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Chinese Patents in International Comparison: Increasing Quantity at the Cost of Quality

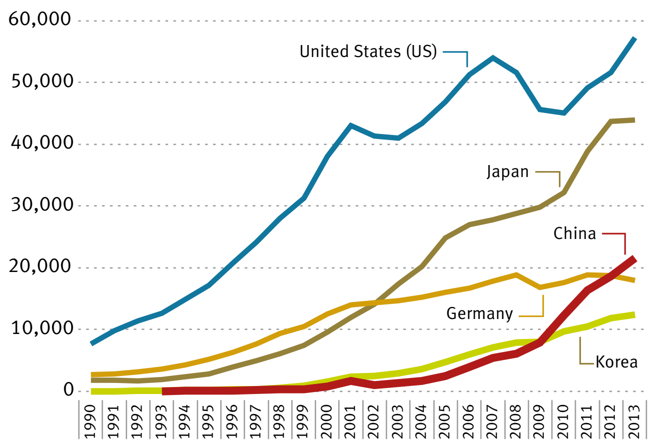
China has long been the enfant terrible of the patent world. While the Middle Kingdom is notorious for copying patented technology, the country has made great efforts since 2000 to protect its own intellectual property and now ranks as one of the world's leading nations in patents registered per year. According to a quality index proposed by a recent ZEW study, however, the quality of Chinese patents trails behind those of high-income countries, and has continued to slip over time.

Businesses can decide to patent their technology with national or regional patent offices or to file an international application using the procedure provided by the Patent Cooperation Treaty (PCT). Basically, the PCT procedure gives companies more time to decide in which countries they want to seek patent protection. Since the PCT procedure is more expensive than domestic fillings, it is typically only used for high-value technology. China is now ranked third in worldwide PCT applications, surpassing even Germany. While this rise in patent applications has been accompanied by increased company spending on research and development (R&D), it has also been driven by government subsidies and political targets. So what are Chinese patents really worth?

Positive Correlation Between Citations and Patents' Market Value

Because the market value of patents varies widely even within countries, a meaningful country comparison must rely on more than the number of applications they file. Typically, representative comparisons quantify the value of patents based on the

PCT-APPLICATIONS BY COUNTRY OF ORIGIN



Source: World Intellectual Property Organization, 2014

number of citations they receive. Citations are references to prior patents on which the technology in the patent builds. When reviewing new applications, patent examiners search for previously filed patents with related technology. There is usually positive correlation between the number of patent citations in an application and its market value – which is why researchers use it as a general index of patent quality.

The ZEW study has developed a new quality index – the so-called ISR Index – for international comparisons that avoids distortions caused by differences in national examination procedures. The ZEW index is only based on patent citations generated during the initial review of PCT applications. This review takes place under the internationally uniform guidelines of the PCT procedure. If citations from one or more national offices would be used, distortions are likely to occur as countries have different examination rules. In order to ensure an outside view, the index omits citations from the same applicant ("self-citations"). Furthermore, to eliminate the influence of national economic policy on the quality measure, the ISR Index only considers citations from outside the home country of the patent applicant.

Comparison to Technology Leaders' PCT Applications

The ZEW study compared the quality of Chinese and non-Chinese PCT applications. The non-Chinese applications came almost exclusively from high-income countries – which are also technology leaders. For the period from 2001 to 2009, Chinese applications reached only 34 per cent of the quality of non-Chinese applications. Moreover, their quality dropped markedly in the period under investigation.

At the company level, the quality index correlates positively and significantly with R&D spending, as expected. Nevertheless, the analysis also finds a significant drop of quality in 2009, the same year that Chinese government introduced subsidies for PCT applications. When using an alternative definition of the index – one that includes self-citations and domestic citations – the correlation with research expenditures vanishes. The findings show that not all citations have the same value. Hence, great care must be taken when selecting suitable quality indicators – especially when national patent subsidies are in place.

The study is available at: www.zew.de/publikation7985

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Though China has surpassed Germany in international patent applications, they produce relatively few high-quality patents.

Poto: ©i Stock.com/CreativaImages

Highly Productive Enterprises Make More Use of Global Sourcing

Many German enterprises are now sourcing raw materials, services and components required for the production of their products and services abroad and they do no longer limit their search for suppliers to the domestic market. Cost advantages to companies resulting from labour cost differences across countries or from the availability of superior material resources abroad are often the main motive for global sourcing. A current ZEW study has examined the role of information and communications technologies (ICT) in corporate decision-making on global sourcing.

The rise in the global trade of intermediate products is generally traced back to the influence of ICT as well as to lowered trade barriers and reduced transportation costs. ICT contribute to reducing costs arising out of the need to coordinate purchasing activities across physical distances. In addition, ICT has opened up new opportunities to divide and organise work tasks in ways that transcend borders. This particularly benefits service providers whose products were previously difficult to trade – many services can now be delivered at (and from) any location via the Internet.

Turnover as a Measure of Productivity

The sample of companies studied using data drawn from ZEW's ICT survey encompasses 1,243 companies from seven industries within the manufacturing sector and 894 companies from eight industries within the services sector. 59.5 per cent of the companies belonging to the manufacturing sector in this sample import inputs, as do 20.1 per cent of the service providers studied. The study uses turnover per employee as a measure of company productivity. ICT intensity is measured using three different indicators: e-commerce intensity, the deployment of distinct enterprise software and the diffusion of PCs and Internet access within companies.

The use of e-commerce is fairly widespread: around half of the enterprises in the manufacturing sector and 43 per cent of the service providers use the Internet to purchase intermediate products and services or to sell their products and services to consumers and customers. In addition, 85 per cent of the companies surveyed have deployed at least one enterprise software package for purposes such as Enterprise Resource Planning, Supply Chain Management and Customer Relationship Management. Employees at service providers use PCs and the Internet in the workplace (68 and 77 per cent) far more frequently than employees in the manufacturing sector (34 and 44 per cent).

Role of ICT Depends on Complexity

The study shows that enterprises with above-average productivity in both the manufacturing and the services sector are more likely to use global sourcing in their purchasing. The correlation is, however, only statistically significant in the case of enterprises with high levels of upstream supply chain complexity. In the manufacturing sector, these were identified in, among other examples, the chemicals and pharmaceuticals industries, mechanical engineering and the automotive sector. In the services sector, they included the fields of management consulting, advertising, IT, telecommunications and technical services.

ICT intensity, taken in isolation, does not tip the balance in favour of global sourcing. The differences between the manufacturing sector and services sector and the differences attributable to the complexity of purchasing structures are far more significant. In the manufacturing sector, the probability that global sourcing is used rises in parallel with the number of employees who have access to the Internet. In both the manufacturing and services sectors, the probability of companies using global sourcing is higher for companies engaged in e-commerce activities. For service providers, this correlation proved to be statistically significant – independently of the complexity of purchasing systems.

