

Distribution of Economic Power and Income between Major Cities and Their Regions in Germany

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Abstract: Based on National Accounts Data for production and income, this article deals with the question how intensive the five economically strongest German cities radiate into their neighboring regions. In this respect, the situation is very different for the five cities and their regions: (1) Two cities (Hamburg, Dusseldorf) are very dominant and exceed the districts of their respective region in all four per-capita indicators; (2) although Munich is an economically very strong city it is surpassed by some rural districts of its region with respect to productivity and income; (3) Frankfurt as an international banking center has a very productive economy and offers the highest earnings of all major cities but it loses a lot of purchasing power due to the commuting of well earning employees residing in more attractive neighboring communities; (4) the indicators show very small disparities within the Region of Stuttgart which is characterized by the production of cars and other investment goods and insofar differs from the other regions with core cities dominating in business services.

Key words: regional accounts; labor productivity; compensation of employees; income; cities

JEL codes: E01, J30, O18, R12

1. Introduction

Major cities radiate in many ways into their neighboring regions. Typically, these cities are economically closely intertwined with the surrounding cities and municipalities and can therefore be considered as the core cities of an area. In this paper, the relation of the core city to its respective region is shown for the five economically strongest cities of Germany. These cities are Hamburg, Munich (München), Frankfurt (on the Main), Stuttgart and Dusseldorf (Düsseldorf).

The geographical location of these cities and their regions which are in fact planning regions is shown in MAP 1. Every region includes the core city as well as other administrative districts or counties ("Kreis" in German), hereinafter referred to as "districts". A district may consist of one single city, then it is called city district ("Stadtkreis"). If it contains various municipalities it will be called rural district ("Landkreis").

In the following, the economic situation of every region is described by four per capita indicators that are regularly published on district level by the National Accounts Working Group of the German Laender ("Arbeitskreis Volkswirtschaftliche Gesamtrechnungen der Länder"). Two indicators ((1) and (2)) are based on the area of production and two indicators ((3) and (4)) are based on residency:

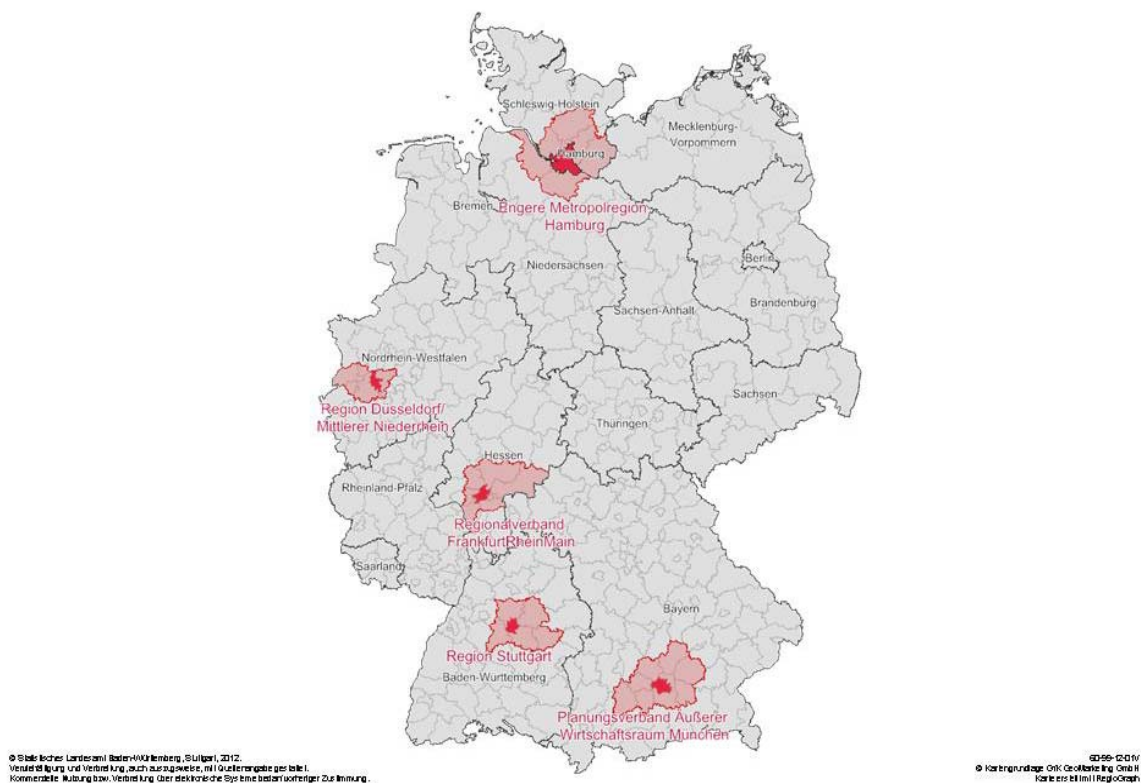
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(1) The Gross Domestic Product (GDP) per person employed is an indicator for the labor productivity as well as for the economic strength of a region.

