

National University of Ireland, Galway Department
of Economics

Regional Economics

Dr. Michael Keane

**Performance of the German Laender in
1992 compared to 1996**

by: Ellen Pressler

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1 Introduction

The peaceful reunification of the two German states took place within the remarkably short period of time of less than twelve months in 1998-1990. The initiated changes which took place within only a few months resulted in a total change of the whole Eastern German State; politically, economically and socially. These changes had to be supported by financial transfers, investment, politics and development policies. The reconstruction of the new German Laender was a very important step to achieve a more even performance of the German Laender and to support a more even standard of living and a more even distribution of welfare in Germany. But how did economical performance of the Laender change and did the disparities between the German Laender diminish? This question shall be considered and analysed and analysed with statistical data in this essay.

2 Why is it important to reduce disparities?

Germany's society is based on a social market economy which "...seeks to combine a system of economic organisation based on market forces, freedom of opportunity and enterprise with a commitment to the values of internal solidarity and mutual support which ensures open access for all members of society to services of general benefit and protection." (European Commission 1996 a, p. 13). With the reunification, disparities between the Laender were even more present as the economy of the new Laender was very desolate. Regional disparities in living standards and persistently high levels of unemployment cause dissatisfaction and resentment for the people and harmful economic costs for the whole nation (Armstrong, Taylor 1993, p.194). To reduce the disparities, and to create a more even distribution of welfare, Germany always had an active regional policy, which since 1990 is mainly directed towards the new Laender. The main aims of those regional policies are "...to reduce disparities in economic development by encouraging investment in the poorer areas and to reduce disparities in unemployment, particularly that linked to industrial restructuring, but also underemployment in backward regions." (European Commission 1996 a, p.53).

What means, in general, to improve the economical performance of the German Laender. To achieve this aim huge efforts have been made, and are still made, by the EU and by the German government. For example, Germany received more than one-third of the annual EU expenditure on regional assistance in Member States 1989-93. (European Commission 1996 a, p.54) But in which way did performance of the regions change?

2.1 Definition of regions

To make it possible to compare different regions of an area it is necessary to determine the relevant regions. Germany consists, now, after the reunification, of 16 regions or so called Laender. Baden-Wuerttemberg, Bavaria, Berlin (west), Bremen, Hamburg, Hessen, Niedersachsen, Nordrhein-Westphalia, Rheinland Pfalz, Saarland and Schleswig Holstein are the 11 old German Laender. The 5 new German Laender are: Brandenburg, Mecklenburg West Pomerania, Saxony and Thuringia and Lower Saxony. Berlin has an exceptional status as Berlin (west) was one of the old Laender and was reunited with Berlin (east) to one single Land. In spite of this statistical data is computed for both parts of Berlin separately as it is the only Land whose geographical area changed with the reunification. The EU in the Nomenclature of Territorial Units also uses these administrative divisions for Statistics, generally known as NUTS levels. The German Laender correspond to the NUTS 1 level.

2.2 How performance disparity can be measured

Economic performance is a very general name for various kinds of facts referring to a certain economy. The principal indicator of regional performance chosen was relative change in GDP per capita. The Gross Domestic Product (GDP) measures the output of goods produced by factors of production located in the domestic economy in the period of one year, whoever owns them. (Statistische Berichte, Statistisches Landesamt Baden Wuerttemberg, 1998) This has the disadvantage that production of firms, which are owned by foreigners, is included and the production of the labour

