

However it is important to note a number of critical points:

- The foreign trade balance for R&D-intensive products shows a negative trend, attributable to the growing international competition from other industrialised and newly industrialising countries.
- The increase in patent applications and in research and development activities has not yet led to a relative improvement in Germany's position, because corresponding activities have also been increased in other countries.
- The concentration on high-level technology has in the past been a central advantage for Germany over its international competitors. However, in the medium-term it will be necessary to shift the emphasis to cutting-edge technology. Such a change is taking place in Germany, but from a very low base and much more slowly than in most other countries.
- The Asian newly industrialising countries are very involved in high-technology and have meanwhile reached an impressive level. This is also a reason for further increasing the innovation activities in Germany.
- The numbers of new enterprises being established in Germany is relatively low in an international comparison. This applies in particular in the research-intensive sector and in knowledge-based services. In Germany, not enough research results and new ideas are tested on the market.
- A particularly grave problem for R&I in Germany is the growing shortage of qualified personnel. With the continual structural change towards a knowledge-intensive economy and a services society, the demand for specialist personnel is increasing. The qualification initiative finally started by the German federal government in January 2008 is therefore most welcome. The supply of highly qualified personnel will become an important factor influencing the choice of research locations for companies within the framework of globalisation.

This assessment of the situation will now be analysed on the basis of the financial, fiscal, and educational framework conditions as well as the Hightech strategy and the growth potential of the German economy.

CONDITIONS FOR FINANCING INNOVATIONS

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Equity essential for innovations

Adequate financing is essential for successful innovations, and in most cases this involves equity (Box 6). However, for various reasons, German companies have relatively low equity ratios – on average 11.7 per cent for medium-sized companies and 26.8 per cent for large ones.⁹ This financing structure is considered to be a constraint on innovation.

Whereas the equity market is very important for the financing of innovations in Germany, in comparison to the size of the economy it is still underdeveloped.¹⁰ Not only is the absolute level of the capital invested lower than in comparable European industrialised countries¹¹ – but also equity holdings are still inadequate in an international comparison. The result is that there are persistent gaps in the supply of financing for young, smaller companies.¹²

In view of the importance of equity for financing innovations, the fiscal framework conditions are of considerable importance both for the companies as well as for providers of loan capital – fiscal policies are thus always an element of innovation policy.

BOX 07

New enterprises

Innovation frequently involves setting up new enterprises. This is often the case if an innovation does not 'fit' into the organisational context of an established company, or originated in a university or a research institute. If the commercialisation of an idea requires the intensive cooperation of the researcher or inventor, then starting up a new enterprise can be an option. This is also favoured if there is the prospect of healthy earnings in the future.

Company tax reform 2008

With the Company Taxation Reform Act 2008, the German government intends to provide more fiscal equality, between businesses with differing legal forms, and provide long-term security for tax incomes of local authorities. Key elements of the reform are the reduction of the tax rates for companies from 40 per cent to 30 per cent and the introduction of a 25 per cent flat rate for the tax on income from capital assets with effect from 1st January 2009. The reform has received a mixed reaction from expert bodies. A positive element is that the tax burden on companies will be reduced and thus funds will be released for investments. However, the German Council of Economic Experts¹³ sees problems in particular in the inadequate harmonisation between the two measures mentioned above. This will reinforce the existing distortions in favour of loan capital financing. Since in many cases innovations cannot be financed by loan capital, the intended positive effects of the reform may not be felt sufficiently by innovative companies.

Tax legislation discriminates against equity

German tax legislation treats equity worse than loan capital. When loan capital is used for investment financing, the interest paid can be booked as expenditure, reducing the taxable profit and thus the tax burden. From 2009 the provider of the private loan capital will only have to pay a flat-rate tax of 25 per cent on the interest received. In contrast, financing by means of equity is subject to double taxation. The company cannot deduct the investment income paid to the providers of equity from earnings before tax, but has to pay this from its profits. And although the company has already paid tax on the profits, the equity provider also has to pay tax on the investment income. In other words, the total tax burden on financing by equity is nearly 50 per cent.

