

## ZEW Conference on Price Indices and the Measurement of Quality Changes

At present Germany trails behind other industrial nations when concerning growth and productivity. The Euro Countries as a whole also seem to lag behind the USA. A growing number of experts thus points out that part of this shortcoming is due to the different statistical techniques applied for the measurement of growth.



Robert Gordon, Northwestern University (left), and Jack Triplett, Brookings Institution (right), were among the lecturers at the ZEW's Hedonics Conference.

■ Price indexes are the main basis for the measurement of productivity and growth. However, due to new products entering the market and quality changes it is not all that easy to compute these price indexes. Observed price changes have to be divided into two components in order to make a correct comparison: inflation and quality change. Particularly if there are frequent quality changes, for instance in passenger cars or PCs, traditional statistical techniques often cannot identify these changes adequately. Hedonic methods can record price developments to a better degree by evaluating individual characteristics with implicit prices, thus including differences between the mo-

dels in the index calculation. To date, however, only the USA are using hedonic techniques to a large extent for official price indexes. The current discussion on international comparability of inflation, growth, and productivity thus mainly deals with the different statistical techniques used for quality adjustments.

Against this background the Federal Statistical Office Germany commissioned the ZEW to analyze "Potential applications of hedonic techniques in official consumer price statistics". The ZEW selected cars and PCs for this study because substantial quality improvements and rapid product changes are typical for these goods. In addition, the ZEW investigated

how frequently hedonic techniques are used in international official statistics, at the same time evaluating the insights gained during the application.

The results of this project were presented at an international conference which the ZEW hosted in cooperation with the Federal Statistical Office Germany. 110 participants from 24 countries, among them scientists and employees in statistical bureaus, exchanged their experience and discussed new research findings on the use of hedonic techniques.

The application of hedonic techniques allows the identification of distinct quality improvements which in many cases have not been recorded thus far. This means that numerous goods are affected by price index distortions due to insufficient quality adjustments. The conference also revealed that improvements in quality adjustment may lead to lower but also to

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## Research Findings

higher calculated price indices. In the IT sector, for instance, traditional techniques frequently overestimate price increases while tending to underestimate price increases for clothing.

All conference participants agreed that initiatives to apply hedonic techniques for official statistics should be intensified despite the efforts this entails. It would then be possible in future to present the economic situation both in the Euro Countries as well as in Germany in a more transparent and realistic way.

Wolfgang Buchwald (Federal Statistical Office Germany) explained that expectations regarding shifts in reported

economic growth after the introduction of hedonic principles were often too high. Simulation calculations regarding the application of hedonic techniques for Germany lead him to expect only slight differences compared to inflation and growth rates computed with traditional price indexes. Jack Triplett (Brookings Institution) stressed that the main benefit of more precise and transparent statistics is being able to quantify the contribution of technological progress to growth and productivity of a given market economy more precisely. More focused entrepreneurial and economic measures would thus be a long-term

gain. Neither should one underestimate the impact that hedonic methods would have on economic activities of enterprises, the two sides of industry, and state agencies whose decisions are guided by the development of the inflation rate.

Paul Schreyer (OECD) and John Astin (EUROSTAT) advocated more international cooperation of statistical bureaus when introducing hedonic techniques. Such cooperation would be particularly desirable with respect to an improved international comparability. In addition, it would lead to a higher degree of efficiency and cost reductions. ◀

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# Training Is not Always Effective

Enterprises can improve productivity by training more employees. For this reason especially establishments with productivity deficits train more employees than their competitors. A recent ZEW study, however, suggests that not all training forms improve productivity.

