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ZEW news

Zentrum für Europäische
Wirtschaftsforschung, Mannheim

Selected Contributions from the Centre for European Economic Research

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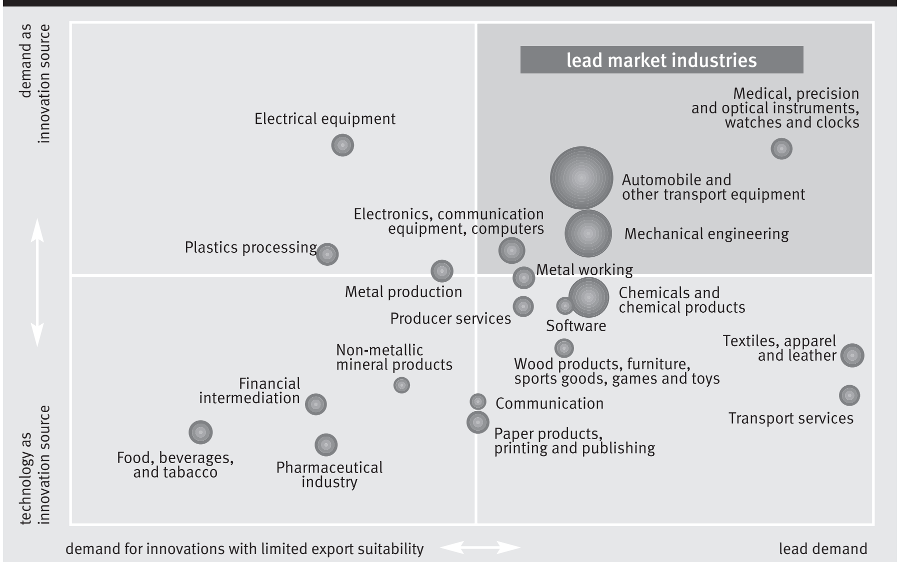
"Lead Market" Germany

Demand conditions of a national market are an often neglected factor of the international success of innovations. Most often, R&D efforts and investment in high-technology are regarded as the main driving forces for technological competitiveness of nations. Recent studies at the ZEW show that the export success of innovations may also be attributed to favourable demand conditions on the domestic market: Local users demand a certain design of an innovation that meets up-coming global trends and thus can be marketed on a global level.

Germany's lead market position by industries



Note: The size of the circle corresponds to each industry's share in Germany's total exports.
Source: Mannheim Innovation Panel, 1999 survey; ZEW computations

■ Frequently Germany's high technology capacity is quoted as an explanation for its tremendous export success. It is assumed that research of enterprises and public institutions spark off the invention of new products and processes which are accepted on the global market due to their technological excellence. Recent studies by the ZEW reveal that particularly in sectors with strong exports, namely the automobile and transport equipment, mechanical engineering, instruments, communication equipment and basic chemicals industries, the customers' demands for innovations and other favourable demand structures in Germany are key success factors, too. Markets showing such initiatives are called „lead markets".

A lead market model was developed at the ZEW to explain the role played by domestic markets for internationally successful innovations (Marian Beise: Lead Markets, ZEW Economic Studies, Vol. 14). The starting point was that often it was not the countries that drove the technical development of innovations that became world market leaders, but rather those countries which were the first to widely use innovations. Five factors qualifying a lead market were identified:

- price/cost advantages: the price of an innovation is so low that other countries prefer it to competing innovations, or a country is leading in the price trend of input or complementary factors, for instance, energy or phone costs;
- demand advantages: a country spearheads a worldwide trend triggering the development of new products, e.g. in the case of environmental pollution and population ageing;
- export advantages: a country provides additional incentives for local enterprises to develop innovations for the world market, e.g. a high export orientation;
- transfer advantages: a country using an innovation increases its benefits for other countries, e.g. via international networking effects;

Content

Research Findings

■ market structure advantages: intense competition in a country forces local enterprises to tap new markets and to develop international leading edge innovations.

