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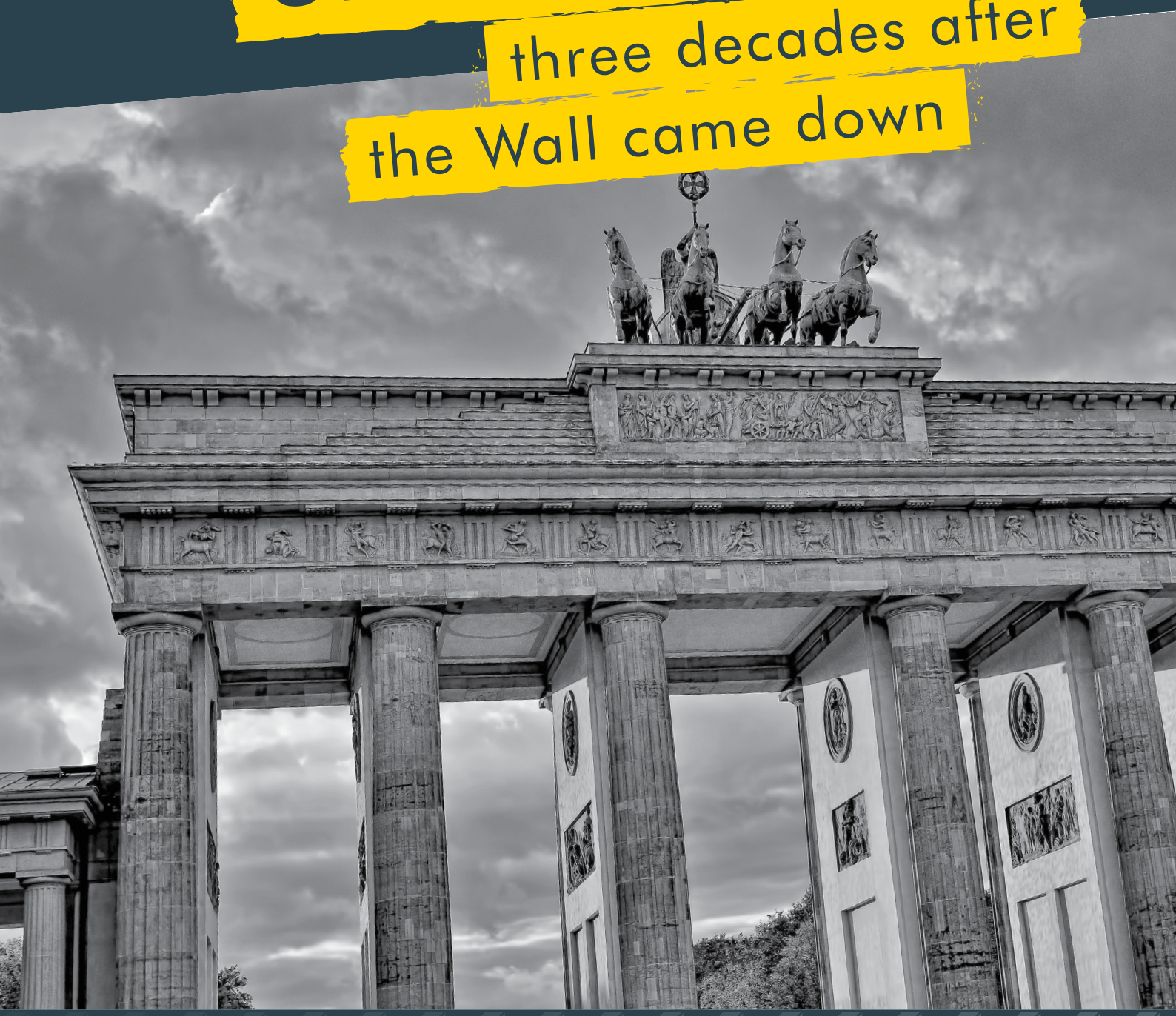
United country – three decades after the Wall came down



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United country – three decades after the Wall came down

The Berlin Wall, once the symbol of the divided Germany, has now been gone for longer than it ever existed. But the differences within the country are still visible. However, recent research suggests that different economic development does not always follow the former inner-German border. Apart from the west-east divide, differences also emerge between the south and the north or between the cities and the country.

United country – three decades after the Wall came down

The Berlin Wall as the symbolic embodiment of divided Germany has now been gone for longer than it ever existed. The third decade without this demarcation line drew to an end in 2019. Cold reality quickly replaced the euphoria after the fall of the Wall and reunification. The people in the east of Germany experienced the collapse of economic structures and the loss of millions of jobs. The political powers were faced with the challenge of promoting a rapid process of cohesion across the country, but without endangering the economic stability of united Germany or its role as a reliable partner in Europe and the world. With this in mind, it appears apt to ask what Germany, which completed reunification as a sovereign state just under one year after the fall of the Wall, looks like three decades later. This article explores the answers. It presents the findings of studies on the economic situation and the development of reunified Germany. In a first step, it illuminates Germany's economic position within an international comparison. Then it casts an eye over the regional differences that prevail across the country in the third decade after the collapse the GDR.

Checkpoint Bornholmer Straße on November 9, 1989

How has Germany's economic position changed in an international comparison since reunification? In Germany, per capita gross domestic product (measured in purchasing power parities) during the early nineties was, on average, approximately equivalent to that of all major advanced economies (Group of Seven – G7), and only the United States – by far the most prosperous member of the group – ranked higher (figure 1). For a longer period afterwards though, per capita gross domestic product in Germany grew at a significantly more sluggish pace than the average within this set of countries. That was by no means inevitable. After all, growth rates in the East German economy were even quite high at the time due to the ongoing process of convergence (figure 9). But reunification also brought burdens that curbed the growth trend in Germany. The public sector, for instance, gobbled up a considerably larger slice of the production potential. While in West Germany the public sector revenue ratio – relative to gross domestic product – was 43% prior to reunification, it had risen to 48% in reunified Germany by the mid-nineties.[1] Compounding this trend was the significant slump in the country's competitiveness in the early years of united Germany.[2] This was caused by a stronger D-Mark (rising by 17% in nominal effective terms between 1989 and 1995) and domestic inflation caused by increased consumer spending after reunification.[3] Moreover, the introduction of the D-Mark in former East

Reunification curbed the growth trend

[1] The expenditure ratio soared from 45% to 51%. To ensure equivalence between the figures for former West Germany and reunified Germany, the expenditure and revenue ratios are based on the gross domestic product according to the European System of Accounts 1995.

[2] The indicator for price competitiveness based on price deflators acting on total sales as calculated by Deutsche Bundesbank, the 1995 prices in Germany – relative to those in the relevant sales markets – were 16% higher than in 1989 and even 20% higher than in 2017.

[3] Consumer prices in the west of Germany, for instance, experienced an average annual rise of 3.7% between 1991 and 1993.

Germany, the consequent conversion of wages at a 1:1 ratio and the following, considerable increase in wages inevitably eroded Germany's competitiveness.[4]

It is worth noting that the degree of openness in the German economy as the ratio of total exports and imports relative to gross domestic product slumped considerably in the years following reunification (figure 2). This observation was by no means inevitable, either. After all, the surge in demand precipitated by reunification and the competitiveness deficit among German companies could just as easily have led to a rise in imports as well. But imports grew at a moderate rate in the first half of the nineties, and demand in the east was mainly satisfied by supply from the west of Germany. The domestic market became increasingly important to West German companies, while the significance of exports dropped significantly, initially at least. The current account balance flipped suddenly into the red (figure 3).

Recoverage from weak phase after German unification

But the German economy has recovered from its weak phase in the middle of the last decade and per capita production has tended to grow at least as quickly as the average of other G7 states. The labour market reforms of 2003 to 2005 are frequently cited as reasons for this turnaround.[5] However, it was the resurgent export market that mainly strengthened the German economy, a trend that had set in at the end of the nineties.

Many companies succeeded in increasing their labour productivity by outsourcing unproductive value chains abroad.[6] Besides, the manufacturers of capital goods which are

Export nation: Germany benefits from internationalisation

eminently important for Germany benefit as a result of increased demand for these products on fast-growing emerging markets, most notably China. Ultimately, therefore, the collapse of the Iron Curtain promoted internationalisation of the German economy to a particular extent, and the degree of openness, relative to the size of the country, is now remarkably high.

Are the 30 years of united Germany a success story from an international perspective? The answer depends on the scale: the German economy was, when all's said and done, able to assert its position within the group of major industrialised nations, but the gap to the United States has nevertheless widened. The reason for the faster improvements in US-American productivity is, to a significant degree, explained by the strength of the country's digital economy. To a large extent, the digital economy did not emerge until after German reunification. The German word "Handy" (for mobile telephone) did not enter common parlance until 1990, and the US-American National Science Foundation first made the Internet available outside of universities in the same year. Technical progress in the IT sector remains driven significantly by the United States, and the world's five most valuable companies

Faster improvements in US-American productivity

[4] And while employee compensation in the states of the east had been 49% of West German levels (not counting Berlin) in 1991 (according to accounts statistics released by the Länder), the number had already climbed to 72% by 1995.
[5] Cf. Council of Economic Experts (2016), Zeit für Reformen, Annual Report 2016/17, No. 7 and 841.
[6] Cf. Council of Economic Experts (2015), Zukunftsfähigkeit in den Mittelpunkt, Annual Report 2015/16, No. 609.

in 2017 all maintained a digital business model and were domiciled in the US. Narrowing the gap in the digital economy will be tricky. But it is worth considering the general issue of why the conditions for the emergence of new technologies were and remain seemingly more favourable across the Big Pond than here in Germany, as well as what can be done to remedy the situation. In doing so, it is essential to remember that Germany's unusually high current account surplus (figure 3) does not have its roots in outstanding competitiveness, but expresses instead a reluctance among investors to put boots on the ground in Germany.

Following this description of Germany's economic position in an international comparison, the next section will turn its attention to the economic situation in the reunified country. Defined in economic terms, the disappearance of the Berlin Wall and the establishment of a united Germany were a case of economic integration. Once the border was opened, residents of former East Germany were allowed to choose freely where they wanted to live and work. With the introduction of the currency, economic and social union in mid-1990, east Germany became part of a wider region of European integration, in which there were no restrictions on the freedom of movement for production factors. There was a general assumption that the significant differences in regional development would gradually converge over time. At the time, the gap between west and east dominated the perceptions of territorial disparities in Germany. But that was hardly surprising. Four decades of German separation would inevitably leave traces.

Regional variances in German productivity remain dominated by the gap between west and east

The most visible expression of the west-east gap in economic performance was the *variance in productivity*. Productivity in former East Germany in 1991 (including Berlin) was just 45% of the west German value, based on the gross domestic product per person employed (figure 4). Between 1991 and 2003, productivity in the new federal states rose faster than in the western parts of the country. By the mid-nineties, however, the pace of productivity convergence had gradually dipped and by the first decade of the new millennium was only progressing in tiny steps, if at all. As a result, 2017 productivity levels in former East Germany (including Berlin) are just 82% of the West German average. None of the East German states (not counting Berlin) can match the least productive state in West Germany, namely Saarland. The question frequently arises in discussions of regional economy whether a north-south gap should replace the diminishing west-east gap. Indeed, a widening discrepancy between productivity in the south and the north of Germany does become apparent if the states of Baden-Wuerttemberg, Bavaria, Hesse, Rhineland-Palatinate, Saarland, Saxony and Thuringia are counted as the south and the other states are assigned to the north (figure 4). But the gap is still far smaller than between west and east.

East-west convergence initially proceeded in giant, but nowadays only in tiny steps

Scientific and political discussions of the causes for continued productivity variance between east and west frequently point to the *fragmented corporate structures* in the new federal states. It is true that the East German economy is dominated by small to mediumsized enterprises, but this applies to the west of the country as well. A consideration of companies that are classified as large (more than 250 employees) is imperative in this context. Put precisely, this group of companies accounts for 0.4% of all business enterprises in the east and the west; in absolute terms that would be 2,341, i.e. 12,289 companies (2016).[7] Considering that the largest companies in West Germany are far bigger than their counterparts in the east, the proportion of labour employed in big businesses, relative to total employment, is much higher in the west of the country (figure 5). What the states of East Germany are lacking, are *large companies with strategic corporate functions*, so primarily research and development. These and similar strategic functions are usually established at group headquarters. But hardly any *group headquarters* exist in the east of Germany (figure 6). Of the TOP 500 companies in Germany listed each year by the daily newspaper DIE WELT, 464 were domiciled in the west and just 36 in the east of the country in 2016. An earlier study by IWH demonstrated that the paucity of strategic leadership functions is a noteworthy explanation for the income gap between east and west.[8] But size is not the only thing that matters. A multivariate estimate performed at IWH shows that the productivity gap between East German companies and equivalent groups in the west is never less than 20%, regardless of the size of workforce (figure 5). It is therefore reasonable to assert that the productivity deficit in the east is caused both by the fragmented company structures, as well as by the prevalent shortfall in relative productivity in comparable organisations. The extension of subsidies within regional policy programmes for corporate investments does not necessarily lead to an increase in labour productivity, as these measures are tied to the creation and protection of jobs (cf. subsection "East Germany no longer exhibits a general deficit in physical capital").

Group headquarters mainly located in West Germany

East-west productivity gap in all firm sizes

Moreover, differences in productivity exist between urban and rural regions in Germany, both in the west and the east of the country. Productivity in the urban regions outperforms the rural areas in both parts of the country. This is hardly surprising, as built-up areas enable external economies of scale that favourably influence productivity as well. What catches the eye nevertheless is the greater similarity between productivity in the rural regions of West and East Germany, compared to the relative productivity between cities in the two halves of Germany (figure 7). Possible explanations for this might

Greater similarity between productivity in the rural regions then between eastern and western cities

Industries in rural regions

[7] Cf. Statistisches Bundesamt (Destatis), 2018: Unternehmen (Unternehmensregister-System); IWH calculation.
[8] Cf. Blum, U. 2007: Der Einfluss von Führungsfunktionen auf das Regionaleinkommen: Eine ökonometrische Analyse deutscher Regionen, in: IWH, Wirtschaft im Wandel 6/2007, 187–194.

be that from 1990 onward, investors decided to preserve industries that had grown over time in rural regions and were given suitable subsidies to do so. After reunification, many investors decided to put money into locations outside of the cities, where they found a favourable range of industrial and commercial land or locations close to a motorway. Moreover, it is important to consider from a perspective of settlement patterns that many of the industrial companies emerging at the turn of the 20th century or after the Second World War were established in more rural locations – with the chemicals industry in the south of Saxony-Anhalt and the metalworking industry in Eisenhüttenstadt as two prime examples. Regional subsidies at political level were added to the equation after 1990. Interestingly, urban areas where productivity tends to be higher are less significant contributors to employment in the east of Germany. While around 50% of employed people in the east of the country work in city regions, the equivalent number in West Germany is approximately three quarters.

The persisting gap between the west and the east can be appreciated in more relative terms if one considers the regional variance in economic strength across the European Union (figure 8). Expressed as per capita gross domestic product, the East German regions exhibit a significant lead over the vast majority of areas in central and eastern Europe that have also experienced a transformation from centralised administration toward market economy. All the same, East Germany, despite of German domestic transfer since the year 2000, on average grew much more slowly than the four Visegrád states Poland, Slovakia, the Czech Republic and Hungary. In terms of purchase power, the Czech Republic is already very close to the economic strength of East Germany (figure 9). The scale of inner-German regional disparities otherwise contracted during the 2000s (figure 10). This was not the case in the other major EU members of France, Italy and Great Britain, and the European Union has itself become more disparate through the acceptance of countries from central and eastern Europe with their economically weak regions. Viewed from the perspective of variance in per capita gross domestic product (purchase power standards), the disparities are more pronounced in the west of Germany than in the east. Nevertheless, the narrowing of inequality was greater in the east, compared to the west.[9] Interestingly, Berlin does not belong to the EU and German regions that top the list in terms of per capita purchase power. But Berlin's gross domestic product has been growing faster than the average in West Germany since 2014 (figure 11).

Scale of inner German regional disparities contracted

Variance in productivity is associated with wage gaps

The productivity deficit in the states of East Germany is of a similar magnitude to the gap in wages (figure 12). The median wage in East Germany is at 81.0% of the national average. Even in the capital Berlin, median pay is just 97.4% of the average across Germany. An analysis of the districts and unincorporated towns in Germany reveals a significant spread in wages. With the exception of Hamburg and a few of the

Visegrád states have closed the gap considerably

[9] IWH calculations based on Eurostat 2018.

Significant pay gap between the south and north as well as west and east

regions of North-Rhine Westphalia, a significant pay gap between the south and the north exists in West Germany. The median wage in Ingolstadt and Erlangen is at 144.4% of the national average. Cloppenburg, the West German district with the lowest median wage, achieves just 81.3% of the national average, although people employed there still earn slightly more than the average worker in East Germany. The spread in East Germany – not counting Berlin – extends from 68.0% in Görlitz to 95.5% in Jena. Among the most important causes of this pay gap is the persistently lower average productivity in the east of the country. But structural differences contribute as well. The proportion of sectors that traditionally pay higher wages in West Germany is lower in the east as well. For instance, manufacturing industry accounts for 28.4% of all full-time positions with mandatory social insurance contributions in West Germany, but only for 21.0% of equivalent jobs in the east. Moreover, pay in the East German manufacturing industry is just 101.4% of the average wage and therefore only marginally higher. The corresponding figure in West Germany is 115.9%.

Services as the biggest driver of employment in united Germany

Growth in value added and employment can be used to measure economic performance. Since reunification, the services sector – relative to the total numbers in gainful work – was the biggest driver of employment in the west and the east of Germany (figure 13). Nevertheless, the number of new jobs in the East German services sector between 1991 and 2005 was insufficient to compensate for the loss of employment in other areas of the economy, so in manufacturing industry, construction, other areas of production, agriculture, forestry and fisheries. The number of industrial employees in West Germany also decreased between 1991 and 2005, although in the west the decrease was more than compensated for by the increase in the service sector. The balance of employment in the east of Germany did not begin to grow until the slump in industrial labour had subsided, and the principal driver was again the services sector. Employment also rose in the industrial sector. But absolute expansion in jobs in the services sector was almost six times higher than in the industrial sector. East Germany is unable to match the rise in employment in the West German services sector. While the west-east ratio for total employment in the services sector is approximately 4:1, it drops to 6:1 when considering the growth in employment between 2005 and 2017. Analysis of the gross value added reveals that services are responsible for the largest absolute increases in both the east and the west of Germany (figure 13).

Jobs in the East German services sector almost six times higher than in the industrial sector

The statistics for underemployment indicate the level to which people have not been integrated in regular employment (figure 14). Not only do they include job seekers, they also include those who receive support within the framework of job stimulation policies. The underemployment rate is a more suitable metric than the unemployment statistics to model the deficit in regular employment.

A pronounced south-north gap is evident. The lowest values are in the districts of Bavaria, while the highest are in Western Pomerania, parts of Brandenburg, outside Berlin's commuter belt and in individual areas of Saxony-Anhalt and North-Rhine Westphalia. 37 of the 84 districts and unincorporated cities in which the underemployment quotas are more than 25% above the national average, are located in East Germany. Berlin is also among the regions with a particularly high level of underemployment. It is important to note that underemployment in the regions of Germany was described in relative terms, so based on the national average. The Federal Employment Agency has suggested that the rate itself has dropped significantly. While it was still 15.6% in East Germany as recently as 2011, it had fallen considerably to 10.4% by 2017. In West Germany this figure dropped from 8.5% to 7.2%.[10]

East Germany no longer exhibits a general deficit in physical capital

No widespread capital deficits, but East German capital productivity is lagging behind the west

The most eye-catching development deficit that was revealed after the borders were opened in the east of Germany was the deplorable condition of the capital stock, both in terms of the former nationalised companies as well as the infrastructure. In 2015, the average capital resources per employee in East Germany were almost nine tenths of their West German counterparts (figure 15). So any assertion of widespread capital deficits would now be entirely erroneous. Indeed, East Germany ranks above the west of the country relative to gross domestic product or capital coefficient. This means nothing other than that capital productivity – not just the productivity of labour – must also be lagging behind the west. Massive subsidies were granted in order to build up capital stock. Regional promotion programmes extended grants to the tune of 42 billion euros between 1991 and 2017, merely for investment in East German business. A considerable portion of these funds – relative to the job numbers – was invested in industrial firms that, in terms of their settlement structures, are situated in rural regions (figure 16). The subsidisation programmes have since been ramped down significantly, however. An IWH study on the regional promotion of individual businesses based on the example of Saxony-Anhalt shows that while there is a positive impact on employment and investment (although the latter continued only in the phase of subsidisation), there is no increase in competitiveness in the meaning of productivity in the subsidised businesses. These findings are consistent with the conclusions of international studies.[11] This result fits with the international literature, after which there is no indication that discretionary investment subsidies raise the recipient firms' productivity (*Neumark, Simpson,* 2015).[12]

Net migration from East Germany to the west has halted, but population decline continues

The availability of labour correlates strongly with population trends and composition, net

[10] Cf. Bundesagentur für Arbeit, Statistik (2018): Arbeitslosigkeit und Unterbeschäftigung (Jahreszahlen). Deutschland, West/Ost und Länder. 2017, in: https://statistik.arbeitsagentur.de/Statistikdaten/Detail/201712/unterbeschaeftigung/jz-arbeitslosigkeit-unterbeschaeftigung/jz-arbeitslosigkeit-unterbeschaeftigung-d-0-201712-xlsx.xlsx, retrieved on 11/09/2018.

