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STANDPUNKTE
DER CHEFVOLKSWIRTE

Investment and Innovation for Germany and Europe

Berlin, 30 January 2018

With a view to the ongoing coalition negotiations in Germany, the chief economists took a very close look at the outcome of the exploratory talks and have come to the conclusion that strategies designed to strengthen investment and innovation will be the key challenge for the 19th legislative period. In their analysis, the chief economists show that the right conditions will now have to be put in place to ensure that the opportunities provided by digitalisation can be seized. In the political arena, this will have to be taken into account by implementing measures:

- → to strengthen rural development by expanding a nationwide and efficient broadband network to cope with the digitalisation cycle.
- → to strengthen Germany's position in the field of education as a country capable of providing young people with the necessary skills.
- → to cope with the investment needs of local authorities.

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Investment and Innovation for Germany and Europe

No prosperity without innovation

The model of the industrialised economy has, in essence, been a success story for more than 200 years. It has raised prosperity to an unprecedented level in numerous Western countries and recently also elsewhere, for example in East Asia. This model rests on two pillars: on the one hand, the exploitation of fossil energy sources (coal, oil, and gas), and on the other hand, the constant search for innovation in the fields of production, procurement and sales. It is evident that fossil energy sources are finite, while it can be assumed that the opposite is true for the human mind, which is the source of all innovation.

Economic theory has been slow to acknowledge that innovation is the result of human capital. As long as 100 years ago, the Russian economist Kondratieff published his now widely recognised research on the role of fundamental innovation in long-term growth cycles. According to the predominant neoclassical growth theory, however, increasing the factor capital was long held to be the major driving force. While the standard model of neoclassical theory considers technological progress to be a potential factor, it cannot readily explain how technological progress comes about; instead, it is taken as a given.

Digitization as a new business driver

These neoclassical approaches are quite useful, for instance, in explaining the catching-up process in Japan, China and South Korea. These countries managed to achieve high real growth rates over decades. They were therefore able to catch up with the leading industrialised nations, by adapting existing technologies and maintaining high investment ratios, while integrating workers into production. With this in mind, according to the law of diminishing marginal returns, GDP growth rates can be expected, for instance, to decrease gradually in China if investment ratios stay the same. This is also roughly what is now observed. While China's GDP was growing at double-digit rates a few years ago, GDP growth has since fallen to a level below 7 percent, with an ongoing downward trend.

However, a world without disruptive technologies, without groundbreaking innovations, would not only be boring, it is not what has been observed in the leading nations since the beginning of industrialisation.

Everything started at the end of the 18th century with steam engines and the textile industry. Other milestones have included heavy industry and the railway, the electrical and chemical industries, assembly line production, the motor car, broadcasting and telephones, computers, networks, and today Industry 4.0, as well as the digitalisation of all walks of life.

Where does innovation come from? Research on the theory of endogenous growth attempts to explain this technological progress as the outcome of the use of resources for research and development (R&D). Progress does not fall like manna from heaven; progress comes about – with a certain probability – as a result of R&D. Of course, such a model cannot explain developments which, in extreme cases, may be due to only a single flash of genius, or which may happen by chance, such as the discovery of penicillin. However, it is probably safe to say that, in many cases, this is a relatively acceptable description of reality.

Innovation through disruptive Technologies is crucial

The time was simply right for innovation such as the aircraft, the telephone, or the computer. We also have reason to believe that innovation is here to stay. Virtually all developed industrialised nations are characterised by R&D expenditure which is higher in relation to GDP than in less developed countries. It is therefore not so much the rapidly growing countries, but the wealthy nations which spend the largest proportion of their resources on R&D.

According to Eurostat, the most research-intensive countries in Europe are the Nordic countries Sweden and Denmark, as well as Switzerland, Austria and Germany, with R&D expenditure ranging from 2.5 percent to just above 3 percent of GDP. However, this is not yet sufficient to be part of the international elite. South Korea is the leader, with research expenditure amounting to 4 percent of GDP, followed by Japan. The countries lagging behind in terms of innovation are the Balkans and the island republics of Cyprus and Malta, as well as Latvia, with R&D expenditure of significantly below 1 percent of GDP.

Germany's laboratories, offices and workshops are quite successful in their pursuit of new ideas. In 2016, they filed nearly 32,000 patents with the European Patent Office (EPO), which has its headquarters in Munich. Only China, Japan, and the United States filed more patents with the EPO. South Korea ranked fifth with 18,800 patents. The next best European competitor was France with 12,700 patent applications. The research-intensive Nordic countries tend to occupy lower ranks in terms of patent applications because they are relatively small countries.

