

The background of the entire page is a map of Europe. A circular spotlight effect is centered over Eastern Germany, highlighting it in a darker blue. Other countries in Eastern Europe are highlighted in various shades of blue, green, and purple. The rest of the map is in a light blue color.

Eastern Germany as a Location for Direct Investment: A Comparison with Selected Eastern European Cities

ADVISORY

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Introduction

This study aims to provide an objective comparison between eastern German Cities and a selection of eastern European cities, by focusing on crucial criteria for the cities' suitability as locations for certain kinds of corporate investment. Ten of the largest eastern German cities commissioned KPMG to investigate specific features of the business environment that could have a major impact on companies' chances of success in a particular location, based on objectively verifiable data.

Today's global competition affects not only companies, but also the numerous locations that are vying for domestic and foreign direct investment projects. Competition for direct investment is particularly intense in central and eastern Europe, including the new member states of the European Union. For the countries, regions and cities involved, it is a question of generating momentum for future development, and above all of creating and retaining jobs.

It is within this environment that eastern Germany competes for new investment by German and international companies. A large number of the location decisions made in favor of eastern Germany in recent years – from AMD, Infineon, Porsche, BMW and DHL to Dell, Liebherr, BASF, Amazon and N3 Engine Overhaul Services, a joint venture between Lufthansa Technik and Rolls Royce – have been secured against the background of international competition. These investments have not only contributed to the creation of high-quality jobs, they also bear witness to eastern Germany's strength as an attractive location for direct investments.

The companies listed above operate within a very wide variety of sectors. What they have in common, however, is their focus on higher-value, i. e. capital and knowledge-intensive activities, and the highest standards in terms of the underlying investment conditions, and thus of location quality. The location decisions reached by these companies were not driven primarily by monetary factors, such as wage costs or taxes, but were mainly based on qualitative factors, such as the quality of infrastructure and the availability of a highly-skilled workforce.

At the same time, there is no doubt that some companies' decisions as to the location of certain activities or facilities are mainly driven by cost factors. One need only think of the large number of cost-driven investments made by German and international companies in eastern Europe in recent years. Many other investment projects have shown, however, that cost benefits are by no means everything, and that they can sometimes even be outweighed by disadvantages in terms of infrastructure, legal security and often underestimated transaction costs. Even the new EU member states are already facing competition from even lower wage costs and tax rates in countries further to the south and east. The first companies have already relocated their activities away from countries such as Hungary or the Czech Republic on the grounds that these countries have already become too "expensive".

Any approach to attracting investors that focuses mainly on costs therefore fails to paint the whole picture. A growing number of locations, including from a very early stage the eastern German cities, have recognized this and structured their strategy accordingly. Sustainable economic growth can only be achieved through higher-value production and service sector activities, as well as with research and development. Location decisions made in these sectors are not primarily based on cost factors, but on more complex and qualitative location factors, which cannot always be easily quantified or measured. However difficult it may be to evaluate such factors, their impact on a company's performance should make them a fixed component of any location analysis.

The investment decisions in favor of eastern Germany mentioned above also illustrate the important role that the cities themselves play in location decisions. They are not only the targets or destinations of corporate investment, but are active participants in the process of attracting potential investors. They have to convince investors that their city can offer the most favorable conditions for a specific investment project. Critical requirements need to be met at the local level, and the conclusion of any site selection process is ultimately a decision between individual cities.

The decision of the ten cities to jointly commission this study reflects their desire to compare themselves objectively with potential investment locations in Central and eastern Europe. At the same time, the study is intended to illustrate the importance of urban centers in generating economic activity and growth. The findings of the study are likely to contribute to a more realistic picture of the quality of eastern Germany as an investment location while increasing companies' awareness of the importance of including more far-reaching criteria in their assessment of potential locations.

Contents of the Study

We have based our comparison on the ten eastern German cities of Berlin, Dresden, Erfurt, Gera, Greifswald, Halle (Saale), Jena, Leipzig, Potsdam and Rostock – cities which account for around 30 percent of the population of eastern Germany and some 40 percent of eastern Germany's economic output. In spite of the differences in their population and economic structure, these cities are representative of the whole of eastern Germany in terms of their success in attracting investors. To enable a high-quality comparison, KPMG made use of an extensive selection process to choose ten cities in Poland, the Czech Republic, Hungary, Slovakia, Latvia and Estonia. The goal of this selection was to identify those cities whose efforts to promote themselves as investment locations are not exclusively based on low labor costs. Furthermore, the comparison focused on cities whose efforts across a range of industry sectors make them strong competitors to eastern Germany.

The most important requirements when selecting these eastern European cities were their competitiveness in higher-value economic activities, a high degree of sector diversification and a track record of success in attracting direct investments. The selection also focused on those cities that are most comparable with the eastern German cities in terms of their population and economic structures.

The objective of these requirements was to enable a comparison of cities that may at first glance represent comparable alternatives from a potential investor's point of view. Based on these criteria, we selected the cities of Székesfehérvár in Hungary, Warsaw, Wrocław and Kraków in Poland, Plzeň and Brno in the Czech Republic, Bratislava and Košice in Slovakia, Riga in Latvia and Tallinn in Estonia.

Given the diversity of the cities compared in this study, we have not focused on any individual industry sectors. Our priority was rather to analyze and compare the investment environment for higher-value, i.e. capital and knowledge-intensive, activities in the fields of production and research and development, as well as in the services sector. This required a careful selection of the decisive investment criteria and success factors in these areas. We consciously decided not to focus predominantly on monetary factors but rather on a combination of qualitative indicators, such as the level of educational qualification of the population, the size and productivity of the research and development sector, the quality of infrastructure and on frequently underestimated quality of life considerations.

The key difficulty in measuring the factors selected for this study is the lack of an adequate supply of data. This problem is all the more apparent on an international level, where the variety of classifications used and the lack of standardized sources make it difficult to ensure that the data collected is consistent across different countries and cities. To increase the value of this study for potential investors, we have compared carefully selected location criteria on a geographical level that we believe is most relevant to companies in their own site selection processes, i.e. on the level of the individual cities.

The following table provides an overview of the criteria analyzed:

R & D Activities	Workforce Qualifications	Infrastructure	Costs	Quality of Life
Patents	R & D workforce	Density of motorway network	Transport costs	Expenditure on culture
Life science publications	Human resources in science and technology	Availability of commercial real estate	Telephone costs	Crime clearance rate
R & D expenditure	Mechatronic engineers in training	Reliability of electricity supply	Number of security personnel	Quality of environment

The findings of this analysis show that no single city is patently dominant or inferior and that the results across the various criteria evaluated in the study provide a relatively balanced overall picture. The median values used in the study for the eastern German and eastern European cities and the careful selection of these cities therefore provide a good basis for comparing eastern Germany with eastern Europe as regions. It is this comparison, rather than a comparison among the individual eastern German cities, which forms the focal point of this study.

Summary of Findings

The overall findings of the study provide a consistently positive picture of eastern Germany as a place to do business. In spite of the efforts made by the eastern European countries included in this analysis to move towards higher-value activities, eastern Germany continues to offer clear benefits in terms of the location factors addressed in the study.

- The findings related to the **intensity and development of local R&D activities** clearly speak in favor of the eastern German cities. These cities not only generate higher numbers of publications and patents; they also provide considerably better conditions in terms of their R&D infrastructure – an increasingly important factor given the enormous importance of networking in this field.
- The eastern German cities are also at a considerable advantage in terms of **infrastructure**, which includes transportation links, the reliability of electricity supply and the availability of commercial real estate. The conditions in these areas for attracting companies to the eastern German cities included in the study are strikingly positive when compared with the eastern European locations.
- The **availability of a highly-qualified workforce** was assessed by investigating factors such as the share of the population holding higher education qualifications and the proportion of the working population involved in research and development. The findings show that the average share of highly-qualified employees is significantly higher in eastern Germany than in eastern Europe.
- **Monetary criteria** play a major role in the location of certain investment projects. However, it is clear from the numerous cases of operations being relocated within a comparatively short period of time from one low-cost location to another that labor cost benefits are particularly susceptible to short-term erosion. This study has therefore identified and investigated the structure of selected costs relevant to specific sectors. In the case of logistics costs, for example, the central geographical location of the eastern German cities and their advantages in terms of infrastructure enable them to compensate for lower personnel costs in eastern Europe. An example of this was DHL's recent decision to locate its new European hub in Leipzig.
- The role that **quality of life** plays in location decisions is the subject of much discussion. Companies often reach instinctive decisions – not least on the basis of this factor. It would therefore be wrong to underestimate its influence on location decisions. In cases where all other factors provide no clear basis for selecting a particular location, it is often this factor that frequently influences the decision in favor of a given location. The findings for indicators such as cities' expenditure on culture, environmental quality and crime clearance rates speak clearly in favor of eastern Germany and provide evidence for the achievements reached in these areas.

Findings for Individual Criteria

Patents

Patent registrations as an indication of research and development activity

Patents provide an important indication of the degree of innovation across all areas of technology in a given location. Studies by international organizations such as the OECD often use patents as a means of comparing the strength of innovation in various countries. This is based on the observation that patents tend to have a proactive impact on other companies and thus provide stimulus for further technical progress. Given that this study is not limited in terms of its scope to any individual sectors, we have not restricted the information provided here to any particular classes of patent.

The registration of a patent at the European Patent Office (EPO) provides protection against imitation in numerous European countries simultaneously, thus saving time and expense. The European Patent Office uses standard approval procedures, which means that inventions then enjoy the same level of protection in all European states.

We have been able to determine the degree of innovation in the cities included in this study by limiting our inquiry to those registrations submitted to the EPO by legal entities or natural persons based within the boundaries of those cities. The data available at the EPO has therefore been filtered on the basis of the names and postcodes of the eastern German and eastern European cities included in this study. In cases where a given patent is attributable to several inventors based in more than one city, we have allocated this patent on a proportionate basis to the cities relevant to the study¹. We have combined the latest data available for a two-year period so as to reduce the impact of any statistical anomalies resulting from volatility in any given year.