force, which is commuting to another region, is excluded. Furthermore, prices include all taxes on expenditure (Gilpin 1973, p. 96). But: "...for most economies there is little difference between GNP and GDP. " (Fischer, Dornbusch, Schmalensee. 1988, p.440-441). Therefore GDP per capita is seen as an indicator for the capability of a region to provide, from internal activities, an increasing living standard to its population. (European Commission 1995, p. 28) Unfortunately the data was only available in current market prices and not in purchasing power parity. Thus, price rises are included in the data used for the calculations. The second indicator chosen was productivity growth (measured in GDP per employee). This indicator was chosen to show the growth of local competitiveness, which is a principal instrument to achieve an increase in living standards. To indicate conditions in the labour market the unemployment rate and the relative change of unemployment is a helpful measurement. The unemployment rate can be computed in relation to various numbers. The number can be, for instance, the whole population, or the number of employees. The rate of unemployed people of the active workforce has the advantage that the number of unemployed people is related to the real resource of labour. To measure regional disparities statistical measures like the standard deviation are a useful measure as it summarises the difference, or the disparity, between regions in only one number. Standard deviation will be computed for the levels of GDP per capita and the GDP per person employed.

3 Statistical analysis

3.1 Focus on GDP per capita

Figure 1 shows the GDP per capita level 1992 plotted against the relative change in GDP per capita during the period 1992-1996. (All used data can be found in the Annex). The division lines shown in the figure represent the German average of the relevant indicator. This produces a kind of portfolio, which shows 4 quarters.

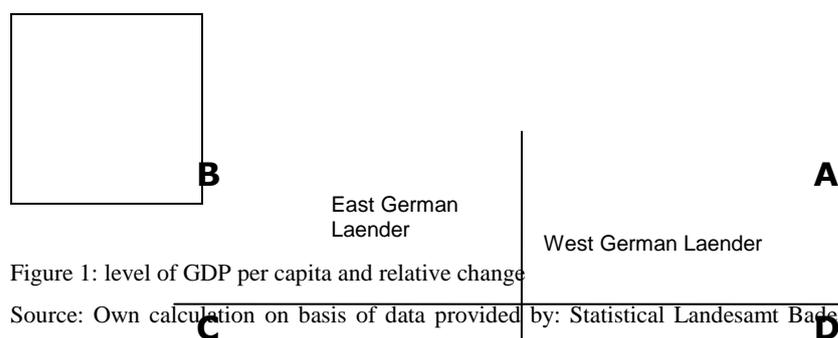


Figure 1: level of GDP per capita and relative change

Source: Own calculation on basis of data provided by: Statistical Landesamt Baden Wuerttemberg: Statistische Berichte , 1998

- Quarter A shows the regions which had a high level of GDP per capita in 1992 and improved their level of GDP per capita level over the period 1992-1996 stronger than the German average. The only Land shown in quarter A is Hamburg.
- Regions located in quarter B are the ones which had a low level of GDP per capita in 1992 and experienced a higher growth than the rest of the German Laender. All Laender shown in quarter B are the east German Laender. They improved their standard of living on average by 58.38% during the period 1992-1996 compared to their standard of living in 1992.

- Quarter C contains regions, which started with a low level of GDP per capita in 1992 and showed a lower growth than the average German Laender. The Laender, which can be seen in this lower performance quarter, are Niedersachsen, Rheinlandpfalz, Schleswig Holstein and Saarland. They all are west German regions.
- Finally quarter D shows regions which started in 1992 with a relatively high level of GDP per capita but their growth has been lower than the growth of the German average. The Laender shown in this quarter are the other west German Laender which are not contained in quarter C.

By looking at Figure 1 alone, a strong disparity between western and eastern German Laender referring to their development of GDP per capita in the period 1992-1996 becomes evident. All eastern German Laender are located in quarter B what means they had a strong growth of GDP per capita and improved their standard of living dramatically. All regions located in the quarters B and C are western German Laender. This means they started in 1992 with a higher than average level of GDP per capita and experienced a medium increase in their living standard during the period. This should also be mirrored in the chosen measure for disparity, the standard deviation. Standard deviation was calculated for the level of GDP per capita for the current year. As can be seen, disparity decreased during the period 1992-1996.

