

## Poor Self-confidence Undermines Performance of Girls in School Subject Mathematics

*At the age of 15, girls achieve poorer grades on average in the school subject maths than boys. A study conducted by the Centre for European Economic Research (ZEW) suggests that this gap in performance can be explained partly by the poor self-confidence of girls in relation to maths.*



At the age of 15, girls achieve poorer grades on average in maths than boys.

Although the educational differences between girls and boys have narrowed in recent years, boys have advanced further at maths by the time they reach the end of secondary school. This has long-term consequences for the academic and career choices made by girls and therefore has a knock-on effect on the availability of highly skilled workers.

While various possible factors have been touched upon in past studies in order to explain this gender performance gap, its causes remain for the most part unexplained. Cultural and sociological factors appear to be key determinants. For instance, it is often assumed that secondary school students perform better when they are taught by teachers of the

same sex. Therefore, a higher proportion of female mathematics teachers may act as role models for girls or lead to the application of teaching methods that are better suited to girls. However, the evidence in this area is ambiguous.

### Information on 3,000 15-year-olds

In order to assess these assumptions, a new study conducted by ZEW evaluated the expanded 2003 PISA data for Germany. This representative data set provides detailed information on roughly 3,000 15-year-olds, including information on their mathematical performance, self-assessments of their performance in mathematics, as well as information on pre-

school attendance. Moreover, information on the home was incorporated in the analysis, e.g. concerning the educational attainment and professional status of the parents as well as the support offered to the child. The study also incorporated data on mathematics teachers and schools, e.g. regarding pedagogical resources and class sizes.

The study first examined whether the ratio of male to female mathematics teachers in secondary schools is correlated with the gender performance gap. Our analysis indicates that teacher gender does not affect relative performance. Accordingly, it appears that increasing the percentage of female teachers would not help to alleviate the gap in performance between boys and girls. The study also examined differences between the self-confidence levels of boys and girls and extrinsic motivation in relation to mathematics. While on average a higher per-

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## RESEARCH FINDINGS

centage of girls attend secondary school and their parents expect more from them in terms of academic achievement, the study shows that they have less faith in their mathematical abilities than boys. Furthermore, boys are more often convinced that they need mathematics for their future careers. In this way, the poor self-confidence and extrinsic motivation of girls in relation to mathematics appear to partly explain the gap in performance.

Our analysis additionally indicates that there is no difference in mathematical performance between boys and girls who come from families with more than 500 books at home. The positive effect of the number of books at home – a yardstick by which to measure the attitude of the parents towards education – on the mathematical performance of girls may be related to the fact that girls from these families have greater self-confi-

dence. One possible interpretation is that there are fewer negative stereotypes in these families when it comes to the mathematical abilities of girls.

We believe that it would be worthwhile to collaborate in the future with psychologists in order to conduct further research into the communication of stereotypes by parents and teachers in relation to mathematical abilities.

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## Family-owned Enterprises Willingly Bear Costs in order to Preserve Independence

*Family-owned enterprises are more often inclined to finance investments through short-term, relatively more expensive lines of credit. This is mainly not due to reduced opportunities for obtaining credit, but rather, the importance attached to entrepreneurial independence.*

ZEW Discussion Paper No. 11-006 compares 1,417 family-owned enterprises with 1,195 non-family-owned enterprises in Germany with regard to their financing behaviour and reasons for selecting different types of financing. The study considered a firm to be a family-owned enterprise if a single family enjoyed at least a 50 percent ownership stake. According to the study's findings,

family-owned enterprises are significantly more likely to make use of short-term and therefore costlier lines of credit for long-term investment and innovation projects. For example, 30 percent of family-owned enterprises use overdraft credit to finance investments; in the case of non-family-owned enterprises, this figure is only 19 percent. To finance innovations, 24 percent of family-owned businesses

but only 14 percent of other businesses rely on short-term forms of credit.

Moreover, econometric estimates show that larger family-owned enterprises with more than 100 employees utilise short-term credit significantly more frequently than other, otherwise similar businesses. At the same time, these firms show higher creditworthiness than non-family-owned businesses. Consequently, their higher demand for short-term and expensive financing methods cannot plausibly be attributed to the absence of other financing options.

### Strong Wish for Greater Independence

The reason for the preference for short-term, flexibly deployable credit might be the wish for greater independence from external providers of capital. Empirical data support this view, as larger family-owned enterprises in particular report frequently that they chose not to obtain additional outside credit in order to avoid the danger of greater dependency upon a credit provider. These findings support the opinion that flexibility and independence from outside providers of capital are of great importance to family-owned enterprises. As a result family-owned enterprises are more willing to accept higher credit costs.

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Family-owned enterprises are more often inclined to finance investments through short-term lines of credit.

## RESEARCH FINDINGS

# A Comparison of Germany's Competing Models for the Activation of Welfare Recipients

*Welfare recipients in Germany have better chances of finding employment in the primary labour market if their supervising job centre is a joint venture (ARGE) between a municipality and Germany's Federal Employment Agency.*

Prior to the implementation of Germany's 2005 welfare reform (Hartz IV reform), there was no consensus about who should be responsible for the supervision and labour-market reintegration of employable welfare recipients. As a compromise, a decision was made to create an alternative model of licensed municipal employment offices (zkT) in addition to the standard model of joint ventures (ARGE) between municipalities and the Federal Employment Agency (BA). In the majority of Germany's 439 districts, a joint venture (ARGE) was established between the BA and the local municipality. The two entities share joint responsibility for employable welfare recipients. The local branch of the Federal Employment Agency is responsible for the administration and payment of basic monetary benefits, the labour-market reintegration of individuals through labour-market policy measures, and job placement. The municipalities, in turn, are responsible for housing and heating benefits and for counselling in problem situations. It is a characteristic feature of the ARGEs that they are bound by the rules of the Federal Employment Agency. The ARGEs are under the direct supervision of the Federal Employment Agency, and can therefore be viewed as centralised job centres.

## Decentralised Job Centers

By contrast, 69 out of the 439 districts were granted permission to establish a decentralised system for organising the supervision of welfare recipients. The municipality bears sole responsibility for these licensed municipal employment offices (zkT) in the areas of benefit administration, labour-market reintegration, job

placement, and counselling; the Federal Employment Agency is not involved in these activities.