Number of patents registered at the EPO (2002 – 2003) / 1 000 000 inhabitants



Source: European Patent Office 2006

Definition

- Number of patents registered at the European Patent Office (EPO) per million inhabitants in the period from 2002 to 2003.
- The address of the inventor (legal entity or natural person) is located within the city boundaries.
- Account has been taken of all registrations, regardless of their International Patent Classification (IPC).

It is apparent from the comparison that the eastern German cities registered a significantly higher number of patents at the European Patent Office (EPO). An average of 365 patents was registered at the EPO between 2002 and 2003 for every million inhabitants – more than five times the average number of registrations from the eastern European cities. Even those eastern German cities with the lowest numbers of patent registrations show good results – the number of patents registered by the eastern German city with the lowest number of registrations is still higher than the average number of patent registrations in the eastern European cities.

The cities of Jena and Dresden reported particularly high per capita volumes of patent registrations. We believe that the significantly higher numbers of eastern German research results subsequently patented is evidence of a high level of innovation in eastern German cities. Brno emerged as the eastern European city with the highest score in this comparison. Brno is a well-established university city where students account for an above-average share of the population. This is reflected in a relatively dynamic research environment. It is striking that no or hardly any patents were registered at the EPO for either Plzeň or Kraków in the period from 2002 to 2003.

1) c.f. OECD, Science, Technology and Industry (STI) Scoreboard, 2003.

Life Science Publications

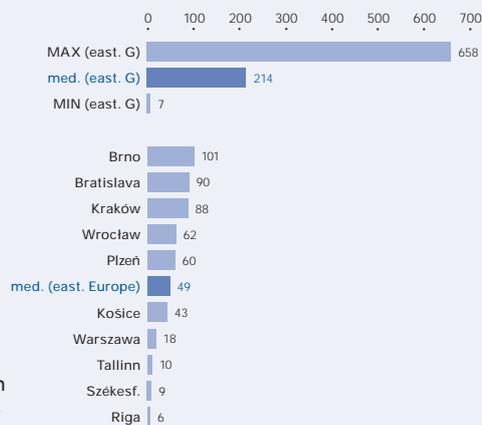
Publications as indicators of innovation

The life science industry represents a clear example of innovation and research intensity. A large number of publications in this area provides evidence of potential in terms of innovation and expertise (especially for the biotech, pharmaceutical and medical technology sectors). This is frequently a result of a large pool of innovative and creative employees with an international perspective, as well as a well-established pool of research institutions. The benefits for innovative companies are enhanced opportunities to cooperate, to draw on available expertise and on the services on offer.

PubMed is the leading archive for academic life science literature and is used globally for publication purposes. For the purposes of this study, all publications have been analyzed in terms of the originating location of the author's institutions in order to identify where the scientific work was generated.

PubMed was established in February 2000 and enables searches to be undertaken free of charge in a digital archive of worldwide academic life science publications. PubMed requires its entries to meet scientific standards and reviews the sources of all entries without assuming the copyright for such publications. The majority of life science publications are provided to PubMed within one year of publication. PubMed is operated by the National Center for Biotechnology Information (NCBI), a department of the US National Institute of Health (NIH).

Number of biomedical publications (2005) / 1 000 000 inhabitants



Source: PubMed 2006

Definition

- Number of biomedical publications in PubMed (central archive of the US National Institute of Health).
- The author's institution (e.g. university, research institute) is located within the city.
- Year of publication: 2005.

Many European cities have been attempting to build regional clusters in the life sciences industry. A comparison of the numbers of biomedical publications reveals that the smaller eastern German university cities of Greifswald, Halle (Saale) and Jena have generated an unusually large number of publications relative to their respective populations. Seven of the ten eastern German cities are very well positioned in this field of technology compared with the other cities and have already established good foundations for life science research. Brno once again stands out among the eastern European cities as a highly productive university city.

The scope of activity in this area in eastern Germany is also documented by investigations undertaken by the German Federal Ministry of Education and Research, which publishes a study on the biotechnology sector in Germany every two years. This study shows that the number of core biotechnology companies¹ operating in eastern Germany more than quadrupled as a proportion of the total population between 2002 and 2004. As a result, eastern Germany therefore has twice as many such companies per head as western Germany².

1) Core biotechnology companies primarily work with modern biotechnical processes.

2) Federal Ministry of Education and Research, 2005.

R & D Expenditure

Highly-developed R & D infrastructure

Expenditure on R&D is an important parameter for assessing the existing framework for research and development activities. On the one hand, it represents a major share of R&D input and is thus a precondition for successful R&D activities¹. On the other hand, it is a good indicator for the quality of the research environment and illustrates the importance of R&D in the various locations.

In most cases, a higher level of R&D expenditure is accompanied by greater investment expenditure. This forms the basis for a modern, competitive R&D infrastructure, which in turn makes it possible to attract highly-qualified research specialists. In our analysis of R&D expenditure, we have deliberately avoided making a distinction between expenditure on investment and personnel. A highly-qualified workforce is indispensable for the generation of ideas, while it is the infrastructural environment which makes it possible to examine and implement such ideas.

It was not possible to obtain data for some cities. In the interests of providing an optimal comparison between eastern Germany and eastern Europe, we have therefore made use of Eurostat data on the NUTS 2 (i.e. regional) level.

R & D expenditure (2003) / Working population in PPS



Source: Eurostat

Definition

- The R & D expenditure in a given region has been expressed in the national purchasing power standards in relation to the working population.
- The research is based on the Frascati Manual, an international OECD guideline for the collection and evaluation of R&D data. All R & D expenditure has been included, regardless of its allocation to one of the four economic sectors (private sector, tertiary education, public sector and non-profit organizations) and irrespective of the occupational groups involved.
- The regions consisting of the cities and their surrounding areas have been taken as the geographical reference areas.
- The reference period for this criterion is the year 2003.

R & D expenditure in the eastern German cities is on average 3.5 times higher than in the eastern European cities. The eastern German city reporting the lowest level of R & D expenditure per member of the working population based on purchasing power standard (PPS) still spends significantly more than the median value of R & D expenditure in the eastern European cities. In this comparison, Berlin, Dresden and Leipzig are the cities with the highest level of R & D expenditure per member of the working population.

The highest level of R & D expenditure per member of the working population in eastern Europe is in Bratislava, with 512 PPS, and in Warsaw, with 409 PPS. These cities nevertheless fall far short of the 1,613 PPS and 1,110 PPS reported for the two best eastern German cities in this category.

These figures clearly show that, even when differences in purchasing power are accounted for, the level of R & D expenditure in eastern Germany is significantly higher than that in eastern Europe. Research and development activities, especially as part of regional networks or clusters, help to promote the ongoing accumulation of knowledge in a given region. This provides the eastern German cities with a sustainable competitive advantage, one which most of the eastern European cities included in the study will find difficult to catch up on in the near future.

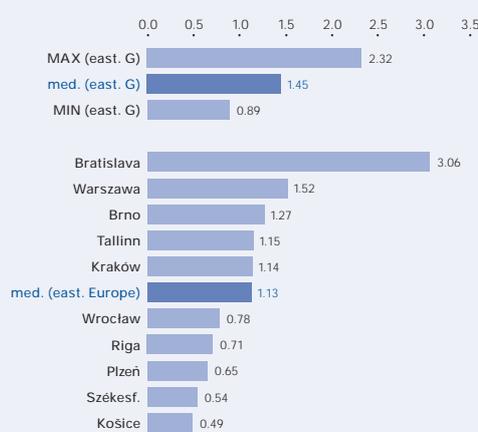
R & D Workforce

Higher concentration of R&D capabilities

The absolute number of individuals employed in R&D activities is one of the most important factors for assessing the R&D environment¹. A high concentration of R&D employees enhances the attractiveness of a location for research-intensive sectors. A large number of R&D employees also enables networks to be established, which in turn foster companies' development of knowledge and innovative capabilities.

Our assessment of the size of the potential R&D workforce takes into account all individuals working in R&D, regardless of the time they actually dedicate to R&D activities. In the interests of achieving the highest possible degree of statistical comparability, we have used the latest data available from Eurostat for 2003. The plausibility of the data collected for the regions has been reviewed on a local level by making targeted inquiries to research institutes and R&D-intensive companies operating in the cities included in the study.

Number of employees in R & D as a proportion of the working population (2003) in %



Source: Eurostat

Definition

- The availability of R&D employees is expressed by the number of employees working in R&D per 100 of the working population.
- The research is based on the Frascati Manual, an international OECD guideline governing the collection and evaluation of R&D data. All R&D expenditure has been included, regardless of its allocation to one of the four economic sectors (private sector, tertiary education, public sector and non-profit private organizations) and irrespective of the occupational groups involved.
- The regions consisting of the cities and their surrounding areas have been taken as the geographical reference areas.
- The reference period for this criterion is the year 2003.

The data shows that R&D personnel make up an average of 1.45 percent of the working population in the eastern German cities. On average, these cities therefore have a higher concentration of R&D personnel than the eastern European cities included in the study. The top 10 cities in this respect include seven eastern German and three eastern European cities. Many eastern German cities would therefore appear to provide a very good environment for the pursuit of innovative activities. Bratislava reported the highest value for this criterion, with around three percent of the working population involved in R&D. It is followed by Berlin and Halle (Saale), which have the highest level of R&D personnel as a percentage of the working population of all of the eastern German cities included in the study.

1) Regional Science and Technology Indicators, Destatis (2006) Page 8.

Human Resources in Science and Technology

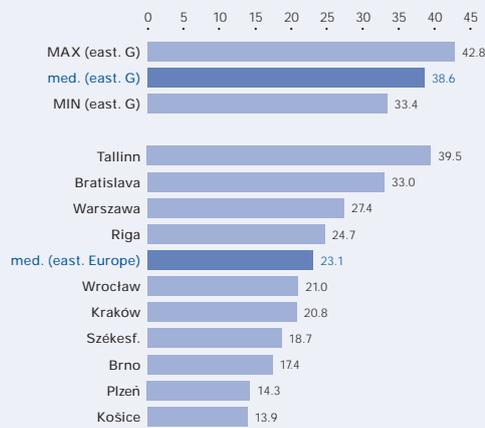
Large pool of highly-qualified employees

The number of individuals with higher education qualifications provides an important indication of the availability of the type of skilled workforce required for higher-value activities. In today’s knowledge-driven society, the quality and expertise of the workforce are among companies’ most important resources. A high concentration of qualified personnel enhances the attractiveness of a location for companies operating in a wide variety of sectors.

