

The Development of Business and Employment Structures in the Rhine-Neckar-Metropolitan Region

- A Branch-Specific Analysis of the Changes in the Business and Employment Structures - ¹

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Abstract

Within this paper, the development of the business and employment structures in the Rhine-Neckar-Metropolitan region will be analyzed on the district level. For this purpose, two independent 50 percent regional stratified random samples of the Establishment-History-Panel were taken. The evaluation of the business structure shows that the number of companies and the amount of employees in the producing (secondary) sector have decreased between 1999 and 2005. In contrast, the service (tertiary) sector gained in importance and can furthermore be identified as a driving force of employment in the region. Beyond, a tendency towards an increase of the part-time employment is recognizable, which leads to the assumption that former full-time employment relationships have been replaced. In the field of qualification structure a decline in unqualified and medium qualified employees can be examined in all economic sectors. The paper points out the differences in the business-, employment- and qualification structure between several districts of a region.

Contents

1	Introduction	2
2	The Rhine-Neckar Metropolitan region	3
3	Data	6
3.1	The Establishment History Panel	6
3.2	Sample design	7
4	Segment-oriented descriptive analysis of business and employment structures	10
4.1	Development of business structures by region and sector of economy: Industrial or service region?	10
4.2	Development of employment differentiated by the type of employment relationship: Which sectors of economy are driving forces of employment in the region?	16
4.3	Digression: Employment situation dependent on the size of the companies in the year 2005	21
4.4	The development of women's employment	24
4.5	The structure of qualification in the Rhine-Neckar-Metropolitan: Is there a threat of skilled-labor shortage?	28
5	Conclusion	31

1 Introduction

On the internet representation of the Rhine-Neckar Metropolitan (MRN) one can read:⁴ The Rhine-Neckar Metropolitan is one of the most important business locations in Germany. In a nationwide comparison there are above-average listed companies. BASF and SAP with a market capitalization of 52 billion euro combine about 13 percent of the whole DAX market capital on their own. The gross domestic product (GDP) of 28.900 euro per capita is above the national average of 27.000 euro. The region is a centre of significant global players with several European and world market leaders: Heidelberger Druckmaschinen is the market leader in the printing sector, Rudolf Wild GmbH, producer of ‘CapriSonne’, is the biggest global manufacturer of natural ingredients for the food and beverage industry. Daimler AG creates values for the whole world with the biggest global truck factories in Wörth and buses in Mannheim. HeidelbergCement, MLP, Roche Diagnostics, ABB, Fuchs Petrolub and other major enterprises show that the economic base of the region is characterized by a wide variety. This has a long history: The strength of the region is rooted in its history of industry that has a long tradition and has generated inventions like the tractor and the automobile. A long lasting innovation culture ensures that the Rhine-Neckar Metropolitan region until today is a dynamic industrial location.

This article is intended to analyze these dynamics with the development of business organization and employment structure. Which sectors emerge as driving forces of employment and which ones became less important in the last years? Can we note a development towards a service or knowledge society or is the MRN region still predominated by industry? In which way has the qualification structure, women’s employment and part-time employment developed in the last decades and which consequences could be expected? Motivated by these central questions, this analysis will be accomplished on a regional level and for different partial segments in the employment market. The Establishment-History-Panel (EHP) of the Research Data Centre (FDZ) of the Institute for Employment Research (IAB) in Nuremberg will be

⁴Cf. <http://www.m-r-n.com/1010.0.html>.

the methodological base for this paper. This is a comparatively new data set, which consists of information about the business and the employment structures as well as salary and qualification structures of all companies in Germany. Two independent and regional stratified random samples are being taken to enable an evaluation on a regional level. The article is structured as follows: The Rhine-Neckar-Metropolitan region will be introduced in chapter two and it will be illustrated which district-types this region contains on the part of the Federal Employment Office (FEO). Part three deals with data and methodology as well as the sampling procedure. Afterwards the descriptive research results concerning business and employment structures in the region are presented and discussed. In detail, questions arise whether there has been or currently is a trend in sight towards a service society (4.1), which industry sectors are driving forces of employment in the region (4.2), how the employment structure in view of part-time employment and women's employment has developed (4.4) and whether there are transparent shifts in the business organizations recognizable (4.5). Finally, this paper outlines the results and discusses potential implications and recommendations.

2 The Rhine-Neckar Metropolitan region

Metropolitan regions are substantially highly concentrated agglomerations with at least 1 million inhabitants. In particular, these areas are characterized by a vibrant development as well as a dominant international position and involvement with respect to economic criteria as competitiveness, value creation, economic power and income.⁵ In addition, they are “significant engines” of societal, economic, social, and cultural development, that maintain performance and competitiveness in Germany and Europe as well as contribute to accelerate the European integration process.⁶ The Rhine-Neckar Metropolitan (MRN), which was former called Rhine-Neckar Triangle, is the region in the triangle of the states Baden-Württemberg, Rhineland-Palatinate and Hesse and is one of the European Metropolitan Regions since April

⁵Cf. Bundesamt für Bauwesen und Raumordnung (Ed.) 2000, p. 318.

⁶Cf. Bundesamt für Bauwesen und Raumordnung (Ed.) 2000, p. 46.

28, 2005.⁷ This area is the seventh largest agglomeration in Germany with about 2.4 million inhabitants. Above all, the sectors chemical industry, engineering and information technology are among the world's leading companies of about 100.000 companies in the region. Furthermore, 22 universities, universities of applied sciences and universities of cooperative education have an excellent reputation.⁸ The Rhine-Neckar Metropolitan consists of the following 15 counties and independent cities which are depicted in the following table 1:

Federal State	Counties	Independent Cities
Baden-Württemberg	Rhein-Neckar-Kreis, Neckar-Odenwald-Kreis	Heidelberg, Mannheim
Hesse	Bergstrasse	—
Rhineland-Palatinate	Rhein-Pfalz-Kreis, Landkreis Bad Dürkheim, Landkreis Germersheim, Südliche Weinstrasse	Ludwigshafen on the Rhine, Frankenthal (Pfalz), Landau (Pfalz), Neustadt on the Weinstrasse, Speyer, Worms

Table 1: The 15 counties and independent cities in the Rhine-Neckar Metropolitan (Source: author).

In Figure 1, the Rhine-Neckar Metropolitan is divided in five different district-types of the FEO (management ratios for international comparisons within the jurisdiction of the Social Security Code SGBII):⁹

⁷Further Metropolitan regions in Germany are: Rhine-Ruhr, Berlin/Brandenburg, Frankfurt/Rhine-Main, Stuttgart, Hamburg, Hanover-Brunswick-Göttingen, Saxony-Triangle, Munich, Nuremberg as well as Bremen-Oldenburg (Cf. Initiativkreis Europäische Metropolregionen in Deutschland (IKM), <http://www.deutsche-metropolregionen.org/mitglieder.html>).

⁸Cf. Tscheulin (2005), p. 1.

⁹Cf. Bundesagentur für Arbeit (2007).



Figure 1: Segmentation of the MRN in district-types. (Source: FEO, author)

Explanation of district-types:

District-type I: Cities in West Germany with an employment situation on average, a high gross domestic product (GDP) per capita and with a proportion of long-time unemployed persons above average.

District-type II: Cities in West Germany with an employment situation above average and a high GDP per capita.

District-type III: Cities in West Germany (except: Berlin) with an employment situation below average and an extremely high proportion of long-time unemployed persons.

District-type IV: In particular cities in East Germany with a bad employment situation and a very high proportion of long-time unemployed persons.

District-type VI: Rural areas in West Germany with surrounding conditions on average.

