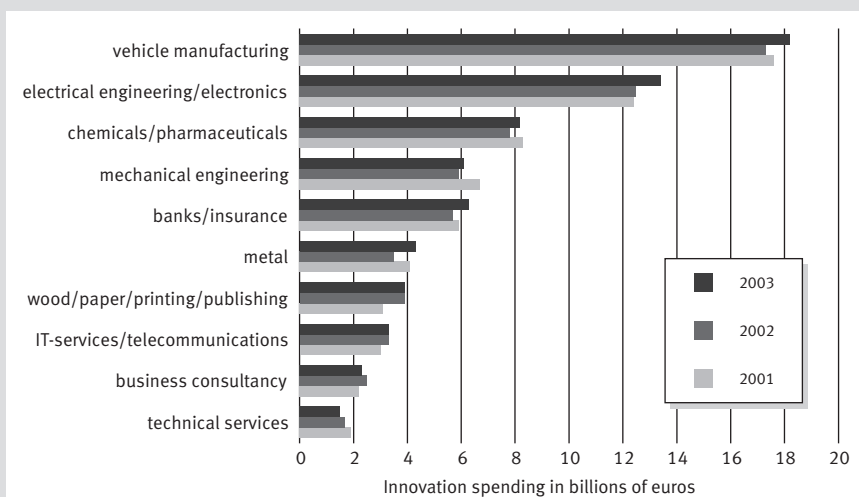


## German Companies Remain Innovative

Despite the gloomy economic climate – the German economy has been suffering from weak growth since the end of 2000 – German companies are proving to be as innovative as ever. While innovation spending fell in 2002, the latest ZEW survey shows that companies expect to boost their innovation budgets during 2003.

Innovation spending 2001 to 2003 in selected sectors



Note: Preliminary figures. Data for 2002 and 2003 is based on companies' budgeted figures/expectations. All figures are projected onto the population in Germany. Source: ZEW (2003): Mannheimer Innovationspanel

■ Around 61 percent of companies in German industry were classified as innovative in 2001 – a figure which has hardly changed since the previous year (62 percent). While these figures are down on the record of 67 percent for 1999, the proportion of total innovative companies is still impressive and considerably higher than during the low ebb of Germany's economic downturn in 1993/1994.

The German economy also managed to sustain the year 2000 levels of innovation spending throughout 2001; in fact, spending in this area fell only marginally short of the historically high figures for 1999. The credit for this positive development goes largely to industrial

firms. These companies, which were responsible for 72 percent of total innovation spending, once again invested more in innovation in 2001 than in previous years. The total innovation spending budget exceeded the 60 billion euro mark for the first time in 2001.

At the time the survey was conducted, in mid-2002, companies anticipated shrinking innovation budgets for the year 2002 as a whole. In the industrial sector, companies calculate that their innovation spending in 2002 will approximate the figures for 2000. Providers of corporate services are more optimistic and anticipate an increase of around three percent. Providers of distribution

services take a far more gloomy view and forecast a further ten percent or more reduction in spending in 2002.

Nonetheless, all three major sectors of business and industry anticipate further expansion in 2003: German industry expects innovation spending to amount to almost 62 billion euros, or a good five percent more than in 2002 and two percent more than in the previous record year 2001. Firms in the service sector report an increase of two to three percent.

Over the last six years growing innovation spending has been confined to the primarily export-oriented sectors of the German economy. While the innovation budget in industry sectors with a relatively low export share and in those focused chiefly on the domestic market stagnated in 2001 at their (nominal) 1995 levels, industries driven by exports recorded a nominal increase of 50 percent. Innovation spending in 2001 in export-oriented

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## Research Findings

The ZEW has performed annual surveys of the innovation behaviour of German business and industry on behalf of the German Federal Ministry of Education and Research since 1993. In addition to the manufacturing and mining sectors, the survey has also encompassed providers of corporate services and the distribution sector since 1995. Around 5,000 manufacturing and service companies take part in the survey every year. The survey is representative for Germany and the results are stratified and projected onto the population in Germany. In 1993, 1997 and 2001, the ZEW innovation survey was the German contribution to the Community Innovation Survey (CIS I to CIS III).

service sectors (wholesalers, transport, the banking industry, IT/telecommunications) was still 20 percent above the figures for 1995. Expectations for 2003 in export-oriented industries are also, on the whole, more positive.