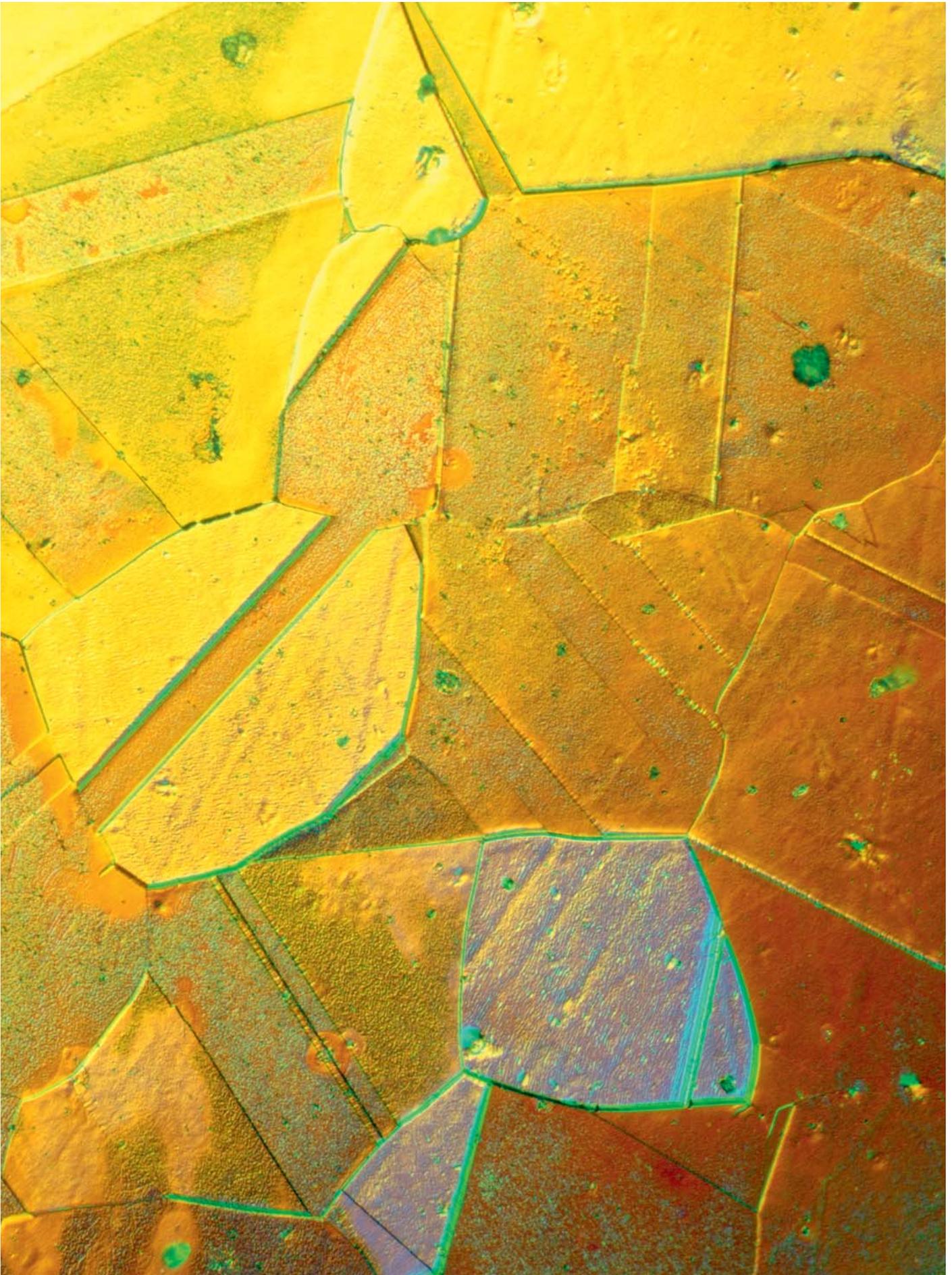
This asymmetry in the fiscal handling of loan capital and equity has long been criticised by leading bodies such as the German Council of Economic Experts¹⁴ and the Academic Advisory Council at the Federal Ministry for Economics and Technology (BMWi).¹⁵ The Expert Commission for Research and Innovation concurs with this criticism. Other countries also have an asymmetric treatment of equity and loan capital—but the effects are as a rule less because the tax rates are lower.

Asymmetric treatment of profits and losses

A further asymmetry is the treatment of profits and losses of innovative companies. Whereas the government partakes proportionally in all profits through taxation, any start-up losses are only partially allowed to be taken into consideration. The negative impact of this is felt in particular by smaller innovative companies. Their projects are frequently long-term, they involve high start-up losses, and in contrast to large companies they cannot be cross-subsidised by profits from other projects.

