



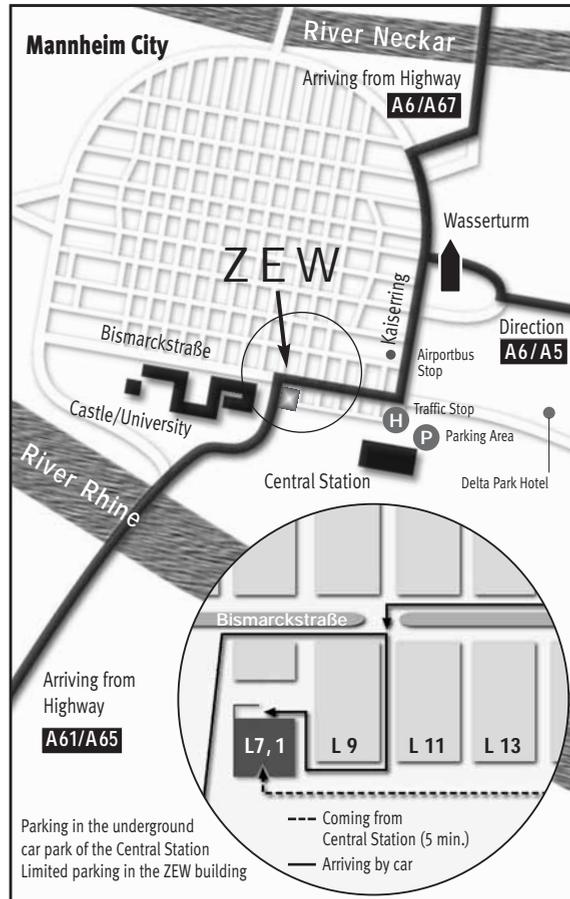
# Aims and Research Activities

## ZEW

Zentrum für Europäische  
Wirtschaftsforschung GmbH

Centre for European  
Economic Research

[www.zew.de](http://www.zew.de)



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# Aims and Research Activities

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Wirtschaftsforschung GmbH  
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Economic Research

## **Imprint**

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# About ZEW

Founded in 1990, the Centre for European Economic Research – in German: Zentrum für Europäische Wirtschaftsforschung (ZEW) – is a non-profit, non-partisan research institute engaged in the quantitative analysis of economic issues. While the focus is on the economies of Europe and Germany in particular, comparative work on other economies is carried out, too. ZEW is committed to contributing to an open debate between academia and the society, and to offering research results based on innovative scholarly work to the general public, to private and governmental institutions, as well as to private firms. The findings of ZEW researchers are frequently used to elaborate on policy recommendations. In order to lay open the research output to discussion within the academic community, ZEW publishes research results in well-established scientific journals and books, and participates actively in the scientific exchange of ideas.

When the institute's fields of research were defined, this was made under rapidly changing economic conditions. The need was felt to help public and private decision makers cope with the challenges of an integrating world economy, the growing importance of international financial markets, the ongoing process of liberalisation and enhanced competition, and an increasingly demanding environmental agenda. Therefore, it was decided to make these topics of foremost importance: financial markets, labour mar-

kets, industrial economics, taxation of firms and public finance, environmental economics, and more recently, economic aspects of information and communication technologies. It is the mission of ZEW to concentrate on rigorous research work based on theory, while striving to gain insights from empirical investigation with a microeconomic and microeconometric focus, distinguishing it from other institutions, whether they be universities or economic research institutes. Many of the empirical projects are based on our large and, for Germany, unique panel data on existing firms and start-ups, as well as on individual households. It goes without saying that the emphasis on microeconomics does not exclude macroeconomics. ZEW has further developed both a macroeconometric disequilibrium model and a computable general equilibrium model for the German economy. The first model is used for simulations of alternative policy measures, whereas the second is one of the most important instruments of our research department "Environmental and Resource Economics, Environmental Management".

Among the major economic research institutes outside universities, ZEW is the only one which conducts research on financial markets on a large scale in its International Finance, Financial Management and Macroeconomics department. Examples of research topics at the macroeconomic level are the international integration of capital markets and

the economics of growth and business cycles. The Industrial Economics and International Management research department, which is substantially engaged in the build-up of the firm-level databases, investigates e.g. the origins and causes of innovations or the breed of success of newly founded firms, and develops tools to monitor and trace innovation-related corporate strategies. In-depth studies of the Labour Markets, Human Resources and Social Policy department, for instance, take into account individual behaviour and characteristics to assess the development of labour supply and demand. Also, and more directly linked to policy-oriented advice, this department carries out evaluations of active labour market policies and simulations on social security reforms.

The Corporate Taxation and Public Finance research department has established the so-called “European Tax Analyzer” which allows computer-aided international tax burden comparisons on an effective basis (in contrast to studies that are restricted to nominal tax rates). Apart from studies based on this instrument, projects of this department deal with the impact of fiscal incentives on private agents’ location decisions and the influence of mobility and competition on government policy. Research of the Environmental and Resource Economics department is, among other things, devoted to aspects such as sustainable development in relation to innovations and performance of firms, the relationship between liberalised energy markets and climate change, and effects of emission restrictions on the car industry. The Research Group “Information and Communication Technologies”, founded in 2001, concentrates on the economic impact of the increased adoption of information and communication technologies (ICT), with particular focus on industrial economics, labour economics and firm taxation. Examples of research issues are the impacts of ICT applications in the workplace on the skills required of

employees, and differences in pricing and market structures of digital markets compared with traditional markets.

Doing original research is not an end in itself. We are committed to communicating the findings of our research not only to our funders, but also to the general public, public policy makers, business professionals and the academic community. We value dialogue with those having to deal with practical economic problems and policy measures who can give us feedback on what matters most and on the relevance of our results. During recent years, ZEW has established itself as a forum where lively academic discussion takes place at the conferences and workshops organised by its staff. Distinguished German business and political representatives express their esteem for ZEW by accepting the invitation to our lecture series and the ‘ZEW Economic Forum’. The “ZEW Summer Workshop” is especially directed at young scholars. During this event, they have the chance to present the results of their current research and discuss them with leading economists who give lectures on the topic of the workshop. The most outstanding paper of the Summer Workshop is distinguished by the Heinz König Young Scholar Award, named in memory of ZEW’s first director of science, a prize of €5,000 and, in addition, a three months’ residential fellowship at ZEW.

To give ZEW effective publicity, and to contribute to public-policy discourse, we continuously strive to disseminate our research output by publishing book series and working papers as well as periodic reports, handing out press releases, giving interviews to the mass media, and of course, providing a comprehensive website.

ZEW has always demanded a high standard of quality in its research. A basic essential for this is the recruitment of highly qualified staff. In order to continuously improve their qualifications, all scientists at ZEW have to take considerable efforts, such as writing

their dissertations or habilitations (a post-doctoral qualification), publishing scholarly articles, and actively participating in (international) scientific conferences. Financial support for these activities stems from a “qualifications fund”, which provides sabbaticals for each scientist. In addition, the activities of our research departments are regularly evaluated by outside experts. Our work is also continuously accompanied and supported by a scientific advisory council whose members are mostly university professors, but also entrepreneurs or high-ranking government officials.

Our research is not insular, but benefits from the co-operation of many partners, comprised of numerous universities and economic research institutes, at home and abroad. Furthermore, ZEW is host to many guest researchers who join us to assist during our research efforts and to discuss their work. On the other hand, our researchers are often invited to stay with scientific institutions elsewhere, or to hold lectures in institutes of higher education. The affiliation with other scientific institutions recently found a formal expression with the establishment of a special chair at the University of Heidelberg held by the head of our Environmental and Resource Economics department. This network of scientific contacts and co-operation is very valuable, bringing new impulses to our work and obliging us to see to it that we are always at the forefront of scientific research.

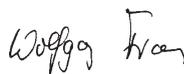
The institute is highly decentralised with respect to fundraising, conducting research, and designing conferences and workshops. A small and effective administration unit gives the necessary bureaucratic support. Two other service departments are responsible for information and communication as well as the transfer of knowledge to a wider public in the form of expert seminars where participants can profit from ZEW’s know-how.

As of 2003, about 130 people are employed at ZEW permanently. Among them are

around 90 scientists who are mostly, but not exclusively, economists. Of these, the majority are young researchers, who are guided by 25 experienced or senior researchers. Their work is supported by about 100 student research assistants and other people who are employed on a temporary basis. Moreover, ZEW is grateful for, and proud of, the engagement of a number of professors who, in addition to their university affiliation, direct research projects at ZEW and very actively give ZEW their backing.

The budget of ZEW amounts to around €11 million (in 2003) and is financed both by the state government of Baden-Württemberg, and funded projects raised by ZEW. Institutions that commission ZEW to do research work for them include the European Commission, federal ministries, firms and private organisations, and last, but not least, science foundations. Funding by the state government enables ZEW to carry out more general research and provide researchers with sufficient means to achieve higher qualifications. Valuable additional funding by the “Club of ZEW Friends and Sponsors” (Förderkreis Wissenschaft und Praxis am Zentrum für Europäische Wirtschaftsforschung e.V.), which consists mostly of entrepreneurs from the region of Mannheim, where ZEW is located, is gratefully acknowledged.

In the following sections, each department of ZEW gives a somewhat more detailed overview on its aims and scopes. We hope that you will appreciate our research, and we would like to cordially invite you to visit our website to obtain an updated research agenda. Please feel free to contact us at any time.



Professor Dr. Dr. h.c. mult.  
Wolfgang Franz  
President



Ernst-O. Schulze  
Director



ZEW building in Mannheim.

- The Research and Service Departments:  
Core Areas of Work

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## International Finance, Financial Management and Macroeconomics

Head of the research department:

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### ■ **Macroeconomics and European Integration**

- European monetary policy
- Macroanalysis and empirical analysis of growth
- Effects of EU enlargement on economies and capital markets
- International integration of capital markets
- Regulation and supervision of financial markets
- Fiscal policy and financial markets

### ■ **Capital Market Analysis**

- The European banking and securities exchange system
- Monthly survey of financial market experts (e.g. ZEW Economic Sentiment Indicator)
- Analysis of the process of expectation formation on capital markets
- Theoretical and empirical analysis of asset prices
- Financial market econometrics
- Relationships between capital markets and the macroeconomy

### ■ **Financial Management**

- Financing of old-age pensions
- Venture capital financing
- Corporate governance
- Electronic financial services
- Corporate finance
- Real estate finance
- Risk management in financial institutes

## Labour Markets, Human Resources and Social Policy

Head of the research department:

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### ■ **Labour Markets**

- Evaluation of active labour market policy
- Analysis of labour demand and labour supply
- Education and wage inequality
- Institutional analysis of the labour market
- Gender research

### ■ **Human Resources**

- Education and vocational training
- Individual and social returns to human capital investment
- Company-specific payment systems
- Productivity effects of company-specific work organisation and flexible working time models

### ■ **Social Policy**

- Labour market effects of social security
- Distributional effects and fiscal costs of social security
- The social security system and demographic change

## Industrial Economics and International Management

Head of the research department:

**Dr. Georg Licht**

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### ■ **Innovation Research and Innovation Policy**

- Determinants of innovation activities at the firm level
- Innovation indicators
- Innovation activities in small and medium-sized enterprises
- Innovation and technology policies
- Internationalisation of innovation activities
- Research infrastructure and technology transfer
- Evaluation of research and technology policies

### ■ **Firm Dynamics and Market Development**

- Start-ups
- Firm mortality and survival
- Determinants of firm growth
- Evaluation of start-up funding
- Start-up financing and venture capital
- Projects on infrastructure

### ■ **International Corporate Strategies**

- Global sourcing
- Market analyses
- Market introduction of innovative products

### ■ **Firm-Level Databases**

- Mannheim Enterprise Panel
- ZEW Start-Up Panels for West and East Germany
- ZEW Start-Up Panel Austria
- Mannheim Innovation Panels (manufacturing sector and mining, as well as service sector)

## Corporate Taxation and Public Finance

Head of the research department:

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### ■ **International Comparative Analysis of Corporate Taxation**

- International comparison of corporate tax burdens
- Economic effects and quantification of tax reform
- Taxation of enterprises in different legal forms
- Taxation of enterprises with international activities
- Taxation of highly qualified manpower

### ■ **Taxes, Investment, and Choice of Location**

- Effects of tax regulations on investment, innovation, and choice of site
- Benefits and problems of tax-based investment incentives

### ■ **Fiscal Competition and Federalism**

- Decision making in fiscal competition
- Vertical distribution of competences
- Intergovernmental transfers and co-ordination of fiscal policies in the EU
- Costs and quality of public services
- Competition of social security systems

## Environmental and Resource Economics, Environmental Management

Head of the research department:

**Professor Dr. Christoph Böhringer**

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### ■ **Innovation and Sustainable Development**

- Specification of rules, indicators, and strategies for sustainable economic activities
- Analysis of determinants and economic impacts of environmental innovations
- Analysis of environmental innovation systems

### ■ **Energy Economics**

- National and European regulatory frameworks for the energy markets
- Definition of objectives and choice of instruments in energy policy
- Evaluation of environmental measures and instruments
- Renewable energy and external costs

### ■ **Transport and Mobility**

- Ecological and socio-economic effects of transport systems
- Concepts for a sustainable development in the transport sector
- Market observation of the volume of traffic and the means of transportation used in freight traffic

### ■ **International Environmental and Resource Policies**

- Analysis of institutions for international environmental and resource policies
- Analysis of trade-offs between international trade and environmental policies
- International climate and resource policy

### ■ **Macroeconomic Analysis of Environmentally Relevant Policies**

- Design of environmental and economic policy tools
- Quantification of trade-offs between ecological and economic goals on macroeconomic and sectoral levels
- Impact analysis of national, international, and global policy measures

## Research Group “Information and Communication Technologies”

Head of the research group:

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### ■ **ICT as General Purpose Technologies**

- Diffusion of ICT
- Productivity effects of ICT
- Spillover effects of ICT

### ■ **ICT and Labour Market**

- Structures of qualification and wages
- Age structure of the employed
- Firm decisions on training and further education
- Organisational changes at the workplace

### ■ **Digital Markets**

- E-commerce
- Pricing and market structure in digital markets
- Effects of digitalisation on classical markets
- Taxation of e-business activities

### ■ **Analysis of the ICT-Related Services Sector**

- Quarterly survey among ICT-intensive service industries and knowledge-intensive service providers
- Market for Internet infrastructure

## Service Department “Information and Communication”

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- Information services and public relations
- Media design and distribution
- IT
- Library

## Service Department “Knowledge Transfer & Qualification Programmes”

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- Expert seminars
- Specific training programmes for enterprises and institutions
- Training for international executives

## ■ Activities of the Research Departments

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## Research Department “International Finance, Financial Management and Macroeconomics”

The projects of the department focus on three research areas: Macroeconomics and European Integration, Analysis of Capital Markets, and Financial Management. Thus, international financial markets are considered from three different points of view: first, from a macroeconomic perspective, second, by analysis of the market process and the market institutions, and third, from the viewpoint of important groups of market participants.

The research area “Macroeconomics and European Integration” centres on macroeconomic problems regarding the European integration process. Accordingly, the projects are about e.g. the European monetary and exchange rate policy or the macroeconomic effects of the EU eastward enlargement. More and more projects deal with the economics of growth and business cycle research. Within this context, special attention is paid to the role of capital market integration as well as on the analysis of financial markets from a macroeconomic point of view.

At the core of the research area “Analysis of Capital Markets” is the theoretical and empirical analysis of asset prices, the analysis of expectations as well as the development of international bank and stock exchange structures. A new field of research deals with the relationship between financial markets and the real economy. An important basis for expectation studies is our monthly financial market survey (ZEW Financial Market Test), which supplies us with data about future trends in financial markets and the business cycle. One indicator stemming from this survey that has become well known is the “ZEW Indicator of Economic Sentiment”.