Given the persistent divergence in growth rates in demand on domestic and international markets over the last ten years, it is not surprising that it is foreign demand which is fuelling the innovation activities of companies – and is indeed becoming increasingly important. A strong export position is generally indicative of an unequivocal innovati-

on orientation: German exporters must be innovative if they are to succeed on foreign markets. Persistently weak demand in Germany may act as an inhibiting factor, however, as many innovations are first tested on the domestic market before they can be successfully marketed abroad. If the domestic market stalls over a longer period and fails to provide impulses for further innovation, this can curb willingness to engage in innovative activities and in turn result in lost market share in a setting of global competition. ◀

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## Tax Haven or High-Tax Country?

In contrast to the figures on the tax burden in its member countries published by the OECD at the end of last year, France and especially Germany have the highest corporate tax burden in the EU, and this state of affairs continues to deter foreign investors from engaging in Germany.

■ The OECD, which performs regular reviews of its member countries' tax revenue ratios as percentage of Gross Domestic Product (GDP) (including social security contributions), total tax ratios (consisting of direct and indirect taxation) as well as ratios of taxes on income and profits, has given Germany a clean bill of health. The average tax ratios of member countries for the year 2001 published by the OECD reveal that Germany has one of the lowest tax revenues (36.4 percent), total tax ratios (21.7 percent) and ratio of taxes on income and profits (10.1 percent). However, there are two reasons for treating the OECD figures with caution. Firstly, the OECD methodology generates excessively low values which underestimate the tax burden in Germany compared with other countries. Secondly, the OECD figures do not allow conclusions about how attractive a country may be to investors.

Extensive calculations of the effective tax rates on the corporate sector in the EU and the impact of differences in tax treatment on investment decisions were

presented by the European Commission in its report "Company Taxation in the Internal Market". The ZEW and the University of Mannheim played a key role in the genesis of this report. The analyses of the tax burdens relies on the microeconomic approach by Devereux and Griffith as well as on the computer based model "European Tax Analyzer" for the international computation and comparison of company tax burdens which has been run collaboratively by ZEW and the University of Mannheim since 1991. The calculations performed on behalf of the EU Commission are based on the legal situation in 1999. The present article draws on results which have been recalculated in line with the legal state of play in 2001 thus allowing a direct comparison with the OECD calculations.

An initial impression of the corporate tax burden is provided by comparing the accumulated nominal tax rates which take into account the interdependencies between different types of tax, and the deductibility of trade tax from corporate tax in Germany. This reveals that the

nominal tax burdens on corporate profits within the EU vary from between 10 percent in Ireland to 40.3 percent in Italy. With 39.4 percent, Germany has the third highest tax rate burden in the EU. The major differences between tax rates also have a considerable impact on the average effective tax rates which varied, in 2001, from 36 percent in Germany to 10.8 percent in Ireland. In other words, Germany and France have the highest effective tax rates in Europe, findings which are confirmed by "European Tax Analyzer". This also provides a clear indication of why investors continue to regard Germany as a comparatively unattractive destination for their money.

As a result there is no discernible relationship between the OECD calculations and the actual effective tax burdens. This discrepancy is due to variations in the data basis used, the breadth of tax rules and regulations included, and the yardsticks selected for determining the tax burden ratios. ◀

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## Research Findings

# EU Financial Market Supervision: Systemic Risk Calls for Cooperation

The system of financial supervision in the EU is entering a phase of radical change. The increasing integration of financial markets calls for closer cooperation between national supervisory authorities. Although committees at the EU level have a vital role to play, there is nonetheless a deficit – as a ZEW study performed on behalf of the German Science Foundation shows – in the monitoring of what has turned into an EU-wide systemic risk as well as in the coordination which would be required in a crisis situation.

