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After the Crisis: German R&D-intensive industries in a good position

by Heike Belitz, Marius Clemens, Martin Gornig, Florian Mölders, Alexander Schiersch, and Dieter Schumacher

The strong reliance of the German economy on the industry sector has been a point of criticism for years now. Germany is too strongly focused on export, making it susceptible to crises and fluctuations in demand and exchange rates, the critics allege. A non-critical look at the numbers during the recent economic crisis seems to reaffirm these old concerns: Industrial productivity shrank significantly and exports collapsed. Taking a closer look, however, it is clear that R&D-intensive industries passed their trial by fire during the crisis. The joint strategy of companies, unions and politicians managed to keep employment figures mostly stable during the global slump in demand and thus helped these industries to be well prepared for the upswing with a broad portfolio consisting of vehicle manufacturing, machine building, and electronic, measurement and medical technology. Looking specifically at the emerging markets, these industries did better than just defend their leading positions; they expanded-market shares during the crisis. This can be seen in the international comparison of the latest data on value added, productivity and bilateral trade, conducted by DIW Berlin. The results: The R&D-intensive industries in Germany have already returned to their long-run growth path and are in a favorable position for the future.

High-level and cutting-edge technologies have been the drivers behind Germany's macroeconomic performance for years now. Their growth outperformed other industries by far right into 2008. Since 2007 Germany has also been the largest gross and net exporter of R&D-intensive goods in the world.

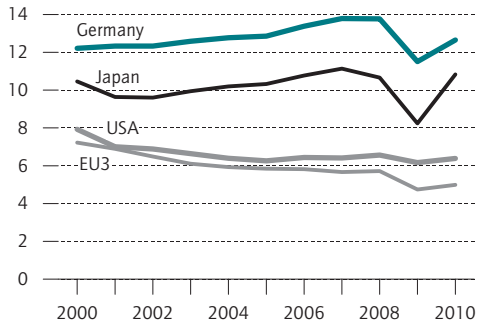
However, the crisis of confidence following the turbelences in the financial markets caused the global demand for capital goods to collapse. Production in high-tech areas like machine building, electronic engineering and vehicle manufacturing, all of which are aligned toward global capital goods, shrank dramatically. This turbulence was therefore the trigger for the most serious recession in Germany's postwar history.

Other large OECD economies faced similar crisis-related difficulties. In particular, our analysis shows that the R&D-intensive industries in Japan experienced similarly strong fluctuations as those in Germany (Figure 1). There is hardly any difference in the extent of the estimated 2009 losses and 2010 gains in the share of valued added between Germany and Japan. Evidently, the other large economies in Europe are trailing behind in terms of how quickly their R&D-intensive industries are recovering. In the US, the fluctuations seem to be more moderate. The contraction and growth figures between the R&D-intensive industries and the overall economy differ only marginally. Boosted by exports, R&D-intensive industries across the world demonstrated a healthy growth as early as 2010. Therefore, the contribution of the R&D-intensive sector to total value added in Germany has risen significantly. Nevertheless, the pre-crisis level will most likely not be reached until 2010.

Germany was also able to defend the top position as exporter for R&D-intensive goods in 2009: While its main competitors, the US and Japan, reported decreases in exports by 27 and 29 percent respectively, Germany's exports "only" declined by 24 percent.As seen in both

Figure 1

Share of R&D-intensive industries in value added in select countries from 2000 to 2010
In percent



EU-3: France, the United Kingdom and Italy.
Sources: EU KLEMS Database 2010; calculations and estimates of DIW Berlin.

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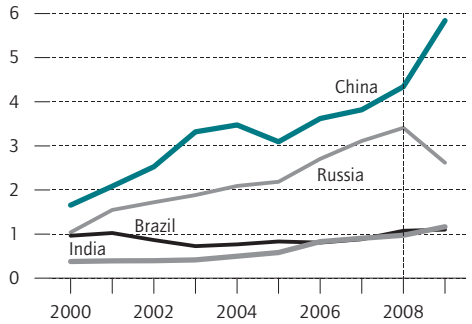
The importance of R&D-intensive industries in Germany is twice as high as in the US.

Figure 2

Share of R&D-intensive goods exported to the emerging economies from Germany from 2000 to 2009
In percent



Sources: UN Comtrade 2010; calculations of DIW Berlin.

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More than one tenth of the export of R&D-intensive goods goes to the four largest emerging markets.

the sectoral and geographic breakdown of foreign trade, Germany's market position has improved.

The export-import ratio of most R&D-intensive industries has improved during the crisis, particularly for machine building and electronics. However, the scrapping premiums negatively affected the export-import ratios of vehicle manufacturing. At the same time, considerable shifts were witnessed within the regional structure of global trading flows during 2009. The strong growth of emerging markets, like China, became more important for the export of R&D-intensive goods (Figure 2). Even though Europe remains the main destination of German goods, the focus of R&D-intensive goods is increasingly shifting toward these emerging markets. In contrast, the US is becoming a less critical destination for Germany's R&D-intensive goods. The rising market shares in the emerging markets are very promising thanks to the potential growth and the associated demand in these economies.

Companies in the countries under review reacted quite differently to the sales crisis in 2009. Supported by labor market policies, the core staffing at German companies hardly shrank. Thus, there is plenty of evidence that labor market actors and industrial policymakers in Germany reacted appropriately to the global crash in demand and helped ensure that German industry remained competitive. However, in the future, politicians should be handed an instrument to make decision-making more objective and transparent. An international industry monitoring system should be developed to assist in distinguishing more rapidly temporary gaps in demand from long-term changes to regional conditions. This would also counter subsidies that are aimed at structural conservation.

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