The main focus of the research area “Financial Management” is threefold: finan-

cial market-related decisions of non-financial enterprises, suppliers of financial services, as well as private households. Important topics in the field of non-financial enterprises are corporate governance, company valuation, and corporate finance, particularly venture capital. Financial sector studies are concerned with the behaviour of banks, savings banks, and credit co-operatives, and the development of special market segments, e.g. the market for online credits. In the area of private households, the emphasis is put on capital investment regarding private provisions for old age. The next sections explain more fully what the three research areas entail.

### Research Area “Macroeconomics and European Integration”

This research area deals with macroeconomic problems from a European point of view. For many problems related to economic policy, the use of highly aggregated data in addition to microeconomic analyses is of major importance. This macroeconomic perspective, which includes studies on monetary and exchange rate policy, but also on fiscal policy, is also helpful for the understanding of how the international financial markets function. From a methodological point of view, the many years of our experience in modern time series econometrics is useful not only for the analysis of capital markets but also for macroeconomic research.

Research topics that are receiving increased attention are: monetary policy research, the interest rate policy of the ECB in comparison with the interest rate policy of the US-Fed, the effects of the EU enlargement, and issues of the currency policy.

More empirical studies are carried out in the area of economics of growth with regard to the reasons for long-term growth differences between developed economies. This should yield further information about why Germany's growth has been so slow compared to other countries for so many years. The first reference project in the field of economic growth investigates the connection between stock exchange development and economic growth.

We do not make forecasts on the business cycle but aim to understand the economic phenomena behind business cycles. One example is a project carried out for the German ministry of economic affairs. Here, we investigated new channels of business cycle transmission, e.g. stock markets, economic expectations of producers and consumers, as well as the influence of multinational companies.

The macroeconomic focus in this research area is also aimed at giving special attention to

the significance of financial market integration as well as to regulation and supervision of financial markets. Many projects have been conducted in this field so far. Pinpointing the advantages of an integrated EU market for financial services was the priority of a larger study. Since the introduction of the euro, Europe's financial markets have generally been regarded as highly integrated. But the results of a study carried out in collaboration with the Institute of European Policy (IEP) in Berlin make it clear that this is a misjudgement, at least with regard to financial services for consumers. This project has been funded by the European Financial Services Roundtable (EFR), a group of leading European banks and insurers. In this project, as well as in a following project for the British Investment Management Association (IMA), it was discovered that there are indeed some natural obstacles, e.g. language barriers, which cannot be overcome. But most of the obstacles to an integrated mar-



Staff of the International Finance, Financial Management and Macroeconomics department.

ket are caused by structural conditions that can be changed in the future. Tax discrimination against foreign financial products or national consumer safety regulations that are used for protectionism are just a few examples. Efforts like those of the European Commission (Financial Services Action Plan) are pointed in the right direction and should cause stronger integration of the markets for financial services.

A further study concerns the structures and causes of real capital investments in European regions. Concerning the specialisation of the sectors in relation to the national investment structure as well as to the EU investment structure, the results are similar. Larger regions and regions with higher market power show significantly less specialisation. Regions with higher unemployment rates or population density and a position in the economic centre or in the periphery have an investment structure that deviates from the relevant national and European structure of comparison. Additionally, the relative specialisation of the EU regions seems to be stimulated by the rising economic openness as well as the degree of capital market integration. The investment structures of the administrative centres and the peripheral regions show a high degree of specialisation.

Intensive research on international capital market integration and the reform of bank supervision in Europe will be continued. Especially the development of financial sectors in middle and eastern Europe will once again be a topic of future projects.

### Research Area “Analysis of Capital Markets”

The projects in this research area currently revolve around three issues: the theoretical and empirical analysis of how expectations are formed in capital markets, the analysis of stochastic processes of asset prices, and the changes in the European and international stock exchange landscape. Thus, this research comprises both quantitative studies

on the characteristics of asset prices and the analysis of institutions and institutional regulations.

One central project on how expectations are formed on capital markets is a monthly conducted survey that started in 1991 (ZEW



Conference “Regulation and Supervision of Financial Markets and Institutions in the EU”: Daniel Nolle (Office of the Comptroller of the Currency, Washington) presenting a paper on “The Structure, Scope, and Independence of Banking Supervision”.

Financial Market Test) and involves about 350 German financial analysts and institutional investors who are questioned for future trends in international financial markets and economic developments. The results are published and commented upon in the ZEW Financial Market Report. In addition, indicators are calculated from the results, which find much attention in the international press. The indicator “ECB monetary policy forecast” is made exclusively for “Handelsblatt”, which depicts and comments the expectations of the experts concerning the monetary policy of the European Central Bank. The indicator “ZEW Economic Sentiment Indicator” has become one of the most important economic barometers in Germany and influences the

development on foreign exchanges and fixed-income securities markets. Also, the expectations on business cycle developments in the euro area are becoming increasingly popular.

Using the monthly questionnaire, participants are asked to answer supplementary questions on topical matters related to current economic policy issues. Some past examples are investment recommendations for “Riester pension plans” (when newly introduced in Germany in 2002), the danger of deflation in the USA, balance sheets and stock valuation, Tobin-tax, and the consequences of the federal elections in Germany on the financial markets. The results are published by the economic press and contribute to the opinion of an interested professional public. Furthermore, several studies on the characteristics of expectation of financial markets have been published.

In the area of asset pricing, one project concerns stock prices. The modelling of stock prices is an essential part of modern capital market research and is the basis for important practical applications. The starting point was that most of the models that have been used so far are unsatisfactory in theoretical and empirical respects. The statistical characteristics of stock returns and option prices found in empirical studies often cannot be explained with existing models. The results of this project show that phenomena like the momentum effect (i.e. within a short time e.g. prices rise when stock prices rise) and the reversal effect (i.e. in the long run the momentum effect reverses) can be explained with the type of risk aversion used in the models and changes in risk aversion over time. Moreover, the relationships of investor expectations and characteristics of stock returns have been investigated. In particular, an economically sound model for the stock return volatility has been developed.

A joint project with the ZEW research department “Environmental and Resource Eco-

nomics” focuses on the econometric analysis of the relationship between the ecological performance of enterprises and the shareholder value. The first part of the analysis is based on the factor models of Fama and French to explain the cross-section of stock returns. The most important result is that enterprises in industrial sectors with relatively good environmental rating exhibit above-average stock price returns. The second part of the project applies up-to-date methods of performance measuring for investment funds and indices which are oriented towards ethical, social, and ecological criteria.

A new field of research focuses on the relationships between international capital markets, economic developments, and business cycle changes. This topic has strong links to the research area “Macroeconomics and European Integration”. A project which would also contribute to this linkage shall deal with the formation of expectations on the foreign ex-



Edgar Meister (Deutsche Bundesbank), presenting a paper on “Central Bank Involvement in Banking Supervision”.

change markets using inter alia the data from the ZEW Financial Market Survey.

### Research Area “Financial Management”

This research area focuses on decisions relating to the financial market made by non-financial enterprises, companies offering financial services, as well as private households. In the field of non-financial enterprises, one main issue concentrates on questions related to corporate governance. A project on the empirical analysis of corporate governance in Germany funded by DFG (the central public funding organisation for academic research in Germany) was completed in 2002. One part of this project was the building of the German Corporate Governance Database, which contains extensive data on financial performance and ownership structures of a wide selection of quoted and non-quoted enterprises for a period of ten years. This database will be used, and if necessary, updated for future projects. Regarding non-financial enterprises, we will investigate problems concerning the valuation of companies and stock prices as well as the financial problems of small and medium-sized companies.

The research department has much experience in studies on venture capital finance. Another project funded by DFG examines the behaviour of venture capitalists concerning their decisions for selling their shares on the stock market. For this project, priority is given to the special aspect of venture capital financing compared to financing through traditional investors (such as banks). This project connects two important subjects – IPO and venture capital finance. In particular, this study contributes to a better understanding of the timing of IPO of venture capitalists and their decisions to disinvest.

Two projects are currently being worked on with regard to the banking sector. One project concerns the determinants of the level of equity capital as well as the distribution ratio of banks. These questions are being analysed

using the bank balance sheet database of the German Bundesbank that contains the complete data of German banks. The level of equity capital is partly determined by the supervisory minimum requirements. But most banks usually have an additional equity capital buffer well above this requirement. One aim of the project is to investigate the reasons



Professor Martin Hellwig, Ph.D. (University of Mannheim), presenting a paper on “A Macroeconomic Perspective of Banking Risk and Banking Regulation”.

for this equity capital buffer. The analysis shall show how close credit risk and equity capital of banks are related. Concerning the determinants of the distribution ratio, savings banks and credit co-operatives will especially be analysed.

Another project regarding the banking sector deals with online banking and Internet usage in credit business. First, real estate, business and consumer credits were examined to find out the extent to which online business is used in the German credit market. After analysing the market, it became clear that many institutes offer extensive Internet usage

only in their website area “credit business to consumers”, where they include, for example, applications for credits. Online offers regarding real estate and company business are mostly restricted to pure information. The survey results concerning operating procedures in online credit business lead us to assume that there are considerable efficiency reserves for all three credit business sectors.

Further research projects in the field of financial services will watch the trends in the electronic financial services area and the credit market. The main focus will be on the future development of the Basle equity capital requirements and their effects on the bank loan supply, particularly for small and medium-sized enterprises.

Concerning private households, special emphasis is given to private provisions for old age. Funded by the “Bertelsmann Foundation”, reform options are being analysed for

household and company provisions for old age. This shall lead to a detailed reform plan for an additional funded old-age provision scheme in Germany. The research concentrates on whether the present concept for a state-supported funded old-age provision scheme can cope with the decreasing efficiency of pay-as-you-go pension schemes caused by the changes in the demographic make-up, so that the standard of living for large sections of the population can be secured on the one hand and that old-age poverty can be avoided on the other.

Research on private provisions for old age will remain the centre of interest in the field of private households. The projects will particularly deal with product-related analysis, and include cost and performance comparisons. We will also consider real estate investments in addition to financial investments for old-age provisions.

## Selected Research Projects

### New Transmission Mechanisms in a Global Economy

The increasing interdependence between international stock markets might be a factor that increases the correlations amongst business cycles and could also speed up the international transmission of changes in business cycles. One of the major purposes of this project was to find out if this is the case. The project also investigated the importance of the behaviour of private banks, the foreign investment activities of multinational enterprises, and the influence of sentiment indicators on the transmission of international business cycles. These “new” transmission channels were then compared to the well-known “old” transmission channels, the international linkages of interest rates and foreign trade.

A major outcome was that the “new” transmission channels have some importance, particularly stock markets and sentiment indicators, but that their influence seems to be relatively low compared, for example, to the importance of foreign trade. In addition, the extent to which stock markets and sentiment indicators are really causal factors of the business cycle is still unresolved. (<http://www.zew.de/project275>)

### Integration of European Financial Services Markets

A series of projects has been devoted to the integration of the European markets for financial services. In spite of the so-called “completion” of the single market in 1992 and the introduction of the euro in 1999, markets for banking and insurance services are still heavily fragmented along country borders. Projects commissioned by the European

Financial Services Roundtable in Brussels and the Investment Management Association in London, have explored the reasons for and consequences of imperfect integration. It can be shown that market fragmentation is costly for consumers and the overall economy alike. Retail consumers suffer particularly from unnecessary cost burdens. Macroeconomic growth is below the potential that could be achieved with a higher degree of integration. The project insights are particularly relevant for integration policy and the definitions of priorities by the European Commission. For example, it has turned out that tax discrimination practices by EU member countries are the most severe obstacle preventing a single market in investment funds.

(<http://www.zew.de/project237>,  
<http://www.zew.de/project319>,  
<http://www.zew.de/project236>)

### Growth Monitor

Public awareness in regard to economic development is heavily biased towards short-run cyclical phenomena. This can be seen from the enormous number of business cycle forecasts that are regularly published. In contrast, little attention is paid to the determinants of long-run growth. This imbalance in public awareness is one of the factors responsible for the observable myopia in many economic policy decisions. It is the objective of this project to contribute to a longer-term view of growth processes. A growth monitor is to be developed that can shed light on the long-run growth potential of the German economy in an international comparison. Based on the modern growth theory, the empirical foundation will be laid by an econometric analysis of an industrial country panel.

This exercise will allow the identification of the most important growth determinants, which will then receive a corresponding weight in the construction of an index representing the future growth potential of an economy.

(<http://www.zew.de/project354>)

### ZEW Financial Market Test

The ZEW Financial Market Test is a monthly survey that has been conducted among German financial experts since December 1991. Around 350 companies regularly take part in this survey. These include 270 banks, 45 insurance companies, and 35 industrial companies. We survey experts working in the finance, research, and macroeconomic departments, as well as those in the investment and securities departments of these companies. The financial experts are asked specifically about their expectations concerning trends in economic activity, the rate of inflation, the short and long-term interest rates, share prices, and exchange rates in selected countries. Moreover, the market experts are asked to assess the earnings position of 13 German industries.

(<http://www.zew.de/en/publikationen/finanzmarktreport.php3>)

### Venture Capital and Initial Public Offerings

The aim of this project is to contribute to the understanding of venture capitalists' investment and divestment behaviour, particularly of the IPO timing and the venture capitalists' lock-up. The project is divided into two parts: The theoretical part analyses the impact of the portfolio firm's features (particularly quality and the need for the managerial contribution by the venture capitalist) and the venture capitalist's experience on his decision on the timing of the IPO, the offer price, and the fraction of shares he sells in the course of the IPO. The hypotheses exposed in

the first part are, together with several findings from previous theoretical research, empirically examined in the second part using a unique hand-collected database of IPOs on Germany's Neuer Markt. The specifics of the German market are considered and the differences in the behaviour of various types of venture capitalists (e.g. public or bank-based) are analysed.

(<http://www.zew.de/project233>)

## Selected Publications

Heinemann, F. (2003), The Political Economy of EU Enlargement and the Treaty of Nice, *European Journal of Political Economy* 19, 17-31.

Heinemann, F. and M. Schüler (2004), A Stiglerian View on Banking Supervision, forthcoming in: *Public Choice*.

Lüders, E. and B. Peisl (2001), How Do Investors' Expectations Drive Asset Prices?, *Financial Review* 36 (4), 75-98.

Schröder, M. (2003), Interactions Between US and German GDP: The Role of Stock Markets, *Applied Economics Quarterly Supplement* 54, 99-118.

Tykvová, T. (2003), Venture-Backed IPOs: Investment Duration and Lock-Up by Venture Capitalists, *Finance Letters* 1 (2), 61-65.

## Research Department “Labour Markets, Human Resources and Social Policy”

As indicated in its name, the Labour Markets, Human Resources and Social Policy department focuses on three major research areas. All of them have in common the microeconomic perspective of the analysed issues, i.e. the examination of individual behaviour, the empirical approach, and the application of modern econometric techniques. Furthermore, there is also a focus on the European context. We have recently introduced several new fields of research to complement our traditional research topics. Among them, two highlights are “Evaluation” and “Unemployment Insurance”.

### Research Area “Labour Markets”

The most important issue in this research area is the phenomenon of unemployment. From a microeconomic point of view, research is primarily concerned with the reasons for individual transitions between employment, unemployment, and being out of the labour force. Many projects in this research area evaluate active labour market policies. Each year, the German Federal Employment Services spend more than €20 billion on provisions for the reintegration of unemployed into the primary labour market. This raises the question of which of these instruments of labour market policy are effective. Evaluation of individual instruments is usually confronted with a variety of publicly funded programmes the complementary effects of which have to be considered. In order to compare the effects of the programme on the participants with an adequate control group, data on participants as well as non-participants are required. Moreover, whether the participants have decided to take part in the programme themselves or whether they have

been selected into it must be taken into account. Further consideration must be given to the fact that the effects of the labour market programme may differ among individuals. The aim is to ascertain, in the highest possible detail, for which group and under which circumstances active labour market policies improve the chances of finding employment, and whether the fiscal costs and market distortions caused by the programmes can be justified.