The study is available at: www.zew.de/publikation8182

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IN THIS ISSUE

Mind the Gap – The Difference Between US and European Loan Rates

The prices of corporate loans have long been significantly different in Europe and the US. As the credit market is a global market with many globally active loan issuers, banks and other lenders, one might expect that competition would eliminate pricing differences. New approaches towards explaining this pricing puzzle are presented in a current ZEW study.

Several questions need to be clarified when discussing price differences in relation to corporate loans. Do the price differences relate to different types of lending? Do they increase or decrease over time? Has the presence of the institutional investors who have increasingly entered the financial markets in recent years affected these price differences?

To generate informative and robust answers to these questions, the researchers distinguish between two types of lending to companies: lines of credit and term loans. Lines of credit, which are granted almost exclusively by banks, provide firms with contingent liquidity they can draw on as required up to a contractually specified limit. The total cost of borrowing includes both loan interest rates and fees for the line of credit. Term loans are different, in that the entire amount of the loan is paid out to the issuer at loan origination. This amount is then repaid, together with interest and fees, either at the end of the loan term or in instalments.

Photo: ©i Stock.com/ZhuDifeng

Focus on the Period 1992 to 2007

The ZEW study draws on detailed information on loans to major European and US companies recorded in the "Dealscan" database maintained by the Loan Pricing Corporation. Only companies evaluated by the credit rating agency Standard and Poor's have been included in the sample of companies investigated for the study, which focuses on the years 1992 to 2007. The years 2008 and 2009 are not considered because enterprises in Europe and the US were affected to different degrees by the financial crisis during those years. A total of 12,721 US and 1,075 European loan tranches from 1,979 US and 263 European lenders were analysed.

It can be noted that European companies with an average value of 945 million US dollars took on significantly larger loans than US enterprises (540 million US dollars) and that the average maturity of the European loans was, at 58 months, significantly longer than that of the US loans (46 months). The proportion of credit lines granted in the US is, at 71 per cent, significantly higher than the equivalent figure for Europe (50 per cent). It is also interesting to note that the creditworthiness of the European companies in the sample was significantly higher than that of the US companies: while 77 per cent of the European companies studied had a rating of AAA, AA, A or BBB at the point in time when loans were originated, only 55 per cent of the US companies did.

Lines of credit are used by companies spanning the full range of credit ratings in both Europe and the US. Interest for credit drawn down was, on average, 13 basis points lower in Europe than in the US, but both interest paid on the undrawn loan amount and fees were higher in Europe than in the US. As a result, lines of credit in Europe and the US had different price structures, but the total cost of borrowing was roughly equivalent for both European and American borrowers.

Poor Performance of US Enterprises

The ZEW study also demonstrates that major differences exist in the composition of the firms borrowing in term loan markets. In Europe, companies across the full range of ratings took out term loans with banks, but in the US, companies in this market were more likely to be those with poor ratings. US enterprises with good ratings tended to issue bonds instead. European companies also performed significantly better after taking out loans: in their ratings, they outperformed US firms by 0.7 points. The ZEW model suggests that around 30 per cent of the difference in interest rates in the European and US lending markets can be traced back to the poorer performance of US enterprises both prior to and after the extension of credit.

It is noticeable that differences in pricing affecting loans between 2003 and 2007 declined strongly and were finally almost insignificant as interest rates in the US market fell and then reached a stable equilibrium at European levels. This change resulted from the increased presence of institutional investors in the US market, which had previously been dominated by banks, and by the resulting pressure on prices. In Europe, the number of loans institutional investors were involved in did not rise as strongly.

The study is available at: www.zew.de/publikation8281

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Photo: ©i Stock.com/MarkgrafAve

Corporate Taxation – Europe Mainly Competes with Itself

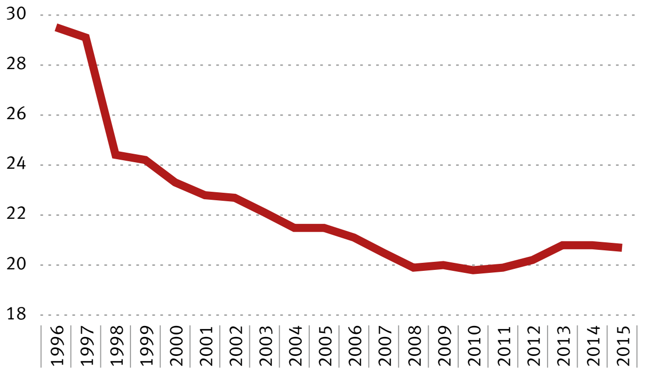
Tax competition is often mentioned as a reason for the decreasing corporate tax rates in Europe. A recent ZEW study investigates whether the EU member states really compete with each other for foreign direct investment, and whether they also compete with countries from outside Europe.

Over the past two decades the effective average tax rate in Europe has declined considerably, dropping from 29.5 per cent in 1996 to 21.5 per cent in 2015. During the same period, the effective tax burden has also decreased in other parts of the world, for example in the Asia-Pacific region.

Experts commonly cite competition for global investments to explain the declining tax rates. But can declining effective tax rates in Europe really be attributed to tax competition? And if so, is the decline in corporate tax levels mainly driven by tax competition between EU member states or is it (also) due to pressure from other world regions? ZEW addresses these questions in an empirical analysis.

Previous studies have shown that countries attempt to attract investment from multinational corporations by offering favourable tax systems. Multinationals in turn usually have several options where to set up production facilities. For example, they can decide to just produce in their home country and serve all other countries by exports. But they can also decide to pick some locations abroad to set up production facilities and use these locations as export-platforms to serve all the nearby markets.

EFFECTIVE AVERAGE TAX RATE IN EU-28 COUNTRIES
BY PERCENTAGE



Source: ZEW

Depending on how they decide, their profits will be subject to different national tax rates.

The ZEW study uses data for 44 countries from 1996 to 2012. The data covers four world regions: Europe, North America, Latin America, and the Asia-Pacific region. Competition for foreign direct investment is reflected in effective average tax rates which compromise depreciation and valuation methods beside statutory tax rates. To identify competition behaviour between states, the study uses so-called tax reaction functions that model the effective average tax rate of a country as a function of the weighted effective average tax rates of other countries.

Tax Competition Only Within Europe – No Tax Pressure from Outside

The findings of the ZEW study suggest that the decreasing effective average tax rates can indeed be attributed to competition between the member states. However, the study finds no evidence that the EU member states respond to tax levels outside Europe. This indicates that the decline in effective tax rates in Europe can be attributed to competition within Europe, not to tax pressure from outside Europe.