(2) The compensation of employees per employee expresses the level of labor costs or the individual labor income earned in a region, respectively.

(3) The primary income of private households per inhabitant shows the income of private households generated directly from market transactions and received by residents. This includes as the main item the compensation of employees as well as income of assets particularly interests, dividends and rents and income from operating surplus and self-employment; interest and rents payable are recorded as negative items.

(4) The disposable income of private households per inhabitant is derived from the primary income by deducting direct taxes as well as social security contributions and other current transfers paid on the one hand, and adding social benefits and other current transfers received on the other; it is generally considered as an indicator of the purchasing power in a region.



Map 1 Geographic Position of the Five Regions in Germany

The year 2008 was chosen for this investigation because it was a cyclically balanced year. By contrast, the year 2009 marks the most severe recession of post-war German history. Moreover, the data for 2008, in contrary to more recent years, are well calculated on the basis of suitable statistics.

Regarding the number of inhabitants, the size of the five cities is very different: Hamburg (1.77 Mill.) is about three, Munich (1.32 Mill.) two times larger than Frankfurt (0.66 Mill.), Stuttgart (0.60 Mill.) or Düsseldorf (0.58 Mill.). In contrast, the regions show significantly lower differences in their population; in particular, the number of inhabitants in the regions of Stuttgart (2.67 Mill.), Munich (2.63 Mill.), Frankfurt (2.53 Mill.) and even Düsseldorf (2.33 Mill.) is almost the same size, only the region of Hamburg (3.19 Mill.) has considerably more

residents. Consequently, there is a great difference in the proportion of the core cities in the respective regions with about a quarter in Frankfurt (26.2 p.c.), Dusseldorf (25.0 p.c.) and Stuttgart (22.4 p.c.) on the one hand and half or more in Hamburg (55.6 p.c.) and Munich (50.0 p.c.) on the other.

The GDP level of the different cities also reveals a significant difference in contrast to a remarkable homogeneity between the regions. Compared to the population, the proportion of the core cities' GDP is much higher (Hamburg 71.1 p.c., Munich 56.4 p.c., Frankfurt 46.7 p.c., Dusseldorf 45.4 p.c. and Stuttgart 33.8 p.c.) underlining the economic impact of the core cities on the surrounding cities and municipalities.

2. The Region of Hamburg

The Region of Hamburg (Engere Metropolregion Hamburg; Inner Metropolitan Region of Hamburg) consists of the City of Hamburg as well as six districts belonging to the Laender Schleswig-Holstein and Lower Saxony (Niedersachsen); see Map 2 with the abbreviations LK for Landkreis and SK for Stadtkreis. The City of Hamburg is located in the region's center and dominates the surrounding districts in all four indicators (see Figure 1). The gap between the City of Hamburg and the districts is most evident with respect to the compensation of employees per employee but also in terms of the GDP per person employed due to Hamburg's high productivity. This high productivity is the result of many capital-intensive industries, especially oil refining, shipping and aviation industries, as well as business, insurance and real estate services. These very productive industries and services offer excellent earnings to the people working there as well.



Map 2 The Region of Hamburg

The districts of Pinneberg and Stormarn which are rather small in terms of area but densely populated and located near to the core city benefit most from the economic impact of Hamburg resulting in a high value of GDP and compensation of employee per capita. The same applies to the District of Stade with a large number of capital intensive production companies as well as for the District of Segeberg. The lowest value in both indicators based on the area of production is measured for the rural District of Herzogtum Lauenburg in the east of the region and

the District of Harburg which is focused on less productive industries such as trade, transport and communication as well as public and private services.