	1992	1996
average:	33.65	19.90
standard deviation:	42.35	24.94

Table 1: Standard deviation of GDP per capita

Source: Own calculation on basis of data provided by: Statistical Landesamt Baden Wuerttemberg: Statistische Berichte , 1998

3.2 Focus on GDP per person employed

To make performance in respect to productivity more visible, the level of GDP per person employed in 1992 and the relative change of GDP per person employed are plotted against each other in Figure 2.

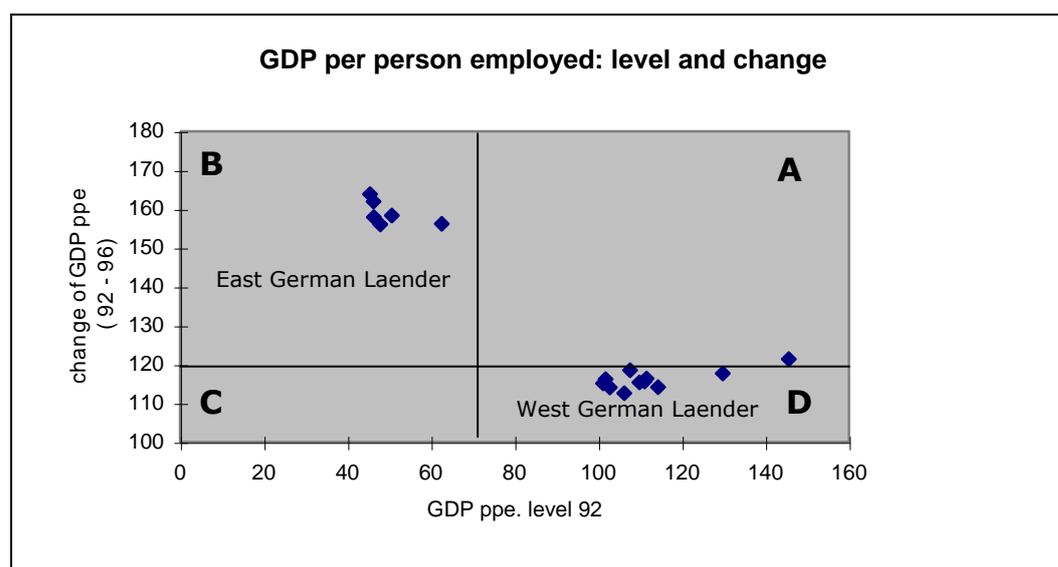


Figure 2: GDP per person employed: level and change

Source: Own calculation on basis of data provided by: Statistical Landesamt Baden Wuerttemberg: Statistische Berichte, 1998

- Quarter A shows the Laender which had a higher level of GDP per employee in 1992 than the average in Germany. That means they had a higher level of productivity. Additionally, these regions improved their productivity at a higher rate than the German average. In quarter A there is only one Land which showed a slightly higher than average productivity growth than the average. This Land is Hamburg.
- The Laender in quarter B had a low productivity in 1992 but increased their productivity at a higher rate than the average German regions. This group of regions consists entirely of east German regions. The Laender that can be found here are all east German Laender. They started in 1992 at a lower level of GDP per person employed (all around 50), except Berlin east which had a level of 62.57 compared to

the German average and had a growth in productivity on average of 58.76% compared to their productivity in 1992.

- Regions with low initial productivity levels and a lower than average increase in productivity can be seen in quarter C. No Land is shown in quarter C.
- Finally a group of Laender with higher than average productivity levels in 1992 and lower than average productivity growth during the period is shown in quarter D. The Laender that can be found here are all west German Laender.

Again the great disparity between east and west German regions is highly visible.

This is also shown by the calculation of the standard deviation for the level GDP per person employed, 1992 and 1996, which can be seen in Table 2.

	1992	1996
average:	92.41	95.06
standard deviation:	33.29	25.54

Table 2: standard deviation of GDP per person employed for the years 1992 and 1996

Source: Own calculation on basis of data provided by: Statistical Landesamt Baden Wuerttemberg: Statistische Berichte , 1998

As can be seen, the disparity between the Laender, as far as productivity is considered, became less.