ZEW Discussion Paper No. 10-106 examines the relative success of these two organisational models. It is based upon a comprehensive survey of job centres, administrative data from the Federal Employment Agency, a survey of more than 20,000 welfare recipients, and extensive regional information. The data encompass the years of 2006 and 2007 and are based on a sample of 154 job centres as well as persons who were receiving welfare benefits in October 2006 and whose subsequent history could be followed through December 2007.

## ARGE Tends to Be More Successful

The results show that the decentralised organisation of the licensed municipal employment offices (zkTs) has a substantial negative effect upon the chances for male welfare recipients to obtain

self-sufficient employment – that is, to obtain a job that provides them with sufficient income to leave the welfare system. Licensed municipal employment offices achieve an integration rate that is one to three percentage points lower than that achieved by the ARGEs. A somewhat negative effect was measured for women as well, but it was not statistically significant. No significant difference was identified either if the comparison of employment rates included individuals who found a form of employment that left them dependent on welfare benefits.

The findings of the study conducted by ZEW show that the ARGEs are more likely to succeed in the absence of job placement obstacles, such as lack of adequate childcare for single parents and young mothers. If such obstacles do exist, then the standardised procedures that come with the centralised job centres lose their competitive advantage. When there are serious placement obstacles, close coordination with local cooperation partners is required to come up with solutions on an individual basis. Neither the ARGEs nor the zkTs have any edge in this situation.

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Photo: digitalstock

Long-term unemployed are taken care of by two competing organisational models of job centres in Germany.

## RESEARCH FINDINGS

# The Creative Industries Thrive on Close Contact with Customers and Business Partners

*The creative industries are considered to be an important driver of future growth in developed countries. In Austria, one in every ten firms belongs to the creative industries and these sectors contribute as much to total gross value added as the traditionally strong tourism industry.*



Photo: istockphoto

Creative professionals often work in companies with no more than ten employees.

The creative industries are regarded as a source of innovations that greatly impact the competitiveness of modern economies. Although there is no general definition of the creative industries, it is undisputed that the characteristic features of these sectors are creativity, specialised knowledge, and inventive ability. The fourth Austrian Report on Creative Industries, which ZEW prepared jointly with KMU Forschung Austria (Austrian Institute for SME Research) and Joanneum Research, assigns firms to the creative industries if they are engaged in the creation, production, and distribution of creative and cultural goods and services. Specifically, the report examines firms that are active in the following sectors: architecture; content (music, books, & arts; radio & TV; video & film); design; software & games; publishing, and advertising.

One result of the report is that the number of firms and persons employed in the Austrian creative industries increased by more than ten percent between 2004 and 2008. In 2008, the most recent year

for which official data is available, one out of ten firms in Austria belonged to the creative industries. This corresponds 36,100 businesses, employing 127,000 persons (including about 92,400 employees). The industry's share in gross value added in the Austrian economy was 3.5 percent in 2008, a contribution comparable to that made by the country's traditionally strong tourism industry.

## In Austria Creatives Are Highly Customer-centered

A characteristic of the creative industries is that firms are very small. 63 percent of the creative firms in Austria are one-person firms, and another third has no more than ten employees.

Given this organisational structure, interesting questions about the working of the creative industries are: How do creative companies provide their services? What role do their business partners play? How do companies market creative services to their customers? The Report

on Creative Industries shows that services provided by the creative industry are highly customer-centred. 84 percent of the creative firms report that they customise their products for the needs of each customer. Typically, the customers of creative firms are other firms, which are located within an hour's travel from their own place of business. Most often, creative firms develop their own ideas for products. Overall, 44 percent rely exclusively upon their own ideas in developing their services and another 38 percent combines their own ideas with those of business partners and customers. Business partnerships play an important role for creative firms. Three-quarters of the firms work in collaboration with other companies in fulfilling customer orders. Generally, their partners are other creative firms.

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## DISCUSSION PAPERS

No 11-020, Benny Geys, Steffen Osterloh: Politicians' Opinions on Rivals in the Competition for Firms: An Empirical Analysis of Reference Points Near a Border.

No 11-019, Sandra Gottschalk, Michaela Niefert: Gender Differences in Business Success of German Start-up Firms.

No 11-018, Florian Misch, Norman Gemmell, Richard Kneller: Fiscal Policy and Growth with Complementarities and Constraints on Government.

No 11-017, Andrea Mühlenweg, Dorothea Blomeyer, Manfred Laucht: Effects of Age at School Entry (ASE) on the Development of Non-Cognitive Skills: Evidence from Psychometric Data.

No 11-016, Marcus Kappler, Helmut Reisen, Moritz Schularick, Edouard Turkisch: The Macroeconomic Effects of Large Exchange Rate Appreciations.

No 11-015, Stephan Dlugosz: Clustering Life Trajectories - A New Divisive Hierarchical Clustering Algorithm for Discrete-valued Discrete Time Series.

## INTERVIEW

Q&A: Free movement for workers from countries that joined the EU in 2004

## Immigration to Germany will Remain Moderate

*On May 1, 2011, all persons from Central and Eastern Europe will gain the unrestricted right to work in another EU nation. Professor Wolfgang Franz talks about the implications of the freedom of movement for the German labour market, as discussed by the Council of Economic Experts.*



Photo: digitalstock

Wage levels in Germany are expected to be effected only marginally by the full freedom of movement.

### How large a number of immigrants can we expect from the nations that joined the EU in 2004?

Our expectation is that immigration from accession nations in Central and Eastern Europe will be moderate after labour market restrictions within the EU have fallen. For one thing, the obstacles to immigration were not insurmountable prior to this change. A number of studies have assumed that between 50,000 and 150,000 individuals will immigrate to Germany every year. However, these studies have failed to consider the recent financial and economic crisis. The

crisis may well have resulted in such a severe deterioration of the labour market in the favoured destination countries of the United Kingdom and Ireland as to make extended residence there unattractive. Immigrants already living abroad are unlikely to decide to move to Germany rather than return to their countries of origin because of potential language barriers. However, the good labour market situation in Germany may attract more immigrants from Eastern and Central Europe.

### What consequences will the free movement without restrictions have for salaries and employment in Germany?

Germany's previous experiences with immigrant labour suggest that we should anticipate only minor negative effects upon wage levels. Nevertheless, we cannot rule out the possibility that a few regional labour markets or specific sectors may be particularly impacted by immigration from the countries cited above, so policy makers might feel pressured to take action. Such pressure would be intensified because the direct displacement of domestic workers is much more visible than the relocations of jobs overseas due to low-cost foreign imports.