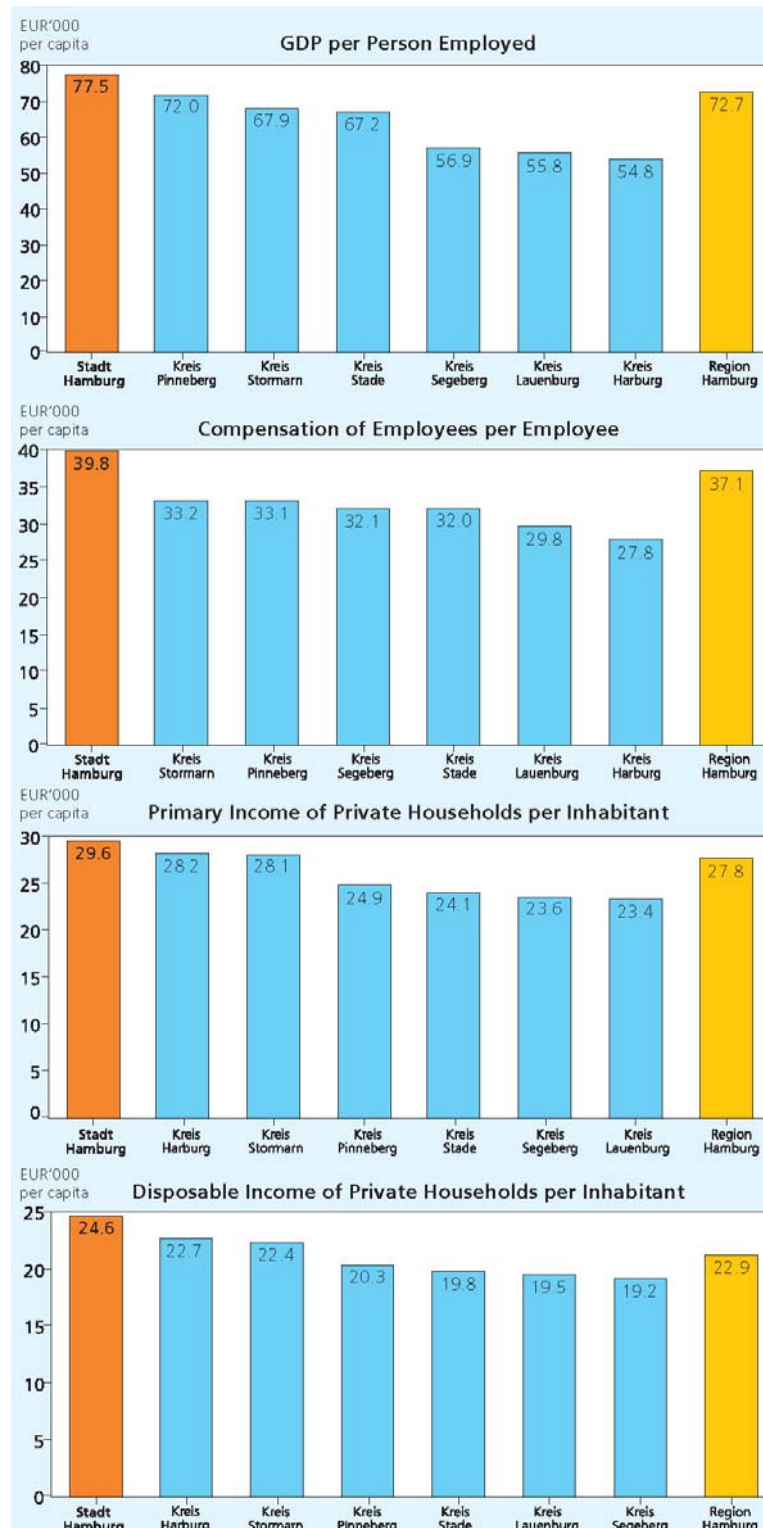
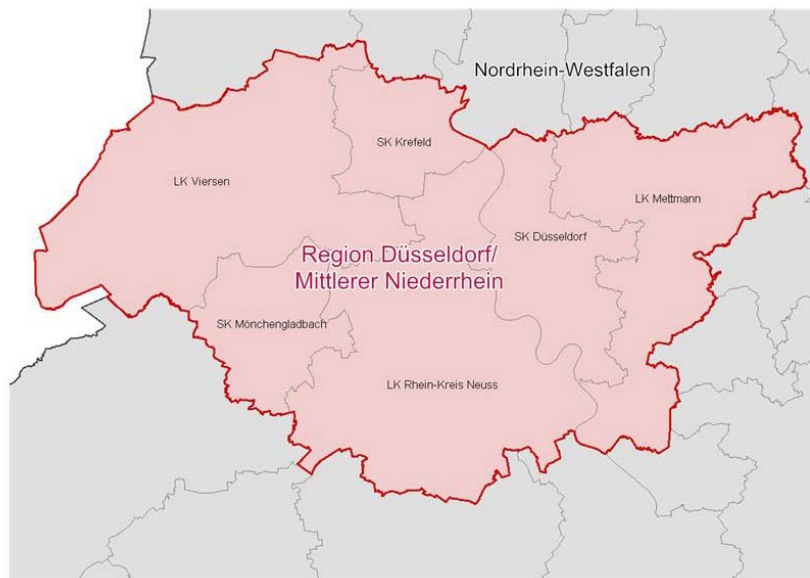