Based on the Mannheim Innovation Panel the ZEW identified the sectors where German demand shows lead market qualities. Germany is a strong lead market for automobiles. Innovations which later become a global standard are often first sought after on the German market, and the innovation design introduced in Germany defines this global standard. Prominent examples are the anti-lock brake or the airbag. Apart from automobile manufacturers, several other sectors in Germany profit from the lead market in automobiles. The mechanical engineering and electronics industry, but also non-R&D intensive sectors such as the textile industry, the metal industry, the plastics and rubber processing industry, and even the telecommunications sector develop a large part of their innovations after having received direct input from the automobile industry.

Germany is also a lead market in mechanical engineering. Even though mechanical engineering accounts is highly internationally oriented, the export strength of this sector is mainly due to innovations triggered by German customers. The German mechanical engineering industry benefits from the demanding requirements that the functional characteristics of machines and equipment need to fulfil for the German industry.

The German service sector, however, gives reason for concern: According to the ZEW study it does not show any lead market characteristics, nor does it generate much lead demand. Among the few exceptions is the software for industrial applications. The lack in lead market characteristics in the service sector has a negative impact not only on the international competitiveness of the sector itself, but also on leading edge technologies which need service providers as customers. ◄

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High Public Debt Hinders Growth

European fiscal policy can make a substantial contribution to growth by reducing public debt. In the past decades high government debt has led to a decline in public investment and thus impaired potential for growth. If the EU heads of government are really serious about their ambitious goals for European economies, they should show more determination in tackling their high prior debt than in the past.

■ Since the seventies, government investment has continuously decreased in many EU states. An increasing share of government expenditure is thus used for consumption. This development reveals a growing neglect of the public capital stock at the expense of potential for growth. The causes for this wrong development have been widely neglected thus far. Based on a comprehensive database compiled during the past 20 years for 16 OECD states, the ZEW carried out an econometric analysis to determine the decisive factors for the decline observed in government investment spending (ZEW Discussion Paper No. 02-19).

The study's results are quite revealing: Although it seems to be a widespread assumption, it cannot be said that the decline in public investment is due to the privatisation process and the state's subsequent withdrawal from sectors with significant investment requirements. In any case, the data do not show any significant correlation between the privatisation speed in the respective states and investment activities of state authorities.

Globalisation an important factor

Increasing globalisation, however, is much more important than privatisation. For instance, public investment has declined much more in states which are more strongly integrated in international capital and commodity markets than in relatively isolated countries. This finding suggests that globalisation makes it more difficult to finance public investment spending. Fierce competition for locations does not allow the state to tighten the tax screw too much for corporations, although this would be necessary to obtain funds for necessary investments.

Even the Maastricht criteria dampened investment activities, if only for a short period of time. The data indicate a marked trough in investment rates for the EU states in 1997 – the decisive qualification year to become a member of EMU. Apparently, capital budgets were temporarily pared down in order to keep government deficits below the three percent ceiling in the reference year.

Among a whole range of variables the debt position of the states considered in the study is the statistically most significant explanatory variable for declining public investment. Particularly highly indebted states were forced to cut back on public spending – especially for investments. The increasing neglect of the infrastructure is thus the price for public debt which has markedly increased since the seventies.