[11] Cf. Brachert, M.; Dettmann, E.; Titze, M. (2018): Public Investment Subsidies and Firm Performance – Evidence from Germany, Journal of Economics and Statistics, 238(2): 103–124, here specifically 121.

[12] In addition, it is also argued in relevant literature (Neumark, D.; Simpson, H. (2015): Place-based Policies, in: Duranton, G.; Henderson, J. V.; Strange, W. C. (Eds.): Handbook of Regional and Urban Economics, Amsterdam et al.: Elsevier, Vol. 5B, 1197–1287, here specifically 1259): „The evidence also suggests that the design of some schemes might it elf createdistortions

migration and the number of births and deaths. *Migration between East and West Germany* has been largely balanced since 2012. It is reasonable to assume that this is due to improvements in the job market. But this has not always been true. As expected, the number of migrations to West Germany rose precipitously immediately after the Wall came down (figure 17). Net migration in East Germany between 1989 and 2015 shows a deficit of 1.9 million people. More than half of this migration took place between 1989 and 1992. The situation has become increasingly balanced since a renewed rise in net migration around the turn of the millennium. There has even been slightly positive net migration to the east if Berlin is brought into the equation, although the number of people leaving the states of East Germany outside of Berlin is still larger than the equivalent number moving there. External migration is another factor, besides domestic migration from east to west, in which net westwards migration was greater than in the other direction for more than two decades (figure 18). East Germany (including Berlin) has recorded positive net external migration in almost all years since 1990. It even became so considerable that it compensated the net domestic migration losses from east to west between 1992 and 1996, as well as after 2010. In addition, the number of births in East Germany dropped in the first few years after the fall of the Berlin Wall. Most likely this was due to the general uncertainties in the East German population as to their prospects in united Germany, and less a result losing the incentives to start a family that were extended in the German Democratic Republic. The number of births between 1990 and 2015 was below the number of deaths. Broadly speaking, a birth deficit in the west of the country did not set in until after the turn of the millennium. If migration and natural population changes are viewed together, it becomes apparent that positive migration in East Germany has been greater than the birth deficit since 2013. The population in East Germany has therefore risen since then. In contrast, West Germany has recorded a population growth in almost the entire period since reunification, except for the years from 2006 to 2009. The population in West Germany rose by almost 6.6 million people between 1990 and 2015, but fell in East Germany (including Berlin) by 2.1 million. Moreover, since reunification, West Germany has satisfied some of its demand for skilled workers through migration from the east. Population trends are also affected by city-country variance in domestic migration. Since 1999, the rural regions of East Germany have consistently lost residents due to domestic migration, and

East-west net migration has become increasingly balanced

Different population development in East and West Germany

Deserted: Rural East German regions are steadily losing their population

to firms' optimal capital-labor ratios and to productivity, with associated welfare effects. Indeed, to the extent that the schemes are designed to finance marginal investment projects that, absent any capital-market failures, would not be backed by private sector finance, the subsidized investment may be relatively unproductive."

the magnitude of migration from these rural areas of the country – relative to the number of inhabitants – has been several times larger than in the rural regions of West Germany (figure 19).

East and west will be affected by the decline in persons of employable age to a differing degree in the coming years

According to the 13th coordinated population projection by the Federal Statistical Office, the *future population development* in Germany does not promise any alleviation in the issue of skilled workers over the coming years (figure 20). Quite the contrary: Even the forecast assuming stronger migration from foreign countries of 200,000 persons per year will nevertheless lead to a decline in persons of employable age in the next few years. Compared to the reference year 2015, the number of persons of employable age will drop by almost two fifths in the states of East Germany (not including Berlin) by 2060, and by just under one fifth in West Germany. It follows, therefore, that the decline in the east will be twice as acute as in the west.

Is EU immigration able to address labour market bottlenecks?

Migration of qualified workers from foreign countries can doubtlessly help to mitigate the drop in the number of persons of employable age in the coming years. But the regions in Germany benefit from foreign migration to differing extents. In the period from 2010 to 2015, accumulated migration gains from EU states amounted to 1.5 million people, or 18.5 per 1,000 residents (figure 21). The federal states that have benefited in particular from migration gains from the EU are Bremen, Baden-Wuerttemberg, Bavaria, Hesse and Berlin. Migration gains in the states of East Germany apart from Berlin are not even half the national average. The EU migration gains are especially low in Saxony and Saxony-Anhalt. The differences between the federal states are not as distinct in regard to migration gains from non-EU states. In total, accumulated net migration was just under 1.4 million people between 2010 and 2015. This is equivalent to 17.0 people per 1,000 residents. It is lowest in Bavaria, Brandenburg, Saxony and Schleswig-Holstein, where it is more than one tenth below the national average. The numbers are highest in Bremen. Regional disparities in regard to migration destinations for foreign nationals are also evident based on the areas in Germany where 'blue cards' are issued (figure 22). Blue cards authorise organisations to employ foreigners with university qualifications, who must earn a certain minimum salary. On average, 49 of 100,000 employed people received a blue card in Germany during 2017. In absolute terms for Germany, this means around 21,700 immigrants. This number – based on people in gainful employment – is

EU migrants are especially heading for West Germany

three times as high in Berlin. The proportion of blue card approvals also ranges above the national average in the West German states of Hamburg, Hesse, Bavaria, Baden-Wuerttemberg and Bremen. In contrast, blue card arrangements played a below-average role in resolving the shortage of skilled workers in structurally weak states of West Germany and in all of East Germany, apart from Berlin. East Germany appears trapped in a vicious cycle in this regard. Migrants prefer to settle in areas where societal networks already exist – so where family members from their source countries are living – East German states, from a current perspective at least, are among the least preferred migration regions for persons moving within the EU[13] and for holders of blue cards. In order to convince qualified people from abroad to move to East Germany, there is a continued need to consistently counteract manifestations of xenophobia and demonstrate a cosmopolitan attitude.

Not even one in ten residents in East German states (not including Berlin) has a migrant background (figure 23). And it is no coincidence that the states that benefit most from blue card arrangements have a greater than average proportion of residents with a migration background. Relative to the total population, the proportion of foreign nationals living in the unincorporated cities and districts of East Germany is significantly below the national average, apart from in Berlin (figure 24). But refugees who are living in Germany for humanitarian reasons account for a greater than average proportion of this small number of foreign nationals in the eastern states. In 49 of the 77 unincorporated cities and districts, the proportion of refugees relative to the number of foreign nationals is at least twice as high as the national average. It follows, therefore, that East Germany faces a particular challenge to integrate those who have been awarded refugee status. But it is equally an opportunity to compensate for below-part migration from the EU.

Particular challenge lies in the high proportion of refugees among the foreign nationals

The new bottleneck throughout Germany: skilled workers

West and East German firms: strong increase of vacant positions

Population shrinkage is not without consequences. Vacant positions for skilled workers are increasingly becoming a problem in the businesses of East and West Germany alike (figure 25). The vacancy ratio (relative to the total number of jobs offered) for qualified positions has risen sharply since 2007. On average, it was 1.8 times greater in 2017 than the equivalent number in 2007. It has even more than doubled in East Germany, where every third position advertised in 2017 remained vacant. The areas most affected by vacancy problems are construction, agriculture, forestry and corporate services. Despite the difficulties recruiting skilled workers, the proportion of part-time positions has continued to rise in recent years (figure 26). The number of part-time employees in East Germany rose by a factor of 2.3 between 1997 and 2017, and by a factor of 1.7 in West Germany. Although there has been convergence, the share of overall employment remains lower in the east than in the west. There is

[13] Refer in this regard, for example, to a study of migration from Poland to Germany, which is expected to involve relocation to built-up areas of West Germany, in: Kubis, A. (2010): Regionale Migration in Abhängigkeit von Humankapital und sektoraler Struktur – Eine empirische Analyse am Beispiel von Deutschland und Polen. IWH-Sonderheft 2/2010. Halle (Saale), 7, 87 et seq.

little doubt that the rise in part-time employment reflects the wish to reconcile work with family life. But it is equally an indicator of untapped potential in the recruitment of skilled workers.

An EU labour force survey reveals that the share of employees with tertiary qualifications, so university and technical college degrees, dropped consistently in all East German states (not counting Berlin) between 2000 and 2017 (figure 27). In contrast, it rose in all West German states and in Berlin. The share of employees with tertiary qualifications in East German states was still greater than the national average as recently as the year 2000. Aside from Saxony, the numbers had fallen below the national average in all East German territorial states by 2017. Except for Berlin, the originally significant advantage in regard to highly qualified workers in East Germany has therefore been lost. Nevertheless, the East German states still record the lowest number of employees with low-level professional qualifications in a Germany-wide comparison. There may be reasons on both the supply and demand side for the drop in employees with tertiary qualifications. Among employees who had earned their qualifications in the GDR, the proportion of those with university or technical college degrees was larger than in West Germany.[14] Some of these persons are leaving the job market year for year having reached retirement age. The demand side is affected by a drop in the number of people in senior management positions and the lower need for highly qualified specialists in East Germany.[15]

Advantage in regard to highly qualified workers in East Germany has been lost

The supply of skilled workers is made particularly fraught in East Germany by the larger prevalence of school drop-outs (figure 28). On average, drop-outs accounted for 5.7% of all German school leavers in 2016. It lies above the national average in 68 of the 77 unincorporated cities and districts of East Germany.

Too many school drop-outs

East Germany's economic structures are different

The economic performance of Germany's regions also depends on their prevailing *economic structures*. In this regard, the fault lines often still run along the state borders between East Germany and the west. Although East Germany's transformation from central administration to market economy was completed a long time ago, the decisions on developing corporate structures that were made in the centralised economy of the GDR have left traces in the economies of the post-transformation era as well. The creative category of small to mediumsized businesses was largely destroyed in the GDR by relocation, forced nationalisation and incorporation (cf. information box). It follows, therefore, that the East German economy lost a significant portion of its creative, innovative entrepreneurial class due to outward migration

[14] This finding relates to data from the years 1980 to 1985. Cf. Maaz, K. (2002): Ohne Ausbildungsabschluss in der BRD und DDR: Berufszugang und die erste Phase der Erwerbsbiographie von Ungelernten in den 1980er Jahren. Selbstständige Nachwuchsgruppe "Ausbildungslosigkeit: Bedingungen und Folgen mangelnder Berufsausbildung", working paper 3/2002. Berlin: Max Planck Institute for Human Development, in: https://www.mpib-berlin.mpg.de/volltexte/institut/dok/full/nwg/NWG_maaz_WP3_2002.pdf, retrieved on 11/10/2018, 10, table 1.

[15] The share of persons in senior management positions and highly skilled workers in manufacturing industry and services (full-time and part-time) in East Germany (without Berlin) fell from 28.6% to 26.6% between the 2nd quarter of 2010 and the 2nd quarter of 2018. The share fell in West Germany (including Berlin) from 34.5% to 33.2% in the same period (sources: Statistisches Bundesamt (2010): Fachserie 16 Reihe 2.1 Verdienste und Arbeitskosten. Arbeitnehmerverdienste. 2. Vierteljahr 2010. Published on 22. September, in: https://www.destatis.de/GPStatistik/servlets/MCRFileNodeServlet/DEHeft_derivate_00002339/2160210103225.xls, retrieved on 01/11/2018; Statistisches Bundesamt (Destatis) (2018): Fachserie 16 Reihe 2.1 Verdienste und Arbeitskosten. Arbeitnehmerverdienste. 2. Vierteljahr 2017. Published on 20 September, corrected on 28 September, in: https://www.destatis.de/DE/Publikationen/Thematisch/VerdiensteArbeitskosten/ArbeitnehmerverdiensteVj2160210183225.xlsx?__blob=publicationFile, retrieved on 01/10/2018.

Information box: The long shadow of the GDR's centralised economy

The innovative segment of small to medium-sized, private-sector businesses in the east of Germany was forced out or marginalised in the four-and-a-half decades that followed the War. Around 36,000 businesses (not including trades) relocated to the west.[1] More than 11,100 additional publicly owned companies were created by the forced nationalisation of private and semi-private businesses in 1972.[2] In the event, production became rigidly concentrated on large companies and conglomerates. Between 1955 and 1989, the average size of the workforce in each industrial firm rose by a factor of seven, while the number of companies dropped by roughly four fifths.[3] On average, around 21,300 people worked in each nationalised industrial conglomerate.[4] Today, 30 years after the Wall came down, the paucity of large companies that include strategic corporate functions is frequently lamented. It appears apt to ask in this context whether the conglomerates might not have been able to act as corporate headquarters after entering the market economy? But no, their organisation would not have been suitable by market economy standards. The reflexive response to the quintessential question of 'make or buy' that every company must answer, was quite simply 'make' in these conglomerates. Framed in the vocabulary of planners, the conglomerates represented "[...] a largely hermetic process of reproduction [...]"[5], which they actually believed to be beneficial. When the first restructuring and reorganisation concepts were prepared prior to privatisation, the excessive degree of vertical integration was immediately recognised as one of the major flaws. Many of the conglomerates were amalgamations of businesses offering the same or similar products. This process eliminated competition and made certain that the central planning authorities could 'intervene'. Investment resources were assigned to the conglomerates. The divergence of significant investment resources to prestige projects created a situation in which many other businesses were forced to make do with obsolete and dilapidated production systems. Inevitably, therefore, the cost of repair and maintenance was high and productivity low. Obsolete systems in the chemicals industry and elsewhere took a horrendous toll on the environment. Many of the former conglomerate businesses were already in dire straits when the currency union came along in mid-1990. The 1:1 exchange rate from East German Marks to the DM was equivalent to a currency appreciation of several

[1] Cf. Hefele, P. (1998): Die Abwanderung von Industrie- und Dienstleistungsunternehmen aus Sachsen nach Westdeutschland zwischen 1945 und 1961, in: Heß, U.; Schäfer, M. in conjunction with Bramke, W.; Listewnik, P. (Ed.): Unternehmer in Sachsen. Aufstieg – Krise – Untergang – Neubeginn, Leipzig: Leipziger Universitätsverlag, 243–252, here specifically 244 (= Leipziger Studien zur Erforschung von regionenbezogenen Identifikationsprozessen, Vol. 4).

[2] Haendcke-Hoppe-Arndt, M. (1997): Die Hauptabteilung XVIII: Volkswirtschaft (MfS-Handbuch). Ed. BStU. Berlin 1997, 61, in: http://www.nbn-resolving.org/urn:nbn:de:0292-97839421301270.

[3] Staatliche Zentralverwaltung für Statistik (Ed.) (1956): Statistisches Jahrbuch der Deutschen Demokratischen Republik 1955. Erster Jahrgang, Berlin: VEB Deutscher Zentralverlag, 121; Statistisches Amt der DDR (Ed.) (1990): Statistisches Jahrbuch der Deutschen Demokratischen Republik '90. 35. Jahrgang, 1st edition, ReWi Verlag für Recht und Wirtschaft GmbH, Berlin: Rudolf Haufe Verlag, 158; IWH calculations.

[4] Staatliche Zentralverwaltung für Statistik (Ed.) (1989): Statistisches Jahrbuch der Deutschen Demokratischen Republik 1989. 34th year, Berlin Staatsverlag der Deutschen Demokratischen Republik, 103; IWH calculations.

[5] Ordinance on the Nationalised Conglomerates, Conglomerate Businesses and Nationalised Businesses of 8 November 1979 (excerpt from the GDR Legal Gazette I, no. 38, 355), in: Wochenzeitung Die Wirtschaft (Publishers) (1993): Kombinate. Was aus ihnen geworden ist. Reportagen aus den neuen Ländern, 1st edition, Berlin, Munich: Verlag Die Wirtschaft GmbH, 365–373, here specifically, 365.

hundred percent, which placed an immense burden on competitiveness. Rapid wage increases that the companies simply could not afford after years in the productive wilderness merely exacerbated the problem. The traditional eastern markets collapsed at the same time. The privatisation process revealed that the conglomerates and many of the companies they held would be unable to continue as going concerns. Investors were not interested in the old organisations and structures that had emerged from the centralised economy. They were equally disinclined to take over the research departments, preferring instead to maintain the existing units at corporate headquarters in West Germany or abroad.

The summarised profitability assessments produced by the GDR Ministry for Economic Affairs in June 1990 for the period immediately following introduction of the D-Mark assumed that merely around 40% of the businesses would operate at a profit and that 43% of the employess worked at businesses that would be at serious risk of bankruptcy.[6] Even these numbers were excessively optimistic, as the assessments were predicated on continuous trade relations with the Soviet Union.[7] Later on, the management board of the privatisation agency Treuhandanstalt, which reviewed the suitability of larger Treuhand businesses for reorganisation, indicated that the proportion of businesses that would were currently operating at a profit or be soon – and were therefore suitable for privatisation in the near future – was even smaller and amounted to less than 10%.[8] Treuhandanstalt split the large corporate units in order to make them saleable. While the portfolio of the privatisation agency originally comprised 8,500 companies,[9] the gross numbers had risen to 12,354 by the end of 1994, of which 8,444 were privatised or re-privatised, a small number were municipalised and 3,718 were shut down.[10] It is not uncommon in public debate for the work of the Treuhandanstalt to be perceived critically, without its actual activities and its long-term implications having been sufficiently analysed within the framework of economic research. When this time arrives, it will certainly be purposeful to consider the legacy of the centralised economy, which the privatisation agency was forced to absorb. Equally relevant in this regard are the widely obsolete industrial structures that were caused by the enforced expansion of heavy industry in the GDR during the 1950s.[11]

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[6] Cf. Ministry for Economic Affairs, Department I (1990): Angaben zur Rentabilitätsentwicklung der Unternehmen der Industrie nach der Währungsunion – Aufbereitungsstand 07.06.1990 – Berlin, 15.06.1990, in: http://deutsche-einheit-1990.de/wp-content/uploads/barch-de10-56.pdf, retrieved on 06/03/2017, 2.

[7] Cf. ibid, 3.

[8] Schwalbach, J. with contributions by Gless, S.-E. (1993): Begleitung sanierungsfähiger Unternehmen auf dem Weg zur Privatisierung, in: Fischer, W.; Hax, H.; Schneider, H. K. (ed.): Treuhandanstalt. Das Unmögliche wagen. Forschungsberichte, Berlin: Akademie-Verlag GmbH, 1993, 177–210, here specifically, 188 (Zusammenfassung der Angaben der ersten beiden Stufen).

[9] Federal Ministry of Finance (undated): Privatisierungspolitik. Unternehmensprivatisierung durch die Treuhandanstalt, in: http://www.bundesfinanzministerium.de/Web/DE/Themen/Bundesvermoegen/Privatisierungs_und_Beteiligungspolitik/Privatisierungspolitik/Treuhandanstalt/treuhandanstalt.html, retrieved on 16/03/2018, no page number.

[10] Cf. Bundesanstalt für vereinigungsbedingte Sonderaufgaben: Abschlußstatistik der Treuhandanstalt per 31.12.1994, 3; IWH calculations.

[11] Cf. Ludwig, U. (2017): Die gesamtwirtschaftliche Entwicklung der SBZ/DDR (1949 bis 1990) – eine Bilanz, in: Heydemann, G.; Paqué, K.-H. (ed.): Planwirtschaft – Privatisierung – Marktwirtschaft. Wirtschaftsordnung und -entwicklung in der SBZ/DDR und den neuen Bundesländern 1945–1994, Göttingen, Bristol CT, U.S.A.: Vandenhoeck & Ruprecht GmbH & Co. KG; Vandenhoeck & Ruprecht LLC, 111–147, here specifically, 113–124.

and forced nationalisation. Moreover, outside investors were only interested in acquiring the production facilities, but not the research capacities. The weakness of research within the corporate sector of East Germany is apparent if one considers the private-sector *expenditure on research*. The 'Stifterverband' estimates that German companies invested almost 61 billion euros in research and development (R&D) during 2015. Of this amount, more than 56 billion euros were spent by companies in West Germany, while those in East Germany account for less than five billion euros. The fact that companies in West Germany spend eleven times more on research is related to the size of the companies. Large companies contribute more than nine tenths to R&D expenditures in the west of Germany, but less than three quarters in the east (figure 29). The medium-sized businesses in the east of the country invest larger amounts – in relative terms – in research spending. Small to medium-sized enterprises in Saxony-Anhalt contribute roughly 51% to expenditure on private sector research, which is the highest share in a nationwide ranking of states.

Companies in West Germany spend eleven times more on R&D than in East Germany

Economic policies have been introduced as a means of mitigating this lack of larger companies engaging in research. They include strengthening scientific institutions in the public sector and also mean that proportionate research spending no longer reflects an east-west dichotomy, and instead produces a mixed ranking of states (figure 30). It is noticeable that research expenditure in public-sector scientific institutions by far outstrips private-sector investments in virtually all of the new German states. The situation is exactly the opposite in West German states with powerful economies, for instance in Baden-Wuerttemberg and Bavaria. Within the East German states, Thuringia is the only one with a largely balanced ratio between public and private-sector R&D spending. Despite targeted support for scientific institutions in the public sector, they are still struggling to achieve promotion to the league of top-level research in Germany. This is also evident in the spatial distribution of excellence clusters. In autumn 2018, the German Research Foundation selected 57 applications from German universities for the funding of excellence clusters. In the coming years, they will now receive financial support in order to engage in high-level research. It is notable that universities from three East German states – Brandenburg, Mecklenburg-Vorpommern and Saxony-Anhalt – were not recognised among the 57 clusters. Universities from Berlin, Saxony and Thuringia are included (figure 31). But even West German universities have room for improvement in terms of their international competitiveness, as can be observed by their participation in EU research funding.[16]

East German universities not recognised among excellence clusters

TU Dresden as one of the few East German universities that succeeded in getting excellence clusters funded

[16] Of the 50 university facilities that most frequently signed research funding agreements between 2007 and 2013 as part of the Seventh Research Framework Programme, West German universities took the places 13, 34, 42, 43 and 44. One East German university (TU Dresden) is 45th. Cf. European Commission (2015): Seventh FP7 Monitoring Report. Monitoring Report 2013. DG Research and Innovation – Evaluation Unit (A.5), 11 March, Table B3, 96, in: http://ec.europa.eu/research/evaluations/pdf/archive/fp7_monitoring_reports/7th_fp7_monitoring_report.pdf, retrieved on 24/10/2018.