■ The existence of systemic risk is the main rationale for banking supervision and regulation. The term “systemic risk” refers to the threat that the failure of a single bank could lead to other bank failures and thereby trigger a chain reaction of bank failures. In today’s world, such a chain reaction would not only threaten national systems, but also the European banking system as a whole. Experience shows that this would also entail high real economic costs.

The finance ministers of Germany and the United Kingdom, Hans Eichel and Gordon Brown, presented a joint initiative for the fundamental reform of the system of European financial supervision in April 2002. The Brown/Eichel initiative has aroused controversial discussion. There is general consensus that, given the increasing integration of financial markets in the EU, there is no alternative to modifying existing supervisory structures. However, the actual shape such a new system should take is hotly disputed among politicians, supervisors, and central bankers.

### Strengthening international cooperation

Most experts agree that, as things stand at present, it would be premature to create a single, integrated supervisory authority responsible for banking, insurance and securities. It is also debatable whether such a mega authority would be at all desirable from an efficiency point of view. A reform of the structure of financial supervision in Europe will therefore primarily focus on strengthening and improving the cooperation between national supervisory institutions. This

would also include creating committees at the EU level.

Amid widespread opposition, including from central banks which feared the plan would reduce their influence on the supervisory bodies, the Eichel/Brown proposal was revised by the EU’s Economic and Financial Committee (EFC) which submitted a report on financial regulation, supervision and stability in October 2002. The proposal envisages extending the Lamfalussy model – named after the first President of the European Monetary Institute – already established for EU securities market regulation to the other sectors of the financial market, i.e. banking, insurance and financial conglomerates.

The Lamfalussy framework refers primarily to the legislative process, i.e. regulatory issues. One of the aims is to speed up EU legislation so that financial market regulation is able to adapt quickly to new market developments and practices. Another priority is the convergence of supervisory practices and the consistent implementation of EU directives. In addition there is the Basel Capital Accord, which already represents a form of international bank regulation. Thus, as far as banking regulation is concerned, these proposals take on board the reality of an increasingly integrated EU banking market.

In terms of monitoring, i.e. ensuring the banks’ compliance with the regulations, certainly, supervision of individual institutions is best carried out at the level closest to the financial intermediaries concerned, i.e. at the national level. However, given increasing interdependence and integration of the EU banking markets, there is also a greater

need for international coordination which will – according to the EFC proposal – be ensured by several committees at the European level.

However, it is doubtful whether the proposed EU supervisory system is sufficient for safeguarding the stability of the European banking market in a crisis situation. A further issue is the need for a European lender of last resort and how such a function might be coordinated. As the only bodies able to create money, the European Central Bank (ECB) and the national central banks would need to play a crucial role in this context. A common argument is that the ECB and the European System of Central Banks (ESCB) already play the role of an implicit lender of last resort, and that, in the event of a crisis, the required mechanisms are already in place to manage a financial crisis.

### Observatory of systemic risk

There can be no doubt that the Eurosystem has both the ability and willingness to intervene in the event of a crisis. However, with respect to the increased Europe-wide systemic risk potential there is a need for an “observatory of systemic risk” at the European level. Such a committee would be essential for crisis prevention. Simple cooperation between national supervisors is unlikely to prove an adequate solution. As such an observatory of systemic risk could also play a major role in the coordination of crisis management. Thus, close cooperation with the lender of last resort, i.e. with the ECB and the national central banks, is essential. ◀

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## Research Findings

# Public Research Spin-offs in Germany

The growing importance of knowledge and the ensuing need to translate research results as quickly as possible into economic activities are drawing the attention of academia and politicians towards so called academic spin-off foundations. These business foundations from universities and public research facilities transfer their research results directly into marketable products or processes. The ZEW has now conducted a study commissioned by the German Federal Ministry for Education and Research which determines the absolute number and important structural characteristics of academic spin-offs in Germany between 1996 and 2000.

■ New businesses founded by academics are important for the structural change towards a knowledge-based economy. The just under 38,000 academic start-ups account for 60 percent of all new businesses in research and knowledge-intensive industries and are responsible for the increase in new businesses in these industries since 1999.