The economic message of this insight is clear: Faced with consumption-oriented desires, politicians have a hard time providing sufficient means for investments in the light of high government debts and interest burdens. Therefore Europe's financial policy should not only speed up consolidation just because this is set forth by the European Stability and Growth Pact, but also because this would benefit economic growth. ◄

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Research Findings

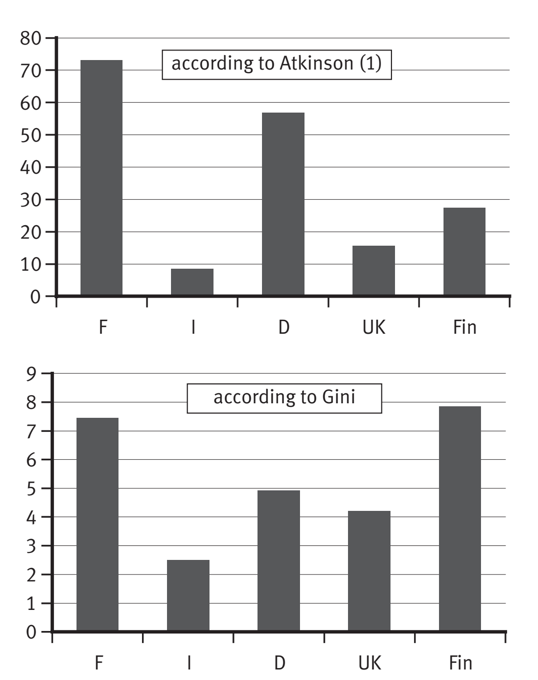
European Schemes of Social Assistance

A ZEW study in co-operation with the University of Hohenheim (Stuttgart) analyses the distributive impacts of European schemes of social assistance and the possible causes for their differences. In particular, the connections between the level of social assistance budgets, the degree of centralisation and their distributive impacts are examined. The results suggest that a medium degree of centralisation produces more distributive efficiency than either extremely centralised or extremely decentralised systems.

■ For the study, the distributive impacts of social assistance payments in Germany, France, Italy, Finland and the United Kingdom were computed by comparing pre-transfer and post-transfer income disparities on the basis of data of the Luxembourg Income Study (LIS) for the reporting years 1994/95. The Gini coefficient and the Atkinson(1) measure were used as inequality measures. For both measures, the distributive effectiveness was calculated as the percentage reduction in the inequality measure employed due to social assistance payments. In both cases the effectiveness reaches its highest level in the United Kingdom and its lowest level in Italy. France, Finland and Germany are in between; but due to the different statistical properties of the measures no unambiguous statement on their rank positions is possible.

When calculating the distributive effectiveness no account was taken of the very different social assistance budgets of the countries considered. For this reason the so-called distributive efficiency was computed for both inequality measures. It is defined as the ratio of distributive effectiveness to the share of social assistance expenditure in GDP (see graph). Due to its large budget, the United Kingdom drops to the next to last position with respect to efficiency. Again, no unambiguous statement is possible on the rank positions of France, Germany, and Finland.

Distributive efficiency



Reading aid: Distributive efficiency indicates the percentage reduction of income inequality achieved by investing one percent of GDP in social assistance payments. Italy therefore has the lowest level of distributive efficiency. Source: ZEW

Influence of the degree of centralisation

The European schemes of social assistance systems were classified according to their degree of centralisation and their strategy mix in order to investigate the causes for differences between the countries. Based on their degree of centralisation the European countries can be categorised into four groups: Ireland, the United Kingdom and the Netherlands have the highest level of centralisation. Denmark, France, Belgium, and Finland belong to the second group. The relatively decentralised systems of Germany, Sweden, Austria, Spain, and Italy are subsumed under the third group, while in Greece and Portugal no nation-wide system of social assistance existed in 1995. As opposed to a popular opinion, a comparison with the distributive impacts shows that decentralised systems are not necessarily more efficient when it comes to redistribution. Rather, the results suggest that a medium degree of decentralisation (Germany, France, Finland) produces more distributive efficiency than the extremely centralised British or extremely decentralised Italian system.

Strategies of social assistance

Based on their strategy mix the systems can be subdivided into two groups. The first group encompasses the Southern European countries and France. In these countries, overall coverage is fragmented, benefits are granted only for a certain amount of time or there is no nation-wide social assistance system at all. The second group comprises the British, Central, and Northern European countries where benefits are granted on a universal basis for an indefinite period of time.