The low *export intensity* is another structural particularity. The proportion of exports relative to revenues in the East German industrial sector is around one quarter below the national average (figure 32). While the export ratio within East Germany's industrial sector has grown by around four percent since 2010, it has risen by virtually the same magnitude in West Germany, meaning the gap has stayed largely unchanged. On average, the industrial sector in all East German states (apart from Berlin) and in some West German states like Schleswig-Holstein or North-Rhine Westphalia achieves a lower export ratio relative to total revenues compared to the German average. The fragmented structure of the business community in the new federal states is frequently cited as a reason for this export gap. Nevertheless, the findings of research apply here as well: There is a paucity of large companies. But that is not the only reason. Where East German companies operate as corporate subsidiaries, it is quite common that they contribute to the export activities within the consolidated group. This contribution does not show up in the industrial statistics. The correlation between company or business size and export activity is not a one-way street. Empirical research on productivity reveals that exporters – compared to non-exporters – exhibit greater productivity ('export premium'). Firstly, companies operating on international markets are confronted with more rigorous efficiency requirements. Secondly, spill-overs from other exporters may also have positive effects on levels of productivity itself.[17]

Correlation between business size and export activities

Transfer dependence of the new federal states has diminished, but still persists

Despite continuing weaknesses, the productivity gap in East Germany has been cut by around two thirds. Moreover, there is no longer an endemic deficiency of physical capital, and underemployment has also fallen. Significant transfer payments have passed from west to east in this time.[18] They enabled the consumption and investment of more resources than the region was able to muster based on its own economic performance. Until the mid-nineties, the gap between end use and production accounted for around six percent, relative to the West German gross domestic product. But this gap between end use and production has narrowed. It was only slightly more than one percent in 2015 (figure 33) and is largely explained by the wages paid to commuters living in East Germany, as well as by transfer payments within the framework of the statutory pensions scheme.

The term 'Steuerdeckungsquote' describes the moment where tax revenues are sufficient to cover expenditures. Its importance in the state budgets indicates the significance of transfer payments. In the ranking of federal states, the five East German states take places 9 to 13 (figure 34), followed by the three city states Hamburg, Berlin and Bremen. The below-average Steuerdeckungsquoten in the new federal states are a consequence of the continuing differences between East and West Germany that were explained in the previous sections. These differences lead to lower

Tax base in East Germany is lower

[17] Cf. European Central Bank, Eurosystem, CompNet. The Competitiveness Research Network (2016): European Firms after the Crisis. New Insights from the 5th Year of the CompNet Firm-level-based Database, September, in: https://www.comp-net.org/fileadmin/_compnet/user_upload/Home_Page/CompNet_Report_5th_round.pdf, accessed on 02/11/2018, 14.

[18] It is only fair to note that the West German economy also benefited from added demand from the east of the country during the early 1990s: the European Commission estimates, for example, that the German production potential was at more than 104% of capacity in 1991. But Germany slipped into a recession in 1993, and idle capacity persisted until 1998.

productivity and hence to lower wages. In some cases the tax base is lower than in West Germany.

This makes it all the more imperative to invest the public funds properly. The demographic transformation in Germany adds urgency to this requirement. Many municipalities will experience declining population numbers in the coming decades due to this transformation. Not all of them anticipate that use of their

Too many pupils, too little space: school containers as a last resort

infrastructures will drop commensurately. Broadly speaking, population growth has a positive impact on physical investments by municipalities. There are many municipalities whose populations will grow moderately by 2035, but which are investing little (figure 35).[19] In contrast, some municipalities whose populations are declining rank highly in regard to per capita investments. Municipal decisions on infrastructural investment projects must therefore anticipate future population trends in good time.

[19] Cf. Altemeyer-Bartscher, M.; Gropp, R. E.; Haug, P.: Der demographische Wandel und kommunale Investitionen. IWH Online 1/2017. Halle (Saale) 2017, 6.

Ten theses about economic development in East Germany

I Financial markets must ensure efficient resource allocation

There is a productivity problem throughout Germany. The productivity growth trend in the US is above that in Germany. If this gap remains the same, more dynamic growth will be required. A precondition for this is that new companies with growth potential enter the market and unprofitable ones leave it. Financial markets and institutions play a central role in this resource allocation. It is the task of financial institutions to provide equity capital for rapidly growing companies. Besides venture capital, management expertise is also made available in this way. This also represents an opportunity for East Germany.[20]

II Mitigate the lack of headquarters by the growth of existing SMEs

East Germany's persistent R&D and export gap is also due to its lack of large firms and/or group headquarters. However, group headquarters in West Germany or overseas hardly ever relocate to East Germany, which is why the growth of existing SMEs is important. If the framework conditions are right, these can become the future headquarters of the east.

III Dispel the myth: the productivity gap is not only due to the lack of large companies

East Germany's productivity gap cannot be explained by structural differences alone. Considerable disadvantages also exist in comparable businesses. As it is unlikely that differences in selling prices explain these productivity disadvantages, due to the extensive integration of sales markets, in industry for example, the most plausible explanation of this east-west divide remains efficient business organisation. While lower salaries and subsidies as part of regional structural policies keep unit labour costs competitive in the east, they also reduce the pressure to improve efficiency. The rising salaries of recent years – not least due to the minimum wage – are likely to increase the pressure for efficiency, however. Politicians should not be tempted to offset this pressure with additional subsidies.

IV Recognise that the service sector is the major growth driver

The largest absolute gains in added value and employment are achieved by the service sector. This does not mean that industry has become meaningless as a source of added value and employment. Industry and services are complementary. The future potential of the industrial sector will primarily consist of research, design, software development and the manufacture of innovative specialty products in Germany – with standardised mass goods being produced overseas.

[20] See Gropp, R. E.; Heimpold, G.: '25 Jahre Aufbau Ost – weiterer Konvergenzfortschritt braucht gesamtdeutsches Produktivitätswachstum', in: IWH, Wirtschaft im Wandel 5/2015, 82.

V Expand public research establishments

With further structural transformation in East Germany, universities and other public research establishments provide access to internationally advanced knowledge and act as hubs in cluster initiatives. This role needs to be further developed. Politicians should create the framework conditions to support spin-offs from research establishments. The recruitment policies of research establishments should also demand entrepreneurial skills.

VI Make East Germany more attractive for qualified immigration

In future, specialist staff will be the main bottleneck hampering East Germany's economic development. Qualified overseas immigration can help to alleviate this shortage of specialist staff. However, the new federal states have so far gained little benefit from immigration from EU states and from the blue card scheme. East Germany must become more attractive for qualified immigration, display a cosmopolitan attitude and decisively counteract manifestations of xenophobia.

VII Invest more in early-years provision and the quality of school education

Germany cannot afford for lots of young people to leave school without graduating. In East Germany, the school drop-out rate is above-average. More investment should therefore be made in early-years provision and school education. It is also important to provide sufficient numbers of adequately trained and qualified teachers.

VIII Promote cities

Politicians and the public have to accept that East Germany's cities, in particular, can drive economic convergence in East Germany. Their potential lies in increasing their attraction. This is the only way to entice qualified immigrants, develop high-quality service offers and provide an adequate environment for public research establishments.

IX Anticipate future population trends when making infrastructure investments

Since 1999, rural areas in the east have continuously lost residents due to emigration as part of internal migration. Municipalities should increasingly anticipate the usage intensities resulting from future population increases or decreases. Otherwise, infrastructure will remain under-utilised in some municipal areas in future, while in other places, infrastructure provision will fail to keep pace with population growth.

X Job creation as a condition for granting economic development resources is no longer relevant – it is all about improving productivity

The shortage of specialist staff that threatens to increase over the coming years also raises the question of whether linking the granting of economic development resources to the

creation of new and the safeguarding of existing permanent jobs is still in line with the current labour market conditions. Instead, improving productivity is the order of the day. This does not mean that new jobs are not desirable. On the contrary: They are a vital part of structural change, which also involves job losses. But their creation primarily requires a corporate environment that supports growth.

Figures

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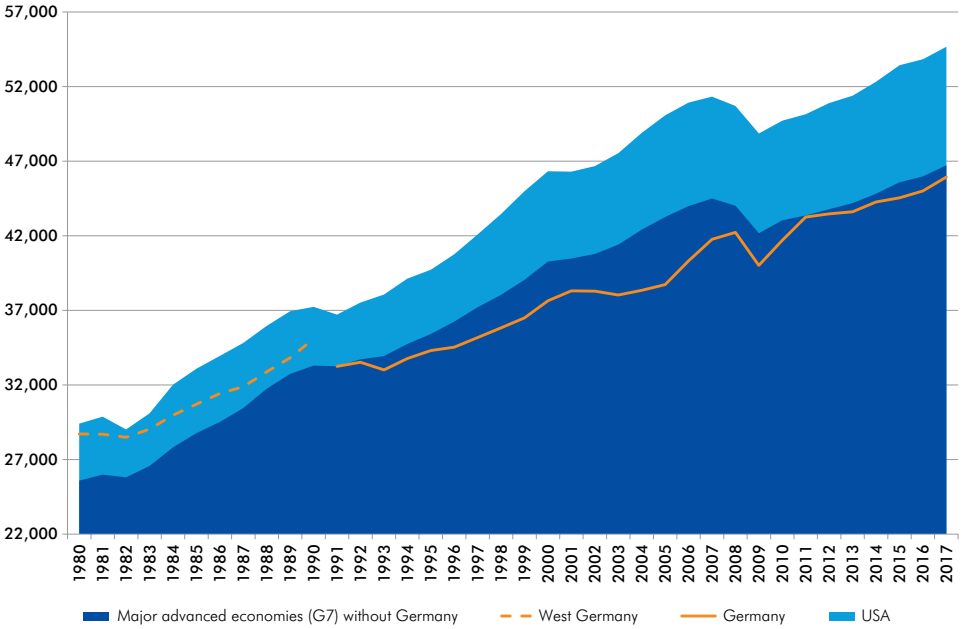
Figure 1

The German economy has overcome a period of weakness following reunification

Gross domestic product per capita, purchasing power parity, 2011, international dollar



Sources: IMF world economic outlook data base; calculation of the time series for West Germany based on H. Vortmann, J. Goebel, P. Krause, G. Wagner (2013): Zur Entwicklung des Preisniveaus in Ost- und Westdeutschland, DIW Discussion Paper 1269; diagram by IWH.

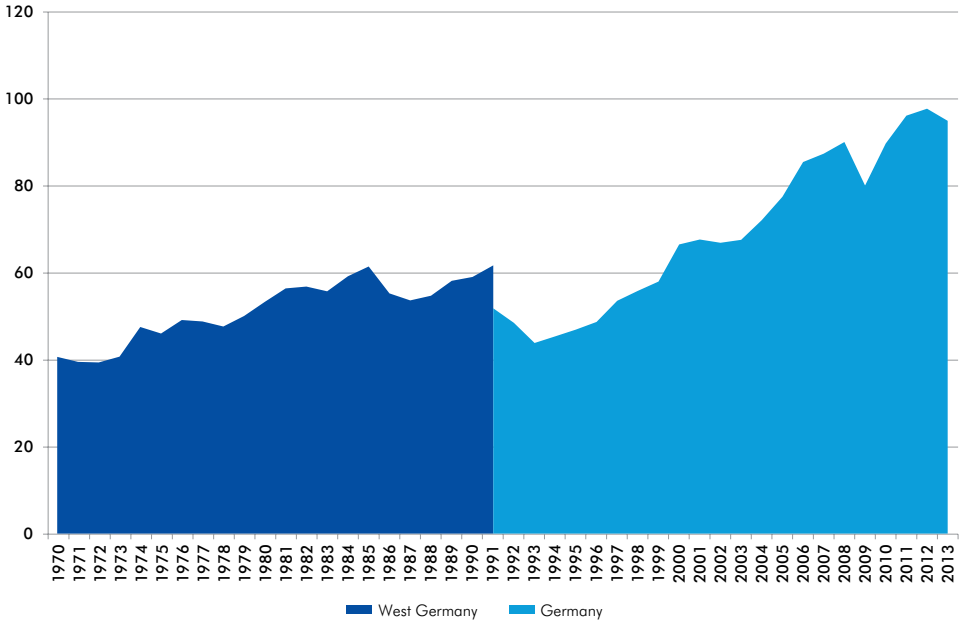
Reunified Germany's GDP per capita in purchasing power parities was about as high as the average of all G7 countries in 1990, making it slightly poorer than West Germany pre-1991. In the years that followed, per capita production grew at a much slower rate than the average of the remaining G7 countries. Since the middle of the last decade, per capita production has no longer been growing more slowly than the average of the remaining G7 countries. However, the rate of productivity growth in the US was higher than in Germany during the entire period.

Contact: Axel Lindner

Figure 2

Degree of openness of the German economy

(Exports + imports)/gross domestic product, in %



Sources: Federal Statistical Office, Wiesbaden; Regional Accounts based on ESA 95; calculations and diagram by IWH.

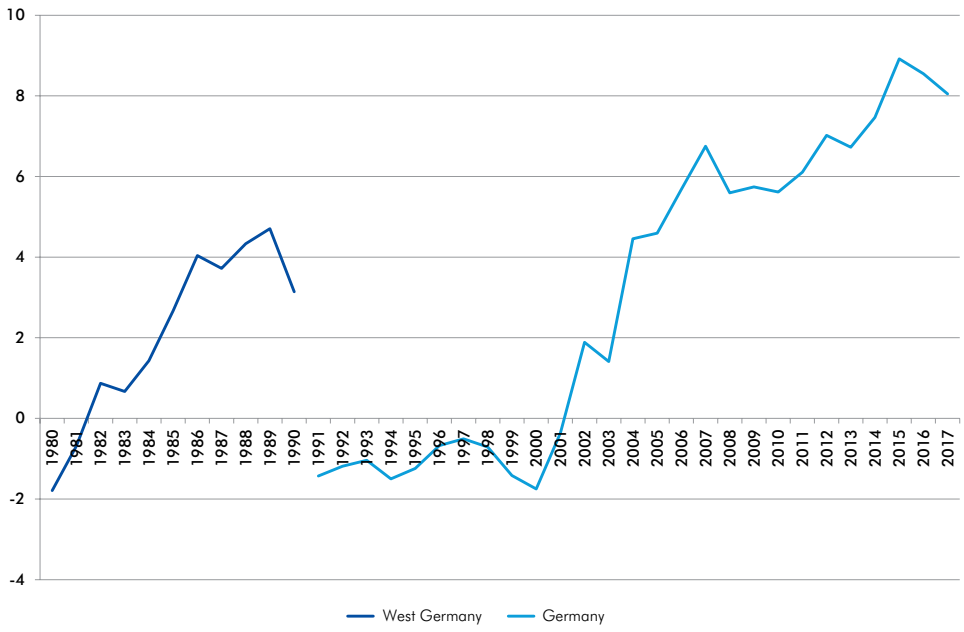
One important measure of an economy's interdependency with the rest of the world is the relationship between total exports and imports and GDP. In West Germany, this figure increased from 40% to 60% during the 1970s and 1980s; in reunified Germany, it then fell to below 45% in 1993. At that time, exports were in decline, due firstly to a pronounced downturn in the international economy and secondly to the creation of a receptive sales market as a result of the consolidation of West German companies in eastern Germany. Since the mid-nineties, the degree of openness has rapidly increased as part of globalisation, and the German economy is currently much more open than that of other countries of comparable size, such as France, the UK and Japan.

Contact: Axel Lindner

Figure 3

Current account balance

Relative to gross domestic product, in %



Sources: International Monetary Fund (IMF); calculations and diagram by IWH.

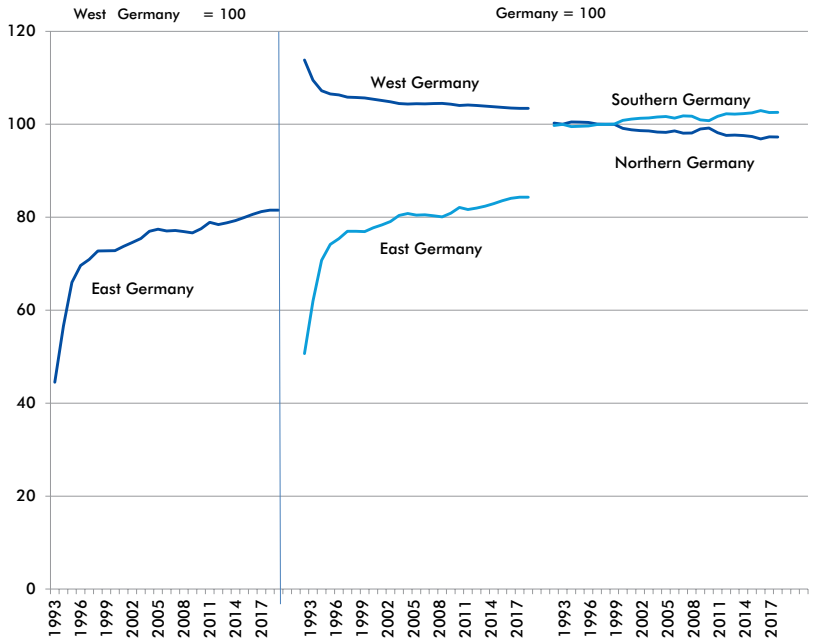
The current account balance combines international trade in goods and services as well as domestic and overseas revenue streams (as a result of income from foreign capital and labour, for example). Current account deficits lead to a deterioration in the financial situation of an economy's residents vis-a-vis non-residents; and surpluses to an improvement. The current account balance clearly shows the extent of the dramatic reduction in the German economy caused by reunification: during the 1980s, a considerable surplus of more than 4% relative to GDP had built up in West Germany; following reunification, the balance moved into negative territory. During the 1990s, capital no longer flowed overseas, but was used to fund the additional costs of reunification. In addition, capital amounting to around 1.5% p.a. relative to GDP was brought into the country. At the beginning of the last decade, the current account balance again turned positive and has since risen to around 8%.

Contact: Axel Lindner

Figure 4

Productivity differences in Germany between west and east

Gross domestic product in current prices per employee



Northern Germany: Berlin, Brandenburg, Bremen, Hamburg, Lower Saxony, Mecklenburg-Vorpommern, North Rhine-Westphalia, Saxony-Anhalt; Schleswig-Holstein, southern Germany: Baden-Wuerttemberg, Bavaria; Hesse, Rhineland-Palatinate, Saarland, Saxony, Thuringia; urban space: independent large cities and urban districts; rural space: rural districts with agglomeration tendencies and sparsely populated rural districts.

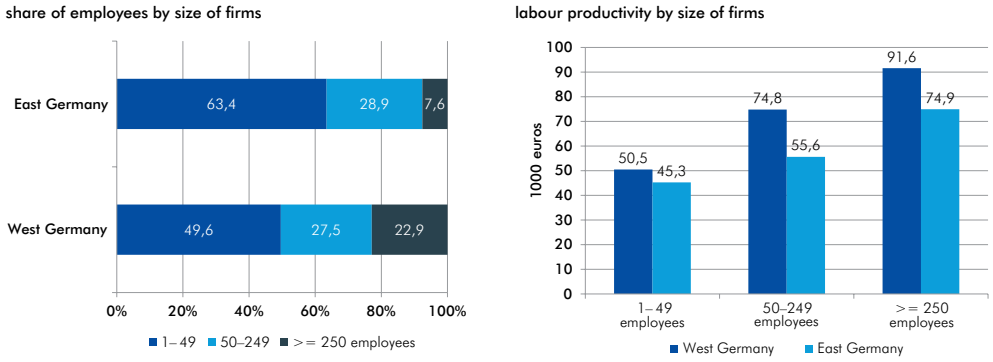
Sources: Regional Accounts VGRdL, Statistical Office of the Federal State of Baden-Wuerttemberg, Stuttgart 2018; north-south categorisation based on The Economist as of 19.08.2017 (online); urban rural categorisation based on: Laufende Raumbeobachtung des BBSR, Bonn 2017; explanation of the spatial categories: Bundesinstitut für Bau-, Stadt- und Raumforschung im Bundesamt für Bauwesen und Raumordnung, Bonn 2018; calculations and diagram by IWH.

Since the early 1990s, reunified Germany has witnessed a remarkable catch-up process in the new states in terms of productivity, measured in GDP per person employed, which has however slowed since the mid-nineties. Even almost 30 years after the fall of the Berlin Wall, a productivity perimeter runs along the border between the old and new states. Not a single East German territorial area has yet achieved the productivity of Saarland – the West German state with the lowest productivity. However, the productivity gap between southern and northern Germany is opening up.

Contact: Gerhard Heimpold

Figure 5

East-west differences in productivity in companies of all sizes



Sources: IAB Establishment Panel; calculations and diagrams by IWH.