The regulation introduced in Germany in 2004 for the minimum taxation of profits means that in the first years of reporting profits a company cannot write these off completely against losses carried forward from earlier years. After reduction of a base sum of one million euros, they have to pay tax on at least 40 per cent of the profit. If innovative developments are very capital intensive they may very well incur initial losses which are considerably higher than the base sum, and the regulation is particularly harmful in such cases. In effect, the tax legislation increases the costs of financing for the very companies which have the courage to invest heavily over a number of years and to risk losses in order to realise profits subsequently.

An even more serious effect has been felt since January 2008. In international comparison, equity-financed German companies face considerable disadvantages because of the new, restrictive provisions of Section 8c of the Corporation Taxation Act (KStG), which regulates the carrying forward of losses. The accumulated losses brought forward are lost if one shareholder acquires more than half the company shares within five years. This includes an increase in the share capital. For a holding of more than 25 per cent and less than 50 per cent, the accumulated losses brought forward are lost proportionally. But the financing of inno-



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Gold foil
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vative new enterprises and also the possible take-over of such companies, e.g. by strategic buyers, represents an important mechanism for technology transfer. The prospect of a profitable acquisition often provides investors with the incentive to invest in a start-up enterprise. In particular in highly innovative sectors with long incubation periods the new regulation leads to considerable disadvantages for Germany as a location. The tax system becomes a massive obstacle for innovative projects and companies.

As an example, biotechnology companies can easily accumulate losses of tens of millions in the first 10 to 15 years of their business operations and more than a quarter require several rounds of external investment to fund this. More than two-thirds also have plans to draw on external capital within the next two years.¹⁶ On average, biotechnology companies go through a new round of financing every 2.4 years. In the course of such transactions, investors frequently acquire more than 25 per cent of the company through new share issues. Although the company retains its legal identity, it is not possible to carry losses forward, either in whole or in part.¹⁷

The original aim of the legislation was to put a stop to the fiscal misuse of losses. But the new formulation, in which situations such as those described for the biotechnology companies are treated as 'misuse', goes too far. A look at other countries shows that it is possible to make an appropriate differentiation between cases of misuse on the one hand and situations which are genuinely worthy of support on the other. Under the fiscal policy which has been adopted, the government participates in the profits of companies, while largely ignoring the losses incurred while establishing the company.

The current treatment of losses carried forward is illogical within the context of innovation, constraining risky, innovative activities of young and medium-sized companies and making Germany less attractive as an investment location in the long term.

EFI urgently recommends that the German government removes the fiscal impediments to research and innovation. An exception should be made to allow losses to be carried forward by innovative companies with a specified R&D rate – analogue to previous recapitalisation privilege under Section 8.4.3 of the Corporation Taxation Act (KStG).

Problematic framework conditions for private equity providers

Constraints on innovation not only affect companies, but also investors. In an international comparison, the framework conditions have been poor for external investors in Germany for many years. A central problem is the legal uncertainty about whether investment companies providing private equity are managing assets or are commercially active. In the case of asset management, taxes would only be payable by the holding companies providing capital, but not by the financial intermediaries. Many holding companies have meanwhile relocated outside Germany because of this lack of a long-term distinction between asset management and commercial activity.

This not only reduces Germany's tax receipts, but is also detrimental to the new enterprises looking for finances. Few investment funds are now established in Germany. This has negative consequences for the supply of capital for German SMEs and new enterprises because the geographical proximity between an investment company and its holdings is important in order to be able to provide support and act locally without complications or additional costs, e.g. travel expenses. This negative development affects in particular the early-stage financing market, which is already underdeveloped.

We recommend that the approval of the status as an asset management fund should in the long-term be harmonised with international standards.

New legislation in 2008 offers few improvements for venture capital

In 2008 the Modernisation of the Provisions for Capital Holdings Act (MoRaKG) is expected to come into force. This represents a step towards improving the equity financing of companies by venture capital but it is so restrictive that only a fraction of the market will benefit.

The proposal introduces provisions for venture capital providers which will allow their classification as asset management funds and provides for appropriate carrying forward of operating losses. However, the venture capital must be provided for enterprises which are less than ten years old and are not listed on the stock exchange. Other restrictions are that they

must not have holdings in older companies and have a net equity of less than 20 million euros.

