INNOVATION BEHAVIOUR IN THE GERMAN PRIVATE SECTOR C 3

Overview

The ongoing financial and economic crisis has changed the situation for private sector innovation activities, with businesses having to cope with falling demand coupled with a shortage of financial loans and liquidity. Opportunities can arise when companies find they have superfluous human resources, which they can divert to innovation projects, so that in the next upturn they will be in a position to compete with a new range of products and improved processes.

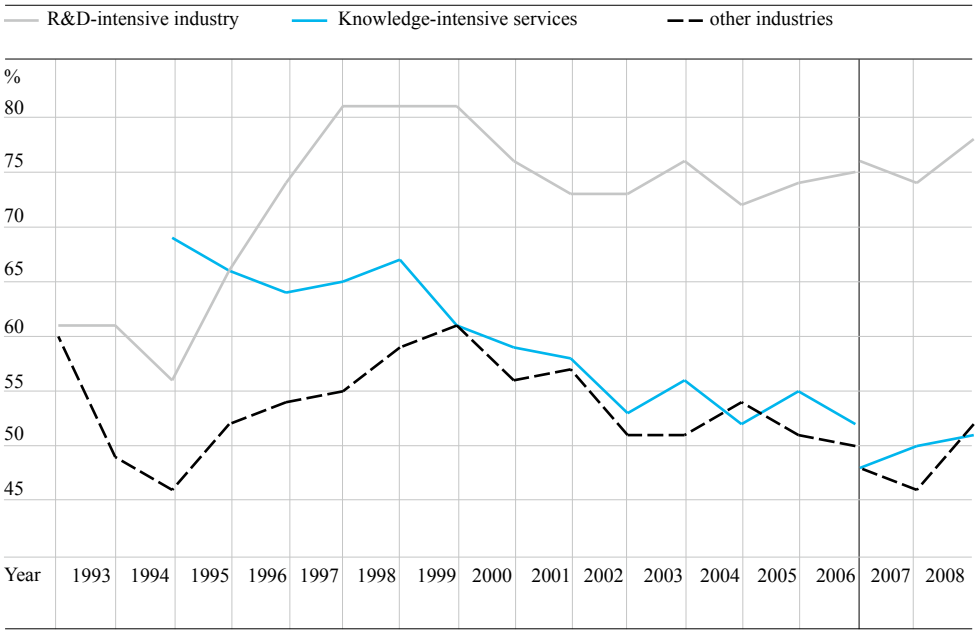
So far, no conclusive data is available to show how the German private sector has changed innovation activities as a reaction to the crisis. The innovation and R&D indicators extend to 2008, with only plan data available for 2009. However, this does allow a provisional assessment. In 2008, the economic downturn had not yet had negative consequences for the innovation activities of companies. However, the plan figures from spring and summer 2009 do indicate a marked decline in innovation expenditure for that year.

The data presented here on the innovation behaviour of the German private sector is drawn from surveys carried out annually since 1993 by the Centre for European Economic Research (ZEW), the Mannheim Innovation Panel (MIP).[181]
The MIP is a survey of the innovation activities of legally independent companies with five or more employees from the manufacturing sector and selected services sectors. It represents the German contribution to the Community Innovation Surveys (CIS) of the European Commission. The MIP survey in 2009 includes a number of methodological changes, which have affected the comparability of innovation indicators over time. All the changes were implemented retrospectively back to 2006, so that innovation indicators in accordance with the new methodology are available for three years (2006–2008). Comparisons with other European countries are based on data from the CIS survey 2007 and refer to Great Britain, Italy, Spain, Sweden, Austria, Denmark, Belgium, Finland and Norway.