The admissibility of temporary work also has an impact on the transition to employment. Spells of temporary work can lead to regular employment, but in the worst case scenario, the affected persons permanently stay out of regular employment. In particular, there might be discrimination against less qualified groups, elderly people or women. So far, there is insufficient knowledge concerning whether and how unemployment and atypical employment in individual careers act as a stigma, and how they can cause a segmentation of the labour market into stable and unstable employment.

Last, but not least, these microeconomic analyses are useful for the description of developments of the economy as a whole. A genuinely macroeconomic view of the unemployment problem is taken in some research projects. For example, the effects of taxes and social security contributions on employment are examined. Questions about the tax burden and the consequences for the national budget are considered. General equilibrium theory is applied by numerical simulation models in order to consider aspects of the economy as a whole.

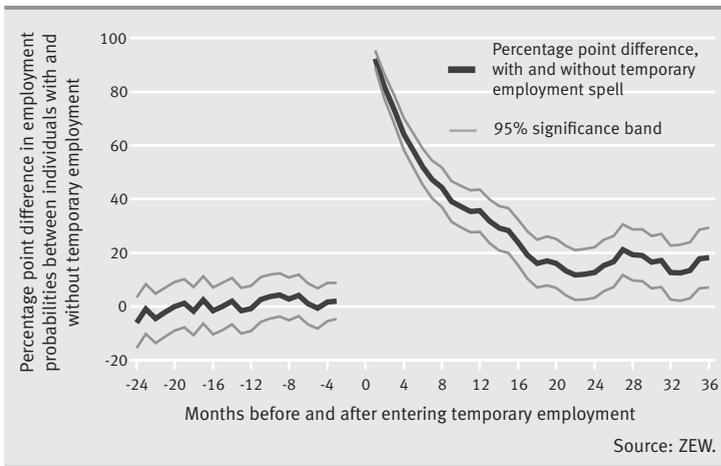
Individual labour supply is a traditional focus of labour market analysis. The depart-

ment examines factors influencing the participation in the labour market, the determinants of individual working time, and the role of public and union regulations or human resource policies within companies given growing employment rates of women and increasing discontinuities in the careers of both men and women. New approaches of the micro-economic theory of household behaviour are considered with a closer look at the labour supply in the family context.

Another way of examining the educational structure is to analyse the determinants of educational success. The influence of individual and family-related characteristics is examined, and the role of public educational policy is of particular concern in this respect. Studies regarding education also raise the question about the connection between the level of education and the labour market situation. What is the impact of the attained level of education on labour market participation, unemployment, and wages? Differences between, as well as within, groups of education are analysed. The question of whether there are any impacts of secular trends (as, for example, educational expansion) on the chances of getting employed in the long run is a further issue of interest.

Studies on labour demand focus particularly on the employees' different qualification levels. The determinants of a firm's demand for different kinds of (more or less qualified) labour is analysed theoretically both for the case of perfect markets and under the assumption of non-competitive behaviour. Empirically, elasticities of substitution are estimated and show the extent to which companies react on variations in relative wages by changing the mix of qualifications or the capital-labour ratio. A starting point for these analyses is the hypothesis that over the last thirty years the elasticities of demand have varied significantly. Acceleration of technical progress led to a systematic preference for higher qualified workers (skill-biased technological change). At the same time, the increase of global trade

### The effects of entering a fixed-term contract job on subsequent employment probabilities of unemployed persons.



Does taking up a fixed-term contract job increase the employment probability of unemployed workers in the subsequent 36 months? The results of our study show that even after more than 24 months, they have a higher probability of being employed (10-20 percentage points) than the control group consisting of unemployed persons who did not take up a fixed-term contract job in the same month.

Labour supply differs with professional qualifications, where professional training plays a central role. A starting point for research is the description of the educational structure in Germany. The educational structure can be examined by looking at formal degrees of education, but also by results of tests like the PISA-Survey. Which developments can be observed, in particular regarding the inequality of education by social environment, gender or birth cohort? How is Germany characterised compared to other countries?

At the same time, the increase of global trade

and mobility of capital induced a reduced demand for less qualified labour in developed countries. Organisational change within companies intensified this trend. Information and communication techniques were major forces driving the skill bias.

The characteristics of labour market institutions are of crucial importance for unemployment. It has been argued that rigid European institutions do not allow for an appropriate reaction of wages to changes on the demand side and this results in persisting unemployment. The auctions model of wage determination has been dominating empirical research for a long time. Nowadays, one often refers to models of imperfect competition concerning wage development. Even if wages are not absolutely rigid in the long run, there are short and medium-term inflexibilities.

Imperfect competition in the labour markets can be explained by the bargaining power of unions and incomplete working contracts. The influence of existing labour market institutions, labour legislation and active labour market policies are important factors. One focus of research is to provide empirical evidence on all these interactions.

Particular attention is paid to specific, spatially defined labour markets. Unemployment is a particularly serious problem in East Germany. Some of our evaluation studies focus on improving the labour market situation in the East. Further consideration is given to European labour markets. The department co-operates with institutions all over Europe. These projects are often supported by the European Union. In addition, studies are conducted regarding European integration. Questions are related to a possible increase in mobility after the EMU and to an assumed adjustment of wages. Finally, spatially defined labour markets are examined when comparing international labour and social standards.

Wherever applicable, the gender perspective is taken into account in the entire re-

search programme. Some projects analyse the status quo of equal opportunities in the society or in the labour market. A further important dimension considered in several projects is the ageing of society and its effects on labour markets. What kind of effects on productivity can be expected? How do firms react on the ageing of the working force?

Most projects are using microeconomic methods. Evaluation studies use new methods in order to estimate causal effects, such as the statistical matching concept. Duration analysis is also a frequently used concept. Besides the well-known parametric methods, the department also uses and develops state-of-the-art semi-parametric statistics for specific applications. Techniques of modelling discrete decisions, econometrics of panel data, and quantile regressions belong to the methodological repertoire of the department. In addition to the econometric techniques, CGE- and microsimulation models are used. The application of experimental techniques and field studies is planned for the future.

Suitable representative data sets are the foundation of the microeconomic and microeconomic research at ZEW. Labour market data are available from the Federal Statistical Office in the "Mikrozensus", the wage and salary structure survey (Lohn- und Gehaltsstichprobe), and the income and consumer sample (EVS). For analyses over time, the German Socio-Economic Panel (GSOEP) and the European Community Household Panel (ECHP) are used. The Federal Employment Office provides a series of individual and company data sets. Newly set up linked employer-employee data sets will be used in future empirical studies of labour demand. In addition, self-collected or experimentally extracted data will be used. Sure enough, there is still a data shortage in some areas. This includes information on institutional aspects, such as the legal fixation of collective labour agreements, or collectively or individually arranged working conditions and wage components.



Staff of the Labour Markets, Human Resources and Social Policy department.

Also, the substantial efforts of the employment offices and their provisions for active labour market policies cannot be sufficiently linked with individual wage and employment data. In this context, ZEW, IAB (Institute for Employment Research), and university research institutes are collaborating to improve and create relevant data structures for future research.

### Research Area “Human Resources”

New organisational processes and strategic measures are continuously being developed by enterprises in order to increase the working efficiency. Strategies often imply the introduction of flexible working time or innovative systems of remuneration, participation, and qualification of the staff. The reduction of hierarchy levels, the connection of the remuneration to the company’s success, specific measures of professional training and coaching, and time accounts per year are all subject of discussion.

There is, however, a lack of knowledge on the efficiency of new methods and corresponding effects of synergy and their costs of reorganisation, which can be immense due to staff resistance. This is why it is so important to analyse the effects and the problems of different elements of human resource policies within the company. Since there are no representative data on the utilisation of innovative measures in the field of Human Resources in Germany, other than the panel interviews of IAB and the “Company Panel of Hanover” (until 1998), we conduct case studies in collaboration with companies.

The department’s approach is quantitative, in contrast to traditional business-related research, which is dedicated to the conceptual design and qualitative assessment of the human resource management within the company. The effects of measures are determined using econometric methods similar to the methods used in the evaluation of active labour market policy. The company, not the in-

dividual or the entire economy, is the focus of attention. Specific projects deal with varieties in human resource management, problems of introducing new human resource practices, and their effects. In the latter case, not only are the effects on productivity examined, but also the effects on other target variables of companies, such as fluctuation rates, job satisfaction or the success of recruitment. So far, studies on the resistance of staff have been conducted on the basis of the “Mannheim Innovation Panel”. We also analyse the effects of employee share ownership, bundles of personnel measures (“high performance workplaces”), and different forms of vocational training on productivity. The coherence of flexible working time systems and the efficient utilisation of companies’ resources will be analysed as well. Finally, self-conducted company interviews help examine the reaction of managers to variations in the performance-related remuneration and the efficiency of measures of coaching for the managing capability of master craftsmen.

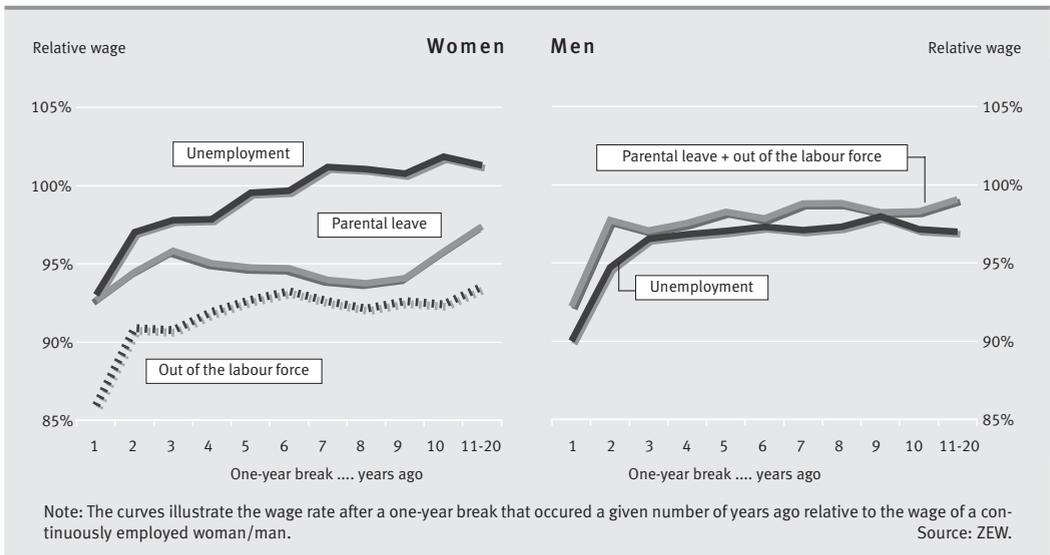
In further projects, the analysis of the effects of human resource management policies

shall be integrated with the problems caused by their introduction. This should enable taking a perspective on the operational processes of innovation, linking two separated fields of research. Moreover, the department is interested in topics such as organisational change, operational flexibility, the introduction of information and communication technologies, and the compatibility of career and family. Effects on employment, impacts on the demand for qualifications, fluctuation, and job satisfaction are to be considered.

**Research Area “Social Policy”**

Unemployment benefits and public assistance are essential determinants of employment, in particular for those who are less qualified. Both the level and duration of unemployment benefits play a major role for the emergence of long-term unemployment. High unemployment and public assistance benefit reduction rates decrease the probability of transition to employment on the primary labour market. The financing of social security systems with taxes and social contributions enlarges the gap between gross and net

**Long-term wage effects of employment breaks.**



wage, and thus distorts labour demand and labour supply decisions. Therefore, social security reforms are of top priority. The political and academic discussion has generated a great number of reform proposals that have partly been tested in field experiments in the past few years. However, there is a lack of empirical studies which take into account the interaction of different systems of social security and the tax system. Therefore, the focus of this main field of research is on the empirical analysis of the budgetary consequences as well as on the effects of the allocation and efficiency of recently discussed reform proposals. Microeconomic models of labour supply, in connection with the Tax-Transfer-Model as developed by ZEW, are used in micro-

simulations. To consider feedback effects of reform proposals a computable general equilibrium model, another ZEW development, is used as well.

Demographic change causes drastic effects on all systems of social security. The effects on nursing care insurance are still a neglected field of research among empirically-oriented economists. Empirical research in this area is made difficult by a lack of substantial data sets. Therefore, the development of appropriate microdata sets is necessary for detailed econometric analyses concerning the chances of employment of less qualified workers in the nursing service sector. At the moment, the development of an appropriate individual data set is under scrutiny.



Florian Gerster (head of the German Federal Employment Services) during the ZEW Economic Forum, talking about reforms of the labour market.

## Selected Research Projects

### Education and Wage Inequality in Europe

The aim of this project is to undertake an in-depth analysis of the interplay between educational expansion and wage inequality in Europe over the past few decades. The novelty of the research is that it analyses the underlying patterns and trends of wage inequality in both between-groups and within-groups and looks for major policy-relevant explanations for the obtained findings. All analysis is undertaken with respect to three dimensions: education level, birth cohort, and gender.

(<http://www.zew.de/project314>)

### Formation and Utilisation of Differentiated Human Capital

Within a theory-based econometric analysis, this project investigates both the supply side of human capital formation, including (on-the-job) training activities, and the demand side regarding the required employment of different skills by enterprises while taking substitution effects and complementarities into account. On the one hand, the connections between the demand for heterogeneous labour, production technology, and the wage structure will be modelled on the basis of an approach using decision theory. On the other hand, schooling and further education will be analysed in a microtheoretical framework, explicitly using private and social returns to education. In this context, the general institutional set-up matters. For example, the dual training system and the existence of wage-setting mechanisms that are influenced by trade unions must be taken into account.

(<http://www.zew.de/project311>)

### Microeconomic Methods for the Estimation of Heterogeneous Returns to Schooling

Conventional empirical studies on the returns to schooling assume that the return for an additional year of schooling is the same for everyone. The goal of this project is to relax this assumption by developing and applying new microeconomic methods that account for heterogeneous returns to schooling and identify the causal effects of schooling. Specifically it is essential to identify the impact of observable and unobservable factors that determine the returns to schooling. Unobservable factors leading to heterogeneous returns to schooling result from selection processes, such that mainly those individuals invest in human capital who expect the highest returns. Policy measures that change the individual's cost of schooling, therefore, lead to a change in the composition of individuals who invest in schooling. Hence, microeconomic tools that are able to identify the causal effects of these policy measures must be developed.

(<http://www.zew.de/project277>)

### The International Labour Organization (ILO) as an International Negotiation System: A Political-Economic Analysis

This empirical project deals with decision-making in the context of International Labour Conventions, the most binding instruments available to the International Labour Organization (ILO). Formulated in a complex bargaining process, conventions are adopted by a qualified majority of the International Labour Conference in which governments, trade unions, and employer associations are represented. Conventions may then be voluntarily ratified by ILO member countries. In

the first group of studies, we estimate hazard-rate models of the individual ratification decision. For developing countries, cost considerations (i.e., the fear of a loss of international competitiveness) seem to dominate, while political variables also matter in industrialised countries. Among these, government partisanship is of particular importance. The second group of studies is concerned with voting behaviour of the delegates to the International Labour Conference. A third group of studies deals with the economic effects of ILO conventions.

(<http://www.zew.de/project30>)

### **Reform of Unemployment Insurance, Unemployment Assistance, and Social Assistance**

The principal aim of the project is to submit a proposal concerning the reform of the German unemployment insurance, unemployment assistance, and social assistance system. The project is part of a major project whose aim is to provide a reform proposal concerning the complete German social security system, including the public pension system and health insurance. Project work is essentially based on the following steps: In a first step, the status-quo systems and current reform requirements will be analysed. In a second step, reform concepts are developed that will be evaluated with respect to their public budget implications and their impact on efficiency and the income distribution. Concerning the quantitative analysis, microsimulations and a computable general equilibrium model are used to simulate the implications of potential reform concepts.