Figure 1 Economic Indicators of the Region of Hamburg



it is particularly significant in a

The sequence of the region's districts in case of compensation of employees per employee is nearly identical

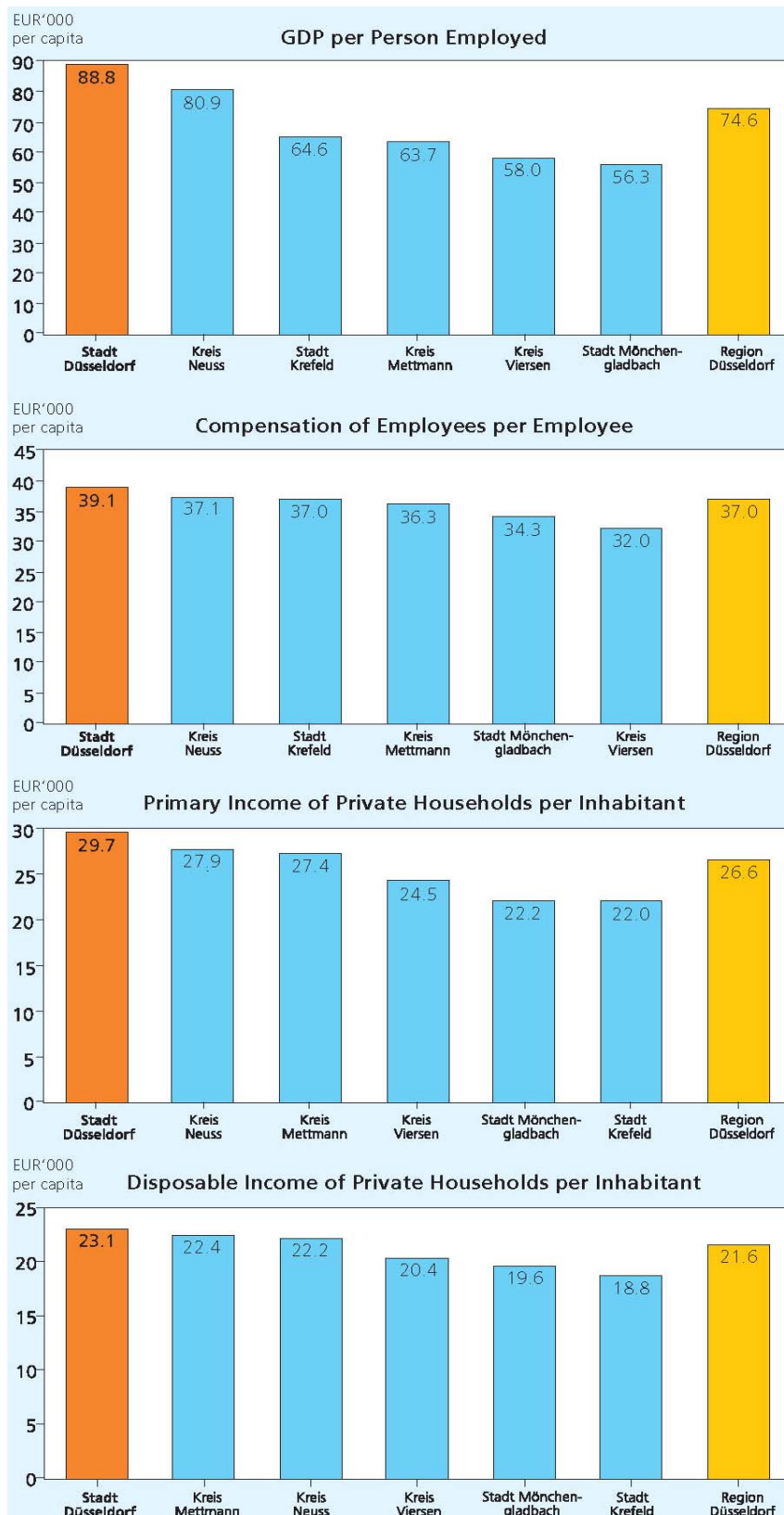


Figure 2 Economic Indicators of the Region of Düsseldorf

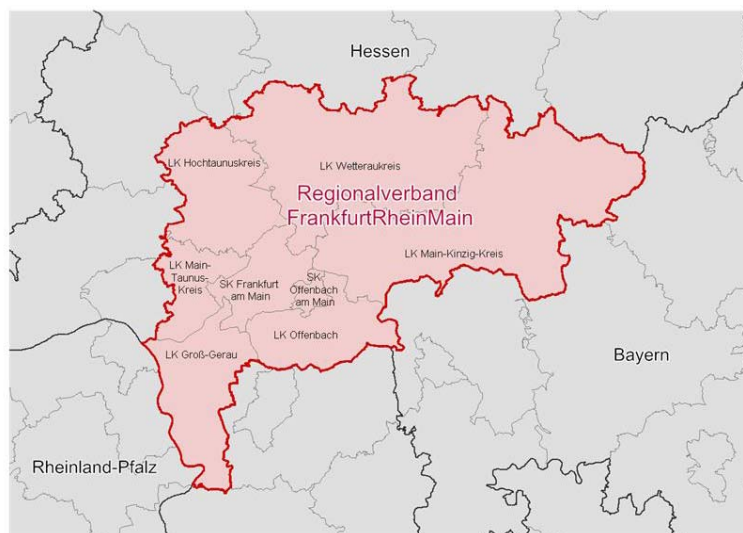
In that respect, there is another interesting aspect to be recognized. While Dusseldorf surpasses all other major cities with respect to GDP per person employed it is ranked last concerning the compensation of employees per capita, i.e., the employees working in Dusseldorf receive lower wages and salaries than their colleagues employed in the other four analysed cities. The reason is the very capital-intensive kind of production of the enterprise-related services which are dominating in Dusseldorf.

The primary income of private households per inhabitant again reveals stronger differences within the Region of Dusseldorf. The City of Dusseldorf heads the list proving a high quality of life and therefore strong attraction for high-income residents. The districts of Neuss and Mettmann rank immediately behind the City of Dusseldorf due to their proximity to the core city as well as to other major cities like Leverkusen, Cologne, Duisburg, Krefeld and Mönchengladbach. These industrial cities offer good earnings for employees working there but residing in more attractive communities. The result is, inter alia, that the City of Krefeld which likewise belongs to the Region of Dusseldorf and offers rather well paid jobs ranks at the region's end together with the City of Mönchengladbach.

The ranking of the cities and districts within the Region of Dusseldorf is nearly the same for the disposable income of private households as for the primary income per capita. However, a significant levelling of income is perceptible mainly due to the progressivity of the income tax at the expense of the very rich City of Dusseldorf as well as the districts of Mettmann and Neuss on the one hand and to the extensive social transfers to residents of the cities of Krefeld and Mönchengladbach on the other.

4. The Region of Frankfurt

The Region of Frankfurt as described here includes the cities of Frankfurt on the Main and Offenbach on the Main as well as six districts belonging to the Regionalverband FrankfurtRheinMain (Regional Association Frankfurt-Rhine-Main). Due to the full integration of all communities of the large-sized districts of Main-Kinzig, Wetterau and Gross-Gerau into the region, the City of Frankfurt is moving slightly out of the region's center; see Map 4.