Figure 1 shows, that the agglomeration Mannheim, Ludwigshafen and Heidelberg is assigned to district-type I and therefore characterized (according to the definition of the FEO) by an employment situation on average as well as a high GDP and a high proportion of long-time unemployed persons. The region around the agglomeration with the districts Kreis Bergstrasse, Rhein-Neckar-Kreis and Rhein-Pfalz-Kreis have an employment situation above average. In contrast, the conditions on the employment market both in the district Neckar-Odenwald-Kreis and South Palatinate (Germersheim, Landau, Südliche Weinstrasse (Southern Wine Route), Neustadt and Landkreis Bad Dürkheim) are rather bad. The classification of counties and independent cities in different employment market clusters from FEO-side clarifies, that the MRN is very inhomogeneous with respect to conditions on the employment market as well as the current employment situation. Moreover, the course of this paper shows, that also the district-types are not homogeneous in itself and therefore counties and independent cities are very different, depending on the actual situation or economic/ statistical management ratios. Due to this heterogeneity an examination of the clusters in detail is necessary to derive strategic recommendations.

3 Data

3.1 The Establishment History Panel

The Establishment-History-Panel (EHP) covers every company in Germany, in an observation period from 1975 to 2005,¹⁰ that have at least one employee who is subject to social insurance contribution (since 1999 at least one person in marginal employment).¹¹ Every company can be identified with accompany registration number and therefore, several volumes of the EHP can be assembled to one panel dataset without any problems. Thus it is possible to make statements about a development in different industrial sectors, beside a cross-sectional comparison of different industries and parameters. The EHP consists of the following variables:

¹⁰In the period from 1974 to incl. 1990 the data only consists of companies in West Germany; Since 1991 it also contains companies in East Germany.

¹¹For a detailed description of data and variables look at Spengler, 2007.

- Company criteria, e.g. first and latest occurrence of the company, branch of industry and district code,
- number of full-time, part-time, and off-site employees as well as gender and nationality,
- age distribution of the employees differentiated into age groups,
- employment structure differentiated into school and professional education as well as occupational status and
- salary structure of full-time employees differentiated into qualification and gender.

Due to available district indicators, it is possible to accomplish detailed regional analysis. The clustering of different variables, e.g. age distribution, can be seen as a disadvantage, because an estimation of the distribution could not be conducted properly. The EHP is currently the best dataset to accomplish evaluations on the development of business organization on a regional level, due to the fact that a complete inventory count of companies guarantees representativeness of data on the district level.

3.2 Sample design

On the one hand, for this analysis simply data of the Rhine-Neckar Metropolitan (MRN) is interesting to look at. On the other hand, the anonymity of the companies should be guaranteed. For this both reasons two independent, 50 percent regional stratified random samples were taken. The regional stratification ensures a representative depiction of every district in the MRN. Both Sample-Designs will shortly be introduced in the following:

Sample-Design 1: The first sample consists of 50 percent of all companies in the Metropolitan without constraints in the number of employees. For reasons of data protection it is not possible to release the district parameter, because the sample covers also companies with more than 200 employees, that could potentially be

identified through a combination of the variables “district parameter” and “branch of industry”. Therefore, with this sample the business and employment structures of the whole MRN can be analyzed.

Sample-Design 2: A second 50 percent random sample has to be taken, which also is regional stratified, to be able to make statements about regional differences within the MRN and to compare several district-types respectively districts in view of employment development as well. The district parameter is recognizable within the sample, but for reasons of data protection the companies with more than 200 employees were not taken into account. On the basis of this sample one can analyze the development of small- and medium-sized companies in the different districts and district-types of the MRN.

Furthermore, it is assured that both random samples can not be merged, as the internal company IDs in both samples do not match. The analysis in this paper mainly relies on sample 2, because the regional development of every district should be considered in detail if procurable.

In the following section the structure and aggregation of the different branches of industry chosen will be presented. The aggregation of the different industry sectors before 1999 was problematic, because they are available in the classification WZ73 of the year 1973 and no official code that shows a solution for a division into classification WZ93 is existent. For this reason the results before 1999 have to be interpreted with caution in comparison to the results afterwards. In this regard, for example, the tremendous rise of the companies in the primary sector between 1998 and 1999 can be mentioned. This increase can be noticed, because all companies that could not be assigned to a branch of industry in 1998, were integrated into agriculture and forestry in 1999. Not only such statistical effects, but also the risk of a wrong allocation of the branches of industries before 1999 can lead to biased results within this time period. Table 2 illustrates the structure of the branches of industry. The illustration is geared to the classification WZ93.¹²

¹²This attribute shows the affiliation of the companies to the branches of industry according to the classification of the branches of industry of the Federal Employment Office statistics, Issue 1993.

Abbreviation	Description
AF	Agriculture, Forestry, Fishery (A+B)
Nutrition	Food and Nutrition Industry, Tobacco Industry (DA)
Textile	Textile and Clothing Trade, Leather Trade (DB, DC)
Chemistry	Manufacturing of chemical products (DG)
Vehicles	Mechanical Engineering, Vehicle Construction (DK, DM)
Manufacturing Trade	Manufacturing Trade (Wood, Paper, Coke Oven, Rubber, Glass, Metal); Mining (C, DD-DF, DH-DJ, DL, DN)
Energy / Water	Energy- and Water Supply (E)
Construction	Construction Industry (F)
Trade	Trading, Maintenance and Repairing (G)
Hotel	Hotel and Restaurant Industry (H)
Transport	Transport Sector (Land, Water, Air) (IA 60- IA 63)
Telecommun.	Telecommunication (IA 64)
Insurance	Banking Sector and Insurance Industry (J)
Properties	Properties and Housing (DA 70 - KA 71)
Data	Data Processing and Database (KA 72)
R & D	Research & Development (KA 73)
Economic Service	Supply of economic services (KA 74)
Civil Service	Civil Service, Defense, Social Security (L)
Education	Education (M)
Health Care	Health- and Veterinary Trade, Welfare (N)
Civil / Private Serv.	Miscellaneous; Private Households; Extraterretorial Organizations and Statutory Corporations (O, P, Q)

Table 2: Aggregation of the branches of industry for the regional evaluation. (Source: author).

4 Segment-oriented descriptive analysis of business and employment structures

In this chapter, the results of the descriptive analysis will be presented and discussed. In detail, it is about an analysis of the gross value added development as well as of business structure on a regional level to reassess whether there has been or currently is a structural change from industry society towards a service society (chapter 4.1). Furthermore, the employment structure with particular attention on part-time employment (chapter 4.2) as well as women's employment (chapter 4.4) will be analyzed. Chapter 4.5 examines on the basis of the analysis of qualification development whether a skilled-labor shortage is already or will be recognizable in the future in several industry sectors.

4.1 Development of business structures by region and sector of economy: Industrial or service region?

The aim of this section is to figure out, whether the Rhine-Neckar Metropolitan region is still affected by industry, or already a change from industry to service society has taken place. First of all, the importance of the different branches of industry for the MRN as well as their development over time will be analyzed. The significance of several industrial sectors can be depicted easily by the use of the gross value added, because it illustrates the services rendered of the different industrial sectors in a region. The results provide the foundation of the following evaluations. In this process not only the MRN-area as a whole will be analyzed, but also the five district-types as well as districts of particular interest, since the aim of this paper is an analysis which is characterized by a highly differentiated regional subdivision.

