

Germany 25 Years after Fall of the Wall



EDITORIAL by Karl Brenke, Marcel Fratzscher, Markus M. Grabka, Elke Holst, Sebastian Hülle, Stefan Liebig, Maximilian Priem, Anika Rasner, Pia S. Schober, Jürgen Schupp, Juliane F. Stahl, and Anna Wieber

Reunification—An Economic Success Story 3

REPORT by Karl Brenke

Eastern Germany Still Playing Economic Catch-Up 6

INTERVIEW with Karl Brenke

»Eastern Germany Must Focus on Education and Innovation« 24

REPORT by Markus M. Grabka

Private Net Worth in Eastern and Western Germany Only
Converging Slowly 25

REPORT by Elke Holst and Anna Wieber

Eastern Germany Ahead in Employment of Women 33

REPORT by Anika Rasner

Gender Pension Gap in Eastern and Western Germany 42

REPORT by Pia S. Schober and Juliane F. Stahl

Childcare Trends in Germany—Increasing Socio-Economic
Disparities in East and West 51

REPORT by Stefan Liebig, Sebastian Hülle, and Jürgen Schupp

Wages in Eastern Germany Still Considered More Unjust
Than in the West 59

REPORT by Maximilian Priem and Jürgen Schupp

Everyone Happy—Living Standards in Germany 25 Years after
Reunification 65

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Reunification—An Economic Success Story

by Karl Brenke, Marcel Fratzscher, Markus M. Grabka, Elke Holst, Sebastian Hülle, Stefan Liebig, Maximilian Priem, Anika Rasner, Pia S. Schober, Jürgen Schupp, Juliane F. Stahl, and Anna Wieber

People's expectations after the fall of the Berlin Wall 25 years ago and of reunification in 1990 were huge. The government promised to create "flourishing landscapes" within a few years. The euphoria of reunification came not only through the desire to finally become one country and one nation again but also had tangible economic reasons: the people from East Germany wanted better economic prospects, more opportunities to realize their potential, and ultimately to create more well-being for themselves and future generations. West Germans were hoping for a boom.

This promise very quickly proved to be an illusion. And, solely from an economic perspective, economic policy errors were made, such as monetary union at an exchange rate that caused East Germany's economic competitiveness to fall rapidly and, at least initially, contributed to a sharp rise in unemployment. In addition, privatization through the Treuhandanstalt was probably premature. Nevertheless, did reunification fail from an economic policy perspective? It would be misguided to take the political promises of whirlwind prosperity as a measure of the success of reunification.

It is difficult to answer the question as to what are realistic objectives and criteria for a systematic economic policy evaluation of reunification. The convergence of living conditions in eastern and western Germany is a measure that comes close to assessing this objective. It would be misleading, however, to equate convergence with complete equa-

lity of all economic indicators. Equality of income, productivity, or assets will never be achieved in any economy or country. There will always be differences between regions, and even within regions, in any small or highly integrated country. The different regions in western Germany have not undergone this process since 1945, which would have led to full economic convergence, had the country not been divided.

Quite the contrary: there are often temporary divergences, i.e., diverging living and economic conditions, sometimes relatively poor regions transform into the most productive. Bavaria is just one example of western Germany experiencing such a process. Countries such as Italy and Spain have very large and persistent differences across regions that have not evened out for centuries but have actually become even greater through globalization.

This present DIW Economic Bulletin is intended as an initial contribution to the economic policy evaluation of reunification. To what extent have income, productivity, and wages converged in western and eastern Germany? How has reunification influenced different population groups? How have assets and well-being developed in both parts of Germany? These are the key questions analyzed in the first part of this DIW Economic Bulletin.

The article entitled "Eastern Germany Still Playing Economic Catch-Up" by Karl Brenke shows that the east still lags far behind the west in terms of economic output and income. The greatest structural pro-

blem is the low level of productivity and the strong focus on executive functions. The greatest success has been effective re-industrialization.

The second article by Markus Grabka "Private Net Worth in Eastern and Western Germany Only Converging Slowly" analyzes the net worth of Germans in both parts of the country.¹ Even 25 years after the fall of the Wall, households in eastern Germany hold assets of 67,400 euros, less than half that of western Germans. Real estate ownership, the most important asset type quantitatively, has been rising significantly in both parts of the country since 1990, yet there is still a gap of 15 percentage points in ownership rates between east and west. However, both in terms of average living space and of real estate furnishings and refurbishment, there has been significant convergence since the fall of the Wall.

In short, the first two articles show clearly that economic convergence between eastern and western Germany has indeed taken place, but that we are still far from achieving full equality.

Nevertheless, as demonstrated, full equality of living conditions across regions cannot be a realistic measure for the economic policy assessment of reunification, although a comparison of regional differences in western Germany or, alternatively, in other countries such as France or Italy is meaningful. After 40 years of planned economy, it is in many ways astounding that the eastern German economy has been so successfully reinvented and opened up favorable economic prospects for people in eastern Germany.

When we speak of a convergence of living conditions in western Germany and eastern Germany, it is frequently assumed that the changes are taking place in eastern Germany with the aim of conver-

ging with western Germany. In macroeconomic terms, there is certainly an economic convergence of eastern Germany toward western German conditions. But does this apply to individual economic situations and, in particular, to community and social developments? Did West Germany actually represent the ideal for East Germany in all aspects? Or were there also areas in which West Germany learned from East Germany?

It would be presumptuous to see reunification merely as an extension of West Germany's economic, social, and socio-political system. Although the social market economy of West Germany was undoubtedly more productive than East Germany's planned economy, the former German Democratic Republic (GDR) still had a number of important social and societal models and characteristics that it brought to reunified Germany which have since become a recognized standard.

The other articles therefore address the question as to whether Germany has become a different country through reunification. There are two areas in which East Germany has strongly influenced the thinking and actions of the past 25 years throughout Germany—first, the question of the family model and childcare and, second, the role of women. The final two articles tackle the issues of wages and living standards in the east and west.

The first article in the second part by Elke Holst and Anna Wieber entitled "Eastern Germany Ahead in Employment of Women" shows that while labor market participation rates in eastern and western Germany have largely converged, the desired and actual hours of work among eastern German women are, however, significantly greater. This is most clearly evident among mothers. Little difference, however, has been observed among men.

These gender differences are also reflected in pension provisions and, in particular, in the pension entitlements of men and women in western and eastern Germany. The article by Anika Rasner enti-

¹ This article is based on data collected by TNS Infratest Sozialforschung on behalf of DIW Berlin from the Socio-Economic Panel (SOEP) study, which was launched in 1984 as an annual survey of the same individuals in West Germany and in June 1990—that is, immediately prior to economic, monetary, and social union—expanded its collected data to include the GDR.

tled "Gender Pension Gap in Eastern and Western Germany" shows that gender-specific differences in old-age pensions have generally diminished. But in western Germany, they are still greater than in eastern Germany. Pensions are also predicted to be significantly higher for western German women than for eastern German women in the future, whereas eastern German men must expect declining pension claims.

There were marked differences between West and East Germany before reunification, particularly in terms of the family model and childcare. The third article entitled "Childcare Trends in Germany—Increasing Socio-Economic Disparities in East and West" by Pia Schober and Juliane Stahl studies how the use of child day care and informal care for children under three years of age has changed in both parts of the country since reunification. The article places special emphasis on varying developments according to the different socio-economic family backgrounds. The main finding is that socio-economic differences in the use of childcare have intensified in the context of continuing east-west differences.

These two areas are only selected examples of East Germany indeed having and continuing to have a significant impact on social and societal life in a reunified Germany. Although these two areas are viewed primarily as socio-political issues, they have nevertheless had a major impact on the German economy and its performance. One resounding success that Germany is seeing today is its employment miracle. It was not just the achievement of reducing unemployment from more than ten percent in the early 2000s to well under seven percent today, but also that nowadays many more people, and women in particular, are able to join the workforce. Although there are still major weaknesses and a need to catch up, reunification and the influence of East Germany on the whole economy has contributed to more success and momentum.

It is not only income and assets that remain unevenly distributed in Germany, and especially between western and eastern Germany, it is also the sense of justice for which there are clear differences between eastern and western Germany. In the next article entitled "Wages in Eastern Germany Still Considered Less Fair Than in the West," Stefan Liebig, Sebastian Hülle, and Jürgen Schupp analyze perceived injustices with respect to wages. In 2013, about 44 percent of the workforce in eastern Germany rated their incomes as unfair, while in western Germany the corresponding figure was one-third. The analyses clearly show that it is recipients of low to moderate incomes and, in particular, skilled workers who feel their net incomes, which have remained stable over time, are unjust. Income tax also contributes to this view.

The last article by Maximilian Priem and Jürgen Schupp examines the levels of life satisfaction and concerns of people in eastern and western Germany. Despite rising life satisfaction in eastern Germany compared to western Germany, the east-west difference has still not been completely eradicated. In 2013, people in eastern Germany were significantly less satisfied with their lives overall than those in western Germany, although general satisfaction in the former East German Länder is higher than it has ever been in the history of the survey which first included the east in June 1990. Satisfaction with residential situations, household activities, work, and leisure has now converged. People in eastern Germany are more concerned about their own economic situations and about crime while, throughout Germany, concerns about xenophobia and for individuals' own jobs have decreased.

Eastern Germany Still Playing Economic Catch-Up

By Karl Brenke

The economic gap between eastern and western Germany is still sizeable, even 25 years after the fall of the Berlin Wall. In terms of GDP per inhabitant and productivity, eastern Germany has attained nearly three-quarters of western German levels, respectively. Since some years, the catch-up process is advancing very slowly indeed. The main reason for low productivity is the lack of highly skilled jobs. In addition, the structure of the eastern German economy is comparatively fragmented. Disposable income per inhabitant in eastern Germany is around 83 percent of the western German equivalent. This ratio has not changed substantially since the end of the 1990s. Unemployment is still relatively high in eastern Germany but, in recent years, has fallen more markedly than in western Germany. However, this is partly due to shrinking numbers of potential employees.

Expectations after the fall of the Wall that the east would quickly catch up with the west in terms of economic power and living standards have not come to fruition. This conjecture was certainly exaggerated and assumed that a traditionally thinly populated region in flux could catch up with one of the best-performing economies in the world. Nevertheless, significant progress toward convergence has been made. In particular, eastern Germany had undergone successful re-industrialization. One major challenge is demographic change. The number of young employees in eastern Germany has fallen more significantly than in western Germany. In order to keep or attract skilled workers, more appealing jobs with good remuneration must be made available in eastern Germany. However, higher wages must accompany greater productivity and, in turn, this requires more intensive innovation activity.

This fall marks the 25th anniversary of the collapse of the political regime in the GDR and the opening of the border to West Germany. Following the political change and right to travel that ensued, there were increasing calls for improvements in the standard of living in the GDR, with people looking to West Germany for direction. After German reunification, the people of East Germany wanted the introduction of the deutschmark which was regarded as a symbol of economic strength and great purchasing power. Monetary, economic, and social union was introduced on July 1, 1990, removing the need to protect the exchange rate of the less productive economy of the GDR. Overnight, the area between the Baltic Sea and the Erz Mountains was flooded with goods from the West. Production in East Germany largely collapsed and the situation was further exacerbated by strong wage increases.

After this economic shock, policy-makers set themselves the task of rapidly building a new self-sustaining economic base. In addition, they were under the pressure to fulfill the expectations of a population that had been promised “flourishing landscapes.” The following examines to what extent these objectives have been achieved.¹

Shrinking and Aging Population

Although monetary, economic, and social union was a cardinal error from an economic perspective, from a political point of view it was both inevitable and necessary, as demonstrated by the announcement that accompanied the calls for this union: “If the deutschmark won’t come to us, we’ll come to it.” Without the deutschmark, the exodus from the GDR after the border opened would probably have been even greater than it actually was.²

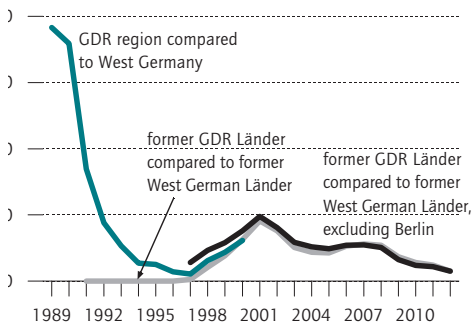
¹ The city of Berlin was assigned to East Germany where the available data allowed.

² A further incentive to leave West Germany was the high level of social security benefits.

Figure 1

Migration Losses from the GDR and Eastern Germany Compared to Western Germany

Emigrants less immigrants in 1,000s



Source: Federal Statistical Office; calculations by DIW Berlin.

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Migration losses in eastern Germany are now very low.

The economy would have thus been deprived of the potential labor force.

Migration-related population losses decreased significantly because people hoped that the economic and political unity, fully implemented in October 1990, would lead to strong economic recovery after a short period of transition. By the mid-'90s, net migration in terms of population exchange with the western Länder was only slightly negative (see Figure 1). Two further, smaller migration episodes then took place: one around the turn of the millennium and the second from 2005 to 2008. This was obviously due to pro-cyclical migration behavior, where people were leaving eastern Germany as a result of the general economic upturn in Germany as a whole and the good employment opportunities in the west.³

After reunification, a second serious demographic development occurred: a dramatic decline in births. According to official population statistics, annual births halved from 1990 to 1994—from a plentiful 200,000 to just under 100,000.⁴ This was partly because women were having their first child at a later age;⁵ in the GDR, people became parents at rather a young age because the birth

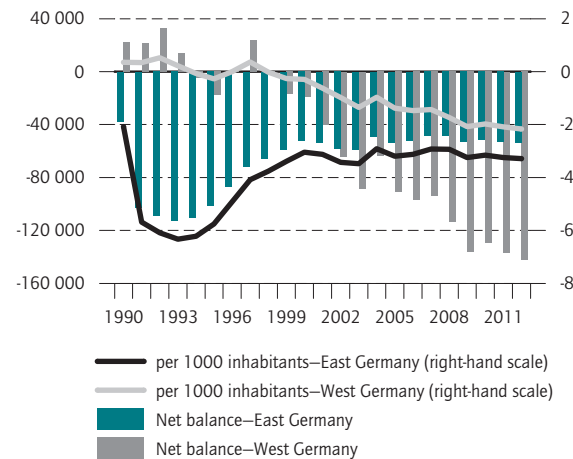
³ This does not include immigration and emigration to or from abroad. Net migration abroad was positive, even for East Germany, but the immigration gain in absolute terms was relatively low.

⁴ Excluding Berlin, the percentage decline was even higher at 56 percent, with the number of births in the eastern German Länder falling from 163,000 to 71,000.

⁵ O. Pötzsch, "Facetten der Geburtenentwicklung in Deutschland," *Wirtschaft und Statistik*, no. 6 (2005): 574 ff.

Figure 2

Balance of Live Births and Deaths



Source: Federal Statistical Office; calculations by DIW Berlin.

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The birth deficit per capita is still higher in eastern Germany than in western Germany.

Table 1

Average Life Expectancy of Newborns

In years

Mortality table	Former West Germany ¹		Former East Germany ²	
	Male	Female	Male	Female
1986/88	72.21	78.68	69.75	75.81
1991/93	73.11	79.48	69.86	77.18
2000/023	75.67	81.35	74.10	80.79
2009/113	77.97	82.77	76.64	82.58

¹ Until 1998/2000, including West Berlin.

² Until 1998/2000, including East Berlin.

³ Excluding Berlin.

Source: Federal Statistical Office.

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Life expectancy has risen faster in eastern Germany than in western Germany.

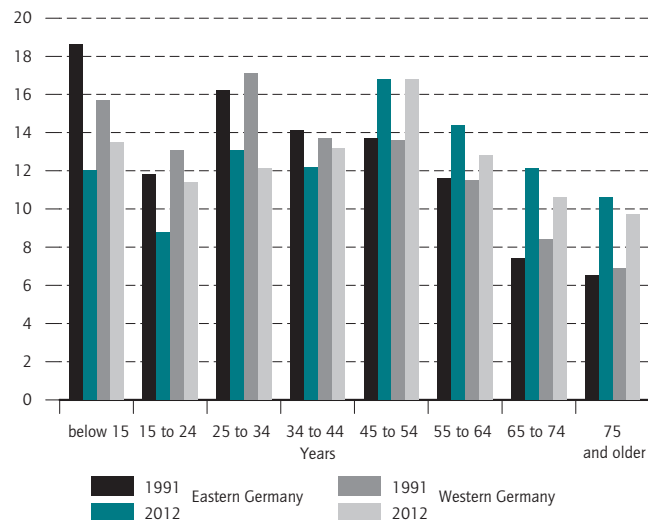
of their first child made them eligible for a number of benefits, such as the right to an apartment of their own. From the mid-1990s, the birth rate rose once again but remained well below previous levels. A total of 130,000 births were registered in 2000, since which time the figures have barely changed. This is far from sufficient for natural reproduction; in 2012, the number of children per woman aged 15 to 49 years was only 1.4; in the former West German Länder, the rate was just as low.⁶

⁶ Data from the German Federal Institute for Population Research, www.bib-demografie.de/DE/ZahlenundFakten/06/Figuren/a_06_08_zusgef_

Figure 3

Age Structure of Population in Eastern and Western Germany

Shares in percent



Source: Federal Statistical Office; calculations by DIW Berlin.

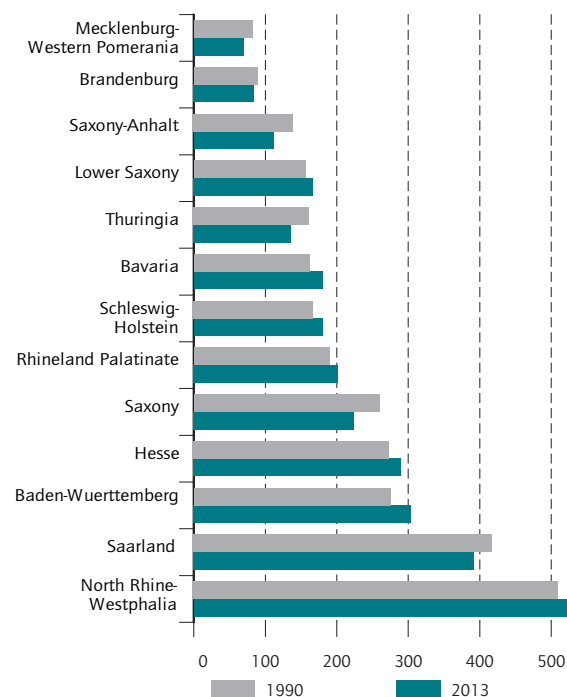
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The percentage of young people to total population has declined more in the east while the percentage of elderly has grown.

Figure 4

Population Density of Territorial States

Inhabitants per square kilometer



Source: Federal Statistical Office; calculations by DIW Berlin.

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The balance of live births and deaths since 2000 is minus 50,000. In 2013, this was more than three people per 1,000 inhabitants compared to more than two people in western Germany (see Figure 2).

The significant increase in life expectancy has had a stabilizing effect on population development in eastern Germany. This led to a substantial convergence with the higher and likewise increased life expectancy in western Germany. During the early 1990s, life expectancy for female newborns in the east was 2.3 years lower than in the west and is now almost as high (see Table 1). A difference of 1.3 years still exists for male newborns, but right after the fall of the Wall it was as much as 3.3 years.

As a result of the development of migrations and births, society in eastern Germany has aged much more than in western Germany in recent years. The younger generation age cohorts now account for a much smaller proportion of the population than in the west; in comparison, however, there are rather a lot of older people in eastern Germany (see Figure 3). In the early '90s, the opposite was the case.

The already low population density in eastern Germany has further declined. With the exception of Saxony, the eastern German non-city Länder are among the lowest populations per square kilometer (see Figure 4). In 2013, there were 265 inhabitants per square kilometer in the west, compared to 150 in the east (non-city Länder: west = 256, east = 118).⁷

With such serious differences in spatial structures, the hope for a rapid convergence of economic power, between east and west was probably unrealistic from the outset. In view of the persisting political objective of an east-west convergence of living standards, the comparison with western Germany may be justified. From an economic structural and historical perspective, however, this may be somewhat misleading. When Germany was divided, the West boasted strong economic centers with the corporate headquarters of many enterprises with cross-regional operations, while in the GDR the economy—a centrally planned economy with inefficient structures—had to be completely rebuilt. This fundamental economic difference between western and eastern Germany will remain for some time to come and will characterize relations between the two parts of the country in terms of economic power and productivity.

7 The more recent demographic development has reinforced east-west discrepancies that existed before the fall of the Wall. Before the GDR existed—in the German Empire and prior to that in the Prussian Kingdom—large parts of present-day eastern Germany belonged to “Ostelbien”—a synonym for, among other things, low population density and economic underdevelopment.

Economic Output: The Catch-Up Process Is Slow-Going

After a sharp fall during the period known as the *Wende* (German term signifying the process of change from a centrally planned economy to the revival of parliamentary democracy and a market economy in the German Democratic Republic in 1989 and 1990), overall economic output in eastern Germany initially started climbing from the mid-'90s, albeit at a significantly slower pace. Since then, real GDP growth has continued to lag behind increases in production in the former Western Länder (see Figure 5). From 1995 to 2013, inflation-adjusted economic output rose by an annual average of 0.9 percent; in western Germany, it was 1.4 percent.

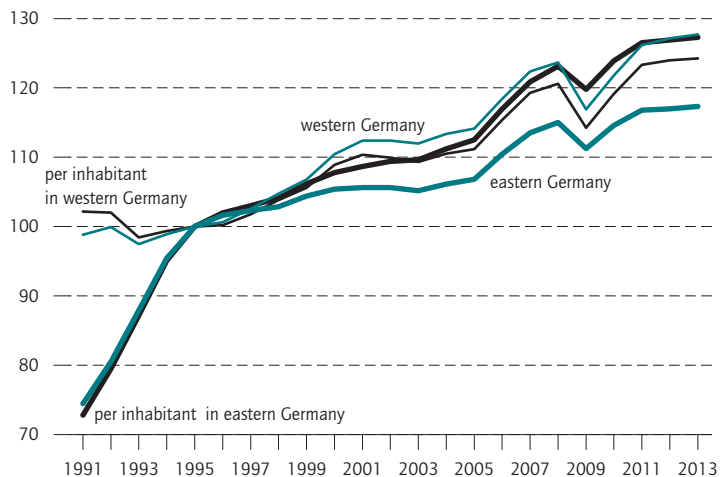
It should also be taken into account, however, that production opportunities are influenced by population growth. Taken by itself, a growing population will result in an increase in demand—for instance, for consumer-related goods that are not traded across the regions within the country, as well as for public services. With a shrinking population, the opposite is true. With regard to the development of wealth and prosperity, this means that a given production output in a region with a shrinking population must be considered differently to that in a region where the population is growing.

Expected per capita results for eastern Germany paint a somewhat more favorable picture: from 1995 to 2013, per capita economic output increased by 1.3 percent per year—in the former West German Länder, however, where the population increased as a result of immigration, it rose by 1.2 percent. From 2006, economic output per capita in the east (1.2 percent) barely rose more than in the west (1.1 percent). In 2013, the east achieved just 71 percent of the western value.

As a result of the adjustment shock caused by monetary union and the obligations resulting from social union, eastern Germany was dependent on massive funding that flowed through various channels: via the federal budget, from other Länder as part of financial compensation, indirectly via the European Union, from social security insurance, and in the form of private investment. The extent of the transfer can be outlined using the ratio of the value of goods consumed (sum of investments, as well as private and public consumption) on the one hand and goods produced on the other. From 1991 to 2011, the year up to which complete data are available, the value of goods consumed was consistently higher than the value of goods produced (see Figure 6). This difference has lessened over time, but, even in 2011, consumption exceeded production by eight percent. In absolute terms, this represents a good 30 bil-

Figure 5

Price-Adjusted GDP Index 1995 = 100



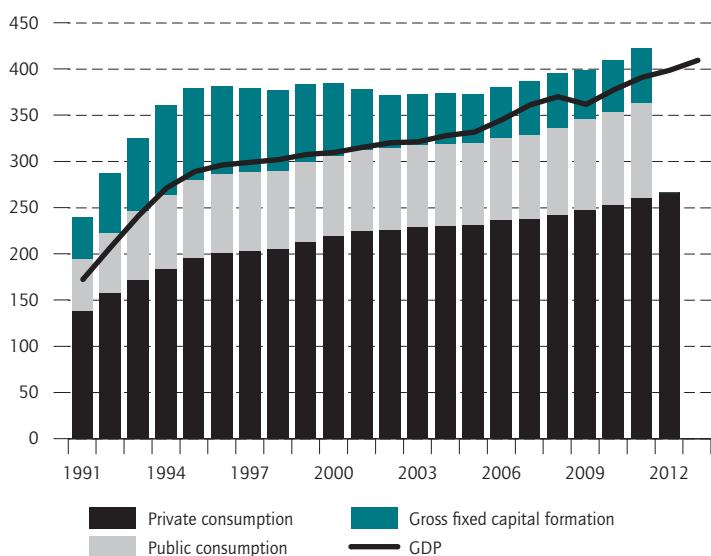
Source: Working Group on National Accounts of the Länder; calculations by DIW Berlin.

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Economic output has been growing more slowly in the east than in the west since the mid-1990s.

Figure 6

Goods Consumption and Production in Eastern Germany In billions of euros at current prices



Source: Working Group on National Accounts of the Länder; calculations by DIW Berlin.

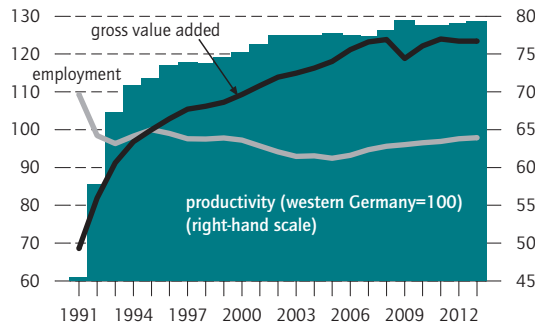
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Although the gap has narrowed, considerably more goods are consumed in the east than are produced.

Figure 7

Productivity and Employment in Eastern Germany

Index 1995 = 100



1 Productivity = real gross value added per worker.

Source: Working Group on National Accounts of the Länder; calculations by DIW Berlin.

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In terms of economic output per employed persons, eastern Germany has not been able to catch up with western Germany.

lion euros or approximately 1,900 euros per inhabitant. Since 2005, the current account deficit has barely fallen at all, meaning eastern Germany remains heavily dependent on transfers.

Significant Deficit in Productivity Persists

With a common currency, eastern Germany had no way of gradually bringing its productivity into line with the western German level.⁸ Rather, rapid and major productivity gains are required in order to just maintain one part of total production. In fact, economic output per worker rose by almost half from 1991 to 1995 (see Figure 7). However, this was accompanied by a sharp decline in employment. Productivity increased not least because many non-competitive production facilities were shut down. To cushion the transition process, particular focus was placed on instruments such as short-term work—even complete stoppages—and job creation measures, especially in the period immediately after the Wende.

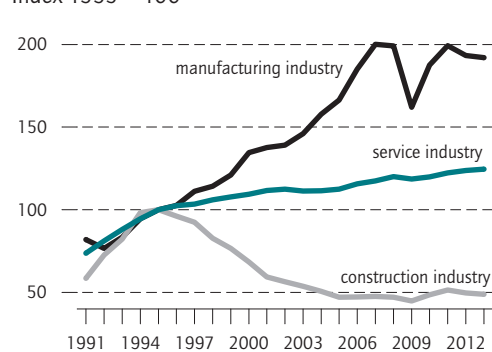
After a temporary slight recovery in 1994 and 1995, employment in eastern Germany fell steadily for ten years. Economic output per worker increased at a faster rate than in western Germany, causing the productivity gap to decrease. This process of catch-up has since

⁸ The estimated productivity level for eastern Germany compared to western Germany ranges from 14 to 35 percent. O. Schwarzer, *Sozialistische Zentralplanwirtschaft in der SBZ/DDR*, (Stuttgart, 1999): 167.

Figure 8

Gross Value Added (GVA)¹ in Selected Areas of the Eastern German Economy

Index 1995 = 100



1 Price-adjusted.

Source: Working Group on National Accounts of the Länder; calculations by DIW Berlin.

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Industry has expanded rapidly in eastern Germany.

relaxed somewhat. Since 2005, employment in eastern Germany has been on the rise once again, and productivity is tending to grow only slightly stronger than in western Germany.

Calculated per employee, eastern Germany achieved 79 percent of western German productivity levels in 2013. As people work longer hours on average in the west than in the east, the gap in hourly productivity is even greater; in relation to the west, the figure for eastern Germany in 2013 was 74 percent.

Very Different Developments in Individual Economic Sectors

Construction

In eastern Germany, after a short transitional period, construction experienced enormous growth in production coupled with major personnel increases (see Figure 8). This was mainly due to a strong increase in demand from the public sector and state-owned enterprises aiming to eliminate major shortcomings in the eastern German infrastructure. A further contributory factor was numerous private investors, many of whom expected that eastern Germany would quickly catch up with the west in terms of economic power. Accordingly, a lot of money went into constructing commercial premises and apartments, and the building boom was

given an addition boost by government concessions (for example, for depreciation).

When it became increasingly clear in the mid-'90s that expectations concerning the development of eastern Germany were unreasonably high, construction output slumped. This downward trend could not be stopped until 2010. During the building boom, the construction industry made a significant contribution to the temporary increase in employment in eastern Germany. At its peak, the number of workers in the eastern German construction industry topped 1.2 million. Today, by comparison, there are only half as many.

Service Sector

The service sector also expanded substantially immediately after the Wende. From the mid-'90s, growth slowed but continued more or less steadily. Given the limited supply of consumer-related goods and services in the GDR, this development was foreseeable. Although numerous state-organized services were abandoned after the Wende, new ones replaced them and employment losses in this area were limited. Many production-oriented services, such as transportation, logistics, security, or research and development were no longer provided by the manufacturing enterprises themselves, but—following the example of the west—were outsourced to service enterprises. In addition, there were growth opportunities in services that were either unknown in the GDR or did not exist to the same extent as in the west, for example, advertising or financial services.

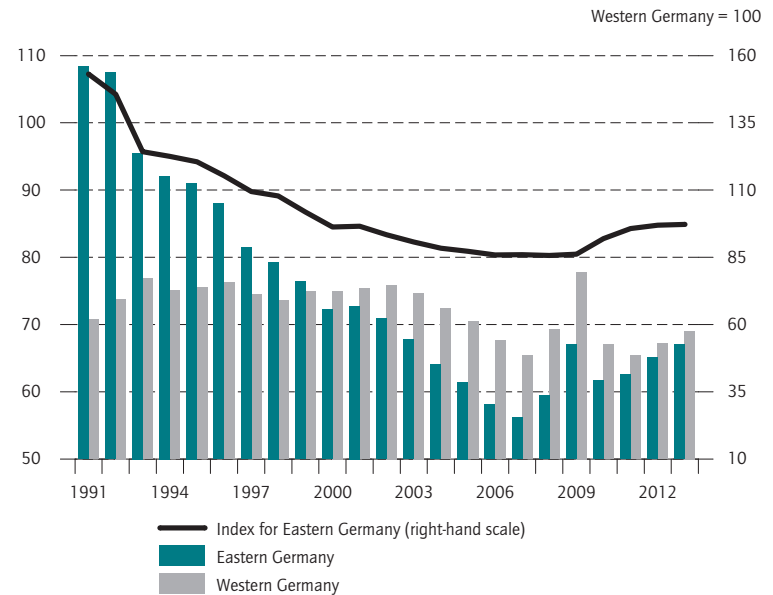
Eastern Germany saw exceptionally strong growth in the tourism sector, with the number of overnight stays in the accommodation sector increasing by 125 percent from 1995 to 2012, almost four times as much as in western Germany.⁹ However, the decline in population had a dampening effect on services oriented toward demand from the local population. For example, if the younger generation age cohorts are on the decline, then fewer education opportunities are needed to meet the demand. The effect of shrinking population on trade and other budget-related services was reflected in decreasing consumer demand.

In the course of general tertiarization, employment in the east continued to grow. The number of workers in the eastern German service sector rose from five million in 1991 to 5.7 million in 2013. The number of self-employed almost doubled to 670,000, and the self-employ-

⁹ Berlin recorded the strongest growth at 240 percent and Mecklenburg-Western Pomerania had a growth rate of 160 percent.

Figure 9

Unit Labor Costs¹ in the Manufacturing Industries of Western and Eastern Germany



¹ Remuneration per employee in relation to GVA per worker.

Source: Working Group on National Accounts of the Länder; calculations by DIW Berlin.