3.3 Productivity, unemployment and population

In the following paragraph two indicators are the main focus: productivity and unemployment. Unemployment is chosen as an indicator because the employment numbers were not available. These would have been more valuable, in this case, than the unemployment numbers because, then, it would have been possible to say, more exactly, if changes in productivity were caused by changes in the number of jobs, or by the number of the active workforce. To make more precise statements possible the

change of population in the Laender is also considered but it is not used as a main indicator. Change of productivity, change of unemployment and population change are used to estimate if growth in productivity was caused by population changes or by changes in the numbers of workplaces. Changes in population can be caused, for instance, by in-migration or out-migration. Another factor for population changes is the natural growth, or fall in population in a specific region, as a result of births and deaths. Changes in workplaces can be a result of rationalisation and reorganisation of production (a cut of workplaces) or they can be the result of the creation of new workplaces by new investment. A quick glance at the population development in the different regions, between 1992 and 1996, is presented in Table 3. It can be seen, that there was a slight trend towards out-migration in the east German Laender. This trend was strongest in Mecklenburg, Western Pomerania, with a loss of population of (-2.83%) and in Lower Saxony (-2.74%). A trend towards in-migration can be seen in the west German Laender especially in Hamburg (+8.31%), Niedersachsen (+3.63%) and Rheinland Pfalz (+3.48%).

change in population in % population (1992 = 100)	
Baden-Wuerttemberg	2.69
Bavaria	2.91
Berlin (west)	0
Bremen	0.73
Hamburg	8.31
Hessen	2.38
Niedersachsen	3.63
Nordrheinwestfalia	1.84
Rheinalnd Pfalz	3.48
Saarland	0.28
Schleswig Holstein	2.63
Brandenburg	0.12
Mecklenburg W. P.	-2.83
Saxony	-2.32
Lower Saxony	-2.74
Thuringia	-2.16
Berlin (east)	0.93
west German Laender :	2.43
east German Laender:	-1.77
Germany:	1.73

Table 3: relative change in population of the German Laender 1992-1996 in %

Source: Own calculation on basis of data provided by: Statistical Landesamt Baden Wuerttemberg: Statistische Berichte , 1998

To make the development of productivity (measured in GDP per person employed) and unemployment more visible, they are plotted in Figure 3.

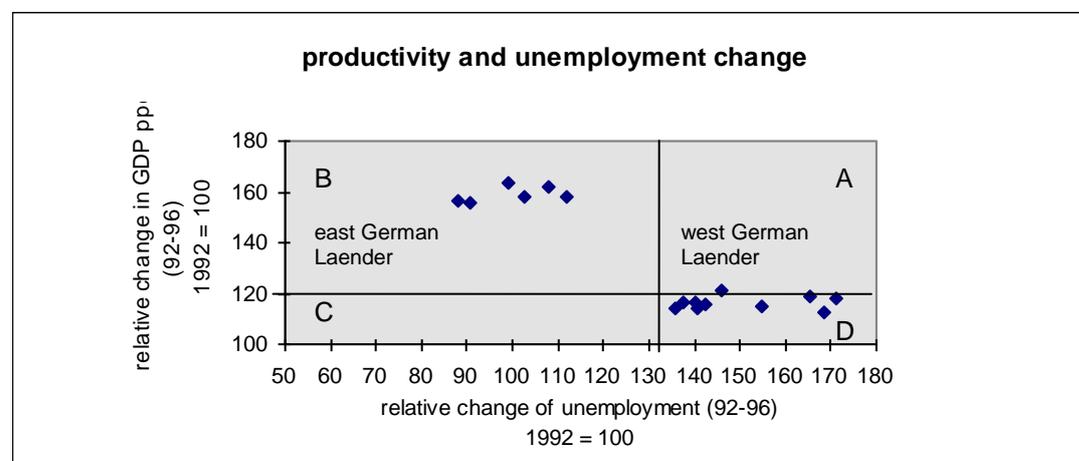


Figure3: changes in productivity and unemployment

Source: Own calculation on basis of data provided by: Statistical Landesamt Baden Wuerttemberg: Statistische Berichte , 1998

- Quarter A shows regions with a stronger than average rise in unemployment and a strong increase in productivity over the period. The only Land which is shown in quarter A is Hamburg. It is marked by a high unemployment rise (146.13 in 1996 compared to 100 in 1992) and a slightly higher rise in productivity.