■ German firms spend considerable sums of money on training of their employees, thus ensuring that flexible, complex, and diversified production processes can be adapted to the latest requirements. New findings of the ZEW based on representative data of the Establishment Panel of the Institute for Employment Research (IAB) show which training schemes actually increase productivity, and which schemes fail to do so. In particular formal external and formal in-

house courses have a large positive impact on productivity. Quality circles and self-induced learning using media such as computer-assisted self-learning programmes and textbooks also have a positive but weaker effect on productivity. These modern training forms are not yet very wide spread among German firms, however, even though their cost and time requirements are comparatively low. Other training forms such as training on the job, lectures, participation in confe-

rences or trade fairs as well as job rotation, which are very wide-spread in some cases, do not influence entrepreneurial productivity. For that reason personnel departments should critically rethink some of their most popular measures in terms of their effectiveness.

When the share of employees taking part in continuous training schemes increases by 1 percent, the ZEW study finds that value added rises significantly, on average, by 0.3 percent. It is also interesting that it is not the firms with high productivity "who are able to afford" and offer such training schemes. Rather, firms with a productivity disadvantage use training specifically as a means to set off their competitive drawback. This plan seems to work as one can see from productivity increases resulting from training. Training is especially widespread in firms investing heavily in information and communication technologies, employing highly qualified staff and working with modern technical equipment. Furthermore, firms that offer apprenticeships and firms that are bound by collective wage agreements tend to provide more training. ◀

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### Incidence of training measures



## Research Findings

# Financial Services in the EU: Barriers Cost Billions

Many nations within the EU still follow a protectionist financial market strategy. Every year consumers have to foot the bill and pay several billions of Euro on the incomplete market for bank and insurance services. In particular tax discrimination, national differences regarding consumer protection and supervisory systems as well as consumers lacking trust in this market are barriers that still need to be overcome.

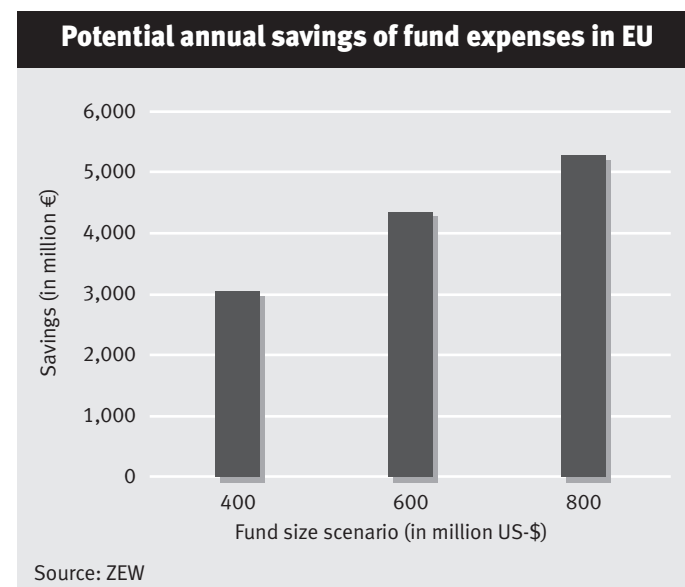
■ The introduction of the common currency Euro has brought about the integration of money and securities markets in Europe. Yet on the retail markets for end consumers, national borders still pose a barrier that can be hardly overcome. These obstacles are the subject matter of a study conducted by the ZEW and the Berlin Institute for European Politics (IEP) ([www.zew.de/erfstudyresults](http://www.zew.de/erfstudyresults)).

Regarding the causes for the dragging financial market integration the authors of the study distinguish between natural barriers and barriers caused by politics that are preventing an integrated market. It is indisputable that natural factors such as different languages and mentalities are by far more relevant in Europe than on the internal market of the USA. To the extent that incomplete integration can be attributed to these factors, policy-makers will not be able to change this situation in the short-term.

The study shows, however, that not all problems have causes that cannot be changed on a short-term basis. Rather, there are several barriers to the financial services market in Europe that could be overcome by political decisions: tax discrimination, national differences in consumer protection as well as in bank and insurance supervisory authorities, drawn-out legislation at EU level as well as consumers lacking trust in the system.