The service (tertiary) sector earned almost 62% of the gross value added in the whole MRN in 2005. This means that the producing sector generated about 37% and agriculture and forestry achieved merely 1%. Since 1992 the tertiary sector in the region has increased from 54.42% to 61.65% in 2005. The compound annual growth rate (CAGR) of the service sector amounts 2.02% from 1999 to 2005. The producing

sector became less important since 2002 and its gross added value proportion in the Metropolitan has declined from 44.15% in 1992 (about 7 percentage points) to 37.30% in 2005. Nevertheless a positive CAGR of 1.14% from 1999 to 2005 can also be determined in the secondary sector. In face of the positive growth of both industry sectors, the service sector becomes even more important. Therefore, a clear trend towards a service industry can be observed. In district-type I, which includes the aggregation of the cities Mannheim, Heidelberg and Ludwigshafen, the situation is somewhat different than in the whole MRN. Although it can be noticed that the services sector became more important since 1992 (an increase from 50.88% in 1992 to 55.99% in 2005), a slight decline between 1999 and 2005 is recognizable. This can be reflected in the compound annual growth rates of both sectors. While the producing sector shows a CAGR of 2.2% between 1999 and 2005, the services sector only grew 1.55% on average in the same period. Table 3 illustrates the proportions as well as the CAGRs of the five district-types for the three branches of industry. Differences between the several district-types are distinguishable. The proportion of

		DT I	DT II	DT III	DT IV	DT VI
Primary	Proportion 1992	0.2%	1.65%	10.87%	3.36%	1.21%
	Proportion 2005	0.16%	1.24%	8.83%	1.49%	1.26%
	CAGR _{1999–2005}	-4.01%	-0.54%	0.36%	-4.41%	1.55%
Secondary	Proportion 1992	48.90%	38.26%	32.71%	37.81%	48.99%
	Proportion 2005	43.85%	28.50%	25.55%	35.13%	36.24%
	CAGR _{1999–2005}	2.22%	-0.9%	0.15%	0.23%	0.11%
Tertiary	Proportion 1992	50.88%	60.09%	56.42%	58.83%	49.80%
	Proportion 2005	55.99%	70.26%	65.62%	63.38%	62.49%
	CAGR _{1999–2005}	1.55%	2.89%	2.06%	0.66%	2.60%

Table 3: Development of the gross value added according to the district-types (Source: Statistics Agencies of the counties, calculations by the author).

the primary sector in the year 2005 constitutes for instance only 0.16% in district-

type I, but 8.82% in district-type III. The differences in the secondary and tertiary sector are enormous as well, so that the MRN with regard to its economic structure can not be seen as a homogeneous region at all. Using the example of district-type I, which contains the three cities Mannheim, Heidelberg and Ludwigshafen, it can be shown to what extent the three branches of industry differ within the respective district-type, thus between the several counties and the independent cities. Figure 2 demonstrates the proportion of the gross value added in the respective sectors and independent cities for 2005. It is obvious, that districts differ immensely with respect

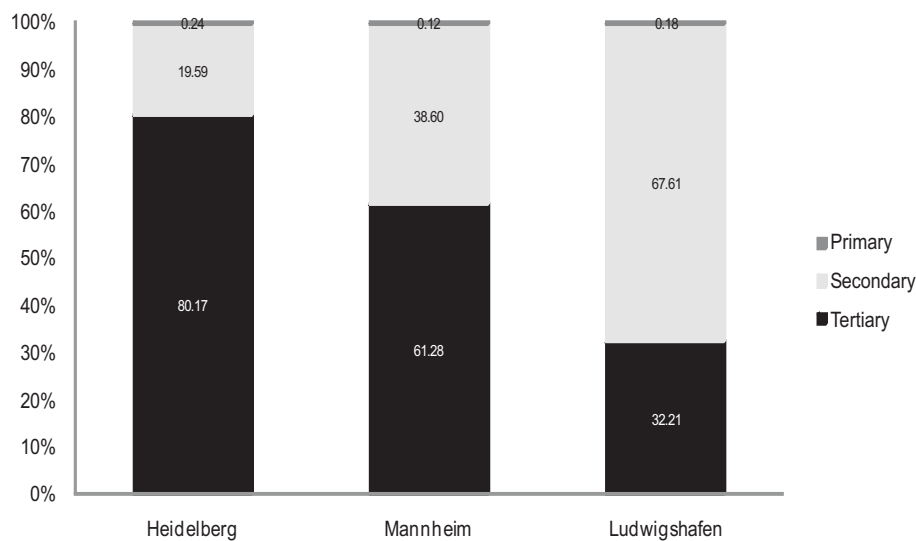


Figure 2: Formation of the gross value added in the three districts of district-type I (Source: Statistics Agencies of the counties, calculations and illustration by the author).

to their economic focus, although they can be subsumed into one district-type in accordance with the definition of the FEO. Heidelberg generated above 80% of its value added in the services sector, and Ludwigshafen in contrast to this almost 70% of it in the producing sector, whereas Mannheim roughly reflects the circumstances of district-type I. This result on its own explicitly shows the necessity of a policy that is in line with regional markets to achieve an economic promotion that is accurately fitting and to stabilize and expand the consolidation of existing regional emphasis.

After it became apparent, which sectors in the MRN are of importance and that they differ from district to district, in the following the development of the organization structure in different branches of industry and selected years will be depicted.¹³ According to this, an interesting question arises, whether companies in different industrial sectors have developed according to their gross value added, or whether this gross value added has changed despite a stable number of companies. First of all, if one considers the total number of covered companies within the sample between 1999 and 2005, it is significant, that the number of companies fluctuates between 34.430 in 1999 and 36.970 in 2004. Particularly noticeable is an enormous increase in 2004 that is in evidence in figure 3. There, the annual growth rates of the companies in all industrial sectors in the whole MRN are illustrated. An explanation

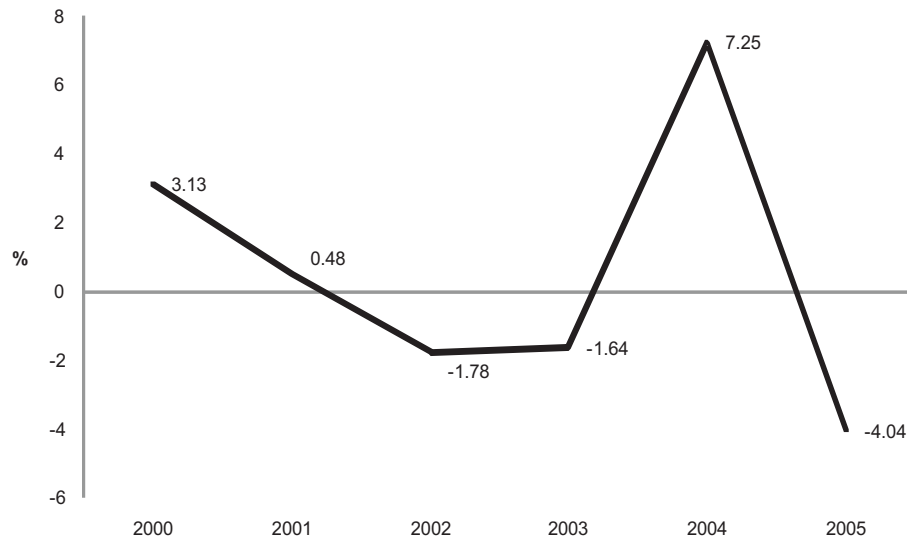


Figure 3: Annual growth rate of the companies in MRN (Source: EHP, calculations and illustration by the author).

of this increase (at least about 7% compared to the previous year) could not have been found so far. One reason could be the “second law of modern services in the labour market” (Hartz II), which came into effect on January 1, 2003, aiming

¹³For the most part, the development since 1999 will be considered, as between 1998 and 1999 the categorization of the branches of industry has been changed (from WZ73 to WZ99) and a classification due to a missing code are undetermined.

to support business start-ups of unemployed persons with the so-called setting up premium.¹⁴ It is possible, that the strong increase is based on a delayed effect of this law as well as on modalities of the sampling procedure, as the data of the EHP are solely collected on June 30 per annum. However, this can not be verified with the information available. A statistical effect due to incorrect coding can be excluded, as on the one hand a 50% sample of all companies has been taken every year, and on the other hand the effect is noticeable in all district-types and therefore in the whole region. The following figure 4 shows the development of companies in the different branches of industry of the MRN from 1999 to 2005. Hereby the industrial sectors, initially on a aggregated regional level, are to be identified, in which a growth of the companies has taken place and such that are characterized by a decline. Above all,