(<http://www.zew.de/project327>)

## **Selected Publications**

Boockmann, B. and A. Dreher (2003), The Contribution of the IMF and the World Bank to Economic Freedom, *European Journal of Political Economy* 19, 633-649.

Franz, W. and F. Pfeiffer (2003), The Rationale for Wage Rigidity, *Jahrbücher für Nationalökonomie und Statistik* 223 (1), 23-57.

Hagen, T. (2003), Does Fixed-Term Contract Employment Raise Firms' Adjustment Speed? Evidence from an Establishment Panel for West Germany, *Jahrbücher für Nationalökonomie und Statistik* 223 (4), 403-421

Lauer, C. (2003), Family Background, Cohort and Education: A French-German Comparison Based on a Multivariate Ordered Probit Model of Educational Attainment, *Labour Economics* 10 (2), 231-251.

Wolf, E. (2002), Lower Wage Rates for Lesser Hours? A Simultaneous Wage-Hours Model for Germany, *Labour Economics* 9, 643-663.

## Research Department “Industrial Economics and International Management”

In policy discussion, insufficient framework conditions are considered to be the main reason behind the slower growth of the German economy in relation to most of the other OECD-countries. Germany’s national system of innovation and its institutional frame are apparently also ill-equipped to meet the challenges of globalisation. Deficiencies are felt regarding industrial production, investment in both tangible and intangible assets, and innovation. The medium and long-term effects of the global shifts of economic activity and the resulting consequences for economic policymakers and corporate strategies call for detailed, continuous scientific monitoring, analysis, and evaluation.

The need for an adjustment of corporate strategies and the economic impacts of those strategies are visible at the micro-level. Thus, a firm-level analysis is the appropriate methodological tool. Given the crucial importance that innovation has as reaction to increased globalisation and local competition, analysing the innovation strategies of companies is a major part of our work. Using large firm-level data sets, we seek to establish stylised facts and test empirical models of the innovation behaviour of manufacturing and service companies. These models also allow us to investigate the determinants of the innovation behaviour and its impacts on the European, national, and regional markets. It is our aim to develop options for microeconomic policy as well as technology and innovation policies on a regional, national, and European level. In addition, we also address company decision makers by developing tools to monitor and trace innovation-related corporate strategies. Our project-based research activities can be grouped under the three

main headings “Innovation Research and Innovation Policy”, “Firm Dynamics and Market Development”, and “International Corporate Strategies”.

### Research Area “Innovation Research and Innovation Policy”

The research area “Innovation Research and Innovation Policy” primarily deals with the determinants and characteristics of innovation activities in manufacturing and services. Based on firm-level data, we aim at disentangling those firm-specific factors that have a crucial impact on the firms’ willingness to undertake technological innovation activities, as well as the ability of firms to successfully implement product and process innovation. Thus, we study the impact of innovation on growth, survival, and the profitability of firms. However, looking solely at the characteristics of individual firms in understanding innovation underestimates the crucial contribution of feedback from the marketplace and the institutional environment as a determinant of the success of innovations.

Therefore, we also investigate the role of competition and Cupertino of firms with respect to technological innovation. The institutional frame set by corporate governance structures, financial and labour market institutions, technological infrastructure, and the intellectual property rights regime are also crucial for understanding firms’ innovation behaviour and, hence, must be taken into account when deriving conclusions for innovation policy. Although these factors change slowly, their dynamics have a considerable impact on firms. This is especially important as the globalisation of markets also induces more global innovation strategies. Hence, our

research also addresses the importance of the national institutional frame and its dynamics for innovation. We assess the strengths and drawbacks of the German institutional frame in comparison with other countries or regions. Thus, we also employ macro-level comparisons although our analysis is mainly based on the micro-level.

Empirical research on the innovation activities of German companies represents an important part of our work. We continually gather data on innovation in manufacturing and services and regularly add new waves to the Mannheim Innovation Panels. Based on the innovation survey data, we provide a comprehensive overview on innovation inputs and impacts, as well as on firm performance in German manufacturing and services. The information is broken down according to firm size, region and industry. In addition, we report recent industry-specific trends and features of innovation activities based on industry-specific analyses to all our survey respondents.

Based on these data, we examine the interrelation of innovation, information technology (IT), and international trade in service sector firms. Moreover, we analyse the impacts of public research on innovation success of German companies taking into account various other sources of innovation-related information such as the companies' suppliers, customers, and competitors.

ZEW researchers are members of Eurostat's task force for the preparation of the Community Innovation Surveys (CIS III) and also take part in OECD's group of National Experts in Science and Technology Indicators (NESTI). The latter is also involved in harmonising the OECD member states' activities to collect data on innovation at the firm level. We are also part of the EU project "Trend Chart on Innovation in Europe", which compares the innovation policies of the member states.

With respect to practical policy, we evaluate public programmes for the promotion and support of research and innovation activities in the private sector and examine, for exam-



Staff of the department "Industrial Economics and International Management".

ple, the impact of R&D grants to German firms on their performance. Important results of our work are published in the Report on Germany's Technological Performance which is prepared every year for the federal government. This report summarises the outcome of the work of four major German research institutes on innovation and technology policy. Our contributions are comprised of detailed analyses on recent trends in the global technological race and conclusions for innovation and technology policy.

Another type of project is on firm behaviour when dealing with the new economic trends of globalisation, internationalisation, and the increasing meaning of knowledge and technology in production and service creation. In this context, for example, we look at the firms' strategies in patent litigation in order to obtain more refined estimates of the value of the patent system. Other projects deal with the effects of information technology on innovation and productivity in the service and manufacturing sectors. As a precondition for measuring IT productivity, we aim at deriving price indices for IT products using hedonic regression techniques.

### Research Area "Firm Dynamics and Market Development"

The research area "Firm Dynamics and Market Development" comprises studies on the determinants of market entry, growth, survival, and exit of firms. Here, we look at the impacts of entry and exit processes of firms on the dynamics of industry in terms of market structure, industry growth, and job creation. Special attention is devoted to firm foundations in high-technology fields of the manufacturing and service sectors (e.g. biotechnology, information technology, telecommunication, technical advisement). Recent analyses explored the impacts of (regional) infrastructure such as traffic infrastructure, scientific infrastructure (e.g. universities), and technology parks, on the like-



Professor Bronwyn H. Hall (University of California at Berkeley) presenting a paper at ZEW on "Measurement Issues in the Use of Patent Citation Data".

likelihood of new firm formation in various R&D-intensive industries. Because globalisation not only affects large multinational companies, we investigate the impacts of globalisation on the growth and survival of young and small firms and the ability of small and medium-sized enterprises (SMEs) to compete in international markets. Taking into account the increasing importance of knowledge and technological competence for existing and newly founded firms, we analyse the significance of so-called academic spin-offs (new ventures using results or competence of public-financed research or science) for the overall firm formation activities in the research and knowledge-intensive industries. The empirical base of this research is a telephone survey of around 20,000 German start-ups founded in the last half of the 1990s. In addition, as pointed out by many scholars of entrepreneurship, the venture capital market is one of the most crucial financial institutions in fostering high-technology start-ups. Therefore, we track those factors that are of impor-

tance to the up-rise of the continental venture capital markets, and we study their impact on start-up rates and the growth of young high-tech firms.

A crucial result of our research on public policy to increase the start-up rates in Germany stems from another large-scale telephone survey of new firms in Germany. Based on these data, we are able to show that public grants help start-ups to survive in the market. However, public grants do not have an impact on firm growth within a multivariate regression framework for firms surviving their first eight years. This result confirms previous research on the internationalisation of high-tech start-ups, showing no significant impact of public grants for starting a firm on the subsequent employment and sales growth. This latter study primarily deals with the reasons for early internationalisation of high-tech start-ups. We also have evidence that despite significant country-specific differences in the internationalisation process, the level of internationalisation of start-ups is quite similar: Nearly two thirds of surviving start-ups sell on international markets within seven years after start-up. In addition, the factors explaining internationalisation are rather similar. Human capital of the founding team and technological characteristics of the product are the most important determinants of the successful internationalisation of SMEs.

Another study looks at the factors which are important drivers of the development of start-ups in new technology fields like multimedia and telematic-based mobility services. Because there is no codified demarcation of economic fields like this we must first develop methods to identify these firms in large databases. To do this, we apply computer linguistic tools to identify firms, not on the basis of industry codes, but on the basis of verbal product and service descriptions. This approach is used to study the development of the biotech industry in Germany.

### **Research Area “International Corporate Strategies”**

Within our third research area, “International Corporate Strategies”, we develop methods and tools to enhance the strategy-finding process of companies. Here, we specialise in tools that involve the application of our core competencies in the analysis of large databases at firm or product level. Some research focuses on analyses of product-level data on international trade to identify potential home countries of suppliers with a given price-quality portfolio. This type of research is often done in close co-operation with enterprises. On behalf of Heidelberger Druckmaschinen, one of the world’s largest manufacturers of printing machines, we developed a highly standardised tool for the selection of foreign suppliers. It allows SMEs as well as large firms to economise on the first steps in the selection process of new suppliers. This tool (Global Sourcing Management Tool) is available upon request for firms.

In addition, we use the lead market approach to investigate local markets with a specific ability to test and redesign new products. The lead market approach is rooted in our research on the internationalisation of R&D and relates to the selection and information function of markets. The basic idea is that in a highly competitive environment a dominant design will arise out of a competitive market environment much earlier than out of a less competitive one. Early entry on those markets will help to generate long-lasting technological advantages which allow the exploitation of economies of scale and network economies.

### **Firm-Level Databases**

Many of our research projects use firm-level databases that have been built step-by-step since ZEW’s foundation. These databases are either based on the firm records of Creditreform (Germany’s largest credit rating agency), or stem from our own data collection

efforts. Historically, the Mannheim Enterprise Panel (MUP) has represented the starting point of ZEW's co-operation with Creditreform. It comprises a sample of around 12,000 firms that have been tracked since 1989 by using the firm-level information gathered by Creditreform. This data set contains basic firm-level data such as sales, employment, legal form, ownership structure, and other information usually gathered by credit rating agencies. It is our basis for tracking the employment dynamics at the firm level. However, this primary goal was extended to explore not only the development of incumbents, but also the contribution of new firm entries to the development of industries.

Two new databases were developed to reach this goal: The first one comprises all new firms in West Germany, which are recorded in Creditreform's database (ZEW Foundation Panel West). Secondly, based again on Creditreform's data, we track the awakening and development of the East German economy after unification using data from the ZEW



Professor Pierre Mohnen (Maastricht University and MERIT) on "Complementarities in Innovation".

Start-Up Panel for East Germany. We also extended co-operation with Creditreform to other countries (Austria) for which Creditreform regularly gathers firm-level information. A common characteristic of all these data sets is that we build a chronological time series of individual firms by systematically recording the information from Creditreform twice a year, whereas a credit rating agency usually concentrates on the most recent data available. These fundamental databases are augmented with yearly surveys of firms in the manufacturing and service industries on innovation activities based on suggestions made in OECD's OSLO Manual – the handbook of firm surveys on innovation.

Finally, we run a special survey revealing short-term expectations as well as structural information about a sample of business-related service firms in order to regularly track the business cycle in this sector. These data help us overcome the lack of information about this sector in Germany, but we also use these data to analyse the interaction of manufacturing and business-related services and the interrelation of the business cycle in manufacturing and services.

Maintaining these unique databases on firm-level data in Germany is an important time and resource-consuming task for the department. However, pure data gathering is not the goal of these endeavours. Our primary motive is to get firm-level information that is not available elsewhere in publicly accessible sources, and that is necessary to empirically investigate the dynamics of industries in Germany. The databases often form the backbone of empirical projects within the department. These data sets are also used by other ZEW departments. Moreover, for some of the data sets, we have already developed methods to allow a wider distribution within the research community by hiding the identification of firms while keeping as much firm-level information within a public use file as possible.

## Selected Research Projects

### The Mannheim Innovation Panel (MIP)

Since 1993, the Centre for European Economic Research (ZEW) has been conducting an annual survey on innovation activities in German manufacturing. The survey was extended to the service sector in 1995. It is designed as a representative panel. MIP has put forward some innovations in international innovation surveys:

- It was the first innovation survey to fully cover the service sector.
- It has introduced several new innovation indicators such as indicators on innovation success.

MIP also collects a number of non-innovation related firm data, thus providing a unique database on firm panel data that allows, for example, the linkage of innovation activities with firm performance. MIP is conducted in co-operation with infas Institut für angewandte Sozialwissenschaft and with a significant financial contribution by the Federal Ministry of Education and Research. In 2003, the eleventh wave in manufacturing and the eighth wave in services was conduct-

ed. Between 4,000 and 5,000 firms take part in the survey annually. MIP was in 1993, 1997, and 2001 the German contribution to the Community Innovation Surveys (CIS) initiated by Eurostat.

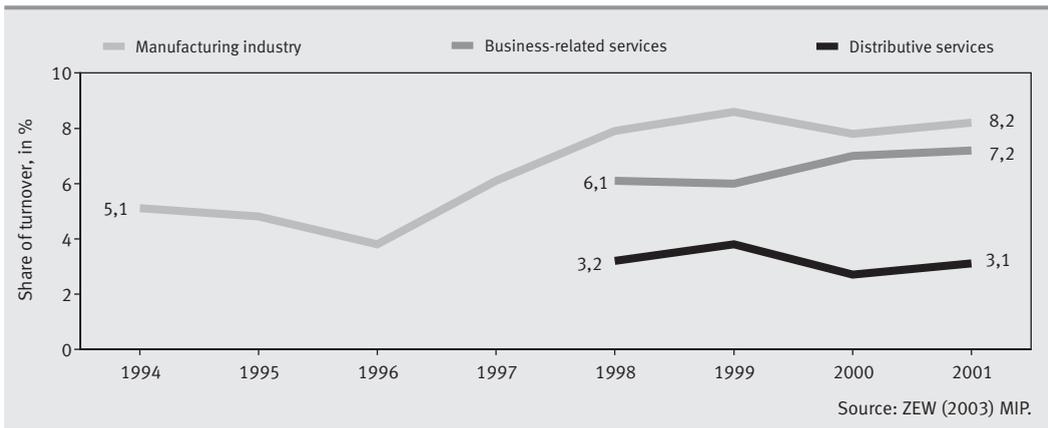
The MIP data are available in an anonymous version ('scientific use file') to external users for non-commercial basic research. Currently, more than 30 researchers use these scientific use files.

(<http://www.zew.de/project92>,  
<http://www.zew.de/project93>,  
<http://www.zew.de/project253>)

### European Hedonic Centre

Harmonised quality-adjusted price indices based on the hedonic approach could overcome the problem of adjusting for quality changes. Eurostat has commissioned the project "European Hedonic Centre" to analyse the feasibility of a European hedonic function and develop the necessary methodology. The market for personal computers (PC) was chosen for this pilot study. The em-

**Share of turnover with products new to the market (in % of total turnover), 1994-2001.**



pirical analysis of the PC market exhibits significant differences between the European countries' "average PCs".

We still find significant differences in the price development after adjusting for quality differences. However, our analysis also provides some evidence for the existence of a European hedonic function. This seems to justify the hypothesis that markets in Europe are sufficiently similar to allow the construction of a joint European hedonic price function. Our results also demonstrate the crucial importance of comparable and representative data. (<http://www.zew.de/project261>)

### The Development of Young Firms

This project is based on the project "Surviving, Growth and Fast Growth of Start-Ups in East and West Germany" funded by DFG (the central public funding organisation for academic research in Germany), which was worked out by researchers of ZEW and the University of Mannheim between 1998 and 2000. The findings and insights of this research led to new questions and to the wish for further and more detailed analyses on the development of young firms to answer them.

Young firms have become an object of economic policy as they are supposed to have a critical role in enhancing the innovativeness of a developed economy. The project aims at answering practical policy questions related to this sector, but also contributes to the current theoretical discussion among researchers.