### Benefits resulting from more integration

The ZEW/IEP study also revealed that more integrated European markets for financial services will lead to declining costs for customers. Due to the fragmentation in national markets today customers cannot take advantage of the re-



turns to scale of large fund volumes. Assuming that average fund volumes of the EU and the USA are adjusted to each other, and based on the current size of the EU fund market cost reductions on a scale of annually five billion Euro might be possible (see graph).

Furthermore, product choice would increase, in particular for consumers in small countries who today suffer most from incomplete retail market integration. In these countries, the supply of available funds e.g. could be augmented by a factor between 10 and 20.

European consumers can also profit from more integration when raising credits. As declining capital market interest rates are passed through to borrowers at a protracted pace, more integration would be linked to more competition, and interest rate advantages would be passed on more rapidly to banks' customers.

However, one could also expect integrated markets for financial services to bring about positive macroeconomic ef-

fects, as advances in integration tend to stimulate economic growth. Not least the Euro would be accepted more easily as a global currency, because powerful financial markets also promote the acceptance of a currency throughout the world.

All these insights allow us to draw several policy conclusions. Political bodies have already set the correct course. For instance, the Financial Services Action Plan which identifies several urgent integration problems is to be implemented by the year 2005. There is, however, more left to do. Combating the aforementioned tax discrimination is one of the prime tasks. In the long term the member states will have no choice but to consider a harmonisation of consumer protection regulations. Furthermore, consumers need to be educated about the reliability of cross-border financial transactions.

Finally, the question arises whether the basic approach that each nation has its bank supervisory authorities still meets the requirements of a single currency area. In the short term the countries have to harmonise their administration practices and optimise their cooperation. In the long-term, however, it might even be necessary to create a European supervisory system. ◀

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## Research Findings

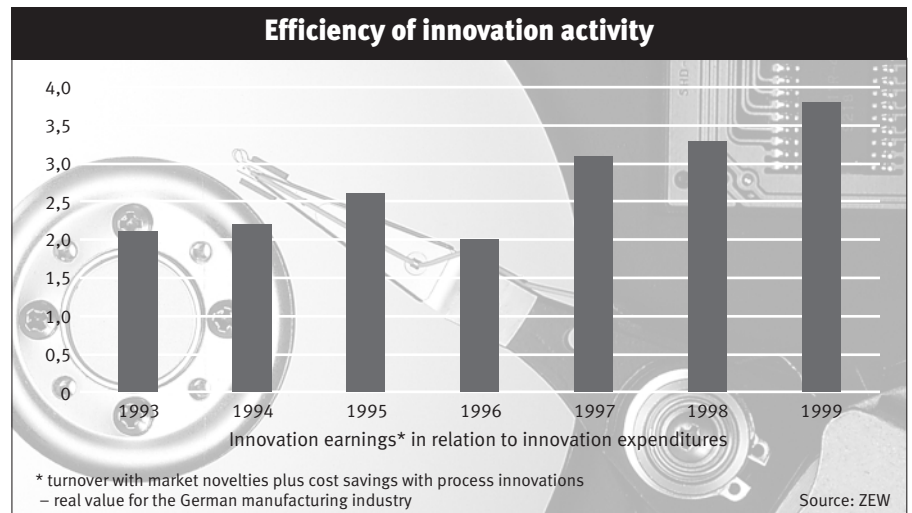
# Efficiency of Innovation Activities

There have been indications in past years that enterprises are conducting their innovation projects with more efficiency. The number of patent applications increased continuously despite stagnating R&D expenditure. Innovation success increased as well even though innovation budgets remained unchanged. A ZEW study on the relation between innovation earnings and expenditure confirms this assumption.

■ In the nineties the number of patent registrations rose much more than real expenditure for research and development (R&D) in many OECD-countries. This is a particularly marked trend in Germany. This development gave rise to speculations as to whether the efficiency of R&D efforts of enterprises is increasing, as apparently every monetary unit that is used for R&D yields a higher output. There are different explanations for this development. For instance, a concentration on application-oriented research activities reduces project times and yields palpable, commercial results in a shorter period of time. An improved organisation of R&D helps to reduce costs without curtailing output. Alliances in the context of research cooperations, in particular with science, facilitate the use of R&D results of other persons and organisations. Finally, enterprises are pursuing the strategy to register as many patents as possible to increase their goodwill. This in turn bolsters their stock price and prevents take-overs from other businesses.