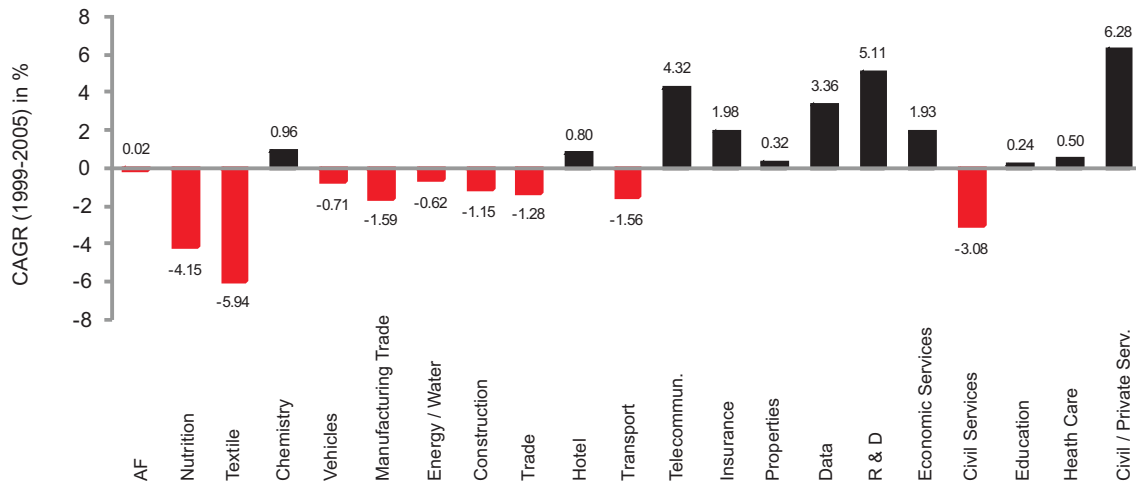


Figure 4: Development of the companies in different branches of industry (CAGR 1999-2005). (Source: BHP, calculations and illustration by the author).

a general decrease of companies can be noted in the secondary sector, in particular in the food and luxury food industry as well as in the fields of Textile and Leather. In the service industry an increase can be determined except of the Civil Service. In particular, the number of companies in telecommunication (CAGR of 4.32%), data processing (CAGR of 3.36%), Research and Development (R&D) (CAGR of

¹⁴Cf. Federal Law Gazette 2002 Part I No. 87, 4211.

5.11%) as well as in the field of public and private services have increased with a compound annual growth rate of 6.28%. Thus it should be noted that both the number of companies and the gross value added have increased in the tertiary sector and therefore this industrial sector gains in importance.

Table 4 exemplifies how companies in the sectors of agriculture, industry and services have developed from 1999 to 2005. For all district-types one can ascertain a decline in

		DT I	DT II	DT III	DT IV	DT VI
Primary	Proportion 1999	0.93%	2.33%	5.74%	4.44%	3.04%
	Proportion 2005	0.88%	2.15%	5.86%	3.82%	2.96%
	CAGR _{1999–2005}	-0.40%	-0.93%	-1.42%	-2.62%	0.00%
Secondary	Proportion 1999	14.30%	20.90%	19.92%	24.60%	19.90%
	Proportion 2005	12.61%	18.53%	17.35%	21.45%	16.21%
	CAGR _{1999–2005}	-1.66%	-1.62%	-1.23%	-2.42%	-2.89%
Tertiary	Proportion 1999	84.66%	76.67%	74.34%	70.96%	77.06%
	Proportion 2005	86.35%	79.24%	76.79%	74.73%	80.83%
	CAGR _{1999–2005}	0.75%	0.92%	1.61%	0.70%	1.29%

Table 4: Development of the business structure depending on the district type (Source: EHP, calculations and illustration by the author).

the number of companies in the industry sector between 1999 and 2005. An increase of the number of companies within the tertiary sector can be detected in all branches of industry and in all district-types, albeit with minor growth rates. The proportions of the companies in the primary sector diverge severely between the district-types. The margin in 2005 is between 0.88% in district-type I and 5.86% in district-type II (related to the total number of companies in the corresponding district-type in each case). The high proportion of companies in the services sector, which varies between 74% and 86% is peculiar. It should be noted that despite the enormous differences concerning the gross value added in the district-types, the business structure in the three sectors is quite similar. If one observes the development of the business

structure on a district level, one will notice that there are only little differences in the cities Mannheim, Heidelberg and Ludwigshafen. Although 70% of the gross value added in the secondary sector is generated in Ludwigshafen, about 80% of the companies belong to the tertiary sector.

4.2 Development of employment differentiated by the type of employment relationship: Which sectors of economy are driving forces of employment in the region?

In this section the development of business structure in the MRN will be presented. The objective is to identify industries that contribute to a positive growth of the region and to analyze the development of different employment relationships (full-time vs. part-time employment). Based on the analysis of the development of companies in the first instance it is to be analyzed, how the total employment in the region in different branches of industry has developed and whether this results are in line with the structure of the development of companies. From 1999 to 2005 employment in the MRN has increased about 2.76%. A decline in employment in the producing industry can be determined as well as an increase in the services industry. Figure 5 shows in which industries employment in the secondary sector is declining.

It is noticeable, that in this economic sector a considerable decline in employment takes place, above all in the fields of Textile and Leather, which corresponds to the development of companies in this period. Simply a positive growth of the total employment in the chemical sector can be emphasized. If one examines the development of the total employment in several district-types, it can be regarded that mainly the field Textile and Leather have been and still are characterized by a substantial decline in employment in the producing industry. The average decline in employment per annum in this economic sector is 4.43% in district-type II, 3.54% in district-type III and even 18.22% in district-type IV. In figure 6 the situation of all employees in the tertiary sector, namely the service industry, will be shown. Afterwards it will be clarified, whether full-time or part-time employment relations have been reduced.

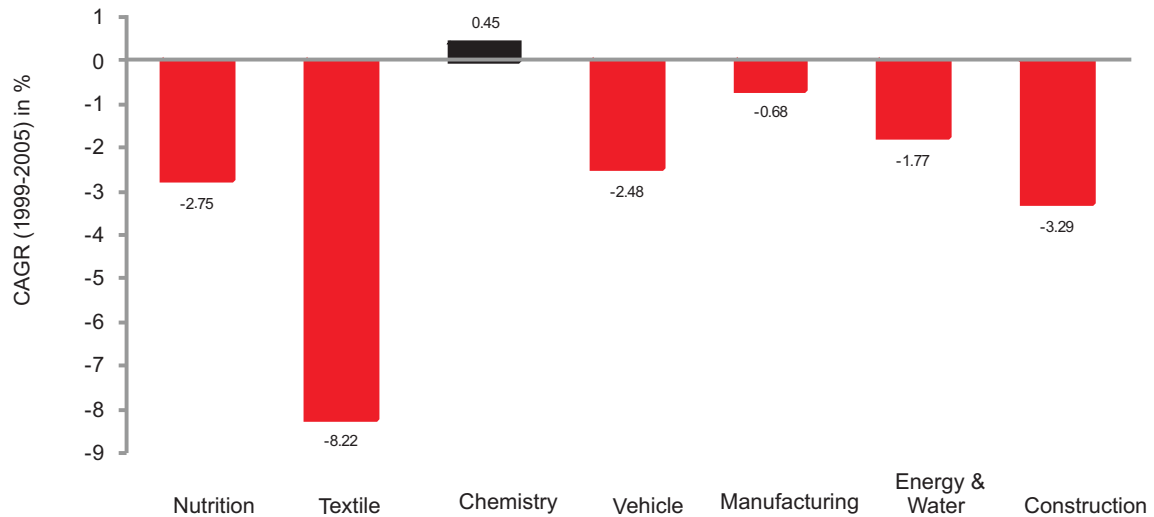


Figure 5: Compound annual growth rates of the employees in the producing industry (Source: EHP, calculations and illustration by the author).