We have assessed the potential pool of highly-qualified personnel by comparing the number of individuals holding higher education qualifications in scientific or technical subjects as a proportion of the overall working population.

In the interest of ensuring that the different education systems in EU states are comparable, Eurostat distinguishes between primary, secondary and tertiary educational qualifications. Tertiary educational qualifications represent the highest comparable educational qualifications in the individual countries.

Human resources in science and technology (2004) / working population in %



Source: Eurostat

Definition

- The calculation has been based on Eurostat’s HRSTE classification (Human Resources in Science and Technology – Education), i.e. human resources with educational qualifications in a scientific or technical subject (ISCED, 97, Section 5a, 5b or 6).
- The number of HRSTE has been presented as a proportion of the working population.
- According to § 71 of the Canberra Handbook (Manual on the Measurement of Human Resources in Science & Technology, OECD, Paris 1995), the seven general academic/technical areas are: natural sciences, engineering and technological sciences, medicine, agricultural science, social sciences, humanities and similar areas.
- The regions consisting of the cities and their surrounding areas have been taken as the geographical reference areas.
- The reference period for this criterion is the year 2004.

The comparison of human resources working in science and technology as a proportion of the overall working population produced clear results – the percentage of highly-qualified personnel is higher in all eastern German cities than in all of the eastern European cities with the exception of Tallinn, which is in fourth position for this criterion. The median figure for the eastern German cities is 60 percent higher than the median value for the eastern European cities. Berlin, Dresden and Halle (Salle) were the cities reporting the highest share of human resources in science and technology.

An assessment of the data leads to the conclusion that eastern Germany has an advantage over most of the eastern European cities in terms of the share of the population holding higher education qualifications and in terms of the resultant pool of qualified personnel.

Mechatronic Engineers in Training

Highly-qualified employees for innovative sectors

Technical innovation is a critical success factor in many industries. The demand for highly-qualified personnel in these sectors has given rise to a new occupation in recent years – that of the mechatronic engineer. This hybrid occupation can be found in numerous sectors (e.g. mechanical and industrial engineering, microelectronics, automotive, energy generation, chemicals). The availability of trained mechatronic engineers is therefore an important indicator for companies on the lookout for personnel with the qualifications required for the future. At the same time, a large pool of qualified personnel reduces the costs of companies' own training activities. Moreover, a large number of qualified mechatronic engineers also reflects the progressiveness of a region's vocational training system.

Mechatronics represents a symbiosis of mechanical systems, electronic systems, and information technology. The hybrid occupation of mechatronic engineers was designed for companies operating in different sectors. The tasks performed by a mechatronic engineer include producing components and assembling them into complex mechatronic systems. Mechatronic engineers then commission and program the completed appliances, as well as installing the necessary software. Following on from this, they are then able to maintain and repair the systems as and when required.

There is no central source of statistics for this occupation on the level of the individual cities. We have therefore collected the data on a decentralized basis by making inquiries to the training centers in the individual cities. The various national classifications were made comparable by reference to ISCO-88, the international occupation classification system. Moreover, we have used absolute figures for this criterion, making it possible to depict the size of the overall pool of mechatronic engineers available to companies at the various locations.

Mechatronic engineers in training



Definition

- Number of mechatronic engineers due to qualify in the 2005/2006 training year.
- Classification:
 - International: ISCO-88; 7242: electronics mechanics, fitters and servicers.
 - Germany: occupation key used by Federal Employment Agency: 3141a.
- Training institutions:
 - Only vocational training schools, no tertiary institutions such as technical colleges or universities.
- Location of training:
 - Within the city boundaries.

Sources: Local employment offices, chambers of commerce and industry, vocational training schools

The distribution of the number of mechatronic engineers due to complete their training in the various cities in 2006 shows a higher median value for the eastern German cities. Overall, training programs for more modern occupations, such as that of mechatronic engineer, generally seem to have been introduced more rapidly in Germany than in eastern Europe. While training for this occupation has been offered throughout Germany since 1998, the first mechatronic engineers will complete their training this year in Kraków and only next year in the case of Brno. Of the eastern German cities, Berlin, Dresden, Rostock and Greifswald reported the highest numbers of mechatronic engineers completing their training in 2005.

The large number of mechatronic engineers reported for Wrocław nevertheless shows that individual cities are certainly able to catch up quickly. IT, electronics and mechanical engineering are major industries in Wrocław. The demand for mechatronic engineers from companies operating in these sectors has led to a rapid increase in the number of trainees.

Overall, the eastern German cities have succeeded in building up a head start in terms of the average number of mechatronic engineering trainees. However, there is a clear trend that eastern Europe towards may be catching up in this area.

Density of Motorway Network

Easy accessibility due to modern infrastructure

The quality of the transport infrastructure is relevant not only to manufacturing companies with high freight volumes, but also affects the level of time and capital input made by the suppliers, customers and administrative personnel of all other companies.

Motorways are by no means the only important component of a high-quality transport infrastructure. Airports, seaports and inland waterways also play a major role. In view of the fact that not all of the cities included in this study have international airports or seaports, we have only focused on the density of the motorway network. This factor also reflects the stage of development of a particular region, given that the expansion of the road infrastructure usually represents a primary objective for public-sector investments in developing nations and regions.

Due to the absence of any standardized data and the need to obtain up-to-date information, the number of motorway kilometers has been calculated on the basis of leading cartography programs. We analyzed the area within a radius of 100 km surrounding the selected cities – on the assumption that key transport nodes requiring direct links to the motorway network, such as airports or major railroad stations, will be found within this radius. In other words, the density of the motorway network also provides an indicator of how easy it is to reach the airport or other transportation hub from anywhere within the city.

The companies responsible for the cartography programs confirmed to us that their information was up-to-date. We deliberately decided not to analyze transport times, given that these are highly dependent on the time of day and thus on traffic volumes. Traffic volume maps are only available for some of the cities included in the study and therefore do not provide a suitable foundation for undertaking a comparison. The lack of comparable data for all the cities also made it impossible to analyze the quality of the road network.

Number of motorway kilometers within a radius of 100 km of the city (2006) in km



Definition

- Total length of the roads officially designated as motorways within a radius of 100 km of the city concerned.
- Status: motorways existing upon the publication of the cartography programs in February 2006.

Source: Various roadmaps

The eastern European cities have a great deal of catching up to do in terms of the density of their motorway networks¹. The density of the motorway networks surrounding the eastern German cities is on average three times higher than that surrounding the eastern European cities. This indicator highlights the excellent standards of transport infrastructure available in eastern Germany. Jena, Gera and Leipzig were the cities reporting the highest density of motorways within a radius of 100 km.

Eastern Europe is just beginning to expand its motorway network. There is therefore a greater likelihood of congestion on its highly-frequented, but not yet fully developed, arterial routes. Although increasing volumes of funds have been injected into financing infrastructure expansion projects since EU enlargement in 2004, little improvement is to be expected in the short term. It should also be noted in this context that the geographical location of some of the eastern German cities, as well as of some of the eastern European cities, means that these cities also benefit from other logistical advantages, such as the ports in Rostock, Riga and Tallinn (c.f. transport costs location factor).

¹ Warsaw is currently only accessible via "Europe" roads. These are only multilane to a limited extent and are counted as arterial routes. Many sections of motorway are due to be completed in the area surrounding Warsaw between 2008 and 2013. The motorways currently end around 200 km from Warsaw, which is the reason why this city has not been allocated any motorway kilometers in the above chart.

Availability of Commercial Real Estate

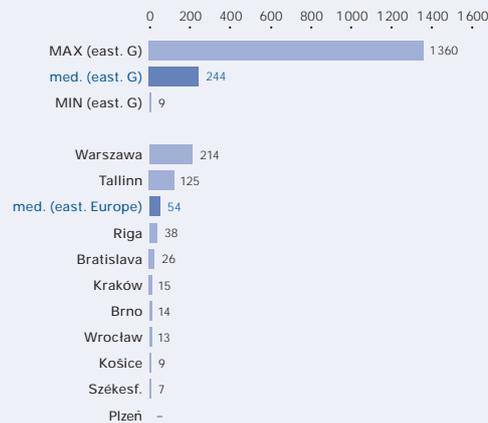
A wide choice of commercial real estate

Europe is witnessing a continued increase in the relocation and centralization of support functions, such as IT, finance or human resources, to shared service centers (SSC). SSCs tend to require modern, inner-city office buildings. Even though they have the option of constructing or renovating buildings to meet their needs, companies generally prefer to rent property for such purposes. A high volume of readily available suitable commercial real estate means that investment projects can be implemented more quickly. At the same time it also indicates that prices are generally inexpensive and that companies are faced with greater choice when selecting real estate suitable to their needs.

Service companies tend to recruit a large share of their personnel from applicants with close links to the city. This is one reason why we have only referred to the real estate available within the boundaries of the various cities. The age restriction on the commercial real estate included in the analysis is intended to account for the shift since the mid-1990s towards an information and communications society – and thus for the change in companies' requirements with regard to office fit-out (e.g. telecommunications infrastructure and connectivity).

The volume of available real estate has been stated in absolute terms, which does not take into account the difference in size of the various cities. This is nevertheless justified in the interest of providing companies that are potentially interested in a particular location with specific information as to the availability of property. Inquiries to local estate agents and real estate managers were made to validate the details of the data collected.

Total gross surface area of available modern commercial real estate in thousand m² (2006)



Definition

- The figures stated represent the gross surface area of modern commercial (i.e. office) real estate currently available.
- The property has been built, renovated or redeveloped since 1995.
- The property is located within the city boundaries.

Sources: Property databases of economic development agencies, private and public-sector commercial real estate statistics, market reports, commercial real estate exchanges organized by chambers of commerce and industry, individual inquiries to real estate managers and property agents

It should be noted that these statistics represent absolute figures, and are therefore naturally dependent in part on the size of the individual city. An analysis of the median values shows that the eastern German cities have on average a considerably larger supply of real estate than the eastern European cities¹. The cities with the largest supply of available real estate are Berlin, Dresden and Erfurt.