The possible reasons for this development may be the rise of population (+ 8.31%), which is caused mainly by in-migration. This can be assumed because the average growth of population in Germany was + 1.73%. Other important reasons might be rationalisation or reorganisation of the production processes in this particular region.

- Regions shown in quarter B had a lower than average level of unemployment increase or even a decrease in unemployment. This was associated by a higher than average rise in productivity. The Laender in quarter B are all east German Laender. Brandenburg, Saxony and Lower Saxony had a moderate increase in unemployment, compared to the German average. Mecklenburg Western Pomerania, Thuringia and Berlin east showed, even, a decrease in unemployment during the period 1992-1996.

Reasons for this development might be found in out-migration, which caused a decline of the appropriate workforce, or, in the creation of new jobs.

- Regions in quarter C experienced a lower than the average rise in unemployment or even a decrease in unemployment but showed only a lower than average rise in productivity. None of the German Laender is located in quarter C.
- Finally the regions in quarter D showed a high increase in unemployment during the period and a low increase in productivity. The regions that are shown in section D are all west German Laender. All experienced a high increase of unemployment but this affects especially Baden-Wuerttemberg, Bavaria, and Rheinland Pfalz. Productivity rose at a lower rate than the average in all west German Laender, except, Hamburg, which is in segment A in Figure 3. Possible reasons for this development could be the trend of in-migration, or the cut of jobs, caused by more rationalised ways of production.

Generally, it can be seen that there was a stronger growth of unemployment in the west German Laender than in the east German Laender. This was associated with a lower increase of productivity in the west German Laender. But, the analysed numbers only reflect relative development. If one looks at the absolute numbers of unemployment there was still higher unemployment, in 1996, in the east German Laender (average unemployment rate: 18,7%) than in the west German Laender (average unemployment rate: 10.1%).

4 Conclusions

- East German Laender had a much lower level of GDP per capita in 1992 than West German Laender.
- East German Laender showed a higher growth of GDP per capita than the west German Laender.
- The standard deviation of GDP per capita level decreased from 1992 to 1996. Thus, it can be said that the disparity in the standard of living across German regions has decreased but has not yet diminished.
- East German Laender had a much lower level of GDP per employee in 1992 than the west German Laender.
- West German Laender showed a lower rate of growth of GDP per person employed during the period than eastern German Laender.
- The standard deviation of GDP per person employed decreased from 1993 to 1996. This indicates that the disparity of productivity across German regions decreased but has not yet diminished.
- East German Laender experienced a lower rate of unemployment growth in the period than west German Laender.
- This development is slightly supported by migration of eastern German population to western German regions.

5 Appendix

Statistical Data Used

Land:	change in GDP per capita 1992-1996 (basis 92)	change in GDP per employee 1992-1996 (basis 92)
Baden Wuerttemberg	106.58	115.61
Bavaria	110.26	118.45
Berlin (west)	111.47	116.37
Bremen	107.02	114.11
Hamburg	114.04	121.38
Hessen	109.61	117.7
Niedersachsen	107.67	115.15
Nordrheinwestfalen	108.01	115.36
Rheinland Pfalz	104.57	112.59
Saarland	109.53	114.01
Schleswig Holstein	109.78	116.21
Brandenburg	157.57	158.31
Mecklenburg V. P.	159.68	156.02
Saxony	167.82	157.92
Lower Saxony	157.54	161.96
Thuringia	164.48	163.79
Berlin (east)	138.35	156.21
west German Laender:	108.57	116.35
east German Laender:	158.38	158.76
Germany:	113.21	119.81