© DIW Berlin

Unit labor costs are slightly lower in eastern Germany than in the west.

ment rate in the east, now at 11.7 percent, is somewhat higher than in the west (10.9 percent).

Manufacturing Industry

Monetary union put pressure predominantly on those sectors manufacturing interregionally tradable goods—particularly the manufacturing industry. In the summer of 1990, industrial production fell by half and would have collapsed entirely had it not been supported by state exports to the Soviet Union, traditionally its most important trade partner, providing the conglomerates with massive liquidity aid.¹⁰ Businesses under the umbrella of the Treuhandanstalt (THA)¹¹ had to be privatized as soon as possible, which frequently required them being divided up into viable units. Although many companies were operating at very low production levels only, they

¹⁰ For a more detailed description of the development in this transitional period, see K. Brenke, "Die Jahre 1989 und 1990. Das wirtschaftliche Desaster der DDR – schleichender Niedergang und Schocktherapie," Vierteljahrshefte zur Wirtschaftsforschung, no. 2 (2009).

¹¹ The Treuhandanstalt was the trust corporation in Berlin responsible for privatizing state-owned East German enterprises.

Table 2

Importance of Manufacturing in European Union Countries

	Per capita GVA in the manufacturing industry in euros at current prices			Proportion of manufacturing to total GVA in percent		
	1991	2002	2013	1991	2002	2013
Ireland	–	8,664	7,491	–	29.1	23.3
Germany	4,431	5,011	6,528	26.6	21.5	21.8
Western Germany	5,608	5,699	7,294	28.1	22.8	23.0
Eastern Germany	1,291	2,362	3,397	14.8	14.0	15.1
Austria	3,381	4,799	6,124	21.1	19.4	18.3
Sweden	3,900	5,201	5,728	18.7	19.8	14.8
Finland	3,325	5,867	4,560	18.9	24.3	14.9
Denmark	3,022	4,449	4,556	16.2	15.1	11.9
Netherlands	2,553	3,447	4,112	17.0	13.4	12.8
Euro area	–	3,735	4,045	–	18.1	15.7
Belgium	–	4,116	3,814	–	17.7	12.5
Italy	3,342	3,924	3,628	21.6	19.1	15.5
EU as a whole	–	3,180	3,477	–	17.4	15.1
Czech Republic	–	1,834	3,183	–	24.6	25.1
France	2,680	3,166	2,861	17.3	14.0	10.2
Spain	–	2,699	2,678	–	16.7	13.4
Slovakia	–	952	2,657	–	21.8	21.9
UK	2,545	3,585	2,577	18.9	13.9	9.8
Portugal	–	1,913	1,939	–	16.2	14.0
Hungary	–	1,279	1,877	–	21.3	22.6
Poland	–	751	1,586	–	15.5	17.7
Greece	–	1,228	1,419	–	9.7	9.8

Source: Eurostat; Working Group on National Accounts of the Länder; calculations by DIW Berlin.

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Industrial production in eastern Germany has now reached the EU average.

held on to part of the workforce because very often it was the skilled personnel potential that constituted the actual essence of a business—and not the equipment and machinery, which in most cases was used and worn or did not meet the standards of the day. Sometimes companies actually had to be given away or privatized by accepting a negative purchase price. Substantial subsidies were granted, in particular investment assistance, to stimulate industrial reconstruction. This assistance still exists today in a modified form.

Industrial production reached its lowest point in 1992; it then rose sharply. Development was greatly supported by a departure from the initial wage policy aimed at the fastest possible convergence of wages to western German levels. At the beginning of the restructuring period, unit labor costs exceeded 100, i.e., labor costs were higher than total economic output (see Figure 9). This was partly because personnel had been retained. Unit labor costs then fell significantly, not least because of moderate wage increases; from the turn of the millennium, they were even lower than the level for the manufacturing sector in western Germany.

This did not necessarily mean that industry in eastern Germany would now be more price competitive than in western Germany. Unit labor costs indicate the wage proportion of added value only. However, the breakdown of costs may vary according to the type of production. The high level of investment subsidization provided a greater incentive to invest in eastern Germany, especially in capital-intensive production, meaning asset depreciation carried more weight as a cost factor.

Given the industry's downturn at the beginning of the 1990s, a de-industrialization of eastern Germany was widely feared. From today's perspective, this assessment was not justified. In fact, the collapse of the industrial base in the GDR was followed by a period of re-industrialization. Similar developments also occurred in other countries in the former Eastern bloc; the opposite—creeping de-industrialization—has been observed in many western countries. The share of industry to total gross value added (GVA) in eastern Germany is indeed far behind that of western Germany, but it has now reached the European Union average (see Table 2). The gap with Italy, for example, is only small, and that with Spain, France, and the United Kingdom, where de-industrialization did indeed take place, has clearly been closed now.

Poor Occupational Structure

One possible explanation for the still relatively low productivity of the eastern German economy could be a specific sectoral structure in which economic sectors with generally low productivity carry greater weight, while industries with generally high productivity are under-represented. In fact, in eastern Germany, some sectors with below-average production, such as hospitality, construction, or the agricultural sector, have higher shares in total added value than in the west and sectors with above-average production, such as financial services, manufacturing, or some freelance and scientific services, carry less weight (see Tables 3 and 4). The picture that emerges, however, is not clear-cut. In eastern Germany, there are comparatively few simple services, such as trade or household services, and the economic structure is characterized, to a greater extent than in the west, by mining and energy—sectors with relatively high productivity.

How the sectoral structure influences overall economic productivity can be estimated using a model calculation. Data for 2011 were used because information for later years is not sufficiently subdivided by sector. Assuming that the labor force in eastern Germany with unchanged productivity was just as well distributed ac-

Table 3

Sectoral Structure of Gross Value Added

In percent

	Eastern Germany			Western Germany		
	1991	2011	2013	1991	2011	2013
Agriculture, forestry, and fishing	1.9	1.2	1.3	1.1	0.7	0.7
Manufacturing industry	30.8	26.8	26.1	37.0	31.4	30.9
Processing industry	14.8	16.2	15.1	28.1	23.8	23.0
Construction	9.9	6.2	6.2	5.6	4.4	4.5
Energy, water, mining	6.1	4.5	4.9	3.3	3.1	3.5
Trade, transportation, accommodation, and ICT	20.6	17.2	17.3	19.9	18.8	18.6
Wholesale and retail trade; Repair of motor vehicles and motorcycles	-	7.3	-	-	9.3	-
Transportation and storage	-	4.1	-	-	3.8	-
Accommodation	-	2.0	-	-	1.6	-
Information and communication technologies	-	3.9	-	-	4.1	-
Financial and corporate activities; Real estate activities	16.4	25.2	25.5	23.2	27.7	28.0
Financial and insurance activities	-	2.6	-	-	4.6	-
Real estate activities	-	12.3	-	-	12.1	-
Professional, scientific, and technical activities	-	4.9	-	-	6.1	-
Administrative and support service activities	-	5.3	-	-	4.9	-
Public services, education, health, other activities	30.3	29.6	29.8	18.8	21.3	21.7
Public administration and defense; compulsory social security	-	9.2	-	-	5.6	-
Education	-	5.9	-	-	4.3	-
Human health and social work activities	-	9.3	-	-	7.1	-
Arts, entertainment and recreation	-	1.8	-	-	1.4	-
Other service activities (unless mentioned elsewhere)	-	3.3	-	-	2.7	-
Households with domestic help	-	0.1	-	-	0.3	-
Total	100	100	100	100	100	100

Sources: Working Group on National Accounts of the Länder; calculations by DIW Berlin.

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The proportion of public services in eastern Germany is higher than in the west.

cording to industry sector as in western Germany (see Model 1), GVA for the whole economy of eastern Germany would be two percent lower (see Figure 10). The low total productivity can therefore not be attributed to the structure of the sectors; otherwise, according to the model calculations, total GVA would in fact be higher.

Another explanation might be that productivity within each sector is lower than in the west, affecting the overall result accordingly. In fact, most industry sectors in the east have a lower per capita output than in the west. The largest deficits are found in financial services, production-related services, and the manufacturing sector.¹² There are only a few exceptions: in the public sector, productivity is as high as in the west,¹³ and in the agriculture, mining, and energy sectors, which are more strongly characterized by large-scale production, productivity is higher in the east. It is assumed that if

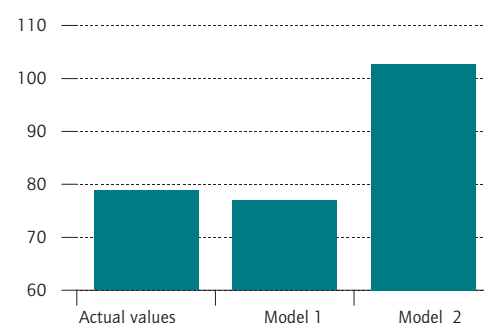
¹² One special case is *rental housing services* because here output is determined essentially on the basis of rents earned. The comparatively low productivity in this sector is due to the low rents in eastern Germany.

¹³ This is the mirror image of wage adjustment in the public sector; here again, GVA is determined largely on the basis of workers' salaries.

Figure 10

GVA Per Employed Persons in Eastern Germany in 2011

Index for western Germany = 100



Model 1: For a given productivity in the individual sectors, eastern Germany has the same sector structure as western Germany.

Model 2: For a given sectoral structure, eastern Germany has the same productivity in the individual sectors as western Germany.

Source: Working Group on National Accounts of the Länder; calculations by DIW Berlin.

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The productivity gap between western and eastern Germany is not due to the industry structure.

Table 4

GVA Per Employed Persons by Sector

In 1,000s of euros

	1991			2011			2013		
	Western Germany	Eastern Germany	Western Germany = 100	Western Germany	Eastern Germany	Western Germany = 100	Western Germany	Eastern Germany	Western Germany = 100
Agriculture, forestry, and fishing	16.8	9.0	53.4	26.5	31.2	117.8	28.8	36.0	125.1
Manufacturing industry	42.2	15.5	36.8	73.8	55.2	74.8	74.8	55.9	74.7
Manufacturing	42.7	11.9	28.0	76.9	56.1	72.9	76.5	54.1	70.7
Construction	33.2	18.2	54.8	47.2	38.0	80.4	48.8	39.7	81.3
Energy, water, mining	66.0	30.7	46.5	141.7	128.4	90.6	165.7	147.8	89.2
Mining and quarrying	-	-	-	72.3	92.7	128.2	-	-	-
Electricity, gas, steam, and air conditioning supply	-	-	-	179.1	191.0	106.6	-	-	-
Water supply; sewerage and waste management activities	-	-	-	119.8	97.1	81.0	-	-	-
Trade, transportation, accommodation, and ICT	31.6	16.9	53.4	42.1	32.8	77.9	43.2	34.1	79.0
Wholesale and retail trade; Repair of motor vehicles and motorcycles	-	-	-	38.0	27.4	72.0	-	-	-
Transportation and storage	-	-	-	46.2	38.7	83.7	-	-	-
Accommodation	-	-	-	23.5	20.2	85.8	-	-	-
Information and communication technologies	-	-	-	79.8	69.0	86.5	-	-	-
Financial and corporate activities; Real estate activities	89.9	35.1	39.1	96.4	67.5	70.1	99.4	70.5	70.9
Financial and insurance activities	-	-	-	87.5	62.4	71.3	-	-	-
Real estate activities	-	-	-	712.7	394.3	55.3	-	-	-
Professional, scientific, and technical activities	-	-	-	58.7	41.4	70.5	-	-	-
Administrative and support service activities	-	-	-	42.9	29.4	68.4	-	-	-
Public services, education, health, other activities	30.6	20.2	65.8	42.1	40.7	96.6	44.3	42.7	96.3
Public administration and defense; compulsory social security	-	-	-	54.4	54.3	99.9	-	-	-
Education	-	-	-	42.4	39.9	94.0	-	-	-
Human health and social work activities	-	-	-	39.9	36.8	92.4	-	-	-
Arts, entertainment and recreation	-	-	-	56.4	37.3	66.2	-	-	-
Other service activities (unless mentioned elsewhere)	-	-	-	45.0	37.3	83.1	-	-	-
Households with domestic help	-	-	-	8.3	6.6	80.1	-	-	-
Total	40.9	18.6	45.4	59.0	46.5	78.8	60.9	48.3	79.3

Source: Working Group on National Accounts of the Länder; calculations by DIW Berlin.

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Eastern Germany's productivity gap is most pronounced in financial and corporate services.

Table 5

Employment Structure for Employees in Western and Eastern Germany in 2013

In percent

	Western Germany ¹	Eastern Germany
Management Executives	10.9	8.8
Highly skilled workers without management skills	23.7	19.9
Workers with intermediate skills	41.6	49.3
Semi-skilled workers	15.3	15.9
Unskilled activities	8.5	6.1
Total	100	100

¹ Including Berlin.

Source: Federal Statistical Office.

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Management executives are strongly underrepresented in the east.

workforce distribution across the individual industry sectors of the east were to remain unchanged in each branch, the same productivity would be achieved as in the former West German Länder (see Model 2), overall productivity in eastern Germany would be 30 percent higher than it actually was in 2011. It would even have exceeded the level of western Germany by three percent. Thus, the overall lower per capita output results from the fact that eastern German production lags behind the west within the individual sectors.

One possible reason for this is that in the east simpler activities are provided in the individual sectors than in the west, a fact that should be seen in the job structure. There may be no relevant data for all the working population, but such data do exist for employees.¹⁴ There are approximately five output groups ranging from manage-

¹⁴ These data are from the official survey of workers' salaries in firms with ten or more employees in almost all industry sectors except agriculture and private

Table 6

Activity Structure by Industry Sector in 2013

	Index ¹ of occupation structure			Proportion of management executives and highly skilled workers to total workforce in percent	
	Western Germany	Eastern Germany	East-west difference	Western Germany	Eastern Germany
Coal mining	168.4	193.8	25.4	37.0	43.0
Mining and quarrying, other mining	158.7	162.4	3.7	25.0	31.0
Support services for mining	175.7	155.3	-20.3	39.0	19.0
Manufacture of food products	151.1	146.2	-4.9	18.0	13.0
Manufacture of beverages	156.9	156.6	-0.3	23.0	21.0
Manufacture of tobacco products	166.0	138.7	-27.4	33.0	18.0
Manufacture of textiles	156.6	156.3	-0.3	23.0	19.0
Manufacture of wearing apparel	159.8	150.3	-9.4	25.0	14.0
Manufacture of leather, leather products and footwear	173.6	136.3	-37.3	34.0	13.0
Manufacture of wood and of products of wood and cork, except furniture;	155.6	150.6	-4.9	22.0	17.0
Manufacture of pulp, paper, and paper products	160.7	152.6	-8.1	29.0	19.0
Publishing, printing, and reproduction	171.1	160.7	-10.3	33.0	23.0
Manufacture of coke and refined petroleum products	191.2	180.2	-11.0	44.0	38.0
Manufacture of chemicals and chemical products	183.9	160.2	-23.7	37.0	25.0
Manufacture of pharmaceutical products	192.0	174.4	-17.6	42.0	29.0
Manufacture of rubber and plastic products	152.2	147.5	-4.7	22.0	17.0
Manufacture of glass and glass products, ceramic	163.2	161.0	-2.2	27.0	25.0
Metal production and processing	164.2	158.3	-5.9	30.0	22.0
Manufacture of fabricated metal products	160.0	153.3	-6.7	25.0	17.0
Manufacture of computer equipment, electronic and optical products.	192.4	169.5	-22.9	47.0	35.0
Manufacture of electrical equipment	180.1	158.5	-21.6	40.0	23.0
Mechanical engineering	178.4	159.7	-18.7	38.0	22.0
Manufacture of motor vehicles and motor vehicle parts	171.0	154.8	-16.3	33.0	22.0
Other vehicle manufacture	204.8	194.2	-10.6	52.0	39.0
Manufacture of furniture	155.2	149.9	-5.3	22.0	15.0
Manufacture of other products	162.5	153.5	-9.0	27.0	18.0
Repair and installation of machinery and equipment	190.0	170.3	-19.7	44.0	31.0
Electricity, gas, steam, and air conditioning supply	193.2	198.0	4.8	55.0	57.0
Water supply	184.3	166.5	-17.7	50.0	29.0
Waste water treatment	173.2	171.8	-1.4	34.0	31.0
Collection, treatment, and disposal of waste	145.9	149.4	3.5	16.0	15.0
Remediation activities	156.9	153.6	-3.3	22.0	18.0
Construction of buildings	171.1	164.0	-7.0	31.0	24.0
Civil engineering	161.8	160.6	-1.1	28.0	24.0
Specialized construction activities	162.8	160.6	-2.2	24.0	23.0
Trade, maintenance, and repair of motor vehicles	166.6	161.1	-5.5	28.0	22.0
Wholesale trade	173.0	162.0	-11.0	34.0	25.0
Retail trade	164.3	161.1	-3.2	26.0	23.0
Land transport and transport via pipelines	144.8	150.1	5.3	13.0	15.0
Shipping	191.9	208.1	16.2	43.0	58.0
Aviation	199.2	199.1	-0.1	44.0	54.0
Warehousing, other transport services	155.4	147.3	-8.0	22.0	16.0
Postal and courier services	147.4	146.9	-0.4	12.0	11.0
Accommodation	160.4	165.4	5.0	23.0	24.0
Catering trade	145.8	153.4	7.6	17.0	15.0
Publishing	187.4	180.5	-6.9	50.0	44.0
Film and audio industry	177.7	169.8	-7.8	38.0	30.0
Broadcasting	215.6	219.0	3.4	63.0	65.0
Telecommunications	193.6	188.2	-5.4	56.0	54.0
Provision of information technology services	201.0	193.4	-7.6	59.0	55.0
Information services	192.6	151.8	-40.8	51.0	17.0
Financial services	198.8	184.5	-14.3	65.0	48.0
Insurance companies, pension funds	192.6	176.8	-15.7	58.0	46.0
Activities auxiliary to financial service activities	195.0	185.0	-9.9	57.0	52.0
Real estate activities	183.4	174.4	-9.0	41.0	31.0
Legal and accounting activities	180.9	175.0	-5.8	39.0	32.0
Activities of head offices; management consultancy activities	204.8	177.5	-27.3	59.0	36.0
Architectural and engineering activities; laboratories	202.1	196.2	-5.9	57.0	58.0
Research and development	229.7	228.1	-1.6	70.0	67.0
Advertising and market research	178.8	169.8	-9.0	38.0	32.0
Other professional, scientific, and technical activities	184.3	179.9	-4.4	44.0	46.0
Veterinary services	193.7	191.8	-1.9	39.0	36.0

Table 6 continued

Tätigkeitsstruktur nach Wirtschaftszweigen 2013

	Index ¹ of occupation structure			Proportion of management executives and highly skilled workers to total workforce in percent	
	Western Germany	Eastern Germany	East-west difference	Western Germany	Eastern Germany
Rental and leasing activities	168.1	165.0	-3.2	31.0	25.0
Labor recruitment and provision of personnel	129.4	129.6	0.3	9.0	6.0
Travel agencies, tour operators etc.	171.1	162.2	-8.8	30.0	19.0
Security services and investigation	125.1	124.7	-0.5	4.0	3.0
Services to buildings and landscape	144.8	147.3	2.5	19.0	18.0
Administrative and support service activities	158.5	144.4	-14.1	25.0	16.0
Public administration	187.5	185.9	-1.6	52.0	52.0
Provision of services to the community as a whole	171.1	160.9	-10.2	35.0	25.0
Compulsory social security	192.2	183.2	-9.0	62.0	53.0
Pre-primary education	153.6	151.1	-2.5	21.0	18.0
Secondary education	248.7	248.7	-0.0	92.0	92.0
Tertiary and post-secondary non-tertiary education	261.9	261.1	-0.7	78.0	78.0
Human health activities	186.6	183.5	-3.1	39.0	36.0
Residential care activities	163.7	171.7	8.0	31.0	34.0
Social work activities without accommodation	174.1	176.4	2.4	38.0	37.0
Creative, arts, and entertainment activities	180.6	187.0	6.4	46.0	55.0
Libraries, archives, museums, and other cultural activities	181.8	180.0	-1.8	40.0	40.0
Gambling and betting activities	140.6	143.6	2.9	18.0	20.0
Sports, amusement, and recreation activities	171.1	176.7	5.6	31.0	34.0
Activities of membership organizations	196.1	182.2	-13.9	51.0	43.0
Repair of personal and household goods	162.2	158.2	-4.0	27.0	24.0
Other personal service activities	152.7	153.2	0.5	20.0	19.0

¹ For a definition of the index, see footnote 15 in the main text.

Sources: Federal Statistical Office; calculations by DIW Berlin.

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ment executives to workers that require no training for their occupations.¹⁵ Taking all economic sectors together, the share of management executives and workers with highly skilled occupations is much lower in eastern Germany than in the west. Instead, the occupational structure indicates more workers with intermediate qualifications (see Table 5). In contrast, very simple jobs can be found somewhat more frequently in western Germany.

More detailed sectoral information exists only for full-time employees likely to dominate the occupational structure. For a more simplistic representation, a code was assigned to the qualification structure: the higher the value on a scale from 100 to 325, the more demanding the occupation on average in the respective sector.¹⁶

households. See Federal Statistical Office, "Verdienste und Arbeitskosten. Arbeitnehmerverdienste," Fachserie 16 (2.3).

¹⁵ The training requirements for employees in the individual output groups are likely to vary considerably between sectors; this is especially true for specialist employees, particularly management executives.

¹⁶ The benchmark for the code is the average hourly wage in the individual output groups of all sectors in Germany. Employees with the lowest requirements were assigned a value of 1 and employees in the other output groups were given a value corresponding to a multiple of the hourly wage of the employees with the lowest requirements. Since management executives in

In most sectors, the index for eastern Germany is lower than in western Germany (see Table 6). In manufacturing, the occupation structure in the east is less favorable in all sectors, and this applies to the great majority of branches within the service sector. Notable exceptions include coal mining and energy; these industries have been more productive in the east than in the west. In addition, some areas of social services and the hospitality industry have a relatively favorable occupational structure in the east.

One reason for the still significant difference in productivity between western and eastern Germany might also be the different sizes of the enterprises. Larger operational units can achieve productivity benefits since they produce larger quantities and are therefore able to reduce unit costs. This can be illustrated with reference to the manufacturing sector. The larger the enterprise,

the general economy earn, for example, an average of 3.25 times the income of an employee with a simple occupation, they would be given a value of 3.25. The respective employee percentage was then multiplied by these values according to the individual output groups in each sector—separated into eastern Germany and western Germany. If, for example, one sector contained management executives only, the occupational structure would have the value $3.25 \times 100 = 325$.

the higher the GVA per worker—that applies to Germany in general (see Table 7). Eastern Germany has a far larger share of workers in smaller enterprises than in the west.¹⁷ In the overall economy, the enterprise size structure in the east is characterized by its relatively large number of small operating units.¹⁸ There may be a close link between this small-scale industry structure and the relatively low proportion of higher-level occupations in the eastern German economy: very few major companies have headquarter functions there.

Another aspect ought to be considered in regional comparisons of economic strength and productivity. All measurements of economic performance and productivity factor in prices. In regional terms, prices not only reflect the economic strength of an area but also its respective purchasing power. This applies in particular to goods that cannot be traded across regions. If, for example, an eastern German hairdresser—e.g., in the Uckermark—can only charge half as much as a western German hairdresser—e.g., in the Munich area—for the same haircut, objectively speaking, the eastern German hairdresser is considered only half as productive as her/his counterpart in the west. This self-reinforcing effect consequently influences economic power estimations: low economic power means weak purchasing power and therefore low prices—and, according to statistical evidence, comparatively weak per capita economic output.

Moreover, larger and long-standing businesses can command relatively low purchasing prices and charge relatively high selling prices due to their strong market positions. Such companies are still rare in eastern Germany—accordingly, they are often at a disadvantage when compared to western German companies.¹⁹

Income Gap Remains Unchanged

Directly after the Wende, per capita incomes in eastern Germany rose very quickly—by about 50 percent from 1991 to 1995 (see Figure 11). What should be taken into account, however, is that price rises in the east were also very strong at that time: consumer prices rose by a third—not least because of the removal of subsidies, for example, for housing rents. After this first phase of improvement in income, it then developed more slowly

Table 7

Enterprise Size Structure in the Manufacturing Sector

	Workforce in enterprises in September 2013 in percent		GVA per worker in companies
	In Germany in 2012 in euros	Westdeutschland	
	Eastern Germany	Western Germany	
1 to 49	17.0	9.9	478,5101
50 to 99	17.1	11.2	53,435
100 to 248	27.1	19.5	59,698
250 to 499	17.2	15.8	71,005
500 or more	21.7	43.6	105,729
Total	100	100	81,816

1 Only for companies with 20 to 50 employees.

Source: Federal Statistical Office; calculations by DIW Berlin.

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Large firms are more productive than small ones on average, and in the east there are many small businesses compared to the west.

ly and the gap between income in eastern and western Germany remained virtually unchanged.

Unlike in western Germany, disposable income in the east, i.e., remaining household income for consumption and saving, is almost as high as gross income earned in the economic process (primary income), i.e., the sum of employee remuneration and mixed and unearned income before taxes and social security contributions. This is due to the differences in the composition of income. In the east, social security benefits account for a larger share of disposable household income than in the west, although this share has decreased in the past ten years (see Figure 12). On the other hand, eastern German households pay less in taxes and social security contributions because the gross income they earn from the market is far lower than that of western German households (see Table 8). The gap in unearned income between western and eastern Germany is especially large. Total disposable income per inhabitant in eastern Germany is 83 percent of the western German level. This ratio has not changed at all since the late 1990s.

Fewer Regional Differences in East than West

Household incomes are not a precise mirror image of the economic power of the regions in which the households are located. This applies to disposable income due to the compensatory effects of social security benefits. But it also affects primary income because in some cases this is

¹⁷ Using enterprises to compare economic output and businesses (local units) to compare workforce size categories could lead to inaccuracies. Enterprises may include several locally distributed businesses. Essentially, the comparison should certainly not be distorted.

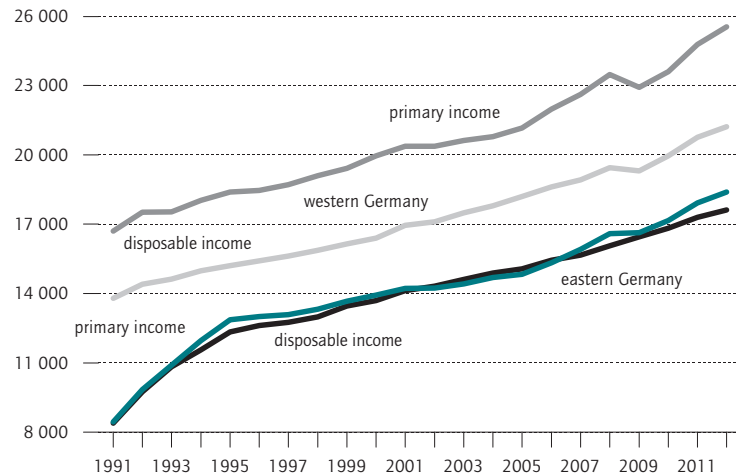
¹⁸ K. Brenke, "20 ans après Unité," in: Isabelle Bourgeois, eds., *Allemagne, les chemins de l'unité* (Cergy-Pontoise, 2011): 112.

¹⁹ See G. Müller, "Schmalere Produktionslücke bei Beachtung von Preiseffekten," *Wirtschaft im Wandel*, no. 5 (1998).

Figure 11

Primary Income and Disposable Income Per Capita in Western and Eastern Germany

In euros



Source: Working Group on National Accounts of the Länder; calculations by DIW Berlin.

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Disposable incomes in eastern Germany are higher than gross incomes earned in the economic process.

earned in other regions. This is of particular importance in eastern Germany since many of its residents who are gainfully employed work in the west. There are statistical data on those commuting to the west from employees' social insurance contributions according to which, in mid-2013, almost seven percent of workers who lived in eastern Germany had a paid occupation in the west (see Table 9). In Thuringia and Mecklenburg-Western Pomerania, the proportion of commuters is well above the average. Commuter flows from west to east, however, are much lower.

In regional terms, income and economic performance are more evenly distributed within eastern Germany than in western Germany (see Table 10). This is true regardless of whether one considers districts, labor market regions, spatial planning regions, or entire states (Länder).²⁰ Very few regional inequalities in disposable income exist in eastern Germany due to the large proportion of social transfers. Even within western Germa-

²⁰ The Hoover inequality coefficient was used to measure the inequality. It shows what percentage of the total sum (e.g., income) would have to be redistributed within a population for each element of the population (e.g., regions) to receive exactly the same proportional share of the total sum (e.g., calculated per capita). The Hoover inequality coefficient can assume values between 0 and 50; the higher the figure, the greater the inequality.

ny, these transfers have a regional balancing effect, albeit much smaller than in the east.

Lower Wages Than in the West Even for Similar Occupations

In the GDR, wages increased sharply even before monetary union.²¹ Shortly thereafter, further increases were successfully negotiated, the objective being to bring union wages into line with western German levels in just a few years. But that did not happen—mainly because more and more companies were turning away from employers' associations, thus circumventing collective wage determination based on bargaining agreements.²² Nevertheless, wages rose steeply in the first half of the '90s (see Figure 13), after which the convergence to western German wage levels slowed. The average per capita wage in eastern Germany is now 83 percent of the average wage in western Germany. In the case of hourly wages, the convergence is less pronounced at 77 percent; on average individuals work longer in eastern Germany than in the west mainly due to the comparatively

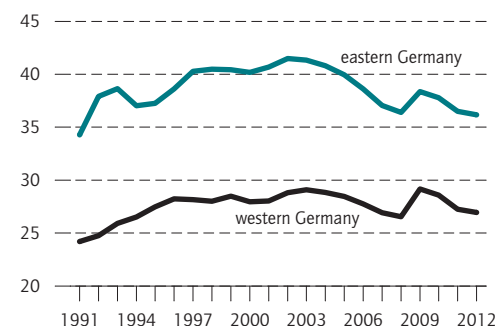
²¹ Brenke, "Die Jahre 1989 und 1990," 24 ff.

²² See DIW, IAB, IfW, IWH, and ZEW, "Fortschrittsbericht wirtschaftswissenschaftlicher Institute über die wirtschaftliche Entwicklung in Ostdeutschland," Sonderheft des IWH no. 3 (2002): 186 ff.

Figure 12

Percentage of Social Security Benefits to Disposable Household Income in Western and Eastern Germany

In percent



Source: Working Group on National Accounts of the Länder; calculations by DIW Berlin.

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Households in the east receive social transfers to a greater extent than those in the west.

low proportion of part-time employment and what are known as mini-jobs (salary up to 450 euros per month).

To some extent, the wage gap is also due to differences in the occupational structures between east and west. If the occupational structure were the same as in the west, the difference in gross hourly pay would only be approximately three percentage points lower (see Table 11).²³ More important than the structural effect is the fact that all employees across all occupation groups working in the east are paid less than their counterparts in the west. In more demanding occupations, the pay gap is even greater than it is for simpler jobs.

Situation In Labor Market Improved

Due to the sharp decline in production after the introduction of monetary union, the number of unemployed in eastern Germany grew rapidly—by half a million to 640,000 from June 1990 until the end of that year. This increase would have been much greater if many employed workers had not been forced into retirement or into working on short time. The following year, the number of unemployed topped the one million mark; by the end of 1991 even more (1.4 million) were put in training and job creation schemes which were installed quickly to counteract the rise in unemployment.

²³ Calculated using data from official statistics on earnings. According to these figures, the wage gap between east and west is greater than that of the national accounts. Earnings statistics contain no information about the hourly wages of workers in firms with fewer than ten employees, mini-job employees, and workers in agriculture and households.

Table 8

Household Income Per Inhabitant

In euros

	1991	2001	2012
Eastern Germany			
Employee remuneration	7,000	10,891	13,388
Operating income, net income from selfemployment	645	1,435	2,050
Unearned income	806	1,897	2,949
Primary income	8,451	14,223	18,387
Social security benefits received	2,875	5,750	6,369
<i>of which: pensions</i>	1,466	3,360	4,023
Income and wealth taxes	556	1,404	1,937
Social security contributions paid	2,402	4,466	5,295
Disposable income	8,388	14,131	17,614
Western Germany			
Employee remuneration	11,867	14,500	17,669
Operating income, net income from selfemployment	2,419	2,511	2,987
Unearned income	2,411	3,368	4,893
Primary income	16,697	20,378	25,549
Social security benefits received	3,336	4,755	5,718
<i>of which: pensions</i>	1,956	3,084	3,600
Income and wealth taxes	2,237	2,685	3,210
Social security contributions paid	3,967	5,442	6,894
Disposable income	13,786	16,958	21,225
Eastern Germany (western Germany = 100)			
Employee remuneration	59	75	76
Operating income, net income from selfemployment	27	57	69
Unearned income	33	56	60
Primary income	51	70	72
Social security benefits received	86	121	111
<i>of which: pensions</i>	75	109	112
Income and wealth taxes	25	52	60
Social security contributions paid	61	82	77
Disposable income	61	83	83

Source: Working Group on National Accounts of the Länder; calculations by DIW Berlin.