The study suggests that the principle ”the more – the better” does not always hold true. Having a large budget and a high degree of coverage the United Kingdom clearly ranks highest with regard to distributive effectiveness. However, no connection between budget size and effectiveness can be identified for the remaining countries. With respect to distributive efficiency there is no longer any connection at all between budget size and efficiency: In spite of its comparatively low degree of coverage and low benefits the French system granting only temporary benefits proves to be more efficient compared to the universal, yet expensive British system, the mid-table German system, and the fragmented low-budget Italian system. ◄

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Research Findings

New Channels of Business Cycle Transmission Are Gaining Importance

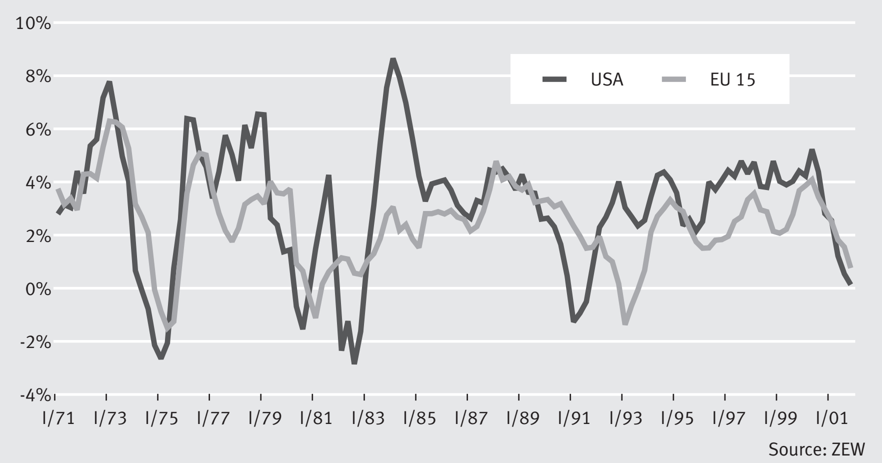
Recent developments have shown that, apart from traditional transmission channels of business cycle effects – foreign trade, exchange rates, and international interest mechanisms – serveral other transmission mechanisms need to be analysed in order to get a detailed picture of how international business cycles are interrelated. To this end the German Federal Ministry for Economy and Technology commissioned the ZEW to investigate the impact of economic trend transmissions via the financial markets, the corporate sector, and the business climate and consumer sentiments.

■ In a first step of the ZEW-study, the interdependence of business cycles in the USA, Germany, Italy, France and Great Britain, and the related long-term effects were investigated. The impacts of external oil price shocks were also taken into account. According to the study's findings, there are no clear signs of any change in the way business cycles were interlinked in the nineties, as compared to the seventies and eighties. It may well be the case, however, that individual channels of business cycle transmission have gained or lost importance.

Mainly the financial market channel, but also cross-border confidence effects show signs of increasing importance. This applies particularly to spillover effects from the USA on stock markets and confidence indices. Nevertheless, there were no further-reaching effects on real economic variables. In the case of Germany the influence has even partially subsided. The results varied for the corporate sector. While company-related analyses, particularly for the high-tech sector, pointed to the relevance of the channel, findings on the basis of highly aggregated data did not indicate that the corporate channel as such was important for international business cycle synchronizations.

In the light of the events in 2001/2002 the question arises as to how economic policy-makers can strengthen Germany's resistance against the transmission of external economic slowdowns. Apart from the general and well-known issues – flexible markets, sustainable financial policy, stability of the overall price level, regional diversification in the export and financial structure – some clear recommendations can be given for the financial market channel, the corporate channel, and the confidence channel.