### A benchmark for innovation efficiency

Within the scope of its annual report on Germany's Technological Performance the ZEW has identified an indicator for the efficiency of innovation activities. It measures the relation between innovation success in terms of monetary returns, and the monetary expenditure necessary for carrying out the innovations. Innovation success for product innovations is measured by means of turnover attained with market novelties; for process innovations the cost savings attained with such innovations are used as performance data. Innovation success is juxtaposed with innovation expenditure of the preceding three-year-period with a



time-lag of half a year. Calculations are made in real terms for 13 sectors in Germany's manufacturing industry.

The results show that the efficiency of innovation activities has continuously increased since 1993 and was interrupted only once in 1996 due to low revenues generated with market novelties. In 1999 the efficiency of innovation activities was approximately 80 percent higher than in 1993. This is due to a decline of real innovation expenditure accompanied by a distinct increase of innovation success measured on the basis of financial magnitudes. While real innovation expenditure declined each year by an average 1.8 percent between 1991/1993 and 1997/99, real turnover generated due to market novelties increased annually by an average 11 percent between 1993 and 1999. In comparison, the increase in cost savings realised with process innovations was lower. It attained an annual average growth of 3.1 percent from 1993 to 1999 which is still impressive.

Part of the large real rise of the efficiency of innovation activities is due to the fact that input prices of innovations have increased more strongly than output prices. This price effect can, how-

ever, explain merely one fifth of the total rise. Due to the small number of observations it is not possible to say whether the rise of the efficiency of innovation activities is caused by a short term perspective of innovations or rather by a rise in the efficiency itself.

The efficiency of innovation activities has increased in all sectors, albeit at different speeds. Less R&D intensive sectors such as timber, paper and plastic industries are leading. In these sectors, which are characterised by contracting employment numbers and stiff price competition, only those enterprises will survive that are able to attain cost advantages with innovations. This holds true for process innovations as well as for new products providing more value for money for consumers. Research-intensive industries cannot increase their innovation efficiency to such an extent, as shorter product cycles require continuous innovations in the product range and often also in production facilities. For that reason the payoff period during which product and process innovations can be transformed into additional turnover and cost savings is too short. ◀

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## Research Findings

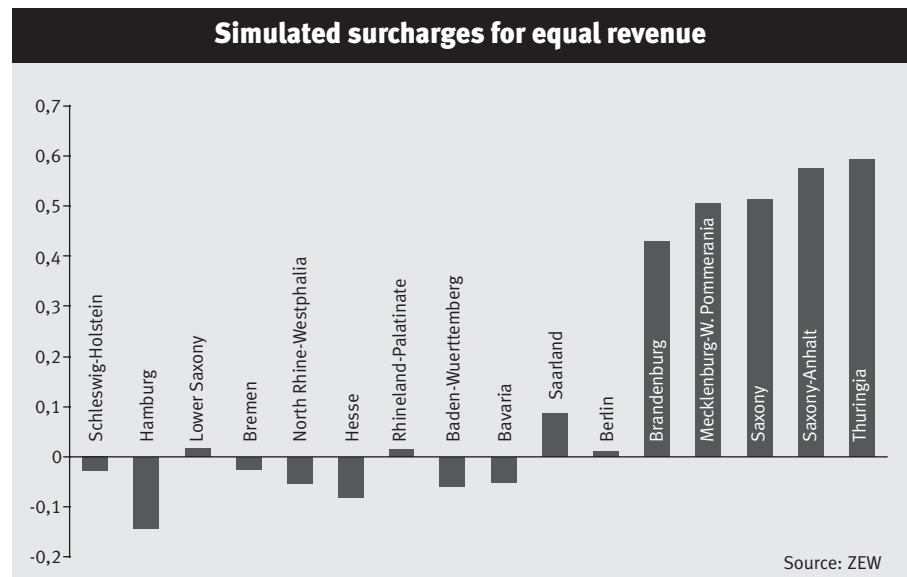
# Tax Autonomy of the Länder

Without a reform of the fiscal equalization system the introduction of partial tax autonomy of the Länder will lead to unwelcome negative incentives for fiscal policy. A recent ZEW study thus suggests that despite of tax competition between the Länder a rise in the tax burden might be the result.