Investigated indicators:

- Innovator rate in the private sector and in the knowledge-intensive services in Germany
- Companies with continuous or with occasional R&D activities in the manufacturing industry and in the knowledge-intensive services in Germany
- Innovation intensity in industry and in the knowledge-intensive services of Germany
- Proportion of revenue generated with new products in the industry and in the knowledge-intensive services of Germany
- Planned innovation expenditure in industry and in the knowledge-intensive services in Germany

C 3 – 1 INNOVATOR RATE IN THE PRIVATE SECTOR AND IN THE KNOWLEDGE-INTENSIVE SERVICES IN GERMANY



No data in 1992, and 1993 and 1995 for knowledge-intensive services, 1995 interpolated value. 2006 time series interrupted. Values for 2007 and 2008 provisional. Source: Mannheim Innovation Panel. Calculations by ZEW

Innovator rate: Proportion of companies who have brought at least one new product or process onto the market within the previous three years.

High innovation involvement of German companies

In 2008, the looming financial and economic crisis had not yet impacted on the innovative activity of German companies. The innovator rate was higher than the previous year, both for R&D-intensive industry as well as in other industries and the knowledge-intensive services. In R&D-intensive industry it was 78 percent, which was four percentage points higher than in 2007. In the other industries the innovator rate increased by six percentage points over the same period to 52 percent. The increase was much lower in the knowledge-intensive services, where the proportion of innovators only moved from 50 percent in 2007 to 51 percent in 2008. A long-term view shows that the innovator rate in the R&D-intensive industry has remained fairly stable since the mid-1990s. In contrast, the knowledge-intensive services have shown a downward trend; this has also been the case for the other industries since the year 2000. Innovations which represent market novelties were introduced in 2008 by 32 percent of R&D-intensive industrial companies. In the other industries and in the knowledge-intensive services, 14 or 15 percent of companies introduced market novelties. In comparison with other European countries, the innovation participation of German companies in all three sectors was very high. However, smaller countries have higher values for the proportion of companies introducing market novelties.

COMPANIES WITH CONTINUOUS OR OCCASIONAL R&D ACTIVITY

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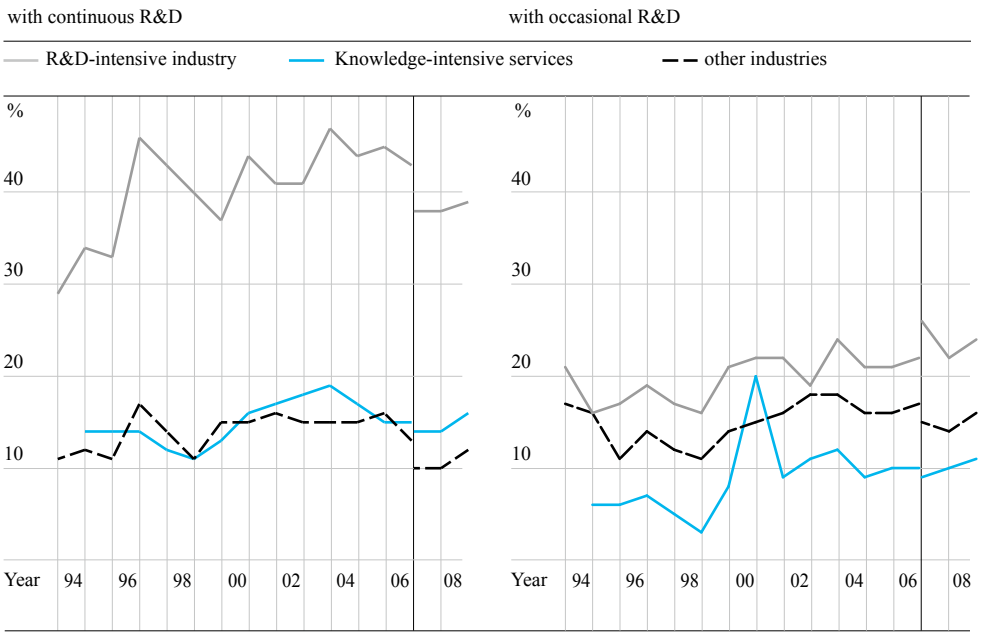


Services sector values were not registered for 1995 or 1997. 2006: Break in the time series.
Source: Mannheim Innovation Panel. Calculations by ZEW