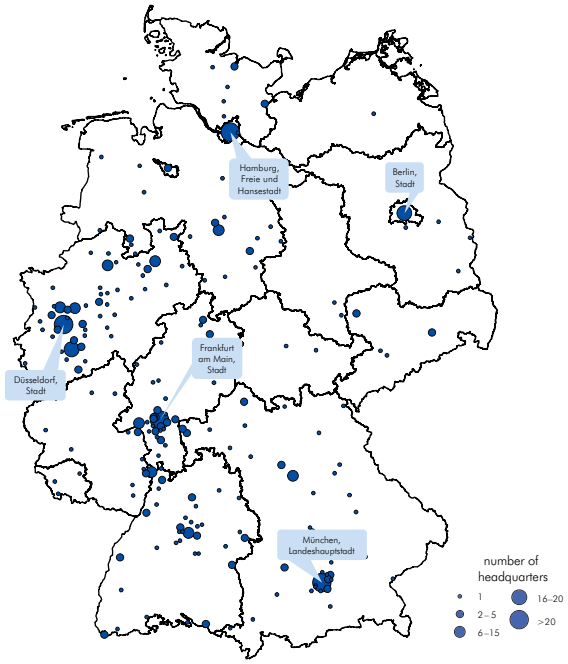
A common explanation for the East German productivity gap is its SME-oriented economic structure and in particular the lack of very large businesses and corporate HQs. The left figure shows that in West Germany, a much bigger percentage of the labour force actually work for large companies. The right-hand figure shows that the gross value added per capita increases as expected in line with the size of the business and that this applies to both east and west. The much higher concentration of West German employment in large companies and the productivity advantage of larger businesses compared to smaller firms both explain why West Germany enjoys higher productivity per capita. But this is only part of the story, because the right-hand figure also shows that there is a productivity advantage for West Germany in companies of any size. One immediate question is whether the east-west productivity differences in companies of the same size can be explained by differences in operational characteristics. Cobb-Douglas production function estimates at a company level, based on 10,000 observations for 2013 to 2016, provide information about this. It shows that even when taking account of differences in industry classification, labour force structure and capital intensity, East German firms of every size have at least 20% lower productivity. Taking account of operational characteristics does not therefore lead to a reduction in east-west productivity differences.

Contact: Steffen Müller

Figure 6

Hardly any corporate HQs in East Germany

Headquarters of the TOP 500 companies in Germany 2016 ranked by DIE WELT



One firm, the Agravis Raiffeisen AG, has headquarters in Hannover and Münster.

Sources: DIE WELT: Die größten 500 deutschen Unternehmen 2016, 2017 (digital version); calculations and map by IWH, mapping by Michael Barkholz (IWH).

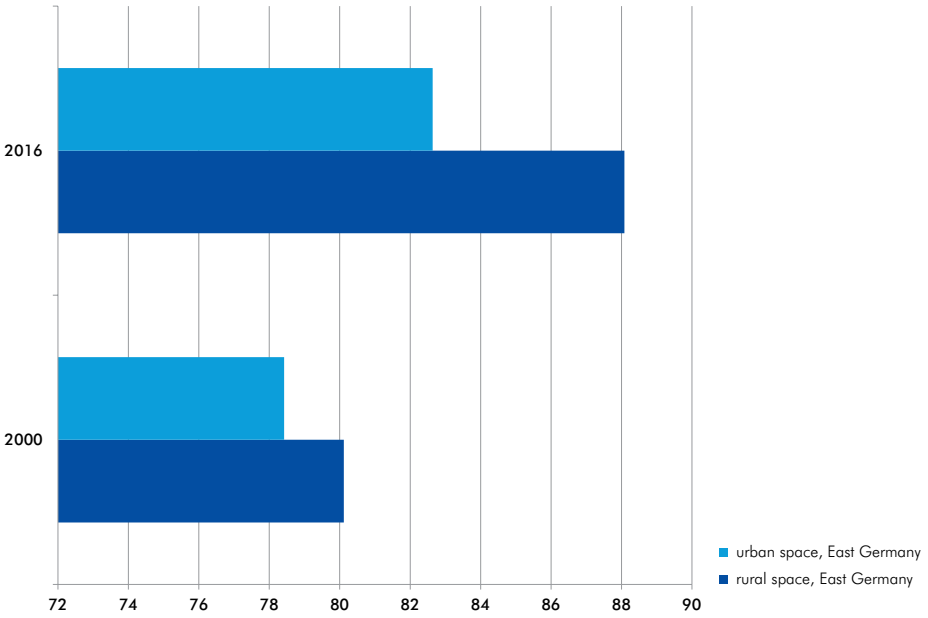
From the annual list of the TOP 500 companies in Germany, published by DIE WELT newspaper, we can deduce in which city and federal state a company's HQ was located in 2016. The map shows that there is a clear east-west divide in corporate HQs: 464 are located in West Germany and 36 in East Germany, including Berlin. If these 500 corporate HQs were distributed in line with the proportion of the population (80%/20%) between West and East Germany, there would be approximately 400 in the west and 100 in the east. There is no sign of a north-south divide, due to the high concentration of corporate HQs in North Rhine-Westphalia and Hamburg. The south is home to 258 HQs and the north to 242. Urban areas are particularly attractive for corporate HQs, with 451 located there.

Contact: Gerhard Heimpold

Figure 7

East-west productivity differences are smaller in rural areas than in cities

Gross domestic product per employee in urban and rural spaces in East Germany including Berlin, spatial category in West Germany = 100



Urban space: independent large cities and urban districts; rural space: rural districts with agglomeration tendencies and sparsely populated rural districts.

Sources: Regional Accounts VGRdL, Statistical Office of the Federal State of Baden-Wuerttemberg, Stuttgart 2018; urban rural categorisation based on: Laufende Raumbeobachtung des BBSR, Bonn 2017; explanation of the spatial categories: Bundesinstitut für Bau-, Stadt- und Raumforschung im Bundesamt für Bauwesen und Raumordnung, Bonn 2018; calculations and diagram by IWH.

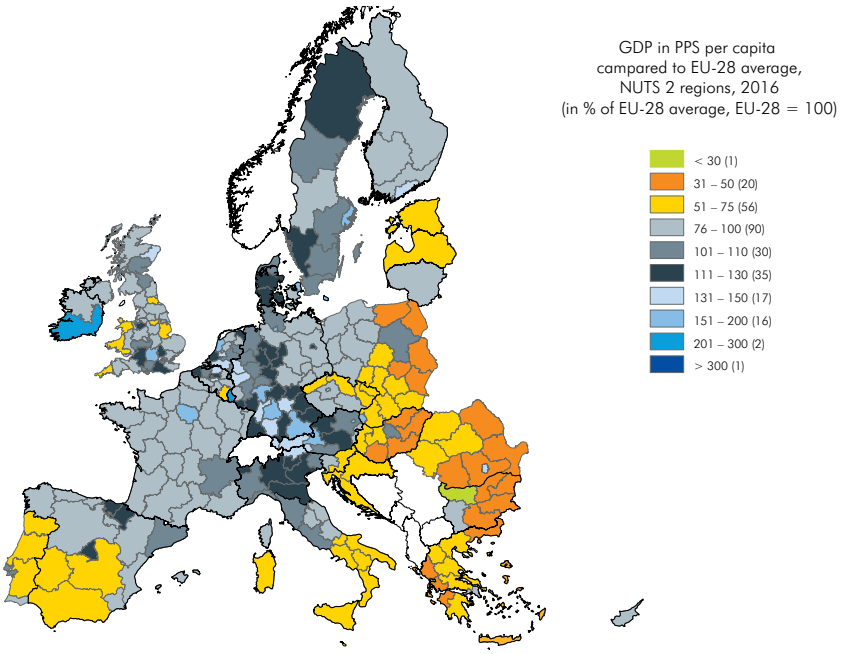
This chart shows productivity, measured in GDP per person employed, in urban and rural areas of East Germany in relation to West German comparison values. The intention is to compare regions in East and West Germany that have similar structural settlement characteristics. It shows that rural areas in East Germany are closer to West German rural areas in terms of productivity than urban areas in the east, compared to their western counterparts. Rural areas in the new states are not therefore intrinsically structurally weak. However, the spatial distribution of employment between town and country in East Germany is different from the west. In the west, over three quarters of the labour force work in urban areas, while in East Germany the figure is around 50%.

Contact: Gerhard Heimpold

Figure 8

Economic output per resident in German regions compared to European regions

Gross domestic product (GDP) in purchasing power parities (PPS) per capita 2016



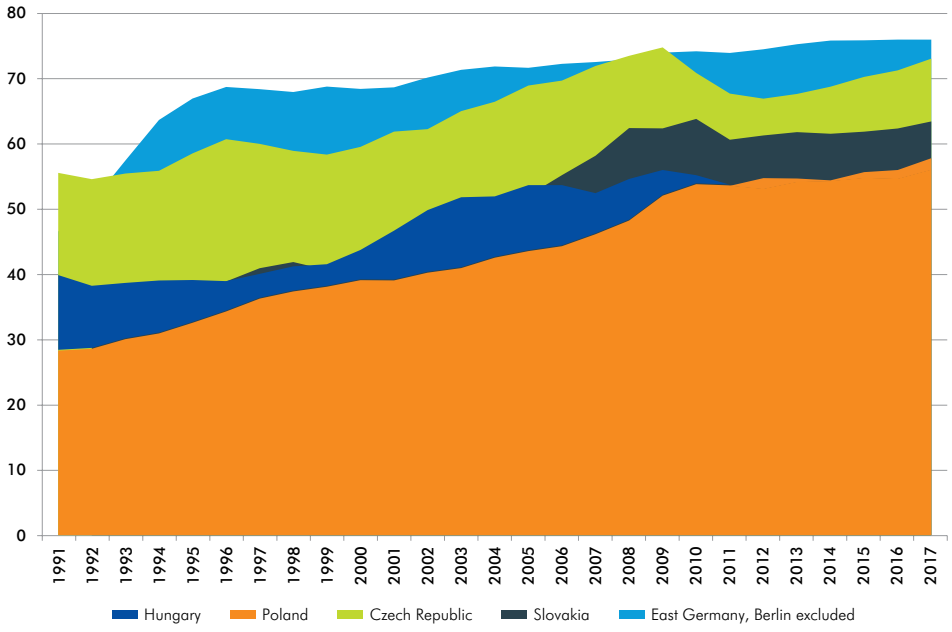
Sources: Eurostat 2018; calculations and diagram by IWH, mapping by Michael Barkholz (IWH).

The map shows the economic performance of the regions within the European Union for 2016, compared to the EU average as measured by the gross domestic product per capita expressed in purchasing power standards. The data of the so-called NUTS 2 regions is shown. In Germany, these are sometimes federal states and sometimes existing or former government districts. While the majority of East German regions has a GDP per capita that is roughly equivalent to many regions in France, northern Spain, Ireland, central Italy and central England, it lies significantly above most regions of central and eastern Europe that were also organised as centrally planned economies until the end of the 1980s. Following its transition to a market economy, East Germany immediately benefitted from generous regional subsidies, which were only available to the central and eastern European countries much later, after they joined the EU. However, if one considers the changes in the individual items relative to the EU between the years 2003 and 2016, virtually all of the central and eastern European regions have managed to narrow the gap significantly, which the regions of East Germany have accomplished only to a limited degree. The capital city regions of Poland, Slovakia, the Czech Republic, Hungary and Romania also caught up in 2016 so that they all now lie above the EU average. Prague and Bratislava even rank among the European metropolitan regions with an economic performance that is over 150% of the EU average, which Berlin is still nowhere near achieving. **Contact: Martina Kämpfe**

Figure 9

Economic output per capita in East Germany higher than in the Visegrád countries

Gross domestic product per capita in purchasing power parities relative to Germany, in %



Sources: World Bank; calculations by IWH based on Regional Accounts VGRdL and assessments of the price level in East Germany published in H. Vortmann, J. Goebel, P. Krause, G. Wagner (2013): Zur Entwicklung des Preisniveaus in Ost- und Westdeutschland, DIW Discussion Paper 1269; diagram by IWH.

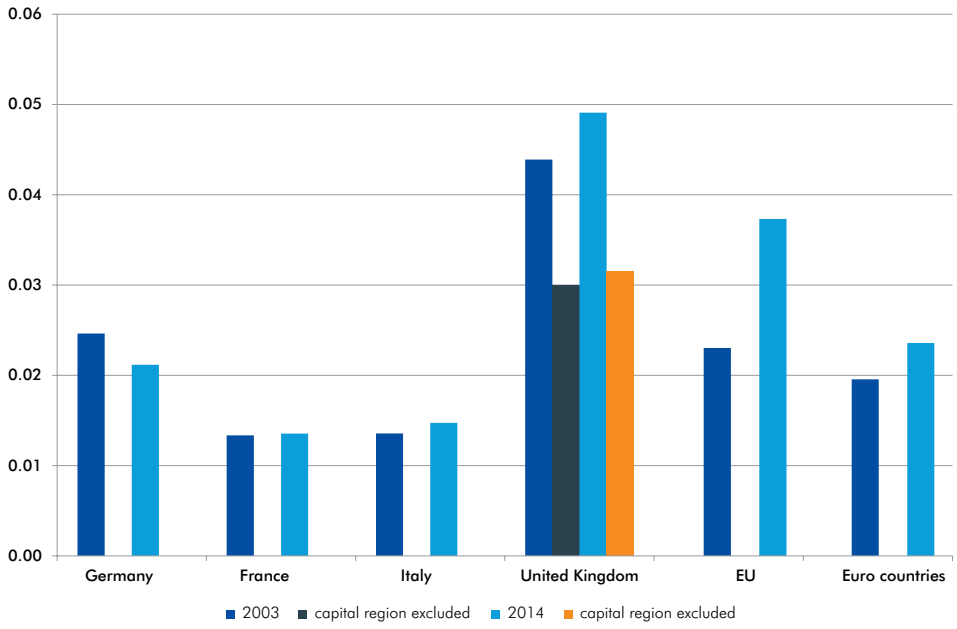
As in East Germany, a centrally managed economy was replaced by market economy principles in the Visegrád countries around 1990. At that time, economic output per capita in the Czech Republic was roughly comparable to that in East Germany, while in other countries it was lower. In the years immediately following the system change, East Germany received a considerable development boost as a result of political efforts to promote the recovery of the east, while the Visegrád states underwent serious transformation crises. In the years after 2000, they then rapidly made up ground. The main reason for this was that the economic area was highly competitive due to low production costs as well as being comparatively close to the major production and sales centres of western Europe. Policy promoted integration into the European Economic Area through the accession of the Visegrád countries to the European Union in 2004. However, they were also hit particularly hard by the 2008/2009 financial crisis, due to considerable currency devaluation in real terms. Recently, however, these economies have again been growing much faster than East Germany. Measured in purchasing power parities, GDP per capita in the Czech Republic is already pretty close to that in East Germany. East Germany's lead in terms of disposable income is still much higher, however, because East German households benefit from revenue receipts from the west, especially via commuter earnings and the nationwide pension scheme.

Contact: Axel Lindner

Figure 10

Germany's regional income disparity has lessened compared to other European regions

Variance of gross domestic product, lograrithmised, purchasing power parities



The analysis comprises regions at the NUTS 3 level. The data for the EU and the Euro countries display the membership of the respective year.

Sources: Eurostat 2018; calculations and diagram by IWH.

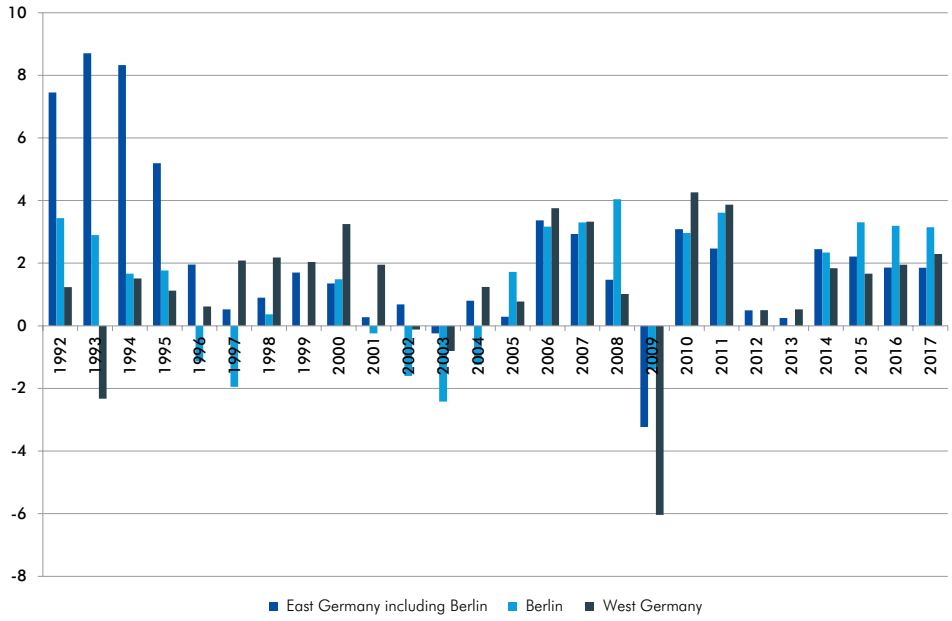
The distribution of regional economic output, measured in GDP per capita, reveals a divergent picture in the four most populous EU countries when comparing 2014 and 2003. While disparity in Germany has fallen, it has increased significantly in the European Union – and in the Eurozone. In the UK, regional income disparities are particularly large, even without taking account of the financial centre of London. In France and Italy, they are much smaller. Domestic German migration flows in the past two decades, in particular, have been significant for the decline in regional disparity in Germany. Besides, disparities within East Germany decreased much more than disparities within West Germany. The rise in disparities across the EU comes as no surprise, however, as the eastward enlargement from 2004 onwards resulted in the accession of Member States with much weaker economies. The subsequent economic recovery process, which has been significant in places, has not produced any fundamental change in the comparatively low economic output of the newly added regions.

Contact: Martina Kämpfe

Figure 11

East Germany has only recorded a more favourable development of economic output than West Germany in 11 out of 26 years

Yearly rate of change of gross domestic product, price-adjusted, chain-linked, in %



Sources: Regional Accounts VGRdL, Statistical Office of the Federal State of Baden-Wuerttemberg, Stuttgart 2018; diagram by IWH.

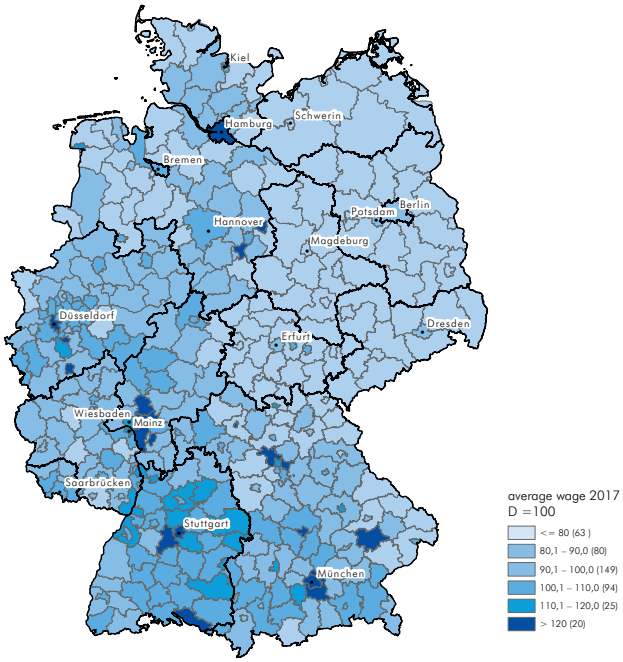
This chart shows the rates of change in GDP in East Germany, including Berlin, as well as in West Germany. East Germany's GDP and that of Berlin only recorded a more favourable development compared to West Germany in 11 out of 26 years, and only in six (in Berlin in seven) years during the period from 2001 to 2017. This is just another way of describing the weakening of the convergence process in East Germany. Berlin is by no means taking a consistent pioneering role as a capital city with regard to the growth of economic output in East Germany. Other indicators analysed as part of this publication, which are typically considered as drivers of economic growth and in which Berlin is well placed, such as R&D spending, leave plenty of scope for economic growth. Incidentally, it is notable that during the recessions of 1993, 2003 and 2009, economic development in East Germany was more favourable than that in West Germany. It should be noted that the share of manufacturing in East Germany was lower than in West Germany. However, the share of "public and other service providers, education and heath, private households" was above the national average. Due to the above-mentioned structural differences, the East German economy is less sensitive to changes in the international economy.

Contact: Gerhard Heimpold

Figure 12

Average wage: clear east-west divide in salaries

Median of monthly gross wages of full-time employees liable to the social insurance system[A, B]; Germany = 100, 31.12.2017



[A] The median divides the group of full-time employees into exactly two equally large sub-groups: One half receives a lower wage compared to the median, the other a higher wage.
[B] The figures in parentheses in the legend display the number of independent cities and districts belonging to the respective size group.