Growth rate of gross domestic product: USA - EU 15



Source: ZEW

Regulatory framework for economic policy makes sense

One can assume that in times of speculative frenzy the stock market has an especially strong impact on consumption and investments. For this reason, the improvement of a regulatory framework should aim primarily at steadying the share price development by further integrating European capital markets. Turning the pay-as-you-go pension system into a more advance-funded system should also bring about positive effects. Findings for the corporate sector tend to confirm the hypothesis that regional and sectoral diversification has a stabilizing effect on the business climate. Seen in this perspective, it would be counterproductive to prevent cross-border mergers and take-overs when intending to even out the business cycle. Analyses on the confidence channel yield as a main result that the American confidence indices seem to exert a considerable influence on their European counterparts. This influence is somewhat out of proportion to the significance of US-American economic growth and bilateral trade with the USA, and might to some part be reduced by adjusting public relations work accordingly. In general, regulatory coordination as implemented in the European Stability and Growth Pact will also make sense in the context of business cycle transmissions. Such rules aim at strengthening a sustainable fiscal policy and are thus suited to promote the immunization of European economies against disruptive spillovers from the global economy. ◄

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ZEW Workshop

Report on the ZEW Summer Workshop 2002 on Human Capital

■ In May, the fourth ZEW summer workshop took place. This year's topic was "Human Capital". Twelve scientists from Germany and abroad had the opportunity to listen to lectures given by professors and to discuss their own papers. All in all, almost 60 postgraduates and postdocs had applied for the conference with a paper – a consequence not only of the broad topic but also of the excellent reputation of the three lecturers.

The lecture by Bernd Fitzenberger (University of Mannheim) dealt with the determination of causal effects that training will have on future incomes. It also addressed the development of labour market demand for employees with different qualifications and how wage distribution evolved within and between these groups. He concentrated on quantile regression techniques used to measure pay differentials. Joop Hartog (University of Amsterdam) focussed on the risk aspect when acquiring human capital. He demonstrated that individuals feel that risks related to human capital investments reduce their expected benefits from training. Findings thus revealed that they prefer school types and training courses that minimize income risks after training. Nevertheless, they react positively on the chance to earn an extraordinarily high income as, for example, musician or athlete, even though only a few practitioners in these occupations are able to reach this income level. Eric Maurin (CREST-INSEE, Paris) dealt with the determinants of educational success in his lecture. First he discussed the effect of family income on children's participation in education in developing countries. He then presented studies on the influence of social inequality on success at school in industrialized countries while focusing particularly on methodological aspects. Finally, he addressed the determinants of individual educational decision-making.

The participants of the Summer School presented their own research results in five workshops. Iida Häkkinen (University of Helsinki and University of Uppsala) presented empirical work on the number of years Finnish students spend in university training. Wissem Sassi (University of Toulouse) studied the transition from school to gainful employment or to phases of unemployment. Hendrik Jürges (MEA Mannheim) presented his evaluation of the TIMMS data on educational success of high-school students with a special focus on international differences. Jesse Levin (University of Amsterdam) compared the quality of Catholic and public primary schools in the Netherlands by looking at students' educational level in both institutions.

Participants in the ZEW Summer Workshop 2002.

Andreas Schäfer (University of Rostock) presented a theoretical study modeling fertility and educational decision-making as an intergenerational problem, and analyzed the long-term effects of such decisions on economic growth. Francois Leclercq (Paris Sorbonne University) analysed the determinants of child labour and school attendance in India. He made a point by distinguishing between the role of household income and the role of other factors such as household composition, school costs and marginal productivity of child labour. Based on English data, Massimiliano Bratti (University of Ancona) investigated which effect family income has on childrens' educational success. Christian Holzner (ifo Institute Munich) concluded that inefficiencies which are normally caused by frictions, wage bargaining and recruitment costs could be eliminated if companies paid the training costs for general human capital. Dubravko Radiç (University of Frankfurt) showed that technological and organizational changes in companies are closely related to each other. Technological change promotes the employment of qualified staff while this does not seem to be the case for organizational change.