The accession of the new EU member states in 2004 caused additional dynamics to tax competition in Europe. Before entering the EU, the new states drastically cut their effective average tax rates. The old member states in turn cut their taxes mainly after 2004. Overall, the new member states show lower average tax rates than the old member states during the complete period under investigation.

Is tax harmonisation the best way to avoid the negative effects of tax competition? An outright harmonization of corporate taxes appears too far reaching given its disadvantages. Instead, there are alternative solutions to tax competition which are milder than complete tax harmonization, e.g. a Common Corporate Tax Base (CCTB) as proposed by the European Commission in its 2015 Action Plan on Corporate Taxation. Such a system would unify the tax base rules without standardizing the tax rate. This would give countries leeway to determine the tax rate that best suits their needs. At the same time, it would reduce companies' compliance costs considerably, making the EU as a whole more attractive for investments than other economic regions.

The study is available at: www.zew.de/publikation8101

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Remittances are transferred mainly for the purpose of consumption: family members who have remained at home are given the opportunity to afford purchases that would be beyond their means without funds from abroad.

Photo: © iStock.com/aluxum

Remittances to Migrants' Home Countries Have Positive Effects on Public Finances

Both international migration and the volume of remittances transferred to migrants' countries of origin have risen in recent years. A new study conducted by ZEW shows the impact this increase in remittances has had on tax revenue in recipient countries and on their tax systems.

Since the turn of the millennium, international migration has increased dramatically. According to United Nations data, 175 million people emigrated in 2000; by 2013, this figure had risen to 232 million. This trend has been accompanied by an increase in remittances, as money transfers by migrants to their countries of origin are termed. Several family members in a given migrant's home country may live off money sent by one relative abroad. In addition to direct foreign investment and development aid, these remittances are an important source of external financial transfers for developing countries. In the year 2013, for example, the total volume of global remittances reached 345 billion US dollars; this equates to approximately double the volume of development aid spending and half the volume of foreign direct investment.

Data from 129 Countries Analysed

In spite of their enormous economic significance, the influence of remittances on the economies of recipient countries has not been scrutinised in depth by researchers. ZEW has now carried out a study looking at the impact of remittances on tax revenue and tax policy in the countries receiving them. Data from 129 countries was analysed for the period 1970–2013. The study pulls together data from multiple sources: the World Bank (information on remittances), the International Centre for Tax and Development (data on tax revenue and structures), and the World Tax Indicators (data on value added tax and income tax rates).

Remittances Can be Taxed Indirectly

The ZEW study shows that remittances have a lasting influence on revenue from value added tax in recipient countries. A ten per cent rise in remittances as a share of a country's GDP triggers a three per cent increase in revenue from value added tax as a share of GDP. Remittances are transferred mainly for the purpose of consumption: they make it possible for relatives who have remained at home to afford purchases that would be beyond their means without funds from abroad. Revenue from income tax is unaffected, however, and the impact of remittances on tax revenue as a whole is not clear. The results indicate that direct income tax is not paid on remittances – it would appear that people do not disclose their receipt in income tax declarations. At the same time, the state cannot trace remittances back to their source. Remittances can, nevertheless, be taxed indirectly through taxes on consumption. Increases in the inflow of remittances make recipient countries more likely to introduce a form of value added taxation. This strategy ensures that the state does not miss out on its share of the income generated by consumption facilitated by remittances.

Positive Impact on Income Tax Rate

The ZEW study shows, moreover, that higher inflows of remittances correlate negatively with changes in the rate of value added tax in recipient countries. A ten per cent increase in remittances leads to a six percentage point drop in the rate of VAT. It is clear that states reduce the tax rate when tax revenue from a particular source rises: unexpectedly high levels of revenue give states leeway to lower tax rates, and they may opt to do so in order to provide economic stimulus.

Inflows of remittances correlate positively with income tax rates, however: when remittances rise by ten per cent, income tax rates rise by 13 per cent and the progressivity of income tax systems increases. Academic studies have shown that an increase in remittances boosts the performance of the financial sector. This makes it easier for states to collect income tax, and that in turn makes it possible for the public authorities to raise income tax rates in order to arrive at a more advantageous mix of indirect and direct taxation.

The study is available at: www.zew.de/publikation8292

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M&A REPORT

Dynamism in German M&A Market Continues

The latest ZEW-ZEPHYR M&A Index indicates that when it comes to mergers and acquisitions (M&A) involving German companies, things are continuing to go well. In January 2016, the index had a value of 123 points, indicating a dynamic start to 2016. Indeed, 96 transactions took place in January 2016 – more mergers and acquisitions have not been achieved in the same period since January 2013. The latest wave of mergers, which began in April 2011 and which since then has continued almost without interruption, saw a slight decline before now once again increasing. This is reflected in the twelve-month moving average of the ZEW-ZEPHYR M&A Index.

Photo: ©i Stock.com/macgyverhh

Number of Announced Deals Remains High

The twelve-month moving average of the M&A Index reached its previously highest value of 92 points in October 2014, before falling to 83.4 points up until October 2015. In January 2016, the twelve-month moving average temporarily exceeded the 90 points-mark and currently reads 89.4 points (March 2016). The future outlook for the moving average is also positive, with the number of announced new mergers and acquisitions remaining high.

These markets are, however, not only dynamic in terms of the number of foreseen transactions. In addition, a number of mega deals involving German companies are set to take place. Current rumours suggest a takeover battle in the plant protection product and agrochemical sector which is currently in a process of consolidation. Initially the US American seed and herbicide multinational Monsanto aimed at taking over the CropScience Division of Bayer or BASF after having recently lost out to the Swiss agricultural giant Syngenta, which won the fight to buy out ChinaChem in March 2016 for 38 billion US dollars.

However, meanwhile the hunter was turned into the hunted and Bayer's CropDivision is now trying to take over Monsanto. If Bayer's current bid of 67 billion US dollars will be accepted, it would make it the biggest deal in German history.

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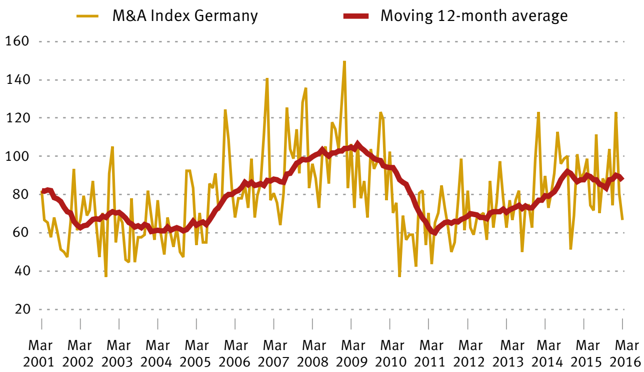
ZEW-ZEPHYR M&A-INDEX GERMANY



Source: Zephyr database, Bureau van Dijk; calculations by ZEW

The **ZEW-ZEPHYR M&A Index** measures the number of M&A transactions completed in Germany each month. It considers only mergers and acquisitions by and with German companies. It does not differentiate between the country of origin of the buyer or partner. This means that both domestic as well as international buyer companies are considered, provided the target companies are active in Germany.