### How should policy makers respond to workers from the new EU nations?

Legislative measure should be avoided, especially legally sanctioned minimum wages. Depending on their design, minimum wages could result in the loss of a large number of jobs, primarily in the area of less skilled work, thereby affecting a problem group in the labour market. Moreover, the question arises as to how policy makers should respond to parallel demands for special treatment from other economic sectors that are likewise under strong pressure from international competition. In the final analysis, from an economic perspective, there is no essential difference if a product is produced in Poland for lower wage costs than in Germany and is then exported here, or if the same product is manufactured by an immigrant Polish worker in Germany whose wage is similarly lower than the prevailing salary earned by local workers. In both cases, the products can be sold at a lower price – to the advantage of consumers.

### The German labour market has a specific deficit in highly qualified workers. Can full freedom of movement counteract the deficit in the qualified work force?

Immigration of workers from Central and Eastern European nations may partially alleviate the lack of highly qualified workers in Germany, but this problem will not be solved simply on the basis of full freedom of movement.

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Photo: ZEW

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## POLITICO-ECONOMIC ANALYSIS

# The Willingness to Pay for Climate Protection

*Climate change and the global public good of climate protection have received public attention in recent years. While there is a broad recognition of the dangers of climate change, efforts to reduce CO<sub>2</sub> emissions are associated with significant costs. The question arises as to how much Germans are actually willing to pay to protect the climate.*

Climate protection is a global public good. All nations can benefit independently from climate protection efforts and nobody can be excluded from the benefits of reduced greenhouse gas emissions, regardless of whether they have made a contribution to securing this public good or not. As the exclusion principle does not apply to public goods, the willingness to pay for such goods is not easily observable in the marketplace. For this reason, economists have conducted various studies using complex questionnaires to survey individuals about their willingness to pay for climate protection. In these studies, participants have been asked about how much of their monthly income they would be willing to sacrifice in order to prevent a tonne of CO<sub>2</sub> emissions, or alternatively, to limit global warming to a specified level.

## Widely Disparate Findings

The findings of these studies are quite inconsistent. The average willingness to pay for preventing one tonne of CO<sub>2</sub> emis-

sions ranges from 25 to 476 euros. These numbers must be regarded with some caution, however, given that the readiness to pay for climate protection was surveyed in a purely hypothetical context. No participants were compelled to actually pay the proposed sum for climate protection.

## Market Mechanism behind EU ETS

It is disconcerting that prior research has concentrated exclusively on survey studies, for there are alternative methods available for determining people's actual willingness to pay for climate protection. Since 2005, CO<sub>2</sub> pollution rights have been traded as part of the European Emission Trading Scheme (EU ETS). The principle behind this trading scheme is simple: member states allocate a specified total quantity of pollution rights to companies covered by the EU ETS. Emitters are subsequently permitted to freely trade and transfer these rights. Every industrial facility that wishes to emit a tonne of CO<sub>2</sub> must demonstrate to na-

tional regulatory authorities that it has the necessary certificates. If emission rights become scarce, the market will set an appropriate price. At the end of 2010, the price of a tonne of CO<sub>2</sub> was 15 euros.

The market mechanism behind the EU ETS can be used to determine actual willingness to pay for the prevention of CO<sub>2</sub> emissions. Thus, in March of 2010, 202 individuals in Mannheim were randomly selected to participate in an experiment at ZEW. The sample was representative of the urban population of Mannheim with respect to age and gender. The participants, who each received a payment of 40 euros for their participation, were first informed about the significant consequences of climate change and about how the EU ETS functions. Then they were offered the chance to purchase CO<sub>2</sub> rights at five randomly selected prices. The subjects were under no obligation to make a purchase. The participants were truthfully informed that the designers of the experiment would actually purchase and withdraw a corresponding amount of certificates from the Leipzig electricity exchange. By purchasing pollution rights, the participants thus had the opportunity to reduce the overall quantity of CO<sub>2</sub> emissions in Europe. This experimental design made it possible to calculate a CO<sub>2</sub> demand curve for each participant, and to derive an equivalent willingness to pay. What were the results?

## Low Willingness to Pay

On average, the willingness to pay for preventing climate change due to greenhouse gasses was in the positive range, but it was small, amounting to just under 12 euros for one tonne of CO<sub>2</sub>. This is the lowest value measured to date. In addition, it is interesting that about 60 percent of participants in the experiment expressed a willingness to spend zero euros. From the perspective of economic theory, this finding is significant, since it suggests that in the final analysis, there is no political majority in favour of substantive and costly climate protection policies. It should be addition-



On average, participants in the experiment were prepared to spend 12 euros to prevent one tonne of CO<sub>2</sub>.

## POLITICO-ECONOMIC ANALYSIS

ally emphasised that the sample of subjects was obtained in Germany, a country where climate change and its negative impacts have received great public attention. Moreover, income levels are relatively high in Germany and in general, higher income is associated with higher demand for environmental protection. What is the significance of such a low willingness to pay for international climate protection policy? The findings of the experiment suggest that it is quite unlikely that other nations would have a greater willingness to make expenditures to prevent CO<sub>2</sub> emissions.

## Symbolic Policy: The Kyoto Protocol

In fact, the low readiness to pay for climate protection provides a good explanation for why important partners to the Kyoto Protocol engaged in numerous rounds of renegotiation, ultimately turning the treaty into a purely symbolic gesture. As they adopted the protocol, nations were able to demonstrate to the general public that they were addressing the problem of climate change. Subsequently, they sought to amend the protocol in order to align the costs of implementation with the low willingness of the voting public to pay for climate protection. If the willingness to pay for climate change is so low in a nation like Germany, then how will it be possible to persuade citizens of China and India to swallow the

**Experimental economics** is an increasingly important subfield of economic research that uses laboratory and field experiments to test theories. Alongside theory validation, economic experiments are used to generate “stylised facts” that are reproducible and robust with respect to different elements of the laboratory environment. Based upon observed patterns of behaviour, new theories with greater explanatory power can be developed. Experiments thus have a theory-building function. Another area of application for experiments involves examining the impact of specific market instruments prior to their actual introduction. The testing of regulatory impacts is of particular significance for the formulation of effective economic policy, for it allows mechanisms which are difficult to assess with theory to be subjected to an acid test in the laboratory. In addition, economic experiments can be used to determine individual preferences, such as the willingness to pay for specific goods.