Map 4 The Region of Frankfurt

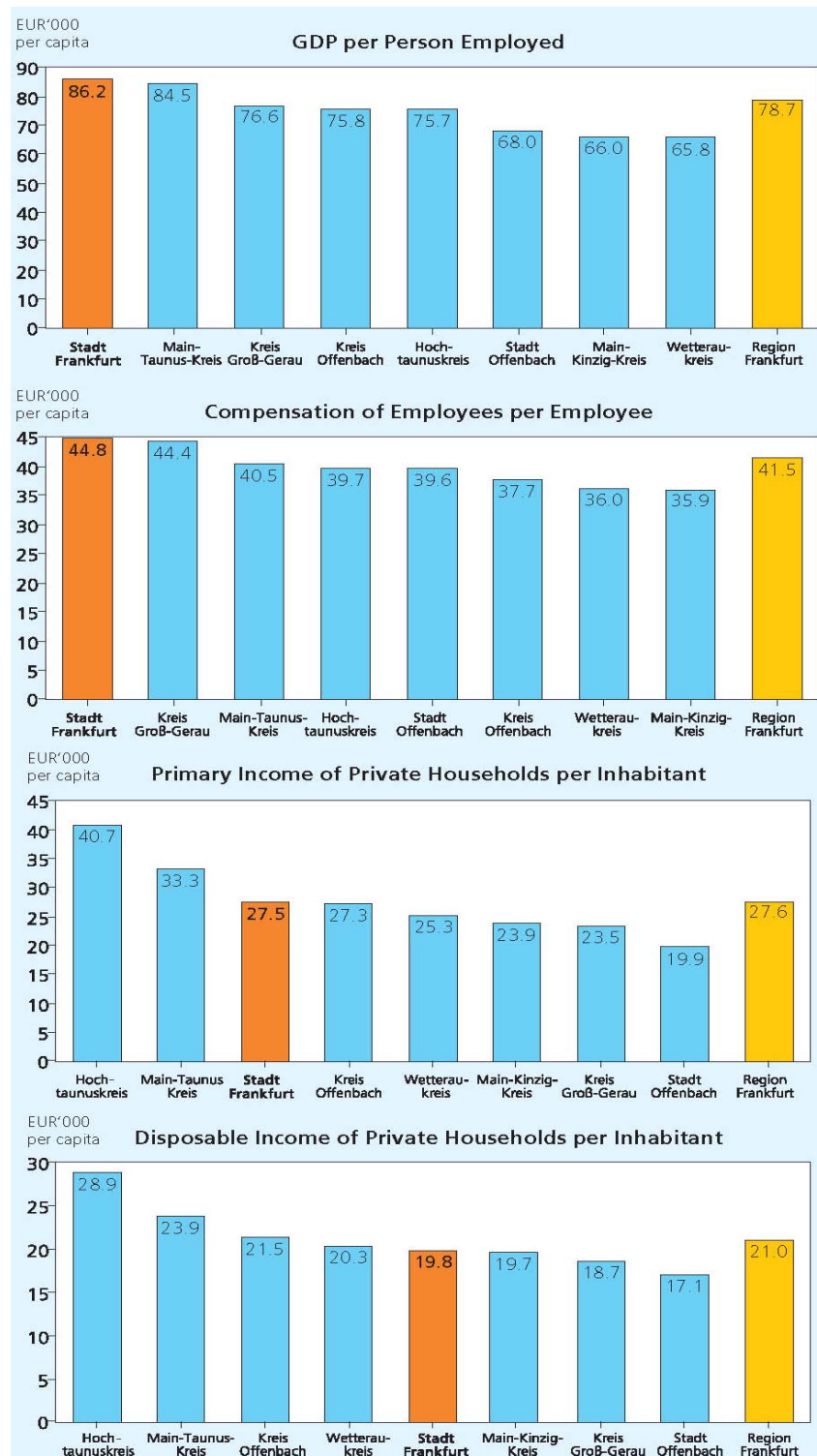


Figure 3 Economic Indicators of the Region of Frankfurt am Main

It is not surprising that the City of Frankfurt as an international banking center and seat of other capital-intensive services is on the region's top in the GDP per person employed (see Figure 3). In relation to the other major cities it is placed second after Dusseldorf. Another district focused on financial and enterprise services,

the District of Main-Taunus, achieves a productivity almost as high as the City of Frankfurt. The high productivity of the third- placed District of Gross-Gerau is mainly due to the car producing industry in the City of Rüsselsheim. The industrialized City of Offenbach and the rural districts Main-Kinzig-Kreis and Wetteraukreis rank at the bottom of the list.

The City of Frankfurt also takes a leading position within the region with regard to the compensation of employees per employee. It is closely followed by the District of Gross-Gerau. This ranking is the result of the high wages and salaries paid to employees in both the financial services and the car producing industries. It is worth mentioning that the City of Frankfurt and the District of Gross-Gerau reach the highest value of this indicator for all cities and districts analysed in this paper. By comparison, the districts of Main-Taunus, Hochtaunus and Landkreis Offenbach fall slightly behind. The lowest compensations of employees per capita in this region is paid to the employees in the rural districts Main-Kinzig-Kreis and Wetteraukreis.