■ The tedious negotiations until the solidarity pact II was reached have shown that a reform of German federalism is the order of the day. Frequently the demand is heard that the Länder should be granted more autonomy in their tax law. The expected gain of such measures is that political bodies in the Länder can meet the regionally differing demands of the population, that the Länder governments can have more policy discretion towards citizens and that discipline in public spending is improved. It seems that, in principle, the technical difficulties involved with the respective surcharge on income tax determined by the Länder can be solved. The core question in terms of fiscal policy about such a reform is, however, the treatment of tax autonomy within the fiscal equalization system.

### Marked differences in fiscal capacity

When taking the idea of autonomy seriously, the Länder's share in income tax should be excluded from the fiscal equalization system. Due to different fiscal capacities this would have serious repercussions on the revenue situation of the Länder. The ZEW conducted simulations based on actual tax proceeds for each Land in order to demonstrate the order of magnitude of these effects. The study assumed that the Länder are entitled to their current share of income tax revenue without this share being included in fiscal capacity measurements for fiscal equalization. In addition each Land can decide on a surcharge on or a deduction from the income tax whose revenue will go exclusively to the respective Land. The diagram shows the income tax surcharges determined by the ZEW which every Land would need to attain a per-capita revenue corresponding to the Länder average. Of course, it is by no



means clear that the demand for public services is identical across states. However, this assumption delivers a clearcut description of differences in taxing capacity. Owing to different taxable capacities in individual Federal states these rates vary considerably. The East German Länder, for instance, would have to levy surcharges of more than 50 percent in order to attain revenues corresponding to the average (see graph). They would thus have the choice to either jeopardize their own economic development due to high surcharges or seriously reduce public services. By contrast, deductions from the income tax would be possible in most of the West German Länder.

In principle, these differences could be alleviated by integrating the Länder's share in income tax revenues into the horizontal fiscal equalization. Standardized Länder surcharges could be used in analogy to the business tax to determine taxing capacity, otherwise each Land would be able to reduce its surcharge rate at the cost of all Länder. This method, however, does not eliminate the indirect incentives resulting from fiscal equalization. As firms and households try to avo-

id taxation, tax rate increases result in a shrinking tax base. Fiscal equalization rewards lacking financial strength, thus shifting part of this negative impact of a high-tax policy onto the other Länder. Integrating the autonomous Länder tax into fiscal equalization thus creates an incentive to increase surcharge rates.

For that reason it makes more sense to level out differences in regional tax potentials between East and West German Länder by means of lump-sum transfers. In this case tax autonomy of the new Länder would stand a chance because the new Länder would be able to contribute actively to an improvement of their local conditions.

Basically, tax autonomy of the Länder only seems to make sense if the idea that all Länder in Germany should offer more or less the same services is abandoned. A combination of tax autonomy and fiscal equalization entails the risk that Germany will be even more of a high-tax country, which in turn will weaken its position in international tax competition. ◀