The subjects of this project are:

- sale, merging, and handing over of firms as an alternative to firm closure,
- survival and growth of new firms,
- macroeconomic employment effects of firm foundations,
- young firms' behaviour on patenting,
- the influence of venture capital on the performance of start-ups, especially of new biotech firms.

The research on each topic deals with the development of new firms and the stimulus on innovation and employment. In part of the analyses, we use panel data and simultaneous models.

(<http://www.zew.de/project221>)

### Report on Indicators on Germany's Technological Performance

To describe Germany's technological performance by using an extensive set of indicators is a central part of the annual report on "Germany's Technological Performance" issued by the German government. ZEW has been part of the research group that prepares this report since 1995. By generating several indicators on Germany's technological performance, the country's international competitive position can be assessed. These indicators are analysed in their development over time and in international comparison, they are updated yearly, and the indicator system will be expanded gradually. ZEW's contribution to the report relating to the time period 2002-2004 is on

- innovation behaviour,
- start-ups in high-tech industries,
- market for risk and venture capital,
- diffusion of new information and communication technologies,
- indicators of the tertiary education system (together with HIS, Hanover).

In the annual report, the indicator findings are interpreted and an overall picture of the technological performance of Germany is drawn.

(<http://www.zew.de/project52>)

## Selected Publications

Almus, M. (2002), What Characterizes a Fast Growing Firm?, *Applied Economics* 34, 1497-1508.

Almus, M. and D. Czarnitzki (2003), The Effects of Public R&D Subsidies on Firms' Innovation Activities: The Case of Eastern Germany, *Journal of Business and Economic Statistics* 21 (2), 226-236.

Kaiser, U. (2002), An Empirical Test of Models Explaining Research Expenditures and Research Cooperation, *International Journal of Industrial Organisation* 20 (6), 747-774.

Lutz, S. and I. Herguera (2003), The Effect of Subsidies to Product Innovation on International Competition, *Economics of Innovation and New Technology* 12 (5), 465-480.

Rammer, C. et al. (2002), Knowledge Interactions Between Universities and Industry in Austria: Sectoral Patterns and Determinants, *Research Policy* 31, 303-328.

## Research Department “Corporate Taxation and Public Finance”

In most European countries, governments traditionally take an active role in the economy. Taxes, social security systems, regulation, but also expenditures for infrastructure and education, influence key economic variables such as growth, investment, household and firm locations, employment, and income distribution. During the last decades, however, governments increasingly have had to think internationally. European integration and the globalisation of markets have decreased the power of any single national authority. This may be welcomed, since firms can more easily escape harmful government intervention nowadays, but on the other hand, fiscal competition may also reduce the governments’ ability to cope with social and economic problems. This situation requires a redesign of important areas of economic and social policy.

Given this background, the department analyses public finance in a context of economic integration in which agents have extended possibilities to choose the location of their activities. The research aims at providing policy advice on both the German and the European level. Research in the department is basically concerned with three related topics:

- the measurement and comparison of incentives of competing governments for businesses, investors, and mobile labour;
- the impact of fiscal incentives on private agents’ location decisions;
- the impact of mobility and competition on government policy, and the assessment of possible means of policy co-ordination.

The study of public finance and corporate taxation requires microeconomic and econometric methods, and a detailed knowledge of public sector institutions such as tax laws and the rules of intergovernmental transfers. The

department emphasises the necessary connection between these three methodological approaches. Since the state intervenes almost everywhere in the economy, and since little goes untaxed, the department is never short of potential areas of co-operation with the other ZEW departments. Examples for such co-operation include the taxation of start-ups and their employees, the interaction of social policy and labour markets, the co-ordination of monetary and fiscal integration in Europe, and green taxes.

### Research Area “International Comparative Analysis of Corporate Taxation”

The specific contribution of ZEW to the ongoing debate on company taxation in an international perspective is the comparative analysis of the tax burden imposed on companies and their activities. This research interest has brought about the development of a specific software tool, called the European Tax Analyzer, which was made in co-operation with the University of Mannheim. The programme simulates the assessment of a representative firm, taking into account all relevant taxes, their interaction, and special features such as tax credits and reduced tax rates. The tax systems of five countries (Germany, France, UK, the Netherlands, and USA) are modelled; industry-specific results can also be obtained. By varying the initial conditions, the tax liability of a representative company can be traced back to specific provisions in the tax code and to industry specific characteristics. Moreover, the quantitative effects of tax reforms can be simulated. Consequently, the department gives advice to policy makers and the public on issues of corporate taxation on a regular basis.



Researchers of the department “Corporate Taxation and Public Finance”.

Beyond its involvement in topical issues of tax policy, the department works on the extension of the methodological basis for the assessment of tax burdens. Thus, the European Tax Analyzer is being extended to cover partnerships in addition to incorporated firms. Moreover, the taxation of transnational investment activities and parent-subsidiary relationships are being integrated. In addition to the European Tax Analyzer, effective marginal tax rates are used so as to evaluate the attractiveness of various countries for corporate investment. With regard to location decisions of multinational companies, the analysis is extended to the tax burden on highly skilled employees and expatriates.

#### **Research Area “Taxes, Investment and Choice of Location”**

The theme of this research area is the impact of fiscal incentives on private agents’ investment and location decisions. The focus is on empirical research, mainly on mobility, but also on its implications for the local economy. Current research is concerned with issues

such as the influence of fiscal incentives on the location of foreign direct investment in Europe, cross-border flows of labour, and the capitalisation of fiscal policies in housing and land prices.

#### **Research Area “Fiscal Competition and Federalism”**

This research area deals with the competition between jurisdictions and the co-ordination of fiscal policies in federal states. Basically, the question is whether fiscal competition improves efficiency of government activities, and whether some form of co-ordination is needed. One of the things we examine is whether fiscal competition indeed leads to a general reduction of tax levels and, therefore, to an erosion of the financial basis for public policies. A first focus in this area is on the tax competition between municipalities in Germany. This is not only of interest for local public policy in Germany. In addition, it provides a particularly well-documented laboratory for the study of fiscal competition. Thus, the existence of competition among local ju-

risdictions has been established. Other issues studied are the revenue effects of unilateral cuts in the tax rate, and the impact of international tax competition in border regions. In an international perspective, this research area addresses two key policy issues. Firstly, the systems of social policy are compared across European countries. This lays the basis for an analysis of the impact of fac-

tor and household mobility on the shape of these systems. Secondly, the department addresses the benefits and risks of greater harmonisation of taxes and other fiscal policies at the European level. This aims at explaining and evaluating the forces, which lead to a centralisation of fiscal responsibilities, from a theoretical and from an institutional and a historical point of view.

## Selected Research Projects

### Fiscal Competition: Theory and Empirical Evidence

The aim of the project is to contribute to the ongoing discussion on fiscal competition by means of empirical research on the characteristics and consequences of fiscal competition. However, international fiscal competition is hard to analyse because of the complexities of the national tax systems and the difficulties in monitoring transboundary factor movements. Therefore, the project exploits the fact that the lower fiscal tiers in existing federations show substantial fiscal autonomy in a highly integrated economic setting, and it studies some of the issues in greater detail at the local level. In particular, in this project we use a large panel data set of jurisdictions in Germany, which show some autonomy in expenditures and taxation (business tax).

(<http://www.zew.de/project75>)

### Taxation of Partnerships

Using the European Tax Analyzer (ETA), a computer-simulation programme, one can compare the tax burdens of corporations resident in Germany, France, the United King-

dom, the Netherlands, and the USA. Except for Germany, ETA is not capable of calculating, comparing, and analysing the tax burden of partnerships at present. Therefore, the purpose of this study is to extend ETA to include all foreign countries considered with respect to the legal form of the partnership.

The extension of ETA creates a comprehensive methodical instrument to assess planned national and international tax reforms, as well as tax changes at the EU level. It will now be easier to determine the situation of medium-sized companies. More comprehensive international tax burden comparisons will be possible, setting the framework to compare the international competitiveness of German companies.

(<http://www.zew.de/project77>)

### Tax Burden and Impact on National and Trans-National Business Activity

The European Tax Analyzer (ETA) is a computer based model-firm approach for measuring the tax burden of corporations. So far, ETA has been limited to purely national-based firms and restricted to the measurement of average tax burdens. The purpose of this study is

to discern which form of tax burden (effective or average marginal) is relevant for various types of decisions, and to expand ETA to calculate effective tax burdens. Furthermore, cross-border corporate investments have been included to examine the taxation effects on location, financing, and investment decisions.

An expanded spectrum of analysis has been created to allow national and international tax burden comparisons. Average marginal and effective tax burdens can be simultaneously ascertained based on the effects of corporate taxation decisions. The impacts of tax burdens on corporate decisions are now more comprehensively covered. The effects of national tax reforms and EU harmonisation plans on corporate decisions can be analysed in a broader way.

(<http://www.zew.de/project78>)

### **The Effective Tax Burden on Companies and Highly Qualified Manpower**

Companies pay taxes on profits and capital, but under competitive labour markets for highly skilled employees, companies also compensate these employees for international differences in labour tax burdens. Both elements influence the attractiveness of a region as a location for investment.

The goal of the study is to make meaningful quantitative estimates of effective tax burdens and to compare the attractiveness of different locations from a tax perspective. The study covers the tax burdens of 142 regions in Europe and the United States. ZEW has developed a new calculation model to determine the tax burden on highly qualified employees. Corporate tax burdens are worked out using the method established by Devereux and Griffith, which has already been used by ZEW, IFS, and the University of Mannheim in a study on behalf of the European Commission in 2000/2001.

(<http://www.zew.de/project272>)

### **Social Transfer Systems in Europe: Design, Redistributive Effects, and Public Choice Explanations**

The effectiveness and efficiency in reducing inequality and poverty of European social transfer systems are analysed in this project. Simultaneously, prevailing differences between countries are explained from a political-economic point of view. The study is comprised of three steps: (1) A classification of European social transfer systems is developed, invoking a set of indicators for institutional characteristics. (2) The distributive effectiveness and efficiency of social transfers are calculated for selected EU countries and the linkage between class assignments and distributive impacts is investigated. (3) To explain the possible causes for the persistence of means-tested systems, two models of stylised political decision processes are developed, in which the existence of disincentives typical for means-tested systems is explained by the middle classes' desire to keep up differences in status and income.

(<http://www.zew.de/project240>)

## Selected Publications

Büttner, T. (2003), Tax Base Effects and Fiscal Externalities of Local Capital Taxation: Evidence from a Panel of German Jurisdictions, *Journal of Urban Economics* 54, 110-128.

Büttner, T. (2001), Local Business Taxation and Competition for Capital: The Choice of the Tax Rate, *Regional Science and Urban Economics* 31, 215-245.

Hölsch, K. and M. Kraus (2004), Poverty Alleviation and the Degree of Centralisation in European Schemes of Social Assistance, forthcoming in: *Journal of European Social Policy* 14 (2).

Jacobs, O.H. and C. Spengel (2000), Measurement and Development of the Effective Tax Burden of Companies – An Overview and International Comparison, *Intertax*, 334-352.

Spengel, C. and L. Lammersen (2001), Methoden zur Messung und zum Vergleich von internationalen Steuerbelastungen, *Steuer und Wirtschaft*, 222-238.

## Research Department “Environmental and Resource Economics, Environmental Management”

During the past decades, major problems in the field of environmental and resource protection have shifted from the national to the international level. The reason for this is not just that key environmental threats, such as climate warming, loss of biodiversity, over-fishing of the oceans and water shortages, are transnational in nature and, thus, require a supranational or global solution. Rather, increasing globalisation of economic activities also implies that unilateral policy strategies have more international feedback effects to consider than they have had in the past.

In this context, the environmental policy debate focuses on the extent to which cross-country differences in regulation drive economic indicators (e.g. the level in competitiveness) and environmental effects (e.g. environmental dumping, race-to-the-bottom, leakage). Increasing attention is also paid to the issue of environmental policy as a strategic tool of foreign trade policy and development aid.

Globalisation of the economy and environmental problems have far-reaching implications for policy design: There is a growing need to achieve internationally binding agreements between sovereign nations. The prospects for such agreements depend, after all, on whether the associated allocation of potential costs and benefits of environmental and resource policies is perceived as “fair”. Therefore, the research community is required not only to seek economically efficient solutions, but also to identify strategies that reconcile potentially diverging fairness concepts. Because of the long-term nature of many environmental and resource problems, this challenge exists not only on a national and international level, but also on an inter-generational level.

Against this background, our research department investigates the degree to which current economic systems or changes induced by policy measures are ecologically sustainable, economically viable (efficient) and socially conforming (fair), i.e. how much they confer to the overall principles of sustainable development as put forward by the Brundtland Report in 1987. The operationalisation of the complex sustainability concept presupposes the specification of sustainability rules and indicators for economic activities. Furthermore, concrete policy recommendations require a quantitative analysis of policy-induced changes in technologies (technological progress), infrastructures, lifestyles, and institutions in relation to sustainable production and consumption patterns.

The department’s research activities cover three problem levels that are inherently linked to each other. The first level (the conceptual, qualitative level) covers the development of environmental policy strategies to improve the overall sustainability of economic activities. At the next level, the economic and environmental effects of governmental policies are quantified. At the third level, the implications of political processes and the institutional framework on the design and implementation of environmental policies are investigated. Current research involves these three dimensions and can be summarised as follows:

In the research area “Innovation and Sustainable Development”, rules, indicators, and strategies for sustainable economic activities are specified in qualitative terms. Furthermore, determinants and economic impacts of environmental innovations are quantified.

The research area “Energy Economics” addresses the development of energy markets and the implications of energy policies at the overall EU level as well as at the level of individual member states (particularly Germany). Environmentally motivated changes of regulatory frameworks are assessed regarding their effects on liberalised energy markets. The research area “Transport and Mobility” deals with the issue of how transport and mobility requirements can be met in a sustainable manner while taking into account external cost estimates. The research area “International Environmental and Resource Policies” is devoted to examining and designing control systems for sovereign states to institutionalise transnational and global environmental and resource policies. This includes codified rules like the principles of international environmental law and concrete problem-specific regulations, such as the Kyoto Protocol and the Framework Convention on Climate Change. In addition, international treaties that are indirectly related to the environment, such as multilateral trade and investment agreements, are investigated with respect to the requirements of sustainable development. The research area “Macroeconomic Analysis of Environmentally Relevant Policies” deals with economy-wide policy interference. Based on large-scale numerical models with different spatial and temporal resolutions, potential trade-offs between economic efficiency, distributional goals, and environmental objectives are identified at the macroeconomic and the sector level.

Research is based on a microeconomic approach, incorporating (micro-)econometric methods as much as possible with the available data. In the microeconomic approach, environmental and resource problems, as well as the reaction to policy measures, are explained from the perspective of individual rationally behaving economic agents (households, enterprises, associations, the media, the government etc.). This involves consistency be-

tween environmental and resource economics and other economic disciplines, such as public finance, the new trade and growth theories, industrial organisation or political economy. An interdisciplinary dialogue with the natural sciences is also required whenever questions are studied that concern the limited substitutability of natural capital.

Our research areas interact with other ZEW research departments. For example, close collaboration takes place with the research department “Labour Markets, Human Resources and Social Policy” on the issue of employment effects induced by environmental innovations. We also work with the research department “Industrial Economics and International Management” to discover the factors determining environmental innovations. The research area “Macroeconomic Analysis of Environmentally Relevant Policies” benefits from the co-operation with the research departments “Labour Markets, Human Resources and Social Policy” and “Corporate Taxation and Public Finance”: The empirical foundation of labour market mechanisms as well as the detailed description of tax and transfer systems within the quantitative macroeconomic models increase the policy relevance of applied policy analysis. Another example of in-house synergy effects is our collaboration with the research department “International Finance, Financial Management and Macroeconomics” regarding the implementation of emissions trading or tradable quotas of renewable energies. We also research with this department the relation between shareholder value and sustainability performance of firms.

We share our research findings with others in the research community through journal publications and academic presentations at international conferences, but we also use other media to keep decision-makers in policy and industries, as well as the broader public, informed about research results (project reports, newsletters, books, workshops, radio, TV).