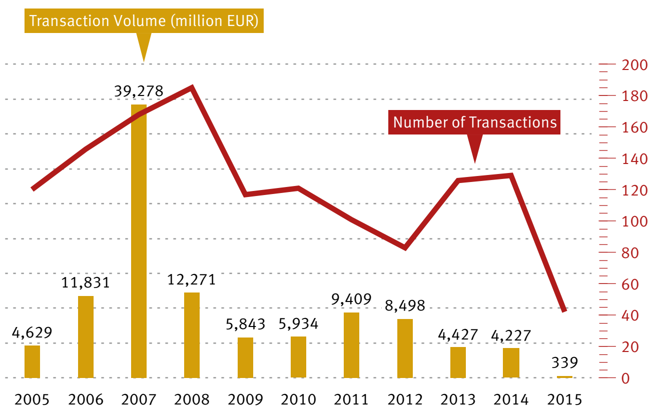
The M&A Report is a biyearly publication issued by the Centre for European Economic Research (ZEW) and Bureau van Dijk (BvD). It uses the Zephyr database to report on current topics and developments in global mergers and acquisitions. The Zephyr database, which is updated daily, contains detailed information on over one million M&A, IPOs, and private equity transactions across the world.

BUREAU VAN DIJK

Mergers and Acquisitions Between Russia and OECD Members Collapse

The number of mergers and acquisitions (M&A) taking place between Russian companies and companies located in countries included in the Organisation for Economic Co-Operation and Development (OECD) have come to an almost complete standstill as a result of the latest political events surrounding the crisis in Crimea. In 2015, only 43 M&A transactions took place between Western and Russian businesses, fewer than ever since data collection began.

M&A TRANSACTIONS BETWEEN RUSSIA AND OECD COUNTRIES



Source: Zephyr database, Bureau van Dijk, calculations by ZEW

In 2014, 129 deals were completed. The latest development therefore equates to a 67 per cent decrease within one year. Even in 2012, the year which previously had the lowest number of M&As on record, 83 mergers and acquisitions took place, double the number seen in 2015.

Commodities Sector in Crisis

Things seem even more drastic if one considers the aggregated financial volume of all completed M&A transactions. Whilst the volume of deals in 2014 totalled 4.23 billion euros, which was already the lowest recorded aggregated transaction value since records began, this value fell by more than 90 per cent in 2015. The financial volume of deals has fallen to 339 million euros. This development is not, however, exclusively a result of political tension. Over the last years, several of the large deals with Russian involvement, such as the acquisition of the Canadian nickel corporation Lionore by the Russian firm Norilsk Nickel in 2007 (3.8 billion euro), or the 50 per cent participation of the Russian oil corporation Rosneft in the Germany-based company Ruhr Öl in 2010 (1.6 billion euros, now in the process of being dissolved), took place in the commodities sector. For some time past, this sector has been in crisis and has just recently undergone significant consolidation.

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M&A Activity in Europe's Water Industry Follows No General Trends

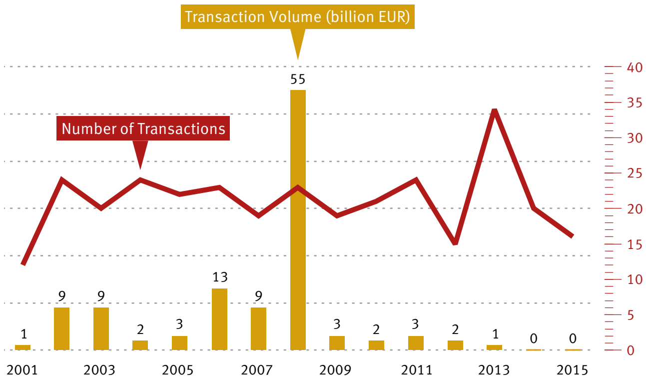
In the past 15 years M&A activity in Europe's water industry has remained steady, with an average of around 21 transactions a year but a notable spike in 2013. By contrast, transaction volumes were considerably higher in the first half of this period, peaking in 2008 only to decline in the following years. (It should be noted that volume data are incomplete, as the values of some deals were not disclosed.)

The highest level of transaction volume in 2008 was primarily the result of Gaz de France's 45.5-billion-euro purchase of the French conglomerate Suez. With the state acting as principal shareholder, the creation of GDF Suez was meant to fend off a hostile takeover bid by the Italian multinational Enel. As part of the deal, the water and waste division of Suez, valued at 7.4 billion euros, was split off to form Suez Environnement. Of the other transactions during the observation period, only three come close to the GDF deal in terms of volume, and all involve British companies: the 2006 acquisition of Thames Water Holding by Kemble Water (11.9 billion euros), the 2008 purchase of the Kelda Group by Saltaire Water (7.4 billion euros), and the 2007 takeover of Southern Water by Greensands Investment (6 billion euros).

UK Leads Transactions

Great Britain saw the greatest number of mergers and acquisitions in Europe's water industry, taking in 18 per cent of the total from the past 15 years. Rounding out the top five was Spain (17 per cent), Italy (15 per cent), Germany (10 per cent), and France (8 per cent). Also worthy of note is that Germany's average transaction volume for disclosed deals after 2008 was 661 million euros, far greater than that of Great Britain, with the next highest

M&A ACTIVITY IN EUROPE'S WATER INDUSTRY



Source: Zephyr database, Bureau van Dijk, calculations by ZEW

average at 355 million euros, and that of Spain and France, each in the vicinity of 120 million euros. Two deals were responsible for Germany's results: first, the capital-intensive purchase of Thüga AG by the municipal consortium Integra Energie in the year 2009 for 2.9 billion euros, and second, the gradual recommunalisation of Berlin's water utilities between the years 2012 and 2013, totalling 1.2 billion euros.

On the whole, M&A activity in Europe's water industry has not followed any general trends. This is due to the diversity of the sector. Unlike the power industry, the water sector has not undergone an EU-led liberalisation of its natural monopoly, and the ratio of private to state-owned companies differs from one country to the next. England and France have the highest levels of privatisation, with England's water industry completely transferred to the private sector. In most other EU states, public-sector enterprises dominate the industry.

In the year 2014 the European Parliament considered a petition by the citizens' initiative Right2Water demanding that the European Union safeguards the UN-recognised right to water and sanitation by excluding water services from liberalisation (among other measures). This citizens' initiative has, however, not found its way into legislation yet, and it's hard to predict what the future holds for the water sector.