Photo: ZEW  
Experiment: a participant must decide how much money he is willing to spend for a particular purpose.

bitter pill of a subsequent agreement that might compromise their continued economic growth? However, the inclusion of emerging nations is essential if we are to have any hope of success in significantly

reducing global CO<sub>2</sub> emissions and thus counteracting climate change.

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## INSIDE ZEW

## ZEW Researchers Receive Best Refereed Conference Paper Award 2011 by Pacific Rim Real Estate Society

A study conducted at the ZEW titled “Diversification Benefits from Securitized Real Estate for International Portfolios” was recently awarded the Best Refereed Conference Paper Award 2011 by the Pacific Rim Real Estate Society. The authors of the paper, Tim-Alexander Kröncke and Felix Schindler, received the award at the Pacific Rim Real Estate Society Conference 2011. The award-winning paper deals with the diversification benefits that are available to investors by adding securitized real estate investments

to an internationally diversified mixed-asset portfolio. The paper shows that, in the case of a portfolio containing U.S. treasuries, stocks, and real estate, international real estate investments provide more diversification opportunities than international stocks. This is particularly the case when international investments are hedged against currency risk exposure. The results proved to be robust over time in an out-of-sample analysis and while taking into account investment restrictions such as short selling



Photo: ZEW  
Felix Schindler



Photo: ZEW  
Tim-Alexander Kröncke

constraints. You can download the paper at the ZEW homepage by following the link [www.zew.de/publikation6120](http://www.zew.de/publikation6120)

## SEEK CONFERENCE

## SEEK Kick-off Conference at ZEW in Mannheim

*ZEW President Wolfgang Franz welcomed some 200 participants from academia, politics and the economy from 20 countries to the SEEK kick-off conference „Strengthening Efficiency and Competitiveness in the European Knowledge Economies“ (SEEK) in Mannheim on 4-5 March 2011.*



Photo: ZEW

Stefan Mappus Minister President of Baden-Württemberg gave the opening speech at the SEEK Conference.

Stefan Mappus, Minister President of Baden-Württemberg, and Máire Geoghegan-Quinn, EU Commissioner for Research, Innovation and Science, gave the opening speeches at the conference. Their speeches were followed by a high-quality panel discussion with Andrew W. Wyckoff (OECD), David C. Mowery (University of Berkeley Haas School of Business), Georg Schütte (State Secretary at the Federal Ministry of Education and Research) and Dietmar Harhoff (LMU Munich, Director of INNO-tec). They discussed how Europe – in competition with the USA, Asia and other emerging economies – could succeed in achieving long-term sustainable growth, which boosts jobs and wealth by sensibly using renewable resources.

In his opening speech, Wolfgang Franz thanked Minister President Mappus and the state government of Baden-Württemberg for providing the financial means for the SEEK programme. Moreover, he outlined the key aim of the SEEK programme, namely fostering a deeper understanding of policy options in order to find solutions on how knowledge-based economies in Europe could remain innovative and secure their wealth in the interna-

tional competition for talents, resources and knowledge.

Stefan Mappus, Minister President of Baden-Württemberg, indicated in his speech that Europe is currently not at its best. This, he continued, was on the one hand due to the global financial and economic crisis; on the other hand Europe had to find a way to manage the consequences of the demographic de-

velopment and public deficits. Here the EU's growth strategy Europe 2020 applies and the SEEK programme is to help implementing this strategy. "Europe and also Baden-Württemberg rely on new models of knowledge transfer to come out of the current crisis strengthened," Mappus said. To achieve growth and competitiveness, and at the same time avoid undesirable developments and pave the way, the economy and politics depend on scientific sound policy advising. The SEEK programme is to contribute to this. The Innovation Council Baden-Württemberg recommended that the state government funded the programme.

### SEEK Important for Europe

Máire Geoghegan-Quinn, EU Commissioner for Research, Innovation and Science, praised Baden-Württemberg as "Leading Powerhouse of Innovation in and for Europe". According to Geoghegan-Quinn, the launch of the SEEK programme, which is financed by the state government of Baden-Württemberg, demonstrated an ambition to keep the region among the leading knowledge-based economies in Europe. SEEK was not only important for Baden-Württemberg but also for Europe as a whole because it made a considerable contribution to strengthening high-quality economic research, she said.



Photo: ZEW

EU Commissioner Máire Geoghegan-Quinn explained the EU's 2020-strategy.



## SEEK CONFERENCE

The EU Commissioner considered the topic of the first SEEK conference, namely generating growth based on knowledge and innovation a burning issue. According to Geoghegan-Quinn, the innovation union was at the heart of the EU's growth strategy Europe 2020. With this strategy, Europe was to close up to the United States and Japan in the next few years, and maintain its competitiveness in comparison with emerging economies like China, India or Brazil. Therefore, the EU Member States had to remember the commonly agreed target to reinvest three percent of the gross domestic product in research and development. The EU commissioner explained that while deficit reduction in EU Member States were necessary, it was also crucial to safeguard investments in areas such as education and research.

### Combine Smartly: Strategies and Programmes on Innovation

Within the panel discussion, Georg Schütte, State Secretary at the German Federal Ministry of Education and Research, highlighted the "race of instruments". This threatened not only within the EU but also between the EU and the individual Member States with regard to funding research and innovation. Rather than initiating more and more new strategic programmes to foster innovations, existing national programmes and programmes launched by the EU have to be combined smartly in order to achieve the EU 2020 goals. He reminded that the EU had to cooperate better with the EU Member States to jointly use their resources instead of being competitors. Schütte gave the example of the European innovation partnerships which analysed the issue of active and healthy aging. These partnerships were in competition with the EU initiative "More Years, Better Lives" and the high-tech initiative of the German federal government which investigated how self-determined life was possible at a great age.

Andrew W. Wyckoff, Director of OECD Directorate for Science, Technology and Industry, explained that the global financial and economic crisis lead to countries using investments for innovations



Thomas Kohl, Director of Business and Administration at ZEW, with Stefan Mappus, Máire Geoghegan-Quinn and Wolfgang Franz, President of ZEW (from left).



Panel Discussion: Dietmar Harhoff of LMU Munich (right) advocated that Germany had to become more attractive for talents from abroad.