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Unearned incomes are particularly low in the east.

Table 9

Workers Subject to Social Security Insurance Commuting to and from Eastern Germany at the End of June 2013

Commuters to western Germany	Commuters from western Germany		Eipendler aus Westdeutschland		Net commuters
	Number of people	Proportion of commuters in relation to total number of employees living in given state in percent	Number of people	Proportion of commuters in relation to total number of employees working in given state in percent	
65,292	5.9	44,465	3.6	-20,827	-20 827
40,462	4.4	9,918	1.3	-30,544	-30 544
54,681	9.3	11,050	2.0	-43,631	-43 631
69,252	4.6	15,109	1.0	-54,143	-54 143
75,292	9.0	14,328	1.9	-60,964	-60 964
92,372	11.0	22,867	3.0	-69,505	-69 505
397,351	6.8	117,737	2.1	-279,614	-279 614

Source: Federal Employment Agency; calculations by DIW Berlin.

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There are approximately 280,000 net commuters traveling from east to west.

Table 10

Extent of Regional Inequality of Income Per CapitaHoover inequality distribution coefficient¹

	Districts, non-district cities	Labor market regions	Planning regions	Federal states
Within eastern Germany				
Primary income in 2011	3.39	3.05	2.66	2.31
Disposable income in 2011	1.57	1.23	1.00	0.74
GDP in 2012	8.97	6.88	5.55	4.77
Within western Germany				
Primary income in 2011	5.64	5.38	4.80	3.35
Disposable income in 2011	3.99	3.62	3.18	2.22
GDP in 2012	14.16	9.38	8.18	5.00

¹ The Hoover coefficient indicates what percentage of income would have to be redistributed between regions for the per capita income to be exactly the same in each region. The coefficient can assume values between 0 and 50; the higher the figure, the greater the inequality.
Source: Working Group on National Accounts of the Länder; calculations by DIW Berlin.

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Regional inequality is less pronounced in the east than in the west.

Such measures were then widely utilized, especially in the 1990s, with the result that unemployment figures did not sufficiently reflect the extent of underemployment. After the transition phase, however, the number

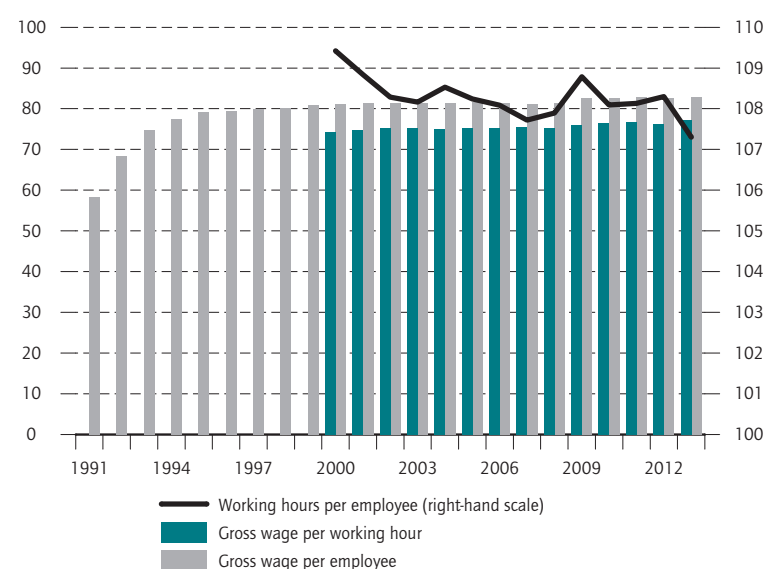
of registered unemployed exceeded the number of participants in such measures by far.²⁴ Even though unemployment figures are only a limited indicator, they still clearly show the severe lack of employment opportunities over many years in the east. By the middle of the last decade, unemployment rates in the east were almost always twice as high as in western Germany (see Figure 14). Since then, increased employment, among other things, has led to a greater decline in the unemployment rate in eastern Germany than in western Germany, where, since the beginning of 2012, the unemployment rate has in fact stagnated. Nevertheless, unemployment in eastern Germany remains far higher at 10.9 percent in August 2014 compared with 6.6 percent in the west.

In the GDR as in other Eastern bloc countries, labor force participation was much higher than in the west. This is especially true for women.²⁵ After the Wende, the

Figure 13

Gross Wages and Working Hours of Employees in Eastern Germany

Index for western Germany = 100



Source: Federal Statistical Office; calculations by DIW Berlin.

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Working hours in eastern Germany are more than seven percent higher than in the west.

²⁴ Sometimes labor market policy measures were used as political pawns. For example, unemployment rose throughout 1997 massively because the measures were dismantled for cost reasons, with an eye on meeting the Maastricht criteria at the end of that year. They were rapidly reintroduced some months before the Bundestag elections in 1998. See K. Brenke, U. Ludwig, and J. Ragnitz, *Analyse der Schlüsselentscheidungen im Bereich der Wirtschaftspolitik und ihre Wirkung auf die ökonomische Entwicklung der vergangenen zwei Jahrzehnte im Land Brandenburg*, report commissioned by the Enquete Commission on "Aufarbeitung der Geschichte und Bewältigung von Folgen der SED-Diktatur und des Übergangs in einen demokratischen Rechtsstaat im Land Brandenburg," (2011): 81 ff.

²⁵ In 1989, the proportion of employed workers to total working-age population (16-64 years) in the GDR was 78.8 percent for women and 82 percent for men (calculated on the basis of population and employment data from the Statistical Office of the GDR). The corresponding figures for West Germany were 63.8 percent and 80.3 percent (employment rates according to micro-census).

Table 11

Gross Hourly Wages of Full-Time and Part-Time Workers¹ by Output Group in 2013

In euros

	Eastern Germany	Western Germany ²	Eastern Germany (western Germany ² = 100)
Full-time workers			
Management executives	32.38	42.68	75.9
Highly skilled workforce	20.76	27.21	76.3
Workforce	14.06	19.16	73.4
Semi-skilled	11.61	15.66	74.1
Unskilled	10.47	13.07	80.1
Total	16.67	23.31	71.5
Assuming identical employment structure as in western Germany	17.48	-	75.0
Part-time workers			
Management executives	27.79	31.18	89.1
Highly skilled workforce	19.48	23.81	81.8
Workforce	14.02	17.62	79.6
Semi-skilled	10.75	13.40	80.2
Unskilled	9.17	11.30	81.2
Total	14.41	18.16	79.4
Assuming identical employment structure as in western Germany	14.66	-	80.7
Full- and part-time workers together			
Management executives	31.88	41.57	76.7
Highly skilled workforce	20.57	26.76	76.9
Workforce	14.06	18.91	74.4
Semi-skilled	11.40	15.20	75.0
Unskilled	10.04	12.53	80.1
Total	16.25	22.47	72.3
Assuming identical employment structure as in western Germany	16.85	-	75.0

¹ All sectors excluding agriculture, households, and mini-jobs.² Including Berlin.

Sources: Federal Statistical Office; calculations by DIW Berlin.

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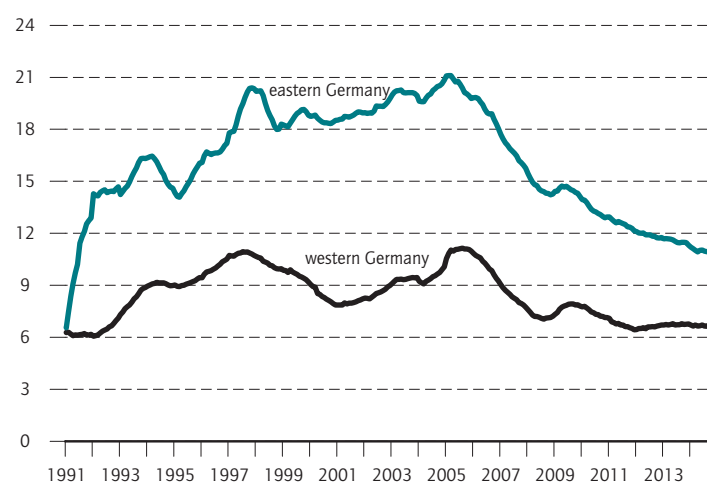
Wages in the east are lower than in the west across all output groups.

employment rate declined; the employment rate is defined as the percentage of the labor force, i.e., those persons in the total working-age population carrying out or seeking gainful employment (see Figure 15). Early retirement programs and the intensive use of further training measures have also contributed here. Nevertheless, labor force participation remained significantly higher than in the former West German Länder, despite the steady increases seen in the west. Since the turn of the millennium, labor force participation in the east has also been on the rise once again and is now even higher than at the beginning of the 1990s. It should be noted, however, that in eastern Germany absolute employee numbers have decreased since the middle of the last decade a result of the population decline (see Figure 16). This decrease is due solely to the fall in the number of young people in the labor force; since 2007, this figure has fallen by more than a third or almost 400,000.²⁶ This is likely to have contributed significantly to the relatively sharp decrease in the unemployment rate in the east seen in re-

Figure 14

Unemployment Rate¹ in Western and Eastern Germany

In percent

¹ Seasonally adjusted monthly values.

Source: Federal Employment Agency; calculations by DIW Berlin.

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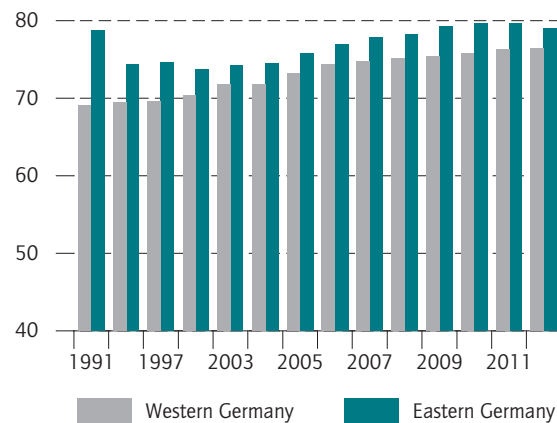
The unemployment rate is higher in eastern Germany than in the west, but it has fallen more sharply in the east than in the west in recent years.

²⁶ Source: micro-census.

Figure 15

Proportion of Labor Force to Total Population Aged 15 to 64 Years

In percent



Source: Federal Statistical Office (micro-census).

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Labor force participation is higher in eastern Germany than in western Germany.

cent years. In the former West German Länder, however, the potential labor force is on the increase.

In western Germany, unemployment is in many ways also a qualified workforce issue. In August of this year, 51 percent of all the unemployed in western Germany had no job training. In eastern Germany, this only applies to one-third (excluding Berlin, where the figure is slightly more than one-quarter). Nevertheless, in eastern Germany, unemployed people with no job training also find it very hard to find employment because there are not enough job offers for unskilled workers. In eastern Germany, the proportion of people with no training to total workforce is only half as much as in western Germany (see Figure 17). The number of people with job training or a university degree in eastern Germany is also relatively high. A lack of formal qualifications among the potential labor force can therefore not be the reason for the significant gap in productivity between east and west, as well as the far higher unemployment rate in the east.

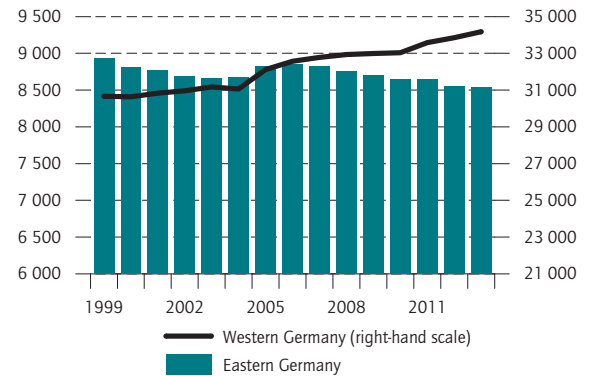
Conclusion

Expectations among GDR citizens were very high. Once political freedom had been won, unification of the two states should have rapidly led to the east achieving economic power and living standards similar to the west.

Figure 16

Size of Labor Force

In 1,000s



Source: Federal Statistical Office (micro-census).

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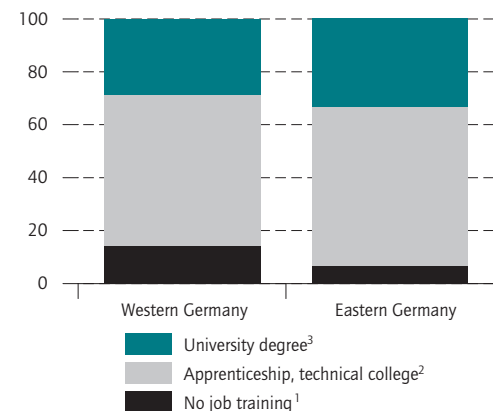
The size of the labor force has been decreasing since 2005; in the west, by comparison, it has been rising steadily.

Monetary union came as a shock. A new economic base had to be created because significant sections of the East German economy proved to be uncompetitive. Given the renewal and recovery that can be seen everywhere, there is no doubt that significant progress has been made. Nevertheless, 25 years after the fall of the Wall, eastern Ger-

Figure 17

Structure of Labor Force by Education in 2013

Shares in percent



1 ISCED 0 to 2.

2 Including high-school diploma (Abitur), ISCED 3 to 4.

3 Including Master Craftsman (Meister), ISCED 5 to 6.

Source: Eurostat (micro-census); calculations by DIW Berlin.

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The labor force in eastern Germany is better qualified on average than employees in the former West German states.

many is still a long way from matching the economic power of western Germany or the income earned there. After initially high growth rates, the catch-up process with western Germany proved to be increasingly sluggish. In terms of economic output per capita and productivity (per hour worked), eastern Germany has achieved 71 percent and 74 percent of the western German levels, respectively. These figures have remained virtually unchanged in the past ten years.

Measured in terms of expectations at the time of the Wende, many are disappointed that, in economic terms, eastern Germany is lagging far behind the former West German Länder. Expectations, however, were unrealistic from the outset because the bar had been set too high. Indeed, it was assumed that a traditionally sparsely populated transition region could catch up with one of the world's most powerful economies in a very short time. It has now been shown that this has not been possible even over the course of an entire generation. Nevertheless, much has been achieved. In fact, the process of re-industrialization was a success and eastern Germany is now mid-table among regions of the European Union in terms of industrial density. There are, however, signs of some serious structural problems. There are relatively few highly skilled jobs on offer in the eastern German economy and its structure is relatively compartmentalized. Above all, very few major companies have head offices there.

The unemployment rate in eastern Germany has decreased significantly in recent years, such that the dependence of households on social transfers has also declined. But this is only partly due to increasing employment. Another important reason for this is that the potential labor force is getting smaller, which reduces the demand for jobs. The labor market now clearly shows the traces of demographic changes in the period immediately after the fall of the Wall, when strong migrations and a dramatic decline in the birth rate occurred. Where the situation on the labor market to date was dominated by a labor surplus, the opposite might soon be the case.

To increase the attractiveness of eastern Germany as a location, educational and job training opportunities need to be improved; it would be counterproductive to make cuts, for example, at universities—especially since eastern Germany is dependent on migration. Attractive pay packages are the key to retaining or attracting a qualified workforce. The problem with this, however, is that the only firms in a position to offer high salaries are those with high productivity levels, which in turn calls for increased innovation by companies.

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JEL: R12, O14, O18

Keywords: Economic development, productivity, eastern Germany



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SIX QUESTIONS TO KARL BRENKE

»Eastern Germany Must Focus on Education and Innovation«

1. Mr. Brenke, it has been 25 years since the fall of the Berlin Wall. In the reunified Germany, the former East German states were faced with an economic catch-up process that could hardly have been more challenging. To what extent has the economic gap in eastern Germany been closed in a quarter of a century? The gap has largely been closed. After reunification, people wanted to achieve western performance levels as quickly as possible. Measured against these expectations, we are about three-quarters of the way there since economic output per capita is now approximately three quarters of that of western Germany. However, after a strong initial phase, the catch-up process is now running out of steam.
2. Why has the catch-up process stalled? Many branches have already caught up. We had a veritable construction boom in the mid-1990s which then fell away, leading to a downward trend that persisted for more than a decade. Services, of which there were systemically very few in the GDR, have caught up considerably. Tourism, for example, has continued to grow strongly. The manufacturing industry has also made vigorous gains. The problem is, however, that productivity, i.e., output per worker, in eastern Germany is too low and lagging far behind the comparable figure in western Germany.
3. Were expectations too high after the fall of the Wall? In 1989, expectations were very high. It was thought we could rapidly catch up with one of the most competitive economies in the world but eastern Germany is traditionally a sparsely populated area and had to cope with its economic base largely collapsing after monetary union was introduced. We had to create a new economic base—and quickly. This is not something that can be done in just a few years or, as we have now seen, even

in a generation. Compared to western Germany, eastern Germany has too few larger- and medium-sized enterprises playing an important role in international markets.

4. The labor market situation in eastern Germany has improved in recent years. Isn't that a positive sign? The labor market situation has improved; this is certainly a positive sign. It has led to a significant reduction in household dependence on social transfers. But this is not necessarily only related to the particularly positive growth in employment. There has indeed been a rise in employment, but what is particularly striking is that the number of inhabitants in former East German states has fallen and, therefore, so has the number of people seeking jobs. That is to say, the fall in unemployment is unfortunately not only due to economic factors, but also demographic ones.
5. What is the prevailing trend in income? There has been a stronger adoption of incomes than economic output to the western level. But a relatively large proportion of income is still made up of social transfers. However, income from self-employment, unearned income, and salaries in eastern Germany still lag far behind. In contrast, disposable income in the former East German states has now reached well over 80 percent of the western German level. Nevertheless, the catch-up process has stalled.
6. The solidarity surcharge is set to expire in 2019. Is this too early? I don't think it's too early. The purpose of the solidarity surcharge is to help fund the reconstruction of the east. As a result, a lot of money has been poured into the development of infrastructure, creating a very modern infrastructure in eastern Germany. As a result, there is no longer any need for this surcharge to provide specific funds for eastern Germany. There is also no longer any reason to provide companies with especially high subsidies because the infrastructure has now been fully modernized.

Interview by Eric Wittenberg

Private Net Worth in Eastern and Western Germany Only Converging Slowly

By Markus M. Grabka

Very nearly 25 years after the fall of the Berlin Wall, households in eastern Germany have an average net worth of 67,400 euros which is less than half that of their counterparts in western Germany with an average net worth of 153,200 euros. In both parts of the country, real estate ownership is quantitatively the most important asset type. Although the share of owner-occupiers has increased significantly in both regions since 1990, only one-third of all households in eastern Germany are owner occupied whereas the corresponding share in the west is almost half. Further, the market value of the real estate owned in eastern Germany is only half of that in the west. There has, however, been a significant convergence both in terms of average living space and property furnishings since the fall of the Wall.

Aside from current income, the parameter of net worth represents a key resource in the economic activity of households. In addition, net worth has a specific function going far beyond the sheer fact of earning (for example, in the form of interest and dividends). It contributes significantly to stabilizing consumption in periods of income loss, while tangible assets can, as in the case of real estate, be used by the owner. A greater net worth may confer economic and political power, and be employed to achieve or maintain an individual's own high social status, or support the development of his or her children. In this way, personal assets also serve to reproduce and form elites. Finally, accumulating private wealth is an important instrument for old-age security and intergenerational transfers in the form of inheritance or gifts.¹

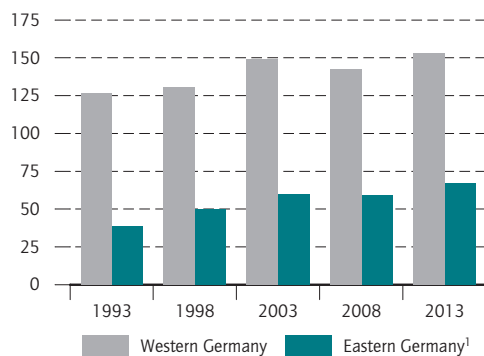
Analyzing the size and distribution of net worth separately in eastern and western Germany is not merely interesting in terms of regional differences but also reflects how far the repercussions of the fundamentally different conditions governing wealth accumulation in the two halves of Germany before reunification still continue to resonate more than twenty years after the fall of the Wall. Under the socialist economic system in the former East Germany, citizens there did not have such favorable opportunities to accumulate net worth as in West Germany. For example, it was only possible to invest to a very limited extent in business capital, in other real estate (in particular apartment houses) or shares. Moreover, although under the Economic, Monetary and Social Union on July 1, 1990, wages and pensions were converted at the rate of 1 East German mark to 1 deutschmark, the conversion for individual savings and liabilities was two East German marks to one West German

¹ On this, see a general discussion of the role of wealth in J. R. Frick, M. M. Grabka, and R. Hauser, *Die Verteilung der Vermögen in Deutschland – Empirische Analysen für Personen und Haushalte*, (Berlin: 2010).

Figure 1

Average Net Worth of Households

In 1,000 euros



1 Eastern Germany 2013 including Berlin (West).

Sources: H. Stein, *Anatomie der Vermögensverteilung – Ergebnisse der Einkommens- und Verbrauchsstichproben 1983-1998*, Berlin, 2004; Ammermüller et al. "Entwicklung und Verteilung"; Federal Statistical Office, "Wirtschaftsrechnungen. Einkommens- und Verbrauchsstichprobe. Geld und Immobilienvermögen sowie Schulden privater Haushalte," 15(2) (2014).

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Net worth in households in western Germany over twice as much as in eastern Germany.

deutschmark.² Since reunification, the labor market in eastern Germany has been marked by migration, a lower wage level compared to western Germany,³ and a higher risk of unemployment in general, all of which negatively impacts the accumulation of assets due to the lower and more irregular flow of income streams.

In this study, the net worth of households⁴ is described in the following by reference to data published in the German Federal Statistical Office's Income and Expenditure Survey (Einkommens- und Verbrauchsstichprobe, EVS), and supplemented by the findings of the Socio-Econom-

ic Panel (SOEP)⁵, a panel surveyed conducted by TNS Infratest Sozialforschung (see box).⁶

Creeping Convergence of Net Worth in Eastern and Western Germany

In 1993, expressed as a mean, the average net worth of all households in western Germany amounted to 126,600 euros (see Figure 1). By 2003, this figure had risen to 148,800 euros, though in the wake of the financial market crisis it fell to 142,700 euros in 2008. By 2013, a new increase was observed with the figure rising to 153,200 euros. In general, the figures for net worth in eastern Germany are significantly lower. In 1993, households in eastern Germany had a net worth of just 38,400 euros, representing only 30 percent of the comparative figure for western Germany. In the period up to 2013, net worth in eastern Germany grew significantly by 75 percent to 67,400 euros yet, despite this increase, households in eastern Germany still only had assets amounting to 44 percent of households in the west.⁷ Hence, while net worth in western Germany has increased by around one-fifth since 1993, it has risen in eastern Germany by three-quarters. Nonetheless, even almost 25 years after German reunification, the long-term differences in wealth acquisition and asset growth in the post-war years determined by the conditions in both former German states still have a lasting impact on current inequalities in net worth in these two regions of present day Germany.

Real Estate and Property Quantitatively the Most Important Asset Type in Both Parts of Germany

Separate detailed information on the asset portfolio of households in eastern and western Germany is only available for the years 2003 to 2013 (see table). According to this data, real estate and property holdings form

² Savings differentiated by age could be directly converted 1:1 (2,000 East German marks per child up to 14 years old; 4,000 East German marks for people up to 59 years old, and 6,000 East German marks for those aged 60 and over).

³ See J. Ragnitz, "Regionale Lohnunterschiede in Deutschland," ifo Dresden berichtet, no. 2 (2012): 26–32.

⁴ Hence, people living in institutional households such as student dormitories or retirement homes are not included.

⁵ The SOEP is a representative longitudinal study of households conducted every year since 1984 in western Germany and since 1990 in eastern Germany, see G. G. Wagner, J. Göbel, P. Krause, R. Pischner, and I. Sieber, "Das Sozio-oekonomische Panel (SOEP): Multidisziplinäres Haushaltspanel und Kohortenstudie für Deutschland – Eine Einführung (für neue Datennutzer) mit einem Ausblick (für erfahrene Anwender)," *ASTA Wirtschafts- und Sozialstatistisches Archiv*, vol. 2, no. 4, (2008): 301–328.

⁶ Analyses of the development of wealth inequality can be found in M. M. Grabka and C. Westermeier, "Persistently High Wealth Inequality in Germany," *DIW Economic Bulletin*, no. 6 (2014): 151–165.

⁷ This figure may well be reduced further if business assets, which are not included in the EVS, are taken into account, since in particular the proportion of small and medium-sized enterprises with the requisite business assets is significantly higher in western Germany than in eastern Germany. Here, the former socialist economic structure of East Germany continues to negatively impact household wealth over the long term.

Box

Measuring Net Worth in the Income and Expenditure Survey (EVS)

Since 1962/63, the EVS survey has been conducted in Germany every five years. Data on net worth in eastern Germany have been available since 1993. The last survey was conducted in 2013. The Income and Expenditure Survey includes the following asset components: owner-occupied and other real estate (including items such as undeveloped building land, holiday and weekend apartments), financial assets (bank accounts, savings or mortgage bonds, shares or investment certificates, life insurance or private pension insurance, building loan agreements), consumer loans, education and training loans, and mortgages. To obtain total net worth, the figure relevant in welfare economics, liabilities are deducted from the total gross worth. Business assets, which are especially sensitive in distribution, are not surveyed; also not surveyed are valuables such as gold bars, jewelry, antiques, or art objects, the value of household goods, as well as the value of vehicles. Moreover, this definition of net worth does not include the entitlements to various old-age security systems which are, in any case, difficult to ascertain (statutory pension insurance, occupational pension, pension plan from occupational groups).¹

Aside from not surveying important asset components, the EVS has other methodological weaknesses as well. For example, since the EVS is not a random sample, but a quota sample, the findings only have a limited representative value; this is evident, among other things, in the insufficient inclusion of people with migrant backgrounds. Using the EVS data, it is not possible to make statements on households with larger net

worth since the survey applies an "upper cut-off threshold"² excluding households with particularly high incomes. The correlation, however, is particularly strong between high incomes and high net worth. In addition, the EVS underestimates liabilities from consumer loans.³ Taking the Bundesbank statistics as a benchmark, the data capture rate for liabilities is under 30 percent which leads, all other things being equal, to overestimating net worth.

In comparing the net worth of households by region, it is worth noting that, in contrast to income analyses, no weighting of needs is applied. Instead, the information obtained on net worth is related to each household in its entirety, so that possible differences due to varied household sizes or compositions are not taken into account here.⁴ In addition, the data do not include any inflation adjustment.

² In the EVS survey in 2013, the upper cut-off threshold applied to households with a net monthly income of 18,000 euros.

³ See A. Ammermüller, A. M. Weber, and P. Westerheide, *Die Entwicklung und Verteilung des Vermögens privater Haushalte unter besonderer Berücksichtigung des Produktivvermögens*, Project Report to the Federal Ministry for Health and Social Security (Mannheim: 2005).

⁴ At the same time, since 1990 the average household size, in particular, has decreased more strongly in eastern Germany than in western Germany, from 2.39 persons to 1.88 in 2012 (figures based on the author's calculations with the SOEP). Moreover, in interpreting the results, one needs to bear in mind the imponderables in the process of gathering data on assets in surveys. In general, the data are based on the respondents' own estimates which can be distorted for a number of reasons. For example, knowledge of the current market value of a given asset may often be limited if it was inherited or acquired many years earlier. In contrast to regular income, assets such as stocks and securities may be extremely volatile, making it additionally difficult to assess their value. Moreover, aside from the general sensitivity of this topic, such factors also lead to more refusals to answer questions relevant to establishing levels of net worth.

¹ On the relevance of entitlements from old-age pension schemes in analyzing the amount and distribution of individual wealth, see J. R. Frick and M. M. Grabka, "Old-Age Pension Entitlements Mitigate Inequality: But Concentration of Wealth Remains High," *Weekly Report*, no. 8 (DIW Berlin, 2010).

the main asset component in both parts of the country. In 2013, this accounted for 85 percent of the net worth of all households in western Germany, while the corresponding figure in eastern Germany was only 73 percent. In contrast, gross financial assets (comprising savings, securities, building loan agreements, insurances, and so on) which represented a share of 50 percent in western Germany in 2013, are relatively more important in eastern Germany.⁸ In comparison, this asset

component only accounted for 36 percent of net worth in western Germany.

Liabilities from mortgages are equally significant in west and east, amounting in both cases to a share of 20 percent, while loans for education and training as well as consumer loans only play a minor role. Over the last ten years, gross debt in eastern Germany has slowly de-

⁸ The proportion of men in eastern Germany in the Riester pension savings scheme is higher than in western Germany; the figures for women taking part in the scheme in the two regions are almost identical. See J. Geyer,

"Riester-Rente: Rezept gegen Altersarmut?," *DIW Wochenbericht*, no. 47 (2011). However, the spread of the Riester scheme does not give any indication of how much wealth is saved in this form of old-age provision.

Table

Portfolio of Net Worth By Region

	Former West Germany ¹			Former East Germany and Berlin ¹		
	2003	2008	2013	2003	2008	2013
Relative share of asset components to net worth in percent						
Gross financial assets	32	39	36	42	53	50
Residual consumer loans	1	1	1	2	3	3
Residual education and training loans	-	0	0	-	1	1
Real estate and property assets	90	83	85	87	75	73
Residual debt on mortgages	20	21	20	27	24	20
Gross total worth	121	122	122	129	128	124
Total debt	21	22	22	29	28	24
Net total worth	100	100	100	100	100	100
Average value per household in euros						
Gross financial assets	43,500	52,000	51,100	23,200	28,700	30,900
Residual consumer loans	1,400	1,700	1,800	1,300	1,600	1,800
Residual education and training loans	-	300	500	-	300	500
Real estate and property assets	122,600	109,100	119,900	47,500	41,000	44,900
Residual debt on mortgages	27,800	27,100	28,200	14,700	13,200	12,300
Gross total worth	166,100	161,200	171,100	70,700	69,700	75,800
Total debt	29,200	29,100	30,500	16,000	15,200	14,600
Net total worth	136,900	132,000	140,600	54,700	54,600	61,200

¹ Prior to EVS 2013, West Berlin was classified as the former West Germany and East Berlin as eastern Germany.

Source: Einkommens- und Verbrauchsstichprobe (Income and Expenditure Survey EVS).

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In both eastern and western Germany, property ownership is quantitatively the most important asset component.

clined to meet the levels in western Germany; while this amounted to 29 percent of net worth in 2003, this figure fell to 24 percent in 2013, reaching a level comparable to the 22 percent in western Germany.

In relation to all households, the average amount of the various asset or debt components in eastern Germany is lower in each case than in western Germany. Hence, in 2013 households in eastern Germany only recorded gross financial assets of 30,900 euros, equivalent to just 60 percent of the corresponding net worth in western Germany. In contrast, both in west and east, consumer loans as well as loans for education and training, which are quantitatively insignificant, amount to less than 2,000 and 500 euros respectively.

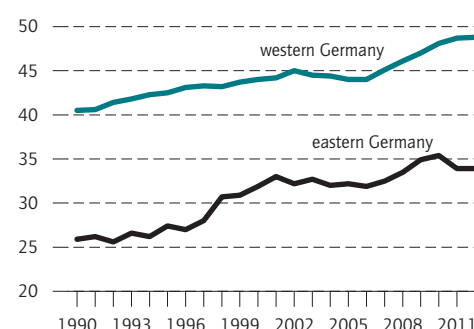
The figures for the residual debt on mortgages reflect the different developments in eastern and western Germany. While residual mortgage debt has been decreasing in eastern Germany since 2003 and only amounted to 12,300 euros in 2013, these liabilities have shown a slight growth in western Germany since 2003 and presently amount to 28,200 euros.

Figure 2

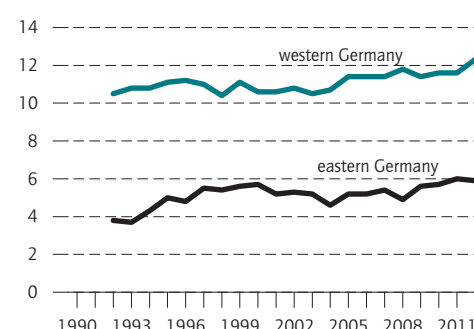
Households in Owner-Occupied Property and Income from Letting and Leasing

In percent

Owner-Occupied Property



Income from Letting and Leasing



Source: SOEPv29, households.