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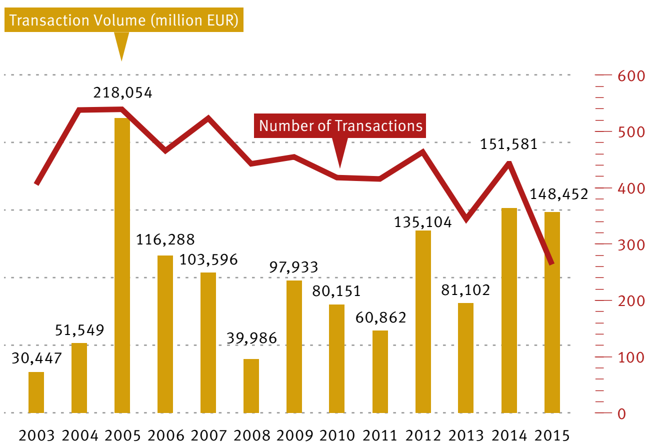
US Megadeals Play Vital Role in World Oil and Gas Industry

Three megadeals closed in the US within the past year ensured that the global transaction volume for merger and acquisition activities in the oil and gas sector remained high. With a global transaction volume of 151 billion euros, 2014 has been a record-breaking year but with 148 billion euros the year 2015 remains only close behind. With deal volumes of 20, 18 and 16 billion euros respectively, the three megadeals executed in the US made up for more than a third of the total global transaction volume in 2015. Indeed, these transactions were the third, fourth and fifth largest transactions ever recorded in the American market.

M&A ACTIVITIES IN THE OIL AND GAS SECTOR WORLDWIDE



Source: Zephyr database, Bureau van Dijk, calculations by ZEW

Largest Takeover for Ten Years

However, the most recent megadeal in this sector was recorded on European soil (not included in the graph). With a value of around 60 billion euros, the takeover of the Reading-based English BG Group by Royal Dutch Shell in February 2016 was the largest takeover in the oil and gas sector for ten years. While the transaction volume remains high, the number of transactions reported is, however, clearly decreasing.

After 444 transactions in 2014, only 264 deals were documented in 2015. After more than one year of depressed oil and gas prices, the sector has now entered a new period of uncertainty and realignment. As no major price increases are expected in the medium-term, it seems that corporations prefer to hold onto their cash, rather than engage in risky ventures.

In addition, especially American fracking firms have incurred large debts as a result of significant investments made in recent years. In case of a takeover, debts must be taken over by the acquirer, which clearly inhibits transfers. This development will result in a cooling-down of the market following the latest megadeals.

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Temporary End to Major Acquisitions in German Property Market

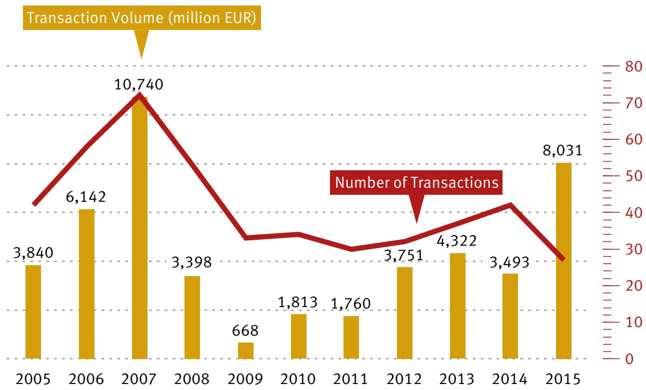
German real-estate companies' tendency to engage in increasingly large acquisitions seems to have come to an at least temporary end. In February 2016, shareholders of the Frankfurt-based real-estate company Deutsche Wohnen voted against a takeover offer from the market leader Vonovia, based in Bochum (formerly Deutsche Annington). The takeover of the second largest real-estate company would have been the largest transaction of all time in the German property market, and would have seen further expansion of the market leader Vonovia.

Financial Crisis Brought Activities to Standstill

Following the boom in the mid-2000s, the financial crisis brought acquisition activities in the German property market to a near standstill. The number of transactions taking place in 2009, during the financial crisis, was only 33 per cent, whilst the transaction volume totalled only 668 million euro. This constituted respective falls of 54 and 94 per cent from the levels seen in 2007, the most active year in the German property market.

Following the crisis, the number of mergers remained low in comparison to pre-crisis levels. The transaction volume, however, showed significant increases. This development was above all a result of the expansion activities undertaken by Deutsche Annington and Deutsche Wohnen. Deutsche Annington's takeover of its competitor Gagfah for 4.3 billion euro not only caused a stir in the property market, but also contributed more than half of the total transaction volume for 2015. The largest German real-estate corporation, Vonovia, developed as a result of this merger. Deutsche Wohnen was also able to significantly increase its market share through its takeover of GSW Immobilien for 1.7 billion euros, thereby establishing itself as the second largest competitor in the property market. The failed merger between

M&A ACTIVITIES IN THE GERMAN PROPERTY MARKET



Source: Zephy database, Bureau van Dijk, calculations by ZEW

Vonovia and Deutsche Wohnen is the second large acquisition to have failed in the last six months. In October 2015, a possible takeover of LEG by Deutsche Wohnen for an estimated value of around eight billion euros also failed as a result of objections raised by the shareholders of Deutsche Wohnen.

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Appartment block of Deutsche Wohnen in Berlin.

Q&A: How Sustainable Are Germany's Planned Energy Market Reforms?

"The Deactivation of Lignite Power Stations Is Ineffective in Terms of Climate Protection"

Germany's federal government has revealed ambitious plans for new legislation. The electricity market law, the act on capacity reserves, and the law on digitisation should ensure that the energy transition is achieved and that the German energy market is made fit for the future. Whilst the Bundestag will first focus its attention on the new electricity market law, the cabinet intends with this trio of regulatory reforms to not only further develop the German energy market, but also to ensure that formerly declared climate protection aims are achieved. ZEW environmental economist Nikolas Wölfing, however, considers these laws to be nowhere near as effective as intended.

In Berlin there is talk of "Electricity Market 2.0". What exactly is this?

The proportion of electricity derived from renewable energy sources has significantly increased over the last several years. The most significant sources of renewable energy, solar and wind energy, however, do not follow the schedule of electricity demand. Alternative measures are needed to ensure that demand and production are constantly balanced. Such might include adjustments in demand or additional production at different power stations. The federal government has already concluded that price signals shall serve as the primary determinant of actual electricity supply. It thereby further fosters the current design of the "Energy Only Market" (EOM). This is to be welcomed since with the right market design, prices can provide efficient shortage signals. In practice, this translates into numerous smaller reforms, which are to ensure that both the user and producer stick more closely to their planned levels of use or production. Moreover, they enable more energy providers to offer flexibility on the basis of energy demand management or production capacities.

