A CURRENT DEVELOPMENTS AND CHALLENGES

A 1 RESEARCH AND DEVELOPMENT – THINKING BEYOND THE THREE-PERCENT TARGET

In 2010, investments in research and development (R&D) in Germany reached a new high. With expenditures amounting to EUR 69.7 billion, the German economy increased its investments in R&D by 4.3 percent compared with the preceding year. Germany's R&D intensity, i.e. the proportion of R&D expenditures of the gross domestic product (GDP), has thus risen to 2.82 percent. This is one step further on the way to the three-percent target as defined by the European Council in Barcelona.[1]

In the year 2010, the business sector spent a total of EUR 46.9 billion on R&D – compared with 2009, this is a rise of 3.7 percent. The different industries showed quite heterogeneous developments: in automotive engineering for instance, R&D expenditures increased by 7.2 percent, and R&D expenditures in air and spacecraft manufacturing even rose by 22 percent. The pharmaceutical and chemical industries however displayed a decrease of 4.1 and 2.3 percent respectively.[2]

The current R&D figures are a solid interim result on the way to the three-percent target that was specified in Barcelona for 2010 – despite the fact that Germany failed to reach the target by EUR 4.7 billion. This gap is not inconsiderable, and yet the figures represent a significant, positive trend, considering the increase in public and private R&D expenditures over the last few years. Thus Germany's research slowdown that began in the 1990s and lasted approximately until 2005 has been replaced by a multiannual growth in R&D expenditures.

Other countries such as Finland, Sweden, Japan and Korea have long exceeded the three-percent target.[3] Since Germany considers itself as one of the leading economies and innovation countries, it should orient itself towards the R&D figures of these global leaders rather than focussing on the three-percent target or the average R&D expenditures of all OECD countries. Against this background, the Federal Government's current objective to invest 3 percent of the GDP in R&D[4] until the year 2015 seems to be lacking in ambition. If Germany fails to catch up with these global leaders, it may be subjected to substantial economic risks in the future.

Even though not all of Germany's economic achievements can be attributed to R&D activities and innovations resulting from this, it is still the R&D activities that have played a major role in securing Germany's competitive edge as a leading international business location. To a large extent, the success of Germany's export industries is determined by capital goods (machinery and plant), motor vehicles, chemical products, as well as associated services. Ever since the 1990s, this pattern of specialisation has proven to be particularly successful as it allows German companies to benefit from the growing demand for high-quality industrial and consumer goods in aspiring emerging economies worldwide.[5]

At the same time, competitors are emerging from these very countries. It is yet unclear how competition and international specialisation patterns will evolve in the future. Some of the emerging countries, China in particular, can offer not only low labour costs and innovative enterprises, but also high-performing scientific institutions. Similar developments in the past, e.g. in the context of Korea's and Japan's rise in the 1960s and 1970s, had prompted fears that Germany's competitive position might weaken. Overall, the increase in the international division of labour and the expansion of trade led to an improved level of prosperity for all countries

involved.[6] Yet, there is no such thing as an automatism for a positive trend; in these new global settings, Germany can only reach or maintain a competitive edge if its innovation system continually generates new knowledge and flexibly adopts fresh impetus while transforming it into innovation on the market.

The German industries that perform best in terms of exports are those that are innovative and research-intensive.[7] In the view of the Expert Commission, national R&D intensity is not a perfect means of measuring an economy's knowledge intensity; it is however a useful means. From an academic point of view, there is no reason for questioning the indicator of R&D expenditures as an important benchmark for policy, and this is in spite of remarkable innovations in sectors with a low R&D intensity. Hence, the three-percent target for 2015 and a new target for the consecutive years can be significant milestones for assessing Germany's political and economic performance.

A 2 ENHANCING INNOVATION AND PRODUCTIVITY IN ALL EU MEMBER STATES

The current debt crisis clearly illustrates that the member states of the European Union display extremely divergent levels of economic power. The EU member states as a whole are less productive than the US federal states, and the productivity level of the EU-27 currently lies at less than 80 percent of the United States' productivity level. Compared with the US, the EU member states are also much more heterogeneous than the US states.[8] The EU is faced with significant challenges, which, in the medium term, cannot be overcome on the basis of monetary and fiscal measures alone.

The last few decades have been characterised by a convergence process between Europe and the United States. Since the 1990s, this process has slowed down and has at least partially reversed. Back in the 1970s, the productivity level of the continental European countries was still 30 percent lower than that of the US. In the years that followed, they managed to continuously narrow this gap, and in the mid-1990s they even surpassed the United States in productivity. Since then, productivity growth in Europe has slowed down again, with a current productivity level falling behind that of the US by 10 percent. While the Scandinavian countries underwent a comparable development, the Southern European countries also narrowed the gap but experienced another significant downturn in productivity from the mid-1990s. Today, the productivity level of these countries amounts to a mere two thirds of the productivity level of the US. Finally, the new EU member states, starting at a relatively low level in the early 1990s, managed to improve their performance and currently have a productivity level that amounts to a good 40 percent of the US' productivity level.[9]

Above all, the disparity in economic strength between individual EU member states is of particular concern since it proves to be a very persistent pattern. In 1975, the European Union established its European Regional Development Fund, and 1994 saw the launch of the Cohesion Fund for the promotion of structurally weak regions ("convergence regions"). In spite of considerable funding allocations of more than EUR 800 billion since 1994, income disparities between member states – an additional means of measuring differences in productivity – have not significantly decreased in the course of the last 15 years.[10] A commonly used measure for assessing income heterogeneity has shown that the EU-27 countries display three times the value than that of the United States. For Europe and the US alike, heterogeneity[11] within the respective region has remained largely unchanged over the last 15 years. In short, Europe as a whole did not manage to catch up with the US, and neither did it succeed in sustainably reducing inner-European differences in economic development.

This heterogeneous pattern is also reflected in the innovation-related activities of the individual countries. The EU aims at an R&D intensity of 3 percent of GDP for each member state, with the aim of increasing the innovative power of the EU as a whole. Two thirds of this is due to be financed by the private sector and one third by the public sector. Currently the average R&D expenditures within the EU are below 2 percent. This average however covers up vast disparities in terms of individual R&D efforts: thus the Scandinavian countries, Germany and Austria are leading with more