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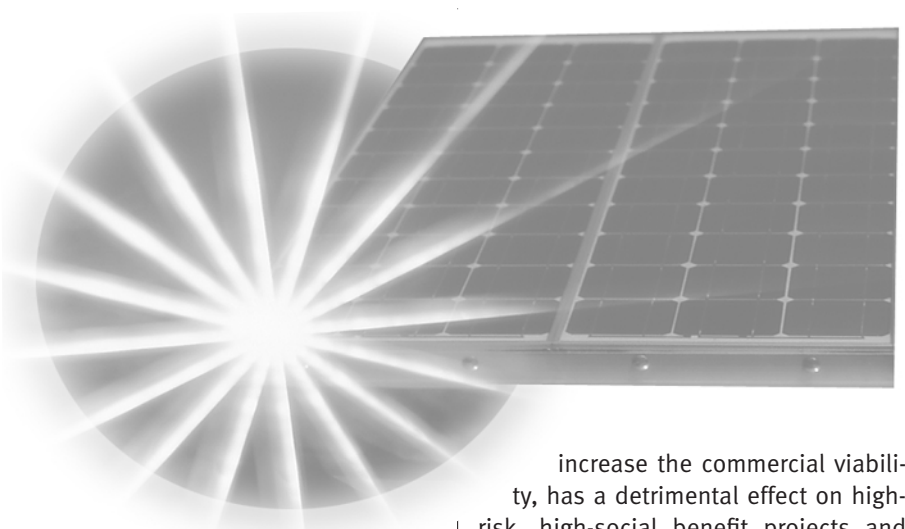
## ZEW Workshop

### How to Support Environmental Innovation Systems?

■ The first workshop of the European network BLUEPRINT (Blueprints for an Integration of Science, Technology and Environmental Policy) was held in January 2002 in Brussels. It brought together 35 people to discuss the topic of environmental innovation systems and policy for the environment. This article summarises the main results of the workshop synthesis report including recommendations how environmental innovation systems should be supported.

Examples of environmental system innovations are the local re-use of waste products, integrated water management, decentralised energy systems or a shift from products to product-services. Their main characteristic is that they do not only improve a single technical detail of a system (as for example a catalytic converter), but the system as a whole. There is a widely held view that system innovations may produce greater ecological benefits, but this remains to be demonstrated empirically.

System innovations are constrained by the costs of changeover, uncertainty and the need to break old ties. System innovations, which are by their nature disruptive, are unlikely to be supported by regime actors who favour system improvement options within technological regimes. Thus public policy should be more oriented towards system innovations offering sustainability benefits gi-



ving the constraints and barriers for this type of change. To date most of the experiments are technology demonstration projects. They are not aimed at system innovation or undertaken in a strategic way, i.e. they are not linked to sustainability agendas and transition programmes. System innovations require both top-down policies and bottom-up initiatives and co-operation between different government levels. Good examples of aligning innovation to sustainability programmes are for example the approaches of strategic niche management and transition management in the Netherlands.

#### Focus on radical innovations

Governments should promote a portfolio of options for dealing with an environmental problem. Uncertainty about which option is best often leads to risk-averse behaviour on the part of companies who are afraid to “bet on the wrong horse”. One way of doing this is through sustainable innovation programmes for problem areas. One could use tenders for selection proposals. In such tenders not the economic success should be used as the determining criterion but expected societal benefits. We need innovation support for high-risk, high-(social) benefit projects, and accept technological and economic failure. The trend towards reducing the share of government support for R&D projects, to

increase the commercial viability, has a detrimental effect on high-risk, high-social benefit projects and worsens the free rider problem (of innovation support for projects that would be done anyhow).

#### Support experiments at the local and regional level

Heterogeneity at the local level should be exploited strategically for system innovation. Local experiments may serve as “breeding spaces” and “testing places”. Special circumstances at the local level (in the form of a particular sustainability problem, special competencies on the part of local economic actors, alternative life style constituencies and political configurations) may form a window of opportunity for sustainability solutions.

In Europe there is a great heterogeneity in terms of institutional ways of dealing with environmental problems from which we can learn a great deal. Comparative research is needed to find answers to questions such as: Are consensual approaches better suited to promote innovation than confrontational approaches? Are long-term goals in environmental policy useful? What are the experiences with integrated approaches? Answers to these questions require a systematic research programme.