The drafted law foresees reserve capacity as from autumn 2017: lignite power stations shall be deactivated, but reinstated in an emergency. This should secure energy supply and ensure that the German climate protection aims are achieved by 2020.

Security of supply and climate protection are claimed to be the objectives of the reform. These claims are, however, insufficiently backed. The reform wants the lignite power stations to act as a reserve of last resort in case of electricity shortage. However, this exact reform merely takes these power stations offline. No capacity is added to the system at all. Indeed, additional capacities would be useless as we currently experience abundant supply in the market. Prices are so low that power stations close down for economic reasons. The current reform, however, does not concern these economically endangered capacities. Instead, it takes out power plants which otherwise would have stayed in the system.

And what about climate protection?

In terms of climate protection, the planned deactivation of lignite power stations is completely ineffective. The first issue is that the national climate protection aim is incompatible with European aims. Since 2005, the Emissions Trading System has determined reductions in greenhouse gas emissions in certain sectors throughout the EU. The overall volume of CO_2 produced by industry in Europe will therefore not change, unless the number of traded emission certificates is reduced. If emissions from German lignite power stations are cut, other sectors or countries will simply be able to increase emissions by the equivalent amount. All participating specialists are aware of this interrelation. The strange thing is that climate protection is nevertheless claimed to be a priority here. There may be other reasons to reduce the use of lignite, but this legislation will bring about very little when it comes to climate protection.

Germany's federal government plans to provide millions in compensation to the operators of reserve power stations. In the future, private households will pay an environmental protection levy of 0.05 cents per kilowatt-hour of electricity. How does this match up?

Unfortunately, it doesn't. 0.05 cents per kilowatt-hour seems very little. Germany's federal government estimates the annual total costs at 230 million euros on average for the next seven years. This is to ensure that by 2020, German CO_2 emissions will have been reduced by 11 to 12.5 million tons. For 2020, this would constitute costs of around 20 euros per ton. In other years, this value would undoubtedly be considerably higher. To pro-

Photo: ZEW

Dr. Nikolas Wölfing has been working as a researcher at ZEW in the Department of Environmental and Resource Economics, Environmental Management since November 2007. His research interest is in competition economics, energy markets, strategic behaviour, and the effects of sectoral regulation. His works on competition in electricity wholesale have earned him several research awards. By successfully passing EEX's "Exchange Trader Certification Course", Nikolas Wölfing meets all requirements to work as an exchange trader for the European Energy Exchange (EEX).

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vide a comparison, the market price for CO_2 is currently between five euros and 6.50 euros. For between a quarter to a third of the costs, emissions could therefore actually be avoided rather than reallocated.

A further important point in the reform concerns digitisation. What exactly is planned?

On the one hand, it aims to increase the use of smart-meters. On the other hand, it discusses which security standards are necessary for this to happen. Germany's federal government is aiming to implement smart-meters first and foremost in industry and manufacture, which certainly makes sense in terms of cost-benefit ratio and data protection. At the moment, the potential costs of a large-scale implementation of smart meters in households may not seem viable. This depends not least on regulated price components such as levies on renewable energy, reserve power stations, and network charges. If fixed levies increase and the energy prices on the wholesale market remain as low as they currently are, there will be little incentive to adjust electricity use to the current situation.

In the future, it will become increasingly important to find intelligent remuneration designs, which until now have been based on fixed levies.

Towards Fair and Just Climate Protection

The Paris Agreement adopted in December 2015 provided new impetus for climate protection by showing the importance of individual states in leading the way on environmental policy. The Energiewende – Germany's transition to renewable energy and sustainable development – is one example of this idea in action. But good climate protection policy must also be fair and just for everyone. As it stands now, the German energy plan places an undue financial burden on low-income earners. Action to remedy the situation is urgently needed.

The aim of the Energiewende can be expressed in simple terms: to make environmentally friendly technologies competitive with traditional technologies so that climate protection becomes economically self-perpetuating. Many studies have shown that this model – in principle – works. Today, Germany draws almost a third of its power supply from renewable sources. This is a remarkable success, but it has come with a hefty price tag. Currently, the annual amount of subsidies payed for renewable energy support amount to about 20 billion euros, and costs are expected to rise over the medium term. Experts estimate that expanding the power grid alone will cost tens of billions of euros.

Fairness is a Key Factor for Climate Action

There has been heated debate on the international stage and within Germany about how to best distribute the costs of climate protection. Behavioural economics has shown the importance of fair burden-sharing for successful cooperation. This is obvious in situations where cooperation is voluntary, as with international climate policy. But fairness is also a key factor for national climate action like the Energiewende.

One of the consequences of the Energiewende has been a large increase in the price of electricity – from 15 cents per kilowatt-hour in 2000 to almost 30 cents per kilowatt-hour in 2015. Now energy – whether in the form of heating or electricity – is a basic necessity that no one can do without. Accordingly, Germany's price increases have affected poor households disproportionately. Low-income households already tend to be frugal energy consumers with little room for additional cost cutting. And as studies conducted by the ZEW have shown, the allotments for electricity in Germany's unemployment insurance and welfare programmes are extremely tight. Overall, about 10 to 12 percent of households in Germany face deprivation with respect to energy services.

Strong Need for Reform

It is crucial that the German government do more to accommodate low-income households when making Energiewende policy, heeding the social welfare principles as found in Germany's constitution while also taking into account environmental concerns. In particular, legislators must quickly adjust basic social security allowances to reflect higher energy costs and protect those hardest hit. The surcharge levied on consumers for funding the Energiewende contravenes the ability-to-pay principle that underlies the German taxation system because it places a larger relative financial burden on households near the poverty line. The legislator should reform the current funding scheme and introduce tax-based funding for the Energiewende.

As for energy efficiency – currently in a state of stagnation due to a market failure – the state could provide targeted information to improve consumer behaviour. Energy labels and advising services such as Stromspar-Check (an electricity calculator offered by Caritas Germany) or NRW bekämpft Energiearmut (an information campaign to combat energy poverty in North Rhine-Westphalia) should be expanded. If economically feasible investments in energy efficiency do not occur due to budgetary restrictions, state intervention may be justified.

Ultimately, there is a strong interaction between climate policy and social aspects. Electricity prices are strongly influenced by domestic policy. Distributive effects can therefore be mitigated by means of effective and efficient design of energy and climate policy. This perspective should be a guiding principle for policy making, and problems of distributive justice in relation to energy policy should receive increased attention in the future.

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In April 2016 EU Commissioner Carlos Moedas gave a speech at ZEW about how results from research can be translated into innovations in markets.

Photo: FKPH

EU Commissioner Moedas: "Europe Must Increase the Flexibility of Its Markets"

The key to competitiveness can be summed up quite simply: More innovation results in greater productivity, and therefore more growth. Research and development, however, are essential drivers of innovation. The critical question therefore is how results from research can be translated into innovations in markets. Carlos Moedas, EU Commissioner for Research, Science and Innovation, believes that in the future, innovation will increasingly occur at the points of intersection between various research disciplines. Protectionism has little role to play here.