Participants of the panel discussion: Wolfgang Franz, Georg Schütte, Andrew W. Wyckoff, Georg Licht, Dietmar Harhoff, David C. Mowery (from left).

## SEEK CONFERENCE

as stimulus for the economy. This was a novelty, and due to the crisis innovation policy has turned out to be “mainstream policy”. In the United States alone almost 100 billion U.S. dollars were spent for fostering innovations. Innovations were the key to better understand and solve burning social issues like demographic aging or climate change, Wyckoff said. It was necessary to make innovations measurable in order to keep politics on an innovation-friendly track. According to Wyckoff, the Frascati Manual, which was introduced as early as 1953 by OECD, mainly covered research and development. The OECD has recognized the important goal to further develop this model to include input and output or the success of innovation policy measures.

#### Lessons from the Bayh-Dole Act

David C. Mowery of the University of Berkeley talked about the Bayh-Dole Act. This act, which was adopted in the United States in 1980, gave the university conducting government-funded research the right to patent their inventions and sell them to firms by license agreements. He explained that as a result the number of patent applications increased. Due to license fees, however, the university only generated moderate revenues. The only exception was biotechnology. Moreover, the Bayh-Doyle Act led to numerous conflicts and legal disputes with the private,



ZEW's President Wolfgang Franz welcomed some 200 participants from academia, politics and economy at the SEEK kick-off Conference in Mannheim.

business. Therefore, opinions on this act differed greatly, Mowery said. Furthermore, the US universities did no longer use their resources with patent application as a goal. Rather the trend was towards technology transfer and technological cooperation of universities and private business. Mowery said he was convinced that this development would increase in the future.

#### Collaboration of Leading Universities in Europe Demanded

“The educational system in Germany is the Achilles’ heal of innovation,” Dietmar Harhoff of LMU Munich said. He men-

tioned that not enough young people in Germany studied subjects like mathematics and science at university. This fact as well as the demographic change would weaken Germany’s innovative strength. To counteract this development, Germany had to become more attractive for talents from other countries. If this did not happen, the added value would be created somewhere else, e.g. in Silicon Valley or Bangalore, Harhoff said. However, the shortage of skilled workers not only was an issue in Germany but in the EU as a whole. Every EU Member State by itself was too small to compete with the United States or China. Thus, Europe had to close ranks with regard to innovation policy. Concerning this matter the EU was headed in the right direction, Harhoff said. Many EU innovation initiatives were successful, in particular the European Research Council, which every year granted significant research funds to promising talents and established researchers. However, despite many successes, the EU had to step up efforts. European innovation policy should not be the lowest common denominator in politics. Harhoff suggested that particularly innovative EU Member States and leading European universities should collaborate more closely to foster innovative cooperation within the EU.

The panel discussion was chaired by Georg Licht, head of the ZEW research department “Industrial Economics and International Management”. The panel



Bernhard Nick, President of Verbund Site Management Europe and Site Manager BASF SE, welcomed the participants to the Conference Dinne held at BASF-Gesellschaftshaus in Ludwigshafen.

## SEEK CONFERENCE

discussion was followed by a discussion with the conference participants.

### Innovation Drift Away from Europe

At the end of the first day, the conference dinner took place at Gesellschaftshaus at BASF in Ludwigshafen, where Bernhard Nick, President of Verbund Site Management Europe and Site Manager BASF SE, welcomed the participants of the SEEK conference. In his dinner speech, he emphasised that in the long run it would not work if developed countries generated ideas but produced them in less developed countries. The outsourcing of production would lead to an innovation drift away from Europe in the long term, Nick said. The second conference day was devoted to science. Thirty scientific lectures and two keynote speeches by the international renowned researchers Philippe Aghion (Harvard University) and Bronwyn Hall (University of California, Berkeley, and Maastricht University) addressed the great variety and interdependence of innovation and growth in knowledge-based economies.

### Budget Cuts in Innovation

Within the financial crisis, many firms and governments reduced their investments in research and development activities. In his lecture "Financial Constraints, Cyclical Macroeconomic Policy and Industry Growth", Philippe Aghion dealt with the effects of this reaction to the medium- and long-term growth prospects. He indicated that in incomplete credit markets a countercyclical monetary policy could contribute to raise the firms' investments to a higher level and, thus, significantly increase the long-term growth. The effect did not rely on Keynesian arguments on the multiplier effect of monetary policy but on the fact that such a policy would moderate fluctuations in the availability of credit. A crisis-induced countercyclical financial policy, e.g. the increase of government spending or tax relief, disappeared without trace without achieving long-term effects.

Philippe Aghion provided evidence for his assumption, namely extensive empirical findings based on data of 45 indus-



Philippe Aghion talked about the consequences of budget cuts in innovations for long-term economic growth.

trial sectors of 17 OECD countries in the period from 1980 to 2005.

Bronwyn Hall concerned herself with the empirical modelling of the relations of product and process innovations and increasing productivity. She talked about advantages and disadvantages of various indicators like patents, R&D spending, and measurement concepts for product and process innovations and the productivity growth. Her lecture focused on the CDM model by Crepon, Duguet and Mairesse, which has been frequently used in the last few years and which identifies research activities of firms, their patent activities and their innovations as driving forces of the long-term

productivity development. Her overview of this model with data of findings of innovation surveys from different European countries on the one hand indicated considerable country-specific differences and on the other hand a major similarity, i.e. that product innovations are of high relevance for productivity. Bronwyn Hall concluded that on company level particularly product innovations contribute to an increase in the volume of sales and added value and, thus, firms should invest more in new products rather than in process innovations.

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Bronwyn Hall dealt with the model of Crepon, Duguet und Mairesse.

## ZEW CONFERENCE

# Volker Wieland Talked about Proposals for Policy Analysis after the Financial Market Crisis

*At the end of January 2011 a special highlight marked ZEW's research seminar. Prof. Volker Wieland, PhD, from Goethe University in Frankfurt gave a talk about new proposals for policy analysis in the wake of the financial and economic crisis.*

At the beginning of his talk, Wieland described the media's current criticism of macroeconomics, which accuses economists of not having predicted the financial crisis and suggests that the general equilibrium models applied are unrealistic. Furthermore, Wieland mentioned

of the economy as a whole, including the banking and finance sector as well as deviations from rational expectations, are to be developed further.