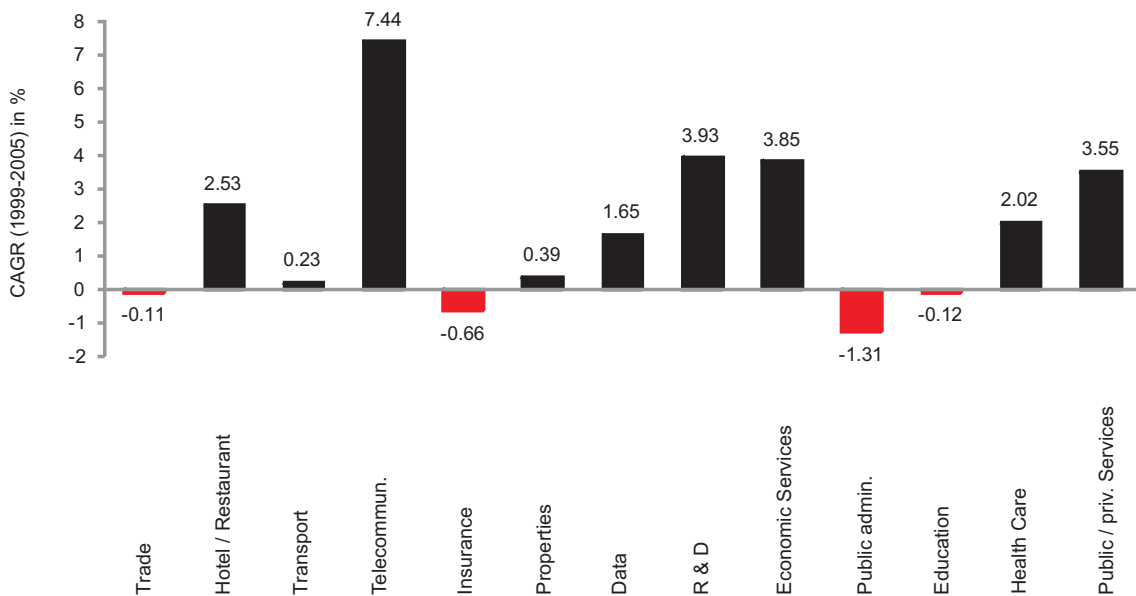


Figure 6: Compound annual growth rates of the employees in the service sector (Source: EHP, calculations and illustration by the author).

One can recognize, that in most fields of the tertiary sector employment holds a positive compound annual growth rate. The fields of telecommunication with a CAGR

of 7.44%, R&D (CAGR of 3.93%), economic services (CAGR of 3.85%) as well as public and private services with a CAGR of 3.55% should be emphasized.

On the district-type level mainly the economic sector of telecommunication has very high and positive growth rates of employment in the services sector (District-type (DT) 1: CAGR of 17.59%; DT II: CAGR of 7.25%; DT III: CAGR of 2.66%; and DT IV: CAGR of 7.74%). Merely in district-type VI employment in this field is decreasing with a CAGR of -36.10%. However not only this economic sector is characterized by an increase of employment. In the sectors of R&D, data processing and economic services also a positive growth can be observed in most district-types.

In the following, the development of full-time and part-time employment will be analyzed as well as the employment relationships in which the noticed increase can be determined. From overall 260.206 employees in the sample in 1999 almost 59% of the employees have been full-time employed and about 33% part-time employed. The total employment has increased from 1999 to 2005 about 2.76%. The proportion of full-time employees have decreased about 15.76% on a proportion of 48.34% of all employees in the same period. The part-time employment even has increased about 21.34% from 1999 to 2005 on a proportion of almost 40%. Figure 7 shows the growth rates of full-time employment in the MRN for the three economic sectors.

In all three economic sectors a downward tendency of full-time employment is distinguishable. The CAGR has a negative value in every field of the secondary sector (except of the chemical industry). Above all the economic sectors nutrition and luxury food (CAGR of -5.73%), Textile and Leather (CAGR of -8.56%) as well as the construction industry with a negative CAGR of -5.43% have reduced their full-time employment between 1999 and 2005. Within the service industry, a decline in full-time employment in almost every field can be noticed as well. Above all, the restaurant and hotel industry, the property sector as well as R&D are affected by this decline. Only in the sectors of telecommunication (CAGR of +8.21%) and economic services (CAGR of +0.14%) a positive growth of full-time employment can be determined. In summary, table 5 shows the distribution and alteration of full-time and part-time employment in the three sectors for the whole MRN.

3.859 persons on average have been employed in the primary sector between 1999

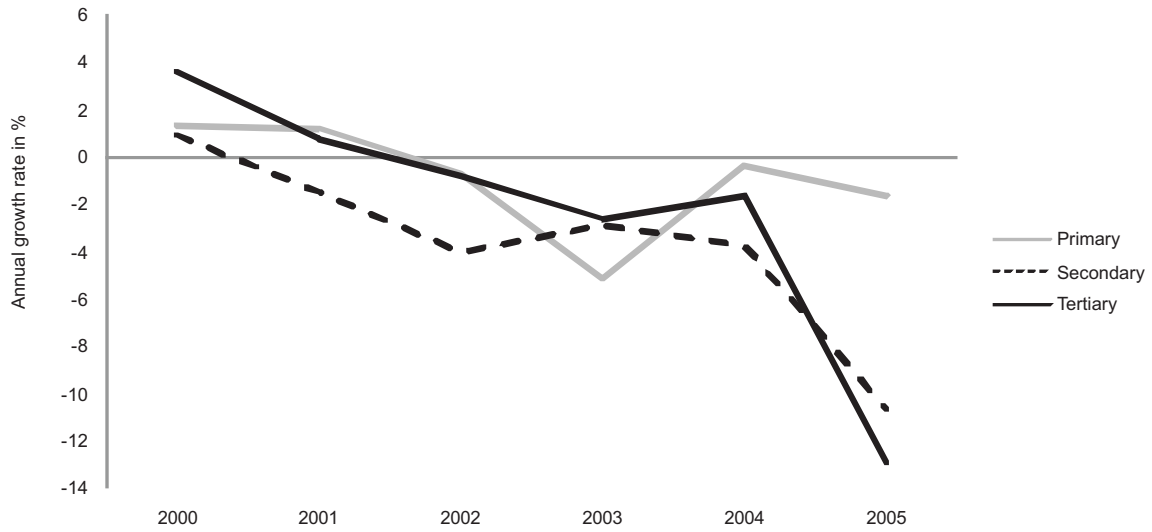


Figure 7: Annual growth rates of full-time employees in the MRN depending on industries (Source: EHP, calculations and illustration by the author).

		1999	2005	CAGR _{1999–2005}
Primary	Prop. of all employees	1.46%	1.49%	+0.77%
	Prop. of full-time (in the sector)	60.15%	54.37%	-0.91%
	Prop. of part-time (in the sector)	28.4%	30.29%	+1.86%
Secondary	Prop. of all employees	27.08%	23.24%	-2.07%
	Prop. of full-time (in the sector)	74.21%	67.02%	-3.72%
	Prop. of part-time (in the sector)	16.43%	21.21%	+2.19%
Tertiary	Prop. of all employees	71.46%	75.27%	+1.33%
	Prop. of full-time (in the sector)	53.18%	42.46%	-2.40%
	Prop. of part-time (in the sector)	40.17%	45.52%	+3.46%

Table 5: Development of full-time and part-time employment depending on industry (Source: EHP, calculations by the author).

and 2005. This proportion equates to about 1.4% of all employees in the region. The total employment in agriculture and forestry holds a CAGR of 0.77% from 1999 to

2005, the proportion of full-time employees has declined about 6 percentage points on 54.37% in this period. In the producing sector the total employment has declined about 2% on average per annum between 1999 and 2005. The decrease in full-time employment has even come to 3.72%. A positive growth can be noticed in the field of part-time employment as well as in the tertiary sector. In this sector, part-time employment has increased about 3.6% on average per annum between 1999 and 2005 and reached a proportion of above 45% of all employees in the service industry in 2005. With the introduction of the “second law of modern services on the labour market” (Hartz II) it is possible to accept activities within minimum wage employments until 400 as proper sideline since April 1, 2003. Moreover, the limitation of the maximum of 15 working hours has been omitted. For this reason one can anticipate an increase in the part-time employment as from 2003 / 2004. Figure 8 validates this assumption by showing the annual growth rates of the part-time employment.