It is not possible to determine exactly how many companies would be affected, but recent investigations estimate that some 50 per cent of venture-capital financed companies have more than 20 million euros of equity.¹⁸ It is likely that funds, which focus in particular on capital-intensive, future-oriented industries, also invest frequently in companies above the maximum level, and thus will not benefit from the legislation in its proposed form.

An additional geographic requirement that financed companies must be located in the European economic area is very restrictive and limits mobility. In order to receive the privileged status intended by the legislators, no more than 30 per cent of the investment volume of the fund may be in holdings which are not in conformity with this law. This can lead to the investor being excluded from the privilege directly or retrospectively. But experience shows that relocations may become necessary because of fluctuations in the economy or as a result of mergers and acquisitions.

It is unlikely that the new legislation will positively affect companies investing in innovations. The commission therefore recommends that the very restrictive scope of the proposed law should be altered to achieve an effective and internationally competitive promotion of equity holdings in SMEs which are not listed on the stock exchange – particularly those with high R&D expenditure. This should include an increase of the equity level from 20 million euros to 50 million euros, as well as the cancellation of the geographical limitations and the requirement that the financed companies are not allowed to acquire holdings in older companies.

In the early phase, technology-oriented new enterprises are often financed by business angels, who provide capital and their valuable expertise and in return acquire shares in the company. In comparison with the Anglo-Saxon countries, Germany is way behind in terms of the numbers of business angels and investment volumes.¹⁹ There are a series of reasons for this. One important reason is certainly that – in contrast to Great Britain, the USA and France – Germany still offers no effective fiscal privilege for such investments.²⁰

We recommend defining tax advantages for business angels which encourage their investments in growing new companies.

Venture capital and the three-percent target

Against the background of the three-percent target adopted by the German government, it is important to consider the possible contribution of the venture capital industry. Venture capital is offered to companies with strong growth rates. These companies frequently also have high research intensity. The research and development expenditure per employee in companies financed by venture capital is much higher than the average of the 500 companies with the highest research expenditures in the 25 EU member states.²¹ Venture capital could therefore make a contribution to achieving the three-percent target. This has not yet been given sufficient consideration in the political discussion.

An interesting scenario would involve improving the German framework conditions for venture capital in order to attract foreign investors. Put simply, achieving the three-percent target would be financed in part by foreign institutional investors. Even if the 'only' success were to stimulate German institutional investors to take greater interest in the venture

capital market in Germany, funds would be mobilised for financing R&D which are currently not available.

R&D AID THROUGH THE FISCAL SYSTEM

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R&D promotion in the fiscal system in the EU and OECD member states

Whereas German tax laws in important areas constrain innovation activities, the majority of OECD and EU member countries provide explicit fiscal stimulation for commercial R&D. These countries use tax credits or tax allowances which are coupled to the level of the R&D expenditure. SMEs often receive preferential treatment under these measures, and in some countries the support is targeted exclusively towards SMEs. Germany makes no use of this possibility.

Fiscal aid instruments for R&D were first tried in OECD member countries in the 1970s and 1980s, with mixed success. Meanwhile, 20 of 30 OECD member countries and 15 of 27 EU member states have implemented measures to aid R&D through fiscal incentives. Evaluation reports suggest that the initial difficulties encountered with the various measures are now under control.²² Using the tax support instruments, the R&D costs in many of these countries have been considerably reduced.²³

Options for fiscal R&D aid

The systems used by various countries differ considerably, both in terms of the level and also the nature of the support. With tax credits, the company is able to cut tax payments or claim for a refund; systems of this type are operating in the USA, Korea, France, the Netherlands and Canada. Tax allowances mean that the income before tax is reduced; this form of state aid for R&D is used by Australia, Austria, and Great Britain.

R&D promotion through the tax system - selected OECD member countries 2004/2005

TAB 01

Countries with tax credits	Countries with tax allowances
France	Australia
Ireland	Belgium
Italy	Denmark
Japan	Great Britain
Canada	Austria
Korea	Hungary
Mexico	
Netherlands	
Norway	
Portugal	
Spain	
USA	

Source: Warda, J. (2006), p.15.

In many countries, the fiscal R&D aid for SMEs and new enterprises is more attractive than for large companies. In some countries the level of tax aid is not dependent on the level of