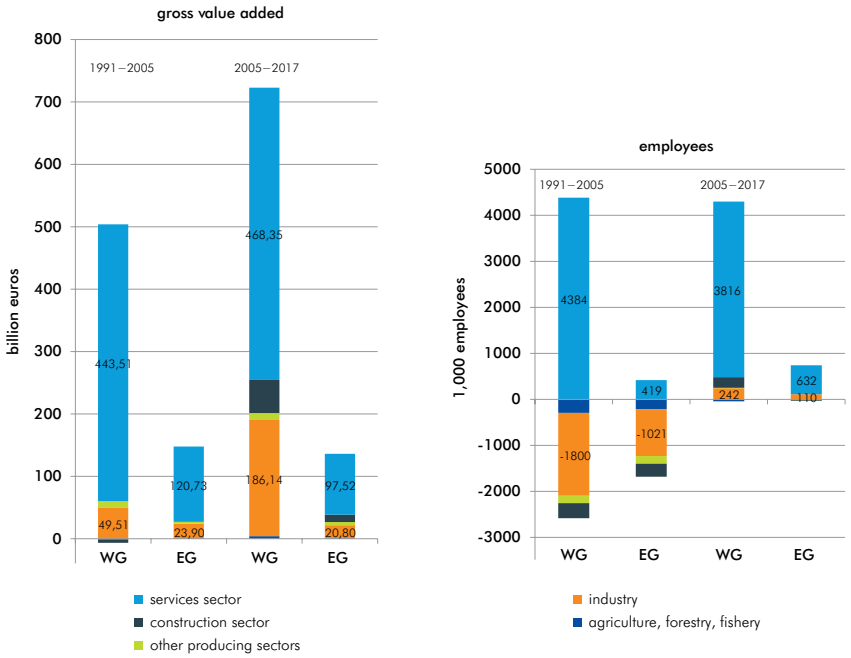
Sources: Federal Employment Agency, calculations and map by IWH; mapping by Michael Barkholz (IWH).

In East Germany at the end of 2017, the average wage of full-time employees liable for social security contributions was only 81.0% of the national value of 3,209 euros. The comparative figure in West Germany was 104.0%. Even Schleswig-Holstein, which recorded the lowest value of all the West German federal states (92.2%), was far above the East German figure. Not even in Berlin (97.4%) the national average wage was achieved. The gap between administrative districts was extremely large. In East German territorial states this ranged from 68.0% in Görlitz to 95.5% in Jena. In Cloppenburg, where the lowest figure in West Germany was achieved (81.3%), the average wage was higher than the East German average. The highest figure (144.4%) in the former federal states was achieved in Ingolstadt and Erlangen. **Contact: Hans-Ulrich Brautzsch**

Figure 13

Services are the main source of added value and employment

Absolute change in gross value added in current prices and in employment by industries



EG = East Germany including Berlin; WG = West Germany.

Sources: Regional Accounts VGRdL, Statistical Office of the Federal State of Baden-Wuerttemberg, Stuttgart 2018; calculations and diagram by IWH.

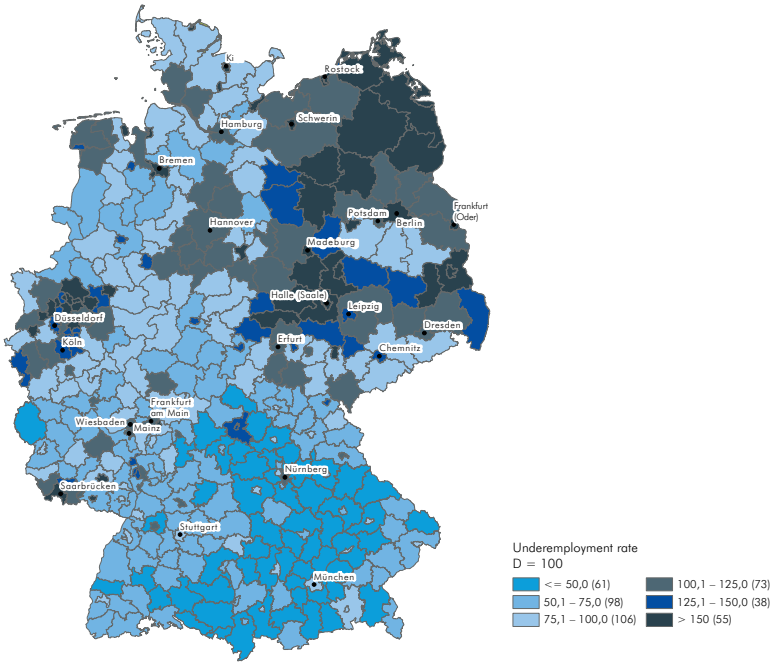
This chart shows the contributions of the economic sectors to the change in gross added value, as well as to the rise and fall in employment in East and West Germany, each in absolute terms. It covers the periods from 1991 to 2005 and from 2005 to 2017. The left-hand figure shows that services – compared to economic sectors – made the biggest contribution to the growth in added value. Industry's contribution was much smaller. Employment fell in East Germany during the period from 1991 to 2005 in all other sectors – with the exception of services (right-hand figure). However, the increase in employment in services was insufficient to even remotely offset the job losses in other sectors. Industrial employment also decreased in West Germany during the above-mentioned period. However, unlike in East Germany, the decrease was overcompensated for by the increase in employment in the service sector. After 2005, the employment situation in East Germany changed for the better. Employment largely increased in the services sector and to a lesser extent in industry. However, the east was unable to match West Germany's employment growth in the services sector.

Contact: Gerhard Heimpold

Figure 14

Underemployment rates[A, B]: large regional differences

Underemployment quota in Germany = 100, 2017



[A] Share of underemployed persons (short time labour excluded) in total number of civil economically active population and persons involved in programmes of labour market policy, in %.
[B] The figures in parentheses in the legend display the number of independent cities and districts belonging to the respective size group.

Sources: Federal Employment Agency, calculations and map by IWH; mapping by Michael Barkholz (IWH).

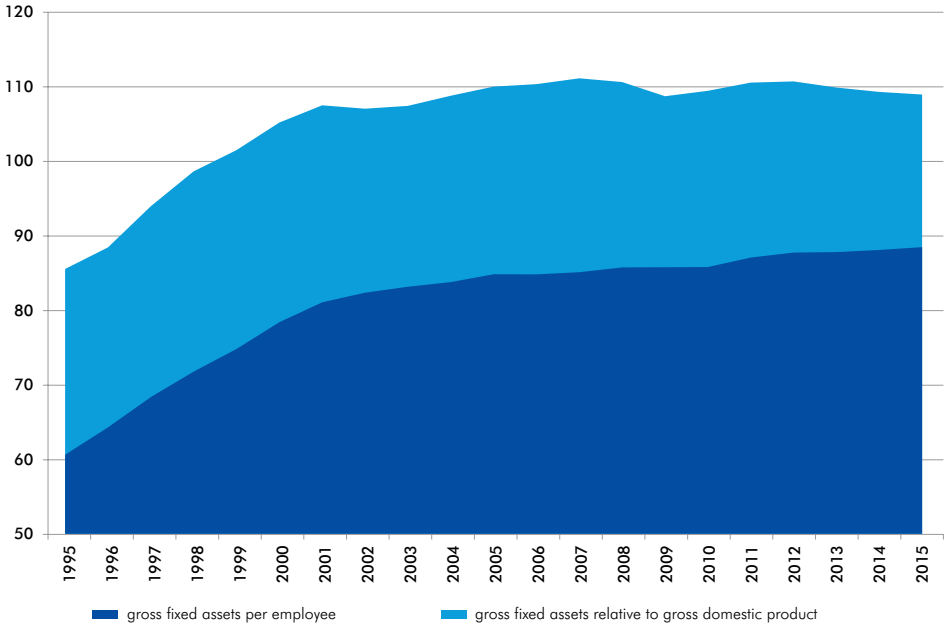
There was a pronounced regional disparity in under-employment rates in 2017. In almost all administrative districts in Bavaria, Baden-Wuerttemberg and in large parts of Hesse and Rhineland-Palatinate, the rates were well below the national average, which was 7.8% in 2017. However, underemployment rates in Berlin, many Brandenburg administrative districts and in Mecklenburg-Vorpommern considerably exceeded the national average in some cases. The record was achieved in Uckermark, where the underemployment rate was 2.1 times the national figure. In Saarland, North Rhine-Westphalia and north-west Germany, the picture was far from consistent: While in large parts of these regions, underemployment rates were – sometimes significantly – below the national average, very high underemployment rates were recorded in the Ruhr area and Bremen, for example. The highest levels were reached in Gelsenkirchen and Bremerhaven, where underemployment rates were 2.4 and 2.3 times the national figure, respectively.

Contact: Hans-Ulrich Brautzsch

Figure 15

Lack of capital of no significance for East Germany's productivity shortfall

Gross fixed assets at replacement costs in East Germany including Berlin relative to West Germany, in %



Sources: Regional Accounts VGRdL, Statistical Office of the Federal State of Baden-Wuerttemberg, Stuttgart 2018; calculations and diagram by IWH.

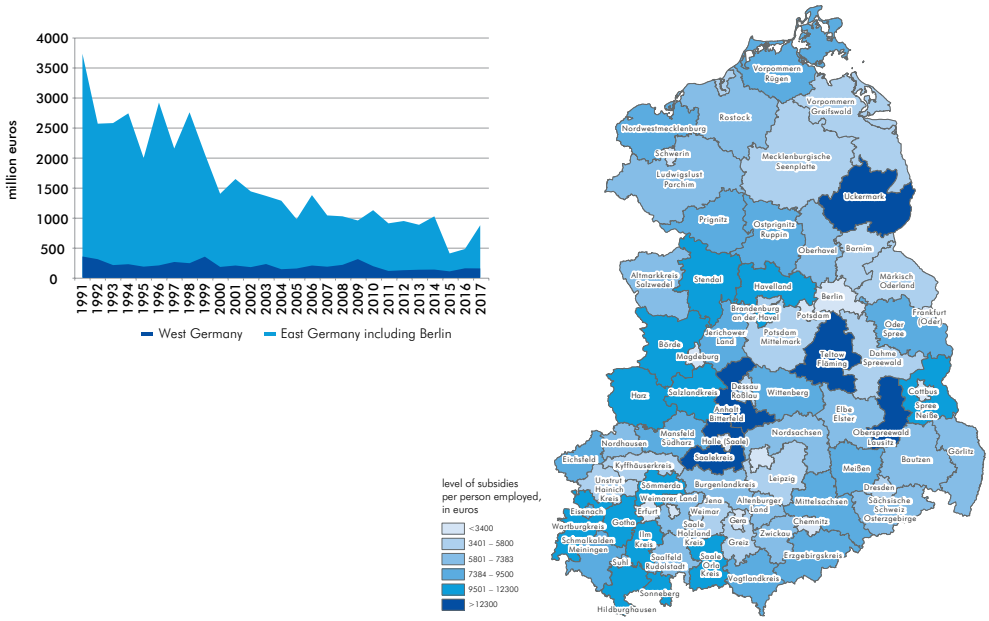
At the time of reunification, East Germany's capital stock was in very poor condition, partly because investments in many economic sectors during the final years of the GDR had been neglected in favour of microelectronics, housing and energy projects. During the 1990s, public infrastructure investments and highly subsidised private investments led to the fundamental reconstruction of the capital stock. At the beginning of the last decade, gross fixed capital per person employed had already reached 80% of the western level. Since then, however, this percentage has only slowly increased to 88% in 2015. Can lack of capital in the east explain the fact that East German GDP per capita is still much (a good quarter) lower than in West Germany? Probably not, because if there was a lack of capital, gross fixed capital relative to output (the capital coefficient) would also be smaller than in the west. Since the beginning of the last decade, however, the opposite has been the case. In other words: Not only labour productivity, but also capital productivity is lower in the east than in the west.

Contact: Axel Lindner

Figure 16

In East Germany, rural regions gained above-average benefit from regional aid – but the period of generous subsidies is over

Investment grants to commercial businesses from 1991 to 2017



Sources: Federal Office for Economic Affairs and Export Control; Regional Accounts VGRdL, Statistical Office of the Federal State of Baden-Wuerttemberg, Stuttgart 2017; calculations and diagram by IWH, mapping by Michael Barkholz (IWH).

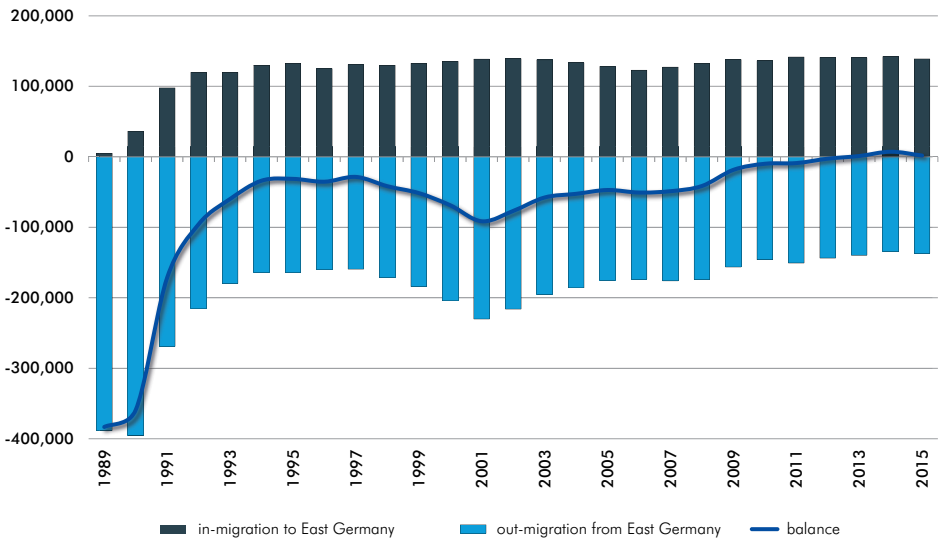
In Germany during the period from 1991 to 2017, investments in commercial businesses in structurally weak regions were funded by grants of around 48 billion euros, underpinned by more than 96,000 recipients and investments of over 258 billion euros. The aid was provided as part of the "Joint Task for Improving Regional Economic Structures", using funds from federal and state budgets. In very many cases, the projects also received co-funding from the European Regional Development Fund (ERDF). Due to the articular challenges of modernising the capital stock of East German companies, the majority of the funds went to the new federal states (see left-hand side of the figure). During the entire period, total grants of 42 billion euros were approved for over 80,000 recipients in the new federal states (including Berlin), thereby helping to fund investments worth around 209 billion euros. However, the total number of grants approved has fallen by almost three fifths in the former federal states and by around three quarters in the new federal states. The funding advantage of the new federal states has declined, but still exists. In East Germany, industrial locations gained above-average benefit from the funding that, in terms of settlement structure, was situated in rural areas – measured per person employed. This is reflected in the high level of subsidies in the administrative districts of Anhalt-Bitterfeld and Saalekreis in Saxony-Anhalt and those of Teltow-Flaeming and Oberspreewald-Lausitz in the State of Brandenburg, for example (see map).

Contact: Mirko Titze

Figure 17

East-west migration: net emigration comes to a halt

Out-migration from East Germany[A] to West Germany, in-migration to East Germany[A] from West Germany, migration balance, from 1989 to 2015



[A] East Germany including Berlin.

Sources: Federal Statistical Office, Wiesbaden; calculations and diagram by IWH.

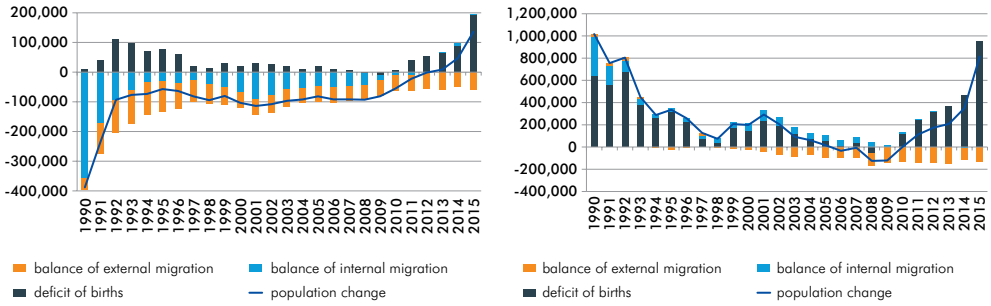
During the period from 1989 to 2015, 5.2 million people emigrated from East Germany, including Berlin, to West Germany. This was offset by 3.3 immigrants from West Germany. In East Germany, therefore, the net loss as a result of internal migration was around 1.9 million, of which 1.0 million is attributable to the period from 1989 to 1992. Emigration rose significantly in the second half of the nineties and then declined again. Immigration increased significantly until the mid-nineties and has since remained at a virtually unchanged high level. From 2013 onwards, immigration from West Germany has slightly exceeded emigration. However, emigration from East German territorial areas to West Germany still slightly exceeds immigration from West German federal states. The fact that net emigration has come to a halt can also be attributed to the improvement in the labour market situation in East Germany. This is reflected by the steady growth in the number of people in employment since 2006, as well as by a sharp fall in underemployment.

Contact: Hans-Ulrich Brautzsch

Figure 18

Population development in East Germany: an increase from 2013 onwards as a result of overseas migration gains

Population development in East [A] and West Germany in the period from 1990 to 2015 by components, yearly population change (number of persons)



[A] East Germany including Berlin.

Sources: Federal Statistical Office, Wiesbaden; calculations and diagram by IWH.

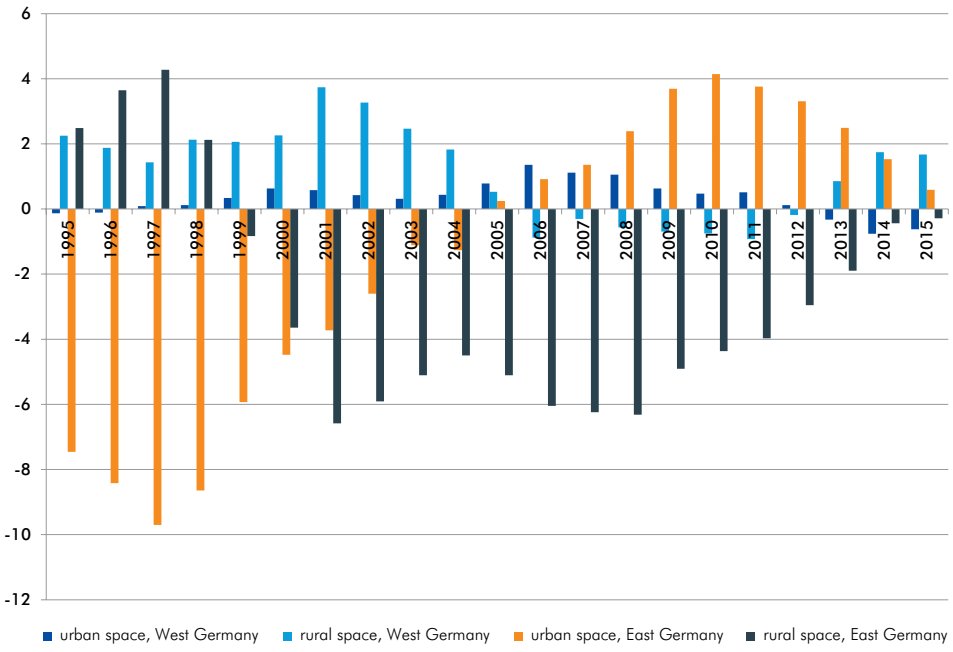
During the period from 1990 to 2016, the population in East Germany fell by 2.1 million, while that of West Germany increased by almost 6.6 million. This development was basically due to migration and the natural population movement that arises from the difference between births and deaths. Migration encompasses net overseas migration, as well as migration between East and West Germany. Natural population development is the difference between the number of live births and recorded deaths (birth surplus and/or deficit). With regard to the contribution of these elements to population development, there were considerable differences between East and West Germany. In East Germany, the large losses in internal migration were offset by overseas migration gains for almost the entire period. However, the gains from external migration were only large enough to offset the losses from internal migration between 1992 and 1996 and after 2010. In West Germany, there were almost always significant migration gains. During the period from 1990 to 2015, the cumulative net migration losses in East Germany were 370,000, while West Germany recorded a migration gain of 8.1 million. There were also considerable differences in the natural population movement: In East Germany, for example, a birth deficit was recorded for the entire period from 1990 to 2015. Cumulatively, this amounted to 1.7 million. In West Germany, there was only a noticeable birth deficit after the turn of the century. Over the entire period from 1990 to 2015, however, this was cumulatively lower than in East Germany, at 1.5 million. Overall, migration gains in East Germany did not exceed the birth deficit until 2013, when the population increased. In West Germany, this was the case throughout the period – with the exception of 2006 to 2009.

Contact: Hans-Ulrich Brautzsch

Figure 19

Internal migration: the population of rural areas in East Germany has continuously declined since 1999

Balance of internal migration per 1,000 inhabitants



Urban space: independent large cities and urban districts; rural space: rural districts with agglomeration tendencies and sparsely populated rural districts.

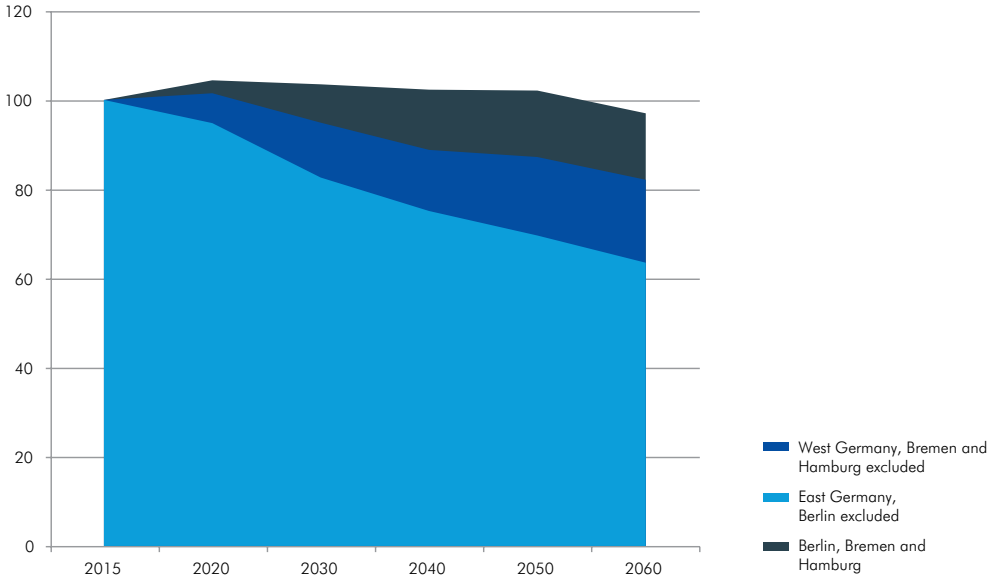
Sources: Indikatoren und Karten zur Raum- und Stadtentwicklung. INKAR. Ausgabe 2018. Hrsg.: Bundesinstitut für Bau-, Stadt- und Raumforschung (BBSR) im Bundesamt für Bauwesen und Raumordnung (BBR), Bonn 2018; diagram by IWH.