The next workshops deal with business strategies, policy instruments and economic impacts of sustainable innovations. ◀

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The BLUEPRINT network is funded by the European Commission, DG Research, under the STRATA programme (Strategic Analysis of specific political issues). The network is co-ordinated by the ZEW and has about 150 members representing research institutions, governments, intermediate organisations and industry. It wants to stimulate research and policy initiatives for a better integration of environmental and innovation policy at the European level and in member states. More information can be found on the network's website:

[www.blueprint-network.net](http://www.blueprint-network.net)

## ZEW Financial Market Test

# Results of the Survey in May 2002

■ 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 400 experts take part in the survey. 270 of them work in banks, 50 in insurance companies, 40 in investment companies and 40 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 29, 2002 and May 14, 2002 and all calculations are termed to May 17, 2002. ◀

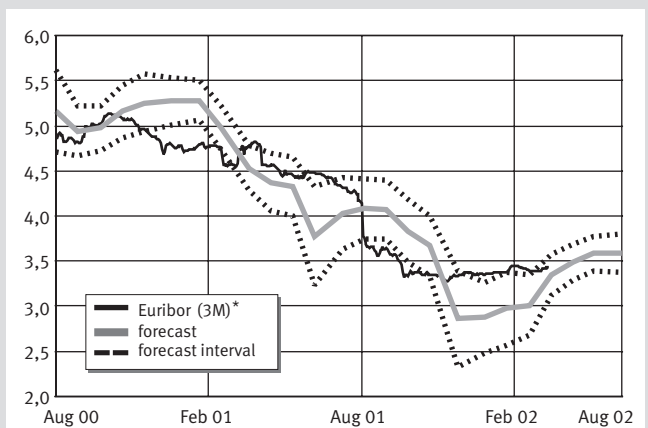
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### ECB-Watch: Inflation Risks

■ The camp of analysts remains split on the issue whether the ECB will be increasing its rates already in the coming months. In total the answers lead to a prognosis of 3.6 percent for the three month Euribor in August. This would correspond to an increase of 25 basispoints in the remaining time period. The decreasing hopes for a low inflation rate tend to be a reason for, while the revival of the external value of the Euro and worries about the business cycle tend to be reasons against a quick increase in interest rates. Prolonged inflation is a tough issue for the ECB. The ECB is running the risk of having to accept, for the third consecutive time, an inflation rate above their own goal of two percent. An additional factor is the high wage increase in the metal producing and manufacturing industries which bears risks for the further price development. Finally, Wim Duisenberg has prepared the ECB watchers in the recent press conference for the beginning of a more restrictive policy. ◀

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### Money market: development and forecast



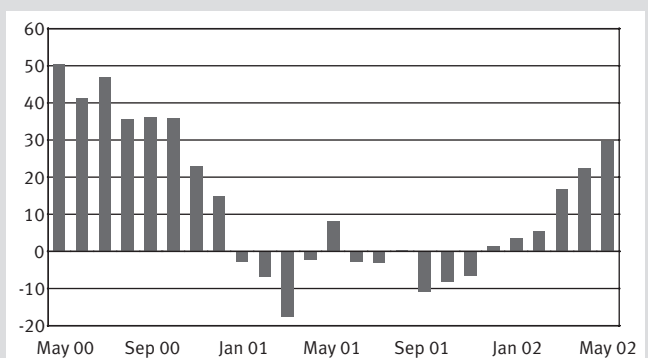
Source: \* Thomson Financial Datastream; ZEW

### Japan: Signs of Hope

■ The weak Yen has made it possible: The Japanese producers of cars and electronics were able to increase their February sales in the US significantly. Furthermore the Japanese index of early indicators has increased in March from 54.5 to 80 points and is signaling economic revival. These gleams of hope are probably the reason why the participating experts are significantly more optimistic with respect to the economic development. The balance of optimists and pessimists has increased from 17 points in March to now 30 points. The experts are even more optimistic about the prospects in the equity market. Here the balance has doubled from 20 to 40 points. With all this optimism, however, it needs to be considered that the domestic demand remains sluggish and that there are few signs that the necessary structural reforms will be implemented. ◀