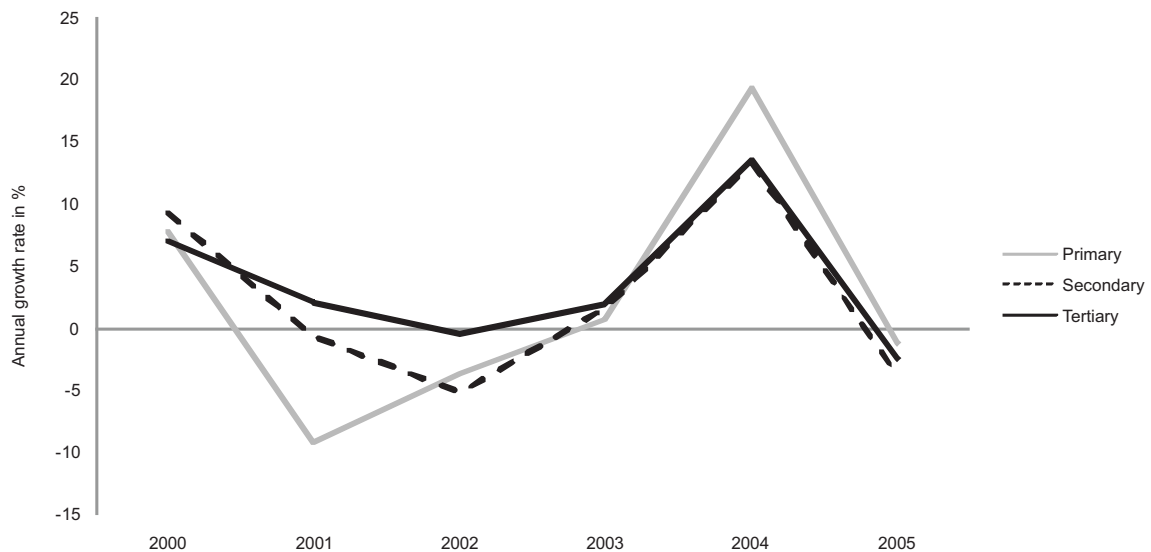


Figure 8: Annual growth rates of part-time employees in the MRN depending on industry (Source: EHP, calculations by the author).

Within the analysis of employment development one can find out, that mainly in the producing sector and in particular in the textile- and leather industries an enormous

decline in employment has taken place and may remain. An increase in employment could be noticed in the services industry, in the sectors of telecommunication, R & D as well as in economic services, that can be identified as driving force for employment in the region. This results confirm the evaluation outcomes of the development of the gross value added and the companies. Furthermore, they intensify the assumption, that the Rhine-Neckar-Metropolitan is also on the way towards a service and a knowledge-based society. Besides, an increase in the part-time employment in all economic sectors (to the disadvantage of full-time employment relationships) could have been recognized.

4.3 Digression: Employment situation dependent on the size of the companies in the year 2005

This digression deals briefly with the business structure in different categories of the company size. At this, companies with 1-4 employees (size 1), with 5-20 employees (size 2), with 21-50 employees (size 3), with 51-199 employees (size 4) and companies with at least 200 employees (size 5) will be examined. Due to the classification of the last company size, a detailed differentiation of the districts is resigned for reasons of data protection. According to that, the following results merely refer to the MRN as a whole. Moreover, it should be mentioned, that this analysis has only been conducted for 2005, because a chronological development of the employment situation depending on certain company sizes can only be hold methodically with constant sizes.¹⁵ In this case this would lead to far. By an analysis of the business structure depending on different company sizes, one can recognize that about 62% of all companies in the MRN engage between one and four employees, but they only represent a proportion of 9.24% of all employees in the MRN. Large companies with 200 and more employees have merely a proportion of 0.54% in relation to all companies, but the proportion of their employees in relation to all employees amounts to 36%. Therefore, it should be noted that the MRN consists of several small companies, but most of the employees are working for medium-sized companies

¹⁵Every company is assigned to a certain category of size within the base year and the company is permanently belonging to this category, no matter how the number of employees will develop.

and for the few large enterprises. In addition, it is noticeable that the proportion of employed women decreases with the rise of the company size. In small companies with up to four employees 54.28% are female employees, whereas the proportion of women in companies with 200 and more employees decreases to 31.33%.

Concerning the qualification structure it can be noted that approximately half of the employees in all company-sizes have an average qualification. It is noticeable that 54.28% of all highly qualified employees work in companies with 200 and more employees. The proportion of highly qualified employees in relation to all employees is with 11.32% in this company-size also comparatively high. In comparison: Merely 3.22% show a high qualification in companies with 1 to four employees. However, it has to be noted that in category 1, for instance, only 59% of the employees could have been assigned to a qualification level at all. For this reason, a concluding statement in terms of differences of the qualification structure between the company-sizes can not be carried out. An aggregation of the results is presented in table 6.

	size-categories				
	1	2	3	4	5
Prop. of companies regarding all companies (in %)	61.97	29.61	5.19	2.68	0.54
Prop. of employees regarding all employees (in %)	9.24	20.86	14.04	19.94	35.92
Prop. of women	54.28	52.28	44.94	39.38	31.33
Prop. of unqualified employees reg. all employees within the size-categories (in %)	11.73	14.00	14.50	19.57	14.86
Prop. of unqualified employees reg. all unqualified employeesn (in %)	7.09	19.11	13.33	25.54	34.93
Prop. of medium-qualified employees regarding all employees within the size-categories (in %)	44.15	52.51	50.31	57.09	57.59
Prop. of medium-qualified employees reg. all medium-qualified employees (in %)	7.53	20.23	13.04	21.01	38.19
Prop. of highly-qualified employees regard. all employees within the size-categories (in %)	3.22	4.16	5.23	7.65	11.32
Prop. of highly-qualified employees reg. all highly-qualified employees (in %)	3.97	11.59	9.80	20.36	54.28

Table 6: Business structure depending on company-size categories in 2005 (Source: EHP, calculations by the author).

4.4 The development of women's employment

It is noticeable that the average proportion of women has decreased in relation to all employees in the primary sector from 40% in 1999 to 37% in 2005. In the secondary sector it has been steady and the proportion of women in the tertiary sector has been decreased of about 3 percentage points and reached a level of 60.8% in 2005. The proportion of women in the producing sector is very high, in particular in the economic sectors of food and luxury food (70%) as well as textile and leather (71%). In the chemical industry it achieved at least a proportion of 46%, in mechanical engineering and vehicle production almost 30%. The least women's proportion can be determined in the field of energy- and water supply in the secondary sector with a proportion of merely 16.6%. Even the construction industry as well as manufacturing trade are located above the account of energy and water supply with 23.6% respectively 39.5%. The average proportion of women in the tertiary sector is above 60% in 2005. Above all the sectors of trading, hotels and restaurants, financial Business and insurance, economic services, education, health care as well as civil and private services have a high women's proportion with above 80% in part. In the sectors of transport and telecommunication the women's proportion is comparatively low with 32% respectively 46%.

However, a significant increase of the proportion of employed women can not be determined between 2003 and 2004. Therefore, a connection between an increase of part-time employment and women's employment can not be confirmed with the present data. However, even in the sectors with a high women's proportion, for instance in the tertiary sector, part-time employment strongly increased, too. According to this, it is conceivable that in the economic sectors a substitution of "normal" employment relations to part-time employment has taken place. However, this assumption can not be verified by the present data. In the following it should be revised whether the proportion of women within an economic sector modifies with the size of the company.¹⁶ For this, figure 9 shows the differences in the proportions of employed women for every economic sector in 2005 with reference to the respec-

¹⁶This evaluations have been conducted on the basis of sample-design 1, since it also contains companies with more than 200 employees.

tive company size.