This figure shows the difference between immigration and emigration in urban and rural areas in East and West Germany in the context of internal migration. Until 1998, rural areas in East Germany still recorded – net – gains. Since then, however, they have been continuously characterised by emigration. In the years following 2008, however, the negative balance has again become smaller. Urban areas in East Germany were also regions of emigration until 2004. Only then did they record more immigration than emigration. But the immigration surplus in urban areas of East Germany declined again after 2010. Between 2006 and 2012, people also emigrated from rural areas in the west, but the number – based on 1,000 inhabitants – was far less than in East Germany. In statistics, emigrants and resettlers as well as asylum seekers leaving central reception centres are counted as internal migration losses. **Contact: Gerhard Heimpold**

Figure 20

Decline in working-age population in East German territorial areas until 2060 more than twice as big as in West Germany

Index of development of population at employable age (20 up to below 67 years) based on the updated 13. coordinated population projection by the Federal Statistical Office, year 2015 = 100



The data represents Version 2-A of the updated 13. coordinated population projection: continuity associated with stronger in-migration. The assumptions are: birth rate of 1,5 per woman; life expectancy if the year of birth is 2060: 84,7 for boys, 88,6 for girls; the balance of external migration goes down from 750,000 in 2016 to 200,000 in 2021, and it remains unchanged since then. The projection comprises internal migration until 2039.

Sources: Federal Statistical Office (Destatis), Wiesbaden, 2017, updated 13th coordinated population projection, diagram by IWH.

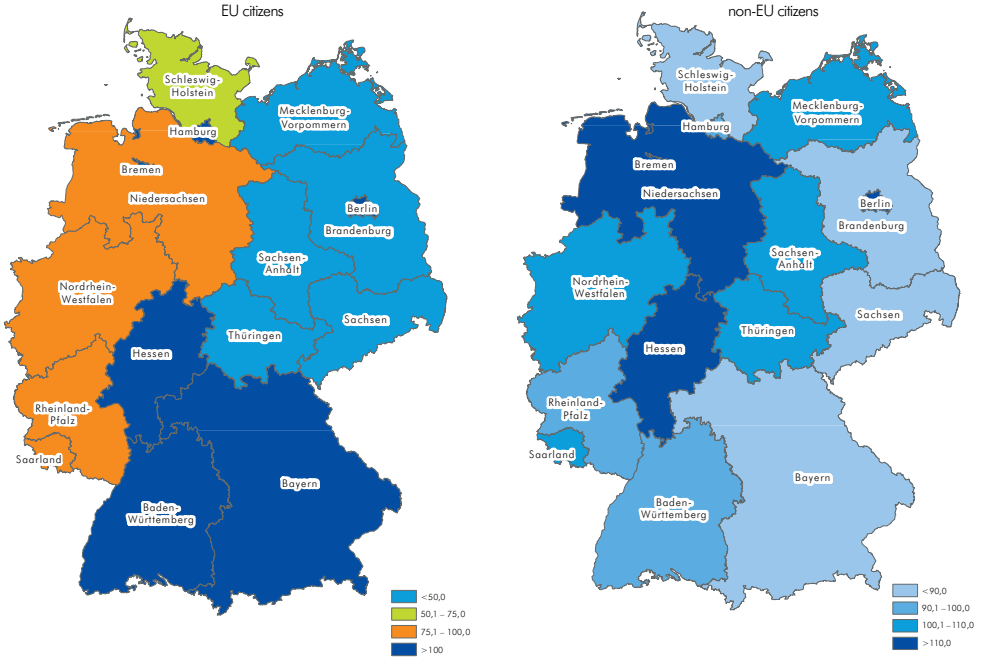
This chart shows how the working-age population (20 up to below 67) will change between 2015 and 2060, according to the updated 13th coordinated population projection issued by the Federal Statistical Office. It shows that in both West and East German territorial areas, the working-age population will decline – despite positive external migration. However, the decline in East German territorial areas will be double that of their West German counterparts, in percentage terms. In the former, the number of people of working age will decline by around 37%, compared to around 18% in the west. Only the city states of Berlin, Bremen and Hamburg will see no great change in the number of people of working age. The results of the population projection shown here are an updated version of the 13th coordinated population projection, which takes 2015 as the starting point and already includes the immigration of asylum seekers in 2014 and 2015 in the initial figures.

Contact: Gerhard Heimpold

Figure 21

Migration gains from the EU: significantly lower in East Germany than in West Germany

Cumulative net migration gain per 1,000 inhabitants[A], Germany = 100



[A] Cumulative net migration gain in the period from 2010 to 2015 per 1,000 inhabitants in 2015.

Sources: Federal Statistical Office, Wiesbaden; calculations and maps by IWH; mapping by Michael Barkholz (IWH).

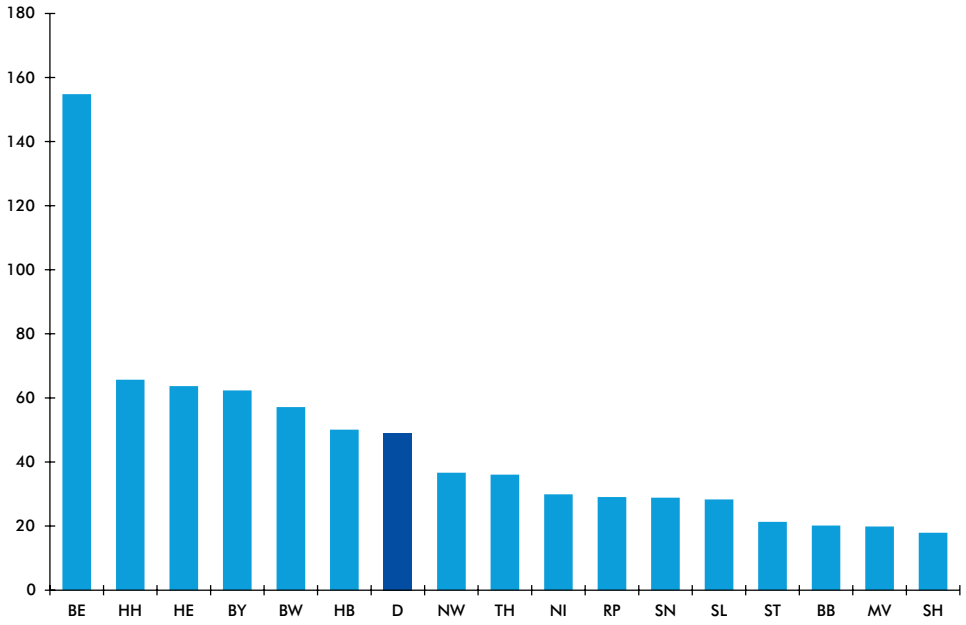
During the period from 2010 to 2015, cumulative migration gains in Germany amounted to 2.9 million people. Based on 1,000 persons, this was 35.4 people. There were considerable differences between the federal states: The highest figures were recorded in Bremen and Berlin, with 50.4 and 47.5 per 1,000 persons respectively. Bringing up the rear were Brandenburg (20.6) and Saxony (20.3). Of the total migration gains, 1.5 million people (or 52.1%) were citizens of EU States. Based on 1,000 persons, this was 18.5 people. The main beneficiaries of this immigration from EU States were Bremen (26.9), Baden-Wuerttemberg (26.3), Bavaria (26.3) and Berlin (26.2). Bringing up the rear were Saxony (5.5) and Saxony-Anhalt (5.8). Cumulative migration gains from non-EU States totalled just under 1.4 million people in Germany. This was 17.0 people per 1,000 persons. In this case, the differences between federal states were much lower. The lowest figure was recorded in Bavaria (13.0), the highest in Bremen (23.5).

Contact: Hans-Ulrich Brautzsch

Figure 22

EU blue card: Berlin has a clear lead

Blue card recipients per 100,000 employees in the federal states[A] in 2017



[A] BB = Brandenburg; BE = Berlin; BW = Baden-Wuerttemberg; BY = Bavaria; D = Germany; HB = Bremen; HE = Hesse; HH = Hamburg; MV = Mecklenburg-Vorpommern; NI = Lower Saxony; NW = North Rhine-Westphalia; RP = Rhineland-Palatinate; SN = Saxony; ST = Saxony-Anhalt; SH = Schleswig-Holstein; SL = Saarland; TH = Thuringia.

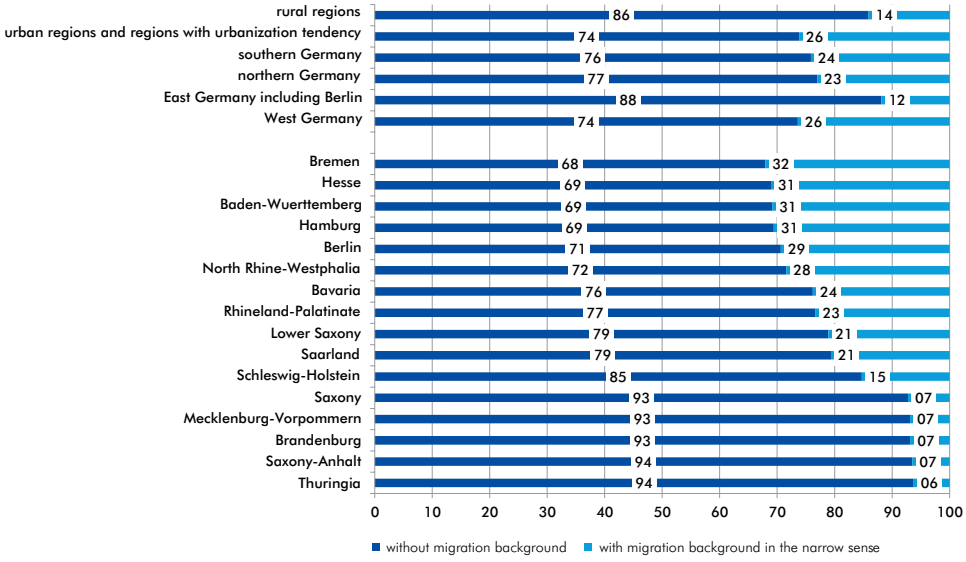
Sources: Federal Office for Migration and Refugees 2018; Regional Accounts VGRdL, Statistical Office of the Federal State of Baden-Wuerttemberg, Stuttgart 2018; calculations and diagram by IWH.

21,727 highly qualified immigrants obtained a so-called EU blue card in 2017. This EU blue card is intended to help highly qualified third-country nationals to permanently work and live within the EU. To obtain an EU blue card, a number of conditions must be met. For example, applicants must hold a university degree, have the offer of employment in Germany and also earn a certain minimum income. Around 90% of EU blue card holders in Germany work in highly skilled occupations. These EU blue cards are issued to differing degrees in the individual federal states. By far the highest number was recorded in Berlin, with 155 per 100,000 of people employed. The national average was 49 EU blue cards issued per 100,000 of people employed. East German territorial areas were well below the national average. **Contact: Hans-Ulrich Brautzsch**

Figure 23

Proportion of people with a migrant background in East Germany and rural regions well below the federal average

Share of population without and with migration background in 2017 in % (total population = 100)



Northern Germany: Berlin, Brandenburg, Bremen, Hamburg, Lower Saxony, Mecklenburg-Vorpommern, North Rhine-Westphalia, Saxony-Anhalt; Schleswig-Holstein, Southern Germany: Baden-Württemberg, Bavaria; Hesse, Rhineland-Palatinate, Saarland, Saxony, Thuringia.

Sources: Federal Statistical Office (Destatis), 2018, Microcensus 2017; north-south categorisation based on The Economist as of 19.08.2017 (online); calculations and diagram by IWH.

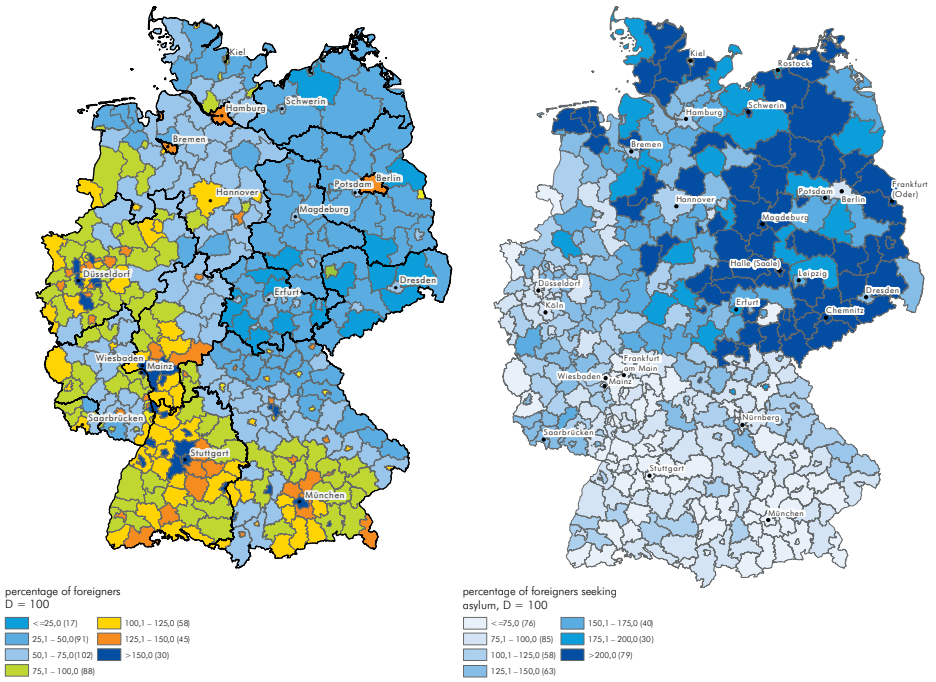
19.3 million people in Germany have a migrant background. This equates to almost a quarter of the population. There are large regional differences, particularly between East and West Germany, as well as urban and rural areas. In Bremen, Hesse, Baden-Wuerttemberg and Hamburg, three in ten people have a migrant background, while in East German territorial areas, the figure is not even one in ten. There used to be agreements in the GDR for the recruitment of workers from abroad, but nowhere near as many as in West Germany. As expected, the proportion of inhabitants having a migrant background in urban areas is almost twice as high as in the countryside.

Contact: Gerhard Heimpold

Figure 24

Percentage of foreigners seeking asylum: well above average percentage in East German territorial areas, with a lower percentage of foreigners[A]

31.12.2016



[A] The figures in parentheses in the legend display the number of independent cities and districts belonging to the respective size group.

Sources: Federal Statistical Office, Wiesbaden; calculations and maps by IWH; mapping by Michael Barkholz (IWH).

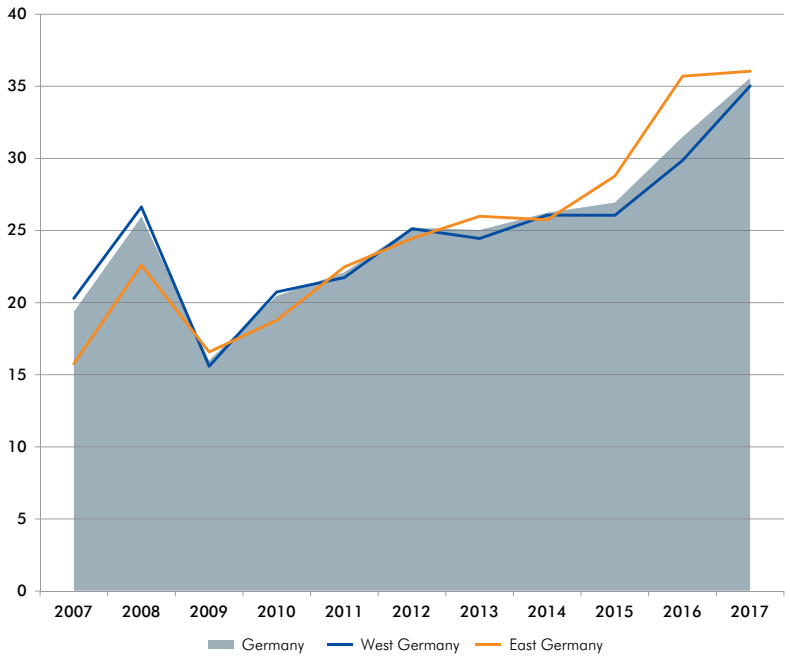
The number of asylum seekers in Germany at the end of 2016 was approximately 1.6 million. This means that 16% of all foreigners were seeking asylum. Asylum seekers are foreigners residing in Germany citing humanitarian grounds. Their numbers vary between the regions. While in East German territorial areas and some regions of north-western Germany, in particular, this percentage was well above the German average, in southern Germany and some regions in western North Rhine-Westphalia and Rhineland-Palatinate, predominantly below average values were recorded. The range extended from 4.1% in the city of Offenbach to 52.6% in the Elbe-Elster administrative district. It should be noted, however, that the percentage of foreigners as a whole in the total population in East Germany was considerably lower than in most western German regions. With an average percentage of 11.2% in Germany, East German regions, in particular, recorded lower percentages. The lowest figure was seen in Erzgebirgskreis (2.0%); the record was achieved in the city of Offenbach (33.9%). In the wake of the increase in refugee migration that began in mid-2015, the number of asylum seekers had increased significantly. The regional distribution of these refugees, which is based on the economic output of the individual federal states (Königsberger Schlüssel), meant that even in regions with a comparatively low percentage of foreigners, the number of asylum seekers increased significantly. As a result, the percentage of foreign asylum seekers is extremely high.

Contact: Hans-Ulrich Brautzsch

Figure 25

Specialist staff vacancies: a growing problem in East and West German companies

Vacancies, 2007 to 2017, in %



Share of vacancies = share of posts which were not staffed in the total number of posts offered for skilled employees; skilled employees due to the IAB Establisment Panel do qualified work.

Sources: IAB Establisment Panel 2007 to 2017; calculations and diagram by IWH.

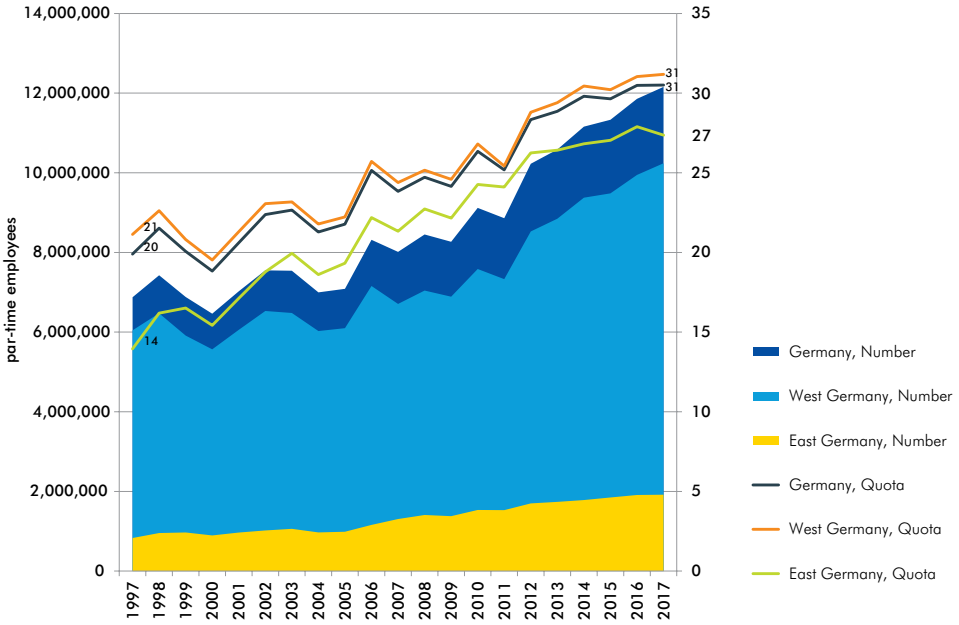
In recent years, the demand for skilled labour has risen steadily – from around 1.4 million in 2007 to around 2.3 million in 2017. This figure includes the number of newly appointed specialist staff and the number of specialist staff vacancies. It is therefore an indicator of fluctuation in the labour market. The proportion of vacant positions in relation to total vacancies indicates the vacancy rate. This can be interpreted as an indicator of potential obstacles to growth, due to an imminent shortage of specialist staff. Since 2009, when the vacancy rate in East and West Germany was around 16%, a considerable increase has been noticeable, which has accelerated once again in the last two years. While in 2014, around a quarter of all specialist staff vacancies could not be filled, this number rose by around ten percentage points over a two-year period. This development occurred over the course of around one year in East German companies. The current vacancy rate of 35% in West Germany and 36% in East Germany means that more than one in three vacancies can no longer be filled. This trend is not the same in all sectors. Most affected by staffing problems are construction, agriculture and forestry as well as corporate services, where around half of all vacancies remain unfilled.