The number of spin-off formations in Germany had reached the level of approximately 6,800 businesses per year by the end of the 1990s, approximately 2,600 of which are transfer spin-offs. However, their effect on overall foundation activities is relatively limited when considering that in all of Germany approximately 150,000 new businesses are founded per year, 65,000 of which are in the research and knowledge-intensive industries. Spin-off foundations account for three percent of all new businesses and approximately eleven percent of the new businesses founded in research and knowledge-intensive industries.

### Universities most important incubator facilities

For the overwhelming majority of spin-off formations, higher education institutions serve as incubator facilities. Among the group of higher education establishments (general) universities are the most important incubator facility in absolute terms. Nearly one in two spin-offs depends on knowledge or capabilities coming from this institutions. External research institutions play a minor role for the formation of spin-offs.

Overall, scientists account for more than one third of all the founders of transfer spin-offs. They also account for 17 percent of the founders of competence spin-offs and twelve percent of the fo-

unders of academic start-ups. Twelve percent of the founders of transfer spin-offs are professors at higher education institutions. When looking at all business formations in the research and knowledge-intensive industries, three percent of them involved a professor, i.e. in absolute terms, more than 2,000 business formations per year involve professors.

The largest number of spin-off founders – just as is the case for founders of academic start-ups – are graduates from higher education institutions. They account for more than 60 percent of all founders in the research and knowledge-intensive industries while their share in transfer spin-offs is somewhat smaller with just under 50 percent. In the second half of the 1990s, approximately 47,000 graduates were participating as founders in the formation of new businesses in research and knowledge-intensive industries, nearly a fifth of which were spin-offs.

In the second half of the 1990s, 1.25 percent of the scientists departed from public research institutions every year in order to create a business. When adding

those scientists who worked in dependent employment in the time between departure from academia and business formation as well as those who continue to work in academia it appears that for every 100 scientists working in public research in Germany there are more than three scientists per year who are involved in a business formation.

### Spin-offs linked to academia

The linkage of spin-offs to academia is important: In 30 percent of transfer spin-offs and 20 percent of competence spin-offs, one of the founders was still active as a scientist or in higher education at the time of the business formation. In more than one out of five transfer spin-offs at least one founder still is a scientist. These partial spin-offs have several advantages: They benefit from close contacts with academia, which enables them to continue to use these resources of knowledge and reduces the employment and/or income risk in the event of a failure of the spin-off. ◀

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### Spin-offs and academic start-ups

Spin-offs are firms where new knowledge or the specific competencies of public research institutions were indispensable for their formation.

- **Transfer spin-offs:** One of the founders was involved in producing new research results or scientific methods which were indispensable to create a spin-off.
- **Competence spin-offs:** Special skills which one of the founders acquired at a scientific institution were indispensable to create a spin-off.

Spin-offs are first and foremost started by scientists, graduates, or students. Transfer spin-offs, on the other hand, may also be generated by persons outside of academia or by other companies (knowledge acquisition via cooperation or licenses). These spin-offs, however, have only minor importance in terms of quantity.

**Academic start-ups** comprise all firms started by persons with higher education exclusive of spin-offs. Together, spin-offs and academic start-ups constitute the group of academic new businesses.

## ZEW Conference

### Empirical Economics of Innovation and Patenting

■ A ZEW conference on the empirical economics of innovation and patenting held on March 14 and 15, 2003 was attended by more than 75 researchers from Europe, North America and Asia. In a series of 36 lectures, the conference provided an opportunity to present and discuss the latest findings in the field of empirical research in innovation and patent economics.

