f) Other:	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

11. At what rate do you expect the company to increase its overall R&D investment in the next three years, in real terms, per annum?

About _____ % p.a.

C. R&D location strategy and management

12. Please estimate the distribution of your company's in-house R&D activity among the following world regions at present and in three years?

Present distribution	R&D carried out:	Expected distribution in three years
%	in the European Union	%
%	in other European countries	%
%	in the US and Canada	%
%	in Japan	%
%	in China	%
%	in India	%
%	in the Rest of the World	%

13. During the next three years, how probable is it that your company will:

	Im- probable 1	2	3	4	Certain 5
(a) start new R&D facilities <i>inside the EU</i> ?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
(b) start new R&D facilities <i>outside the EU</i> ?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
(c) bring R&D activities <i>from outside into the EU</i> ?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
(d) take R&D activities <i>from the EU to the outside</i> ?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

14. Which country do you consider the *most attractive* location for the company's R&D?

⇒ _____

15. How important are the following factors for this consideration? *Please rate on a scale from 1 (unimportant) to 5 (highly important) and tick here if you refer to an actual case.*

	Un- important 1	2	3	4	Highly important 5
(a) Access to markets	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
(b) High availability of researchers	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
(c) Low labour costs of researchers	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
(d) Access to specialised R&D knowledge and results	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
(e) Reliable legal framework for R&D, e.g. Intellectual Property Rights	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
(f) Macroeconomic and political stability	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
(g) Proximity to technology poles ⁵ and incubators ⁶	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
(h) Proximity to other activities of your company	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
(i) Proximity to suppliers	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
(j) Access to R&D cooperation opportunities, including with regulatory bodies	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
(k) Access to public support for R&D	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
(l) Regulation of your product markets	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
(m) Other:	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

⁵ "Technology poles" are areas where R&D active companies, institutions and universities are concentrated.

⁶ "Incubators" are structures that support innovative start-up companies in order to increase their survival rates.

16. Which country where your company is carrying out R&D do you consider the *least attractive* location for expanding its R&D?

⇒ _____

17. How important are the following factors for this consideration? *Please rate on a scale from 1 (unimportant) to 5 (highly important) and tick here if you refer to an actual case.*

	Un- important 1	2	3	4	Highly important 5
(a) Limited market access or demand	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
(b) Limited availability of researchers	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
(c) High labour costs of researchers	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
(d) Limited access to specialised R&D knowledge and results	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
(e) Unreliable legal framework for R&D, e.g. Intellectual Property Rights	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
(f) Macroeconomic and political instability	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
(g) Distance to technology poles ⁷ and incubators ⁸	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
(h) Distance to other activities of your company	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
(i) Distance to suppliers	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
(j) Limited access to R&D cooperation opportunities, including with regulatory bodies	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
(k) Limited access to public support for R&D	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
(l) Regulation of your product markets	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
(m) Other:	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

D. Comments or suggestions

⇒ _____

Thank you very much for your contribution!

⁷ "Technology poles" are areas where R&D active companies, institutions and universities are concentrated.

⁸ "Incubators" are structures that support innovative start-up companies in order to increase their survival rates.

Questionnaire Privacy Statement

The 2007 EU Survey on R&D Investment Business Trends is carried out by the Industrial Research and Innovation (IRI) action of the European Commission's Joint Research Centre (JRC), Institute for Prospective Technological Studies (IPTS). The survey is directed at the 1000 European companies in the 2006 EU Industrial R&D Investment Scoreboard.

The European Union is committed to data protection and privacy as defined in Regulation (EC) n° 45/2001. This survey is under the responsibility of the IRI action leader, Pietro Moncada Paternò Castello, acting as the Controller as defined in the above regulation. The Controller commits himself dealing with the data collected with the necessary confidentiality and security as defined in the regulation on data protection and processes it only for the explicit and legitimate purposes declared and will not further process it in a way incompatible with these purposes. These processing operations are subject to a Notification to the Data Protection Officer (DPO) in accordance with Regulation (EC) 45/2001.

Purpose and data treatment

The purpose of data collection is to establish the analysis of the *2007 EU Survey of R&D Investment Business Trends*. This survey has a direct mandate from the Commission's 2003 Action Plan "Investing in Research" (COM 2003 (226) final, see http://ec.europa.eu/invest-in-research/action/2003_actionplan_en.htm). Last year's results have been the subject of a Commission Press release (see IP/06/1118).

The personal data collected and further processed are:

- Company: name, primary sectors of activity, home country, company size
- Contact Person: name, job title, phone number, e-mail address

The collected personal data and all information related to the above mentioned survey is stored on servers of the IPTS, the operations of which underlie the Commission's security decisions and provisions established by the Directorate of Security for these kind of servers and services. **The information you provide will be treated as confidential and aggregated for analysis.**

Data verification and modification

In case you want to verify the personal data or to have it modified respectively corrected, or deleted, please write an e-mail message to the address mentioned under "Contact information", by specifying your request. Special attention is drawn to the consequences of a delete request, in which case any trace to be able to contact you will be lost. Your personal data is stored as long as follow-up actions to the above mentioned survey are necessary with regard to the processing of personal data.

Contact information

In case you have questions related to this survey, or concerning any information processed in this context, or on your rights, feel free to contact the IRI Team, operating under the responsibility of the Controller at the following email address: jrc-ipts-iri@ec.europa.eu.

Recourse

Complaints, in case of conflict, can be addressed to the European Data Protection Supervisor (EDPS) at www.edps.europa.eu.

European Commission

EUR 23416 EN – Joint Research Centre – Institute for Prospective Technological Studies – DG Research

Title: The 2007 EU Survey on R&D Investment Business Trends

Authors: Alexander Tübke

Luxembourg: Office for Official Publications of the European Communities

2008

EUR – Scientific and Technical Research series – ISSN 1018-5593

Abstract

This report presents the results of “The 2007 EU Survey on R&D Investment Business Trends”. It provides new insights into company expectations about future R&D investments and their motivations for investing in research. The results are drawn from the responses received from 118 large companies in the EU. These companies are responsible for a total global R&D investment of almost €28 billion, constituting 23% of the total R&D investment of the European Scoreboard companies.