As Moedas made clear in his lecture on April 13, 2016, which he delivered at ZEW as part of the lecture series First-Hand Information on Economic Policy, it is important that the EU Member States become more flexible and open their markets to keep investors and venture capital within Europe. When it comes to developing and implementing market innovations for the future, Europe remains too risk-averse in comparison to its global competitors. This is something which Carlos Moedas argues can be changed. Up to now, innovation in Europe has been somewhat stagnant. Openness to new ideas seems to be a decisive factor here. "We need to be open to research, to innovation and to the world," emphasised the Portuguese politician numerous times during his lecture and in the subsequent discussion with the audience at ZEW. Paving the way for innovation in Europe, however, requires a paradigm shift.

Bottom-up Approach for Regulation

Whilst the USA remains the clear leader in the global race to provide businesses with the most favourable conditions, Europe has by no means had to admit defeat. This depends, however, on how competition on this side of the Atlantic is structured. The creation of a digital domestic market, as planned by the EU Commission, determines the direction and nature of innovation efforts. According to Moedas, "It is not so much a question of how much money we invest, but rather increasingly a matter of investing in the correct points of intersection." In order to establish a functioning European market for innovation, Moedas favours a bottom-up strategy over the classic top-down approach. "Effective regulation policy requires that we communicate with business leaders; the EU must learn from innovators."

With its 28 Member States, the EU is considerably more diverse than the USA. "This is a huge plus for innovation," explained Moedas. Nevertheless, fragmentation of the European market continues to prevent Europe from making the best of this diversity. This is a result of the varying political and economic particularities and regulations within the 28 Member States. The Union therefore finds itself facing a significant challenge. In practice, innovation activities might be specifically promoted through the provision of more venture capital funding. This, however, would require more investors from the private economy. In this respect, the USA remains streaks ahead of Europe.

Openness Instead of Protectionism

On average, venture capital available in Europe totals 60 million euros. In the USA, this value is doubled. How can we encourage investors to invest their money in Europe rather than in the US? "Europe must increase the flexibility of its markets and better align its various national economies," explained Moedas. Reforms are therefore required on a national level to ensure that the markets of the various European Member States are more open to innovation. "To think that we can benefit from protectionism constitutes pure populism," emphasised Moedas.

The Commissioner then provided arguments in favour of his plans to create a European Innovation Council, which shall be established on the basis of a call for ideas within Europe. Together with the EU Framework Programme for Research and Innovation this shall lead to more effective integration of politics, universities, innovators and providers of capital. Using the example of Baden-Württemberg, Moedas illustrated that this type of investment pays off. Since 2007, around 1.2 billion euros of funding from the EU research programme has been invested in Baden-Württemberg – this is more than has been invested in some entire Member States. Carlos Moedas drew comparison here with Poland, where in the same period the EU has provided only 450 million euros for research projects.

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ZEW Researcher Accepts Junior Professorship at University of Cologne


Photo: ZEW (privat)

Dean Professor Werner Mellis and ZEW economist Junior Professor Susanne Steffes.

Junior Professor Susanne Steffes, Deputy of the ZEW Research Department "Labour Markets, Human Resources, and Social Policy", has been offered a junior professorship for empirical personnel economics at the University of Cologne. The junior professorship is in the Corporate Development area of the Management, Economics and Social Sciences Faculty.

Susanne Steffes' research interests include labour quality and how it is affected by instruments of personnel management. She is currently focussing on the effects of long-term personnel management on employee loyalty, the organisation and impact of flexible work, and the effects of instruments for staff development and equal opportunities on career progression.

ZEW Economist Wins Best Paper Award

Dr. Philipp Dörrenberg, Senior Researcher in the Research Group "International Distribution and Redistribution" at ZEW, received the Best Paper Award at the 21st Spring Meeting of Young Econo-mists (SMYE) in Lisbon in March 2016. The SMYE is organised annually by the Economic Association of Young Economists (EAYE) and brings together young international researchers from different fields. The awarded paper "Asymmetric Labor-Supply Responses to Wage-Rate Changes – Evidence from a Field Experiment" analyses – co-authored with Denvil Duncan and Max Löffler – the effects of wage-rate changes on labour supply using a ran-domized field experiment in an online labour marketplace. The results provide evidence that wage increases have different effects than wage decreases, suggesting that the labour-supply response to wage changes is asymmetric. This finding is especially strong in the case of extensive wage margins. The award-winning paper thus suggests that a reference-dependent utility function that incorporates loss aversion is the most appropriate way to model labour supply.


Photo: ZEW

25 Years Since ZEW Began its Work

Photo: ZEW

25 years ago, in April 1991, the Centre for European Economic Research (ZEW) commenced its work. This was to be the beginning of a success story, which has seen ZEW become a leading European economic research institute within a relatively short period of time. The institute's 25th anniversary shall be fittingly celebrated as part of festivities held on December 8, 2016, in the company of high-ranking guests from the fields of science, economics, politics and society.

Right from the off, ZEW consistently combined the concept of qualitatively advanced scientific research, with international and interdisciplinary collaboration, and relevance to practice. ZEW has also consistently expanded the scope of its research, adding new fields to its five original research departments: labour economics, industrial economics, financial markets, environmental and resource economics, and corporate taxation and public finance. New areas of research include information and communication technologies, international distribution analyses, and competition and regulation as well as market design, the scientific approach, which has been prompted by the new ZEW President, Professor Achim Wambach, PhD.

ZEW holds an exceptional position on both a national and international level. In 2015, the German Research Foundation (DFG) concluded that in terms of funding received as part of the Seventh EU Framework Programme (FP7), ZEW is the most successful German economic research institute. This has been achieved despite strong international competition.

The festivities to mark ZEW's 25th anniversary, to be held in December 2016 in Mannheim, shall provide an opportunity to look back on pivotal moments in ZEW's development, and to discuss the direction which ZEW shall take in the coming 25 years.

Workshop on Empirical Tax Research

On September 1 and 2, 2016, ZEW will be hosting the fifth Mannheim Workshop on Empirical Tax Research. Keynote speaker will be Thomas Hemmelgarn, Head of Sector – Economic Analysis of Taxation, European Commission, Directorate-General for Taxation and Customs Union.

The aim of this workshop is to bring together researchers from the field of corporate taxation, and to initiate the presentation and discussion of latest research findings. We encourage the submission of papers which address questions regarding the effects of taxation decisions on businesses, on personnel or on other market participants, on the basis of empirical research methods. The workshop benefits from the diversity of data and methods used. We therefore also welcome papers which make use of data from sources such as surveys, experiments, or secondary data gained from annual financial statements or taxation figures for empirical investigation.