#### Internationally renowned researchers among speakers

The conference was opened by Herbert Knorr (Head of Research Department, Ministry of Science, Research and Arts of the State Baden-Württemberg, Stuttgart/Baden-Württemberg). Invited speakers included internationally esteemed researchers such as Bronwyn H. Hall (University of California at Berkeley), Dietmar Harhoff (University of Mu-

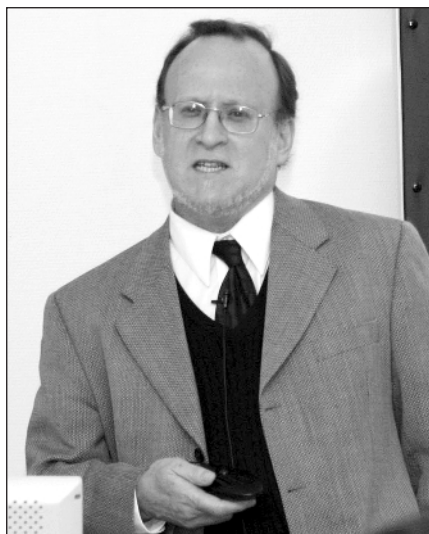


*Bronwyn H. Hall*

nich), Jacques Mairesse (CREST Paris), Pierre Mohnen (MERIT Maastricht), Mark Schankerman (London School of Economics) and Frederic M. Scherer (Princeton University).

Bronwyn H. Hall examined the influence of patents on the market value of companies in relation to the strategic function of patents. Pierre Mohnen presented results of a comparative international project in collaboration with Jacques Mairesse on the productivity effects

of research and development (R&D) activities. Jacques Mairesse and Elisabeth Kremp (SESSI Paris) presented a joint lecture which focused on the relevance of knowledge management for R&D-driven productivity increases. Both studies made use of data generated by innovation surveys conducted in the fra-



*Mark Schankerman*

mework of the “Community Innovation Survey” (CIS). The Mannheim Innovation Panels (MIP) annually conducted by the ZEW is the German contribution to the European CIS (see page 1).

Mark Schankerman presented a study performed with Jean O. Lanjouw (University of California at Berkeley) on the enforcement of patent rights which dealt in particular with the determinants of patent infringement cases and their outcomes. Dietmar Harhoff concentrated on opposition to the granting of patents which is specific to the European patent system and analysed both their determinants and outcomes. In the concluding address, Frederic M. Scherer discussed the welfare effects which arise when “Third world” countries adopt international patent standards which apply to the pharmaceuticals industry and which are widely used in the industrialised nations.

The lectures held by these six invited researchers provided the framework around which a further 30 contributions – selected by an expert commission

from a total of 100 submissions – were given. These contributions were discussed by the conference participants in ten topic-oriented conference sessions. Some of these sessions focused on current issues in the field of patent research, patent citations as a means of assessing patent value, the transfer of knowledge by disclosing information in the form of patents, the special patent problems encountered in particular fields of technology and the enforcement of patent rights. The conference also considered the broad topic of innovation research, including the productivity



*Frederic M. Scherer*

effects of innovations, the relevance of complementarities in the framework of innovation activities and networks, the relationship between innovation activity and corporate finance, as well as the theoretical basis of recent models used in empirical innovation research.

The social programme included a guided tour through the city of Heidelberg and a conference dinner sponsored by BASF. Within the latter Klaus-Dieter Langfinger (Head of Patenting Department, BASF Ludwigshafen) discussed practical problems of patenting from the viewpoint of a large chemical company.

The interested reader can download the papers presented at the conference in PDF form from the ZEW homepage at [www.zew.de/innovation-patenting](http://www.zew.de/innovation-patenting). ◀

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## ZEW Conference

### Impacts of Environmental Innovations on Competitiveness and Employment

■ „Putting Porter into Practice!“ This call for a wider political response to the so-called Porter-Hypothesis characterised several contributions to the fourth Workshop of the network „Blueprints for an Integration of Science, Technology and Environmental Policy“ (BLUEPRINT). The network is funded by the European Commission and co-ordinated by ZEW. The title of the workshop was „Impacts of Environmental Innovations on Competitiveness and Employment“, it was held in the Northern Ireland Executive in Brussels in December last year.

The controversial debate concerning the relation between competitiveness and environmental policy was opened by Michael Porter in early 90s. Porter had argued that “right” environmental policy would stimulate innovation and competitiveness of a country in the long run. The argument is that a reduction in the use of natural resources also leads to economic savings (e.g. costs of water or waste disposal) and creates new products (e.g. fuel-efficient cars). Porter did not clearly define “right” environmental policy but described it as both market oriented and based on economic incentives.