Of course, correlation does not necessarily mean causation. However, extensive R&D activities must be seen at least as a necessary, albeit not a sufficient condition for defending a position of technological leadership. Highly industrialised nations will only be able to maintain their leading positions in future with a mix of technical expertise, a State with an adequate legal and administrative system, and the continued increase in the use of capital, including human capital.

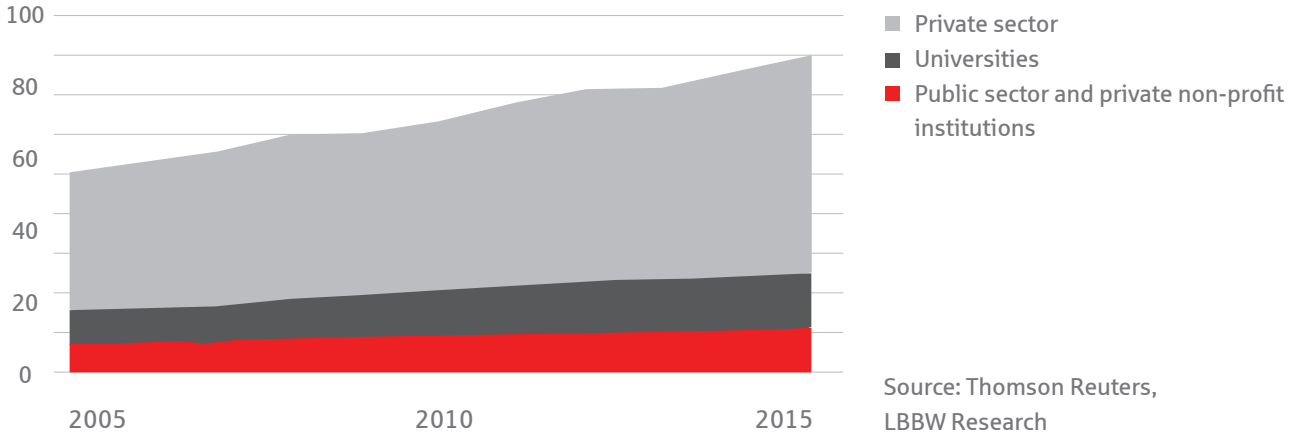
No innovation without investment

Today, the tinkerer in the garage is the exception rather than the rule. The drivers of innovation are research institutions, which may be public or private. While the private sector clearly accounts for the larger share, the groundwork is often performed by public institutions. It is probably well-known, for instance, that the Internet came about as a result of a university research project in the United States.

Research facilities are important

With more than 60 billion euros, business enterprises account for more than two-thirds of total R&D expenditure in Germany, which amounts to 90 billion euros overall. The remainder is contributed in equal parts by public institutions and by private non-profit institutions. Of course, translating innovation into prosperity and growth will remain a challenge because, in the final analysis, the key message of the neoclassical growth strategy is irrefutable: an increase in production can only be achieved by inputting more resources, be they raw materials, physical or human capital. Innovation without investment is like a car without wheels.

R&D expenditure (in billions of euros) by sector in Germany



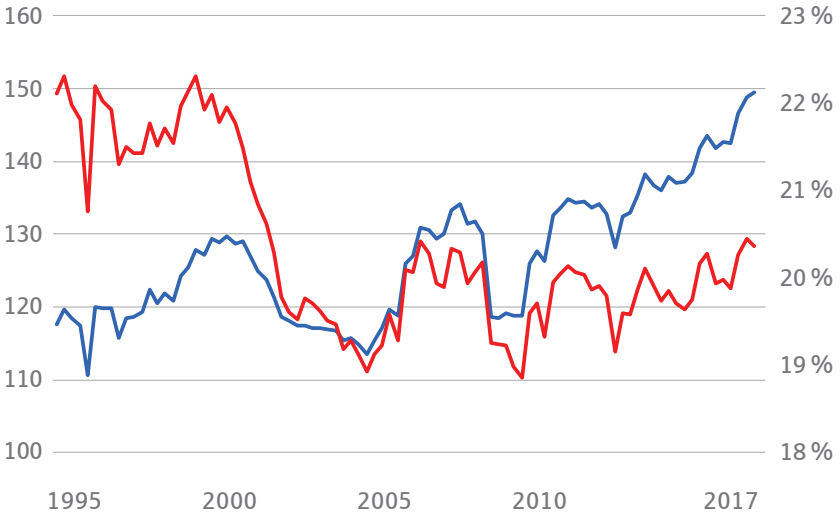
Source: Thomson Reuters, LBBW Research

In Germany, the investment ratio – i.e. the sum total of all gross investments as a percentage of GDP – on average amounted to 22 percent of GDP in the 1990s, and has since decreased to approx. 20 percent. Although the investment ratio has recently reached its highest level (20.5 percent) since the financial crisis, the ratios of earlier decades or of emerging countries in other regions will not be reached that quickly. By comparison: China has an investment ratio of over 40 percent, and Korea's ratio is just below 30 percent.