All papers should be submitted in electronic form in PDF format to tho following adress: steuerforschung2016@zew.de. The deadline for submission is July 1, 2016.

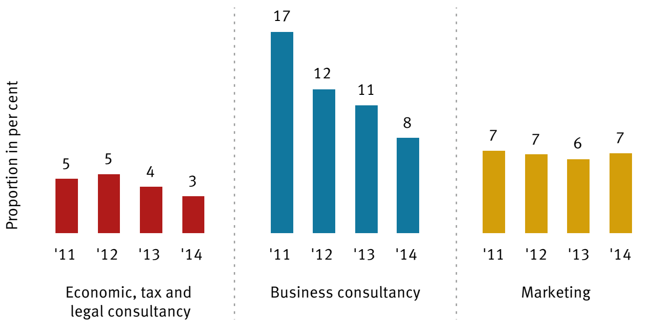
ReCapNet: Real Estate and Capital Markets

The ZEW is pleased to announce the eighth interdisciplinary conference of the Leibniz Network on Real Estate Markets and Capital Markets (ReCapNet) in Mannheim on November 3 and 4, 2016. This conference is open to all researchers interested in the relationships between real estate markets and capital markets. We welcome contributions from the perspectives of real estate finance and economics, concentrating on issues related to behavioural real estate. A non-exhaustive list of potential topics include behavioural biases in decisions on real estate finance, behaviour in buying/selling residential property and market efficiency, individual behavioural characteristics and house prices, strategic default on mortgages, mortgage loans and effectiveness of monetary policy, real estate "bubbles": Identification and consequences for financial stability.

Submissions on these topics, or on other relevant aspects of real estate markets and capital markets are highly encouraged.

All papers should be submitted in electronic form in PDF format to the following adress: conference@recapnet.org. The deadline for submission is July 15, 2016.

Consulting and Marketing in Germany – Lower Revenues from New Offers and Services



Source: ZEW

In 2014, the revenues generated from new offers and services by businesses in the German consultancy sector (economic, tax, legal, business, and PR consultancy, marketing) fell. 3.96 billion euros, or 5.2 per cent of total turnover, was generated from innovative offers and services. In 2011, 5.6 billion euros (8.2 per cent of turnover) was generated as a result of new consultancy services. The rate of innovation amongst business consultants showed a particularly marked decrease (2011: 17 per cent, 2014: 8 per cent of turnover in the business consultancy sector). In the economic, legal and tax consultancy sectors, the proportion of turnover generated as a result of new offers and services fell by 3 per cent. In the marketing sector, turnover gained from innovative services remained stable at 7 per cent.

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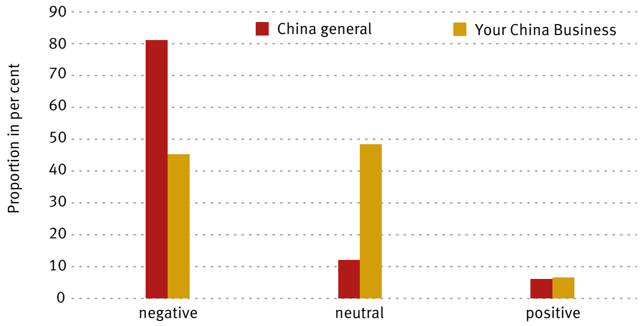
ZEW-PwC China Economic Barometer – Tougher Restrictions on Capital Movements



Source: ZEW-PwC China Economic Barometer Q2 2016, survey period: 09/03 – 04/04/2016, 38 survey participants

Cross-Border Cash Pooling has been implemented by China's central bank. For the time being, no further negative Cross-Border Cash Pool balances shall be accepted. In addition to this, China's State Administration of Foreign Exchange has been restricting international cash withdrawals made by UnionPay bank card holders since October 2015. 81 per cent of the German companies surveyed in the second quarter of 2016 assume that these restrictions shall have negative consequences for China as a whole. 72 per cent, however, expect that these impacts will be predominantly moderate. 45 per cent of the German companies surveyed foresee restrictions to have an adverse effect on their businesses in China. Again, these impacts are generally prognosticated to be rather moderate.

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Photo: ZEW

Brexit: Rediscovering Europe as a Win-Win Project

The day of decision is just around the corner. Currently, the odds are against a UK departure from the EU, at least for British bookies. Yet whatever the result of the vote, the Brexit referendum has cast a harsh light on the future of the European Union. Euroscepticism is on the rise in many countries, including Germany, where critical voices have been gaining traction.

Euroscepticism did not arise overnight. Over the last two decades, the EU has failed to showcase the benefits it provides to all member states. In the 1990s, when completing the single market dominated the agenda, perceptions were different, as the advantages of unity were more evident. Indeed, all member states have profited from the elimination of barriers to trade and transparent rules to ensure free competition.

In recent years, however, policy debates have often focused on how various measures redistribute wealth, thus creating "winners" and "losers". For example, while the ECB's bailouts have been important for ensuring financial stability, they have created the impression that some nations are footing the bill for others, thus sewing discord.

The European project is in acute jeopardy, as the advantages of EU membership are no longer clearly visible. The current wave of disaffection is by no means confined to the UK. Clearly, to remain viable over the long term, the EU must generate net benefits for all member states. To this end, there is a need for mutually beneficial activities that go beyond the original idea of a common market.

How can we augment support for the European Union? One possibility is for the EU to expand its activities when there are clear advantages to EU-level action. The establishment of the Banking Union is a good example, for the joint supervision of Europe's banks has distinct benefits over running separate systems in each nation. Economists at ZEW have recently illuminated other policy areas that generate added value when competencies are delegated to the EU level. Considerable cost savings and quality improvements could be achieved, for example, by establishing European embassies and consulates abroad, rather than having each nation maintain its own foreign presence. By eliminating the need for parallel organisational structures, the costs of diplomatic missions to Europe's taxpayers could be reduced by one third. Similarly, closer collaboration in the area of defence would bring economies of scale. Lastly, in the area of refugee policy, including the protection of Europe's borders, considerable cost savings and quality improvements could be achieved by supplanting national fragmentation with collective action. Under the pressures of the refugee crisis, the EU is already moving in this direction: Frontex's duties have been expanded, and certain areas of Southern Europe are now specially designated as "hotspots". More would be possible, however, with the establishment of a refugee agency at the EU level.

Dealing with these issues on a EU level will not be easy from a political point of view, as it will arouse considerable resistance at the national level. However, all 28 member states stand to benefit from an expanded EU in the above areas, thus defusing the impression of random wealth redistribution. In any event, if we fail to demonstrate that European unity is a win-win situation for all member states, the Brexit referendum is sure to trigger exit debates in other EU states.

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