The research on real estate availability in the eastern European cities also revealed a shortage of properties larger than 5 000 m² in many locations². This means that there is no suitable real estate, or only a limited selection, available to companies looking for office space for approximately 200 or more employees.

In general, the results of the comparison indicate that companies on the lookout for suitable office space will find appropriate offices more easily and quickly in the eastern German cities. In view of the large supply of real estate available in the eastern German cities, it can also be assumed that the eastern German market is more likely to be a tenant's market than that in eastern Europe.

1) According to information provided by the regional office of CzechInvest (the Czech national economic development agency), there was no commercial real estate meeting the conditions outlined above in Piżeń at the time of our inquiry. However, two properties are currently under construction and are planned to be completed in 2007 and 2008 respectively.
2) It should be noted for this criterion that the figures stated represent a snapshot taken at the time of the study. Extensive real estate projects are underway in many of the cities included in the study. These could have an impact on the volume of real estate available in the near future.

Reliability of Electricity Supply

More reliable electricity supply

The reliability of the low-voltage electricity supply is an important indicator of the overall quality of the electricity supply. High-tech companies are especially dependent on there not being any failure or fluctuation in their supply of electricity. Any interruption in the supply to companies operating in the semiconductor industry, for example, would lead to an enormous level of downtime costs. In order to avert this risk, some companies rely on their own emergency electricity supplies, which involves significant additional costs.

Locations with a low risk of power blackouts are therefore at a considerable advantage, especially for companies whose production processes are heavily dependent on the electricity supply. An analysis of the average duration of low-voltage blackouts per customer thus provides a useful indication of the reliability of the supply.

The data used for this indicator has been obtained from eastern German electricity suppliers based on the blackout statistics that all suppliers are required to collect by the German Association of Network Operators. The information on the reliability of the electricity supply in the eastern European cities included in this study was obtained directly from local electricity suppliers in each country.

We regret that not all electricity suppliers provided us with information as to average blackout times per customer. The SAIDI Index is an internationally recognized indicator of electricity supply reliability. The energy sector has only recently been privatized in some countries and companies are still in the process of developing their statistical data systems. In Poland and Slovakia, for example, such data is only expected to be available starting in 2007.

The chart therefore only includes information for four of the ten eastern European cities. It nevertheless provides a clear overall picture in terms of a comparison of the electricity supply in eastern Germany and that in eastern Europe.

Interruptions to electricity supply – SAIDI in minutes (2005)



Sources: Local electricity suppliers, German Association of Network Operators (VDN)

Definition

- The figures are based on SAIDI-LV (System Average Interruption Duration Index – Low Voltage) data, which depicts the average low-voltage blackout time per customer.
- The figures are stated in minutes and refer to the year 2005.

Companies operating in the eastern German cities included in this study were without electricity for an average of 6.6 minutes in 2005. At almost two hours, the median value for the eastern European cities was almost 20 times higher. The comparison clearly illustrates the greater reliability of the electricity supply in eastern German cities. Leipzig, Dresden, Halle (Saale) and Greifswald were the cities with the most reliable electricity supply.

The figures for the eastern German cities are all clustered within a relatively narrow range at a low level of interruption to the electricity supply. Based on the definition provided by the SAIDI Index, companies can expect to face more frequent or longer electricity blackouts in the eastern European cities.

Transport Costs

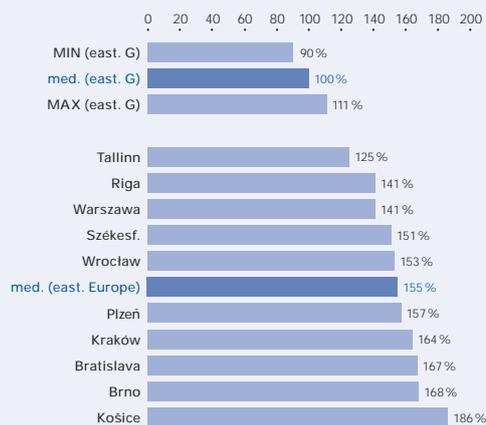
Advantages in terms of airfreight and maritime freight

Transport costs represent an important cost factor for many companies. According to a study undertaken by the Vienna University of Economics and Business Administration¹, logistics costs account for an average of 11.5 percent of turnover across a range of industrial sectors. In the interests of comparing the transport costs involved in the global distribution of merchandise from the cities included in the study, we have compared the costs of sending a standardized amount of airfreight and maritime freight to the most important long-haul destination in Asia (Hong Kong). The overall costs used as the basis for the comparison include the costs of shipping the goods from the selected cities to the nearest or most convenient airfreight airport or container port and the costs of airfreight or maritime freight to Hong Kong.

Hong Kong was selected as the destination for airfreight and maritime freight consignments in view of the consistently high growth rates in the volumes of goods transported between Europe and Asia in recent years. These are set to continue to grow rapidly in future. Over and above this, none of the cities included in the study has any relevant geographical advantages in terms of their access to Hong Kong. Moreover, Hong Kong has the largest container port and (along with Singapore) the largest airfreight airport in Asia and therefore represents one of Asia's most important logistics hubs.

We requested quotations from leading global logistics providers for the shipment of 20 Euro-pallettes of airfreight and 10 containers of maritime freight to Hong Kong. The respective airfreight and maritime freight costs for shipping the goods to Hong Kong (including haulage costs) were then added. In view of the confidentiality promised to the logistics companies with regard to the price information they provided, we have indexed the costs. The information stated in the chart represents the total costs for the individual cities compared with the median value of the transport costs for the eastern German cities (= 100 percent).

Cost of airfreight and maritime freight to Hong Kong (2006)
(Index – median value for eastern Germany = 100%)



Definition

- Cost of shipping 20 Euro-pallettes of airfreight and 10 containers of maritime freight to Hong Kong (including haulage costs for transport to the most convenient airfreight airport or container port).
- No account has been taken of customs tariffs, insurance costs and other duties.
- The costs were calculated on the basis of inquiries made to leading logistics providers.

Source: Inquiries to international logistics providers

The comparison of transport costs led to the identification of surprisingly clear cost advantages for the eastern German cities. The transport costs for both airfreight and maritime freight are considerably higher for the eastern European cities than for the eastern German cities. Berlin, Potsdam and Rostock reported the lowest level of transport costs in this analysis.

The advantages reported by eastern German cities for this factor can be assumed to result from the fact that these cities have better links to major logistics hubs with high volumes of goods transferred to Asia. The eastern European cities reported a higher level of haulage costs to transport the goods to international airfreight airports, or higher airfreight costs given that the smaller-scale cargo airports in eastern Europe do not enjoy the same benefits of scale as their German counterparts.

The global distribution of goods to production and sales sites around the world is a matter of crucial importance to Germany as one of the world's leading exporting countries. This analysis shows that cities which are located in the proximity of major logistics hubs are at a substantial advantage.

1) Various industrial sectors were investigated within the framework of the study "Impact on companies of the introduction of the mileage-based toll system", June 2005, Institute of Transport and Logistics, Vienna University of Economics and Business Administration.

Telephone Costs

Market liberalization shows initial results

In spite of the considerable decline in prices in recent years, telephone costs still represent a major cost factor for businesses with significant communications activities, such as customer-driven shared service centers (SSC) or outbound call centers¹. A low level of telephone costs at companies operating in these areas is frequently a sign that the telecom providers have favorable cost structures, which in turn is generally an indication of a highly competitive market.

An analysis of market liberalization in eastern European countries shows that all of the eastern European providers included in the analysis had shares of more than 75 percent of their respective fixed line markets in 2004, far higher than equivalent share of around 54 percent reported for Deutsche Telekom in Germany. The liberalization of markets, coupled with the resultant intensity of competition, leads not only to customer-friendly pricing structures, but also to more comprehensive service packages.

We worked with the authors of KPMG’s “Competitive Alternatives” study to calculate the call volume profiles and were able to draw on the findings of this internationally recognized study. The profile used for this analysis is based on the typical telephone usage of a medium-sized international SSC with around 80 employees.

No account has been taken of cost components such as additional services, cell phone offers or other fixed costs. The data has been collected by making inquiries to the leading communications provider in each country² on the condition that the services thereby provided are available across the whole country.

Annual telephone costs (landline) in EUR (Thousands) (2006)



Definition

- The figures stated represent the total variable telephone costs (landline) for 1.25 million minutes of national calls and 3.75 million minutes of international calls to eight European countries.
- No account has been taken either of fixed costs or of volume discounts.
- The volume profile has been compiled on the basis of profiles typical for shared service centers (SSC).

Source: Inquiries made on the basis of the volume profile to the leading telephone provider in each country

It should be noted in the context of this analysis that large telecommunications providers generally offer standard prices for the whole country. It is for this reason that identical costs have been stated for cities in the same country.

The average annual telephone costs in eastern Germany are considerably lower than the equivalent costs in most of the eastern European cities included in the study. The costs stated have been based on the annual call volume typical for a shared service center (SSC). It is apparent from the results that a shared service center (SSC) located in eastern Germany could save between Euro 160,000 and Euro 370,000 per year compared with one located in Poland, Hungary, Slovakia or the Czech Republic. Only Estonia and Latvia can offer telephone costs that are competitive with those in eastern Germany.

1) According to KPMG’s “Competitive Alternatives” study, telephone costs account for an average of five to ten percent of the total costs of an SSC.
 2) Inquiries were made to Deutsche Telekom in Germany, Telekomunikacja Polska in Poland, Cesky Telecom (CeTe) in the Czech Republic, T-Magyar Telekom (MATAV) in Hungary, EEsti Telekom in Estonia, Lattelecom in Latvia, and Slovak Telekom in Slovakia.