In the last part of the Summer Workshop, Astrid Kunze (IZA) reported on pay differentials between female and male work entrants. According to her findings, men start their career with a wage differential of 25 percent which does not diminish during the course of their initial eight work years. Pedro Martins (University of Warwick) presented research findings on the correlation between educational level and income from employment in Portugal. Finally, Antonio Capparos Ruiz (University of Malaga) gave a paper on an approach to determine wage effects of job changes. His empirical analysis was based on Spanish data. ◄

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ZEW Workshop

On the Economics of Information and Communication Technologies

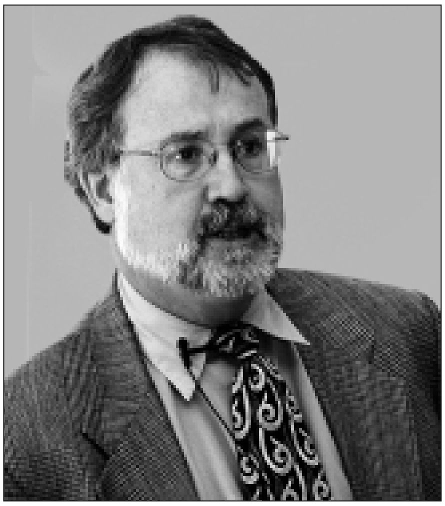
■ On June 24 and 25, 2002, the ZEW hosted the second conference concerning „The Economics of Information and Communication Technologies". The conference was funded by the Landesstiftung Baden-Württemberg foundation and the Deutsche Forschungsgemeinschaft (German Research Council). More than 60 internationally renowned scientists from Germany, Europe and the USA delivered challenging papers and took part in discussions. The scientific committee, consisting of Ernst Berndt (MIT Sloan School of Management, USA), Dietmar Harhoff (University of Munich), Francis Kramarz (CREST-INSEE, France), Georg Licht (ZEW), Ishaq N. Nadiri (New York University), Luc Soete (MERIT and Institute of Infonomics, the Netherlands) und Konrad Stahl (University of Mannheim), selected the presentations for the conference from a large number of submitted papers.

The aim of the conference was to examine the economics of information and communication technologies (ICT) from different angles and to present the status of research efforts. In this context, the determinants and effects of the diffusion of ICT as well as the special economic characteristics of the ICT-producing sector were the main point of reference. The 32 papers that were delivered dealt with the microeconomic and macroeconomic aspects of ICT and included theoretical as well as empirical studies.

The plenary sessions

In the first plenary session of the conference, Eric Bartelsman (University of Amsterdam) demonstrated in a comparison of several OECD countries that both the regulatory framework and market dynamics play a vital role for the intensity of ICT usage. His speech was followed by Lex Borghans (University of Maastricht) who presented an empirical study on the diffusion of computers in enterprises and its consequences for the development of wage patterns. The study suggests that it is the most productive employees who are equipped with computers first whereas less productive workers follow later after computer prices have continued to fall.

The second plenary session dealt with the price development and market dynamics of the ICT-producing sector. On the basis of econometric estimates of demand functions, John van Reenen (University College London) demonstrated that the market for work group servers is characterized by the strong market power of only a few suppliers. He concluded that this might justify regulatory intervention. Ernst Berndt (MIT) presented new challenges to PC price measurements using hedonic regression techniques.




Prominent presenters at the ICT conference: Ernst Berndt (left) and John van Reenen (right).

His paper was followed by several parallel sessions focussing on pricing strategies and market structures in the ICT sector, productivity effects of the usage of ICT, and the resulting consequences for the demand of skills. Individual sessions addressed the determinants of ICT diffusion, its effects on the formation of market equilibriums, and the price and competition dynamics on electronic markets. Some presentations also dealt with patent protection issues on the software market and game theoretic aspects of the internet economy.