Taking the example of the financial crisis, Wieland also showed that current models did not correctly predict the re-

less accurate. Wieland pointed out that this fact was surprising, considering that experts could freely choose variables and therefore were more flexible in developing forecasts. Finally, he examined the stimulus packages launched during the financial crisis applying different models and concluded that the effects of the crisis on German GDP had not lived up to the worst expectations.

Volker Wieland is professor for Monetary Theory and Policy at the Goethe University in Frankfurt/ Main. Having studied Economics at the University of Wuerzburg, the State University of New York at Albany and the Institute for the World Economy in Kiel, he received a PhD from Stanford University in 1995. Before joining the Frankfurt faculty, Volker Wieland was a senior economist at the Board of Governors of the Federal Reserve System in Washington, DC. In the year 2008, he was awarded the Wim Duisenberg Research Fellowship by the European Central Bank (ECB).

Wieland's research interests include monetary and fiscal policy, business cycles and macroeconomic models. He became well-known, amongst others, for his research on reducing the risks of deflation and a more robust interest rate policy. Furthermore, he is working on the development of a comparative analysis of different macroeconomic models.

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Photo: ZEW

Volker Wieland talked about new proposals for policy analysis after the financial and economic crisis.

Krugman's and Buiter's opinion that modern macroeconomics appears to be ineffectual.

As an answer to this criticism, Wieland presented his view on how the robustness of macroeconomic policy analysis could be improved after the financial market crisis. The core element of his proposal is the development of an internet platform that uses different models and thereby makes it possible to conduct extensive model comparisons via different explanatory approaches. Competition between models is intended to lead to more robust policy recommendations and to facilitate the review of research findings. Additionally, dynamic stochastic models

cession but that in comparison, forecasts made by experts had been even

## INSIDE ZEW

## Prof. Dr. Irene Bertschek Accepts Position at University of Mannheim



Photo: ZEW

Since February 2011, Prof. Dr. Irene Bertschek, head of the ZEW-research group Information and Communication Technologies, has been appointed professor of economics with a focus on applied empirical economic research at the University of Mannheim. The position is attached to the Department of Economics within the Faculty of Law and Economics. The chair is partly funded by the Gottfried Wilhelm Leibniz Scientific Community.

## ZEW CONFERENCE

# Conference on Competition and Innovation

*In March 2011, ZEW, the Mannheim Centre for Competition and Innovation (MaCCI), the University of Mannheim and the WHU Otto Beisheim School of Management hosted the conference "Public and Private Enforcement of Competition Law – Legal and Economic Perspectives".*

Around 60 lawyers and economists from Germany and other European countries attended the conference in order to discuss and to learn about the current challenges of public and private enforcement of competition law.

sion focused on the private enforcement of competition law. Based on theoretical models, Martin Hellwig of Max Planck Institute for Research on Collective Goods raised questions on the legal approach to the so-called "passing-on defence".

realised in the near future. The second conference day started off with the panel discussion on "Interaction of Public and Private Enforcement". Thomas Ackermann of the University of Munich discussed the relation between the calculation of fines and the calculation of damages in private suits. Gunnar Niels of the consultancy OXERA presented a variety of possible empirical methods to calculate damages.

## Procedural Aspects of Public and Private Enforcement

The next panel discussion was devoted to the procedural aspects of public and private enforcement. Andreas Heineemann of the University of Zurich showed the close relation between the importance of alleged offences and the principles for accessing evidence in a legal order. Ulrich Schwalbe of the University of Hohenheim dealt with the different leniency programmes in the EU member states from an economic perspective and their interaction with private claims for damages. The conference was perceived as a great example for the successful dialogue between economists and lawyers. It is aimed to be followed by other MaCCI conferences in the future which aim at fostering the interaction between academic researchers and professionals.

For further information please visit [www.macci-mannheim.eu](http://www.macci-mannheim.eu)

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Participants at the MaCCI Conference on "Public and Private Enforcement of Competition Law – Legal and Economic Perspectives" in Mannheim.

Joachim Bornkamm (Judge at the Federal Supreme Court of Germany) gave the keynote speech on the significance of public and private enforcement of competition law. He talked about the EU Commission's plans on private enforcement of competition law. In particular, he addressed the issue of "class actions" and "passing-on defence". The keynote was followed by a panel discussion on "Public Enforcement – Fines and the Skimming Off of Illegal Gains by Competition Authorities". Gerhard Dannecker of the University of Heidelberg gave the introductory presentation on this topic. He raised the question whether damages should be deducted from fines, and plead in favour of harmonising the regulations for the calculation of fines in the individual EU member states. The second panel discus-

sion focused on the private enforcement of competition law. Based on theoretical models, Martin Hellwig's remarks and indicated if and how these conceptual considerations for calculating damages could be

## INSIDE ZEW

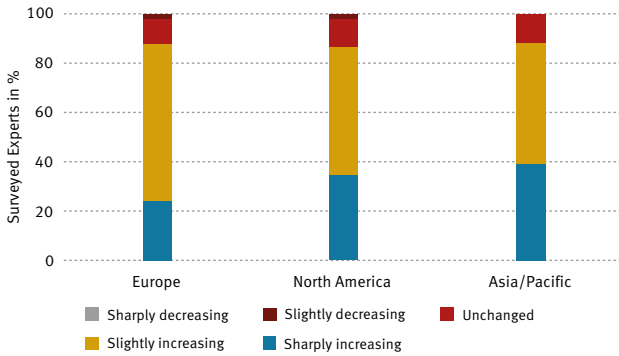
## Prof. Dr. Michael Schröder Accepts Position at the Frankfurt School of Finance and Management



Prof. Dr. Michael Schröder, head of ZEW's International Finance and Financial Management research department, has accepted a professorship in asset management at the Frankfurt School of Finance and Management. The position is attached to the school's Finance Department. Schröder is doing research on topics such as the empirical analysis of capital markets as well as the analysis of the relationships between financial markets and the real economy.