#### Environmental policy has small effects on competitiveness

Paul Portney (photo) from Resources for the Future opened the workshop discussion with a literature review on economic impacts of environmental policy. The president of the well-known economic think tank in Washington concluded that impacts on competitiveness and employment are quite small since environmental costs are only a small fraction of total costs in most sectors and firms. Moreover, even if significant differences of environmental costs exist across countries, they are often not exploited by firms. The environmental performance in a certain facility of a firm is normally more driven by environmental standards in the headquarter than by environmental regulation in the respective country of the facility. This does not mean that conflicts between environ-

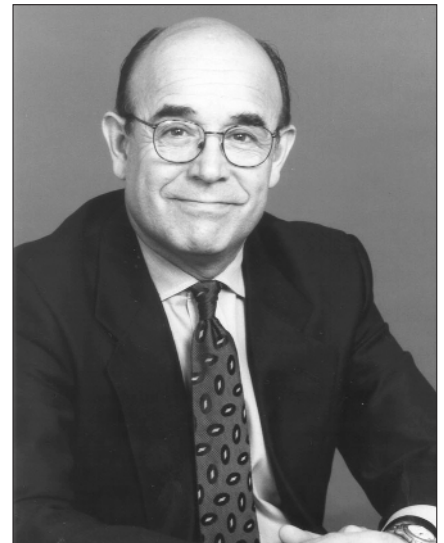
mental and economic goals are irrelevant, often economic impacts of environmental policy are however strongly exaggerated in the public debate.

Portney emphasised the Porter-argument that especially economic instruments like emissions trading can stimulate innovation. He however criticised the Porter effect (environmental regulation leads to innovation) as a tautology. If environmental policy introduces new environmental technological standards, firms have no other choice than to adapt by changing processes and products.

#### Putting Porter into practice

Stephen White from the DG Environment of the European Commission suggested not to discuss if Porter was right but rather how to put it into practice. This means that, firstly, conditions have to be identified under which the hypothesis can be confirmed. Second, measures are needed to create these conditions.

Alistair Fulton from Environmental Resource Management in London presented some results of on-going research in the British task force on innovation and growth that had recently made recommendations for an improvement of innovations and competitiveness in the British industry. The research aimed at studying the key industry sectors and their competitiveness, and one of the components was to look at the drivers that contribute towards innovation and competitiveness. In the environmental sector, the key driver of market demand are not market forces like in other regulated sectors but much rather government policy and regulation on sustainable development and environmental protection. Another conclusion was that the development of the environmental sector requires close cooperation between government, regulatory bodies and industry. The task force’s basic recommendations are reliable political framework conditions, including incentives and long-term policy goals. Another important policy instrument is environmental criteria in public procurement.



Dr. Paul Portney, Resources for the Future

Two European regulations were discussed: the IPPC Directive (Integrated Pollution and Prevention Control) and Integrated Product Policy (IPP). Don Litten, Director of the European IPPC Bureau in Sevilla, described the mission of IPPC as defining best available environmental technologies in Europe. Thus IPPC constitutes the basis for negotiations concerning emissions reductions and respective instruments. IPPC is not an instrument for stimulating innovation decisions in firms, but an instrument to collect the necessary information. Moreover it contributes to the diffusion of existing technologies, because documents being developed in the IPPC process influence regulation at the EU and member state level. Cynthia Wolsdorff (AUDI) and Keith Harsham (BP) emphasised the role of market conditions, demand and costs for the development of environmental innovations in their firms. Reductions of fuel consumption in cars for example will only be accepted by consumers if fuel savings compensate higher car prices, assuming no changes in product quality. More ambitious reductions of the environmental performance of cars such as three litre cars or one litre cars fail on the market.

All workshop contributions can be downloaded from the network homepage: [www.blueprint-network.net](http://www.blueprint-network.net) ◀

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## ZEW Financial Market Test

# Results of the Survey in May 2003

■ The Financial Market Test conducted by the ZEW is a monthly business survey of German financial market experts which started in December 1991. The survey asks for the predominant expectations about the development in six international financial markets.