Number of Security Personnel

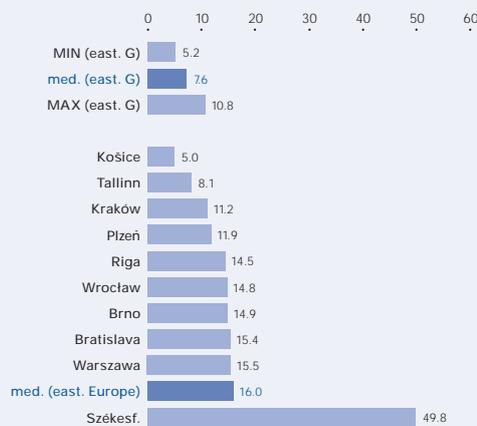
Low expenditure on security and fewer security concerns

The level of demand for company security personnel provides an indication both of the safety of company employees and of the potential threat to companies' assets. Any increase in the risk of damages resulting from criminal activity leads to greater expenditure on security personnel and investments in security infrastructure, such as boundary fencing and alarm facilities, as well as increasing the cost of insuring inventory and other company assets.

To ensure that the figures used in this seldom investigated area are comparable, we have drawn on the definition of security-related occupations set out in the international ISCO classification system. The data has in most cases been collected on the basis of regional employment market statistics and therefore only includes officially registered security personnel.

The number of security personnel in the cities of Kraków, Warsaw and Brno has been estimated on the basis of data about companies providing security services, broken down by size category.

Number of security personnel (2005) / 1 000 inhabitants



Definition

- The data collected represents the number of employees working in 2005 in the field of security / protective services (ISCO: 5169 and Groups 791-793) per 1 000 inhabitants.

Source: Employment offices and national statistics offices

On average, a smaller percentage of the eastern German population is employed in security-related occupations than is the case for the eastern European cities included in the study. On the basis of this criterion, the overall security situation in eastern Germany can therefore be considered to be better than that in eastern Europe. Košice is nevertheless the city reporting the lowest number of personnel employed in security-related occupations. It is followed by seven eastern German cities, led by Gera, Jena and Rostock.

The high value reported for Székesfehérvár is particularly striking, but is due in part to the fact that the Hungarian head office of a large security services company is located in this city. Generally speaking, companies located in eastern Germany seem to require a lower level of expenditure to guarantee their security.

Expenditure on Culture

Cultural offering – important but difficult to measure

The level of expenditure channeled by a city’s authorities into cultural institutions and projects provides an important indication of the range of culture on offer in that city. A wide range of cultural activities serves to enhance the overall attractiveness of a location for employees, investors and customers, a factor which is not easy to quantify. In certain circumstances, a rich cultural offering can also generate tangible cost savings for companies in their recruitment of international employees, as it may make it unnecessary to pay additional premiums to employees as compensation for locations with a lower quality of life. Particularly in cases where companies are planning to relocate their operations, the success of the new operation is often highly dependent on those companies being able to convince key management personnel to move to the new location.

It should be noted that the cultural activities in many cities are partly financed by the central or state government and that the financing structures involved vary widely from country to country. We have nevertheless excluded state and central government expenditure from our analysis, which is primarily intended to focus on the motivation shown by the city authorities to promote cultural activities.

Individual perceptions as to the quality of culture on offer are by their very nature highly subjective and therefore do not always correlate with the level of expenditure involved. It is nevertheless generally possible to identify a close connection between the two.

We have ensured that the figures involved are comparable by precisely defining the items that can be included as representing culture-related expenditures, although there may be slight differences in definition among the individual cities. In order to reflect the different size of the cities, the expenditure has been adjusted to account for their respective populations¹.

City expenditure on culture in 2005 / population in PPS



Sources: Local municipalities (cultural budget), statistics offices

Definition

- Each city’s expenditure on culture in 2005 has been stated in the national purchasing power standards of the countries involved and adjusted to account for the number of inhabitants.
- Expenditure includes:
 - ongoing costs (payroll and operating expenses).
 - expenditure on investment (new investment and maintenance).

Based on purchasing power standards, the cultural budgets of the eastern German cities are on average more than twice as high as their counterparts in the ten cities selected in eastern Europe². The cities with the highest level of expenditure on cultural activities per inhabitant are Rostock, Gera, Potsdam and Greifswald.

The eastern German cities show consistently high levels of expenditure on cultural activities. This is an indication not only of a wide range of culture on offer, but also of a high level of demand for cultural activities. The range of culture on offer represents an important factor in determining the quality of life at a given location. From the point of view of a potential investor, it therefore plays a major role both for the company’s employees and for its customers.

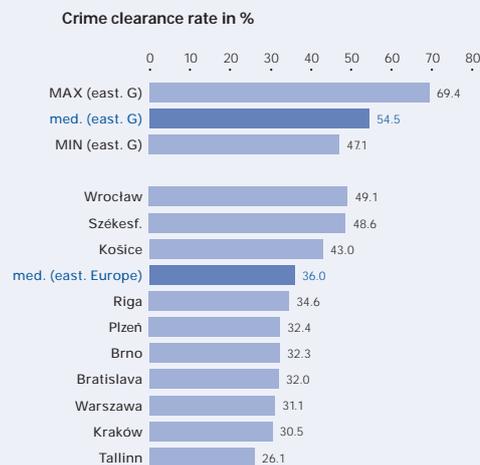
1) It was not possible to calculate any comparable cultural budget for the city of Košice. This city has therefore been omitted from the chart.
 2) In absolute figures, i.e. in Euros, the average cultural budget of the eastern German cities is four times higher than that of the eastern European cities.

Crime Clearance Rates

Crime clearance rate as an indication of legal protection

Crime clearance rates show the percentage of known crime, i.e. offenses reported and followed up, ranging from white-collar crime through to violent crime, which have been possible to resolve. The executive authorities (police, public prosecutors etc.) are responsible for ensuring that laws are complied with and that offenses are followed up and resolved. The crime clearance rate gives both the companies and the inhabitants of a city an impression of the degree of legal security in that city. This statistic also provides an indirect reflection of the competence of the executive authorities. Finally, a high crime clearance rate may even serve as a deterrent for potential criminals and therefore represents an important aspect of the quality of life in a given region.

The comparison is based on the latest available data. It is of course not possible to make any predictions as to future developments on the basis of this momentary snapshot. Moreover, the crime clearance rate merely indicates the scope of police activity and thus does not allow any conclusions as to absolute levels of crime or criminal convictions.



Definition

- The figures stated represent the crime clearance rate in 2004 for all criminal offenses, regardless of their allocation to specific classes of offense.
- The criminal clearance rate is defined as the percentage of reported and registered offenses that have been resolved.
- Given the different national definitions involved, our analysis has not accounted for different categories of criminal offenses.

Sources: Federal Criminal Police Office (Germany), national offices of criminal investigation in eastern Europe, databases of national statistics offices

The eastern German cities succeeded in solving an average of around 55 percent of all criminal offenses reported in 2004. The median value for the eastern German cities is therefore higher than that of the eastern European city with the highest crime clearance rate (Wrocław: approx. 49 percent). Gera, Erfurt and Potsdam were the cities reporting the highest crime clearance rates. Even the lowest crime clearance rate speaks in favor of eastern Germany – at 47 percent it is higher than the median crime clearance rate of 37 percent reported for the eastern European cities included in the study.

In the event of companies or their employees being the victims of crime, the likelihood of receiving compensation or of seeing the culprits brought to justice would therefore seem to be higher in eastern Germany.

Quality of Environment

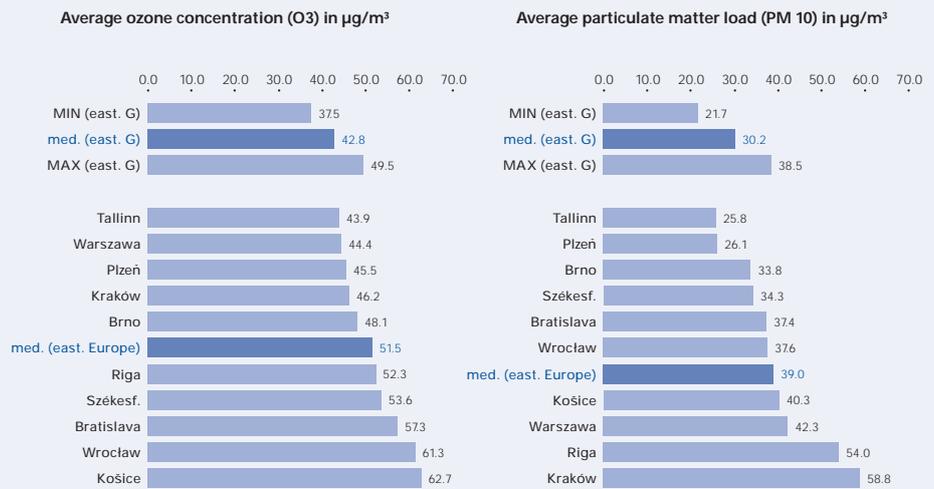
Greater air pollution in eastern Europe

High levels of ozone or of particulate matter are thought to involve a health risk that could lead to disorders of the heart, blood system, lungs and airways. Environmental damage resulting from air pollution therefore represents an important factor when assessing the quality of life in a given city.

The degree of air pollution has been compared on the basis of the levels of ozone and particulate matter concentration as monitored by measuring stations in the cities included in this study between 2000 and the first half of 2006. The two charts present the average levels of ozone and particulate matter concentration over this period. These have been calculated on the basis of the daily and monthly figures published since 2000 by AirBase (European air quality database) and national environmental offices.

Definition

- **Ozone:** ozone is produced from a reaction between nitrogen dioxide (NO₂) and oxygen (O₂). The ozone concentration is measured in micrograms per cubic meter (µg/m³).
- **Particulate matter:** particulate matter of the type PM 10 is a respirable dust particle with a diameter of less than ten micrometers. The concentration of particulate matter is measured in micrograms per cubic meter (µg/m³).
- The data stated represents the average of the median monthly and annual values measured between 2000 and the first half of 2006.



Source: AirBase (European air quality database) and national environmental offices

The comparison of data shows a higher average level of ozone concentration in the eastern European cities. The average airborne load of particulate matter in the eastern German cities is also considerably lower than the median value for the eastern European cities.