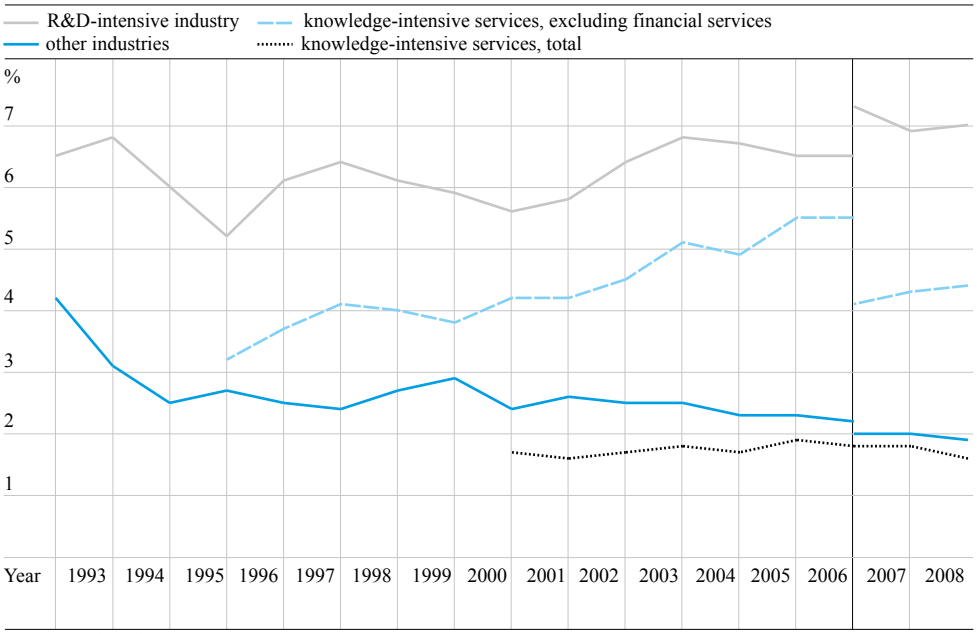
Proportion of companies with continuous or occasional R&D activity: Companies which have carried out internal R&D activities continuously or occasionally within the previous three-year period.

Increasing R&D involvement of German companies

Research and development work is usually necessary for the introduction of new products, which differ from those already on the market. It is also needed to carry out internal R&D in order to be able to respond to external stimuli for innovations, e.g. customer wishes, or new technologies or novel materials offered by suppliers. To this extent, R&D represents the “core” of innovation activities.

In the R&D-intensive industry, 39 percent of companies were carrying out continuous R&D and 24 percent occasional R&D. The R&D involvement was particularly high in the chemical industry, and also in electronics, precision and optical instruments. In the other industries, twelve percent of comparisons were carrying out continuous R&D. The proportion of companies with occasional R&D was 16 percent. In the knowledge-intensive services the situation is reversed; in this case, 16 percent of the companies carried out continuous R&D and eleven percent occasional R&D. Involvement was considerably above average in the R&D services. In all three sector groups considered here, the R&D participation increased in 2008. The German private sector shows a relatively strong R&D orientation. In the R&D intensive industry, the proportion of companies carrying out continuous R&D is higher than in any of the European comparison countries. Considering the average for all sectors, Germany also has the highest proportion of occasionally researching companies.

C 3-3 INNOVATION INTENSITY IN GERMAN INDUSTRY AND KNOWLEDGE-INTENSIVE SERVICES



2006: Break in the time series.
Source: Mannheim Innovation Panel. Calculations by ZEW.

Innovation intensity: Innovation expenditure of companies relative to total revenue.

Innovation intensity in the knowledge-intensive services showing rising trend

The innovation expenditures of companies covers internal and external R&D, patents and licences, machines and equipment for innovations, product design, launching new products, and other innovation-related goods and services. In 2008, the total for R&D-intensive industry, other industries, and the knowledge-intensive services amounted to nearly EUR 117 billion.