The ranking of the cities and districts in the Region of Frankfurt differs significantly when the two indicators based on residency instead of those based on the area of production are applied. Starting with the primary income of private households per inhabitant, there are remarkably big differences between the districts within the Region of Frankfurt: The residents in the District of Hochtaunus do not only receive the highest income per capita of all German districts and cities but also more than twice the income of the people living in the City of Offenbach within the same region. The District of Hochtaunus as well as the next-placed District of Main-Taunus strongly benefit from the commuting within the Region of Frankfurt: Many well paid employees which are working in the cities of Frankfurt and Offenbach as well as in the District of Gross-Gerau are living in communities of the surrounding districts of Hochtaunus and Main-Taunus which offer much more attractive conditions for living. As a result, the City of Frankfurt where the highest wages and salaries are paid falls behind to the third place within its region concerning the primary income per capita. The gap between the City of Frankfurt and the District of Landkreis Offenbach and even the rural districts with low wages and salaries such as the Wetteraukreis and the Main-Kinzig-Kreis is moderate. All three districts likewise include municipalities in the proximity to Frankfurt. In this respect the situation of the City of Frankfurt and its districts is completely different to that of Hamburg and Dusseldorf which are very attractive for high-income residents, too.

The same effect can be found in the District of Gross-Gerau: Although the employees in this district get the highest per-capita compensation of employees in all cities and districts analysed here the district falls behind to the place next to the last which is the City of Offenbach suffering the same fate.

A levelling effect occurs when switching over from the primary to the disposable income of private households. Nevertheless, the order of the cities and districts within the region remains almost unchanged. Only the City of Frankfurt is falling further back to the fifth place mainly due to the relatively low unemployment rate with less social transfers to its residents. The gap between the District of Hochtaunus in the first place and the City of Offenbach in the last place remains very high with regard to the disposable income. However, it is significantly lower compared to the primary income indicator. This is due to the progressivity of the tax system as well as the high unemployment rate in the City of Offenbach and therefore high social transfers to its inhabitants.

5. The Region of Stuttgart

The geographic situation of the Region of Stuttgart resembles that of the Region of Frankfurt: The core city is located slightly outside of the center of the region (see Map 5). However, the city is moving closer to the center

when ignoring the south-eastern district of Göppingen which ranks last place in all indicators due to its distance to the region's center. By contrast to the Region of Frankfurt and typical for the Region of Stuttgart there is a very small gradation in the per-capita indicators between the city and the other districts, particularly with respect to the income indicators; see Figure 4.



Map 5 The Region of Stuttgart

The economy of the City of Stuttgart as well as the districts of the region is based on the manufacturing sector, especially on the production of investment goods. This leads to a lower GDP per person employed in the City of Stuttgart compared to the other four major cities with a greater share in capital-intensive financial, real estate and business services. Concerning the productivity indicator the District of Böblingen is topping the list due to its numerous locations of car producing industries including automotive component supplies as well as machinery and electronic data processing industries. The City of Stuttgart follows closely due to a similar economic structure of industries as well as many private and public services which are usually located in the state capital. Many producers of investment goods are also to be found in the districts of Ludwigsburg and Esslingen. Therefore, these districts show a higher productivity than the more rural districts Rems-Murr-Kreis and Göppingen.

The reason why employees working in Stuttgart receive the highest per-capita compensation among the five major cities (next to their colleagues in Frankfurt) is Stuttgart's focus on the car and investment goods industry. In this context, it should be noted that Stuttgart generates the lowest value of the GDP per person employed in this comparison. The importance of the investment goods industry for the value of the labor-income indicator is underlined by the top position of the District of Böblingen.

People with high earnings often move to a residence with better living conditions which can only be found in another community. Consequently, the District of Böblingen shows a great surplus of people daily commuting from other districts. As a result of this commuting, the District of Böblingen drops back to the last but two rank within the Region of Stuttgart concerning the primary income of private households per inhabitant. As mentioned above, a similar effect occurs in the case of the District of Gross-Gerau as the car producing district of the Region of Frankfurt. But in contrast to Frankfurt, the City of Stuttgart is also attractive for high-income residents and therefore obtains the first rank of this income indicator within the region.