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### Economic sentiment for Japan



Balance of positive and negative expectations regarding economic growth in Japan six months from now. Source: ZEW

## ZEW Publications

### ZEW Economic Studies

Otto H. Jacobs, Christoph Spengel:

#### Effective Tax Burden in Europe – Current Situation, Past Developments and Simulations of Reforms

This book summarises the results of a study on behalf of the European Commission. It presents estimates of effective average tax rates (EATR) in five EU Member States plus the USA. The main aim is to compare EATR on domestic investments by companies. A secondary aim is to work out the impact of the different tax drivers on the tax burden. The comparison is made in six stages: – Comparison of the EATR for a base case – Effects of alternative assumptions on the economic data – Comparative effects of the German tax reform from 1 January 2001 – Consequences of the most important tax reforms since 1995 – Effects of hypothetical tax reforms – Comparison with results obtained from other studies.

*Physica-Verlag, Vol. 15, Heidelberg/New York, 2002, ISBN 3-7908-1470-9*

Ulrich Kaiser:

#### Innovation, Employment, and Firm Performance in the German Service Sector

Empirical and theoretical evidence on the German service sector is inversely related to its growing overall importance for the entire economy. This monograph offers a comprehensive theory-based economic treatment of three important and severely understudied issues related to services: innovative activity, the effects of innovation on the demand for labour, and the performance of newly founded firms. In addition, the book contains detailed descriptive statistics on innovative activity, on skill mix as well as on growth and current economic importance.

*Physica-Verlag, Vol. 16, Heidelberg/New York, 2002, ISBN 3-7908-1481-4*

You may also order these books online: [www.springer.de/economics](http://www.springer.de/economics)

#### ■ Discussion Papers

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Böhringer, Christoph; Vogt, Carsten: *Rio – 10 Years After: A Critical Appraisal of Climate Policy*, No. 02-09.

Lüders, Eric: *Asset Prices and Alternative Characterizations of the Pricing Kernel*, No. 02-10.

Lauer, Charlotte: *Family Background, Cohort and Education. A French-German Comparison*, No.02-12.

Boeters, Stefan: *Tax Progressivity and the Trade Union's Fallback-Option*, No. 02-15.

Buettner, Thiess: *The Impact of Taxes and Public Spending on the Location of FDI: Evidence from FDI-flows within Europe*, No. 02-17.

Boockmann, Bernhard; Dreher, Axel: *The Contribution of the IMF and the World Bank to Economic Freedom*, No. 02-18.

Heinemann, Friedrich: *Factor Mobility, Government Debt and the Decline in Public Investment*, No. 02-19.

Hüfner, Felix; Schröder, Michael: *Exchange Rate Pass-Through to Consumer Prices: A European Perspective*, No. 02-20.

Schüler, Martin: *The Threat of Systemic Risk in Banking – Evidence for Europe*, No. 02-21.

Schüler, Martin; Heinemann, Friedrich: *How integrated are the European Retail Financial Markets? A Cointegration Analysis*, No. 02-22.

Schüler, Martin: *Integration of the European Market for E-Finance – Evidence from Online Brokerage*, No. 02-24.

Böhringer, Christoph; Vogt, Carsten: *Dismantling of a Breakthrough: The Kyoto Protocol – Just Symbolic Policy!*, No. 02-25.

Heinemann, Friedrich; Schüler, Martin: *Integration Benefits on EU Retail Credit Markets – Evidence from Interest Rate Pass-through*, No. 02-26.

Heinemann, Friedrich: *The Benefits of Creating an Integrated EU Market for Investment Funds*, No. 02-27.

Löschel, Andreas; Zhang, ZhongXiang: *The Economic and Environmental Implications of the US Repudiation of the Kyoto Protocol and the Subsequent Deals in Bonn and Marrakech*, No. 02-28.

Lange, Andreas: *Climate Change and the Irreversibility Effect – Combining Expected Utility and MaxiMin*, No. 02-29.

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