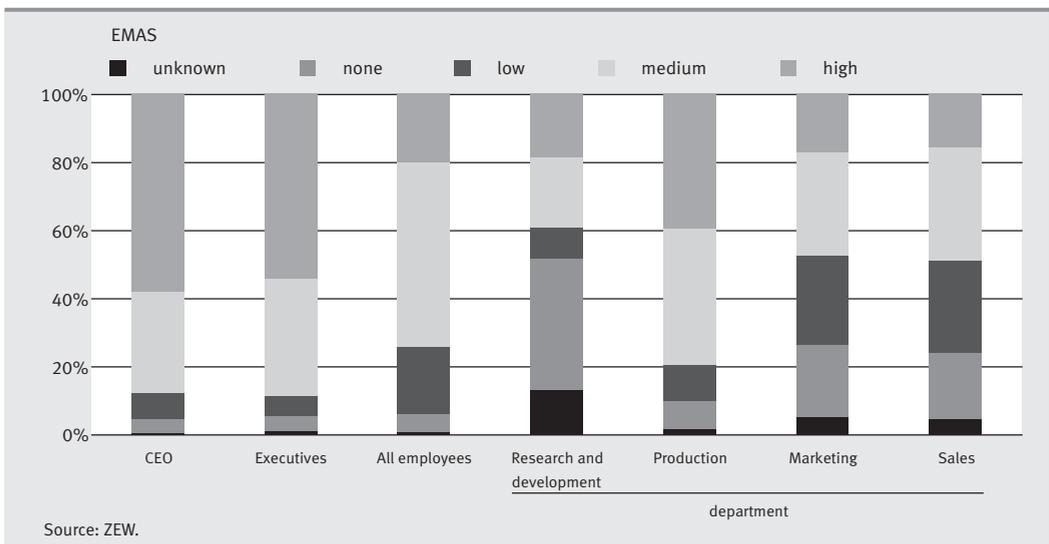
## Research Area “Innovation and Sustainable Development”

Sustainable economic systems require environmental innovations in the sense of far-reaching and long-term changes in technologies, infrastructures, and institutions. Against this background, the projects of the research area “Innovation and Sustainable Development” mainly deal with two thematic fields. The first field covers the analysis of determinants and effects of environmental innovations. Concerning determinants, special attention is paid on whether or not it is possible to stimulate such innovations by market forces and, alternatively, by regulation, and if so, how this can be done. Concerning effects, the focus is on economic impacts, especially the effects of environmental innovations on personnel size and competitiveness. The second field addresses the relation between environmental performance of companies and economic success (measured e.g. as stock performance.)

On the theoretical front, research largely draws on neoclassical approaches in environ-

mental, innovation, and labour market economics. Whenever these approaches appear to be too restrictive to explain real-life innovation processes, they are supplemented with new approaches in evolutionary economics. Concerning the determinants and effects of environmental innovations, empirical work is based on company interviews, in the form of either large-scale surveys or in-depth case studies. The role of case studies is to get a better understanding of innovation processes on the firm level, e.g. the importance of environmental management systems for the innovation behaviour of firms. Large-scale surveys are then the natural second step to derive representative results. The preferred methods for data collection are Computer Assisted Telephone Interviews (CATI) and surveys with written questionnaires. Concerning the relation between environmental performance and economic success, additional data come from exogenous sources like rating agencies. The data are analysed with statistical and econometric methods, e.g. discrete choice models or empirical asset pricing models.

### Participation of persons at different functional and hierarchical levels in the development of Environmental Management Auditing Schemes (EMAS).





Staff of the Environmental and Resource Economics, Environmental Management department.

Another established string of research deals with the specification of rules, indicators, and strategies for sustainable development. Once again, the core theoretical framework is provided by the neoclassical paradigm, complemented with important aspects of ecological economics, e.g. when environmental policy goals have to be derived, or very long-term environmental problems (raising the problem of intergenerational fairness) have to be solved.

### Research Area “Energy Economics”

Major environmental problems, such as global warming, are linked to energy consumption and conversion. Given the (ongoing) liberalisation of energy markets, policies that aim at reducing negative energy externalities must conform to criteria of open competition. Against this background, environmentally motivated changes in the (inter-)na-

tional policy framework are investigated with respect to their environmental outcome, competitive effects, and distributional incidence. Special emphasis is given to renewable energies and the role of alternative support policies, e.g. feed-in tariff or certificate trading regimes, that promote the evolution and market penetration of renewable energy technologies. Quantitative assessment is based primarily on partial equilibrium models of national and international energy sectors that allow the simulation of the utilisation of, and investment in, different energy conversion technologies, taking into account strategic behaviour of suppliers.

Since energy represents an important input for both production and consumption activities, energy regulation may cause non-negligible macroeconomic impacts. Economy-wide analysis of energy policy interference is performed using both computable

general equilibrium models (PACE, GEM-E3) and the dynamic input-output model DIO-GENES (featuring a detailed vintage-approach that reflects the technological change of actual electricity generation capacities).

Evaluation of policy interventions based on empirical data and appropriate micro-econometric methods is a continuing research topic, yet one that is apparently quite constrained by data availability.

Finally, short to medium-term forecasts of key indicators for Germany's energy market are based on a biannual survey among energy market agents and scientists ("ZEW Energiemarktbarometer").

### Research Area "Transport and Mobility"

Environmental burdens caused by traffic have increased in the past few years due to the rise of passenger and freight traffic, combined with a shift towards motorised road transport. In Germany, as in the entire European Union, transportation is becoming the major source of pollution. Hence, with regard to sustainable development, the question is how transport and mobility requirements still can be met while lowering the detrimentality of environmental impacts. The principal policy options to meet these environmental goals include decoupling economic growth from transport activities, rationalising transport, and shifting transport activities to more environmentally friendly means of transport. Our research goal is to develop environmental or sustainability criteria to assess alternative transport policies and to derive a cost-efficient mix of instruments influencing transport activities.

In the freight transport market, the choice of mode and the price-quality comparison on which this choice is based have mainly been discussed on an aggregate level. Research activities in this field aim at a better understanding of the individual decision-making process (by identifying its main determinants). This is a pre-requisite to selecting

best-practice solutions while making a substantial shift towards more environmentally friendly modes.

One major option for integrating the transport sector into a general climate protection policy is to formulate comprehensive emission trading schemes. However, these trading schemes must be adapted to the special conditions of the transport sector. In this context, alternative implementation strategies are compared and benchmarked against key criteria of environmental efficacy and economic efficiency.

Another research line concerns the assessment of macroeconomic effects induced by transport policies. To this aim, the transport sector has been incorporated into a standard general equilibrium model of international trade and energy use (PACE-T). The model represents passenger cars as durable consumption goods. The application of PACE-T includes the comparison of relative carbon emission standards (as agreed upon in the voluntary agreement between the European Automobile Producers Association and the EU) with emission tax or permit policies.

The transport sector is characterised by several network effects. However, research about environmental policies in the presence of network effects has been rather limited. We study environmental regulation in the automobile market with a focus on alternative propulsion technologies. One prominent example relates to hydrogen-fuelled engines and the network effects through the infrastructure of filling stations, which could lead to a lock-in with conventional petrol and diesel technologies. Research is dedicated to the question of whether or not it is possible to promote environmentally friendly fuels in spite of these hindering network effects, and if so, how.

The "TransportmarktBarometer ProgTrans/ZEW", which has been designed and used in co-operation with ProgTrans, is a continuous market assessment tool. It is based on a sur-

vey and offers the transport industry a quarterly market overview of the main economic indicators: price and traffic volume.

### **Research Area “International Environmental and Resource Policies”**

The globalisation of economic relations and the growing significance of transnational and global environmental and resource problems increasingly calls for internationally coordinated environmental policy. The research area “International Environmental and Resource Policy” addresses this need at different levels:

Firstly, theoretical research focuses on the question of how fundamental incentive problems can be overcome in the provision of international and global public goods. Here, research is based on methods from non-co-operative game theory and coalition theory. A major focus has been on climate policy and the question of how effective measures can be obtained to deal with global warming. Special focus within this field of research has been on equity considerations that obviously play an important role in climate negotiations.

Secondly, policy measures are evaluated that have been laid down in international treaties on climate policy. This includes the evaluation of both the economic consequences as well as the ecological effectiveness of the Kyoto Protocol. Research activities in this field of investigation make use of quantitative analysis based on a comprehensive set of computable general equilibrium models.

Thirdly, different instruments for the implementation of environmental goals that are agreed upon in international negotiations are analysed. Besides the field of climate policy, the range of topics is currently extending to resource problems, such as biodiversity loss and water. Here, conflicts and possible solutions for the use of transnational water resources are studied.

### **Research Area “Macroeconomic Analysis of Environmentally Relevant Policies”**

The operationalisation of policies for sustained protection of natural resources requires quantitative assessments of their environmental and economic effects. It is mainly a matter of quantifying potential trade-offs between environmental and economic goals, such as safeguarding international competitiveness and the preservation of jobs or economic growth versus improving environmental quality. To this end, the research area further develops and applies macroeconomic tools for the economy-wide analysis of environmental policy measures as well as environmentally relevant policies, e.g. trade agreements. Apart from a powerful system of large-scale general equilibrium models (GEM-E3, PACE) with different breakdowns in terms of sectors, regions, and time horizons, our set of quantitative tools also encompasses an econometrically estimated dynamic input-output model (DIOGENES) that features a variety of different emissions and incorporates detailed technological information on the energy sector. The complementary application of these models accommodates the comprehensive impact analysis of policy. Moreover, DIOGENES can be used to create trend or reference scenarios that can serve as a starting point for counterfactual policy simulations with the equilibrium models.

Recent applications include the analysis of efficiency and distribution effects of alternative strategies for the achievement of climate gas reduction targets and the interaction of trade policies and climate protection policies. At the national level, the major focus is on evaluating environmental, employment, and efficiency implications of environmentally motivated shifts in the tax system.

The methodological extensions of the equilibrium models centre on the integration of imperfect market structures for the purpose of a microeconomic foundation of unemployment and international trade, and on the inclusion of

approaches from industrial economics in order to depict competition among locations. As for the econometrically estimated dynamic input-output model, the focus is on a micro-founded

depiction of mechanisms in labour and capital markets as well as on continuing the integration of technological innovation and diffusion processes on a macroeconomic level.

## Selected Research Projects

### **Blueprints for an Integration of Science, Technology and Environmental Policy (BLUEPRINT)**

The BLUEPRINT network examines the relationship between S&T and environmental policies and considers the complexity of factors influencing innovation and environmental decisions in firms. It promotes the dialogue between the socio-economic research community, policy makers, industry, and intermediate organisations in Europe to enhance policy coherence in addressing sustainable development issues. In five workshops and a final conference, policy recommendations were made for stimulating policy initiatives in the area of environmental and innovation policy on the EU and member state level.

(<http://www.zew.de/project243>)

### **The Role of Innovation and Policy Design in Energy and Environment for Sustainable Growth in Europe (TCH-GEM)**

This project concerns the study of policies in the energy/environment domain with the help of the GEM-E3 model, a full scale general equilibrium model for the 15 EU countries that represents energy/environment issues in a consistent economic framework. The policy

issues include the role of innovation for sustainable growth in Europe, the phasing-out of nuclear power, trade and environmental effects of the enlargement of the Union to Eastern Europe, and the fine tuning of the Kyoto policies. The model maintenance and model refinement research cover the extension to Eastern Europe, the full implementation of previously decided extensions (inclusion of Switzerland, integration of bottom-up modelling for the electricity sector, integration of imperfect competition) and an advancement in modelling technical change.

(<http://www.zew.de/project184>)

### **Development and Evaluation of Concrete Approaches to Integrate the Transport Sector into a CO<sub>2</sub>-Emissions-Trading-System**

The target of this study is to develop and evaluate concrete approaches to integrating the transport sector into a CO<sub>2</sub>-Emissions-Trading-System. Three approaches – the upstream approach with the fixed emissions target, the midstream approach with the fixed emissions target, and the midstream approach with specific emissions targets and inherent gateway construction – are put in concrete terms by dealing with a list of methodical questions. In addition, we check

whether the three main approaches can be integrated into the already existing national regulations (mineral oil tax, automobile tax, ecotax) or combined within a mixed system. Finally, possible transition paths from the present regulation arrangement to a pure Emissions-Trading-System in the transport sector are formulated and evaluated. (<http://www.zew.de/project259>)

### **International Negotiations on Climate Protection in the Context of Domestic Climate Policy**

It is well known that international co-operation is needed in order to deal effectively with global environmental problems, such as climate warming. The project puts forward the hypothesis that co-operation can be explained by “equity preferences”. Standard economic theory is based on the assumption that agents are solely motivated by material self-interest and care only about their ab-

solute payoff. While keeping the assumption of pure self-interest, we assume that countries also care about their relative position to others. In a formal model, the project has shown so far that co-operative behaviour of huge coalitions can be explained, if countries are sufficiently interested in fair outcomes. More currently, the project aims to discover the degree to which negotiators may have been motivated by equity arguments. (<http://www.zew.de/project138>)

### **Climate Change Policy and Global Trade (CCGT)**

This project aims at providing advice to European policy makers about the best strategy for climate change mitigation within the framework of the Kyoto protocol and the provided flexibility instruments, focusing on the interrelationships with global trade agreements. Based on rigorous quantitative analysis with a General Equilibrium Model of the



Workshop of the BLUEPRINT network in Brussels, December 2002. The network is financed by the EU Commission and co-ordinated by ZEW. From left: Cindy Fökehrer (Eurochambers), Dr. Klaus Rennings (ZEW, network co-ordinator), Hugo Brouwer (Ministry of Economic Affairs, the Netherlands), Niels Henrik Mortensen (Environment Agency, Denmark), Marialuisa Tamborra (Research Directorate-General of the EU Commission).

world economy, the study investigates how trade agreements interfere with climate change mitigation policies. With respect to the use of the Kyoto flexible instruments, the project identifies the optimal mix between domestic emission limitation actions in the OECD countries and foreign abatement action, considering transaction costs and risk premia associated with capital transfers outside the OECD.

(<http://www.zew.de/project185>)

### Selected Publications

Böhringer, C., T. Hoffmann, and S. Vögele (2002), The Cost of Phasing out Nuclear Power – A Quantitative Assessment of Alternative Scenarios for Germany, *Energy Economics* 24 (5), 469-490.

Böhringer, C. and A. Löschel (2003), Market Power and Hot Air in International Emissions Trading: The Impacts of U.S. Withdrawal from Kyoto-Protocol, *Applied Economics* 35 (6), 651-664.

Böhringer, C. and C. Vogt (2003), Economic and Environmental Impacts of the Kyoto Protocol, *Canadian Journal of Economics* 36 (2), 475-494.

Lange, A. and C. Vogt (2003), Cooperation in International Environmental Negotiations Due to a Preference for Equity, *Journal of Public Economics* 87, 2049-2067.

Ziegler, A., K. Rennings, and M. Schröder (2003), The Economic Performance of European Stock Corporations. Does Sustainability Matter?, forthcoming in: *Greener Management International*.

## Research Group “Information and Communication Technologies”

The ICT research group, founded in 2001, is primarily supported by grants from the Landesstiftung Baden-Württemberg foundation for a time period of five years. Research activities of the group focus on the economic impacts of the increased adoption of information and communication technologies (ICT), with particular focus on industrial economics, labour economics, and firm taxation. Empirical analyses are conducted with firm-level data, which are partly collected by ZEW itself and with individual data, using mainly microeconomic and microeconomic tools. Our research programme has four main focuses:

The first research area is concerned with monitoring the diffusion and usage of various ICT and analysing the determinants and effects of diffusion. The effect that ICT usage has had on firm performance, for instance, is analysed by looking at developments in labour productivity. The second main research area focuses on labour market aspects of ICT usage. The impacts of ICT applications in the workplace on skills required of employees, on the wage structure, and on the age structure within firms are analysed. Workplace reorganisations are also incorporated in the analyses as they often coincide with increased ICT usage. The third main research area covers digital markets. One aspect of this research is to compare differences in pricing and structures of digital markets to those of traditional markets. A further aspect covers the impact digital markets have had on firm structures, and the resulting difficulties for firm taxation. The analysis of the ICT-related services sector is the subject of the fourth main area of research. The ICT research group annually organises an international conference on “The Economics of Information and

Communication Technologies”, which is a platform for presenting and discussing recent work in this field of research.