In Germany, there is a trend towards knowledge-based investments. This sounds like a late slogan for the election campaign, but this trend has a tangible impact on statistics.

Germany's Federal Statistical Office subdivides investments into three major categories: firstly, construction investment; secondly, investment in equipment and machinery; thirdly; "other" investment, including the sub-categories of software and patents. Since the mid-1990s, the share of "other" investment in total gross investments has increased from 11 to 19 percent.

Investments and investment ratios in Germany

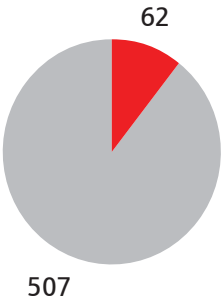


Summe der Investitionen in Euro (real)
Quote der Investitionen in % des BIP (rechte Skala)

Source: Thomson Reuters, LBBW Research

To put it simply, investments are increasingly being made in ideas. Of course, this is not strictly true because the two categories of construction investment and investment in equipment and machinery still account for more than 80 percent of the investments; however, there is an identifiable trend. In addition, innovation also plays a role – one which should not be underestimated – in the two former categories.

Public-sector and private-sector investments in Germany (in billions of euros)



Public sector
Non-public sectors

Source: Destatis, LBBW Research

A programme for more innovation and investment

Incidentally, a survey recently conducted by the Association of German Chambers of Industry and Commerce (DIHK) has shown that the trend towards more "other" investments is likely to continue. 87 percent of the enterprises interviewed, for instance, stated that they would increase their investments with a view to digitalisation. A similarly high percentage of respondents stated that they saw a need to train their employees. In order to respond to these challenges of the digital future, the interviewed enterprises (and the DIHK) have a clear message for policymakers: 88 percent would like policymakers – and in particular Germany's new government – to see to it that Germany will be equipped with an efficient and nationwide broadband network.

Accelerate broadband network

Of course, this is not only an expectation expressed by enterprises. Similar expectations have been expressed by local authorities. According to the Association of German Counties – the umbrella organisation of Germany's 294 rural districts – it is the obligation of the federal government and the state-level governments in Germany to accelerate the expansion of the broadband network. In the view of Germany's rural districts, such investments are also structural policy matters because the expansion of broadband networks is progressing well in conurbations, while progress has been very slow elsewhere.

The expansion of the network in rural areas is not particularly attractive for the telecommunications sector; to some extent, it is also hampered by the existing market structure. The leading company in the market has no incentive to make additional investments; instead, it is only interested in preventing additional competitors from entering the market.

Secure rural areas

For the companies concerned, this is a handicap in global competition. For rural districts, it is also a disadvantage with multiple effects including the "rural exodus" – to use a buzzword – as well as the traffic caused by rural commuters travelling to conurbations. Investments made in the digital infrastructure could help to reduce the gap between urban and rural areas and consequently alleviate the associated problems. And it can also help to reduce problems in urban areas, which have to shoulder the main burden of three immigration flows: from other countries to Germany, from the eastern to the western part of Germany, and from rural to urban areas.

In the long term, this may be a blessing for urban areas; in the short term, however, population growth will lead to higher social expenditure for municipal responsibilities. The money spent for this purpose will not be available for investments. The German Association of Towns and Municipalities recently quantified the backlog of local investments at

126 billion euros – which is equivalent to approx. 4 percent of GDP. In this context, it should be noted that the conditions for investment have rarely been more favourable than they are today. Tax revenues have reached new record highs year after year, and interest rates continue to be low. Of course, investments should be made prudently. Short-lived capital expenditure in good times which lead to permanently higher costs without any benefits is not desirable. This applies, for instance, to aqua parks which are then closed during the next recession because their upkeep has become too expensive. Only long-term improvement of infrastructure which helps to retain enterprises in a given county or municipality would form a solid foundation: wherever enterprises have jobs to offer, young families will not be far away – and with them, the next generation of local innovators.

Effectively strengthen municipal investment power

Disclaimer

The present position paper of the Chief Economists does not necessarily correspond to the attitude of the DekaBank or the attitude of the respective Landesbanken and Savings Banks.

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