The last but one plenary session of the conference focused on several issues regarding the regulation of the telecommunications market. In this context, the economic consequences of the liberalisation of former state monopolies such as the telecommunications sector attracted special attention. Martin Peitz (Universiy of Frankfurt) presented a game theoretic model, where cost-covering Internet access prices for well-established companies and profitable prices for new providers increase competitive pressure and thus total welfare. Lars Sørgard (Norwegian School of Economics and Business Administration) offered two different scenarios in his presentation. If start-ups compete against each other on the former monopoly market, his model predicts an equilibrium where the new businesses seek to gain market shares with lower prices. As soon as an established company from a related market competes on the market as well, price collusions that are detrimental to welfare present a risk for competition.

In the final session, Stuart Graham (Haas School of Business, U.C. Berkely) talked about the development of the U.S. software market. He pointed out the consequences that legislative changes had on the patenting behaviour of software suppliers. Andreas Panagopoulos (University of Toulouse) concluded the conference with his presentation on innovation incentives in Europe.

You can view the program and download the conference papers on the Internet at www.zew.de/ict-conference2 ◄

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ZEW Financial Market Test

Results of the Survey in August 2002

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

As a whole around 400 experts take part in the survey. 270 of them work in banks, 50 in insurance companies, 40 in investment companies and 40 in other industries. Participants in the survey are financial experts of the finance departments, the research departments and the economic departments as well as the investment and securities departments of the firms. In detail, the financial experts are questioned on their medium term expectations about the development of important international financial markets with respect to the business cycle, the inflation rate, short term and long term interest rates, the exchange rate and share prices.

To construct forecasted figures, the qualitative response categories (increasing, unchanged, declining) are transformed into quantitative figures by the Carlson/Parkin procedure. Additional information to the applied procedure is available as an abridged version published by the ZEW. The present survey was conducted between July 22, 2002 and August 13, 2002 and all calculations are termed to August 16, 2002. ◄

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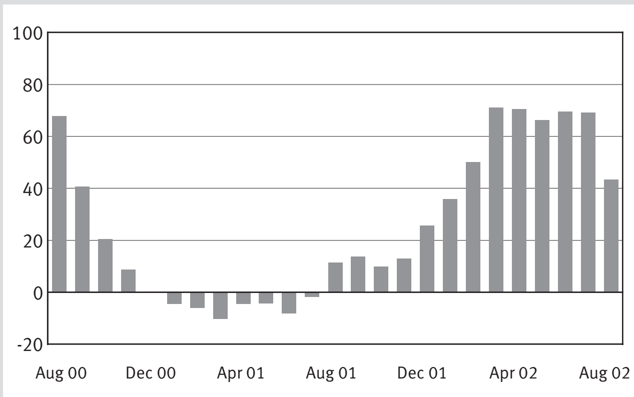
ECB Area: Weak Stock Markets Reduce Hopes for Growth

■ The mood on the European financial markets has worsened decidedly in August. Apparently now the understanding prevails that the declines in stock prices will derogate the real economy in the short to medium term. Up until now there has been a gap between the positive outlook for the economy and the negative impressions on the financial markets. The decline in the business cycle indicators is now indicating a closing of this gap. The ZEW indicator of economic sentiment for Germany has now after a phase of stabilization declined sharply in August by close to 26 points and is signaling risks for the medium term recovery. Of course, one should not overvalue a single decline in the indicator, however, two factors make this collapse notable: First, this is the sharpest decline in the indicator in two years. Second, the indicators for other European countries are also declining sharply, indicating a wide deterioration.

Economic sentiment for Germany



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

Three coherences between the financial markets and the real economy are possible. First, the stock market shows the discounted future company profits and therefore serves as a leading indicator. Second, reduced asset prices will curb private consumption. This means that consumers will reduce their purchases because of losses on the stock markets. Third, a bad sentiment on the stock markets will have a direct effect on corporate financing because less investors are willing to take risks. This is manifested in the reduced number of new stock offerings and a risk premium on corporate bonds.