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Households in eastern Germany continue to be significantly less likely to live in owner-occupied property.

Quantitatively, real estate and property holdings are the most important component of net worth. However, with property assets in eastern Germany amounting to 44,900 euros, this still only represents 37 percent of the corresponding figure in western Germany (119,900 euros).

No Catch-Up Process in Owner-Occupied Residential Property

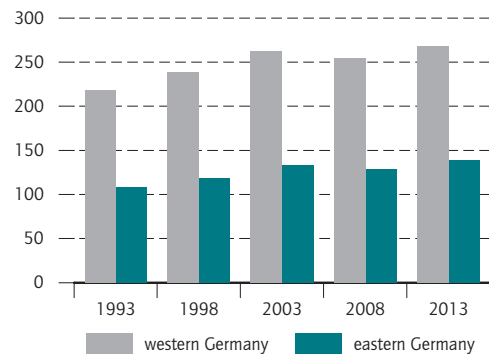
Given the particular quantitative importance of property ownership, the following examines this in more detail.⁹ Here, it is necessary to distinguish between own-

⁹ In addition to the quantitative factor, due to its utility function, real estate plays a particular role in old-age provision; after the repayment of the mortgage, if necessary, owners can live rent-free in their property in their old

Figure 3

Market Value of Real Estate and Property Holdings

In 1,000 euros



Sources: Federal Statistical Office, "Einkommens- und Verbrauchsstichprobe," 15(1) (2013) (special issue); *Wirtschaft und Statistik* 3 (1999): 210–220.

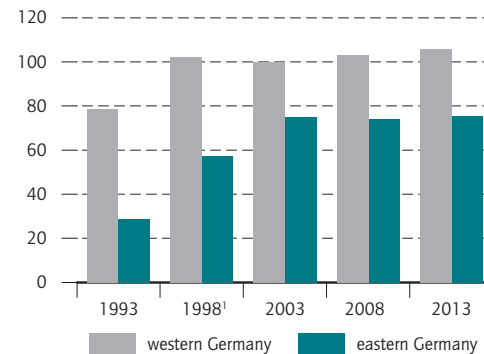
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Market value of real estate and property in eastern Germany only amounts to approximately 50 percent of that in western Germany.

Figure 4

Residual Debt on Mortgages

In 1,000 euros



¹ Figure estimated for western Germany.

Sources: Federal Statistical Office, "Einkommens- und Verbrauchsstichprobe," 15(1) (2013) (special issue); *Wirtschaft und Statistik* 3 (1999): 210–220.

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In eastern Germany, liabilities from mortgages have reached 70 percent of the value in western Germany.

er-occupied residential property (for example, an owner-occupied house or apartment) and other real estate and property (land, rented real estate, holiday homes, and so on.). In 1990, the proportion of households living in owner-occupied property in eastern Germany was significantly lower than in western Germany (see Figure 2). Only around one-quarter of all households in eastern Germany owned this form of asset, while over 40 percent of those in western Germany lived in owner-occupied property. Hence, both in the west and the east, the dominant residential form was tenant households.

Although the percentage of owner-occupied property has significantly risen since then, the gap of 15 percentage points has not decreased. In 2013, nearly 50 percent of all western German households were now living in owner-occupied property. In eastern Germany, in contrast, this proportion only rose to around one-third. Moreover, over the past five years, the percentage of owner-occupiers in western Germany increased noticeably faster than in eastern Germany. These differences may well be traceable to the discontinuation of the scheme to provide state subsidies to those buying their own residential property (*Eigenheimzulage*), which was only in force up until

December 31, 2005.¹⁰ Given the same level of subsidies, the significant differences in the price of building land in east and west meant that a family in eastern Germany was far more likely to create property assets through this scheme than a family in western Germany.

In comparison, a slight catch-up process is evident in households with other types of property ownership (see Figure 2).¹¹ In 1992, for example, 10 percent of all households in western Germany received income from other property, while this figure was less than four percent in eastern Germany. By 2012, this gap had been reduced to approximately half the western German level (12 to six percent).

There is also no catch-up process evident either from the figures for market value developments in residential real estate in eastern and western Germany (see Figure 3). In both regions, the nominal market value has risen by a good 25 percent over the past 20 years. In eastern Germany, market values continue to remain at close to half

¹⁰ See the *Eigenheimzulagengesetz* (Law on Subsidies for Residential Property). Since 2006, there has no longer been a national program to promote owner-occupied property in Germany. Aside from state subsidy schemes, the key factors fuelling real estate demand also include the level of interest and related financing options, as well as the anticipated level of inflation.

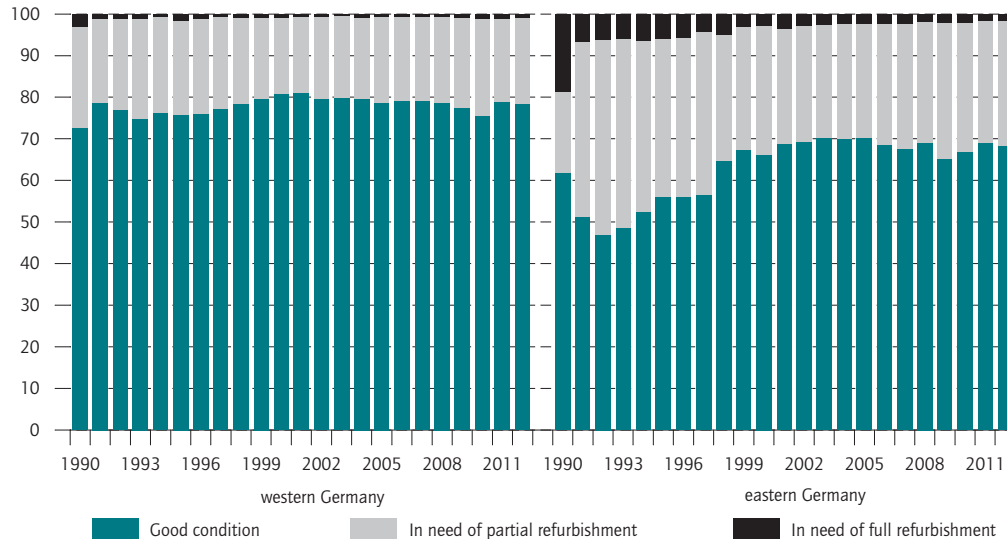
¹¹ Here, these are approximated through the income households receive from other property. As a result, since not all property is let or leased and so produces income, the extent of other property ownership is underestimated.

age and, in contrast to tenants, have a relevant income advantage on this, see J. R. Frick, M. M. Grabka, T. Smeeding, and P. Tsakloulou, "Distributional effects of imputed rents in five European countries," *Journal of Housing Economics*, vol. 19 (2010): 167–179.

Figure 5

Assessment of Refurbishment Need in Owner-Occupied Apartments/House—Owners Only

In percent



Source: SOEPv29, owner-occupied households.

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Apartment/house owner-occupiers in eastern Germany more frequently describe the condition of their properties as poor.

the levels in western Germany. Since real estate values also develop in relation to a region's purchasing power, this can also be explained by continuing below-average income levels on the labor market in eastern Germany.¹²

The development in residual debt on mortgages for these real estate and property holdings shows a contrary trend (see Figure 4). While the value of these liabilities in western Germany since the late 1990s has shown little movement, remaining at approximately 100,000 euros, liabilities in the former East German Länder significantly increased up to 2003, and have presently reached more than 70 percent of the level in western Germany. Given the lower income levels in eastern Germany, households there have to take on relatively more debt to acquire residential property than their counterparts in the west. As a result, the net worth of property in eastern Germany continues to trail the comparative figure in western Germany.

¹² For example, one of the lowest prices for a used single-family house or duplex can be found in the district of Landkreis Mansfeld-Südharz at only 440 euros per square meter, while the equivalent price in Munich is 6,080 euros. The level of income in the former region is far below average, while the latter is numbered among those areas in Germany with the highest income levels. See J. Lembke, "Deutschland driftet auseinander," Frankfurter Allgemeine Zeitung, August 30, 2013, 28.

Condition of Property in East Still Worse than in the West

One factor to explain the lower market value of owner-occupied property in eastern Germany is the condition of the buildings (see Figure 5). In a survey of owner-occupied real estate in 2013, when owners were asked about the need to refurbish their properties, nearly 80 percent in western Germany replied that their property was in good condition, while less than 70 percent of property owners in eastern Germany gave the same response. Although there was a rapid process of improvements (and modernization) in owner-occupied residential property there in the 1990s, this catch-up process has ground to a halt since the start of the 2000s.

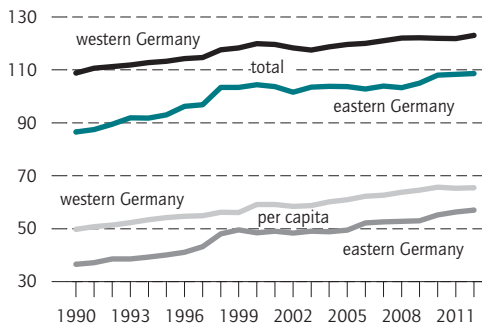
Convergence in Living Space and Furnishings

An ongoing catch-up process can still be observed in owner-occupied residential property. While in 1990, the average living space in eastern Germany of 87 square meters (sqm) was still over 20 sqm less than in western Germany, the most recent survey shows this gap decreasing to 14 sqm (see Figure 6). At the same time, over the last 25 years, the size of residential properties in both east and west has grown by over 10 percent. This growth

Figure 6

Living Space Per Apartment and Per Capita—Owner-Occupied Property Only

In square meters



Source: SOEPv29, owner-occupied households.

© DIW Berlin

Owner-occupied households in eastern Germany have significantly increased living space per capita since 1990.

is even more marked when living space is set in relation to the number of household members. Here, eastern Germany has made a major leap forwards. In the early 1990s, each owner-occupier had on average only 37 sqm of space available per person, compared to 50 sqm in western Germany. By 2012, the average living area in eastern Germany had risen by over 50 percent to 57 sqm per person (66 sqm per person in the west).¹³

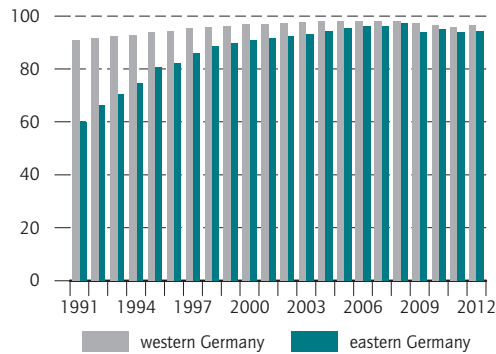
A substantial convergence process can also be noted in home furnishing (see Figure 7). Although eastern Germany had a significant modernization backlog, this was rapidly addressed and reduced. For example, while in the 1990s, over 90 percent of all owner-occupied residential properties in western Germany were fitted with central heating, the corresponding figure in eastern Germany was only two-thirds (moreover, frequently coal-powered central heating). From the mid-2000s, the provision of central heating systems in owner-occupied properties in both regions of Germany has been nearly the same, since almost every residential property now has this kind of heating. A similar convergence process can also be observed with regard to the provision of hot water and sanitary facilities with shower, bath, and WC in residential properties. Since the new millennium, both eastern and western Germany have virtually the same level of furnishings.

¹³ These findings are congruent with the decreasing size of households, especially in eastern Germany.

Figure 7

Owner-Occupied Households with Central Heating

In percent



Source: SOEPv29, owner-occupied households.

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Since the mid-2000s, it has hardly been possible to identify a difference between the two regions

Conclusion

Nearly 25 years after the fall of the Wall, there are still significant differences in average net worth between eastern and western Germany. The average household net worth of 67,400 euros in eastern Germany is less than half that in western Germany.

No catch-up process has been observed in the spread of owner-occupied property—which is quantitatively still the most important form of asset in Germany. While in western Germany almost every second household is in owner-occupied property, this figure has remained at only one-third for all eastern German households. However, not only is the distribution of owner-occupied real estate lower in eastern Germany, the average market value of these properties is also only approximately half that of western Germany. Here, one can cite as an explanation lower than average pay levels, the continuing high rates of unemployment, and demographic developments with a shrinking population in large parts of eastern Germany. The condition of the buildings in eastern Germany also remains slightly worse than those in the west. A clear catch-up process can be observed in average living space and home furnishings, with eastern Germany nearly closing the gap to western Germany here.

Given the overall lower wage and income levels, and higher unemployment, the opportunities for net worth

formation for the population in eastern Germany may well continue to be worse than for their counterparts in western Germany.¹⁴ In addition, inheritance and gifts form a significant factor in wealth formation.¹⁵ Irrespective of east-west migration, one can assume that the largest number of intergenerational transfers in the future cohort of those inheriting will take place within each of the regions analyzed here (east and west), and thus similarly play no significant part in reducing wealth differentials between them.

For wealth formation and old-age security, owner-occupied residential property has a particular significance. In an international comparison, the rate of owner-occupancy in Germany is very low. Germany is one of the few European countries without a national program to promote home ownership. If policy-makers planned to make property ownership more attractive, particularly for the half of the population on a low income, eastern Germany would profit more from state funding instruments due to the lower income levels there and this could then somewhat reduce the net worth differential that still exists 25 years after the fall of the Wall.

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JEL: D31, I31, R31

Keywords: net worth, EVS, eastern and western Germany, transition

14 See M. M. Grabka, J. Goebel, and J. Schupp, "Höhepunkt der Einkommensungleichheit in Deutschland überschritten?," DIW Wochenbericht, no. 43 (2012).

15 See J. R. Frick and M. M. Grabka, "Zur Entwicklung der Vermögensungleichheit in Deutschland," Berliner Journal für Soziologie, vol. 19, no.4 (2009): 577-600.

Eastern Germany Ahead in Employment of Women

By Elke Holst and Anna Wieber

Almost a quarter of a century after the fall of the Wall, there are still more women in employment in eastern Germany than in the west. Although the disparity is marginal now, the two regions started from dramatically different levels. In 1991, immediately after reunification, the employment rate for women in western Germany was 54.6 percent, but since then it has increased year on year, reaching 67.5 percent in 2012. In eastern Germany, female employment initially plummeted after the fall of the Wall but then sharply increased again and, at 69.1 percent, slightly exceeded the western German rate in 2012.

In both parts of the country, women are more likely to work part-time today than in the past, although, at 27.8 hours per week in 2013, the actual volume of work carried out by eastern German women is considerably higher than in the west (21.7 hours). According to a study conducted by DIW Berlin using Socio-Economic Panel (SOEP) study data, however, many women would prefer to work more hours per week. A comparison of the desired, contractually agreed, and actual weekly working hours of women in the east and west of the country shows that, on average, for eastern German women all values in these three categories far exceed even the maximum value for western German women. In contrast, the majority of employed men in both parts of the country would like to work a 40-hour week, but this is a reality for only 22.6 percent of western German and 29.2 percent of eastern German men. The majority works longer hours, despite the fact that this is unpopular among men. The post-reunification changes had a significant impact on the lifestyles of couples with children: the modernized breadwinner model (father in full-time work/mother part time) is playing an increasing role in both parts of Germany—in western Germany, this has been at the expense of the sole breadwinner model (father as sole earner) and, in the east, at the expense of the equality model (both parents working full-time).

Between 1991 and 2012, the female employment rate in western Germany rose a dramatic 12.9 percentage points to 67.5 percent.¹ Yet even in 2012, the employment rate for women in the west was lower than that in the east. There, the female employment rate was temporarily reduced as a result of German reunification (by 9.3 percentage points up to 1995) and then rose again. At 69.1 percent in 2012, the figure was more than two percentage points above the 1991 level (see Table 1). The labor market participation rates showed slightly less convergence. These figures also include unemployment, and can thus be used to derive information on employment orientation. In the east, the labor market participation rate for 2012 was 75.8 percent, more than 5.2 percentage points above that among women in western Germany.

Among men, the 2012 employment rate in western Germany reached the approximate level of 1991, following slumps in the intervening period. In eastern Germany it rose again after declines up to around 2004, but, at 74.3 percent, did not reach the starting level of 78.5 percent. Employment orientation, measured by the labor market participation rate, was almost equal among men in the east and west of Germany at around 82 percent.

In the period to 2012 there was a particularly marked increase in employment among women and men aged 55 and above, in both parts of Germany (see Figure 1). This development can be linked with the gradual disappearance of favorable arrangements for exiting working life before retirement age, the raising of the regular retirement age from 65 to 67, and associated deductions for early retirement in the 2000s. Among younger people up to 25, the employment rate has fallen, which can be ascribed to increased educational participation and longer vocational training periods. In all age groups from 25 years onwards, the female employment rate in

¹ The micro-census figures for 2013 were not yet available at the time of going to press.

Table 1

Labor Market Participation and Employment Rate by Gender

In percentage of population aged between 15 and 65

	Labor market participation rate ¹		Employment rate ¹	
	Men	Women	Men	Women
Former West German Länder (not including Berlin)²				
1991	81.1	60.7	78.4	54.6
1995	81.3	59.9	74.7	54.5
2000	80.7	62.9	74.3	57.7
2004	80.4	64.5	71.7	58.5
2006	81.4	67.1	74.5	61.5
2008	81.9	68.3	77.0	64.1
2010	81.9	69.4	76.6	65.5
2011	82.1	70.5	77.8	67.1
2012	82.1	70.6	78.1	67.5
Former East German Länder (including Berlin)²				
1991	84.2	77.2	78.5	66.8
1995	79.2	73.9	70.5	57.5
2000	77.9	69.3	66.7	57.7
2004	79.9	73.4	62.9	58.1
2006	80.1	73.4	65.9	60.8
2008	81.6	74.7	70.6	64.9
2010	82.8	76.1	72.8	68.2
2011	82.7	76.4	74.0	69.3
2012	82.0	75.8	74.3	69.1

¹ From 2005 onward: annual average.² Deviating regional definitions for employment rates 1991 to 2000: former West Germany including West Berlin / former East Germany including East Berlin.

Sources: Federal Statistical Office; table by DIW Berlin.

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The female employment rate in western Germany has increased dramatically.

the west rose after German reunification. This constitutes a significant societal change.

Share of Mothers Working Full Time Twice as High in East as in West

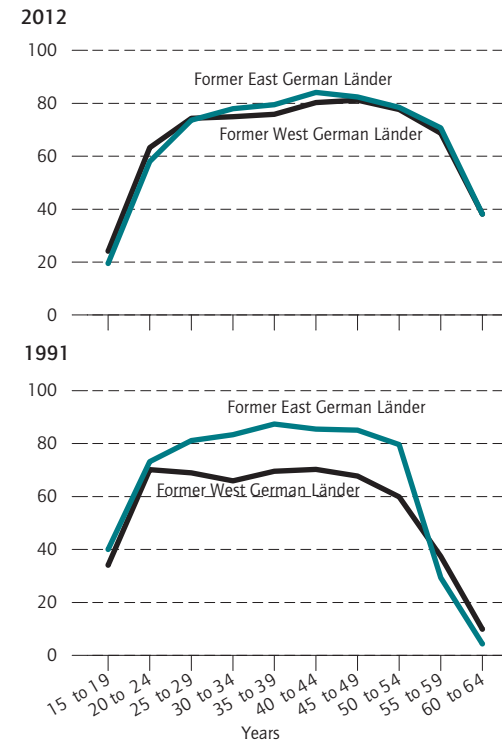
The increase in the female employment rate in western Germany in recent years has been driven particularly by a change in employment behavior among mothers. According to Federal Statistical Office figures,² the female employment rate has converged: in eastern Germany, it fell 6.6 percentage points between 1996 and 2012 to 62.9 percent, while it rose 9.2 percentage points in the west, to 59.7 percent.

² The following statistics, up to the section "Wishes and Reality—Weekly Working Time in East and West," are taken from M. Keller and T. Hausteine, "Vereinbarkeit von Familie und Beruf," *Wirtschaft und Statistik* 12 (2013): 862–82. They relate to mothers and fathers with children under 18 in their household.

Figure 1

Female employment rate in the former West and East German Länder

In percentage of population for each age group



Sources: Federal Statistical Office; graph by DIW Berlin.

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The employment rate for western German women has increased in all age groups above 25.

Although the east-west difference in employment volume among mothers with children under 18 in their household has narrowed, it remained very significant in 2012: in eastern Germany, 55.7 percent of mothers worked full time in 2012 (1996: 76.7 percent), in western Germany only 25.2 percent (1996: 37.5 percent). Mothers cohabiting with partners worked full time more often than married mothers.

Modernized Breadwinner Model Gaining Significance in Both Parts of Germany

With the rise in employment among mothers in western Germany, the family model for working couples with children has also changed. In this part of Germany, "only" 30.7 percent of two-parent households live according to the male breadwinner model, with only the father working. In 1996 this figure was 44.8 percent.

Box

Data basis, Definitions, Distinctions

The data basis for the following study is the Socio-Economic Panel (SOEP) study compiled by DIW Berlin in conjunction with Infratest Sozialforschung. This representative repeat survey of households in Germany has provided a wealth of information on objective living conditions and subjective attitudes, for West Germany since 1984 and for both western and eastern Germany since 1990—that is, even prior to German reunification.

The present study distinguishes between contractually agreed, actual and desired working time. These working time volumes are gathered in the survey using the following questions:

- Contractually agreed working time: "How many hours per week are stipulated in your contract (excluding overtime)?"
- Actual working time: "And how many hours do you generally work, including any overtime?"
- Desired working time: "If you could choose your own working hours, taking into account that your income would change according to the number of hours: How many hours would you want to work?"

The working time volumes below are average values. "Full-time employees" are understood to be persons with a contractually agreed working time of at least 35 hours per week on average. "Part-time employees" are those with an contractually agreed working time of up to 34 hours per week. For persons with no contractually agreed working time, the actual working time is used.

The study covers female and male employees aged from 18 to 64 in eastern and western Germany; that is, private-sector waged and salaried employees and public employees (not including trainees).

In eastern Germany, there has been barely any change (2012: 23.2 percent, 1996: 23.5 percent).

In over half of households with two working parents in eastern Germany, both parents are still in full-time employment (2012: 53.5 percent), thus living according to the equality model. In comparison to 1996, however, when the share was almost three-quarters, it constitutes a drastic decline in this family model (–21.3 percentage points). As many mothers in western Germany have taken up part-time employment, the equality model lost significance there too (2012: 19.1 percent, 1996: 32.6 percent). In the west of Germany, the model of father in full-time employment and mother in part-time employment (the "modernized breadwinner model")³ gained ground, accounting for over three-quarters of these two-parent households by 2012 (76.1 percent, 1996: 65.0 percent). Almost all employed fathers in these households still work full time, in both east and west. Thus, the modernized breadwinner model has gained considerable significance in both parts of Germany—in western Germany at the expense of the sole breadwinner model (father as sole earner),⁴ in the east at the expense of the equality model.

Wishes and Reality—Weekly Working Time in East and West

This section considers how far the altered realities of working time meet employees' wishes and how they have developed in the course of Germany's economic and societal transformations from 1991 to 2013.⁵ Here, too, we differentiate by gender and region (see box).

During the observation period from 1991 to 2013, men's average contractually agreed working time and desired working time remained relatively stable across the country, aside from slight variations. For women, the same figures have been stable only since 2000 (see Figure 2), and there have been greater variations in average actual weekly working hours. This development appears to follow variations in the economy as a whole. There is a greater gap between desired and actual weekly working hours among men than among women. The difference

income at least 60 percent). This proportion was significantly higher in eastern Germany (15.2 percent) than in western Germany (9.3 percent). Taking lone parents into account, the total share of female breadwinners in Germany was 18 percent of all multi-person economically active households. See U. Klammer, C. Klenner, and S. Pfahl, *Frauen als Ernährerinnen der Familie: Politische und rechtliche Herausforderungen*. Policy Paper. BMFSF und Max-Planck-Institut für ausländisches und internationales Sozialrecht (2010).

⁵ See also E. Holst and H. Seifert, "Arbeitszeitpolitische Kontroversen im Spiegel der Arbeitszeitwünsche," *WSI-Mitteilungen* 65, no. 2 (2012): 141–49.

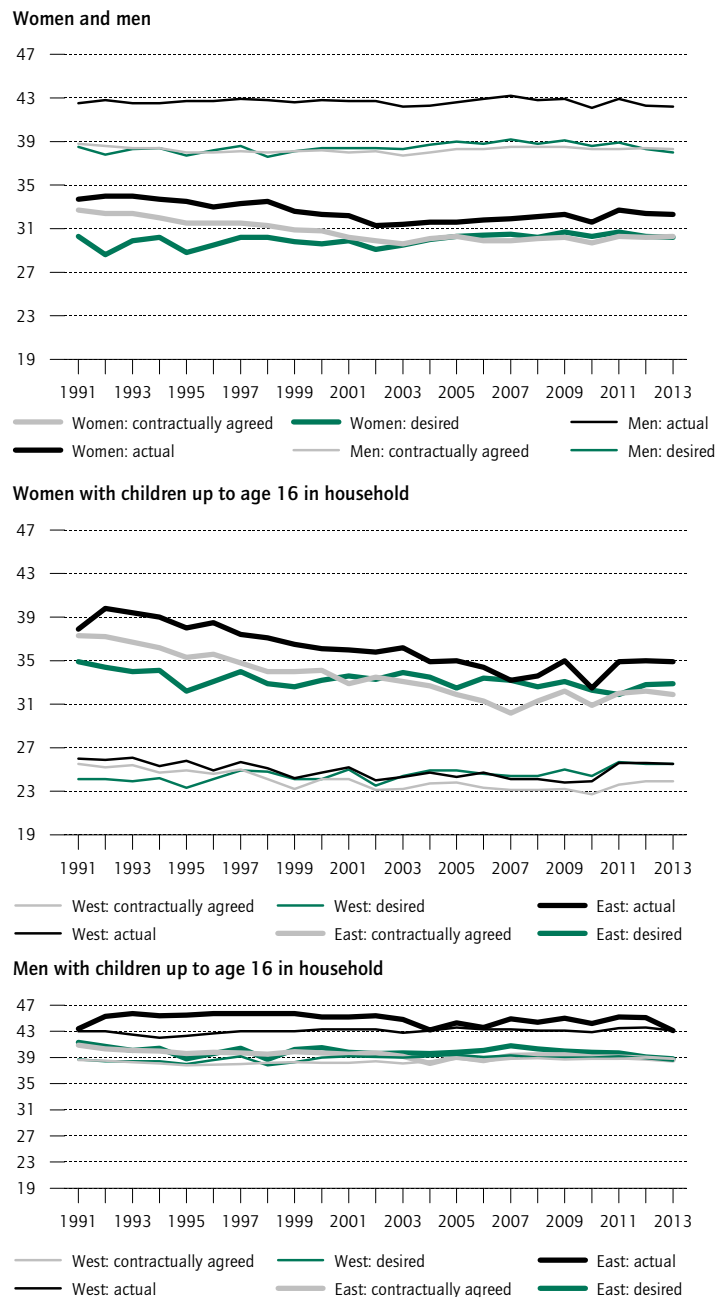
³ See also B. Pfau-Effinger, "Welfare State Policies and the Development of Care Arrangements," *European Societies* 7, no. 2 (2005): 321–47.

⁴ According to other studies on the basis of SOEP, every tenth couple household is supported by a female breadwinner (woman's share of family

Figure 2

Contractually agreed, Actual, and Desired Weekly Working Time¹ for Employees

In hours



¹ 1992 data for western Germany only. No data available for 1996. Values for 1992 and 1996 calculated as arithmetic mean of previous and subsequent year.

Sources: SOEPv30, provisional weighting from SOEPv29 for 2013; calculations by DIW Berlin.

es between the average desired and contractually agreed working time, however, are small for men across the entire period—and from 2000 onwards, the same goes for women. All in all, actual, contractually agreed, and desired weekly working time is, predictably, higher on average among men than among women.

According to SOEP figures, the average contractually agreed working time for men in the entire period was approximately 38 hours per week. In 2013 it was 38.3 hours (−0.5 hours compared to 1991). It thus corresponded almost exactly to the desired weekly working time (38 hours, −0.5 hours compared to 1991). The actual weekly working time was well above this figure, most recently almost as high, at 42.2 hours, as in 1991 (42.5 hours). Men's actual working time initially rose slightly in the course of the economic upturn after 2005, then fell as the economy declined as a result of the financial and economic crisis, only to increase again more recently.

Among women, the average actual and contractually agreed weekly working hours fell from 1991 until around 2003 and then remained relatively stable. As with men, the actual average working time per week was influenced by wider economic factors. In 2013, average actual working time was 32.3 hours (1991: 33.7 hours), thus some two hours higher than the average contractually agreed weekly working time. In 1991 the difference between the actual and contractually agreed figures was one hour. Desired working time was 30.2 hours, remaining almost the same as the 1991 figure (−0.1 hour) and very similar to the average contractually agreed working time (30.3 hours). Thus, there is also a large disparity between desire and reality with respect to average working time volumes for women, though not as large as for men.

Subtracting women's average weekly working time from that of men, the gender-specific differences in actual and contractually agreed working time increased during the period under observation. In terms of actual working hours, the difference was 9.9 hours in 2013 (+1.1 hour in comparison to 1991), while in terms of contractually agreed working time it was 8 hours (+1.9 hours compared to 1991). However, there was a slight reduction in the gender-specific difference in terms of desired weekly working time (2013: 7.8 hours, 1991: 8.2 hours). During phases of economic upturn, men extended their working time more substantially and thereby contributed to the enlargement of the gender difference in actual and contractually agreed working times. During the economic and financial crisis, the difference then declined again.

Desired and Actual Working Time for Eastern German Mothers Still Significantly Higher than in the West

Whereas this article has so far discussed the changes in family models due to the altered employment patterns of mothers in two-parent households with children, the focus is now on the volume of employment among women and men with children up to 16 in the household; that is, including lone parents (see Figure 2).⁶ It becomes clear here that fathers in eastern and western Germany work the same number of hours per week (2013: 43.1 hours) but significantly more than mothers in eastern and western Germany. There are clear east-west differences among mothers, in contrast: in 2013, mothers in eastern Germany worked over nine hours longer, at an average 34.9 hours of actual working time, than mothers in the west (25.5 hours). This difference is linked with the gender regime standard in the GDR. Until 1989, the societal model was a woman in full-time employment, accompanied by practical preconditions such as childcare provision.⁷ This major difference to western Germany—where women's role as mothers was more strongly emphasized, child care was rather privatized, and paid work for mothers was generally seen merely as a source of supplementary income⁸—is presumably the reason why mothers' desires and realities are on average so strongly divergent in the east and not in the west. Mothers' desired average weekly working time increased in the west from 1991 to 2013 by 1.4 hours, while it fell by two hours in the east. On average, actual working time in the west now corresponds to mothers' desired working time (2013: 25.5 hours). In the east, actual working time is two hours higher than the desired time. Thus, the average desired working time among working mothers in eastern and western Germany still differs considerably (by 7.4 hours).

Among fathers, desired and actual working time are much further apart—and at a far higher level—than among mothers. In both parts of Germany since reunification, significantly lower working hours are desired than are actually worked. The difference between actual and desired working time among fathers in the east

Table 2

Contractually agreed, Actual, and Desired Weekly Working Time¹ for Women in Full-Time Employment

In hours

	Western Germany			Eastern Germany		
	Contractually agreed	Actual	Desired	Contractually agreed	Actual	Desired
1991	38.6	41.2	34.7	40.4	40.5	37.0
1992	38.6	40.9	34.4	40.0	42.3	36.6
1993	38.5	40.9	34.5	39.9	42.6	36.1
1994	38.4	40.7	34.8	39.8	42.7	36.2
1995	38.4	41.3	33.7	39.7	43.3	34.9
1996	38.2	40.7	34.4	39.7	43.0	36.1
1997	38.4	41.5	35.1	39.5	43.5	37.3
1998	38.3	41.3	34.9	39.5	43.4	35.8
1999	38.3	41.2	35.7	39.3	42.4	35.9
2000	38.6	41.6	35.7	39.5	42.6	36.4
2001	38.4	41.5	36.0	39.3	42.9	37.2
2002	38.5	41.3	35.7	39.4	42.7	37.0
2003	38.5	41.4	35.9	39.5	42.9	37.3
2004	38.5	41.4	36.1	39.2	42.5	37.3
2005	38.9	41.8	36.7	39.2	43.2	37.4
2006	38.7	42.1	36.5	39.2	43.3	37.8
2007	38.9	42.2	37.0	39.3	43.8	37.8
2008	39.0	42.5	36.4	39.2	43.1	37.1
2009	38.8	42.4	36.3	39.2	43.1	37.5
2010	38.9	42.1	36.4	39.3	42.2	37.5
2011	39.0	42.8	36.8	39.6	42.9	37.3
2012	39.1	42.5	36.5	39.4	42.8	36.6
2013	39.1	42.5	36.4	39.2	43.3	36.9

1 1992 data for western Germany only. No data available for 1996. Values for 1992 and 1996 calculated as arithmetic mean of previous and subsequent year.