### Research Area “ICT as General Purpose Technologies”

It seems to be common sense that ICT are general purpose technologies that penetrate all business sectors. Since there is still a lack of reliable statistical data concerning ICT topics, the ICT research group is conducting a biennial business survey. The aim is to get a representative picture of the diffusion and the use of ICT – with a special focus on e-commerce activities – in German companies belonging to the manufacturing sector and to selected service sectors. The survey data serve as a database for several projects commissioned by the Landesstiftung Baden-Württemberg. The graph on page 56 shows which factors are impediments to the use of e-commerce in the distribution of goods and services.

One of the main topics of research is to analyse the extent to which ICT may affect the production potential and the innovative ability of enterprises. The effects of ICT on the productivity of enterprises are evaluated on the basis of firm-level data of the German service sector. First results indicate that the innovation experience of enterprises may be significant for their productive usage of ICT. Future research will concentrate on organisational changes and training within enterprises and on macroeconomic implications of ICT usage. Some of the results are included in the report of the OECD Working Group on “ICT and Business Performance”.

Research on productivity effects of ICT emphasises the fact that ICT usage should coincide with appropriate workplace reorganisa-

tion in order to achieve positive productivity effects. Decentralising organisational changes are of particular importance in this context. Increasing the responsibility of individual employees, for instance, can be achieved through a flattening of hierarchies and an intensification of team work. This topic will be further investigated using different data sets on the firm-level as well as on the individual level.

The ICT research group also contributes to the “Report on Indicators on Germany’s Technological Performance”, an annual report to the Federal Ministry of Education and Research, which the ZEW department “Industrial Economics and International Management“ is in charge of. The input of the ICT research group is to analyse the diffusion of ICT in Germany in an international context.

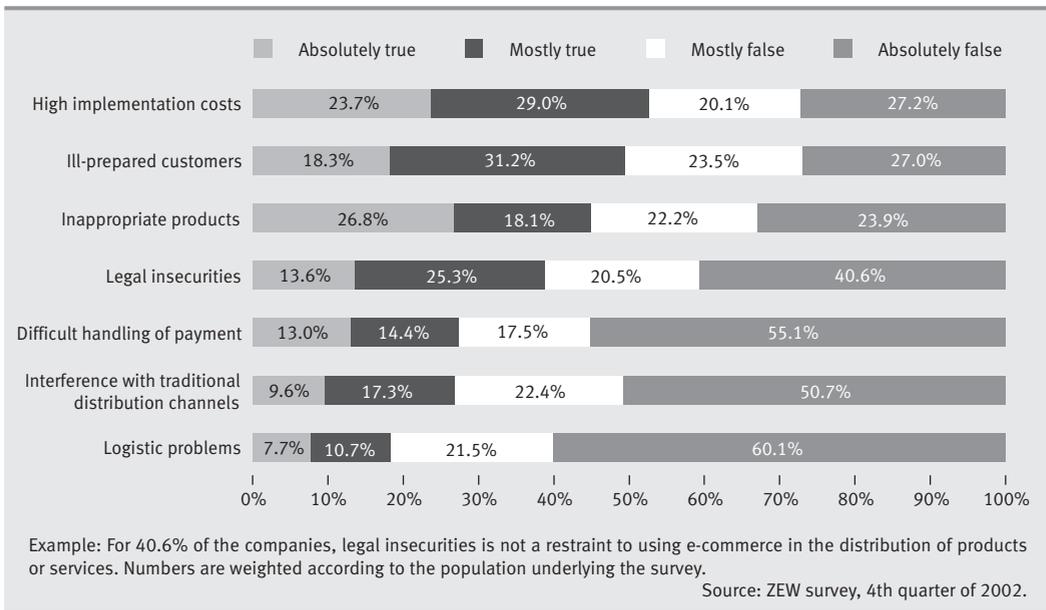
**Research Area “ICT and the Labour Market”**

This research area is concerned with various effects of ICT usage on the labour market, and possible effects that changes in labour market policy may have on the usage of ICT.

The relationship between ICT usage and skills is a widely discussed topic in economics, making it important to study the correlation between ICT, the demand for heterogeneous labour, and the structure of wages. Instead of looking only at skills, we analyse how ICT has changed the composition of tasks within occupations over a period of 20 years. The changing skill requirements of occupations are then related to changes in the demand for labour with different levels of formal education. Generally, the application of new technologies requires higher qualification of employees. ICT usage, human capital, as well as organisational changes may therefore be seen as complementary factors, which, when combined, may positively affect labour productivity. These relationships are investigated on the basis of individual data as well as on the basis of firm-level data.

A further aspect of ICT usage is its relation to the age structure of employees. Older workers may have more difficulties working with new technologies than younger ones.

**Restraints to using e-commerce in the distribution of goods and services.**





The Research Group “Information and Communication Technologies”.

This again may affect the timing of retiring and the personnel policy of firms. One research objective is to analyse how increased ICT usage affects the employment of older workers. The analysis will necessarily also take into account institutional factors, which may have an effect on the age structure of the workforce, such as training possibilities and incentives for early or partial retirement. A comparison across countries pursuing different employment policies is a further research component.

### Research Area “Digital Markets”

Digital markets distinguish themselves from traditional markets through a high degree of transparency and the irrelevance of geographical boundaries. Digitisable products, which can be delivered electronically, have an especially high potential to lower transaction costs. The resulting hypothesis is

that digital markets are more competitive than traditional markets.

In this research area, various aspects of digital markets are studied. One aspect discussed in the literature on digital markets is the effect that lower search costs for consumers as well as lower operating costs of running an online business have on the price level on digital markets. A further aspect is whether or not the fact that e-commerce enables firms to distribute their products worldwide has an effect on the intensity of different foreign sales activities. On the one hand, firms could increasingly pursue a strategy of direct exports due to the possibilities of e-commerce, and consequently reduce other forms of foreign activities, such as production facilities or sales subsidiaries abroad. On the other hand, the communication between a parent company and its subsidiaries and the communication between several internation-

al branches could be intensified with the possibilities of modern information and communication technologies, which in turn would foster foreign direct investments. Which of these effects outweighs the other and to what extent shall be analysed empirically.

The increasing diffusion of ICT has consequences with respect to changing firm and market structures and thus modifies international corporate taxation requirements. The difficulties that e-commerce activities have introduced to corporate taxation issues stem from the fact that firms and production factors are no longer assigned to a particular geographical location. This has led to a situation in which traditional determinants for taxation, such as national borders, are blurred. A further difficulty for corporate taxation of e-commerce activities is the fact that many online transactions are anonymous, and that appro-

priate data for taxation are consequently not available. First research results show that international corporate taxation should be based on taxation according to the residence principle.

#### Research Area “Analysis of the ICT-Related Services Sector”

The quarterly business survey in the German ICT-related services sector is a joint project of ZEW and an important credit rating agency, Creditreform. The focus of the survey on ICT-related services dates to the first quarter of 2002. Previously, the survey, which initially began in 1994, had focused on business-related services. In order to account for structural changes caused by the extended diffusion of ICT, the survey now focuses on ICT service providers (enterprises of the branches computer services and leasing, ICT-spe-



3rd ZEW Conference on the Economics of ICT: Professor Jack Triplett (Brookings Institution) and Professor Ulrich Kaiser (University of Southern Denmark at Odense).

cialised trade as well as telecommunication services), and knowledge-intensive service providers (enterprises of the branches tax consultancy and accounting, management consultancy, architecture, technical consultancy and planning, research and development as well as advertising). In each quarter, firms are requested to provide information on their economic situation. A second, variable part of the questionnaire deals with current ICT topics.

The market for the physical network infrastructure on which Internet services are provided is undergoing fundamental changes. Mergers, vertical integrations of Internet backbone operators into closely related markets, as well as advancements in Internet technology which enhance the possibility of product differentiation, are all changing the carrier landscape. Thus, the market for Internet service provision is analysed in order to allow a well-founded assessment of the regulatory requirements of this market. The analysis concentrates on establishing definite criteria for the localisation of network-specific market power. The focus is both on supply-side and demand-side characteristics of the market structure.

## Selected Research Projects

### ICT as General Purpose Technologies

Similar to the wide and rapid diffusion of electricity and the steam engine, information and communication technology is increasingly acknowledged as a General Purpose Technology (GPT) that penetrates all sectors of the economy and entails large potentials of technological improvements and innovation-complementarities within firms. The aim of this project is to investigate in which ways the technological advances in ICT affect the production potentials and the innovation capacities of enterprises. In this context, the main focus will be to assess which firm characteristics and strategies are particularly suitable to enhance the productivity contributions of ICT investment. Complementary factors, such as human capital, innovative activity, and organisational change, are taken into account. (<http://www.zew.de/project284>)

### ICT, the Demand for Heterogeneous Labour, and the Structure of Wages

In this project, the impacts of the diffusion of ICT on the labour market are investigated. First analyses focus on the effects of ICT on the changing task composition of occupations. These changing skill requirements of occupations are then related to changes in the demand for labour with different levels of formal education and to wage inequality within skill groups. Further analyses take into account organisational changes that often go hand in hand with ICT use. The empirical analyses are based on individual level data. (<http://www.zew.de/project285>)

### ICT and the Age Structure of Employees

During the last few decades, the labour force participation rate of the older work force has declined strongly in many European countries. One explanation is the so-called “digital divide”. A lot of older workers have to leave the labour market because they are not able to keep pace with the new requirements in their jobs with respect to using new technologies. This project is analysing the impact of ICT on the age structure of the workforce whilst evaluating ways out of the dilemma. The empirical analysis will concentrate on the relationship between vocational training, the usage of ICT, and the incentives to retire earlier. (<http://www.zew.de/project343>)

### Sales Activities and Pricing Strategies in Digital Markets

Electronic commerce opens various possibilities for new ways of designing business relationships. The aim of this project is to analyse digital markets with respect to pricing strategies, market efficiency, and the possibilities of firms’ foreign activities. This project mainly addresses three questions: Firstly, is the Internet price level lower than the price level in traditional markets, and if so, under which conditions? Secondly, why do firms use digital markets, which type of marketplace do they decide to use, and which effects do these decisions have on the firms’ performance? And finally, how does the decision to use digital marketplaces affect the intensity of using different foreign sales activities? (<http://www.zew.de/project289>)

## E-Commerce and International Corporate Taxation

The goal of this project is to systematically compile the consequences for international corporate taxation emanating from organisational changes within enterprises and changes of market structures owing to the increasing diffusion of ICT. The difficulties for taxation generally result from the increasing regional independence of enterprises and their production factors and from the fact that country borders become less important. Transactions are frequently carried out anonymously in such a way that data required for taxation are not always available. The generally accepted taxation principles which constitute normative criteria for an optimal taxation, such as the neutrality principle and the equity principle, are used to evaluate the given tax regulations and to recommend possible reforms.

(<http://www.zew.de/project286>)

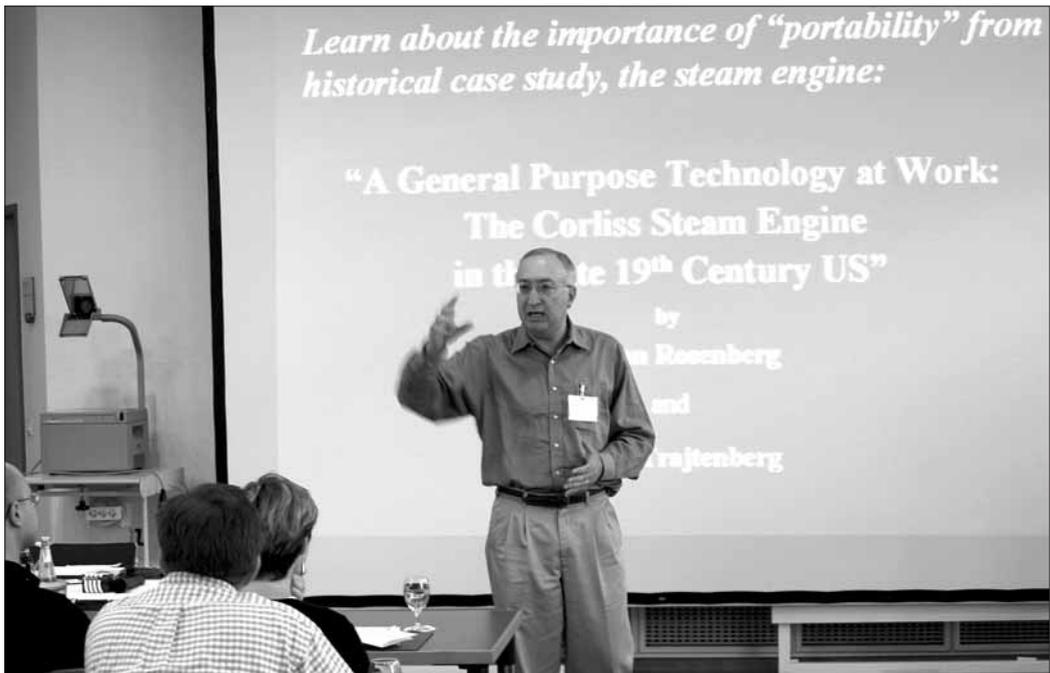
## Selected Publications

Bertschek, I. (2003), Information Technology and Productivity Gains and Cost Savings in Companies, in: Jones, D.C. (Ed.), *New Economy Handbook*, New York, 213-228.

Bertschek, I. and U. Kaiser (2004), Productivity Effects of Organizational Change: Microeconomic Evidence, forthcoming in: *Management Science*.

Hempell, T., G. van Leeuwen, and H. van der Wiel (2004), ICT, Innovation and Business Performance in Services: Evidence for Germany and the Netherlands, in: *The Economic Impacts of ICT – Measurement, Evidence and Policy Implications*, OECD Proceedings, Paris.

Jacobs, O.H., C. Spengel, and A. Schäfer (2003), ICT and International Corporate Taxation: Tax Attributes and Scope of Taxation, *Intertax*, 214-231.



Professor Manuel Trajtenberg (Tel-Aviv University) in the ZEW auditorium, discussing a paper on valuing mobile computing.

# Databases

ZEW has established several very important databases that it updates regularly. Extracts from some of these databases can be made available to scientists for research work only (subject to data protection rules for individual data).

- **Mannheim Enterprise Panel (MUP)**

Contains firm-level data based on a representative sample by sectors, firm size categories, and regions for the East and West of Germany (access to individual data only possible within ZEW).

- **ZEW Start-Up Panels**

These databases contain a collection of firm-level data for analysing business start-ups, growth, and insolvencies. They contain information on about 1,870,000 firms in West Germany and 720,000 firms in East Germany (access to individual data only possible within ZEW).

- **Mannheim Innovation Panel (MIP)**

This database covers information on the innovative activities of companies in the industrial and service sector in Germany, based on an annual survey (scientific use file available on CD-ROM).

- **Business Survey in the ICT-Intensive Services Sector**

Data here display results from quarterly surveys of companies of the ICT-intensive services sector on their present situation and expectations for the future with regard to their economic results.

- **European Tax Analyzer (ETA)**

This database contains detailed information on tax systems in several European

countries and the USA. The database can be used to compute the effective tax burden of a representative firm in these countries.

- **Bond and Interest Rate Segments of the DFDB**

This excerpt from the German Financial Database (DFDB) contains all master data and prices of DM bonds (since 1, January 1999 denominated in Euro), including interest rates.