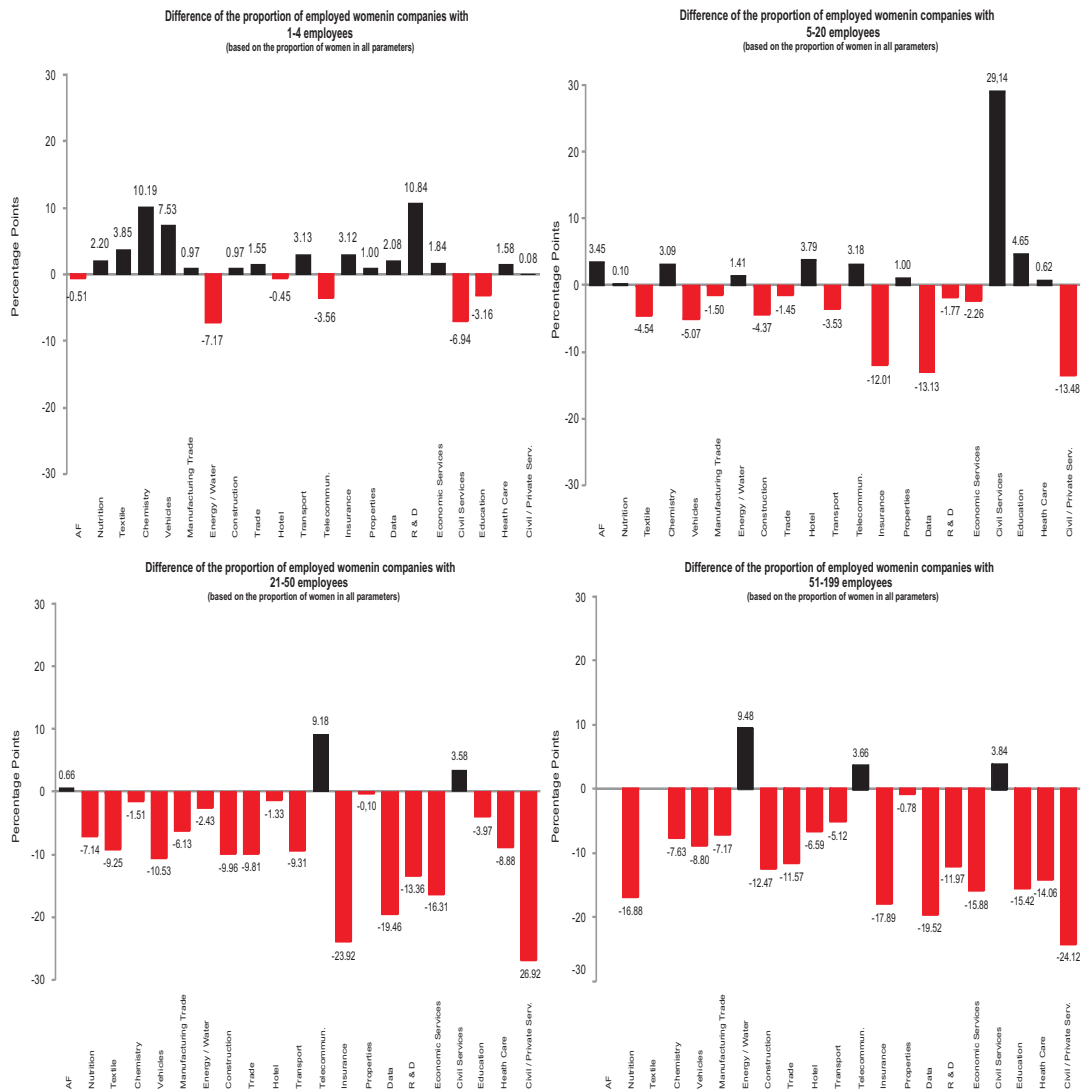


Figure 9: Alteration of the averaged proportion of women depending on company size in 2005 (Source: EHP, calculations and illustration by the author).

This figure displays the fact that the proportion of women decreases with an increasing company size regarding the average women's proportion in the respective economic sector. Whereas the women's proportion in the chemical industry in companies with 1 to 4 employees is industry-wide above average with 10.19%, companies with 51-199 employees have already 7.63 percentage points below average and companies with more than 200 employees even have a proportion of women that is 15.79

percentage points below average. This can be also recognized in the public and private services. While the average proportion of employed women in this economic sector is about 81% in 2005, companies with 50 and more employees have only about 53%. Table 7 is summing up the results.

	Proportion of female employees depending on company-size					
	Total	1-4	5-20	21-50	51-199	>200
AF	35.77	35.26	39.21	36.42		
Nutrition	69.31	71.51	69.41	62.17	52.43	29.95
Textile	69.00	72.86	64.47	59.75		
Chemistry	37.27	47.46	40.36	35.76	29.65	21.48
Vehicles	27.19	34.72	22.12	16.65	18.39	11.85
Manufacturing Trade	38.57	39.54	37.08	32.44	31.40	30.46
Energy & Water	17.17	10.00	18.57	14.73	26.64	21.07
Construction	23.67	24.64	19.30	13.71	11.20	
Trade	62.00	63.55	60.55	52.19	50.43	50.46
Hotel	62.36	61.92	66.16	61.03	55.77	
Transport Sector	31.01	34.14	27.48	21.70	25.89	29.57
Telecommun.	44.15	40.59	47.33	53.33	47.81	53.64
Insurance	72.37	75.49	60.36	48.45	54.48	57.76
Properties	48.09	49.08	49.09	47.99	47.31	
Data	48.21	50.29	35.08	28.75	28.69	33.04
R & D	55.20	66.04	53.42	41.84	43.23	
Economic Service	64.42	66.26	62.16	48.11	48.54	65.64
Civil Service	55.87	48.92	85.01	59.45	59.71	59.38
Education	78.89	75.73	83.53	74.92	63.47	52.98
Health Care	89.21	90.79	89.83	80.32	75.15	76.83
Civil / Private Service	80.91	80.99	67.43	53.99	56.79	63.73

Table 7: Proportion of employed women in 2005 depending on industrial sector and size of company (Source: EHP, calculations by the author).

4.5 The structure of qualification in the Rhine-Neckar-Metropolitan: Is there a threat of skilled-labor shortage?

The aim of this section is to identify whether there are shifts recognizable in different economic sectors and whether there are references to a potential skilled-labor shortage on the basis of the development of the qualification structure. These will be defined before evaluations for different qualification levels will be initiated. Employees that have no A-levels as highest educational achievement and no professional education are characterized as "unqualified".¹⁷ Do employees have A-levels or optionally a professional education as highest educational achievement they will be dedicated as "medium-qualified" employees. The term "highly qualified" characterizes people with technical college or university degree.

Development of unqualified employees: If one examines the development of unqualified people in the whole Metropolitan and in all economic sectors, one can determine that the number of these employees has decreased about 17% from 1999 to 2005. Figure 10 underlines that this development can be observed in all three economic sectors. In agriculture and forestry the number of unqualified employees has decreased about 20%, in the producing sector about 28% and in the services sector almost 12% between 1999 and 2005. Within the secondary sector in all branches of industry a negative growth rate can be determined. Above all the decline in textile and leather is high with a growth rate (GR) of -63.86% between 1999 and 2005. In the service sector a positive growth of unqualified employees in the same period can be declared in the field of telecommunication (GR=241.01), in data processing (GR=31.93) and in economic services (GR=24.47). An enormous decline has taken place in the sectors of financial business and insurance (GR=-34.98) as well as in education (GR=31.33). The decrease of unqualified employees occurred in all district-types in the Metropolitan area. The compound annual growth rate of all

¹⁷Cf. Spengler (2007), S. 17.