With regard to the concentration of particulate matter, EU Directive 1999/30/EC permits the 24-hour average threshold value of 50 µg/m³ to be exceeded on a maximum of 35 occasions per calendar year. Even the median values for Kraków and Riga in recent years, amounting to 58.8 µg/m³ and 54.0 µg/m³ respectively, were higher than this threshold value. The lowest levels of particulate matter concentration were measured in Rostock and Potsdam.

The lower level of air pollution in eastern Germany is most probably due to more stringent environmental standards and the increasing use of modern, environmentally-friendly products and processes. In future, it can be expected that increasing numbers of environmental protection directives will be issued and implemented across the whole of the EU and that eastern European member states, cities and companies will also be required to implement increasingly stringent measures to protect the environment.

Conclusion

The findings of our analysis show that eastern Germany enjoys considerable advantages over its competitors in eastern Europe. The eastern German cities achieve very good results in key areas relevant to their business environments. These are factors that should play a major role in companies' decisions about where to locate higher-value activities. In many respects, these results are a reflection of the extensive efforts and investments made in eastern Germany with the aim of developing an attractive and internationally competitive business environment.

However, these favorable conditions in themselves will not be sufficient to continue to attract investors to eastern Germany in future. Competition between locations remains intense. The analysis undertaken for this study shows that the eastern European cities are also making efforts to enhance their business environments and to make themselves more attractive to investors. Investment decisions are frequently influenced by certain perceptions and trends. Eastern Germany will therefore have to continue to proactively position and market itself as an attractive location for domestic and foreign investments.

Achieving sustainable success in this area will require close and concerted cooperation between all parties involved in economic development and investment attraction at various levels of government and in the private sector. It is crucial that these efforts highlight the importance of the eastern German cities as centers of growth and innovation, as well as their important role as attractive locations for investment.

Structure and Methodology of the Study

Selected questions and answers on the approach to this study

What is the target audience for this study?

This study is aimed at all target groups interested or involved in location decisions and direct investment. These groups include national and international investors, cities and municipalities and their economic development agencies, national location promotion and investment attraction agencies, and not least the general public, the media, and the political and business communities.

What is the main focus of the study?

As a result of the discussions currently surrounding companies' international investment decisions, this subject has recently been covered by a large number of publications and studies. However, most of these publications only provide comparative data on a national level, an approach which is only of use to investors in the first stage of their location decision process. Other studies, by contrast, only compare cities within the same country, a method which is in turn not especially helpful for international location decisions. Moreover, the majority of the studies and comparisons focus on quantitative location factors, such as wage costs or taxes.

This study, by contrast, deals with location criteria that are more difficult to measure. Many of these (e.g. infrastructure) are frequently mentioned, but rarely quantified in practice. Furthermore, virtually all of the criteria analyzed in this study have been investigated on the level of the individual cities. Accordingly, we have not considered economic and fiscal location criteria (such as "tax burden" or "non-wage labor costs") which the cities in question cannot influence themselves.

Our analysis is targeted at companies which operate in higher-value activities, and whose location decisions are based more on issues of quality and flexibility than on cost factors. Examples of such activities include high-tech and advanced production, research and development and higher-value services (e.g. maintenance, contract research, shared service centers). All these activities share the need for a high-quality workforce, good infrastructure and an environment that supports innovation.

On what basis have the ten eastern German cities been selected?

The ten cities of Berlin, Dresden, Erfurt, Gera, Greifswald, Halle (Saale), Jena, Leipzig, Potsdam and Rostock joined forces to commission this study. They intend this study to provide the initial impetus for a concerted action aimed at raising the profile of the whole of eastern Germany and to allow themselves to be compared directly with some of their major competitors in the global competition for attracting investors.

To what extent are these cities representative of eastern Germany?

With a total population of approximately 5.2 million, the ten cities selected not only account for around one third of the entire population of eastern Germany, but also represent some 40 percent of eastern Germany's economic output. Nine of these cities are among the twelve most populous cities in eastern Germany. These cities represent the entire range of city, from smaller university cities to state capitals to the capital city of Berlin. In terms of the sectors represented, these cities also cover a broad spectrum of industries. Virtually all important sectors of the eastern German economy, such as automotive, aviation, microelectronics, biotechnology, medical technology, logistics and the tertiary sector (services) are represented.

Why has the comparison not been based on the whole of eastern Germany?

Although one of the objectives of the study is to provide a comparison of eastern Germany as a region, we have nevertheless based our analysis on individual cities in order to reflect the importance of the cities as targets for direct investments. The comparison has been based on the median value of the ten eastern German cities for each criterion as a representative value for eastern Germany as a whole.

It is also important to note that comparative data is not available for the whole of eastern Germany as a separate region. Such data can only be calculated to a limited extent by harmonizing the statistics available for the individual states that comprise eastern Germany.

Why has eastern Europe been taken as the basis for comparison?

As already mentioned in the foreword, this study is based on a comparison with those cities in eastern European countries that we identified in our analysis as representing particularly strong competitors to eastern Germany in the competition for attracting direct investment. Although eastern Germany competes with many locations around the world, its geographical proximity to eastern Europe means that there is particularly fierce competition with the new EU member states. This study therefore focuses on providing a comparison with cities in six of the eastern European countries that joined the EU in 2004. The choice of eastern Europe reflects the intense degree of competition between eastern Germany and these countries when it comes to attracting direct investments.

On what basis have the ten eastern European cities been selected?

Six of the eight new EU member states in eastern Europe are represented in our selection (Hungary, Czech Republic, Poland, Slovakia, Estonia and Latvia). Individual cities within these countries were then selected for the analysis.

One overriding requirement in the selection process was that the selected eastern European cities should already be major competitors to eastern Germany for attracting investments, or be expected to become so in future. Over and above this, the cities were selected on the basis that a potential investor might view them as representing viable alternatives to the eastern German cities. Other major criteria for selecting the ten eastern European cities included:

- The eastern European cities selected should have populations roughly comparable to those of the eastern German cities included in the study.
- The cities chosen should have prospering, diversified economies.
- The selected cities should have a track record of success in attracting investments in the fields of higher-value production, research and development (R & D) and the service sector.
- There have been recognizable initiatives by local authorities or national economic development agencies to market the cities as suitable locations for direct investment.

In making our selection, we also drew on the experience gained by KPMG in advising companies with regard to location decisions, as well as on information from KPMG's offices in the respective countries, to assist us in assessing local developments.

Following an extensive selection process based on the requirements outlined above, we selected the eastern European cities of Székesfehérvár (Hungary), Warsaw, Wrocław and Kraków (Poland), Plzeň and Brno (Czech Republic), Bratislava and Košice (Slovakia), Riga (Latvia) and Tallinn (Estonia). Brief profiles of the individual cities can be found on Page 30 onwards.

To what extent are these cities representative of eastern Europe?

The ten cities selected are among the most successful locations in their respective countries in terms of economic strength and performance. All of the cities have in recent years been preferred targets for investors from Europe and other parts of the world. The group of cities includes technologically advanced capital cities (e.g. Tallinn and Warsaw), traditional locations for higher-value production activities (e.g. Plzeň), successful university cities (e.g. Kraków and Brno), upcoming centers of growth (e.g. Wrocław), and a Hungarian city that has established itself as a major center for production and services and has the country's third-highest income per capita (Székesfehérvár).

On which criteria has the comparison of the cities been based?

A total of 15 criteria were identified for the study. These are intended to reflect the business environment in the cities included in the study, and therefore include a selection of both cost-related and non-cost-related factors.

Why have wage costs and taxes not been compared?

Wage costs have been investigated in a number of other studies and have intentionally been omitted from this study. On the one hand, wage costs are of lower importance to the higher-value areas of activity on which this study is focused.

On the other hand, one of the main objectives of our evaluations was to provide an analysis of qualitative factors – factors that are often neglected as a result of the difficulty involved in measuring them objectively. In view of the fact that our analysis is focused on attributes specific to individual cities, we have not taken any account of factors that apply to the overall countries (e.g. tax and labor law).

For which companies are the selected criteria important?

As mentioned above, our analysis has targeted companies in higher-value areas of activity. In making their location decisions, these companies generally attach greater priority to factors such as quality and flexibility than to labor costs.

It is clear from an analysis of the indicators that the availability of a highly-qualified workforce plays a decisive role for companies involved in the production of higher-value products, such as automotive, mechanical engineering or semiconductor companies. These companies also place greater emphasis on the reliability of the electricity supply and transport costs. The telecommunications costs criterion, by contrast, is mainly of relevance to service companies, such as customer-oriented shared service centers (SSC). The R&D indicators included in the study, on the other hand, are relevant to activities involving significant volumes of R&D. Such activities might involve the spin-off of R&D divisions from multinational companies. Equally, they could include the establishment of small and medium-sized life science companies (e.g. pharmaceuticals or biotechnology). The criteria included under the headings of infrastructure and quality of life sections are relevant to all companies making important location decisions.

How have the 15 criteria been selected?

KPMG began its analysis by defining those topics that could influence the attractiveness of a location for higher-value areas of economic activity. These topics include workforce training and qualification levels, innovation, the industrial and physical infrastructure, as well as additional factors that could be used in assessing the quality of a given location. One of our priorities in this respect was to identify tangible and measurable criteria. A further priority involved selecting criteria that would allow a description of the investment environment in which companies actually operate in a particular location. In selecting the factors, we drew on KPMG's longstanding experience in supporting companies with their location decisions.

In view of these challenges, the criteria used in the comparison were selected and refined in the course of the investigation, depending on the availability of relevant comparative data. The decisive factor when making our final selection was that up-to-date comparative data should be available for all 20 cities included in the study.

Do the chosen criteria represent a comprehensive selection?

The criteria used in the study represent a selection of mainly qualitative factors that should play a major role in location decisions involving “higher-value” investments (i.e. investments in which quality-related factors are on a par with, if not more important than cost factors). It is worth noting that not all factors will play the same role for every company and that the actual selection and weighting of the various criteria will be different for each investment project.