Contact: Eva Dettmann

Figure 26

Part-time work: lower proportion of part-time staff in East Germany

Part-time employment and share of part-time employment in total employment, 1997 to 2017



Part-time quota = share of part-time employees in total employment; as part-time employees, due to the IAB Establishment Panel, all emploees are regarded whose contractual working time is below than that of full-time employees.

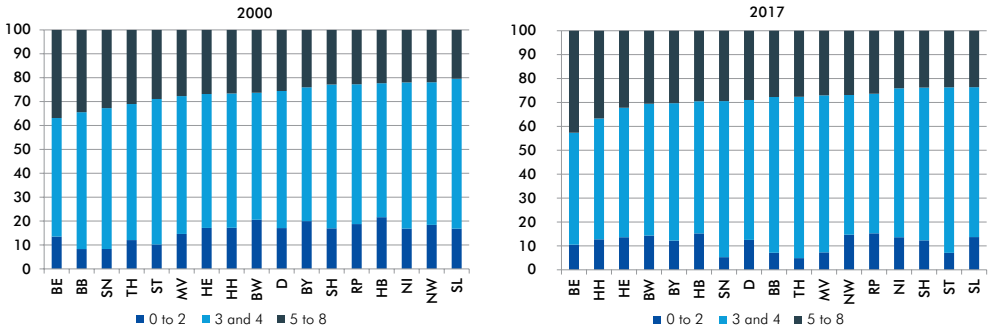
Sources: IAB Establishment Panel 1997 to 2017; calculations and diagram by IWH.

In the past 20 years, the total number of regular part-time workers in Germany as a whole has increased by approximately 75% – from around 6.9 million in 1997 to just over twelve million in 2017. In East Germany in 1997, around 900,000 people worked part-time; in 2017, almost two million. In West Germany during the same period, this number rose from six million to ten million. Measured in terms of all employees, the proportion of part-time workers in Germany increased from approximately 20% to around 30%. There was no increase in part-time workers during the 2008/2009 crisis. Nevertheless, a slightly higher increase was recorded in the following years, from 2010 onwards. Over the entire period, the proportion of part-time workers among all workers in East German businesses was lower than in West Germany. Between 1997 and 2017, the number of part-time workers in East Germany rose from around 14% to approximately 27% and in West Germany from approximately 21% to around 31%. Between 1997 and 2011, the numbers tended to be in alignment, and since 2012 the number of East German part-time workers has been relatively stable, at around 3 to 4 percentage points below the West German level. **Contact: Eva Dettmann**

Figure 27

Tertiary education is falling behind in East German territorial areas

Employment in the federal states [A] by education level [B, C], ranked by the share of employees with tertiary education



[A] BB = Brandenburg; BE =Berlin; BW = Baden-Wuerttemberg; BY = Bavaria; HB = Bremen; HE = Hesse; HH = Hamburg; MV = Mecklenburg-Vorpommern; NI = Lower Saxony; NW = North Rhine-Westphalia; RP = Rhineland-Palatinate; SN = Saxony; ST = Saxony-Anhalt; SH = Schleswig-Holstein; SL = Saarland; TH = Thuringia.
[B] Levels 0 to 2: less than primary, primary and lower secondary education; levels 3 and 4: upper secondary and post-secondary non-tertiary education; levels 5–8: tertiary education.
[C] All data were included which contain information on the level of education.

Sources: Eurostat 2018; calculations and diagram by IWH.

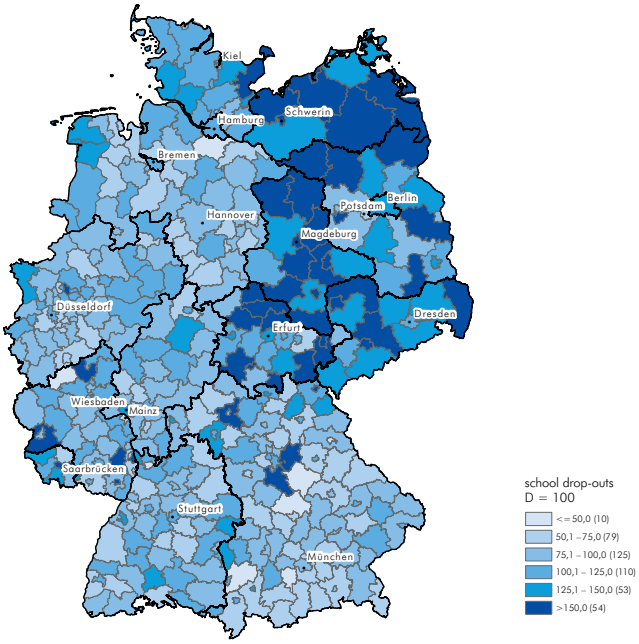
This figure compares employee structures in the German federal states in 2000 and 2017. In 2000, there were two pronounced advantages for the new federal states: firstly, tertiary education in all East German federal states was ahead of that in West German federal states. Secondly, the proportion of employees with the lowest qualifications (GCSE grades G–D) was considerably less than in all West German federal states. Berlin was in top place in terms of the proportion of highly qualified staff, with 36.9%. Mecklenburg-Vorpommern (27.7%) was ahead of Hesse, which achieved the highest percentage among the West German federal states (26.8%). In 2017, it was a very different picture: The proportion of low-qualified employees (GCSE grades G–D) in East German states continued to be well below that in West German federal states. Compared to 2000, however, in East Germany, tertiary education had only increased in Berlin. East German territorial areas had lost their initial leading position with regard to the proportion of highly qualified staff. In Brandenburg and Saxony-Anhalt, the declines were particularly sharp, at 6.7% and 5.2% respectively. Saarland, Saxony-Anhalt and Schleswig-Holstein are now the federal states with the lowest proportion of employees holding a university degree or equivalent. Therefore, East Germany's advantage in terms of highly qualified workers can now only be seen in Berlin, which is number one in Germany in this regard, and in Saxony.

Contact: Hans-Ulrich Brautzsch

Figure 28

Large regional differences in school drop-outs

Early school leavers: share of school leavers who do not possess a Certificate of Secondary Education in the total number of school leavers in 2016[A], Germany = 100



[A] The figures in parentheses in the legend display the number of independent cities and districts belonging to the respective size group.

Sources: Federal Statistical Office, Wiesbaden; calculations and map by IWH, mapping by Michael Barkholz (IWH).

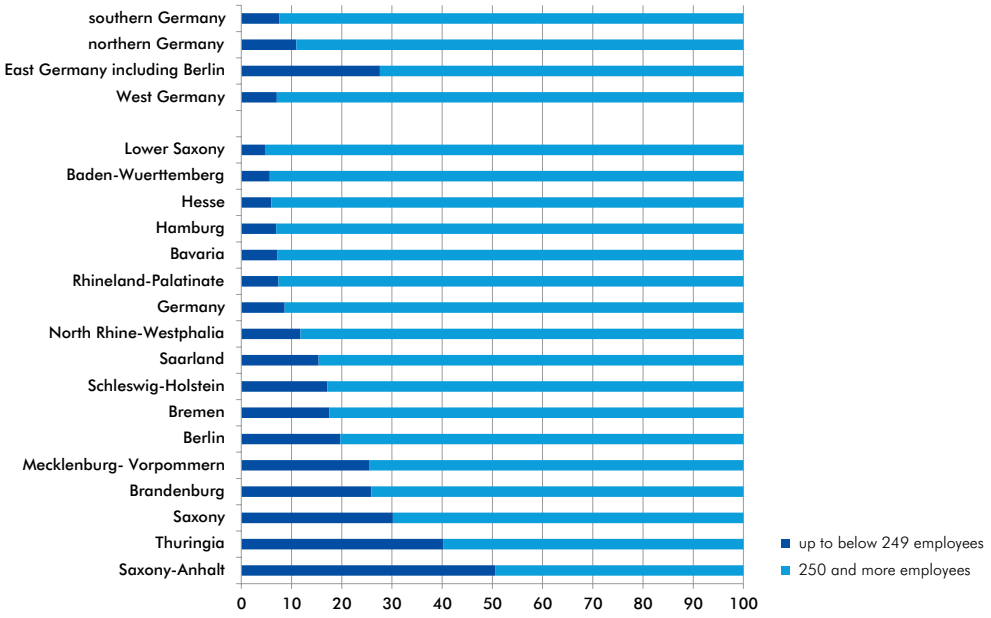
In 2016, the percentage of pupils leaving school without graduating in Germany was 5.7%. There were considerable regional differences. This percentage was particularly high in many East German regions. The highest percentage was recorded in the rural district of Prignitz (14.2%). This was two and a half times the national figure. In West Germany, the highest percentage was recorded in the city of Gelsenkirchen (11.8%), the lowest percentage was recorded in the city of Mainz (1.2%). In the east, the lowest percentage was 3.6% in Potsdam.

Contact: Hans-Ulrich Brautzsch

Figure 29

In East Germany and structurally weak West German states, SMEs make an above-average contribution to the economy's research and development spending

Internal R&D expenditures in the corporate sector by employment size of firms 2015, in % (total expenditures per state or region = 100)



Northern Germany: Berlin, Brandenburg, Bremen, Hamburg, Lower Saxony, Mecklenburg-Vorpommern, North Rhine-Westphalia, Saxony-Anhalt, Schleswig-Holstein; southern Germany: Baden-Wuerttemberg, Bavaria, Hesse, Rhineland-Palatinate, Saarland, Saxony, Thuringia.

Sources: SV Wissenschaftsstatistik GmbH (Hrsg.): a:ren di: Zahlenwerk 2017 – Forschung und Entwicklung in der Wirtschaft 2015, Essen, July 2017; north-south categorisation based on: The Economist as of 19.08.2017 (online); calculations and diagram by IWH.

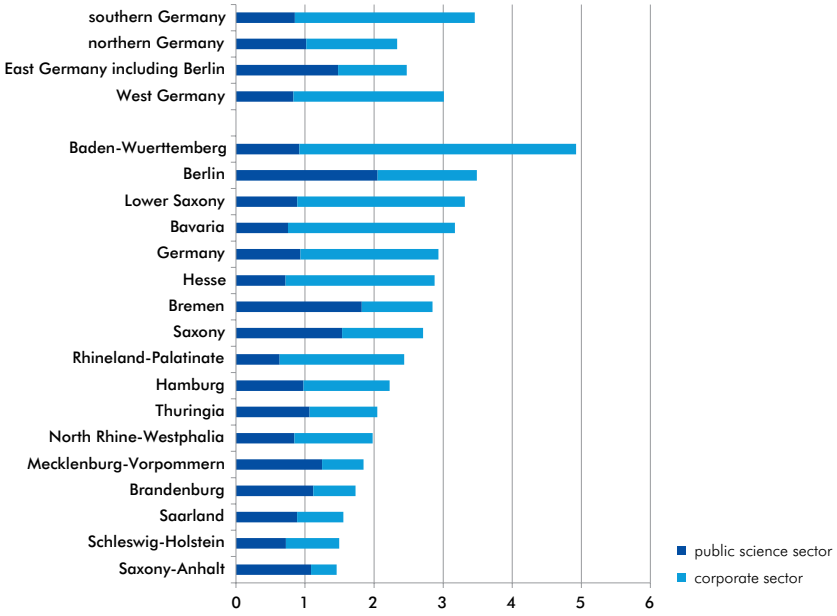
In all East German states, including Berlin, small and medium-sized enterprises (SMEs) with up to 249 employees have an above-average share of the economy's total research and development spending, while the opposite is true of larger firms. In Saxony-Anhalt, this share of SMEs is just over 50%. And even in structurally weak West German states, SMEs play an above-average role in R&D spending. To avoid any misunderstanding: The proportion of SMEs in the total number of companies differs little between East and West Germany. The difference is the number of major research companies that contribute significantly more to R&D spending in the west and less in the east. Because large companies in Lower Saxony and Hamburg also spend a proportionally above-average amount on R&D, there is no pronounced north-south divide in R&D spending.

Contact: Gerhard Heimpold

Figure 30

Baden-Wuerttemberg, Berlin, Lower Saxony and Bavaria spend above-average amounts on research and development

Share of internal R&D expenditures 2016 in gross domestic product by federal states and regions, current prices, in %



Northern Germany: Berlin, Brandenburg, Bremen, Hamburg, Lower Saxony, Mecklenburg-Vorpommern, North Rhine-Westphalia, Saxony-Anhalt, Schleswig-Holstein; southern Germany: Baden-Wuerttemberg, Bavaria, Hesse, Rhineland-Palatinate, Saarland, Saxony, Thuringia.

Sources: Federal Statistical Office, Wiesbaden; Stifterverband Wissenschaftsstatistik, Essen; Regional Accounts VGRdL, Statistical Office of the Federal State of Baden-Wuerttemberg, Stuttgart 2018; north-south categorisation based on: The Economist as of 19.08.2017 (online); calculations and diagram by IWH.

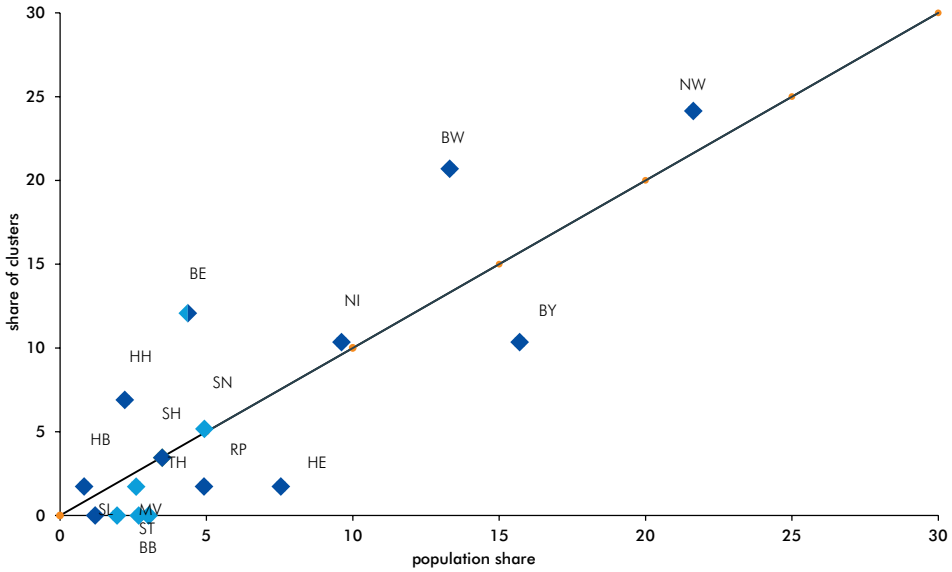
Research drives economic growth. Baden-Wuerttemberg, Berlin, Lower Saxony and Bavaria spend above-average amounts on research and development in Germany, while all other states are below the national average. It is also noticeable that in West German states with high research intensity, well over half of this spending comes from the business sector, i.e. from companies and to a lesser extent from public science institutions, i.e. universities and non-academic research establishments. In many structurally weak states, the opposite is true. Apart from the traditional science location of Berlin, the Free State of Saxony is high on the list of research spending among the new states, while in the Free State of Thuringia, the ratio between the business and public science sectors is almost balanced in terms of R&D spending.

Contact: Gerhard Heimpold

Figure 31

Excellence clusters: East German territorial areas underrepresented in cutting-edge research, with the exception of Saxony

Share of the federal states in the 57 excellence clusters of German universities in relation to the share in total population in Germany, in %



One out of 57 clusters comprises universities from two federal states (Saxony, Bavaria). Therefore, this cluster was assigned to both federal states. The population share concerns 2017 (31.12.)

Sources: German Research Foundation 2018; Federal Statistical Office, Wiesbaden; calculations and diagram by IWH.

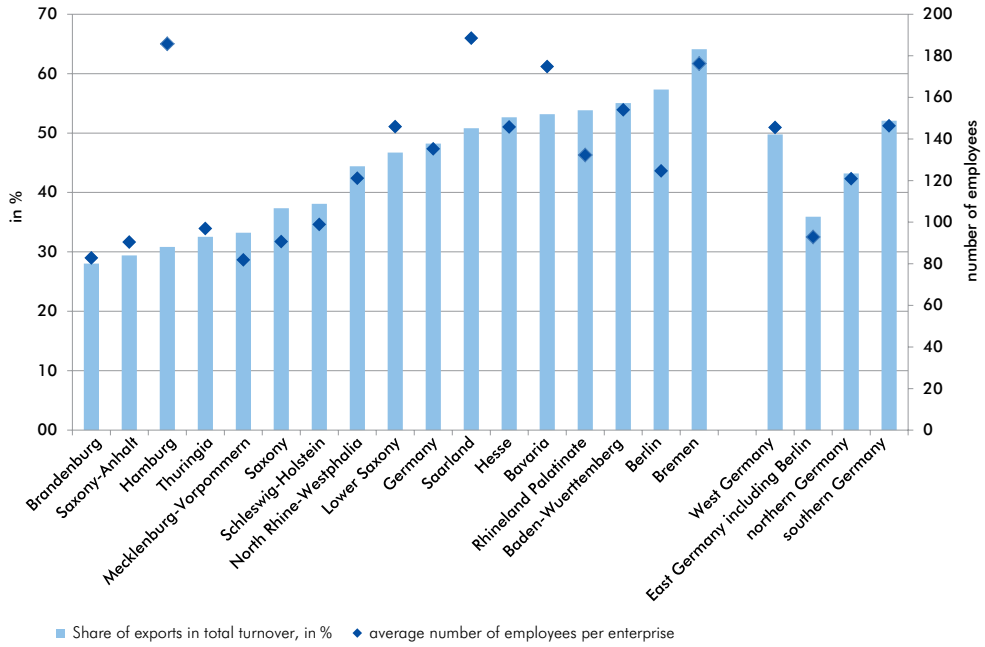
German universities were able to apply for excellence cluster funding as part of the „Federal and State Excellence Strategy". 57 excellence clusters were selected for funding in autumn 2018. This chart shows the federal states' share of the 57 excellence clusters selected for funding and compares this with the states' share of the population. States whose share of clusters is above their share of residents are located above the 45-degree line on the figure. Baden-Wuerttemberg's, Berlin's and Hamburg's above-average share of excellence clusters selected for funding is striking. Among the East German states, Saxony and Thuringia will benefit from the funding, as well as Berlin. In the East German territorial areas of Brandenburg, Mecklenburg-Vorpommern and Saxony-Anhalt, however, there is not a single excellence cluster. East German territorial areas are therefore underrepresented in cutting-edge research.

Contact: Oliver Holtemöller

Figure 32

In industry, companies of below-average size tend to be associated with lower export rates

Employees per enterprise, share of exports in total turnover, 2017, enterprises belonging to firms of the manufacturing sector, mining and quarrying of 20 and more employees



Northern Germany: Berlin, Brandenburg, Bremen, Hamburg, Lower Saxony, Mecklenburg-Vorpommern, North Rhine-Westphalia, Saxony-Anhalt; Schleswig-Holstein; southern Germany: Baden-Wuerttemberg, Bavaria, Hesse, Rhineland-Palatinate, Saarland, Saxony, Thuringia.

Sources: Federal Statistical Office (Destatis), Wiesbaden, 2018; north-south categorisation based on: The Economist as of 19.08.2017 (online); calculations and diagram by IWH.

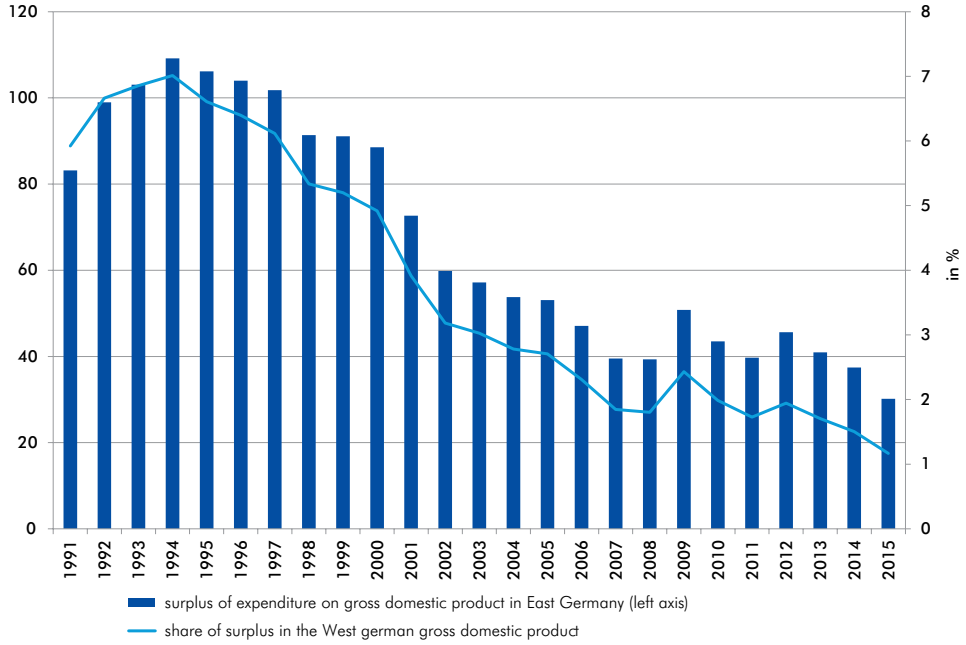
German industry generates almost half (48%) of its revenue abroad, albeit with large regional differences. It is noticeable that the export share in all East German territorial areas as well as in some West German states, such as Schleswig-Holstein and North Rhine-Westphalia, is below average. In Hamburg, the oil industry, showing a relatively low export rate, is of relatively large importance in the industrial sector. There may be various reasons for the regional differences in export-orientation: This figure suggests that it also has something to do with differences in company size. Small businesses may face larger barriers to market entry. Conversely, more or less export activity may affect the size of the operation and its employee development. Added to the conspicuously lower percentages of abroad sales in East German territorial areas is the fact that it is not uncommon for these to undertake deliveries to exporters in West Germany.