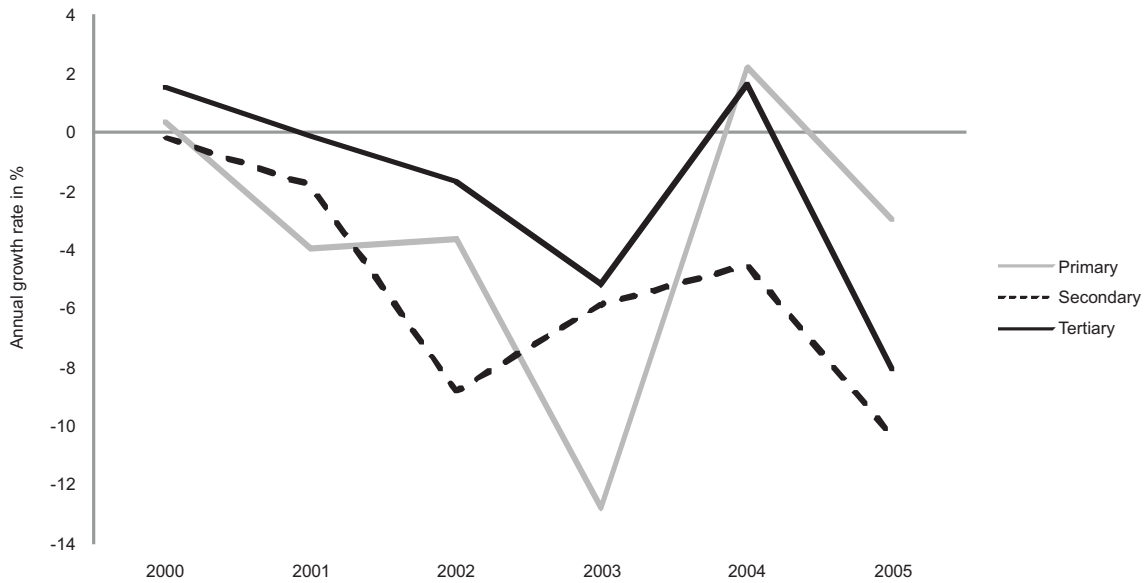


Figure 10: Annual growth rates of unqualified employees in the MRN depending on industries (Source: EHP, calculations and illustration by the author).

five district-types are negative for the primary, the secondary and the tertiary sector from 1999 to 2005.

Development of medium qualified employees: The development situation of medium qualified employees is similar to the situation of unqualified employees. For the whole MRN a decrease of employees with a medium qualification of 6.14% in the primary sector, 16.45% in the producing sector, and 0.85% in the services sector can be determined from 1999 to 2005. Above all, the sectors of textile and leather (secondary sector) have reduced the numbers of employees with medium qualification of about 47%, additionally to the reduction of unqualified employees. Positive growth rates of medium qualified employees can be noted in the tertiary sector, particularly in telecommunication, R & D and health care. In comparison to the aggregated results of the whole MRN and the development in several district-types, the amount of employees with a medium qualification in district-type III have increased about 17% in the primary sector between 1999 and 2005 and in the service

sector about at least 3%. In district-type IV (Neckar-Odenwald-Kreis), a positive growth rate of 2.21% in the tertiary sector can be examined as well. Above all, the sectors of transport and data processing achieved comparatively high growth rates. The development of medium qualified employees in district-types I, II, and VI is comparable to the agminated regional development.

Development of highly qualified employees: Evaluations of the development of highly qualified employees are merely conducted for district-types I, II and III due to a limitation of data available. District-types IV and VI consist of one county / city each, therefore many data matrix elements are empty for the sake of data protection. Furthermore, an evaluation of the districts has no additional benefit. In the primary sector the growth of highly qualified employees of 3.48%, in the producing sector of 0.06%, and in the service sector of 2.46% on an aggregated level between 1999 and 2005 can be observed. The group of highly qualified employees is therefore the only one that achieved positive growth rates in all economic sectors. If one examines every district-type separately, strong differences regarding the development of highly qualified employees in different economic sectors can be determined. Whereas district-type I has a CAGR of -2.06% from 1999 to 2005, the growth rates of highly qualified employees are positive in agriculture and forestry within the second and third district-type (DT II: CAGR=4.17%; DT III: CAGR=6.44%). In district-type I the producing sector generated positive growth rates, particularly in the fields of nutrition, chemical industry and manufacturing trade. In district-type II, only in the energy- and water supply a positive growth can be achieved. In district-type III all economic sectors gained positive growth rates. The compound annual growth rates in the service sector are positive in all district-types. Within the tertiary sector particularly the fields of trade, data processing and health care hold negative growth rates in district-type I, education in the district-types II and III as well as R & D in district-type III. Table 8 summarizes the development of the qualification structure in the MRN.¹⁸ In summary it can be noted that both the proportion of unqualified

¹⁸The data about highly qualified employees merely refers to the district-types I, II and III.

		unqualified	medium qualified	highly qualified
Primary	Proportion 1992	33.85%	41.56%	1.67%
	Proportion 2005	25.94%	37.25%	1.94%
	CAGR _{1999–2005}	-3.60%	-1.05%	3.48%
Secondary	Proportion 1992	22.32%	60.60%	3.29%
	Proportion 2005	18.21%	57.41%	3.72%
	CAGR _{1999–2005}	-5.34%	-2.95%	0.06%
Tertiary	Proportion 1992	17.92%	57.62%	5.50%
	Proportion 2005	14.61%	52.78%	5.86%
	CAGR _{1999–2005}	-2.07%	-0.14%	2.46 %

Table 8: Development of the qualification structure in the MRN (Source: EHP, calculations by the author).

employees and the proportion of medium qualified employees has decreased. Only the proportion of highly qualified employees has increased. This results indicate a threat of a skilled-labor shortage in different economic sector, that implicitly needs a counteraction. A precisely fitting regional analysis has to find out which measures are required in detail.

5 Conclusion

The evaluations of the business and employment structures in the Rhine-Neckar-Metropolitan have shown that in particular the number of companies and employees in the producing sector have decreased between 1999 and 2005. Above all, the food and luxury food industry as well as the sectors textile- and leather industries have been affected by these. In the construction industry as well many employment relations have been reduced with a compound annual growth rate of -3.20% since 1999. This economic sectors therefore can be identified as regional losers of employment. However, in the service industry an increase of companies can be examined.

In particular, the sectors of telecommunication, data processing, research and development as well as public and private services are among the driving forces of employment in the region. Moreover, it can be noted that the tertiary sector in the MRN has gained in importance, since not only the business structure and the development of employment has increased but also the gross value added in this sector. In 2005, 60% of the gross value added has been generated in the tertiary sector of the region, in which at the same time already 80% of the companies has operated. Even though, a trend towards a services economy can be examined, one has to point out the differences of the several district-types and counties due to their economic structure. The structure of employment relations has also changed over time in the MRN. An explicit trend towards increased part-time employment is recognizable. The proportion of the part-time employees has already been above 45% in the tertiary sector in 2005. However, a connection could not have been assessed between an increase of the women's proportion and the growth of part-time employment. But it is noticeable that even in economic sectors with a (historical) high proportion of women a big part of the employment relations is executed in part-time and that they have increased since 1999. Examples of this are the sectors of food and luxury food, textile and leather, trading, restaurant and hotel as well as public and private services. This result leads to the assumption that former full-time relations have been replaced by part-time employment. However, this assumption can not be verified with the data available. In the field of qualification structure a decline in unqualified and medium qualified employees can be examined in all economic sectors. This trend has to be stopped immediately in order to counter a shortage of skilled labor. Though the MRN is very heterogeneous regarding its economic structures, it is of particular importance to accomplish a differentiated regional examination to derive accurately fitting and problem-oriented measures.

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