These factors are now being taken more seriously by the analysts especially after the decline of the Dax by 16 percent in July. However, it is still to early to talk of a double-dip in the economic cycle, meaning a second downturn of growth after a short recovery. At this point however, such a scenario can not be ruled out.

According to the analysts there is little hope for a notable increase in European stock market prices in the coming three months. The balance of optimists and pessimists for the Euro Stoxx 50 has declined by 14 percent in August. The expected November level of the index of European stocks is therefore 2,800 points. ◄

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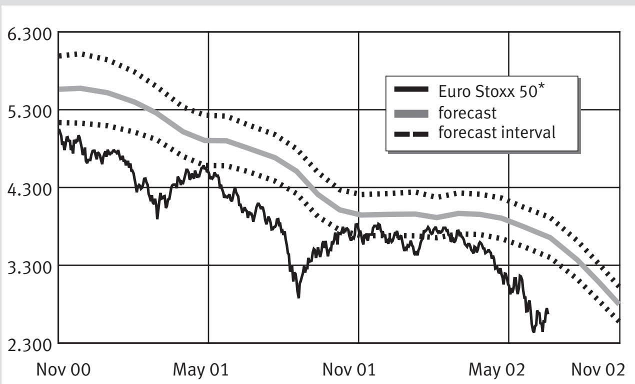
Euro Stoxx 50: development and forecast



Source: ZEW; *Thomson Financial Datastream

ZEW Conference

October 3/4, 2002 in Mannheim:

ZEW Conference: The Economics of Entrepreneurship and the Demography of Firms and Industries

Workshop jointly organised with the odeon center for entrepreneurship in Munich, with financial support by the Deutsche Ausgleichsbank (DtA)

Recently, the impact of formation, growth and exit of firms on innovation and structural change of an economy as well as on the creation of employment has attracted increasing attention in the scientific literature. At the same time, an increasing body of literature analyses the origins of these firm demographic variables, such as entrepreneurship or industry life cycle.

The aim of the ZEW workshop is to discuss recent scientific contributions to the understanding of causes and implications of firm formation, growth and exit. It will focus on recent theoretic and economic studies. An applied workshop will be organised on "The Venture Capital Market, Two Years After the Gold Rush".

For further information please see www.zew.de/de/firm-demography
or contact Dr. Max Keilbach, Phone +49/621/1235-257, Fax -170, Email keilbach@zew.de

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Stirböck, Claudia: *Relative Specialisation of EU Regions: An Econometric Analysis of Sectoral Gross Fixed Capital Formation*, No. 02-36.
Ziegler, Andreas: *Simulated Classical Tests in the Multiperiod Multinominal Probit Model*, No. 02-38.
Boeters, Stefan; Böhringer, Christoph; Feil, Michael: *Taxation and Unemployment: An Applied General Equilibrium Approach for Germany*, No. 02-39.
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Czarnitzki, Dirk; Doherr, Thorsten: *Genetic Algorithms: A Tool for Optimization in Econometrics – Basic Concept and an Example for Empirical Applications Impacts of ICT at the Firm-Level*, No. 02-41.
Hempell, Thomas: *What's Spurious, What's Real? Measuring the Productivity Impact of ICT at the Firm Level*, No. 02-42.
Hempell, Thomas: *Does Experience Matter? Innovations and the Productivity of ICT in German Services*, No. 02-43.
Boockmann, Bernhard; Thurner, Paul W.: *Flexibility Provisions in Multilateral Environmental Treaties*, No. 02-44.
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Lüders, Erik: *Why Are Asset Returns Predictable?*, No. 02-48.
Stirböck, Claudia: *Explaining the Level of Relative Investment Specialisation: A Spatial Econometric Analysis of EU Regions*, No. 02-49.
Zwick, Thomas: *Continuous Training and Firm Productivity in Germany*, No. 02-50.

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