Contact: Gerhard Heimpold

Figure 33

East Germany's transfer dependency has fallen, but still exists

Gap between expenditure and gross domestic product in East Germany including Berlin, absolute volume and relative to the GDP in West Germany



Sources: Regional Accounts VGRdL, Statistical Office of the Federal State of Baden-Wuerttemberg, Stuttgart 2018; calculations and diagram by IWH.

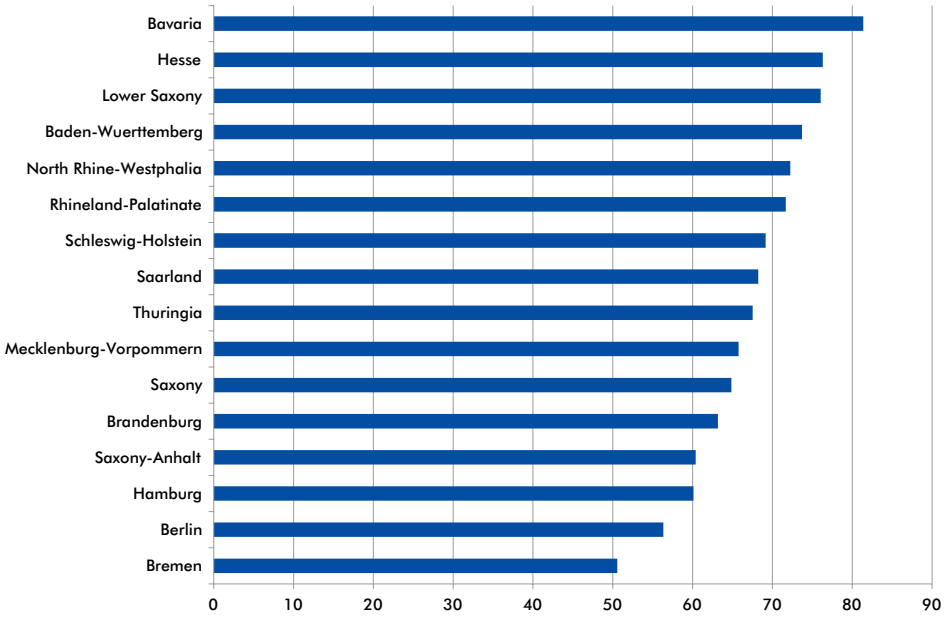
The East German economy has a trade and services deficit, whereby it consumes more than it produces. In 1991, final demand was 47% higher than East German GDP and in every year of the 1990s, domestic final demand in the form of private and state consumption, as well as investments, exceeded GDP by more than 80 billion euros. Since 2001, however, this difference has been declining. In 2015 (more recent figures are not available), the trade and services deficit in relation to GDP was still 7%. The gap between final demand and production in the new states is mainly closed by west-east transfers, especially via social security systems, but also by commuter incomes. Compared to West German GDP, the gap dropped from an initial almost 6% to 1.2% in 2015.

Contact: Axel Lindner

Figure 34

2017 tax coverage ratio: still an east-west divide

Tax revenues as a percentage of adjusted expenditures, in %



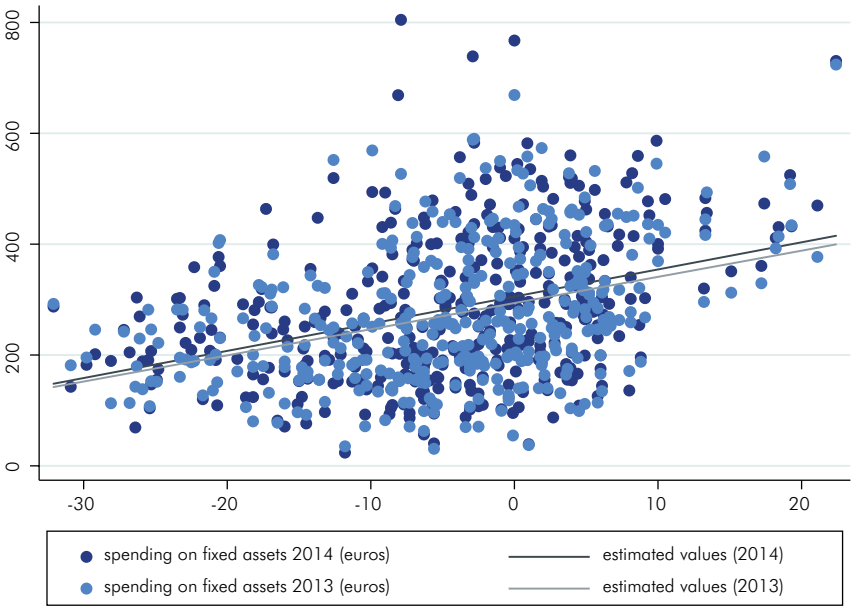
Sources: Federal Statistical Office, Wiesbaden, Fachserie 14, Reihe 2, Vierteljährliche Kassenergebnisse des öffentlichen Gesamthaushalts, 1.– 4. Vierteljahr 2017; calculations and diagram by IWH.

In 2017, tax coverage ratio in East German federal states was still lower than that in West Germany. Tax coverage ratio represents the percentage of a local authority's spending that is covered by its own tax revenues. It is essentially determined by regional economic output. The lower tax coverage ratios in the new federal states are attributable to a lower tax base. Persistently lower labour productivity in East Germany and – as a result – lower incomes are responsible for this. The tax coverage ratio is highest in states where large firms are located. Although, local authorities where such companies have branches do also benefit from tax revenues by tax breakdown. The latter does only lead to a convergence of the states' fiscal capacity to their economic output. Eastern Germany's SME-oriented economic structure and a lack of corporate HQs, where highly paid jobs are located, clearly reduce the tax revenues of East German federal states. **Contact: Götz Zeddies**

Figure 35

Not all municipalities anticipate demographic change in their investment decisions

Distribution of municipal investment in fixed assets per resident in Euro for the years 2013 and 2014



Sources: Altemeyer, Bartscher, M.; Gropp, R. E.; Haug, P. (2017): Der demographische Wandel und kommunale Investitionen. IWH-Online 1/2017. Halle (Saale) 2017, 6, based on: Vierteljährliche Kommunale Kassenstatistik und Gemeindefinanzberichte der statistischen Landesämter, Bundesinstitut für Bau-, Stadt- und Raumforschung, INKAR 2014; calculations and diagram by IWH.

This chart shows the distribution of municipal investment expenditures for tangible fixed assets per resident in euros for 2013 and 2014, based on the forecast percentage population change until 2035. In general, it reveals that population growth has a positive impact on municipal investment. However, it is also clear that many municipalities with moderate population rises (1% to 10%) invest relatively little. Conversely, there are municipalities whose populations are declining but that are sometimes highly ranked in terms of investments per resident. One regression analysis has shown that besides future population development, municipal financial resources, especially the combination of self-generated tax revenue and the amount of investment subsidies, as well as structural peculiarities in individual federal states, can particularly influence investments. For example, a municipality in Bavaria with relatively unfavourable population development invests more than comparable municipalities in financially weak federal states. The impact of the initial municipal capital stock is hardly discernible, due to a lack of indicators, and the effect of settlement structure is unclear. **Contact: Peter Haug**

Glossary

Adjusted expenditure: Total amount of current accounting and capital revenue.[1] The information in this publication relates to the federal state level.

Asylum-seekers: Foreigners residing in Germany citing humanitarian grounds. Asylum-seekers in Germany include the following three categories of foreigners: (a) Asylum-seekers, whose asylum application is being handled in Germany and about whose asylum status a decision is yet to be made; (b) Asylum-seekers with a temporary or permanent residence permit issued on humanitarian grounds according to the Residence Act and (c) Asylum-seekers, whose asylum application has been declined and who are obligated to leave the country.[2]

Average wage: Average monthly gross salary of a full-time employee liable for social security contributions. The average value splits the number of full-time employees liable for social security contributions into two distinct groups: half of the employees receives a below-average wage; the other half receives an above-average salary.[3]

Capital coefficient: Ratio of capital stock to gross domestic product.[4]

Capital stock: Annual average gross fixed capital.[5]

City states: German federal states of Berlin, Bremen and Hamburg.

Current account balance: The difference between exports and imports of goods and services, as well as revenue and expenditure from income and current transfers beyond national borders.[6]

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[1] See glossary, in: *Statistisches Bundesamt (Destatis) (2018):* 'Finanzen und Steuern. Vierteljährliche Kassenergebnisse des öffentlichen Gesamthaushalts. Fachserie 14 Reihe 2, 1.–4. Vierteljahr 2017'. Published quarterly. Published on 20 April, in: https://www.destatis.de/DE/Publikationen/Thematisch/FinanzenSteuern/OeffentlicheHaushalte/AusgabenEinnahmen/KassenergebnisOeffentlicherHaushalt2140200173244.pdf?__blob=publicationFile, accessed on 07.01.2019.

[2] See '2. Definition von Schutzsuchenden', in: *Statistisches Bundesamt (Destatis) (2017)*: Bevölkerung und Erwerbstätigkeit. Schutzsuchende. Ergebnisse des Ausländerzentralregisters, Fachserie 1 Reihe 2.4, 2016, published: annually. Published on 2 November 2017, 5, in: https://www.destatis.de/DE/Publikationen/Thematisch/Bevoelkerung/MigrationIntegration/Schutzsuchende2010240167004.pdf?__blob=publicationFile, accessed on 10.01.2018.

[3] See 'I Analyse, IV Glossar für sozialversicherungspflichtige Bruttoarbeitsentgelte (Entgeltstatistik)', in: *Federal Employment Agency. Statistik (2018):* Tabellen. Sozialversicherungspflichtige Bruttoarbeitsentgelte (Jahreszahlen). Germany, West/East, states and districts, reporting date: 31 December 2017, in: https://statistik.arbeitsagentur.de/Statistikdaten/Detail/201712/iiia6/beschaeftigung-entgelt-entgelt/entgelt-d-0-201712-xlsm.xlsm, accessed on 03.01.2019.

[4] See *Schmalwasser, O.; Schidlowski, M. (2006):* 'Kapitalstockrechnung in Deutschland', in: Statistisches Bundesamt: Wirtschaft und Statistik 11/2006, 1107–1123, and specifically 1108.

[5] See definitions in: *Arbeitskreis Volkswirtschaftliche Gesamtrechnungen der Länder (2018):* 'Anlagevermögen in den Ländern der Bundesrepublik Deutschland 1991 bis 2015. Reihe 1, Länderergebnisse Band 4, Berechnungsstand des Statistischen Bundesamtes': August 2017 [Revision 2014/ESVG 2010/WZ 2008]; Stuttgart: Statistisches Landesamt Baden-Württemberg, published: annually. Published in June, in: https://www.statistik-bw.de/VGRdL/tbls/RV2014/R1B4.zip, accessed on 02.01.2019.

[6] See '17 Zahlungsbilanz', in: *Statistisches Bundesamt (2018):* Statistisches Jahrbuch Deutschland und Internationales 2018, 441–452, and specifically 444 and 451, in: https://www.destatis.de/DE/Publikationen/StatistischesJahrbuch/StatistischesJahrbuch2018.pdf?__blob=publicationFile, accessed on 02.01.2019.

East Germany: In this publication, unless otherwise specified, includes the German federal states of Berlin, Brandenburg, Mecklenburg-Vorpommern, Saxony, Saxony-Anhalt and Thuringia.

East German territorial areas: Brandenburg, Mecklenburg-Vorpommern, Saxony, Saxony-Anhalt, Thuringia.

EU blue card: a temporary residence permit for non-EU citizens. To obtain the card, applicants must hold a university degree, have signed an employment contract or been made a binding job offer and earn a certain minimum gross salary per annum. For so-called understaffed professions, such as skilled workers in information and communication technology, there is a lower minimum gross salary per annum threshold. An EU blue card can only be issued to people in this group with the agreement of the Federal Employment Agency. This agreement is not required if the applicant holds a domestic university degree.[7]

Expenditure ratio: Percentage of state expenditure related to gross domestic product, consumption and capital expenditure, subsidy and transfer payments.[8]

Gross fixed capital: Value of assets without the deduction of accumulated depreciation.[9]

Group of Seven (G7): An informal global economic forum consisting of seven leading economies: Germany, France, the UK, Italy, Japan, Canada and the USA. Representatives of the European Union also attend the meetings.[10]

Growth trend: Medium and/or long-term growth, ignoring cyclical or seasonal influences.[11]

Internal R&D expenditure: Staff and material costs and investment in research and development, provided this takes place on the premises of the statistical unit concerned, such as the company.[12]

Natural population development: Balance of births and deaths.

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[7] See *Federal Office for Migration and Refugees (BAMF) (2015)*: EU Blue Card. Information on the residence title in accordance with section 19a of the German Residence Act (Aufenthaltsgesetz), Nürnberg, last updated February, in: https://www.bamf.de/SharedDocs/Anlagen/EN/Publikationen/Flyer/flyer-blaue-karte.pdf;jsessionid=932D87F38095E2FAD9183C5D49B003B3.2_cid294?__blob=publicationFile, accessed on 12.02.2019.

[8] See *Schratzenstaller, M. (2013)*: 'Staatsquoten – Definitionen, Grenzen der Vergleichbarkeit und Aussagekraft', in: Wirtschaftsdienst Heft 3, 204–206, and specifically 204, in: https://archiv.wirtschaftsdienst.eu/downloads/getfile.php?id=2952, accessed on 17.12.2018.

[9] See definitions in: *Arbeitskreis Volkswirtschaftliche Gesamtrechnungen der Länder*, reference as above.

[10] See *G7 2018, Charlevoix, Home, G7 Presidency, G7 Members*, date modified: 4 June 2018, in: https://g7.gc.ca/en/g7-presidency/g7-members/, accessed on 02.01.2019.

[11] See *Federal Ministry for Economic Affairs and Energy (2019)*: Article: 'Leitbild Soziale Marktwirtschaft. Wirtschaftswachstum', in: https://www.bmwi.de/Redaktion/DE/Artikel/Wirtschaft/definitionen-02-wirtschaftswachstum.html, accessed on 02.01.2019.

[12] See *Stifterverband (2017)*: α:ren di: Analysen 2017, authors: Verena Eckl, Barbara Grave, Andreas Kladroba, Bernd Kreuels, Thu-Van Nguyen, Gero Stenke, publisher: Wissenschaftsstatistik GmbH im Stifterverband für die Deutsche Wissenschaft, Essen, 7, in: https://www.stifterverband.org/download/file/fid/4848, accessed on 19.02.2018.

Northern Germany: Berlin, Brandenburg, Bremen, Hamburg, Mecklenburg-Vorpommern, Lower Saxony, North Rhine-Westphalia, Saxony-Anhalt, Schleswig-Holstein.[13]

People with a migrant background: The person concerned or one or both of their parents was not a German citizen at the time of birth. The statistical data used here relates to the literal definition of migrant background. This is deemed to exist if the characteristic of migrant background can be determined for every year of the time series.[14]

Purchase power parities: Indicate how many currency units are required in different countries in order to buy a given amount of goods and services. For international comparisons, a notional monetary unit (purchase power standard) is created based on purchase power parities. This is calculated in every country in such a way that the same basket of goods and services can be purchased everywhere with it.[15]

Revenue ratio: Percentage of gross domestic product related to state revenue from taxes, national insurance contributions, fees and other income.[16]

Rural areas: Include both densely and sparsely populated rural districts according to the settlement structure-based district identification of the Federal Institute for Research on Building, Urban Affairs and Spatial Development (BBSR).[17]

School drop-outs: Pupils leaving school without graduating. This also includes school leavers with qualifications focussed on learning or spiritual development.[18]

Southern Germany: Baden-Wuerttemberg, Bavaria, Hesse, Rhineland-Palatinate, Saarland, Saxony, Thuringia.[19]

Tax coverage ratio: Tax revenue and parafiscal charges in relation to adjusted expenditure (in %).[20] The information in this publication relates to federal state level.

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[13] See 'The beautiful south. Germany's new divide', in: *The Economist*, Print edition | Europe, 19 Aug. 2017 | Bremen and Dresden, no page reference, in: https://www.economist.com/europe/2017/08/19/germanys-new-divide, accessed on 15.10.2018.

[14] See III Glossar in: *Statistisches Bundesamt (Destatis) (2018):* 'Bevölkerung und Erwerbstätigkeit. Bevölkerung mit Migrationshintergrund – Ergebnisse des Mikrozensus 2017 – Fachserie 1 Reihe 2.2', 18, in: https://www.destatis.de/DE/Publikationen/Thematisch/Bevoelkerung/MigrationIntegration/Migrationshintergrund2010220177004.pdf?__blob=publicationFile, accessed on 13.08.2018.

[15] See *Eurostat (2018):* Glossary: 'Purchase power parities (PPP)'. This page was last modified on 1 March 2018 at 10:16, https://ec.europa.eu/eurostat/statistics-explained/index.php?title=Glossary:Purchasing_power_parities_(PPPs)/de, accessed on 03.01.2019; eurostat (2018): 'Glossary: Purchasing power standard (PPS)'. This page was last modified on 11 December 2014 at 10:58, in: https://ec.europa.eu/eurostat/statistics-explained/index.php/Glossary:Purchasing_power_standard_(PPS), accessed on 12.02.2019.

[16] See *Schratzenstaller, M. (2013):* 'Staatsquoten – Definitionen, Grenzen der Vergleichbarkeit und Aussagekraft', in: Wirtschaftsdienst Heft 3, 204–206, and specifically 205, in: https://archiv.wirtschaftsdienst.eu/downloads/getfile.php?id=2952, accessed on 17.12.2018.

[17] *Federal Institute for Research on Building, Urban Affairs and Spatial Development in the Federal Office for Building and Regional Planning (BBR) Bonn (2018):* INKAR 2018. 'Erläuterungen zu den Raumbezügen', 17, in: http://www.inkar.de/documents/Erlaeuterungen%20Raumbezuege.pdf, accessed on 15.10.2018.

[18] See explanations in: *Statistisches Bundesamt (Destatis) (2018):* 'Bildung und Kultur. Allgemeinbildende Schulen. Schuljahr 2017/2018. Fachserie 11 Reihe 1'. Published: annually. Published on 22 Aug., 6, in: https://www.destatis.de/DE/Publikationen/Thematisch/BildungForschungKultur/Schulen/AllgemeinbildendeSchulen2110100187004.pdf;jsessionid=3FFC3A7D33D8C5EF4B0CAA8A-84C95BFC.InternetLive2?__blob=publicationFile, accessed on 04.01.2019.

[19] See *'The beautiful south. Germany's new divide'*, reference as above.

[20] See Glossary in: *Thüringer Rechnungshof:* Jahresbericht 2018 mit Bemerkungen zur Haushalts- und Wirtschaftsführung und zur Haushaltsrechnung 2016, no page reference, in: https://www.thueringer-rechnungshof.de/files/16435EDE022/Jahresbericht%202018.pdf, accessed on 04.01.2019.

Underemployment rate: The number of people who are unemployed or affected by labour market policy measures or have special status (especially those unable to work in the short term), expressed as a percentage of the total civilian workforce, people affected by labour market policy measures and those with special status.[21]

Urban areas: Administratively independent municipalities and urban districts according to the settlement structure-based district identification of the Federal Institute for Research on Building, Urban Affairs and Spatial Development (BBSR).[22]

West Germany: In this publication, unless otherwise specified, includes the German federal states of Baden-Wuerttemberg, Bavaria, Bremen, Hamburg, Hesse, Lower Saxony, North Rhine-Westphalia, Rhineland-Palatinate, Saarland and Schleswig-Holstein.

West German territorial areas: Baden-Wuerttemberg, Bavaria, Hesse, Lower Saxony, North Rhine-Westphalia, Rhineland-Palatinate, Saarland, Schleswig-Holstein.

[21] See *Bundesagentur für Arbeit*, Statistik/Arbeitsmarktberichterstattung, Grundlagen: Definitionen – Glossar der Statistik der BA, Nuremberg, as of May 2012, in: https://statistik.arbeitsagentur.de/Statischer-Content/Grundlagen/Glossare/Generische-Publikationen/Gesamtglossar.pdf, accessed on 03.01.2019.

[22] See *Federal Institute for Research on Building, Urban Affairs and Spatial Development in the Federal Office for Building and Regional Planning, Bonn (2018)*: INKAR 2018. 'Erläuterungen zu den Raumbezügen', 17, in: http://www.inkar.de/documents/Erlaeuterungen%20Raumbezuege.pdf, accessed on 15.10.2018.

IWH at a glance

The Halle Institute for Economic Research (IWH) – Member of the Leibniz Association was founded in 1992. IWH's tasks are economic research and research-based advising of economic policy. With its three research departments – Macroeconomics, Financial Markets as well as Structural Change and Productivity –, IWH conducts evidence-based research by combining theoretical and empirical methods.

In the focus of its research, IWH investigates processes of economic convergence, the role of the financial system regarding the (re-)allocation of production factors as well as the facilitation of productivity and innovation. The institute among other things participates in the Joint Economic Forecast, a six-monthly expert review on behalf of the German Federal Government.

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