- **ZEW Financial Market Survey**

This monthly survey displays the expectations and forecasts of experts for national and international financial markets' developments and the economic situation.

## Conferences and Workshops

ZEW holds quite a number of conferences and workshops, allowing researchers to exchange ideas and information on recent research results. For instance, ZEW's annual summer workshop is an opportunity for young scholars to present results of their research work and discuss them with leading economists who give lectures on the topic of the workshop. On occasion, we jointly organise conferences with foreign institutions.

Information on this kind of activities can be found on <http://www.zew.de/allevvents>. An overview of events in the English language held in recent years is given below:

### 2003

- Conference "European Summer School on Industrial Dynamics (ESSID)" (<http://www.zew.de/event198>)
- Conference "Regulation and Supervision of Financial Markets and Institutions in the EU" (<http://www.zew.de/event201>)
- "3rd ZEW Conference on the Economics of Information and Communication Technologies" (<http://www.zew.de/event186>)
- Summer Workshop "Innovation, Location and European Integration" (<http://www.zew.de/event124>)
- Conference "Evaluation of Government Funded R&D Activities" (<http://www.zew.de/event187>)
- Conference "The Economics of Gender Issues: Widening the Debate" (<http://www.zew.de/event192>)
- Workshop "Empirical Economics of Innovation and Patenting" (<http://www.zew.de/event182>)

### 2002

- Workshop "The Economics of Entrepreneurship and the Demography of Firms and Industries" (<http://www.zew.de/event119>)
- "2nd ZEW Conference on the Economics of Information and Communication Technologies" (<http://www.zew.de/event62>)
- Summer Workshop "Human Capital" (<http://www.zew.de/event113>)
- „Energy Market Analysis: Quantitative Methods“ (Economic Modeling Workshop 2002) (<http://www.zew.de/event112>)
- Conference "Price Indices and the Measurement of Quality Changes" (<http://www.zew.de/event81>)

### 2001

- Workshop "Wages, Working Hours and Employment" (<http://www.zew.de/event58>)
- Workshop "Empirical Modeling of the Economy and the Environment" (<http://www.zew.de/event51>)
- Conference "The Economics of Information and Communication Technologies" (<http://www.zew.de/event56>)
- Summer Workshop "Financial Economics of EU Enlargement" (<http://www.zew.de/event46>)
- Conference "Labour Market Effects of Income Support and Training Programs – A Comparison Between Germany and the US" (<http://www.zew.de/event53>)



ZEW Summer Workshop “Innovation, Location and European Integration”: Professor Richard Baldwin (Graduate Institute of International Studies, Geneva) holding a lecture on theoretical and econometric issues in new economic geography. This workshop was organised by ZEW in co-operation with the Research and Training Network “The Economic Geography of Europe”.



Panel at the ZEW Economic Forum 2003: Harald Schliemann (Chief Judge at the Federal Labour Court), Dr. Dieter Hundt (president of the Confederation of German Employers’ Associations), Professor Dr. Dr. h.c. mult. Wolfgang Franz (ZEW), Professor Dr. Dres. h.c. em. Bernd Rütters (University of Konstanz).

## ■ Activities of the Service Departments

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# Information and Communication

Knowledge transfer is of high importance to ZEW. The institute engages in various activities to inform firms, politicians, and the administration, the scientific community, organisations, and the public in general about its research work. In this context, it is the responsibility of the Information and Communication service department to prepare press releases and articles on ZEW's research results, to establish contacts between ZEW researchers and print and electronic media, to update continually ZEW's website, and edit and produce ZEW's own publications.

The Information and Communication department is also involved in the organisation and promotion of ZEW lecture series as well as annual events, such as the ZEW Wirtschaftsfo-

rum (ZEW Economic Forum) or the ZEW Summer Workshop. Furthermore, it is responsible for the presentation of ZEW and its research activities at national and international conferences and meetings of economists. Furthermore, the Information and Communication service department is in charge of ZEW's IT services, the library, and the design of ZEW media.

## Publications

In addition to publishing in national and international scientific journals as well as participating in current political and economic debates by contributions in print and electronic media, ZEW also informs about its research results in its own publications:

### ■ Publication Series

Among the book series edited by ZEW, the "ZEW Economic Studies" are published in English. They are monographs on theoretical, empirical, and methodological problems in economics. The series in the German language are called "ZEW Wirtschaftsanalysen" and "Umwelt- und Ressourcenökonomie".

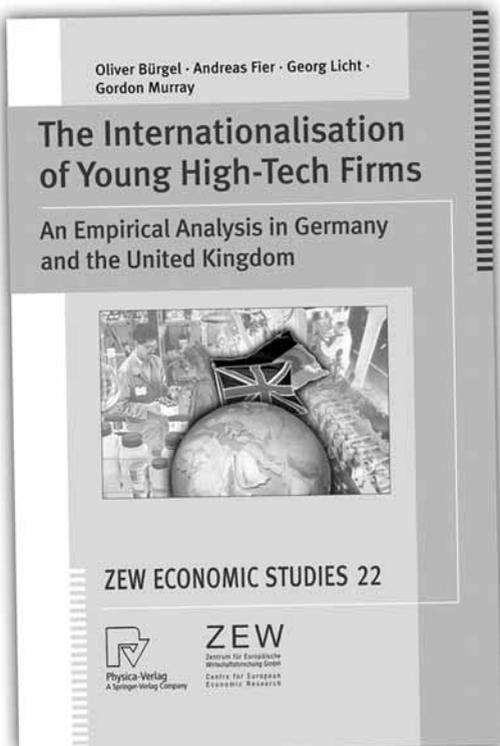
### ■ Working Papers (to be downloaded from the Internet)

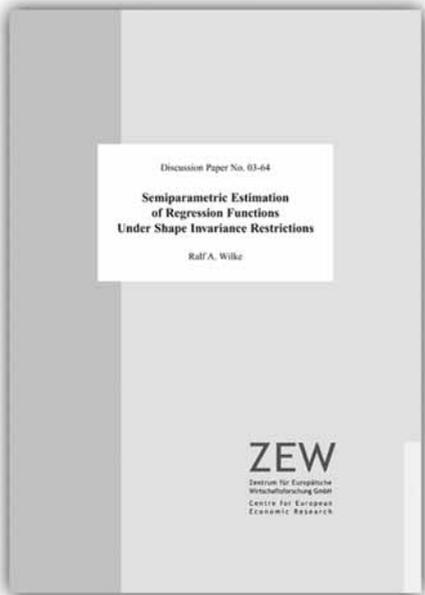
#### – ZEW Discussion Paper

Discussion papers (nearly all of them in English) provide information on recent ZEW research for the scientific community. They are intended for publication in national and international scientific journals.

#### – ZEW Dokumentation

Non-technical analyses and surveys on selected economic topics, mainly in German.





– *ZEW Branchenreport Innovation*  
Annual reports on the innovation activities in selected sectors of manufacturing and service industries based on the ZEW innovation survey.

– *ZEW Branchenreport Dienstleister der Informationsgesellschaft*

A quarterly report on current and anticipated developments in the ICT-intensive services sector.

– *ZEW Gründungsreport*

This biannual report contains the findings regarding start-up activities in Germany.

– *ZEW Jahresbericht*

ZEW's annual report presents the institute's performance in the previous year with an emphasis on ongoing and completed research projects as well as activities of the service departments.

■ **Publications for the General Public/Publication of Survey Results**

With the exception of the ZEWnews English edition, the following publications are only available in German.

– *ZEWnews/ZEWnews English edition*

ZEWnews contains general information on current research results, ongoing activities, and recent publications as well as dates of ZEW events. ZEWnews, in German, is published ten times a year. The ZEWnews English edition is published quarterly.

– *ZEW Konjunkturreport*

In this report, ZEW publishes quarterly analyses of macroeconomic topics, as well as forecasts by European research institutes on business developments in their respective countries.

– *ZEW Finanzmarktreport*

A monthly report presenting the current results of the ZEW Financial Market Survey with assessments and expectations by financial experts regarding developments on national and international financial markets.



The screenshot shows the ZEW website interface. At the top, there is a navigation bar with links for 'Press', 'Jobs', 'Staff', 'Contact', 'Links', and 'Print'. A search bar is located in the top right corner. Below the navigation bar, the main content area features a section titled 'Research at the ZEW' with a descriptive paragraph. To the left of this section is a vertical menu with categories like 'Home', 'The ZEW', 'Research', 'Publications', 'Conferences/Events', and 'Expert seminars'. Below the text is a matrix diagram with five rows representing research areas and five columns representing activities. The matrix cells contain small square icons.

	Description	Research Areas	Projects	Publications	Seminars / Workshops	Staff
Financial Markets	□	□	□	□	□	□
Labour Markets	□	□	□	□	□	□
Industrial Economics	□	□	□	□	□	□
Corporate Taxation	□	□	□	□	□	□
Environmental Economics	□	□	□	□	□	□
ICT Research Group	□	□	□	□	□	□

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The ZEW website gives general information on ZEW's organisation and its work. All ZEW employees can be looked up on the website and can be contacted by e-mail.

### Lecture Series and Special Events

For the discussion of current economic problems ZEW organises a few distinct lecture series and an annual conference. Twice a year in "Wirtschaftspolitik aus erster Hand", a distinguished representative of the German economy or politician is invited by ZEW to provide an insight into current economic developments and practical policy issues. In the lecture series "Mannheimer Wirtschafts- und Währungsgespräche", which is organised three times a year by ZEW in co-operation with the University of Mannheim, the banks' association of the Rhine-Neckar region, and a regional academy, CEOs of financial institutes give lectures on developments in the banking

sector. The annually organised "ZEW Wirtschaftsforum" is a one-day conference that serves as a forum for entrepreneurs and representatives of business associations and state institutions to discuss current political-economic questions. On this occasion, papers are presented by prominent representatives of politics and economics from Germany and abroad.



Visitors at the ZEW booth at the conference “Evaluation of Government Funded R&D Activities” in Vienna.



Minister President of the State of Baden-Württemberg (right), and ZEW's director of business and administration, Ernst-O. Schulze.

# Knowledge Transfer & Qualification Programmes

The activities of the Knowledge Transfer & Qualification Programmes department focus on the intensive exchange between research and business experience. In line with its mandate, ZEW makes a contribution to further education by offering scientifically based training courses to employees in business and administration.

An appropriate form of training is provided for each chosen topic to ensure an efficient transfer of knowledge from research into business practice.

## Expert Seminars

Seminars are held by experts, mostly ZEW researchers, who present selected research

results and methods for participants from firms, institutions, and research and administrative facilities. To ensure a high level of relevance for practical business applications, some seminars are held together with experts from firms.

An important aim of these seminars is to encourage the dissemination of fundamental background knowledge concerning current economic issues among managers from all kinds of companies and institutions. These events offer a forum at which participants can acquire current knowledge as well as discuss its practical application in entrepreneurial terms.

In addition, the participants are able to establish contacts and exchange experience with executives from other organisations.



Participants of a ZEW expert seminar.

### **Specific Training Programmes for Enterprises and Institutions**

Upon request from companies and other institutions, ZEW provides tailor-made training programmes. These are based upon the specific training requirements and economic issues that concern the client. In general, these programmes cover the following three stages:

- Analysis of the specific corporate training requirements
- Conception and implementation of the training programme
- Evaluation of the success of the training programme

On request, ZEW conducts empirical studies on the topic of such a particular training programme.

### **Training for International Executives**

Due to the increasing trade liberalisation and the economic transformation in several countries, ZEW works in conjunction with international organisations and provides extended training to future management executives in particular from Asia, Africa, and Eastern Europe. This includes visits to enterprises and trainee programmes in firms.

- Organisation, Personnel, Finance

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# Organisational Structure

**Shareholder:**  
State of Baden-Württemberg

**Supervisory Board**  
Chairman:  
Minister G. Stratthaus

**Scientific  
Advisory Council**  
Chairman:  
Professor Dr. F. Buttler

**Board of Directors**  
Professor Dr.  
Dr. h.c. mult. W. Franz  
President  
E.-O. Schulze  
Director

**Förderkreis  
Wissenschaft und Praxis  
am ZEW e.V.**  
(Club of ZEW Friends  
and Sponsors)

## R e s e a r c h D e p a r t m e n t s

International  
Finance, Financial  
Management and  
Macroeconomics

Labour Markets,  
Human Resources  
and Social  
Policy

Industrial  
Economics  
and International  
Management

Corporate  
Taxation and  
Public Finance

Environmental  
and Resource  
Economics,  
Environmental  
Management

Research Group  
“Information and  
Communication  
Technologies”

## S e r v i c e D e p a r t m e n t s

Knowledge Transfer &  
Qualification Programmes

Information and  
Communication

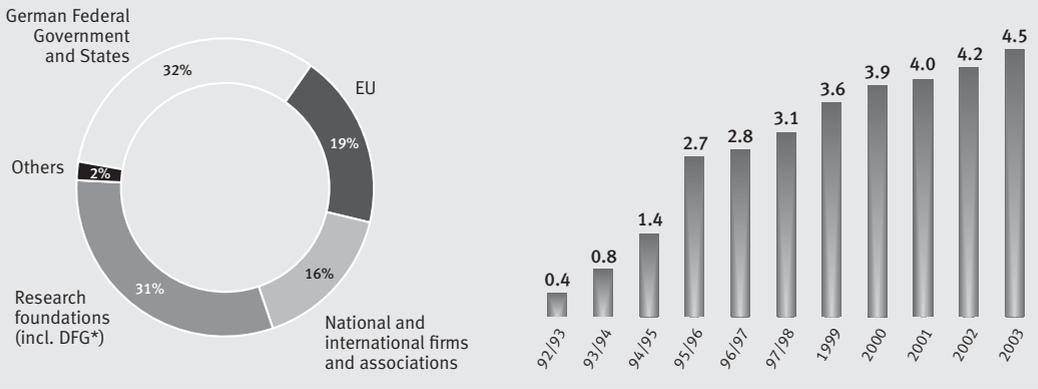
Administration

# Personnel and Finance

## ZEW Staff

	Jan '96	Jan '00	Jan '04
Employees: total/part time	78/9	111/14	131/26
of which: scientific staff	58	74	90
non-scientific staff	20	37	41

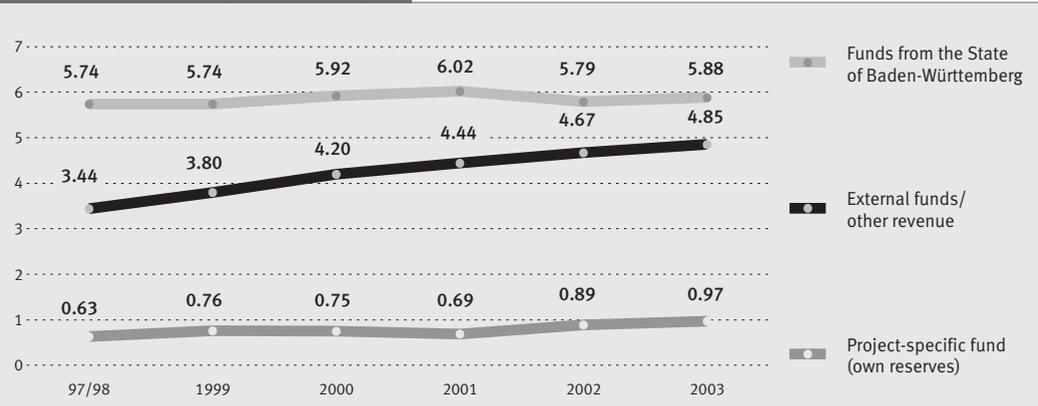
## Projects Financed by External Funds



External funds from 2003 onwards, as of December 2003.  
 \* German Research Foundation.

Revenue, including sub-contractors; € million.

## ZEW Financial Survey (€ million)



# ZEW

Zentrum für Europäische  
Wirtschaftsforschung GmbH  
Centre for European  
Economic Research



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Internet: [www.zew.de](http://www.zew.de)