As a whole around 350 experts take part in the survey. 280 of them work in banks, 50 in insurance companies and investment companies and 20 in other industries. Participants in the survey are

financial experts of the finance departments, the research departments and the economic departments as well as the investment and securities departments of the firms. In detail, the financial experts are questioned on their medium term expectations about the development of important international financial markets with respect to the business cycle, the inflation rate, short term and long term interest rates, the exchange rate and share prices.

To construct forecasted figures, the qualitative response categories (increasing, unchanged, declining) are transformed into quantitative figures by the Carlson/Parkin procedure. Additional information to the applied procedure is available as an abridged version published by the ZEW. The present survey was conducted between April 28, 2003 and May 12, 2003. All calculations are termed to May 16, 2003. ◀

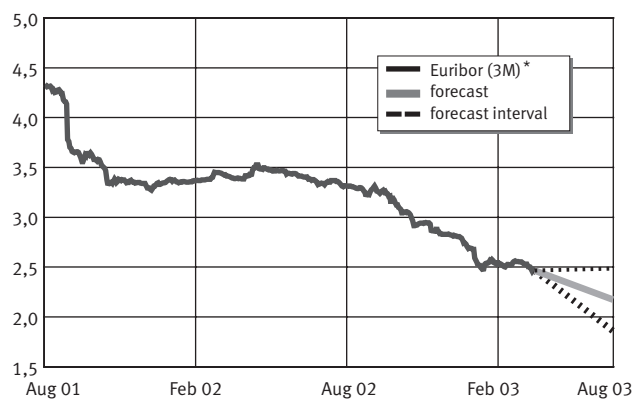
Felix Hüfner, [huefner@zew.de](mailto:huefner@zew.de)

### ECB Watch: Expectations of Interest Rate Cuts are Undiminished

■ Almost two thirds (64.8 percent) of the experts interviewed expect the three-month Euribor to fall over the next three months. Based on this assumption the forecast for August is 2.2 percent which corresponds to another small cut of 25 basis points by the European Central Bank. The strong appreciation of the Euro against the US dollar has probably given momentum to these expectations. About half of the respondents who participated in the survey forecast a further appreciation of the Euro while only slightly more than 20 percent expect a depreciation. Inflation expectations thus haven't taken up this clear downward trend. The balance of positive and negative answers for the Euro area in May is down at -32.4 percent compared to 24.7 percent in April. This change appears even more distinct for Germany where the balance of -18.8 percent dropped to -30.5 percent. ◀

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#### Money market: development and forecast



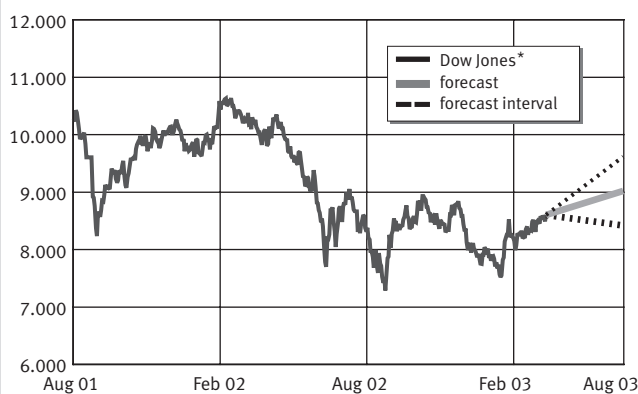
Source: \* Thomson Financial Datastream; ZEW

### USA: Further Share Price Increases Expected

■ Despite the recent share price increases which lifted the Dow Jones to more than 8,500 points the end of the upward trend has not been reached yet, for experts expect a further rise to more than 9,000 points by August. This optimism is based on the assessment that the economy will perform clearly better over the next six months. More than one in two experts expect the economy to pick up in the medium run although all of them still adopt a rather pessimistic view of the present situation. Economic prospects are better due to the fact that the war against Iraq ended earlier than expected and that the US dollar recently has been markedly weaker than the Euro, which clearly improves the export opportunities of US firms. At the same time the weak dollar mitigates the risk of deflation. And experts tend to expect the depreciation of the Greenback to continue. Exchange losses thus can partially offset stock market gains. ◀