FACTS AND FIGURES

### Sharp Price Increase for Air Freight, Especially for Asian Destinations

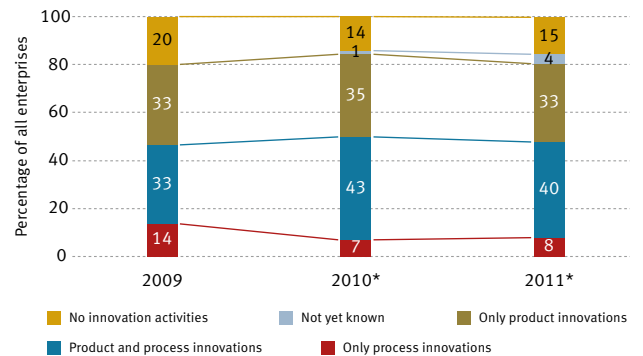


Source: ZEW

The sharp price increases for air freight witnessed recently will continue during the upcoming half year in all three submarkets, according to the experts surveyed for the ProgTrans/ZEW Transport Market Barometer. Among the queried experts, 85 to 90 percent anticipate price increases, with the lowest increases expected for transport in Europe and the highest for the Asian and Pacific regions. For Asian and Pacific routes, almost 40 percent of the experts currently anticipate price increases of more than three percentage points.

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### Chemical and Pharmaceuticals Industry Ramps up Innovation Efforts



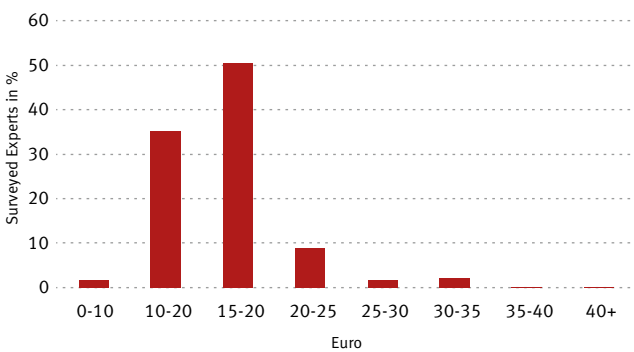
\* Target figures from spring/summer 2010

Source: ZEW, Mannheim Innovationpanel

The chemical and pharmaceuticals industry is the sector with the greatest percentage of firms engaged in efforts to innovate. Even during the economic crisis in 2009, 80 percent of firms invested in new products and processes. With the economic recovery in 2010, this figure rose to some 85 percent. The share of companies that are pursuing both product and process innovations increased robustly to 43 percent, up from 33 percent in 2009. In 2011 more than 80 percent of firms in the chemical and pharmaceuticals industry will carry out innovation projects, too.

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### Emissions Prices of 15 to 20 Euros per Tonne CO2 Anticipated

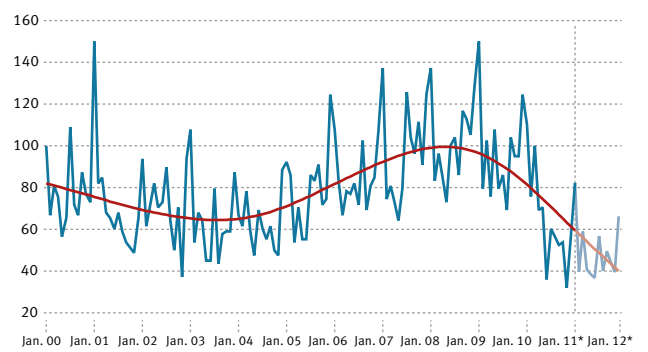


Source: ZEW

More than half of the experts surveyed for the ZEW Energy Market Barometer are predicting near-term (six month-time horizon) prices of between 15 and 20 euros per tonne of CO2 on the European emissions market. The current price is about 14 euros. Among the survey participants, some 35 percent predict a price between 10 and 15 Euro. Another nine percent anticipate that over the near term, the price of a tonne of CO2 will range from 20 to 25 euros. The ZEW Energy Market Barometer is a survey of experts about future trends in international energy markets.

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### Revitalisation of Germany's M&A Market Ahead



\* Forecast starting January 2011

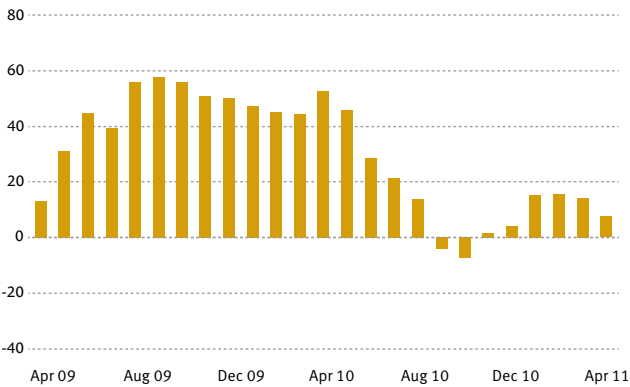
Source: Zephyr database, Bureau van Dijk, ZEW

After its significant decline in 2010, German M&A activities are about to recover slowly. In November 2010, the M&A Index for Germany reached with 32 points its lowest value of all time. Nevertheless, since January 2011 the index gained terrain hovering at the 46 mark. Although this is well below the index starting point in January 2000 (100 points), there is light on the horizon. Forecasts for the future development of the indicator suggest that M&A activities in Germany will be bottoming out. The Index is calculated monthly by ZEW and Bureau van Dijk (BvD).

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FACTS AND FIGURES

## ZEW Financial Market Test April 2011

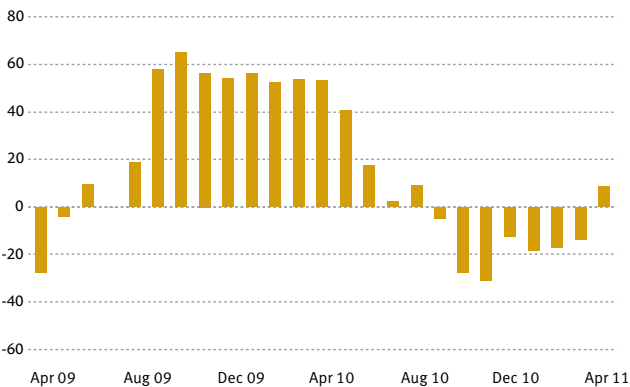


Balance of positive and negative assessments concerning economic development in Germany. Source: ZEW

### Germany: Cautious Expectations

In April the ZEW Indicator of Economic Sentiment for Germany declined by 6.5 points and now stands at 7.6 points. This value is below the indicator's historical average of 26.6 points. Two factors may have contributed to this decline. On the one hand, the current boom doesn't leave much room for a further improvement of the current economic situation. On the other hand, experts are more and more aware of the risks for the world economy resulting from the severe incidents in Japan and in the Arab world. Despite the positive economic development, considerable risks may result from increasing commodity prices. These price increases could lead to second-round effects that could then force the European Central Bank (ECB) to adopt a more restrictive monetary policy.