Sources: SOEPv30, provisional weighting from SOEPv29 for 2013; calculations by DIW Berlin.

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The contractually agreed working time of women in full-time employment had practically equalized between east and west by 2013.

was most recently 4.3 hours (2013: actual weekly working time 43.1 hours, desired 38.8 hours), and in the west 4.6 hours (actual 43.1 hours, desired 38.5 hours). Fathers' desired work volume was thus at about the same level as their contractually agreed working time (2013: west 38.8 hours, east 38.6 hours).

Men in Full-Time Employment Want to Work around Five Hours Less per Week

For women in full-time employment, there has been a significant convergence between east and west regarding contractually agreed, desired, and actual working time (see Table 2). This was particularly the case in the most recent years of the observation period, with the convergence coming from both sides. It is interesting

⁶ These women and men with children in the household are referred to hereafter as mothers and fathers. Strictly speaking, the children may not be their biological offspring. In some cases, they may be the children of other family members. It is assumed, however, that the adults adopt a function corresponding to a mother/father role toward the children in the household.

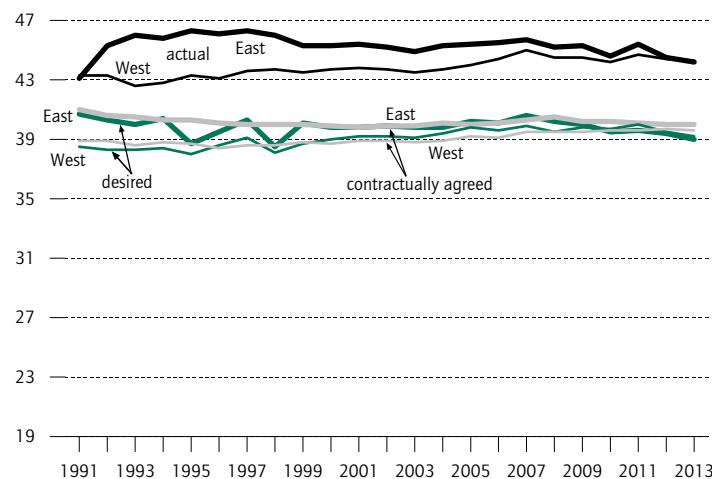
⁷ See, for instance, H.M. Nickel, "Geschlechterverhältnis in der Wende. Individualisierung versus Solidarisierung?" Inaugural lecture, July 5, 1993, Humboldt-Universität zu Berlin, Social Studies Faculty (1993), and H.M. Nickel, "Mitgestalterinnen des Sozialismus – Frauenarbeit in der DDR," in *Frauen in Deutschland 1945–1992*, ed. G. Helwig and H.M. Nickel (Berlin: Bundeszentrale für politische Bildung, 1993), 233–56.

⁸ See Pfau-Effinger, "Welfare State Policies."

Figure 3

Contractually agreed, Actual, and Desired Weekly Working Time¹ for Men in Full-Time Employment

In hours



1 1992 data for western Germany only. No data available for 1996. Values for 1992 and 1996 calculated as arithmetic mean of previous and subsequent year.

Sources: SOEPv30, provisional weighting from SOEPv29 for 2013; calculations by DIW Berlin.

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Eastern and western German men in full time employment work about 5 hours per week longer than desired.

that the average actual weekly working time for women in full-time employment in eastern Germany directly after reunification was 40.5 hours, this was below the corresponding figure for western Germany (41.2 hours). This had already changed by 1992 and women in eastern Germany have since been ahead (1993: 43.3 hours, western Germany: 42.5 hours). In contrast, the average contractually agreed weekly working time of women in full-time employment in eastern Germany fell by 1.2 hours to 39.2 hours per week, while in western Germany there was a slight increase of 0.5 hours between 1991 and 2013 to 39.1 hours. Interestingly, women in full-time employment in western Germany now wish for a weekly working time of 36.4 hours on average, on a similar level to their eastern German counterparts (2013: 36.9 hours, 1991: west 34.7, east 37 hours).

A conspicuous factor among men in full-time employment is the gap between reality and wishes in terms of working time, in all years—this phenomenon was more marked in eastern than western Germany for a long time (see Figure 3). The difference between actual and desired weekly working time reached a peak in 1995 (west 5.3 hours, east 7.6 hours) and then settled at around five hours in both parts of Germany. Between

1991 and 2013, the actual working time of men in full-time employment rose by about one hour. It was roughly equal in both regions by this point (west: 44.3 hours, east: 44.2 hours per week). Desired weekly working time increased in the west (39.2 hours, +0.7) and decreased in the east (39 hours, -1.7 hours). All in all, the gender-specific differences are at their lowest among people in full-time employment.

Women in Part-Time Employment Work Significantly Longer in Eastern Germany than in the West

Part-time and marginal part-time employment are women's domains in Germany.⁹ Only relatively few men take up these forms of employment. The following analysis of reduced paid employment in eastern and western Germany (hereafter "part-time work") is therefore focused on women.

The clear differences in employment orientation between women in eastern and western Germany previously observed among mothers are repeated among part-time employees in total (see Figure 4). In eastern Germany, all the average working time values examined are above the highest average value among women in western Germany—although to a slightly lesser extent than among mothers specifically. The east-west difference in desired working time is particularly large—indicating dissatisfaction among eastern German women with the volume of their part-time work. The large gap between wishes and reality applies across the entire observation period, although the east-west difference has decreased over time. Whereas eastern German women wanted to work 10.2 hours longer than western German women in 1991, by 2013 this difference was 6.8 hours. A similar development can be observed in contractually agreed working time: the east-west gap has narrowed from 6.2 to 4.9 hours. Although women working part-time in western Germany also want to work more hours, the desired number of working hours was only 1.5 hours above the actual working time, a comparatively small difference (east: +2.2 hours). Looking at the average figures, one might assume a high degree of satisfaction with the vol-

9 On the low percentage of men and gender-specific trends in the number of employees subject to social insurance in full-time and part-time work since 1999, see for example Bundeszentrale für politische Bildung, www.bpb.de/nachschlagen/zahlen-und-fakten/soziale-situation-in-deutschland/61705/teilzeitbeschaeftigte, accessed September 5, 2014. On the development of marginal part-time work, see for example Deutscher Bundestag, Entwicklung der geringfügigen Beschäftigung in Deutschland, Bundestags-Drucksache 17/6382 (2011), and most recently Bundesagentur für Arbeit, Beschäftigung – Die aktuellen Entwicklungen in Kürze – August 2014, statistik.arbeitsagentur.de/Navigation/Statistik/Statistiknach-Themen/Beschaeftigung/Beschaeftigung-Nav.html, accessed September 5, 2014.

ume of employment in western Germany. However, the following findings relativize this impression.

Weekly Working Time in Eastern and Western Germany in 2013 in Detail: Long Weekly Working Hours Also Unpopular among Men

The previous sections have presented average values for weekly working hours among people in full-time and part-time employment. This section examines actual and desired working time in detail and contrasts the percentages of women and men in the various time categories. The analyses refer to the year 2013.

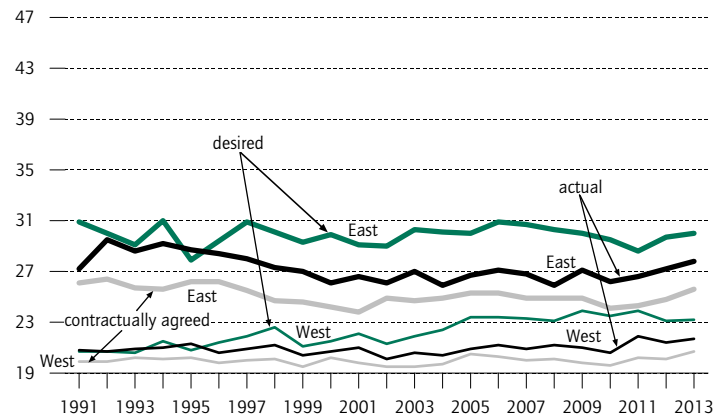
In this analysis, it is once again the major differences between women in western and eastern Germany that stand out (see Figure 5). The majority of employed women in eastern Germany want to work full time or nearly full time. The working time preferences of women in western Germany, however, vary significantly—including in the part-time sector. Almost one-third (32 percent) of employed women in eastern Germany wish for a volume of 40 working hours per week, while only 19 percent are actually employed for 40 hours a week. In western Germany, 18 percent would like to be employed for 40 hours per week and 14 percent actually work this number of hours. The second most frequently desired working time bracket among eastern German women is 30 to 34 hours per week (28 percent). This volume of work is also popular in western Germany (20 percent, although actually worked by only 10 percent) and is preferred slightly more frequently than a working time of 20 to 24 hours per week (15 percent, actually worked by 12 percent). Among women, the disparities between actual and desired working time are greatest in the time brackets 20 to 24 hours and 30 to 34 hours. Women in both parts of Germany rarely wish for a very short working time of below 15 hours or long weeks of over 40 hours. However, it is rather more frequent for women in western Germany to actually work short weeks and for women in eastern Germany to work long weeks.

Actual working time and desired working time are significantly more similar among men in the two parts of Germany (see Figure 6) than among women. The preferred working time is a 40-hour week—favored by 42 percent of western German and 53 percent of eastern German men. However, significantly fewer men actually work this volume of hours (west 23 percent, east 29 percent). Many men work over 40 hours per week, but few of them wish to do so. For example, 14 percent of western German men and 15 percent of eastern German men work 45 hours per week, while only 4 percent (west) and 3 percent (east) want to do so. The differences

Figure 4

Contractually agreed, Actual, and Desired Weekly Working Time¹ for Women in Part-Time Employment

In hours



¹ 1992 data for western Germany only. No data available for 1996. Values for 1992 and 1996 calculated as arithmetic mean of previous and subsequent year.

Sources: SOEPv30, provisional weighting from SOEPv29 for 2013; calculations by DIW Berlin.

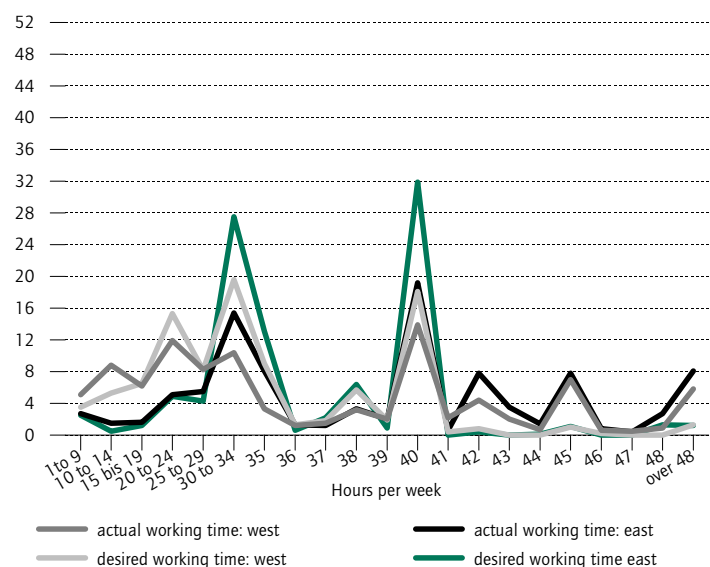
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The working time of women in part-time employment is much higher in the east than in the west.

Figure 5

Actual and Desired Working Time of Female Employees in 2013

In percentages



Sources: SOEPv30, provisional weighting from SOEPv29; calculations by DIW Berlin.

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The majority of eastern German women wants to work full time or almost full time.

Figure 6

Actual and Desired Working Time of Male Employees, 2013 In percentages



Sources: SOEPv30, provisional weighting from SOEPv29; calculations by DIW Berlin.

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Men prefer a 40-hour week, but often work longer.

are even clearer in the case of very long working weeks of 49 hours and more, which are worked by around 19 percent of men in western Germany and 18 percent of men in eastern Germany, but are only preferred by every twentieth man in employment. A working week of 35 hours is preferred by 13 percent of western German and 14 percent of eastern German men, but only very few actually work this few hours. Men rarely wish for working time below 35 hours per week—and very few of them actually work such short weeks.

Summary and Conclusions

Since German reunification, female employment in western Germany—particularly for mothers—has seen a constant and strong increase. In eastern Germany, actual female employment initially plummeted but is now above the western German level again. Women's employment orientation, however, is significantly higher in eastern Germany, as indicated by differences in labor market participation and the volume of work. Overall, developments in both parts of Germany have been accompanied by a rise in part-time and marginal part-time work.

Women's contractually agreed and actual weekly working time has fallen. The modernized breadwinner model has become more prevalent in both parts of Germany. The most marked differences between eastern and western Germany in the years 1991 to 2012 are found when comparing mothers: mothers in eastern Germany work a considerably higher number of hours. In western Germany, the average contractually agreed and actual working time fell only in the group of mothers, while it rose slightly in all other groups included in the analysis—that is, among fathers and among women and men working full and part time. The desired weekly working time among mothers in western Germany rose by 1.4 hours on average between 1991 and 2013—2.5 hours among women in part-time work and 1.7 hours for women in full-time jobs. In western Germany, since 1991 desired weekly working time has fallen only among fathers, and only to a small extent. The case is different in eastern Germany: there, not only fathers but all other groups in the analysis wanted to work less on average in 2013 than in 1991, though this decrease was greatest among fathers. Although conditions have changed and childcare options have been reduced in many cases, the standard GDR model of the woman in full-time employment still appears to influence women in eastern Germany almost a quarter of a century after reunification.

When looking for potential for expanding the present volume of work—for instance in the context of demographic change—the analysis based on SOEP data confirms that such potential exists first and foremost among women. The extent to which this working time potential can be realized, however, depends essentially on how far the demand for labor can be matched with the supply of labor, for instance with regard to region and qualification.

Many women and men work longer hours than they would like to—even when taking into account changes in their earnings that would result from the preferred working time. Long working weeks of over 40 hours are not popular among either men or women. Women wish for a wider spectrum of working volumes than men. In Germany as a whole, the gender differences in terms of actual and contractually agreed working time have increased from 1991 to 2013. This trend is reversed only when it comes to desired weekly working hours.

The findings indicate a considerable need for organizations to take action on restructuring weekly working time. The decline in labor supply due to demographic change could make that need even more urgent. Future working time models should therefore recognize new divisions of labor within the family as soon as possible. One example is the model of family-friendly working

times for new fathers and mothers, previously examined by DIW Berlin.¹⁰

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JEL: J12, J16, J21, J22

Keywords: Labor supply, labor market participation, working time, working time preferences, East Germany, West Germany, modernized breadwinner model

¹⁰ See, for example, K.-U. Müller, M. Neumann, and K. Wrohlich, "Bessere Vereinbarkeit von Familie und Beruf durch eine neue Lohnersatzleistung bei Familienarbeitszeit," DIW Wochenbericht 46 (2013).

Gender Pension Gap in Eastern and Western Germany

By Anika Rasner

Now, 25 years after the fall of the Berlin Wall, eastern and western German men are receiving similar state pensions, the main pillar in the system of old age provision in Germany. In contrast, the average pension paid to eastern German women far exceeds that of their western counterparts. A cohort comparison shows a narrowing of the gender gap when it comes to pension entitlements in eastern Germany. This decline is less a result of higher pension entitlements among eastern German women than a consequence of significant drops in pensions among eastern German men. In western Germany, however, the gender pension gap has remained consistently high throughout the cohort comparison. Western German women born in the baby boom years have only managed to narrow the gender gap to a limited extent despite their increasing labor participation.

The present analysis first compares the development of average pension payments received by pensioners in eastern and western Germany who retired between 1993 and 2013. A cohort comparison analyzes the extent to which the existing East-West differences, particularly among women, are likely to continue into the future.

With the passing of the Unification Treaty of August 31, 1990 and the Pension Transfer Law of July 25, 1991, the German pension laws set down in Book VI of the German Social Code were extended to include the states of the former German Democratic Republic (GDR).¹ Consequently, on January 1, 1992, the day on which the new regulations came into effect, almost eight million people who are insured in the statutory pension insurance and just under four million pensioners from the former GDR were merged with the western German system.²

One of the biggest challenges that arose in connection with the alignment of the two pension insurance systems was recalculating existing eastern German pensions on the basis of western German pension laws. Although pension insurance in the GDR was also organized on the basis of a pay-as-you-go (PAYG) system, there were still substantial differences between east and west. At the time of reunification, for example, pension levels in the GDR were still very low,³ with many pensioners on minimum-level pensions.

The German Pension Transfer Law meant existing pension entitlements were re-calculated, taking into consideration the number of contribution years, as well as the individual average incomes for the last 20 years. Owing to the clear differences in income in the east and west,

¹ These analyses came about during the Hans Böckler Foundation-backed project "Die Entwicklung der geschlechtsspezifischen Rentenlücke in Deutschland: Analysen zu Entstehung und Bestimmungsfaktoren im Lebenslauf," project no. S-2012-613-4.

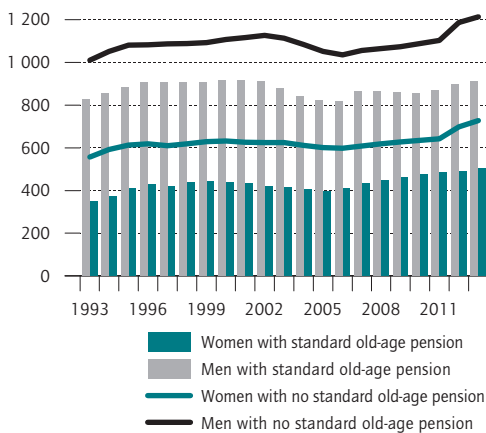
² One of the main criticisms made was the fact that reunification-related costs were financed to a certain extent through pension and unemployment insurance. An overview of pension insurance during the process of reunification is provided by G. Ritter, "Die Rentenversicherung im Prozess der deutschen Wiedervereinigung," (2011), in: E. Eichenhofer, H. Rische, and W. Schmähl, eds., "Handbuch der gesetzlichen Rentenversicherung," Book VI of the German Social Code (Cologne): 67-103.

³ E. Kirner, H. Vortmann, and G.G. Wagner, "Übergang zum neuen Rentensystem ist schwierig," DIW Wochenbericht, no. 14 (1990): 167-171.

Figure 1

Average Monthly Pensions for All Old-Age Pensioners for Those Entering Retirement from 1993 to 2013 (West)

In euros (nominal)



Sources: German Statutory Pension Insurance (DRV) statistics: *Rentenversicherung in Zeitreihen – DRV Brochure, no. 22 (Berlin: 2013)*; calculations by DIW Berlin.

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A slight upward trend can be seen in pension rates for western German women.

eastern German incomes had to be upscaled.⁴ This provided a basis for recalculating existing pensions, as well as for new pension entitlements for those retiring after reunification. The aim here was to achieve a comparable level of old-age provision in eastern and western Germany.

The present article shows, first and foremost, the development of statutory pension payments since reunification for women and men in eastern and western Germany. The extent to which the existing east-west differences will affect future pension generations is analyzed on the basis of projected data.

Development of Pension Payments since Reunification

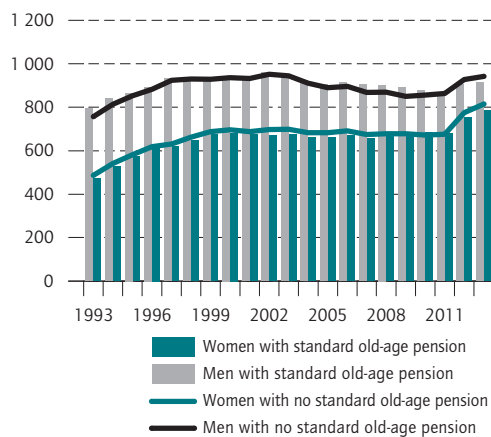
Figures 1 and 2 show an east-west comparison of average monthly pensions for men and women who reached

⁴ The conversion rates used to upwardly adjust the eastern German payments can be found in Schedule 10 of the German Social Code Book VI. Owing to the different standards of living and wealth in the east and west, the eastern German entitlements are assigned a higher value even 25 years after the fall of the Wall.

Figure 2

Average Monthly Pensions for All Old-Age Pensioners for Those Entering Retirement from 1993 to 2013 (East)

In euros (nominal)



Sources: German Statutory Pension Insurance (DRV) statistics: *Rentenversicherung in Zeitreihen – DRV Brochure, no. 22 (Berlin: 2013)*; calculations by DIW Berlin.

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The gender pension gap in eastern Germany is less striking.

pension entitlement age between 1993 and 2013.⁵ The figures for new pensioners include all those who started receiving an old-age pension within the given calendar year. The columns in the figures denote the nominal averages for all old-age pensions in a given year, while the horizontal lines represent those receiving a “standard old-age pension”, who are not included in the calculations (see Box 1). The low standard old-age pension payments have a dampening effect on average pension levels.

During the period under observation, no notable increase in nominal average pensions for western German men was evident (825 euros in 1993 compared with 913 euros in 2013). In the case of western German women, in contrast/conversely, an upward trend, albeit rather slight, can be observed. Average pensions rose from 350 euros in 1993 to 505 euros in 2013.⁶ The gender pension gap narrowed from around 58 to just below 45 percent during this period.⁷

⁵ The first ever reliable statements on the development of pension payments in eastern Germany were made in 1993.

⁶ At an average rate of inflation of just under two percent per year, this resulted in losses in real pension payments.

⁷ The gender pension gap measures the difference (in percent) between the average statutory pension payments for men and women. See A. Rasner, “Das

Box 1

Glossary of Pension Terms

Earnings-related pension points: In order to calculate the pension level, the time a person has paid into the statutory pension scheme is converted into points. For this calculation, the individual earnings of the insured person are divided by the average earnings of all those who have paid into the system. One point is awarded for each year at average earnings. For half the average wage, 0.5 points are counted. Additional pension points can be earned for periods that are of relevance for pension insurance, such as maternity leave. Due to the persistent salary differences in eastern and western Germany, a conversion factor is applied to bring points earned in eastern Germany in line with western levels (see Schedule 10 of Book IV of the German Social Code (SGB IV)).

Standard old-age pension: The eligibility age for a standard old-age pension is gradually being increased to 67 years. For those born in 1949 the standard old-age pension is payable at age 65 and three months. To be eligible for a standard old-age pension, the only requirement is a minimum of five years' contributions. Those receiving a standard old-age pension are a rather heterogeneous group, including, on the one hand, civil servants who had paid into the statutory pension fund for a number of prior years, making them eligible for a standard old-age pension, and, on the other hand, western German women with low labor market participation. Due to the relatively short contribution periods, standard old-age pensions are rather low. When calculating averages for all old-age pensions, the standard old-age pension payments have a cushioning effect on the resulting averages.

If standard old-age pensions are not included in the calculations,⁸ the average pensions for men in western Germany increase from 1,010 euros in 1993 to 1,213 euros in 2013, while in the same period western German women's pensions went up from 558 to 728 euros. Here, the reduction in the gender pension gap from 45 to 40 percent is less significant. The different results can be attributed to the large proportion of western German women claiming a standard old-age pension, who, owing to their low level of labor participation, fail to meet the eli-

gibility requirements for early old-age pensions such as the old-age pension for women.

A comparison of all old-age pensioners with those not claiming a standard old-age pension shows the differences in eastern Germany are less striking. For both men and women, an increase in average nominal pensions from 1993 to 2013 was observed. For eastern German men, average pensions rose slightly from 794 to 915 euros, as compared with an increase from 471 to 786 euros for women in eastern Germany. Between 1993 and 2013, the gender pension gap closed from 41 to 14 percent. The considerable differences in pension payments between eastern German men and women shortly after reunification are surprising; the efforts to improve gender equality in the former GDR would appear to have been more fruitful than in West Germany. Having said that, this did not apply to eastern German women who retired post-reunification. Many of the women had no formal professional training and were earning far less than their male counterparts. In addition, many women had to stop working to raise their children.⁹ This would suggest that it is younger birth cohorts that profit most from the gender equality. For this age group, full-time employment for men and women was actively encouraged in the GDR and supported by extensive childcare opportunities.¹⁰ Consequently, the gender pension gap for the newly retired is much less pronounced than is the case in western Germany.

While the increase for eastern and western men was rather moderate during the period of observation, the average pensions of their female counterparts were on the rise. In eastern Germany, the gender pension gap had narrowed significantly, whereas in western Germany the gap was closing very slowly, leaving it still relatively wide. In terms of east-west differences, 25 years after the fall of the Wall, it can be said that, on average, eastern and western German men are almost on an equal footing when it comes to the most important pillar of the system for old-age provision in Germany. The situation for their female counterparts, on the other hand, is very different with the pensions of eastern German women far exceeding those of their western German counterparts. The standard pension alone, however, cannot be taken as an indicator for social security in old age. Furthermore, if occupational and private pension funds are also taken into account, the disposable income of west-

Konzept der geschlechtsspezifischen Rentenlücke," *Deutsche Rentenversicherung*, vol. 55 (2006): 270-284.

8 In 2013, 42 percent of women qualified for a standard old-age pension, while the equivalent for men was only 32 percent.

9 H. Trappe, "Lost in Transformation? Disparities of Gender and Age," in: M. Diewald, A. Goedicke, and K.U. Mayer, eds., *After the Fall of the Wall: Life Courses in the Transformation of East Germany*, (Stanford, 2007): 116-139.

10 B. Hanel, and R. T. Riphahn, "The Employment of Mothers – Recent Developments and their Determinants in East and West Germany," *Journal of Economics and Statistics* 232(2) (2012): 146-176.

ern German pensioners is in fact far higher since supplementary insurance schemes continue to be less widespread in eastern Germany.¹¹ In addition, since women have less frequent and overall lower pension entitlements in occupational and private pension schemes, the gender pension gap would become even wider, particularly in western Germany.

Various Reasons for Gender Pension Gap

In the German statutory pension insurance scheme (GRV), those in dependent employment essentially begin to accumulate pension entitlements when they start their first job where they are liable for social security contributions. The greatest share of pension entitlements comes from employment subject to social insurance contributions. For this reason, the statutory pension insurance in Germany is regarded as earnings-centered. Nonetheless, some forms of non-gainful employment can also earn a person pension entitlements, for example, during studies, periods of unemployment or sick leave, as well as when bringing up children or taking care of sick or elderly relatives (unpaid). Such attempts at achieving social equality help close certain gaps in the individual employment history and mitigate the negative effects that temporary non-gainful activities may have. On average, women profit from this pension-related recognition of periods of non-gainful employment more than men.¹²

There are many different reasons for the gender pension gap. When men and woman enter into employment for the first time, they make various choices as to profession and studies with men tending to opt for those areas with higher average salaries and salary increases.¹³ Men and women also differ with regard to educational return on investment. In other words, even in cases where women and men do enter the same profession, women will have lower average earnings.¹⁴

In a pension scheme that is largely earnings-based, as is the case in Germany, differences in salary between women and men¹⁵ are one of the major factors contributing to the gender pension gap. Salary differences are also a result of women often being employed in low-salary jobs.¹⁶ In addition, more women work part-time with correspondingly lower earnings or take on “mini-jobs,”¹⁷ where no pension entitlements can normally be accumulated.¹⁸ Besides lower labor market participation, women also take breaks in employment more often and for longer periods, in particular to raise their children and help care for family members.¹⁹ On the one hand, this interruption to working life may be an expression of personal preference. It may, however, also be due to insufficient childcare facilities and care support systems. Part-time employment and mini-jobs often provide women with the flexibility they need to be able to combine work and family life. The low employment prospects for women may, however, also be a result of income splitting, which can bring about particularly good tax benefits if one spouse—normally the husband—has a higher salary and the other spouse—normally the wife—has very little or no taxable income at all.²⁰

The gender pension gap continues to widen when employment ends and people reach retirement age. For instance, married couples tend to retire at the same time.²¹ With married women often being a number of years younger than their husbands, their pensions will be correspondingly lower.²² A large proportion of women also

¹⁵ OECD, *Closing the Gender Gap* (Paris, 2012).

¹⁶ T. Kalina and C. Weinkopf, “Niedriglohnbeschäftigung 2008: Stagnation auf hohem Niveau – Lohnspektrum franst nach unten aus,” *IAQ Report*, no. 2010-06.

¹⁷ D. Voss and C. Weinkopf, “Niedriglohnfall Minijob,” *WSI Mitteilungen*, no. 1 (2012): 5-12.

¹⁸ Since January 1, 2013, mini-jobs have been liable to pension insurance contributions, although those employed in mini-jobs can apply for exemption from this liability, which the German legislature introduced to improve the precarious “security” situation in this form of employment. The majority of people employed in mini-jobs, however, make use of the possibility of exemption.

¹⁹ C. Boll, *Lohneinbußen von Frauen durch geburtsbedingte Erwerbsunterbrechungen. Der Schattenpreis von Kindern und dessen mögliche Auswirkungen auf weibliche Spezialisierungsentscheidungen im Haushaltszusammenhang. Eine quantitative Analyse auf Basis von SOEP-Daten* (Frankfurt am Main: 2011).

²⁰ V. Steiner and K. Wrohlich, “Introducing Family Tax Splitting in Germany: How Would It Affect the Income Distribution, Work Incentives and Household Welfare?,” *Finanzarchiv*, vol. 64, no.1 (2008) 115-142.

²¹ M. Coppola and C.B. Wilke, “How Sensitive Are Subjective Retirement Expectations to Increases in the Statutory Retirement Age? The German Case,” *MEA Working Paper Series*, no. 207 (Mannheim: Mannheim Research Institute for the Economics of Aging, 2010).

²² M. Brüssig, “Fast Die Hälfte aller neuen Altersrenten mit Abschlägen – Quote weiterhin steigend: Probleme mit dem Anstieg der Altersgrenzen vor allem bei Arbeitslosen, aber auch bei Erwerbstätigen,” *Altersübergangs-Report*, no. 1 (Duisburg: Institut Arbeit und Qualifikation, 2010).

¹¹ K. Kortmann and T. Heien, *Alterssicherung in Deutschland 2011 (ASID 2011) – Zusammenfassender Bericht*, (Munich: TNS Infratest Sozialforschung, 2012).

¹² For a discussion on the effectiveness of spouse- and family-related benefits in the statutory pension insurance scheme, see H. Buslei, P. Haan, R. Ochmann, and B. Rürup, “Ehe- und familienbezogene Leistungen in der Alterssicherung: Wichtig für die wirtschaftliche Stabilität von Familien,” *DIW Wochenbericht*, no. 23 (2014).

¹³ S. Gundert and K.U. Mayer, “Gender Segregation in Training and Social Mobility of Women in West Germany,” *European Sociological Review*, no. 28(1) (2012): 59-81; E. Smyth and S. Steinmetz, “Field of Study and Gender Segregation in European Labour Markets,” *International Journal of Comparative Sociology*, vol. 49, no. 4-5 (2008): 257-281.

¹⁴ D. Glocker and J. Storck, “Risks and Returns to Educational Fields – a Financial Asset Approach to Vocational and Academic Education,” *Economics of Education Review* 42 (2014): 109-129.

Box 2

Statistical Data Fusion and Data Projection

Statistical data fusion was applied to obtain the set of data used for this report, the basis being anonymous data from the Socio-Economic Panel (SOEP) study¹ collected by the field-work organization TNS Infratest Sozialforschung on behalf of DIW Berlin, as well as the Sample of Active Pension Accounts (VSKT) provided by the research data center of the German Pension Insurance scheme (FDZ-RV) for those born between 1936 and 1965.² Unlike with record linkage approaches, where identical observations in two data sources are linked by means of an unambiguous ID number, data fusion involves combining "statistical twins" on the basis of socio-demographic characteristics found in both. The identity of the people is not known at any point. The main purpose is to fuse data that display as many similar attributes as possible.

The aim of data fusion is to merge the in-depth and complex data from the SOEP study—which contains information on household context, education, and employment history, as well as various other earnings and income types (including pension payments from private and workplace pension plans)—with detailed longitudinal pension entitlement data and insurance periods contained in the Sample of Active Pension Accounts (VSKT).