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#### Dow Jones: development and forecast



Source: \* Thomson Financial Datastream; ZEW

## ZEW Calendar

### July 10/11, 2003 in Mannheim

Joint Conference of the ZEW and Arbeitskreis Europäische Integration (AEI)

## Regulation and Supervision of Financial Markets and Institutions in the EU

The arrangements for the supervision of financial markets in Europe are changing. At the national level countries like the UK, Germany and Austria recently installed integrated supervisory agencies replacing different former specialised authorities for banking, insurance, and securities.

At the European level the integration of financial markets – not just since the introduction of the euro – may have increased the systemic risk potential. The divergence between an increase in EU-wide systemic risk and the current national based supervisory structure may call for a reform of the European supervisory framework. In particular, the following questions emerge: Is there a need for a truly European supervisory framework? How should a potential European supervisor be organised? What role should the European Central Bank play in supervision?

By bringing together high profile academics, policy makers, central bankers, and practitioners from the financial industry the conference aims at discussing these issues.

The conference is supported by the German Science Foundation (DFG) as part of the research program “Governance in the European Union”. The registration fee is 80 Euro (60 Euro for AEI members).

For further information please visit [www.zew.de/supervision](http://www.zew.de/supervision) or contact Martin Schüler, Email [schueler@zew.de](mailto:schueler@zew.de)

## ZEW Publications

### ■ ZEW Dokumentation

Egeln, Jürgen; Gottschalk, Sandra; Rammer, Christian; Spielkamp, Alfred: *Public Research Spin-offs in Germany*, Nr. 03-04.

### ■ ZEW Discussion Papers

Download the Discussion Papers at our web site: [www.zew.de/en/publikationen](http://www.zew.de/en/publikationen)

Löf, Hans; Heshmati, Almas: *The Link Between Firm-Level Innovation and Aggregate Productivity Growth. A Cross-Country Examination*, No. 03-07.

Böhringer, Christoph; Lange, Andreas: *On the Design of Optimal Grandfathering Schemes for Emission Allowances*, No. 03-08.

Böhringer, Christoph; Löschel, Andreas: *Climate Policy Beyond Kyoto: Quo Vadis? A Computable General Equilibrium*

*Analysis Based on Expert Judgements*, No. 03-09.

Schröder, Michael: *Socially Responsible Investments in Germany, Switzerland and the United States – An Analysis of Investment Funds and Indices*, No. 03-10.

Schröder, Michael; Schüler, Martin: *Systemic Risk in European Banking – Evidence from Bivariate GARCH Models*, No. 03-11.

Tykvová, Tereza: *The Decision of Venture Capitalists on Timing and Extent of IPOs*, No. 03-12.

Büttner, Thiess; Spengler, Hannes: *Local Determinants of Crime: Distinguishing Between Resident and Non-resident Offenders*, No. 03-13.

Rennings, Klaus; Ziegler, Andreas; Ankele, Kathrin; Hoffmann, Esther; Nill, Jan: *The Influence of the EU Environmental*

*Management and Auditing Scheme on Environmental Innovations and Competitiveness in Germany*, No. 03-14.

Hölsch, Katja; Kraus, Margit: *Poverty Alleviation and the Degree of Centralisation in European Schemes of Social Assistance*, No. 03-16.

Lutz, Stefan H.: *Mutual Recognition of National Minimum Quality Standards may Support International Convergence*, No. 03-17.

Puhani, Patrick: *A Test of the ‘Krugman Hypothesis’ for the United States, Britain, and Western Germany*, No. 03-18.

Ullrich, Katrin: *A Comparison between the Fed and the ECB: Taylor Rules*, No. 03-19.

Hempell, Thomas: *Do Computers Call for Training? Firm-level Evidence on Complementarities Between ICT and Human Capital Investments*, No. 03-20.

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