The criteria identified for this study represent a selection based on the focus and objectives of the study and are not intended to provide a comprehensive list of all criteria that may be relevant to a location decision. The criteria were selected based on their suitability as indicators of important characteristics of potential investment locations. The transport infrastructure of a given city, for example, can be measured using a variety of different key figures. The measure used in this study (concentration of motorways) only provides one indication of the quality of the transport infrastructure and could be substituted by other factors. By analogy, other indicators, such as the number of patents or the level of air quality, have been taken as representative of the level of R&D activity and the quality of life in each city. As mentioned above, the choice of indicators was also driven by the availability of suitable data.

Which data sources have been drawn on?

There are no central data sources available for the majority of the indicators used in this study. Depending on the criterion, we therefore drew on specific sources in the individual cities. These sources have been named in the presentation of the findings. For some of the criteria (e.g. logistics costs), we were able to draw on a single source for all cities.

How has the data been made comparable?

For some criteria (e.g. number of security personnel), there are differences between the various national classifications in use. To ensure that the findings are nevertheless comparable, we used European or globally recognized classification systems when collecting the data for specific countries. The study provides a precise definition and explanation of the data collection approach for each individual criterion.

To reflect the difference in the size of the individual cities included in the study, we used relative figures (e.g. findings relative to the number of inhabitants or working population) for many of the criteria. Absolute figures, which may be dependent on the size of the city, have only been used in a small number of cases (e.g. availability of commercial real estate). Apart from these exceptions, the findings of our analysis have not been affected or skewed by the size of the individual cities.

In order to provide a comparable basis for criteria involving city expenditures, we used the Purchasing Power Standards (PPS) calculated on an annual basis by organizations such as the World Bank or Eurostat. These are derived by using purchasing power parities to convert the national currency into an artificial currency (PPS), which accounts for differences in exchange rates and prices to ensure comparability.

How have the findings been presented?

For reasons of clarity, we have based the depiction and interpretation of the findings on the same four-part structure for all of the criteria:

- Presentation of background information on the selected criterion
- Definition and explanation of the approach used to collect the data
- Graphic representation of the findings
- Analysis and interpretation of the data

In the case of the eastern German cities, the minimum and maximum values have been shown for each criterion, together with the median value of the results for all of the ten cities. In the case of the ten eastern European cities, we have shown the findings for all of the individual cities, together with the median value of all the ten cities.

Why have the eastern German cities not been named on an individual basis in the presentation of the findings?

The primary objective of this study is to compare eastern Germany with eastern Europe. The aim of the study is not to provide a comparison between the individual eastern German cities.

Is the median value for the eastern German and eastern European cities statistically meaningful?

For some of the criteria there is a wide spread between the best and worst values for the eastern German and eastern European cities. Notwithstanding the differences between the values at either extreme, most of the cities are clustered around the median values. The median values can therefore be viewed as being representative for the cities in both of the regions.

Profiles of Eastern German Cities

Halle (Saale), the historic focal point of the so-called “chemical triangle”, is increasingly developing into a modern service and technology location. The region within a 50 km radius of the cities of Halle and Leipzig has a population of around 1.7 million. Halle’s university is more than 500 years old and now has around 19 000 students. Its Weinberg Campus is the second-largest technology park in eastern Germany. Halle has proven its international competitiveness as a business location by attracting Dell to locate a service and sales center and the Swiss company Zur Rose AG to establish a service center for mail order medicine in the city.

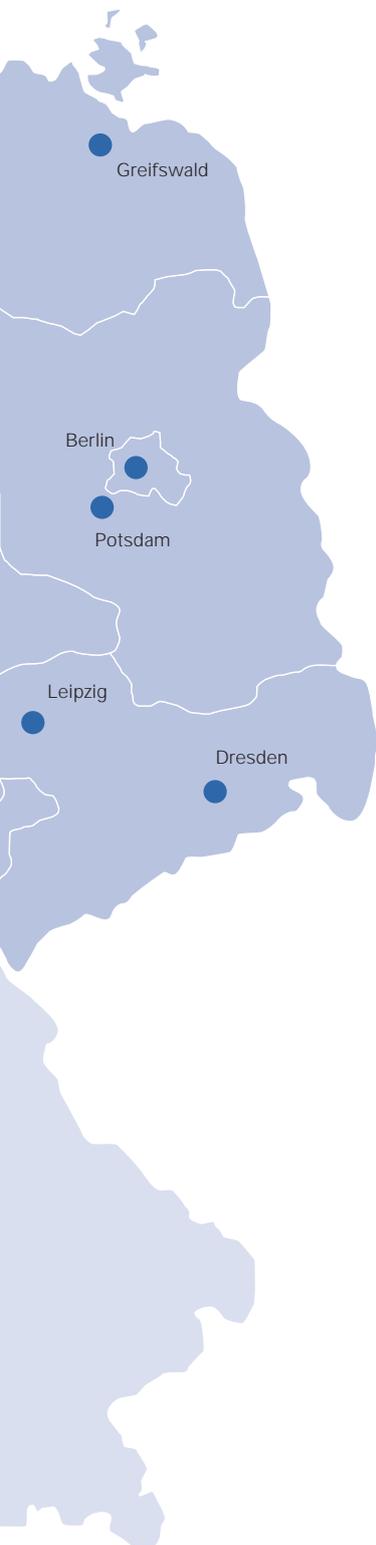
With more than 500 000 inhabitants, **Leipzig** is the largest city in Central Germany. A total of 2.8 million people live within a radius of 60 km of the city. Porsche and BMW, two of the top players in the German automotive industry, have invested billions in their locations in the city. By 2008, DHL will have completed the construction of one of its three global air freight hubs at Leipzig / Halle (Saale), enabling the city to develop into an international logistics center. Other large logistics companies with operations in Leipzig include Quelle AG and Amazon.de. Leipzig’s highly-qualified workforce, the quality of its suppliers, its superb infrastructure, the degree of legal security it can offer and its speedy and efficient city administration – these are just some of the arguments which convinced these companies to choose this location.

The state capital of **Erfurt**, located at the center of the so-called “green heart” of Germany, is the political, economic and cultural focal point of the state of Thüringen. The city’s companies and 200 000 inhabitants appreciate the medieval city center, as well as the city’s superb infrastructure, which offers optimal transport links at the heart of Europe. Erfurt’s economic structure consists of a high-performing blend of mechanical and plant engineering, microsystems technology, photovoltaics, media, agriculture, horticulture, retail, logistics services and public authorities. The companies which have already chosen to locate here include IKEA Logistics, TNT Express GmbH, X-FAB Semiconductor Foundries AG, Siemens AG, Müller Weingarten AG, ErSol Solar Energy AG, Circle Smart Card AG, mobilcom AG, and csg Computer Service GmbH, an IBM company.

Jena has a population of around 101 000 and is the main technology center in the state of Thüringen. The commercial and research companies located in Jena are active at the highest international levels. Companies with roots in the area, such as Zeiss, Jenoptik, SCHOTT Jenaer Glas and Jenapharm, have helped to establish and expand the region as a place to do business. The visionary technologies they discovered in the past laid a foundation for new high-tech companies, such as Analytik Jena AG, CyBio AG, biolitec AG and Jena-Optronik GmbH. Jena’s reputation as a high-tech location is backed up by highly-qualified personnel, extensive global cooperation and an export share of more than 40 percent. Jena’s traditional values have thus provided a platform for innovation, enabling extremely well-developed networks to be established between business and science.

Gera, birthplace of the painter Otto Dix, is the main city in eastern Thüringen and has a population of around 450 000 in its overall catchment area. Traditionally a center of mechanical engineering, the city’s numerous well-trained specialists are now mainly employed at automotive suppliers. Companies operating in sectors such as precision mechanics, environmental technology, logistics and services have also established operations in the city’s business parks, which are superbly located next to the A4 motorway. The Federal Garden Show to be held in Gera-Ronneburg in 2007, which is being co-hosted by the district of Greiz, will also provide the opportunity of marketing Thüringen’s Vogtland region to tourists. Not only that, with total expenditure of around Euro 140 million the garden show will be one of the main motors driving the city’s further development.





Rostock stands for Hanseatic tradition, seaports and high-technology. This historic city is in a process of transformation and is open to new ideas. With more than 500 000 inhabitants in the surrounding region, Rostock is not only the largest city, but also the economic and cultural center of the state of Mecklenburg-Vorpommern. The city's seaport means that it is a major logistics hub in the Baltic region. Moreover, the city's proximity to Hamburg makes it an important secondary location for companies operating in the aerospace industry. Rostock can also offer a convincing track record in the fields of industrial processing, life sciences and higher-value services. Rostock's significance as a business location is underlined by its success in attracting companies such as Liebherr, Diehl Aerospace, AIDA Cruises, IKEA, HanseNet and Lidl Logistik.

The university and Hanseatic city of **Greifswald** will be celebrating the 550th anniversary of the foundation of Ernst-Moritz-Arndt University this year, one of the most important motors of the city's economy. By building on a network of innovation, Greifswald has developed into the center of the high-tech region of Vorpommern. This region has a successful track record of innovation, notably in the fields of medicine, biotechnology and plasma technology. Renowned research institutes, such as the Max Planck Institute and the Institute for Marine Biotechnology, have already exploited the benefits offered by the region. Its superb location on the Baltic Sea, coupled with easy access to the seminal sales markets of Scandinavia, Poland and the Baltic States, make Greifswald and the overall region an ideal location for transport and logistics operations.

Berlin, one of Europe's youngest capital cities, is a center of innovation, communication and creativity. Over the past decade, the city, whose population numbers 3.4 million, has become the new center of German political life and has developed into a cosmopolitan, dynamic economic center offering excellent conditions for companies operating in communications, life sciences, mobility, services and modern industry. BASF, Gillette, Jenoptik, Quintiles, L'Oreal and Bombardier are just some of the companies that have been convinced by Berlin's highly-qualified personnel, inexpensive real estate and superb R&D environment. The world's most up-to-date central railroad station and the planned Berlin Brandenburg International airport will enable Berlin to develop into a new European hub.

The state capital of **Potsdam** is located on the south-western boundaries of the federal capital of Berlin and acts as an innovative motor for the region. Companies such as Oracle or the VW design center, and more recently Katjes, have chosen Potsdam as a location for their new operations. Three universities and more than thirty non-university research institutes have already enabled the city to establish an international reputation as a scientific center. Film and media producers are attracted to Babelsberg, a traditional center of the film industry which has now developed into one of Europe's most modern media locations.