1 The SOEP study is a representative longitudinal study of households conducted annually since 1984 in western Germany and since 1990 in eastern Germany. See G.G. Wagner, J. Göbel, P. Krause, R. Pischner, and I. Sieber, "Das Sozio-oekonomische Panel (SOEP): Multidisziplinäres Haushaltspanel und Kohortenstudie für Deutschland—Eine Einführung (für neue Datennutzer) mit einem Ausblick (für erfahrene Anwender)," *ÄStA Wirtschafts- und Sozialstatistisches Archiv*, vol. 2, no. 4 (2008): 301–328

2 See A. Rasner, J.R. Frick, and M.M. Grabka, "Statistical Matching of Administrative and Survey Data: An Application to Wealth Inequality Analysis," *Sociological Methods & Research*, vol. 42, no. 2 (2013): 192–224.

To enable the old-age income of those in the baby-boom group to be compared with that of predecessor cohorts, the LAW life projection model developed by DIW Berlin was applied; this model delivered consistent projections on the individual earnings, family, and income biographies of the three analysis cohorts up to the age of 67.3 For younger insured people, this means that expected pension entitlements up to a person's 67th birthday are filled up." For those who are 66 years old in 2007, this is just one year, while for 42-year-olds this would mean filling up 25 years.

Unlike model-based projection methods which simulate results year for year, the LAW life projection model forecasts matching sequences in different life courses. Here, entire biographies of older years (donors) are used on the basis of the similarity between earnings-related and family biographical data (number of years in first marriage, age when second child was born, number of years in unemployment, etc.), as well as age-specific pension entitlements in eastern and western Germany, and sequential projections made for incomplete biographies of younger birth years (recipients). This method does not produce oversimplified life courses, as is the case with model-based imputations, but models the diversity of the life courses in the dataset in its entirety.

In the projection model used here, neither cohort effects nor the mortality of the people in the sample are taken into consideration. The basic economic conditions were kept constant for the reference year 2007. Similarly, changes to the recognition of pension entitlement during periods of unemployment were not adequately considered, either, meaning the projections made here can be seen as optimistic.

3 See C. Westermeier, A. Rasner, and M.M. Grabka, "The Prospects of the Baby Boomers: Methodological Challenges in Projecting the Lives of an Aging Cohort," *SOEP Papers*, no. 440 (DIW Berlin, 2012).

cease to be active on the labor market towards the end of employment age (between their 58th and 65th years).²³

The aforementioned reasons do not affect women and men in eastern and western Germany to the same extent. First, full-time employment for eastern German women has been actively encouraged. Second, there are considerable east-west differences in childcare options and attitudes to non-parental childcare, which still ex-

ist, albeit to a lesser extent, even 25 years after the fall of the Wall.²⁴ In addition, eastern German women have, on average, worked far more hours per week than their western counterparts.²⁵ Consequently, the salaries of eastern German women are higher, which implies that they benefit to a lesser extent from the income splitting in the German tax law.

23 A. Rasner and S. Etgeton, "Rentenübergangspfade: Reformen haben großen Einfluss," *DIW Wochenbericht*, no. 19 (2014).

24 See the 3rd report in this issue of DIW Economic Bulletin.

25 See the 4th report in this issue of DIW Economic Bulletin.

Future Development of Gender Pension Gap

A cohort comparison examines the extent to which east-west pension differences for men and women are likely to exist in future. To this end, the accumulation of pension entitlements between the 15th and 58th years is broken down using model calculations and the birth cohorts compared.²⁶ The baby boomer cohort born between 1956 and 1965 are of particular interest here. They are compared with two predecessor cohorts: those born between 1936 and 1945 (war-years cohort), almost all of whom have already retired, and those born between 1946 and 1955 (post-war cohort), who are about to reach retirement age.

To calculate the accumulation of pension entitlements in the course of a person's life, as well as the development of future pensions, statistical data fusion was applied: the fused dataset containing data from the Socio-Economic Panel (SOEP) study and the sample of insured persons and their insurance accounts (Sample of Active Pension Accounts, VSKT) was then analyzed (see Box 2). For the youngest and oldest in the "baby boom" group, data on pension entitlements were available up to the 42nd and 51st year, respectively. To make the pension entitlement accumulated during working life comparable with earlier cohorts, the time left till retirement is completed using a projection model.

The baby boomers differ from the pension generation of today in many ways. It is in this cohort that a clear increase in gainful employment and employment orientation is evident for women—particularly in western Germany. Eastern German baby boomers, in contrast, were strongly affected by the high unemployment rate that continued into the post-reunification years.²⁷ This is also the age group that, owing to educational expansion in the 1970s, now has better formal education qualifications than the post-war generation. This group also includes more cases of separation and divorce in the course of their lives, however.²⁸ Besides the general increase in life expectancy in recent years, the fast ap-

proaching pension age of the "baby boomers" has been another of the motives for the extensive reforms in the past few decades which have resulted in fundamental changes to old-age provision in Germany.

To begin with, the accumulation of pension entitlements between the 15th and 58th year acquired solely from employment subject to social security contributions is analyzed by cohort. The second step is to factor in all pension entitlements from all pension-relevant periods in a person's life. The cohort comparison showed a drastic decline in pension entitlements from employment subject to social security for eastern German men (see Figure 3). While eastern German men in the war-years group had earned an average of 35 pension points by the time they reached the age of 57, the baby boomers were predicted to earn as little as 25 pension points. In terms of the current pension-point value²⁹ for eastern Germany (currently 26.39 euros), this is equivalent to a drop in monthly pension of 264 euros. One reason for this is the persistently high unemployment rate in the post-reunification years. For eastern German women, the comparison also showed a decline, albeit not quite as severe, in pension entitlements from employment liable to social security contributions. Women in the war-years cohort had earned 25 pension points by the age of 57. Eastern German baby-boom women were projected to earn 21.5 pension points. In terms of the current pension-point value for eastern Germany, this is a 93-euro fall in pension payments. This development causes the gender pension gap to close, taking it from 28 percent for the war-years cohort to 15 percent in the baby-boom cohort. This decrease is, however, less the result of increasing pension entitlements for women and more the consequence of significant losses for eastern German men. Overall, one can state that in an employment-centered pension system as the German, the share of earning points coming from employment is constantly decreasing across cohorts.

The cohort comparison revealed a decline in pension entitlements from employment subject to social security contributions for western German men, too, with those from the war-years cohort demonstrating, on average, a stronger decrease than for the baby-boom cohort, which was more moderate on the whole. On the basis of the current pension-point value for western Germany (equivalent to 28.61 euros), the pension payment for the baby boomers is 105 euros lower. Contrary to expect-

²⁶ The analysis of the accumulation of pension entitlements was conducted until the 58th year of the insured's life only. The reason for this is that forecasts on pension transition for those from the baby-boom cohort involve considerable uncertainty. The average pension entitlements specified here are thus lower than the actual pension entitlement that is expected on reaching retirement age. In addition, once a person reaches pension eligibility age, a final calculation including any periods where no or reduced contributions were made is carried out. This final calculation will increase the actual pension payment.

²⁷ J. Simonson, N. Kelle, L. Romeu Gordo, M.M. Grabka, A. Rasner, and C. Westermeier, "Babyboomer: Mehr Brüche im Erwerbsleben, weniger Rente," DIW Wochenbericht, no. 23 (2012).

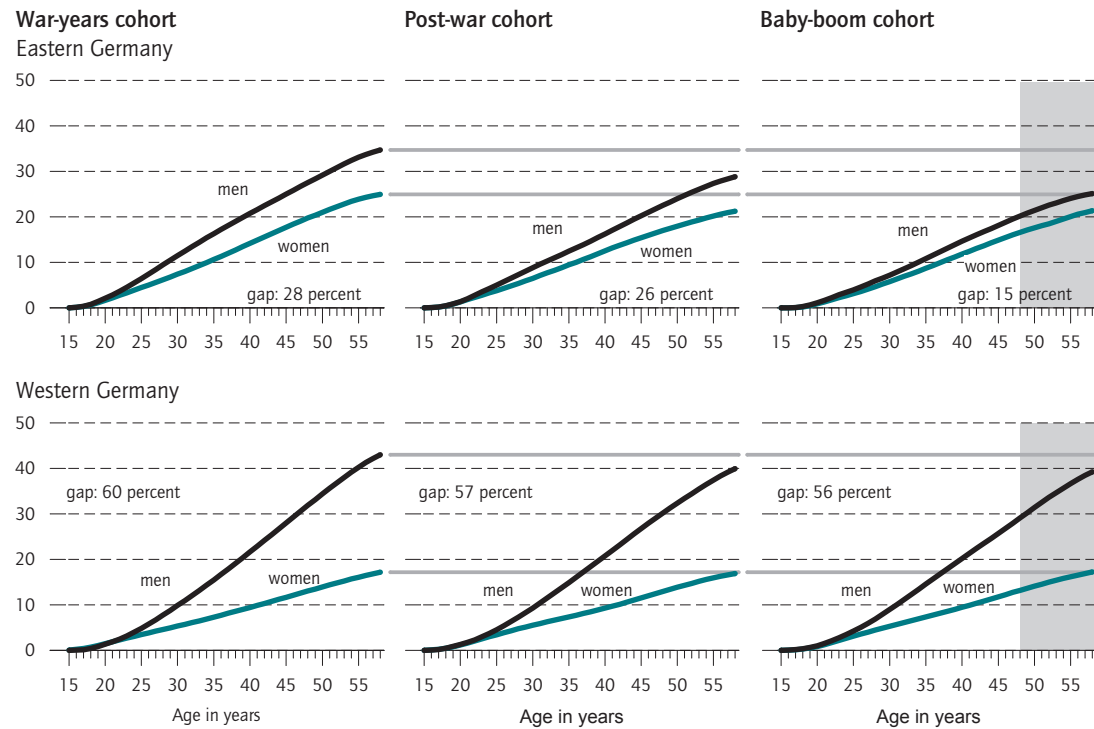
²⁸ E. Grünheid, "Ehescheidungen in Deutschland: Entwicklungen und Hintergründe," BiB Working Paper 1 (Wiesbaden: Bundesinstitut für Bevölkerungsforschung, 2013).

²⁹ The current pension-point value is one factor of the pension benefit calculation formula that is independent of individual-level factors. The current pension-point value is recalculated each year with the help of the benefit indexation formula. Multiplied with the individual earning points the current pension-point value reflects the actual pension entitlement.

Figure 3

Pension Entitlements from Employment Subject to Social Security Contributions

Total pension points



The shaded area denotes the projected period, while the gray line shows the starting pension level for the war-years cohort. Civil servants, the permanently self-employed, and migrants are not included in the calculations.

Source: SOEP v.27; SUF-VSKT-LAW-2007, LAW Life Projection; calculations by DIW Berlin.

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The gender pensions gaps in entitlements from gainful employment are on the decline.

tations, western women barely caught up with the men. A comparison between the war-years cohort and the baby boomers showed pension entitlements from employment subject to social security contributions stagnating at a consistently low level, causing the gender pension gap to narrow slightly from 60 percent to 56 percent, although this is also a consequence of the reduced entitlements among western German men. A more differentiated view at the earnings histories of western German women shows that the number of years in full employment is on the decline, while more and more western German baby-boom women are taking on mini-jobs and working part-time. As mentioned above, these forms of employment generate very little pension entitlement (part-time employment) or none at all (mini-jobs).

The accumulation of pension entitlements between the 15th and 58th year of life obtained from all periods of activity is compared below. This includes periods of study, raising children, non-gainful care work, unemployment,

or illness. The entitlement assigned to these periods varies over the course of time. For example, for every child born before 1992, women are granted two years of parental leave under the current law, while three years are granted for each child born after 1992.³⁰

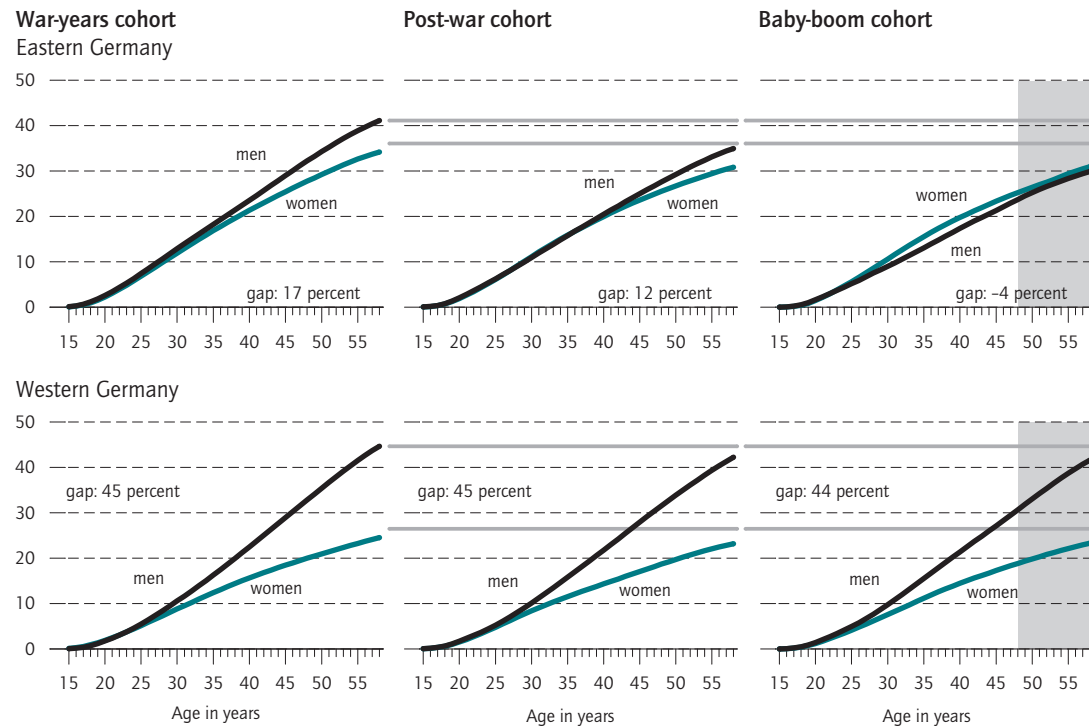
The clear decline in pension entitlements for eastern German men is even more apparent if all pension-relevant periods are factored in. A comparison between the war-years cohort and the baby boomers revealed a decrease in pension entitlements from 41 to 30 pension points (see Figure 4). In terms of the current pension point value for eastern Germany, this is a drop in monthly pension of 290 euros. For eastern German women,

30 Since 2014, mothers of children born before 1992 have been granted two years of maternal leave recognized in pension entitlements. This entitlement, which is known as the *Mütterrente* (literally: mother's pension) was part of a parliamentary act on the improvement of statutory pension entitlements which entered into effect as of July 1, 2014.

Figure 4

Pension Entitlements from All Pension-Relevant Activities

Total pension points



The shaded area denotes the projected period, while the gray line shows the starting pension level for the war-years cohort. Civil servants, the permanently self-employed, and migrants are not included in the calculations.

Source: SOEP v.27; SUF-VSKT-LAW-2007, LAW Life Projection; calculations by DIW Berlin.

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Only a slight narrowing of the gap between western German women and men can be observed.

the average pension entitlements from all pension-relevant periods are also on the decline. While the women in the war-years cohort managed to accumulate more than 34 pension points by the time they reached their 58th year, the baby boomers had earned just 31 pension points. The decline in this case is less marked. If total pension entitlements are taken into consideration, eastern German women in the baby-boom cohort would in fact overtake eastern German men in terms of average pension points accumulated.

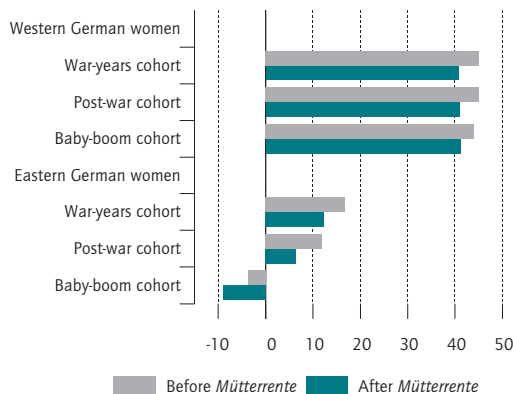
In western Germany, if the entire pension entitlements are considered rather than just those earned from employment liable to social security tax, the gender pension gap may not be strikingly wide. The huge disparity between men and women, however, is ever present. For western German baby boom men, a decline in pension entitlements by three pension points was seen (a fall from 44.5 to 41.5 points), compared with the war-years cohort. Western German women from the baby-boom

cohort dropped one point on average in comparison to those in the war-years cohort (taking it from 24.5 to 23.5 points). Despite them demonstrating the smallest decline in entitlements among all the groups examined, western German women still continue to accumulate by far the least pension entitlements between their 15th and 58th years. The gender pension gap in western Germany remains virtually unchanged at 44 percent.

In Germany, the Mütterrente (effective as of July 1, 2014, see footnote 29), which resulted in the recognition of periods spent bringing up children in pension care entitlements, has not yet been factored into the calculations implemented here. This can, however, be approximated using the existing data. Women from the war-years and post-war years cohorts profit to a large extent from the Mütterrente, since they have more children on average, mainly born before 1992. Figure 5 shows what effects this change in entitlement recognition may have on the gender pension gap. In western Germany, the dispari-

Figure 5

Gender Pension Gap Before and After *Mütterrente* In percent



Source: SOEP v.27; SUF-VSKT-LAW-2007, LAW Life Projection; calculations by DIW Berlin.

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Eastern German women from the baby-boom cohort are overtaking men.

ty between men and women in the baby boomer cohort decreased from 44 to 41 percent, while in eastern Germany, the gap between women and men worsened, with women in the baby boomer cohort having nine percent greater pension entitlements.

Even if the *Mütterrente* were introduced for reasons of fairness, in western Germany, in particular, this did not lead to any substantial change in the gender pension gap.

Conclusion

Twenty-five years ago, four million pensioners and eight million insured individuals were integrated from the pension system of the former GDR into a new system for the whole of Germany. Despite the continuing institutional differences between east and west, the ongoing difference in pension payments, and the continuing need for transfer in eastern Germany, the integration of the eastern German pension scheme can be regarded as a success. Analyses have shown that average statutory pensions for men in eastern and western Germany are more or less equal, while the pensions for women in eastern Germany remain higher than those for women from western Germany as a result of far higher labor market participation by eastern German women since the 1950s.

As regards ensuring a good standard of living and avoiding old-age poverty, the development of pension enti-

tlements for future generations of pensioners is a matter of concern. With the exception of western German women, for whom the cohort comparison showed insignificant changes only in pension entitlements, entitlements for all other groups are on the decline. Particularly drastic was the drop for eastern German men from the baby-boom cohort, who were affected worst by the high unemployment levels following reunification, as well as the structural changes on the eastern German labor market. For western German women, too, no substantially positive development can be expected in the near future. Their pension entitlements are exceedingly low and will presumably remain so in future. Even if the statutory pension level is not an indicator of material wealth and security in old age, pension entitlements for western German women are so low that many of them will be forced to rely on other sources of income or old-age security in the household context. In times where divorce rates are high, however, the overall pension situation in the household context as a result of the husband's higher pension is becoming increasingly uncertain.

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JEL: J14, J16, J26

Keywords: Statutory pension insurance, east-west comparison, baby boomer, SOEP, projection

Childcare Trends in Germany—Increasing Socio-Economic Disparities in East and West

By Pia S. Schober and Juliane F. Stahl

In East Germany, prior to reunification, daycare provision was widely available to encourage mothers to return to work soon after giving birth. Conversely, in West Germany, childcare facilities for under-threes were few and far between and, at the end of the '80s/beginning of the '90s, the length of parental leave was gradually extended up to three years following the birth of a child. Since 2005, post-reunification Germany has seen a significant expansion in daycare services, primarily to help parents combine employment with family responsibilities. Despite these recent trends, however, 25 years after reunification, there are still major disparities between East and West Germany when it comes to childcare for the under-threes. The present article examines how the use of daycare facilities (Kitas) and informal childcare by relatives or babysitters has changed for this age group in both regions since the '90s. The study specifically analyzes whether the expansion of daycare in recent years has also resulted in rising socio-economic disparities in the use of different types of childcare and to what extent this applies to East and West Germany. Using data from the Socio-Economic Panel (SOEP) study, our analyses show that in West Germany, since 2006, there has been a significant rise in the probability of children with single mothers, or whose mothers have a university or vocational qualification, attending a daycare facility. For children whose mothers have a low level of education or whose parents are at risk of poverty, this increase was less pronounced. In East Germany, considerable growth was observed in daycare attendance among children with highly educated or single mothers as well as of children at risk of poverty. In some groups, the increased use of these institutions was accompanied by a decline in informal childcare arrangements. However, West German mothers with a university qualification and single mothers in East Germany still frequently make use of informal childcare options.

The present report analyzes long-term trends in the use of daycare facilities, including pre-school, and in-home daycare providers, as well as of informal childcare provided by relatives, neighbors, close friends, acquaintances, or paid carers. Previous evidence has shown that both children and parents can benefit from non-parental care support, provided it is of high quality. International analyses indicate that the effects of high-quality early education in non-family care establishments are especially positive for children from disadvantaged backgrounds with fewer resources.¹ In this context, the term “fewer resources” is used to refer to low household income, a low level of maternal education, single parenthood, or immigration background. To date, less is known on the effect of informal childcare provided by relatives or paid private persons than for childcare in formal daycare establishments. The few existing international studies show conflicting effects on child development,² which may be due to large variance in the quality of informal childcare.

The use of non-parental childcare also helps parents, in particular mothers, reconcile work and family responsibilities. Here, quality is also important, since mothers, in particular in East Germany, have been found to return to work faster and to work longer hours in regions with better daycare quality.³ A support system in the form of high-quality daycare is especially important when it comes to enabling employment of single-par-

¹ See the latest findings from Y. Anders, “Stichwort: Auswirkungen frühkindlicher institutioneller Betreuung und Bildung,” supplement, *Zeitschrift für Erziehungswissenschaft*, vol. 16, no. S2 (2013): 237-277.

² See, for example, K. Hansen and D. Hawkes, “Early Childcare and Child Development,” *Journal of Social Policy* Volume 38 (2009): 211-239; H. Zagel, G. Kadar-Satat, et al., “The Effects of Early Years' Childcare on Child Emotional and Behavioural Difficulties in Lone and Co-Parent Family Situations,” *Journal of Social Policy*, vol. 42 (2013): 235-258.

³ P. S. Schober and C. K. Spieß, “Local day-care quality and maternal employment: Evidence from East and West Germany,” *Journal of Marriage and Family* (forthcoming).

Table 1

Attitudes Towards Childcare among Different Socio-Economic Groups¹ in Germany

Proportion of respondents that agreed with the statement (in percent)

		West Germany	East Germany	Level of Education			Non-German nationals	Single mothers	At risk of poverty
				Lower than Abitur	Abitur	Higher than Abitur			
A pre-school child is likely to suffer from his mother going to work.	1994	68.8	30.3	68.1	55.6	43.9	–	–	–
	2002	47.6	25.7	54.3	39.8	28.3	56.3	39.2	58.4
	2012	32.1	13.3	44.3	29.1	16.8	48.9	30.0	34.5
Childcare for pre-schoolers should be provided mainly by family members.	2012	42.2	17.4	49.5	36.9	31.6	37.8	31.8	42.9
	1994	1 126	569	878	659	158	–	–	–
Sample size ²	2002	485	210	264	319	109	37	31	61
	2012	616	293	126	576	205	65	65	124

¹ The definitions of socio-economic groups in the ISSP data are not always congruent with SOEP data analyses.

² Results for cell entries under 30 are not shown.

Sources: International Social Survey Programme 1994, 2002, and 2012; calculations by DIW Berlin.

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Over time, attitudes to childcare have changed considerably, but differences between East and West Germany, as well as between different socio-economic groups, persist.

ents or low-income households, where both parents' incomes are needed.⁴

East-West Disparities in Childcare

In the early 1990s, mothers in East Germany were returning to work sooner and more often to full-time employment than was the case in West Germany.⁵ Despite the fact that over the past 25 years, the East-West disparity in the labor market participation of mothers of young children has become less striking, with more mothers in East Germany now working part-time, significant differences do continue to exist between East and West Germany.⁶ The reason for the marked East-West disparity of the early 1990s was the cultural ideal of maternal employment which came about as a result of a focus on increased integration of women into the workforce in the GDR and that remains prevalent until today.⁷ Accordingly, there was—and indeed is—far

greater social acceptance in East Germany with regard to parents making use of childcare. In West Germany, by way of contrast, the accepted norm was for the mother to take care of her child at home.⁸ Shortly after reunification, 69 percent of women in West Germany agreed that children of pre-school age were at a disadvantage if their mother returned to work, whereas in East Germany only 30 percent felt this way (see Table 1). By 2012, the number of women in West Germany with this opinion had fallen to 32 percent as opposed to only 13 percent in East Germany. Figures for 2012 also showed that 42 percent of women in West Germany believed children of pre-school age should be taken care of mainly by relatives, while the corresponding figure for East Germany was just 17 percent.

The fact that different socio-economic groups also hold different attitudes towards mothers being in employment, as well as towards childcare is a less well-known fact. These disparities still exist today despite a general decline in concern over pre-school children suffering from their mothers being employed, a trend seen since the mid-1990s. From 1994 to 2012, the number of women without a high-school diploma (Abitur) who had such concerns fell from 68 to 44 percent. A more drastic drop from 44 to 17 percent was seen among wom-

⁴ K. U. Müller, C. K. Spieß, et al., "Kindertagesbetreuung: Wie wird ihre Nutzung beeinflusst und was kann sie für die Entwicklung von Kindern bewirken," Vierteljahrshefte zur Wirtschaftsforschung, vol. 83, no. 1 (2014): 49–68.

⁵ R.A. Rosenfeld and H. Trappe, et al., "Gender and Work in Germany: Before and After Reunification," Annual Review of Sociology Volume 30 (2004): 103–124.

⁶ See German Federal Ministry for Family Affairs, Senior Citizens, Women and Youth (ed.), *Ausgeübte Erwerbstätigkeit von Müttern: Erwerbstätigkeit, Erwerbsumfang und Erwerbsvolumen 2010* (Berlin, 2012).

⁷ See C. Schmitt and H. Trappe, "Die Bedeutung von Geschlechterarrangements für Partnerschaftsdauer und Ehestabilität in Ost- und Westdeutschland," in: P. Krause and I. Ostner (eds.), *Leben in Ost- und Westdeutschland: Eine*

sozialwissenschaftliche Bilanz der deutschen Einheit 1990–2010 (Frankfurt am Main, 2010): 227–246.

⁸ See A. Wengler, H. Trappe, et al., "Alles wie gehabt? Zur Aufteilung von Hausarbeit und Elternaufgaben in Partnerschaften," *Zeitschrift für Bevölkerungswissenschaft* 34 (2009): 57–78.

Box

Changes in the Law in the Area of Childcare Provision

One starting point in the expansion of formal childcare provision in recent years was the German law on the expansion of childcare provision, the Daycare Expansion Act (Tagesbetreuungsausbaugesetz 2004),¹ according to which children under the age of three are entitled to extra funding for daycare when the child's welfare otherwise cannot be guaranteed or when both parents are in employment, education, or employment-integration programs as defined in Book II of the German Social Code.² The 2008 Child and Youth Welfare Act (Kinderförderungsgesetz)³ stipulates a legal right to a daycare place for all children aged one year or over from August 1, 2013. In addition, children in some regions have a right to a place at a daycare center from an even earlier age.⁴ Some German federal states and local authority districts make provision for certain groups such as single mothers in their planning of required daycare slots or provide more public funding to daycare facilities offering language development programs.⁵

¹ See Tagesbetreuungsausbaugesetz, German Parliament (2004): Entwurf eines Gesetzes zum qualitätsorientierten und bedarfsge- rechten Ausbau der Tagesbetreuung und zur Weiterentwicklung der Kinder- und Jugendhilfe (Tagesbetreuungsausbaugesetz – TAG), Parliamentary Documentation No. 15/3676 (6 September, 2004).

² See Section 24a of the Child and Youth Welfare Act (Kinder- und Jugendhilfegesetz, KJHG).

³ See Kinderförderungsgesetz, German Parliament (2008): Entwurf eines Gesetzes zur Förderung von Kindern unter drei Jahren in Tageseinrichtungen und in der Kindertagespflege (Kinderförderungsgesetz – KiföG), Parliamentary Documentation No. 16/9299 (27 May, 2008).

⁴ See, for example, State-by state: Monitoring Early Childhood Education Systems, Bertelsmann Stiftung (2012), www.laendermonitor.de/, September 2012.

⁵ For details, see C. K. Spiess, E. M. Berger, et al., "Overcoming Disparities and Expanding Access to Early Childhood Services in Germany: Policy Considerations and Funding Options," UNICEF Innocenti Research Centre Working Paper, no. 3 (2008).

en with academic qualifications. While in 2012, 50 percent of women without Abitur and 43 percent of those from at-risk-of-poverty households agreed that childcare should be provided mainly by family members and not by formal daycare facilities, only 32 percent of academic and single-mothers felt that way.

Influence of the legal framework on Childcare Provision

Besides changes in attitudes to childcare, the basic legal framework for daycare for children under three in East and West Germany has also changed drastically since reunification (see box). In the early '90s, there were far more childcare facilities in the East than in the West. In 1991, 54 percent of children under three in East Germany attended a daycare facility, while in West Germany places were available for 2 percent of under-threes only.⁹ From 1990 to 2002, the number of formal daycare places in East Germany plummeted to 37 percent, compared with a one-percentage point increase in West Germany during the same period.¹⁰ Since 2005, the number of under three-year-olds in daycare has increased significantly in both East and West Germany.

The demand for daycare places for under threes has risen steadily in recent years, albeit to varying degrees in East and West. In East Germany, the number of children under the age of three attending a daycare center went up from 40 to 50 percent between the years 2006 and 2013. In West Germany, a more striking increase from 8 to 24 percent was seen for the same period.¹¹ In comparison, regional divides in the regular use of informal childcare are less notable. In recent years, approximately one-third of all children under the age of three were in informal childcare in both East and West Germany.

Rising or Declining Socio-Economic Differences in Childcare in East and West?

The present report examines the question of whether, since the fall of the Berlin Wall, differences between the various socio-economic groups have increased or decreased with regard to the use of different forms of childcare. Given the prioritized access for children whose parents are in employment or education in recent years, one might expect working parents to be more likely to have used daycare facilities more recently. A disproportionately large number of these are women with a university qualification. With prioritized access or additional funding for children from single-parent families or those with an immigration background, these children

⁹ Federal Statistical Office, Statistik der Kinder- und Jugendhilfe (Bonn, 1991).

¹⁰ Federal Statistical Office, Statistik der Kinder- und Jugendhilfe (Berlin, 2002).

¹¹ Federal Statistical Office and Statistical Offices of the Länder, Kindertagesbetreuung regional 2006 (Wiesbaden, 2006); Federal Statistical Office and Statistical Offices of the Länder, Kindertagesbetreuung regional 2013 (Wiesbaden, 2013).

may have caught up compared to earlier periods. Owing to higher availability of daycare and greater acceptance of formal childcare and working mothers following reunification, one might assume that the socio-economic differences in East Germany are less pronounced than in West Germany.

Study Structure

Many studies document significant differences among the various socioeconomic groups with regard to the use of formal daycare in recent years. Most of these analyses, however, do not look at long-term trends. This is important, however, to gain a better understanding of changes in the use of daycare, which have occurred since government-subsidized daycare provision was reduced and expanded in East and West Germany, respectively. Two studies on trends in the group-specific use of childcare show that, in West Germany, the probability of unmarried couples or women with Abitur using formal daycare grew more strongly for the period 1995–2009 than was the case for married couples or women with lower or intermediate school leaving qualifications.¹² This study, in contrast, analyzes data up to 2012, meaning it includes a period in which a substantial further expansion of childcare provision took place. The present study also looks at how the seldom investigated use of informal individual childcare has developed over the long term in East and West Germany. Formal childcare trends can be looked at for the period 1991–2012, while informal childcare can only be compared from 1997 when data first became available in a comparable form. Here, the period of observation has been split into four distinct periods: period 1 shortly after reunification from 1991 to 1995, period 2 from 1996 to 2000, from which point children of three years and older had a legal entitlement to a daycare place, period 3 from 2001 to 2005, and finally period 4 from 2006 to 2012, which was marked by a major expansion in daycare provision.

The following changes in the use of different childcare forms over time by selected socio-economic groups are analyzed based on data from the Socio-Economic Panel (SOEP) study for the period 1991 to 2012.