R&D-intensive industry companies alone spent EUR 77.2 billion on innovations in 2008. This corresponds to about seven percent of the total revenues of the sector group. From 1992 to 2008, the innovation intensity in the R&D-intensive industry hardly increased at all. The relative increase in the stagnation years 2001 to 2003 is above all due to the weak revenue situation. Since then, there has been a slight downward trend in innovation intensity for the R&D-intensive industry. In the other industries, the companies' innovation expenditure in 2008 amounted to EUR 18 billion. The innovation intensity was 1.9 percent, which is much lower than the value for the R&D-intensive industry, with a continuing downward trend. The companies in the knowledge-intensive services spent EUR 21.6 billion towards innovations in 2008. This corresponds to 1.6 percent of the total revenues for this sector group. Excluding financial services, the innovation intensity in 2008 was much higher at 4.4 percent and also showed an upward trend.

PROPORTION OF REVENUE ACHIEVED WITH NEW PRODUCTS IN GERMAN INDUSTRY AND THE KNOWLEDGE-INTENSIVE SERVICES

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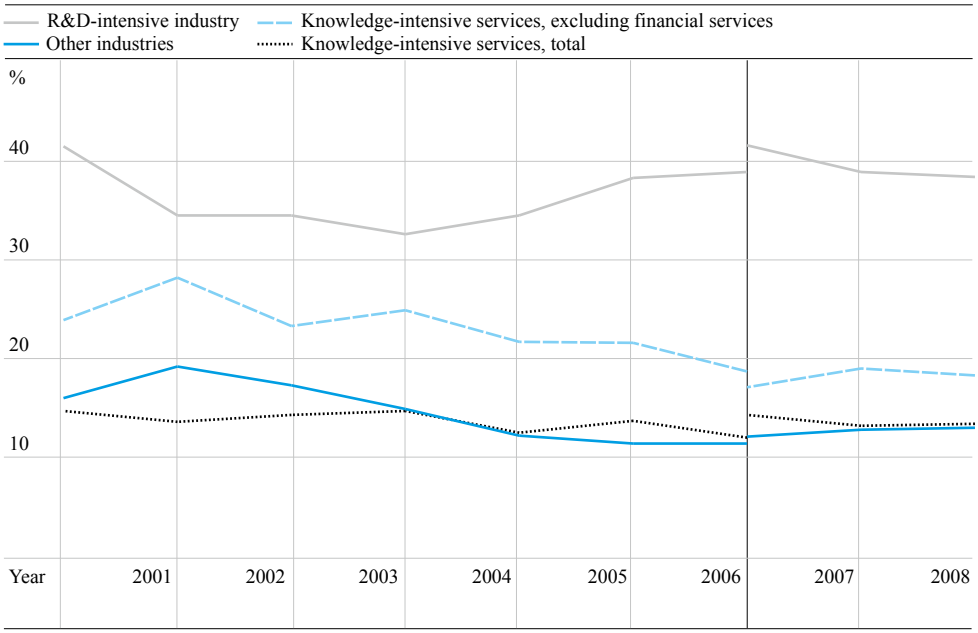