Dresden, the state capital of Saxony, is the largest city in the eastern part of Saxony and is located at the heart of an economic region with 1.7 million inhabitants and a high degree of innovative and export competence. The city's economy is characterized by a broad industrial base, business services, and high-performance research. Its principal focuses include microelectronics and IT, nanotechnologies, basic materials, life sciences and tourism. Dresden is also a university city, as well as being one of the most important cultural centers in Germany. The city also has a reputation as a center for high-technology activities in fields such as microelectronics, information technology, software, pharmaceuticals, mechanical and plant engineering, vehicle and aviation technology. Advanced Micro Devices (AMD), Infineon/Qimonda, GlaxoSmithKline, EADS, VW, Linde, SAP-SI, and Gruner & Jahr are among the largest industrial investors in the city.

Profiles of Eastern European Cities

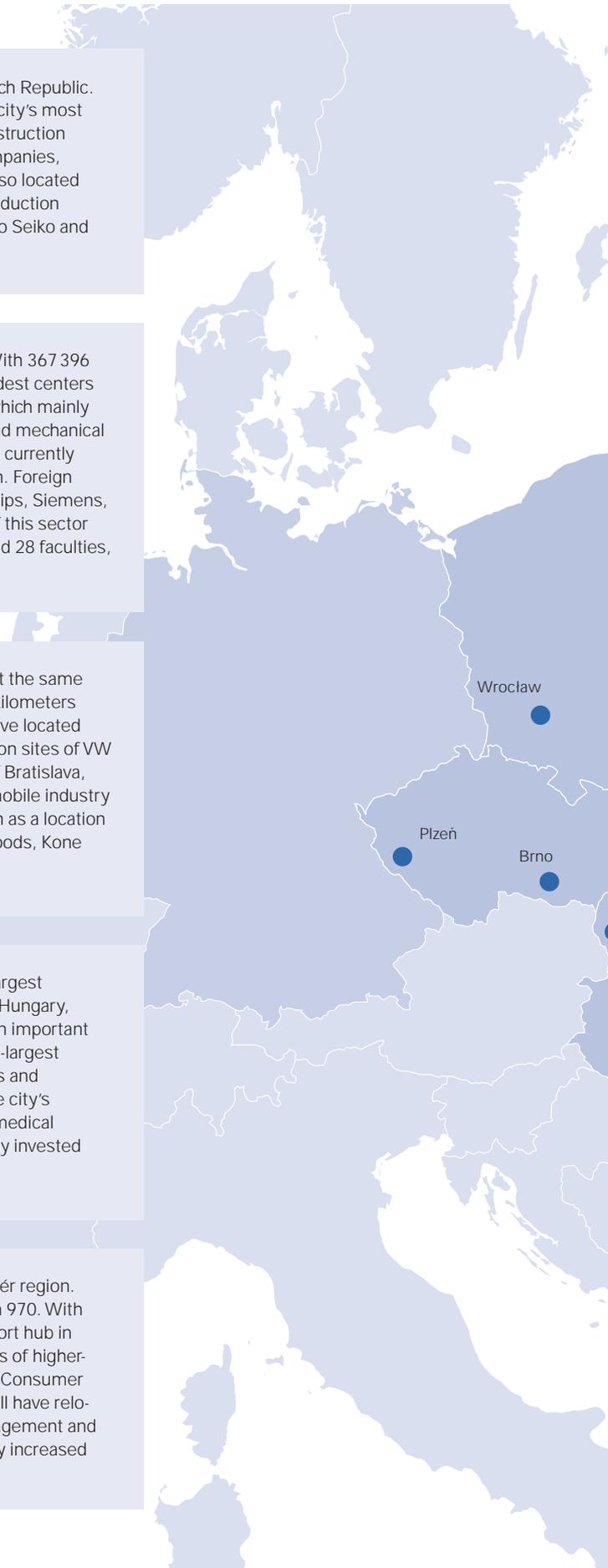
The city of **Plzeň** was founded in 1295 and is located in the west of the Czech Republic. With a population of 167 000, it is the fourth-largest city in the country. The city's most important industries include mechanical engineering, food-processing, construction materials and ceramics, as well as energy generation. Traditional Czech companies, such as Škoda Holding and the world-famous brewery Pilsner Urquell are also located in Plzeň. Many international companies, such as Panasonic, which has a production site for plasma television sets there, the Japanese automotive supplier Koyo Seiko and the Austrian construction group Lasselsberger, have also invested in Plzeň.

Brno is located in South Moravia in the south-east of the Czech Republic. With 367 396 inhabitants, it is the country's second-largest city. Traditionally one of the oldest centers of the textile industry in Central and eastern Europe, the city's industries, which mainly comprise medium-sized companies, are now focused on the automotive and mechanical engineering sectors. Electronics and electrical engineering are nonetheless currently viewed to be harboring the greatest potential for future growth in the region. Foreign direct investments made by companies such as ABB, Honeywell, IBM, Phillips, Siemens, BenQ and Control Techniques have contributed to the continuous growth of this sector since the early 1990s. With more than 60 000 students at six universities and 28 faculties, Brno is one of the most important university cities in the Czech Republic.

With approximately 425 000 inhabitants, **Bratislava** is the largest city and at the same time the capital of Slovakia. It is located in the west of Slovakia, around 70 kilometers from the Austrian capital Vienna. Large numbers of automotive suppliers have located in and around Bratislava in recent years, not least as a result of the production sites of VW in Bratislava and PSA Peugeot-Citroën in Trnava, 50 kilometers north-east of Bratislava, thus turning the region into one of the most important centers of the automobile industry in Europe. Moreover, in recent years Bratislava has also built up a reputation as a location for shared service centers, with investments by companies such as Kraft Foods, Kone Elevator and Allianz Business Services.

The city of **Košice** has a population of 235 000, thus making it the second-largest city in Slovakia. Located in the east of the country, only 20 kilometers from Hungary, 80 kilometers from the Ukraine and 90 kilometers from Poland, the city is an important logistical hub for national and international commerce. Košice is the second-largest industrial center in Slovakia, with a major focus on basic materials industries and mechanical engineering. The US-American company U.S. Steel Košice is the city's largest employer. Schelling Anlagenbau, Zeppelin Baumaschinen/CAT, Unomedical and Ford-Getrag provide further examples of companies which have recently invested in and around Košice.

Székesfehérvár is located 60 kilometers south-west of Budapest in the Fejér region. Called the "City of the Kings", it was named as the first capital of Hungary in 970. With 110 000 inhabitants, Székesfehérvár is an important commercial and transport hub in center of the country. The city has successfully attracted increasing volumes of higher-value investments in recent years. Companies such as Phillips, Flextronics (Consumer Electronics), General Electric, IBM, Lufthansa, Axa Insurance and Honeywell have relocated IT support, data management, customer service centers, asset management and other internal support functions to this central Hungarian city. Alcoa recently increased the workforce at its shared service center to more than 200 employees.





Located on the eastern shores of the Baltic Sea, **Tallinn** is the capital of Estonia and has a population of 403 500. The city's economic structure is dominated by the services sector, which accounts for around 80 percent of the local economy. Tallinn has built up a reputation as the Baltic center for innovative software and technology development, especially in the field of telecommunications. Between 70 and 80 percent of foreign direct investment in Estonia, most of which originates from Scandinavia, is targeted at Tallinn. ABB, Statoil, Coca-Cola, Telia and Ruhrgas are among the largest foreign investors in the city. The Hilton Chain has announced that it intends to expand its call center, which processes telephone inquiries in twelve languages, by 50 employees to a total workforce of 300 in 2006.

With around 572 000 inhabitants, **Riga** is both the capital and the main economic center of Latvia. Latvia has reported some of the highest economic growth rates in Europe in recent years (7.5 – 8.5 percent GDP growth). The country's GDP is dominated by the services sector, which accounts for 72.7 percent of economic output. The IT and telecommunications service sectors have shown particularly strong growth in recent times. Financial services constitute a further important sector in the Latvian economy. Around 60 percent of foreign direct investment in Latvia is targeted at Riga. Microsoft, Exigen Group, Tele2, Vereins- und Westbank AG and Tilts Communications are some examples of major foreign investors in the field of IT/telecommunications in Riga.

With around 1.7 million inhabitants, **Warszawa (Warsaw)** is the capital city of Poland. Numerous companies use Warsaw as their base for business in Central and eastern Europe. Commerce and services represent the most important components of the city's economy. Only 18 percent of Warsaw's working population is employed in industry. The city has developed into one of the largest financial and stock exchange centers in Central and eastern Europe. The most important investors in Warsaw include many renowned international banks and insurance companies, such as Citibank and Uni Credito Italiano, as well as manufacturing companies, such as Nestlé and ThyssenKrupp. With a student population of around 255 000, Warsaw also offers very great potential in terms of highly-qualified personnel.

Wrocław is located in Lower Silesia in the south-west of Poland, not far from the borders to Germany and the Czech Republic. With around 640 000 inhabitants, it is the fourth-largest city in Poland. Wrocław's economy is mainly focused on IT, electrical engineering, logistics, financial services, automotive and pharmaceutical sectors. With a student population of around 130 000, Wrocław is the third-largest university city in Poland after Warsaw and Kraków. Given the availability of large numbers of qualified engineers, the city is endeavoring to position itself as a location for complex production, information technology and electrical engineering activities. ABB, Volvo, Danfoss, Wabco and 3M are among the most important investors in Wrocław. Siemens also has a research and development center located in Wrocław.

Kraków has a population of around 757 400 and is located in the region of Malo-polskie in the south of Poland. The city's 16 universities include the Jagiellonen University, the second-oldest university in Central Europe. Today's Kraków is a rapidly growing industrial and economic center which has already attracted numerous renowned foreign investors, such as Motorola, RR Donnelley, the MAN Nutzfahrzeuge Group and Lurgi. The city is also becoming increasingly important as a location for research and development. The US-American automotive supplier Delphi, for example, has opened a technology center in Kraków. Philip Morris and Ahold have also recently established shared service centers in Kraków.

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