The following groups are distinguished:

¹² M. Kreyenfeld and S. Krapf, "Soziale Ungleichheit und Kinderbetreuung: eine Analyse der sozialen und ökonomischen Determinanten der Nutzung von Kindertageseinrichtungen," in: R. Becker and W. Lauterbach (eds.), *Bildung als Privileg: Erklärungen und Befunde zu den Ursachen der Bildungsungleichheit* (Wiesbaden, 2010): 107–128; S. Krapf and M. Kreyenfeld, "Soziale Unterschiede in der Nutzung externer Kinderbetreuung für Ein- bis Sechsjährige: Gibt Es Veränderungen Im Zeitraum 1984 Bis 2009?" *Materialien zum 14. Kinder- und Jugendbericht* (Munich: Deutsches Jugendinstitut, 2013).

Mother's level of education: (a) mothers with a university qualification, (b) a vocational qualification, and (c) lower-level qualifications, for instance lower- or intermediate-school leaving qualifications with no occupational training.

Children born to single mothers: a mother is seen as a single parent if she does not share a household with her partner.¹³

Children from households whose monthly income is below the at-risk-of-poverty threshold set at 60 percent of national median equivalized disposable income for the given year.

Children with an immigration background: this group includes children whose parents are both first- or second-generation immigrants, since previous studies show a low tendency towards using external childcare for this group.¹⁴ The analysis is limited to West Germany for this group since the East German sample contains too few families with immigrant backgrounds.

Socio-Economic Differences in the Use of Childcare Options: Long-Term Trends

This study looks at trends in the probability of families with different resources using daycare facilities or informal childcare arrangements for a child under the age of three years.¹⁵

Figures 1 and 2 show estimated values for the probability of families using daycare facilities or informal childcare options. In West Germany the probability of daycare use rose from period 2 to period 3 and once again significantly in period 4.

Given the rapid expansion of childcare provision in recent years, this increase was to be expected. In East Germany, the probability of childcare uptake initially fell after reunification and did not start to rise again until 2006, reaching an average of 48 percent. Parallel

¹³ Here, only single mothers were taken into consideration, since there are too few single fathers to warrant conducting a separate analysis.

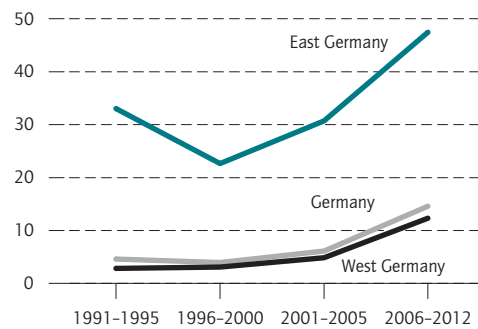
¹⁴ P. S. Schober and C. K. Spieß, "Frühe Förderung und Betreuung von Kindern: Bedeutende Unterschiede bei der Inanspruchnahme besonders in den ersten Lebensjahren," *DIW Wochenbericht*, no. 43 (2012).

¹⁵ The probability values are calculated on the assumption that families fall into one of the disadvantaged categories only. Combinations of categories are not included. In all of the analyses other factors related to the probability of formal or informal childcare uptake are also taken into account; these are, for example, age and gender of the child in question, the number of children under the age of 16 in the household, the mother's age, and the district population. During the period 1991 to 2012, a total of 3,246 and 900 households with under-threes were observed in West and East Germany, respectively.

Figure 1

Probability of Using Daycare for Under-Threes

Probability¹ in percent



¹ Logistic regression, weighted. The following were taken into account: mother's education, single-parenthood, poverty risk, immigration background, age and gender of the child cared for, number of children under 16 in the household, mother's age, and district population.
Sources: SOEP 1991-2012; calculations by DIW Berlin.

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A large increase in daycare use for under-threes was observed, although levels in East and West Germany continue to vary widely.

to the expansion of daycare places in recent years, a decline in the estimated average use of informal childcare was observed from 2006 onwards (40 to 36 percent in West Germany and 42 to 33 percent in East Germany).

Increasing Socio-Economic Disparities in Daycare Uptake in East and West Germany

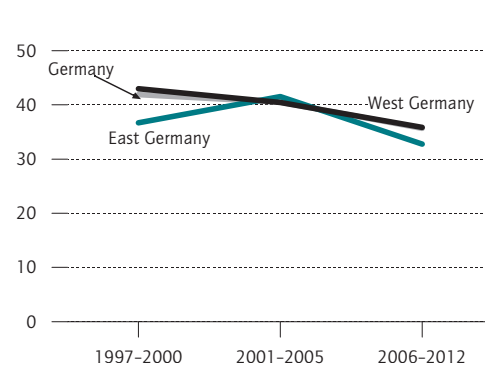
In West Germany, the probability of single mothers and mothers with a university or vocational qualification using daycare centers has undergone a very similar development over the past 20 years. For these groups, a significant increase, albeit to varying degrees (see Figure 3) was seen for the period beginning 2006. For children whose mothers are less educated, whose parents are at risk of poverty, or where both parents come from immigrant backgrounds, the increase was smaller. In these groups, less than ten percent of under-threes on average attended daycare during the expansion period, compared with 27 percent of children whose mothers had a higher education qualification and 19 percent among children of single mothers.

In East Germany the probability of single mothers and mothers with a university qualification using a daycare facility increased more than for mothers with vocation-

Figure 2

Probability of Informal Childcare Use for Under-Threes

Probability¹ in percent



¹ Logistic regression, weighted. The following were taken into account: mother's education, single-parenthood, poverty risk, immigration background, age and gender of the child cared for, number of children under 16 in the household, mother's age, and district population.
Sources: SOEP 1997-2012; calculations by DIW Berlin.

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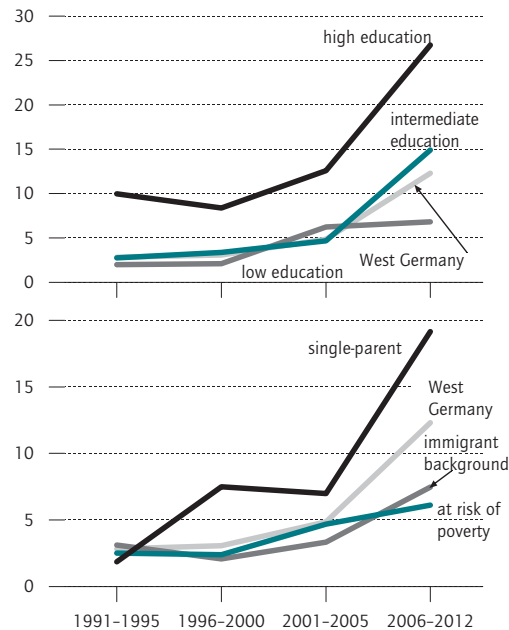
During the daycare expansion period, a significant drop in informal childcare for under-threes was observed in East and West Germany.

al qualifications or lower levels of education (see Figure 4). For mothers with a university education, the probability of the child being at a daycare facility went up on average from 36 percent (for the period 2001 to 2005) to 70 percent in the recent expansion period. A stark increase could also be seen for children whose parents were at risk of poverty. Despite this increase to 29 percent, children from at-risk-of-poverty backgrounds continue to attend daycare facilities far less frequently than children from other groups.

Further analyses indicate that the significant differences between the various groups in the probability of using daycare are, at least in part, related to differences in maternal employment. In West Germany, the difference in likelihood of using daycare between children with highly educated mothers and those with less educated mothers is up to 50 percent lower over all periods when employment status is controlled for. Similar reductions are seen for at-risk-of-poverty households as well as those with immigrant backgrounds for the period of expansion. In East Germany, too, the lower probability of daycare uptake in periods 1 and 4 for at-risk-of-poverty families or in cases where the mother has a low or intermediate level of education can be partly explained by the lower maternal employment rates.

Figure 3

Probability of Daycare Use for Under-Threes in West Germany

Probability¹ in percent


¹ Logistic regression, weighted. Interaction terms between group membership and periods were added to the models in each case. For the single-mother groups, as well as for households at risk of poverty or those with an immigration background, the mother's education was defined as intermediate. The following were taken into account: age and gender of the child cared for, number of children under 16 in the household, mother's age, and district population.

Sources: SOEP 1991-2012; calculations by DIW Berlin.

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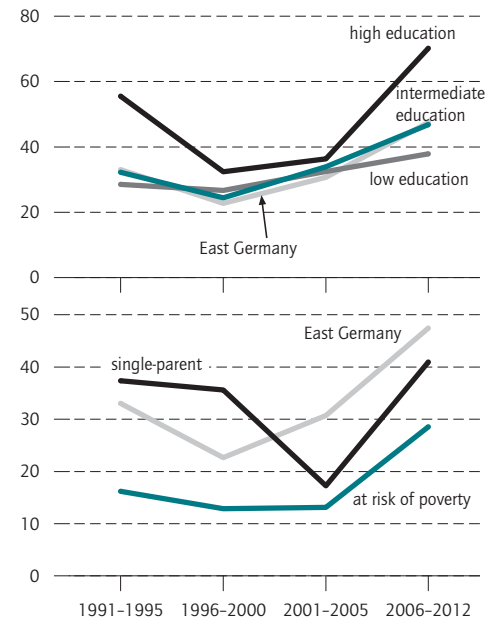
In West Germany, socio-economic differences in daycare use have increased.

Decrease in Informal Childcare in East and West Germany, Yet Not in Every Group

In West Germany, the probability of single mothers and mothers with a vocational qualification or low level of education using informal childcare fell significantly from 2006 onwards, taking it from 62 percent to 45 percent for single mothers, from 46 to 40 percent for mothers with a vocational qualification and from 38 to 29 percent for mothers with a low level of education (see Figure 5). These results indicate that these groups are moving away from using informal childcare and more toward formal daycare facilities. This does not apply, however, to mothers with a university qualification or immigration background. From the early 2000s onwards, the use of informal childcare increased for mothers with a univer-

Figure 4

Probability of Daycare Use for Under-Threes in East Germany

Probability¹ in percent


¹ Logistic regression, weighted. Interaction terms between group membership and periods were added to the models in each case. For the single-mother groups, as well as for households at risk of poverty or those with an immigration background, the mother's education was defined as intermediate. The following were taken into account: age and gender of the child cared for, number of children under 16 in the household, mother's age, and district population.

Sources: SOEP 1991-2012; calculations by DIW Berlin.

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Daycare use has increased significantly among mothers with a higher education qualification, single mothers, and at-risk-of-poverty households in East Germany.

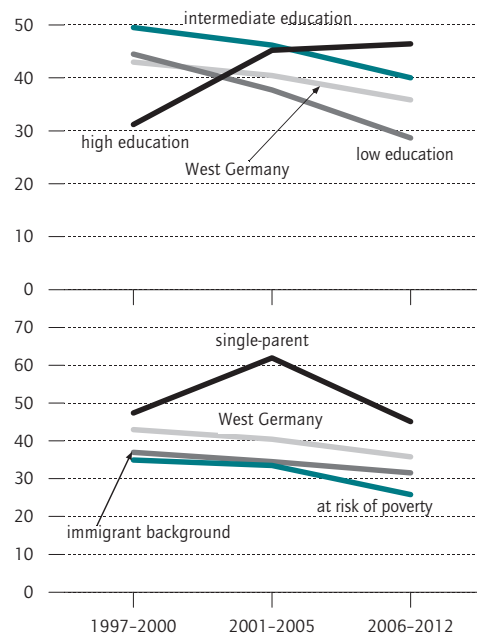
sity qualification. In the period beginning 2006, however, when childcare provision was expanded significantly, the number of mothers in this group who were using informal childcare remained almost unchanged at around 47 percent. Additional tests show that a general increase in combined use of formal and informal childcare has occurred, which was similar across all groups irrespective of education level. Highly educated mothers, however, were more likely to use any form of external childcare, be it formal, informal or both.

In the case of East German children with academic mothers, there has been a statistically significant reduction in the use of informal childcare since the expansion of daycare services began (see Figure 6). For mothers with a vocational qualification, those at risk of poverty, and single mothers, the uptake of informal

Figure 5

Probability of Informal Childcare Use for Under-Threes in West Germany

Probability¹ in percent



¹ Logistic regression, weighted. Interaction terms between group membership and periods were added to the models in each case. For the single-mother groups, as well as for households at risk of poverty or those with an immigration background, the mother's education was defined as intermediate. The following were taken into account: age and gender of the child cared for, number of children under 16 in the household, mother's age, and district population.

Sources: SOEP 1997-2012; calculations by DIW Berlin.

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Unlike in other groups, West German mothers with a high education qualification have not reduced the use of informal childcare since the expansion of formal daycare provision.

childcare has remained relatively stable since the mid-1990s. In recent years, the group that was found to use regular informal childcare for their under-threes most often was single mothers, at over 55 percent. All other groups displayed probability values of between 25 and 35 percent (see Table 2).

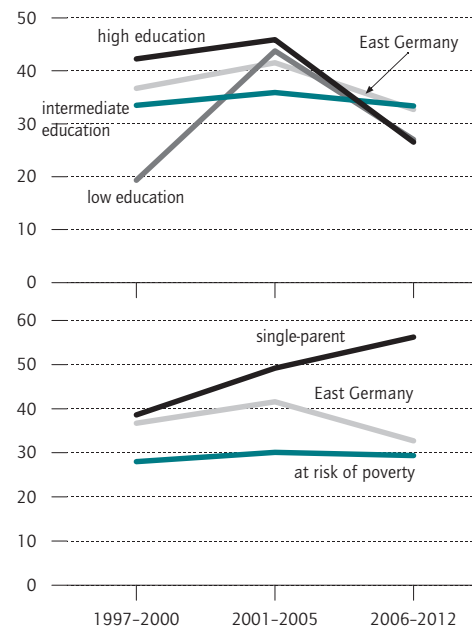
Conclusion

Twenty-five years after German reunification, East-West differences in the uptake of formal daycare for children under the age of three are still very evident, while the frequency of informal childcare uptake has been roughly similar in both East and West Germany. The growth in the use of daycare facilities seen in recent years differed

Figure 6

Probability of Informal Childcare Use for Under-Threes in East Germany

Probability¹ in percent



¹ Logistic regression, weighted. Interaction terms between group membership and periods were added to the models in each case. For the single-mother groups, as well as for households at risk of poverty or those with an immigration background, the mother's education was defined as intermediate. The following were taken into account: age and gender of the child cared for, number of children under 16 in the household, mother's age, and district population.

Sources: SOEP 1997-2012; calculations by DIW Berlin.

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East German mothers with high education qualification used informal childcare less since the expansion of formal daycare provision.

across the various socio-economic groups. The increase among mothers with a university qualification, as well as single mothers was far greater in both East and West Germany than in the case of mothers with no vocational qualification or in families with immigration backgrounds in West Germany. These results confirm the findings obtained to date,¹⁶ also taking account of more recent periods in which there have been greater attempts to expand childcare provision. The minor differences in group-specific trends between East and West Germany are remarkable given that one might expect smaller socio-economic differences in a system marked by a long tradition of maternal employment where childcare provision had been expanded more widely.

¹⁶ Krapf and Kreyenfeld, "Soziale Unterschiede."

Table 2

Estimated Probability of Daycare and Informal Childcare Use for Under-Threes

Probability¹ in percent

	West Germany				East Germany			
	1991-1995	1996-2000	2001-2005	2006-2012	1991-1995	1996-2000	2001-2005	2006-2012
Daycare use								
High Education	10.0**	8.4***	12.6***	26.8	55.5	32.3***	36.3**	70.2
Intermediate Education	2.7***	3.4***	4.7***	14.9	32.2*	24.4**	33.9*	46.8
Low Education	2.0***	2.1***	6.3	6.8	28.5	26.7	32.5	37.9
Single mother ²	1.9***	7.5*	7.0**	19.2	37.4	35.6	17.3*	40.9
At risk of poverty ²	2.5*	2.4**	4.7	6.1	16.2	12.9+	13.1+	28.6
Immigrant background ²	3.1*	2.1***	3.3**	7.5				
Use of informal childcare								
High Education	–	31.2*	45.2	46.5	–	42.3	45.9*	26.6
Intermediate Education	–	49.5*	46.2+	40.0	–	33.5	35.9	33.4
Low Education	–	44.5**	37.7+	28.6	–	19.4	43.8	27.0
Single mother ²	–	47.4	62.0*	45.1	–	38.6	49.2	56.2
At risk of poverty ²	–	34.9	33.5	25.8	–	28.0	30.1	29.4
Immigrant background ²	–	37.0	34.5	31.6	–	–	–	–

¹ Logistic regression, weighted. Interaction terms between group membership and period were added to the models in each case. The reference category is period 4 (2006–2012). The following were also taken into account: age and gender of the child cared for, number of children under 16 in the household, mother's age, and district population.

Significance levels: + $p < 0.10$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

² The mother's education level was defined at intermediate. For this reason, the group with intermediate education is also the comparison category for these groups.

Sources: SOEP 1991–2012; calculations by DIW Berlin.

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East-West differences in informal childcare use are less pronounced than for formal daycare.

Interesting East-West differences can be seen between informal childcare trends for children of single mothers and mothers with a university qualification. Single mothers in West Germany used daycare more and informal care less often in recent years. In East Germany, the increasing use of daycare by single mothers was not accompanied by a decrease in informal childcare, a fact that may well be accounted for by the increased labor force participation of single mothers.

In East Germany, fewer mothers with a university education have used informal childcare for their infants in recent years—probably because some of them switched to formal daycare options. In West Germany, in contrast, almost 50 percent of these mothers continued to use informal childcare regularly. These different trends may be due to the shorter average opening times of daycare facilities¹⁷ or can perhaps be attributed to more mothers in this group in West Germany preferring informal childcare than they do in East Germany. Following the introduction of legal entitlements to childcare in the summer of last year, future findings on formal daycare uptake might shed light on the extent to which the le-

gal changes have led to a reduction in socio-economic differences. They may also provide new insights as to whether the notion of what is considered 'good' childcare and the acceptance of maternal employment have converged between East and West Germany, as well as between different socio-economic groups.

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JEL: I 24, I 28, J13

Keywords: childcare, disadvantaged groups, early education, social disparities; long-term trends

¹⁷ German Federal Statistical Office, Kindertagesbetreuung in Deutschland 2012 (Wiesbaden, 2012).

Wages in Eastern Germany Still Considered More Unjust Than in the West

By Stefan Liebig, Sebastian Hülle, and Jürgen Schupp

Almost twenty-five years after the fall of the Berlin Wall, far more eastern Germans are unhappy with their income than western Germans. In 2013, around 44 percent of employed eastern Germans rated their earnings as unjust compared with approximately one-third in western Germany. Although the east-west gap has been diminishing since 2005—to around 12 percent in 2013—this is not because eastern Germans feel that they are now being paid more fairly, but rather because the perceived injustice in western Germany increases. One of the reasons why a relatively high level of perceived wage inequality persists in eastern Germany is the fact that there are still differences between East and West in incomes within occupations. Evidence of this is seen in analyses conducted by the Socio-Economic Panel (SOEP).

In the summer of 1989, when more and more citizens of the German Democratic Republic (GDR) were actively protesting against the existing political and economic system, one of their key demands was performance-related pay. The income structure in the GDR was known for having a much smaller spread, so that only minor differences in income existed, in particular, between “production workers on the one hand and master craftsmen, university graduates and technical or economic specialists on the other hand.”¹ The Politburo of the Central Committee of the SED responded to the protesters’ demands: as part of a declaration to the 12th party congress on October 12, 1989, it made “performance-related pay” to one of the GDR’s main objectives to be realized in the GDR.² It is known that the east German public had little confidence that the SED could satisfactorily perform this task. Rather, they believed that the economic and political system of the Federal Republic of Germany was more likely to provide “just incomes and just remuneration”.³ So today, twenty-five years after the fall of the Berlin Wall, the question comes up whether this hope has been fulfilled.

There are two methods of obtaining an answer to this question. The first is to consider the actual distribution of , calculate specific measures of distribution and then assess them on the basis of normative criteria that have been designated in the course of philosophical or political debate.³ The second is to ask the members of the workforce themselves whether they perceive their own

¹ See H. Stephan and E. Wiedemann, “Lohnstruktur und Lohndifferenzierung in der DDR,” IAB Mitteilungen aus der Arbeitsmarkt- und Berufsforschung 4 (1990): 553; and “Ostmark zum Willkür-Kurs,” Der Spiegel, no. 48 (1989): 112-113.

² Declaration by the Politburo of the Central Committee of the SED, Neues Deutschland, October 12, 1989, www.chronik-der-mauer-online.de.

³ See, for example, W. Merkel, Soziale Gerechtigkeit im OECD-Vergleich. Soziale Gerechtigkeit – eine Bestandsaufnahme (Gütersloh: 2007): 233-257; and Bertelsmann Stiftung, Social Justice in the EU – A Cross-National Comparison (2014), www.bertelsmann-stiftung.de.

Box

On the Methodology of the Questions Used in Empirical Justice Research in the SOEP

Since 2005, the Socio-Economic Panel (SOEP)¹ population survey, which is carried out every two years by DIW Berlin in collaboration with the fieldwork organization TNS Infratest Sozialforschung, has included questions about respondents' assessment of justice concerning the own net income.² The question in the SOEP questionnaire is phrased as follows: "Is the income that you earn at your current job just, from your point of view?" The respondents can answer either "Yes" or "No." If a respondent answers "No," he or she is asked: "How high would your net income have to be in order to be just?" and the respondent's actual income is recorded. Beginning with the survey in 2009, a question about the assessment of fairness of gross income has also been included.

In addition to distinguishing between justly and unjustly paid individuals, the justice formula J^3 developed by American sociologist Guillermina Jasso can be used to calculate an even finer distinction of the feeling of injustice.⁴ The logarithm of the relation between actual income and the income regarded as "just" generates the index J which can be used to quantify the intensity of perceived injustice.⁵ The arithmetic mean (JI1) of these individual J values, or the arithmetic mean of the absolute J values (JI2) can also be used to calculate two more indices which quantify the intensity of income injustice on the aggregate, i.e. on the level of groups or the society.⁶

$$J = q \ln \left(\frac{\text{actual earnings}}{\text{as just perceived earnings}} \right).$$

⁴ G. Jasso, "On the Justice of Earnings: A New Specification of the Justice Evaluation Function," *AJS*, no. 83 (1978): 1398-1419.

⁵ J takes the value 0 when there is perfect justice. A positive value of J results if a respondent states that his current income is higher than is needed for it to be just; a negative value of J is given when the actual income is lower than the income deemed to be just. The bigger the difference between actual income and that regarded as just, the greater is the deviation of the J value from 0.

⁶ G. Jasso, "How Much Injustice is There in the World? Two New Justice Indexes," *American Sociological Review*, vol. 64, no. 1 (1999): 133-168.

¹ See J. Schupp, "25 Jahre Sozio-oekonomisches Panel – Ein Infrastrukturprojekt der empirischen Sozial- und Wirtschaftsforschung in Deutschland," *Zeitschrift für Soziologie* 38 (2009): 350-357.

² In the survey of 2009, questions were asked not only about the subjective justice of personal net income but also about that of gross income.

income as just or unjust.⁴ We chose the second route, partly because many empirical studies have shown that perceived injustice at the workplace can lead not only to reduced productivity or increased absenteeism, but above all to physical and mental health problems for the employees who feel unjustly paid.⁵

In order to assess whether, twenty-five years after the fall of the Wall, the working population of eastern Germany feels more justly paid, we used survey data collected at two-year intervals since 2005 by the Socio-Economic Panel. Respondents were asked whether they consider their income to be just and, if they perceive it as unjust, what specific net income from employment they would consider as just for themselves (see box). We have no way of making a direct comparison with the sense of

justice in 1989. In order to find an answer to the question of perceived income injustice concerning the east Germans, we compared them in terms of extent and intensity with perceptions of income injustice in western Germany. This allowed us to identify regional developments during the period of observation and to describe features peculiar to the Länder (federal states) that once constituted the GDR.

Share and Intensity of perceived income inequality in eastern Germany larger

If we look at the share of employees who felt unjustly paid during the observation period, the first thing that stands out is the large significant difference between eastern and western Germany (see Figure 1). In 2005, approximately 25 percent in the west were of the opinion that their income was unjust, whereas in the east the corresponding value was 42 percent. By 2013, this had increased slightly in the eastern Länder to 44 percent, while the west exhibited an increase of around seven percentage points to 32 percent. On average, the differ-

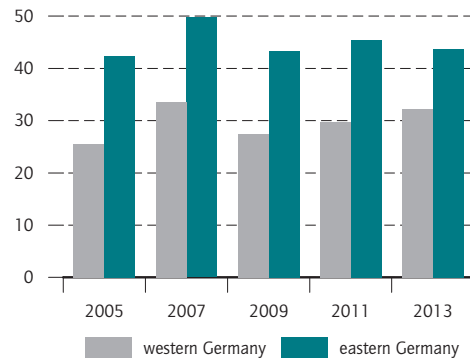
⁴ Whereas the first method provides information about the extent of income injustice existing in a society on the basis of the normative notions of a given selection of experts (philosophers, economists, etc.), the second assesses it in terms of the population's subjective perception.

⁵ R. Schunck, C. Sauer, and P. Valet, "Macht Ungerechtigkeit krank? Gesundheitliche Folgen von Einkommens(un)gerechtigkeit," *WSI-Mitteilungen* 66 (2013): 553-561.

Figure 1

Share of Perceived Income Injustice

In percent



Source: SOEP v30; calculations by DIW Berlin.

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In eastern Germany, the share of perceived income injustice is much higher.

ence between eastern and western Germany is around 15 percentage points high. Hence, the question of just payment is evaluated very differently in the two parts of the country.

The majority perceived their income as just in 2013, both in the east and in the west. But the feeling of being unjustly paid is far more widespread in the east than in the west. In both parts of Germany this feeling of injustice peaked in the survey year 2007, when every second surveyed employee in the east evaluated the own income as unjust. In 2009, this proportion decreased in each part of the country, only to rise again by 2011. Between 2011 and 2013, the feeling of income injustice in eastern Germany declined, but in the west it continued to rise, almost reaching the level of 2007. Although the difference between eastern and western Germany shrank, this was not because people in the east felt more justly paid, but because more workers in the west evaluated their incomes as unjust.

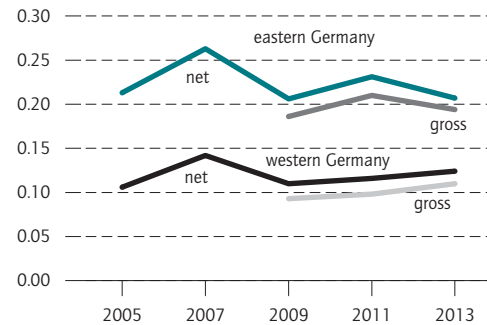
The legitimacy gap in the assignment of earned income, which is expressed in the different shares employees that evaluate their own income as unjust, may have many causes. Of these, we consider the following two mechanisms to be the two most plausible: first, that the assignment criteria on the labor market are perceived as unjust and second, that state intervention in the form of taxation and welfare transfers is considered illegitimate.

To establish whether the feeling of injustice connected with taxation is rising or falling, the assessment of net

Figure 2

Intensity of Perceived Income Injustice (Net and Gross Income)

Justice index JI2



Source: SOEP v30; calculations by DIW Berlin.

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The intensity of perceived income injustice concerning the net and gross income is more pronounced in eastern Germany, too.

and gross income are considered separately. This has been possible with the SOEP since 2009. It also allows us to quantify the intensity of perceived income injustice concerning both kinds of income using the JI2-index (see box)..

Considering the intensity of perceived injustice with respect to the net income, the annual average in the west is 0.120, but it is a lot higher in the east: 0.224 (see Figure 2). According to this, those in the east who feel unjustly paid judge the intensity of injustice with regard to their net earnings to be on a level that is nearly twice that perceived in the west.

While the pattern in both parts of the country is very similar from 2005 to 2009, a difference has emerged since 2011: in the east, there was another increase in the intensity of perceived income injustice, followed by a renewed decline to the original level. In contrast, the west exhibited an uninterrupted increase in the intensity of perceived income injustice.

A greater feeling of injustice is also evident in the east with regard to the intensity of perceived injustice of gross income: the JI2-index annual average is 0.197 in the east, while in the west it is only half as much: 0.100. Chronologically, it runs broadly parallel to the assessment of net income. In other words, in both parts of the country, market wages are judged to be less unjust than the remaining net earnings after taxes and mandatory deductions. State intervention is therefore apparently an independent source of the feeling of injustice in both

Table 1

East-West Difference in Median Income by Occupational Group of the Federal Institute for Vocational Education and Training (BiBB), 2005 to 2013

In euros

Position in the ranking	East-west difference ¹	N ²	No. of BiBB category	Occupational activity
1	-1,575	81	33	Aviation and maritime professions
2	-1,040	164	26	Technical specialists
3	-1,027	597	44	Legal professions
4	-800	256	22	Chemists, physicists, and other scientists
5	-650	1,864	21	Engineers
6	-621	1,340	23	Technicians
7	-540	2,314	35	Managers, auditors, management consultants
8	-530	117	17	Food, beverage, and tobacco manufacturing, other nutritional industries
9	-515	351	31	Advertising agencies
10	-500	1,200	8	Machine fitters, toolmakers
...				
45	-141	1,114	36	Public sector administration
46	-73	152	13	Textile processing, leather production
47	-50	4,946	39	Clerical professions
48	-20	2,339	27	Sales personnel (retail)
49	9	609	16	Cooks
50	20	69	25	Surveying
51	69	656	51	Journalists, librarians, translators, and related academic staff
52	255	485	40	Clerical office staff, switchboard operators
53	300	1,836	54	Cleaning, waste disposal personnel
54	400	755	47	Licensed health professionals
Average	-257.88			
Standard deviation	268.74			

¹ Median income of the occupational group in eastern Germany minus the median income of the occupational group in western Germany.

² Total: 51,922 observations.

Source: SOEP v30; calculations by DIW Berlin.

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workforces. In many cases, progressive taxation is likely to play a part in this.⁶

Regional Differences among Occupations as Cause of Perceived Injustice

Why does the workforce in eastern Germany rate its gross or net income as significantly more unjust than its counterpart in western Germany does? The first studies after reunification showed that the point of reference for assessing one's own economic situation was the "west."⁷ Consequently, it may be the continuing earnings gap between the two regions that is contributing

to the higher level of perceived income inequality in the east. To answer this more accurately, it should be noted that the justice of one's own earned income is generally estimated on the basis of comparisons—people compare their personal income with that of workmates or those who perform the same kind of work elsewhere.⁸ The crucial point is that on the level of occupations still differences in wages exist and that the convergence between east and west has progressed to a different extent from one occupational group to another. Within some occupational groups, there are now no regional differences in wages, while in others they are still considerable. Table 1 lists the median income levels within occupations and gives an overview over occupations with

⁶ See DIW glossary, www.diw.de/de/diw_01.c.412410.de/presse/diw_glossar/kalte_progression.html.

⁷ See S. Liebig and R. Verwiebe "Einstellungen zur sozialen Ungleichheit in Ostdeutschland. Plädoyer für eine doppelte Vergleichsperspektive," *Zeitschrift für Soziologie*, 29, (2000): 3-26.

⁸ A. E. Clark and C. Senik, "Who compares to whom? The anatomy of income comparisons in Europe," *The Economic Journal* 120 (544), (2010): 573-594; C. Sauer, P. Valet, and S. Liebig, "The impact of within and between occupational inequalities on people's justice perceptions towards their own earnings," SFB 882 Working Paper Series 21 (Bielefeld: SFB 882: From Heterogeneities to Inequalities, 2013).