2006 Break in the time series. Source: Mannheim Innovation Panel.
Calculations by ZEW.

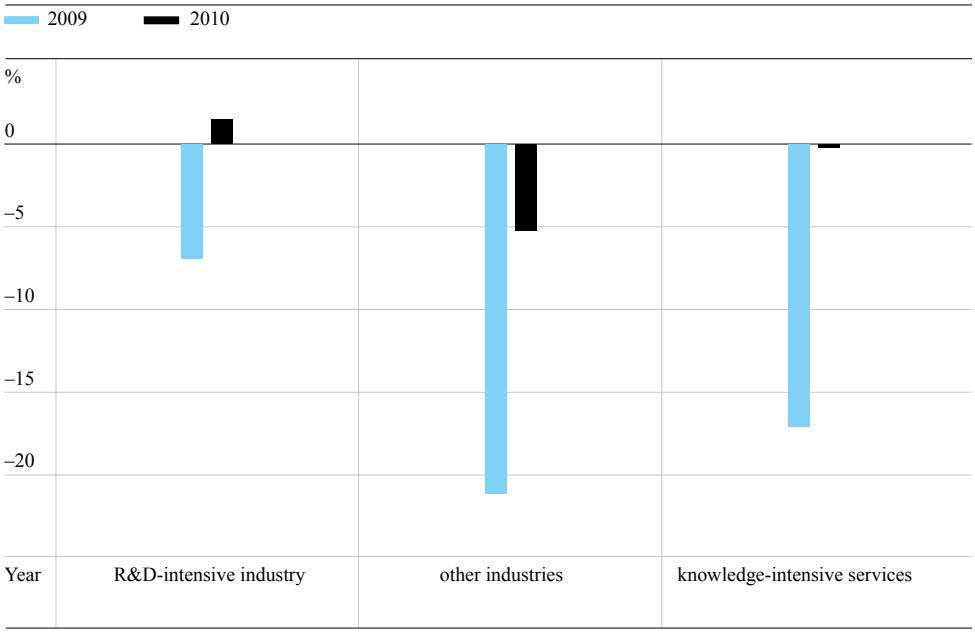
Proportion of revenue achieved with new products: Revenue from new or significantly improved products introduced in the preceding three years by the innovating companies, relative to total revenues.

Successes in sectors with high innovation intensity and short product cycles

In the R&D-intensive industry, some 38 percent of revenue in 2008 was generated with new products. In the automotive industry the proportion was 53 percent and in electronics, and precision and optical equipment it was 45 percent, both of which are well above average. Both sectors have high innovation intensity and short product cycles. In contrast, and despite higher innovation intensities, the proportion of revenue achieved with new products in the pharmaceuticals industry and the chemical industry was just under 19 percent in each case, and thus below average. In these sectors there is intensive innovation competition, combined with long product cycles and development periods.

In the other industries, 13 percent of revenue in 2008 was generated with new products. The figure was the same for the knowledge-intensive services. Without the financial sector, about 18 percent of revenue was generated with new products. Innovation success was above average in these sector groups for R&D services and computers and communications, with values of about 29 and 28 percent respectively. In a European comparison, the German private sector is well positioned in all three sector groups regarding the share of revenue generated with new products. But this is primarily due to the success with imitating innovations – comparing the share of revenue generated with market novelties, Germany is well behind.

C 3 – 5 PLANNED INNOVATION EXPENDITURE IN GERMAN INDUSTRY AND KNOWLEDGE-INTENSIVE SERVICES



Values based on company plans for spring and summer 2009.
Source: Mannheim Innovation Panel. Calculations by ZEW.

Planned innovation expenditure: Figures derived from company plans on changes to innovation expenditure compared with the previous year.

Economic crisis signals a drop in innovation expenditure in 2009

What are the effects of the severe financial and economic crisis on the innovation activities of the German private sector? As far as 2009 is concerned, the only figures available while preparing this report have concerned the plans of the individual companies. The responses given in spring and summer 2009 suggest that they were setting much less aside for innovation projects in 2009. Since 1995, there has been a consistent year-on-year increase in innovation expenditure. This trend will probably be interrupted in 2009. In the R&D-intensive industry, the plan figures indicate that the innovations- budgets will be cut back by seven percent compared with the previous year. The development seems to be particularly unfavourable for mechanical engineering, electronics, and precision and optical instruments. Innovation expenditure in the other industries and in knowledge-intensive services are expected to have declined by 21 and 17 percent, respectively. In total, the three sector groups under consideration will register a decline of eleven percent for 2009. In 2010, the innovation expenditure for the three sector groups should stabilise again according to the responses made by the companies. Innovation budgets should increase further in the R&D-intensive industry, whereas the other industries plan further cuts. In the knowledge-intensive services, innovation expenditure seems set to develop stably in general.