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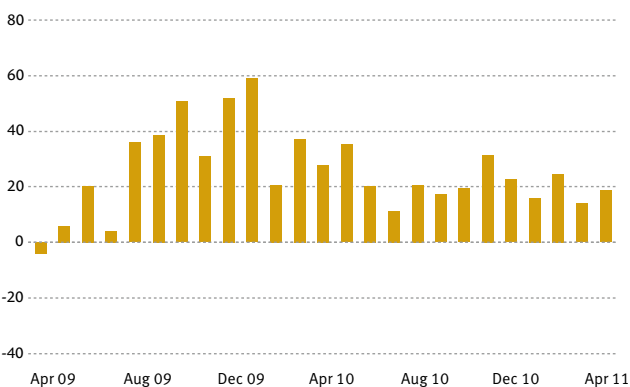


Balance of positive and negative assessments concerning economic development in Switzerland. Source: ZEW, Credit Suisse

### Switzerland: Economic Expectations Brighten up

Economic expectations for Switzerland brightened up in April. The ZEW-CS-Indicator which reflects the expectations of the surveyed financial market experts regarding the economic development in Switzerland on a six-month time horizon has climbed by 22.3 points to the 8.8 threshold, moving into positive territory again for the first time since August 2010. The ZEW-CS Indicator is calculated monthly by the Centre for European Economic Research (ZEW) in cooperation with Credit Suisse (CS). The share of financial market experts who predict that economic momentum will pick up steam in the next half-year relative to the prevailing picture grew by roughly ten percentage points to 20.6 percent. Only 11.8 percent of the survey participants expect the dynamics of the Swiss economy to weaken.

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Balance of positive and negative assessments concerning economic development in the CEE region. Source: ZEW

### CEE Region: Expectations Recover Slightly

The ZEW-Erste Group Bank Economic Sentiment Indicator for Central and Eastern Europe including Turkey (CEE) has increased by 4.8 points to 18.7 points in April. The current economic situation in the CEE region has seen an even stronger improvement. The respective indicator climbed 20.2 points to a value of 22.5 points in April. The economic sentiment indicator for the CEE region and further financial market data have been surveyed monthly since 2007 by the Centre for European Economic Research (ZEW), Mannheim, with the support of Erste Group Bank, Vienna. The CEE region consists of Bulgaria, Croatia, the Czech Republic, Hungary, Poland, Romania, Serbia, Slovakia, Slovenia and since October 2010 of Turkey. Financial market data for Austria and the Eurozone are surveyed separately.

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## The Future of Nuclear Power

The horrific news reports and images from Japan's nuclear disaster are disturbing, yet it would be unwise to rely on the advice of the Cassandras in our midst. What is instead needed is a re-assessment of nuclear energy in light of the following two questions: What

lessons can be drawn from the catastrophe in Japan with regard to the safety of nuclear power plants closer to home? Moreover, what alternatives to nuclear power do we have, and how viable are they both technically and economically?

Current information indicates the Fukushima nuclear disaster was not caused by the earthquake. Rather, the severe tsunami, coupled with potentially insufficient safety systems, were responsible. While the magnitude 9.0 earthquake in Japan was one of the seven strongest of the last three centuries, Fukushima's automatic shutdown system and back-up power generators, which were triggered due to the loss of external power supply, did in fact work properly. Rather, it was the tremendous force of the subsequent tsunami that led to the failure of the emergency power generators, and, as a result, to the overheating of the reactors. The possibility of a tsunami was certainly taken into account by Japan's nuclear engineers, yet the strength of this tsunami was unexpected. It appears there was only one back-up diesel power system at the Fukushima plant, and that the reserve battery system, which served as a second back-up, was not sufficiently redundant in its design.

The strongest earthquake in Germany over the past several hundred years was 5.6 in magnitude, and occurred in 1911. Furthermore, a tsunami is an impossibility in Germany. Thus, in discussing the lessons to be drawn from the Fukushima disaster, the following questions are key: How strong of an earthquake could Germany's nuclear power plants withstand? What back-up power systems do Germany's nuclear facilities possess in the event that external power supply is lost? Furthermore, it is possible to prevent the failure of cooling systems due to flooding, loss of water supply, or an attack by hackers or terrorists?

The next step is to discuss to what the extent the citizenry is willing to accept the remaining safety risks. For it is of little value to say an event only occurs once in 100,000 years if that event takes place tomorrow. We must also take into account what is

perhaps the greatest unresolved problem posed by nuclear power – that of nuclear waste, and how to dispose of it.

With regard to nuclear power, we must of course also consider alternative forms of energy. At the same time, however, we must remain aware that other countries – such as France – will hardly allow themselves to be instructed by Germany in matters of energy policy. The establishment of acceptable EU-wide safety standards would itself be a significant achievement.

Although the recent temporary shutdown of seven of Germany's nuclear power plants is unlikely to threaten security of supply, Germany will nevertheless not be able to avoid the importation of electricity from French nuclear power plants. Thus, while the temporary shutdown has done nothing to reduce safety risks, electricity prices are likely to increase – to say nothing of Germany's dependency on foreign energy imports. In any event, a rapid closure of all of Germany's nuclear power plants would necessitate a strong expansion in power generation from fossil fuels, for which there would be little public acceptance in the impacted regions. An accelerated shutdown of Germany's nuclear power plants in the broader effort to transition to renewables would not only lead to higher electricity prices (due to the reduced proceeds from nuclear), but could also potentially threaten the stability of Germany's power grid. The risk to stability would be particularly acute along the country's north-south axis, as most nuclear power plants are located in the south, and most green energy facilities in the north. With regard to solar energy, Germany lacks sufficient sunshine, and the lack of political stability in northern Africa calls into question potential projects for constructing large-scale solar facilities there. The wind in Germany blows unreliably; moreover, wind turbines are an aesthetic blight on the landscape, and expensive to install offshore. The alternatives to nuclear power thus all have considerable drawbacks.

My personal opinion? We are going to have to live with nuclear energy for the next two or three decades due to its benefits and despite its risks. In the meantime, being more conservation-minded would go a long way.

Wolfgang Franz

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