Source: Own calculation on basis of data provided by: Statistical Landesamt Baden Wuerttemberg: Statistische Berichte , 1998

GDP per capita level in 1992 and 1996 (Germany = 100)		
Land	level 92	level 96
Baden Wuerttemberg	120.38	107.22
Bavaria	117.69	106.45
Berlin (west)	123.38	108.38
Bremen	140.35	108.88
Hamburg	184.89	147.54
Hessen	135.72	127.51
Niedersachsen	96.23	97.25
Nordrheinwestfalia	105.57	105.62
Rheinland Pfalz	95.11	99.86
Saarland	96.96	98.68
Schleswig Holstein	95.34	98.72
Brandenburg	58.21	66.97
Mecklenburg V. P.	46.81	62.32
Saxony	42.97	61.06
Lower Saxony	42.6	62.48
Thuringia	42.2	62.05
Berlin (east)	40.55	81.58
west German Laender:	113.52	107.97
east German Laender:	44.2	64.15
Germany:	100	100

Source: Own calculation on basis of data provided by: Statistical Landesamt Baden Wuerttemberg: Statistische Berichte , 1998

standard deviation: per capita level in 1992 and 1996		
	1992	1996
average:	33.65384083	19.90034602
standard deviation:	42.35621719	24.94764064

Source: Own calculation on basis of data provided by: Statistical Landesamt Baden Wuerttemberg: Statistische Berichte , 1998

GDP per person employed level (Germany = 100)		
Land:	level 92	level 96
Baden Wuerttemberg	111.11	107.22
Bavaria	107.68	106.45
Berlin (west)	111.58	108.38
Bremen	114.32	108.88
Hamburg	145.64	147.54
Hessen	129.8	127.51
Niedersachsen	101.19	97.25
Nordrheinwestfalia	109.89	105.62
Rheinland Pfalz	106.26	99.86
Saarland	102.81	98.68
Schleswig Holstein	101.78	98.72
Brandenburg	50.68	66.97
Mecklenburg V. P.	47.86	62.32
Saxony	46.32	61.06
Lower Saxony	46.27	62.48
Thuringia	45.39	62.05
Berlin (east)	62.57	81.58
west German Laender:	111.18	107.96
east German Laender:	48.58	64.15
Germany:	100	100

Source: Own calculation on basis of data provided by: Statistical Landesamt Baden Wuerttemberg: Statistische Berichte , 1998

Standard deviation: GDP per person employed		
	1992	1996
average:	92.41	95.06
standard deviation:	33.29	25.54

Source: Own calculation on basis of data provided by: Statistical Landesamt Baden Wuerttemberg: Statistische Berichte , 1998

change in unemployment (1992-1996) in % *		
Land:	%	1996 (1992 = 100)
Baden Wuerttemberg	84.36	184.36
Bavaria	65.27	165.27
Berlin (west)	37.38	137.38
Bremen	40.72	140.72
Hamburg	46.13	146.13
Hessen	71.08	171.08
Niedersachsen	54.62	154.62
Nordrheinwestfalia	42.46	142.46
Rheinland Pfalz	68.32	168.32
Saarland	35.96	135.96
Schleswig Holstein	40.06	140.06
Brandenburg	2.58	102.58
Mecklenburg V. P.	-9.42	90.58
Saxony	1.83	111.83
Lower Saxony	7.81	107.81
Thuringia	-0.9	99.1
Berlin (east)	-12.06	87.94
west German Laender:	54.63	154.63
east German Laender:	-0.12	99.88
Germany:	33.09	133.09

* change of unemployment of workforce (92-96) in %

Source: Own calculation on basis of data provided by: Statistical Landesamt Baden Wuerttemberg: Statistische Berichte , 1998

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