Table 2

Evaluated Justice of Personal Net Income

Jasso index J

	Unbalanced models			Balanced models		
	M1	M2	M3	M4	M5	M6
Region: eastern Germany	-0.045***	-0.045***	-0.254***	-0.036***	-0.036***	-0.257***
Gender: male	-0.027***	-0.027***	-0.017***	-0.012	-0.012	-0.004
Age	-0.002***	-0.002***	-0.001***	-0.001**	-0.001**	-0.001
Hourly wage (log)	0.189***	0.188***	0.152***	0.137***	0.136***	0.104***
Actual weekly working hours	-0.002***	-0.002***	-0.002***	-0.002***	-0.002***	-0.002***
Employment (reference: full-time)						
Part-time	-0.024***	-0.022***	-0.020***	-0.017	-0.016	-0.016
Marginal	-0.043***	-0.041***	-0.010	-0.021	-0.019	-0.011
Public sector	0.002	0.007	0.005	0.010	0.014*	0.011
Education (CASMIN)	-0.012***	-0.012***	-0.011***	-0.008***	-0.008***	-0.007***
Professional status (ISEI)	-0.001***	-0.001***	-0.001***	0.000	0.000	0.000
Occupational group (acc. to BiBB)	0.000	0.000	0.000	0.000	0.000	0.000
East-west difference in median income within occupational group	0,015**	0,012**	0,002	0,016*	0,013	0,002
0.015**	0.012**	0.002	0.016*	0.013	0.002	
Year (reference: 2013)						
2005		-0.004	-0.003		0.009	0.009
2007		-0.038***	-0.037***		-0.019***	-0.018**
2009		-0.013***	-0.013***		0.012*	0.012*
2011		-0.014***	-0.014***		0.002	0.003
Interaction effects:						
East x gender: male			-0.017*			-0.020
East x age			-0.002***			-0.001
East x hourly wage (log)			0.125***			0.112***
East x marginal employment			-0.144***			-0.153**
East x east-west difference in median income of the occupational group			0.030**			0.040**
Constant	-0.346***	-0.327***	-0.267***	-0.279***	-0.276***	-0.210***
N (observations)	45,188	45,188	45,188	11,650	11,650	11,650
N (people)	19,890	19,890	19,890	2,330	2,330	2,330
R ² within	0.043	0.046	0.051	0.022	0.026	0.032
R ² between	0.156	0.159	0.179	0.208	0.208	0.217
Chi ²	4,780.34	4,942.69	5,615.56	782.98	825.56	934.25
df	12	16	21	21	16	21
Rho	0.466	0.465	0.457	0.317	0.318	0.316

Random effect models; Only employed respondents; Significance thresholds: * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

Source: SOEP v30; calculations by DIW Berlin.

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The regional wage differential within specific occupations leads to an increased feeling of injustice in eastern Germany.

high and low levels of regional wage differentials within occupations. Negative values indicate that the income level within the respective occupation is higher in western Germany than the eastern Germany.

Regression models can be used to determine the significance of earnings differences within a particular occupational group—given that the characteristics of the labor force are otherwise identical—and the extent to which this actually leads to an increase or decrease in perception of income injustice. The results of this are shown in Table 2. The key determinant of the subjective justice in both eastern and western Germany is,

as could be expected, the hourly wage. This is not surprising, because a higher income for oneself tends to be perceived as just.

What is even more decisive is the result for occupational group differences (see Table 2). The coefficients listed show that in the east, an increase in the regional income gap between the members of a particular occupational group is associated with a rise in perceived income injustice. This effect is only to be found in the east. If we compare two people who possess the same characteristics relevant to the labor market (gender, education, etc.), have the same gross income, and are employed in a pro-

fession that is subject to income differences between east and west, we see that the person in the east judges their income to be much more unjust than the person in the west does. It is therefore not only the level of personal income that produces feelings of injustice, but also the fact of whether wage differentials between east and west within the considered occupational group exist. Consequently, within a person's occupational group the mere fact that the part of the country where one is employed makes a difference is enough to increase the perception of injustice. This ties in with results from empirical justice research which indicate that questions of equal treatment play a central role in the allocation of rewards or punishments. Where individual groups are already systematically favored or discriminated in the decision-making process, a greater degree of injustice is perceived.⁹ It may be that the eastern Germans interpret the mere existence of regional wage differentials within their own occupation as unjustified unequal treatment. In fact, these wage differentials are influenced by the situation on the labor market in eastern Germany and are also caused by still existing productivity differences.¹⁰ In this case, however, in the subjective experience and the value judgment of over 40 percent of the workforce in the new Länder, that is not a sufficient reason for receiving a lower income.

Summing up, differences continue to exist in the perceived justice of personal earned income across the former inner-German border, even if now the feelings of injustice in the east are no longer caused by the lack of income differences that was denounced in the summer of 1989, but by the existing income differences between east and west. Twenty-five years after the fall of the Berlin Wall, the frequently invoked "wall in the mind" is still very much present for many of the workforce in the former East German Länder, at least regarding their personal earned income.

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JEL: I31, Z10

Keywords: German reunification, justice, wages, SOEP

⁹ See S. Liebig and C.Sauer, "Soziologische Gerechtigkeitsanalyse. Überlegungen zur theoretischen Fundierung eines Forschungsfeldes," *Analyse und Kritik* 35 (2013): 371–394.

¹⁰ See the first article in this issue of DIW Economic Bulletin.

Everyone Happy—Living Standards in Germany 25 Years after Reunification

By Maximilian Priem and Jürgen Schupp

It is now a quarter of a century since the fall of the Berlin Wall and the gap in living standards between eastern and western Germany is still not fully closed. Admittedly, this could not realistically have been expected. Despite the increase in life satisfaction in eastern Germany, the east-west divide prevails. Evidence of this can be found in the latest data from the long-term Socio-Economic Panel (SOEP) study gathered by DIW Berlin in cooperation with the fieldwork organization TNS Infratest Sozialforschung. According to the SOEP data, in 2013, eastern Germans were far less happy than western Germans, although the level of life satisfaction in the east was higher than at any other point in the history of the survey, which was conducted for the first time in eastern Germany in 1990—shortly before economic, currency, and social union. Other subjective indicators reveal differences in satisfaction with household income, health, and childcare. In contrast, job satisfaction, as well as satisfaction with housing, housework, and leisure time have converged. Eastern Germans worry more about crime levels and their own financial circumstances, whereas concerns about xenophobia and employment have diminished throughout Germany. The SOEP surveys show that, according to population, living standards in Germany are now largely aligned. Despite a number of specific problems which, in the coming years, will include the development of new pensions in eastern Germany in particular, German reunification has proven to be an extraordinary success story.

“The process of divided Germany growing together will begin [...] with the people and their standards of living.” These were the words of Lothar de Maizière,¹ the last Prime Minister of the German Democratic Republic (GDR), that accompanied the signing of the State Treaty between the Federal Republic of Germany and the German Democratic Republic establishing a monetary, economic and social union of 18 May 1990. His statement clearly reflects the fact that the reunification of the two German states, initiated through the peaceful revolution in November 1989, was intended primarily to achieve the socio-political alignment of living standards, with aspects relating to market economy playing a secondary role.²

In order to fully assess the progress made in the unification process, both objective living conditions and subjective well-being in Germany have to be taken into account according to the concept of quality of life.³ For this reason, this report presents selected areas of subjective well-being as well as their time sequence in eastern and western Germany: how has general life satisfaction developed in eastern and western Germany since 1990? In what areas of life are levels of satisfaction among eastern and western German citizens now converging and where do differences still exist? What concerns are

¹ 1989.dra.de/themendossiers/wirtschaft/waehrungs-wirtschafts-und-sozialunion.html.

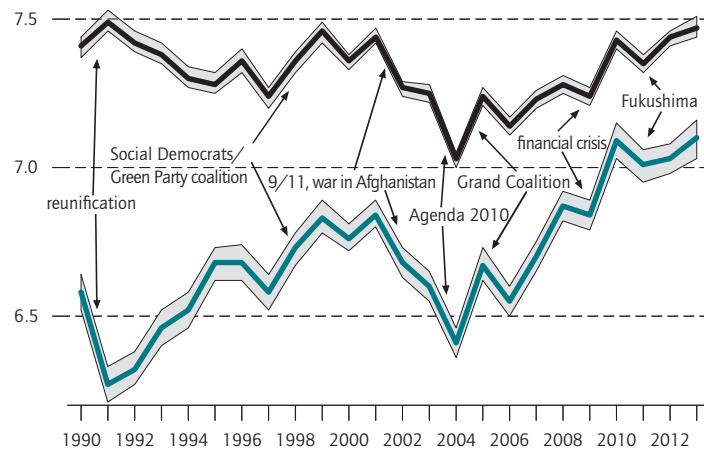
² See, for example, the first report in this issue of DIW Economic Bulletin and K. Brenke and K. F. Zimmermann, “Ostdeutschland 20 Jahre nach dem Mauerfall: Ist die Flasche nun zu einem Drittel leer – oder ist sie zu zwei Dritteln voll?,” *Vierteljahrshefte zur Wirtschaftsforschung*, 78(2) (2009): 57.

³ See W. Zapf, “Individuelle Wohlfahrt: Lebensbedingungen und wahrgenommene Lebensqualität,” in: W. Glatzer and W. Zapf (eds.), *Lebensqualität in der Bundesrepublik* (Frankfurt/M., New York: 1984):13-26. This concept for measuring the quality of life developed in the '80s for West Germany was further developed in the '90s for the adjustment process of western and eastern Germany. For details, see W. Zapf and R. Habich, *Die Wohlfahrtsentwicklung im vereinten Deutschland. Sozialstruktur, sozialer Wandel und Lebensqualität* (Berlin: 1999); for a similar analysis strategy to that used in the present report, see also J. Goebel, R. Habich, and P. Krause, “Zur Angleichung von Einkommen und Lebensqualität im vereinigten Deutschland,” *Vierteljahrshefte zur Wirtschaftsforschung* (78) 2 (2009): 122-145.

Figure 1

Average Life Satisfaction¹ in Germany

Scale from 0 to 10 with 95-percent confidence interval



¹ Estimate corrected for repeat-survey effects. The basis of the estimated value for 2013 was a provisional weighting procedure (not including adults surveyed in the SOEP for the first time in 2013). Source: SOEP v30; calculations by DIW Berlin.

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Historical events have an impact on life satisfaction.

Germans most frequently preoccupied with? Are people in the former Federal Republic of Germany happier than those in the former German Democratic Republic (GDR)? In order to present evidence-based answers to these questions, the development of both life satisfaction and concerns is examined using the longitudinal study SOEP.⁴ This is done descriptively and, in the case of general life satisfaction, by means of multivariate analyses. The SOEP is a particularly suitable data source for providing answers to these questions since it is one of the few studies that collected data in East Germany before reunification on October 3, 1990 and thus covers the entire period of transformation.

Life Satisfaction in Eastern Germany Higher Than Ever

In the year of reunification, 1990, the level of life satisfaction in East Germany was considerably lower than

that of West Germany (see Figure 1).⁵ Initially, the east-west difference increased slightly; while in western Germany a slight collective increase in average life satisfaction was seen in the first few years after reunification, a decrease in life satisfaction occurred in the east following the abrupt change in living conditions.⁶ This gap narrowed again in the ensuing years, although it did not cease to exist, i.e., the average level of life satisfaction prevalent in western Germany was not achieved in the east. As of the late '90s, the average levels of life satisfaction in the west and in the east have followed a virtually parallel pattern, with peaks and troughs occurring simultaneously.⁷ Since then, the average levels of life satisfaction in east and west have been converging gradually, causing the gap to virtually halve since the turn of the millennium. Over and above this, life satisfaction in Germany is at an all-time high; in western Germany the 1984 level has been attained again and in eastern Germany the level of general life satisfaction measured is unparalleled.⁸ Nevertheless, the difference still remains significant, since the confidence intervals of the two mean values do not intersect.

Equal Levels of Satisfaction with Work, Housing, and Leisure Time in East and West

A look at the satisfaction patterns in individual areas of life also shows that the process of harmonization of living standards does not follow a similar pattern in all spheres of life, and the convergence process between east and west is not yet complete (see Figure 2). Satisfaction with household income and standard of living⁹ in eastern Germany has not yet been able to attain the western German level over the past 25 years, although, as with general life satisfaction, the gaps have been continuously closing in recent years.

⁵ See box for further information on data collection on general life satisfaction and revised data in the SOEP.

⁶ Here, it should be noted that at the time of the first survey in June 1990, there was virtually no unemployment in the GDR. Although job loss could be anticipated, it was only in the follow-up surveys that the real experience of unemployment was also reflected in the levels of life satisfaction included in the questionnaires.

⁷ This becomes clear in 2004, for example. One possible explanation for this all-time low in the west and the second-lowest level of life satisfaction in the east since the "post-reunification shock" may lie in a combination of two things: first, the changed global security situation in the wake of September 11, 2001 and the ensuing wars and, second, the Agenda 2010 reforms announced by the then German Chancellor Gerhard Schröder as a reaction to the high unemployment in Germany.

⁸ See J. Schupp, J. Goebel, M. Kroh, and G. G. Wagner, "Life Satisfaction in Germany at Highest Levels since Reunification," SOEP Wave Report 2013.

⁹ The question about satisfaction with the standard of living was not included in the SOEP questionnaires from 2007 to 2012.

⁴ The SOEP is a repeated representative survey of households which has been conducted annually in West Germany since 1984 and both western and eastern Germany since 1990; see G. G. Wagner, J. Göbel, P. Krause, R. Pischner, and I. Sieber, "Das Sozio-oekonomische Panel (SOEP): Multidisziplinäres Haushaltspanel und Kohortenstudie für Deutschland - Eine Einführung (für neue Datennutzer) mit einem Ausblick (für erfahrene Anwender)," *ASTA Wirtschafts- und Sozialstatistisches Archiv* 2, no. 4 (2008): 301-328.

Box

Measurement of Life Satisfaction in the SOEP

As part of the Socio-Economic Panel (SOEP) study, the fieldwork organization TNS Infratest Sozialforschung, which collects survey data on behalf of DIW Berlin, asks respondents about a number of subjective indicators linked to the key question as to the cognitive dimension of well-being. From the beginning of the first survey wave in 1984, this was: "How satisfied are you currently with your life overall?" Responses to the question about general life satisfaction are collected on the basis of an 11-point scale from 0 ("completely dissatisfied") to 10 ("completely satisfied"). This scale is also used to measure satisfaction with various other areas of life, for example satisfaction with one's standard of living, household income, job, leisure time, health, and housing.

If we look at the time sequence of the average general life satisfaction in eastern and western Germany, it is important to consider the fact that the measurement of life satisfaction depends more on the context of the survey situation, known as survey artefacts, than the measurement of "objective information" such as level of education. The survey artefacts include, for example, the time of year the survey is conducted or how often an individual has already participated in a SOEP study. An interesting observation here is that people are more likely to indicate the maximum value ten when questioned for the first time than in the second or subse-

quent surveys.¹ If people participate in a repeat survey such as the SOEP for a very long time, they generally give lower satisfaction values on average. Although this "routine effect" only has a minimum impact from one year to the next, it has an accumulative effect when respondents participate for over 30 years as is sometimes the case with the SOEP. In order to take this into account in the descriptive analysis of life satisfaction courses in eastern and western Germany, the average levels of life satisfaction were revised in this report using a method developed by the SOEP group at DIW Berlin.² Here, all measurement artefacts are quantified in a regression analysis and subsequently assigned to each survey data point as if the respondents had answered the question for the first time in May of a given year in a paper and pen survey. The revised average general satisfaction and confidence interval are shown in Figure 1.³

1 See H.-M. Mohr, "Analysen zur Vergleichbarkeit von Zufriedenheitsmessungen," *Zeitschrift für Sozialpsychologie*, vol. 18 (1987): 160–168.

2 See Schupp et al., "Zufriedenheit in Deutschland"; and M. Kroh, M. Priem, U. Schimmack, J. Schupp, and G. G. Wagner, "Zur Korrektur der Lebenszufriedenheit um artifizielle Befragungseffekte," SOEPpaper (forthcoming, 2014).

3 *The basis of the estimated value for 2013 was a provisional weighting procedure (not including adults surveyed in the SOEP for the first time in 2013).*

Trends can change, however, as can be seen in the example of job satisfaction. Up until six years ago, eastern Germans were less satisfied with their work. The mean values have since converged to such an extent that, since 2009, statistical differences between them no longer exist. Here, of course, it should be taken into account that only those in gainful employment are able to respond to the question about job satisfaction.

Satisfaction with the living situation, housework, and leisure time have now fully converged. Initially, their development was similar to that of general life satisfaction but from 2005 at the latest, the "east-west divide" disappeared completely owing to the alignment of housing standards and leisure opportunities in both parts of the country.

Satisfaction with childcare facilities for pre-school children was higher in East Germany than in West Germany and this has still remained the case since reunification. The opposite applies to satisfaction with health: this was uniform in east and west at the time of reuni-

fication but has since dropped slightly in eastern Germany. This finding is all the more remarkable given the increased life expectancy in eastern Germany.¹⁰ Of course it also means that although elderly people with care needs now live longer than was the case in the former GDR, they are not satisfied with their health due to their advanced age.

Concerns about Crime, Xenophobia, and the Environment Allayed despite East-West Divide

Since it began in 1984, the SOEP has collected data on almost a dozen specific concerns individuals may have about private and public spheres of life.¹¹ The SOEP data concerned attitudes toward general economic develop-

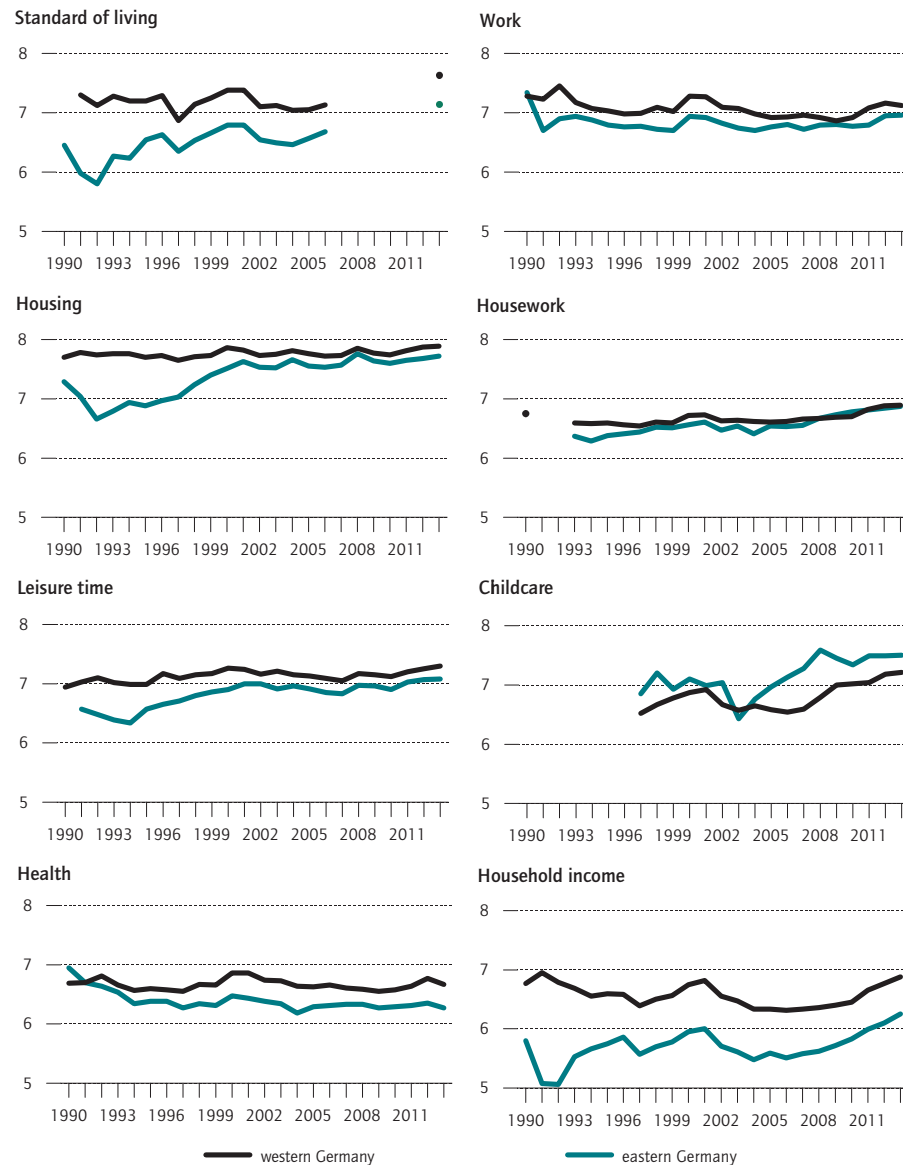
10 See T. C. Vogt, "How many years of life did the fall of the Berlin Wall add? A projection of East German life expectancy," *Gerontology* 59 (3) (2013): 276.

11 For the latest general overview of the development of concerns about public and private spheres, see J. Göbel, R. Habich, and P. Krause, "Subjektives

Figure 2

Average Satisfaction with Various Areas of Life¹

Scale from 0 to 10



¹ Estimate corrected for repeat-survey effects. The basis of the estimated value for 2013 was a provisional weighting procedure (not including adults surveyed in the SOEP for the first time in 2013).
Source: SOEP v30; calculations by DIW Berlin.

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Patterns of satisfaction with various areas of life differ in east and west.

ment, an individual's own financial situation, keeping a job, crime, xenophobia, and world peace, given as a three-category variable (very concerned, somewhat concerned, or not concerned at all).

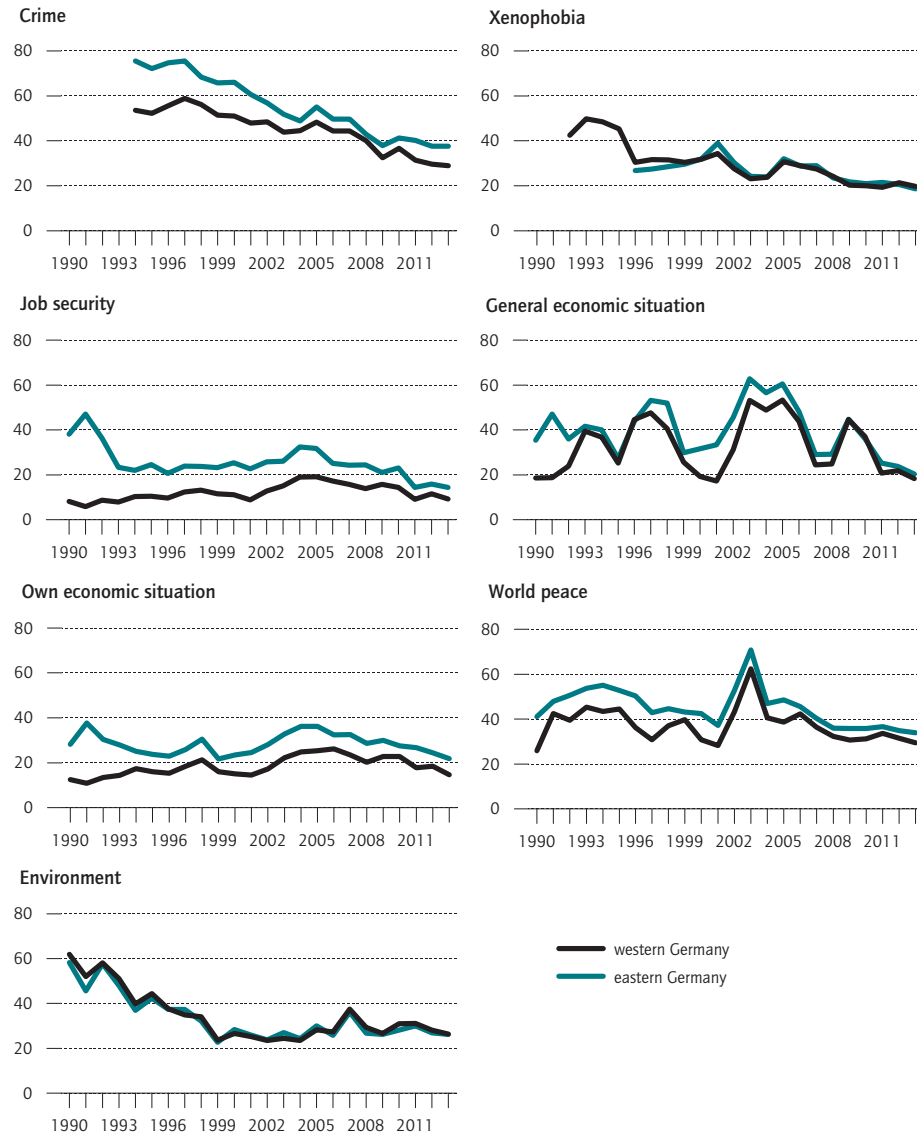
The pattern observed for concerns is similarly heterogeneous to that for satisfaction with the individual spheres of life (see Figure 3). In the mid-'90s, for instance concerns about crime were much more pronounced in eastern Germany than in western Germany; they then began to ease—more sharply in the east than in the west—and now show a similarly low level. There has also been

Wohlbefinden," in Federal Statistical Office (ed): Datenreport 2011 – Schriftenreihe der Bundeszentrale für politische Bildung, vol. 2, (Bonn, 2011): 377-384.

Figure 3

Perceived Concerns in Public and Private Spheres¹

Share of major concerns in percent



¹ The basis of the estimated value for 2013 was a provisional weighting procedure (not including adults surveyed in the SOEP for the first time in 2013). Source: SOEP v30; calculations by DIW Berlin.

Developments of concerns in east and west are largely convergent.

a decrease in concerns about xenophobia and the environment, both of which still caused great concern to over half the population in the '90s, but to only just under 20 percent in 2013. The long-term fluctuations in

these three areas of concern do not point to any clear east-west divide.¹²

¹² See Goebel et al. "Zur Angleichung."

Table

East-West Divide in General Life Satisfaction¹

OLS regression parameters

	1992	2002	2012
Region: east	−0.94***	−0.436***	−0.266***
Gender: female	0.0167	0.067**	0.0513
Age	−0.0336***	−0.0343***	−0.0439***
Age squared	0.00031***	0.00031***	0.00039***
Nationality: non-German	−0.163***	−0.0309	0.0915
Household income (ln)	0.647***	0.628***	0.588***
Employment status			
1. Full-time employment			
2. Part-time employment	−0.0118	0.0582	0.0428
3. Marginal employment	0.144	0.0195	0.0425
4. Unemployed	−0.783***	−0.862***	−0.809***
5. In education or training	0.0742	−0.0094	0.0177
6. Not in gainful employment	−0.0144	−0.0902**	−0.0451
Education (in years)	0.00059	0.0359***	0.0436***
Household size	−0.0036	0.0901***	0.113***
Household type			
1. Single-person household			
2. Household with a (married) couple	0.33***	0.161***	0.288***
3. Family household (children up to 16 years of age)	0.384***	0.101	0.233**
4. Single-parent household	−0.156	−0.344***	−0.182*
5. Family household (children over 16 years of age)	0.239**	0.0625	0.0761
6. Other	0.151	−0.183	−0.305*
District population size			
1. Fewer than 2,000 inhabitants			
2. 2,000 to 20,000 inhabitants	0.0271	−0.0044	−0.103*
3. 20,000 to 100,000 inhabitants	0.0415	−0.021	−0.112*
4. 100,000 to 500,000 inhabitants	−0.0898	−0.0141	−0.1
5. 500,000 inhabitants or more	−0.0692	−0.0216	−0.0343
Constants	3.42***	2.93***	3.42***
R ²	0.1301	0.1056	0.0988
N	12,803	21,870	18,446

¹ Estimate corrected for repeat-survey effects (see box).

Sources: SOEP v30; calculations by DIW Berlin.

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Despite there still being a significant difference in life satisfaction, the effect of the east-west divide has halved in the past 20 years.

Over the past 25 years, eastern Germans have been increasingly more concerned about their own financial situation and job security than their western German counterparts. Concerns in eastern and western Germany follow a very similar pattern overall. This can be clearly seen from the pattern that emerges for concerns about world peace; a lower level of concern about this was recorded after the fall of the Wall. This trend was abruptly interrupted by the terrorist attacks in 2001; concerns about world peace across Germany rose in the two subsequent years. Levels of concern about world peace then began to fall once again.

Concerns about the general economic situation also followed a similar trend. Shortly after reunification, these were more pronounced in the east than in the west but with every economic downturn, there was a sharp increase in levels of concern in both parts of the country. An interesting observation here is that, although concerns among eastern Germans rose to approximately the same extent as for western Germans, eastern Germans still “carry over” these concerns to periods of economic upswings.

Still Not Completely Unified

The descriptive analyses indicate that in the '90s life satisfaction in east and west converged rather quickly to begin with, slowing down over the last 15 years. Nevertheless, individual indicators now no longer reveal an east-west divide. A common level has still not been achieved, however, particularly from the viewpoint of the central indicator of general life satisfaction. Multivariate regression analyses are used to examine whether this is due to structural differences, which lead to higher levels of dissatisfaction in certain regions of western Germany also (particularly as a result of unemployment), or whether this difference can be attributed to socio-demographic characteristics such as age, marital status, or household type, or whether there is an “east effect” that cannot be identified more specifically. Here, the relevant level of general life satisfaction is calculated as a dependent variable for socio-demographic covariates as well as for several different periods. The place of residence in eastern or western Germany was also taken into account, meaning the corresponding “east-west indicator” can be interpreted as the resultant gauge for a less specifically identifiable east-west divergence.

Gender, age, nationality, income, employment status, education, household size, household type, and the district population size were all included in the calculation as control variables.

For the years 1992, 2002, and 2012, the OLS regressions¹³ show significant less specifically identifiable life satisfaction values for eastern Germany which cannot be attributed to socio-demographic differences (see Table). However, a trend towards convergence can also be seen in the multivariate analysis. In 1992, shortly after reunification, this had an average negative effect of almost one point on the 11-point life satisfaction scale for respondents living in the former GDR. Ten years later,

¹³ OLS regressions with robust standard errors.

in 2002, this effect had halved. In 2012, this negative effect was only 0.27 points.

Despite this convergence trend, the significant “east effect” would seem to indicate that the convergence process is still ongoing as far as general life satisfaction is concerned. If we look at the effect of other explanatory socio-demographic characteristics included in the model, these findings confirm the research into life satisfaction: life satisfaction follows a U-shaped trajectory over the course of people’s lives,¹⁴ i.e., it is lowest in middle age. Unemployment has a strong negative¹⁵ effect and income and education a positive effect on general life satisfaction.

Initially, up until the mid-’90s, general life satisfaction in eastern Germany quickly approached the western level. In the following ten years, virtually no progress was made with regard to convergence. It is only since 2008 that a further reduction in the east-west divide, albeit slight, has been evident (see Figure 4).¹⁶

Conclusion

The descriptive analysis of the SOEP data shows that satisfaction with various areas of life has developed heterogeneously in Germany over the past 25 years; while satisfaction levels with regard to living situation, housework, leisure time, and job satisfaction have largely converged in eastern and western Germany, people in the former East are still less satisfied on average with their household income, their health, and their life as a whole than those in the former West Germany.

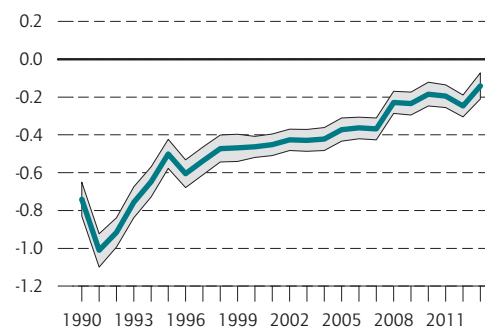
Eastern Germans are more concerned than their fellow citizens in the west of the country about their own financial situation, crime, and world peace. Moreover, even in periods of economic upturn, they are more concerned about the general economic situation than western Germans. People in both parts of the country are equally concerned about work and xenophobia.

The most important indicator for evaluating subjective living standards is general life satisfaction. Descriptive and multivariate analyses have shown that, as a result

Figure 4

Convergence of General Life Satisfaction¹ between Eastern and Western Germany

OLS regression with 95-percent confidence interval



¹ Estimate corrected for repeat-survey effects. The basis of the estimated value for 2013 was a provisional weighting procedure (not including adults surveyed in the SOEP for the first time in 2013). Source: SOEP v30; calculations by DIW Berlin.

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The highest level of convergence of life satisfaction between east and west since 1990 was in 2013.

of the changed circumstances after the fall of the Wall, life satisfaction in the east fell sharply, picking up again significantly in the '90s. At the turn of the new millennium, the convergence process slowed down and stagnated. It is only since 2008 that a slight narrowing of the east-west gap can be observed again. Given the developments to date, however, it still remains to be seen whether this will even out over the next few years.

This east-west divide in subjective well-being, albeit less pronounced, continues to prevail, and— alongside material convergence—must continue to be taken into account in the future, for example when the German government and the Länder are consulting on a new strategy for structural policy once the Solidarity Pact II expires in 2019.

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¹⁴ The linear age effect is significantly negative and the effect of age squared is significantly positive. See also D. G. Blanchflower and A. J. Oswald, “Is Well-Being U-Shaped Over the Life Cycle?,” *Social Science & Medicine* 66 (8) (2008): 1733-1749.

¹⁵ L. Winkelmann and R. Winkelmann, “Why Are the Unemployed So Unhappy? Evidence from Panel Data,” *Economica* 65 (1998): 1-15.

¹⁶ See also J. Geyer and V. Steiner, “Künftige Altersrenten in Deutschland: relative Stabilität im Westen, starker Rückgang im Osten,” *DIW Wochenbericht*, no. 11 (2010).