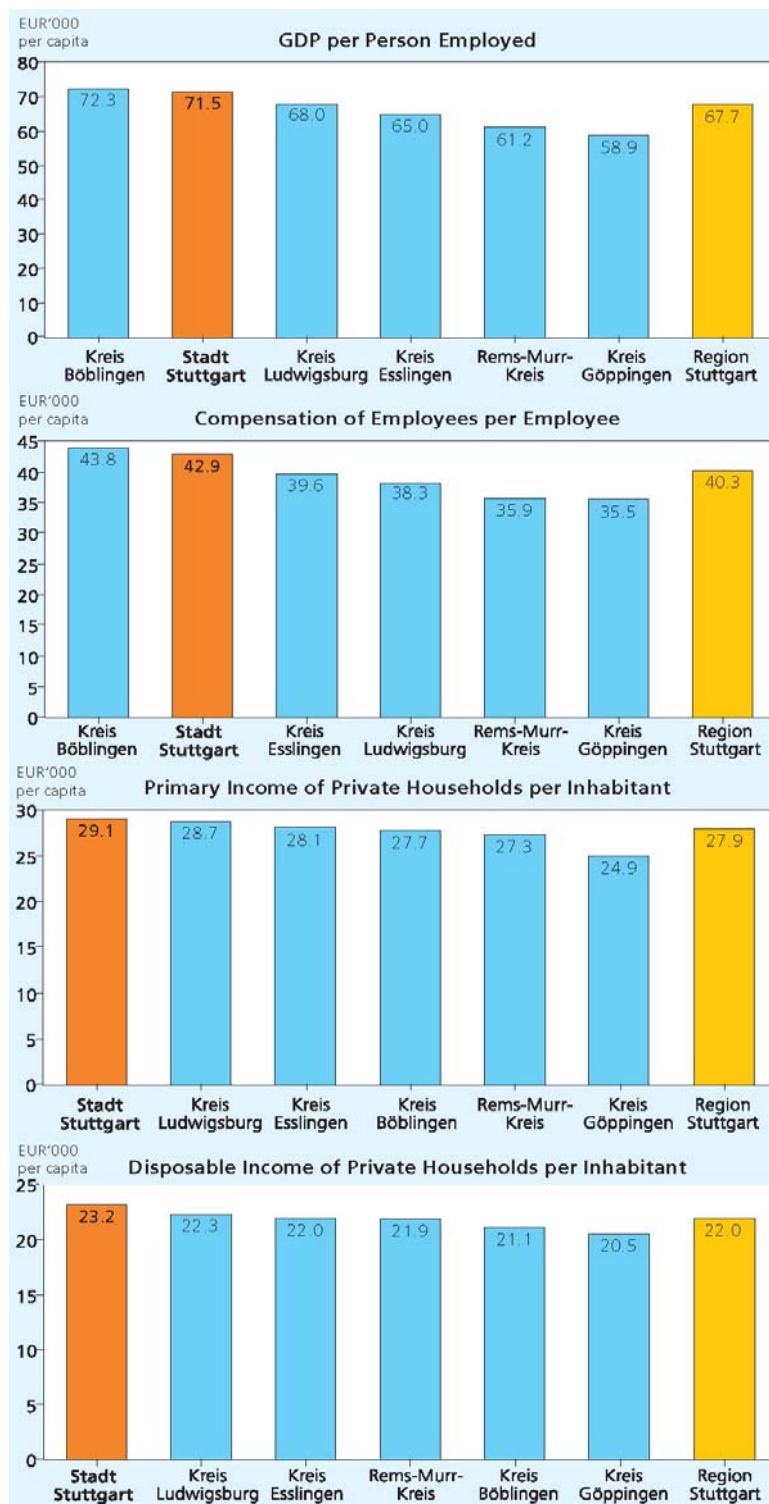


Figure 4 Economic Indicators of the Region of Stuttgart

The indicator for the disposable income of private households per inhabitant shows a similar ranking between the districts. However, the differences between the districts are smaller due to the levelling effect of Germany's

progressive tax system. Noteworthy is the falling back of the District of Böblingen to the penultimate place which is the result of comparatively low social transfers received due to a low unemployment rate in this district.

6. The Region of Munich

The City of Munich is located almost exactly in the center of its region (Planungsverband Äusserer Wirtschaftsraum München; Planning Association Outer Economic Area of Munich); see Map 6. As presented in Figure 5, the economic situation within the Region of Munich is very different, i.e., the indicators show an unequal regional distribution of economic power between the city and the eight districts.



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Map 6 The Region of Munich

Particularly striking is the situation in the case of the GDP where the District of Landkreis Munich with € 114,100 per person employed not only exceeds the state capital (City of Munich) and the other districts inside the region but also has the highest value compared to all German districts. This district surrounding the City of Munich is characterized by a balanced and powerful mixture of large- and medium-sized enterprises with the focus on capital-intensive and high-tech industries like aviation and aerospace, biotechnology, communication and information technology, media industries as well as insurance companies.

The labor productivity of the District of Landkreis Munich is almost twice as high as that of the District of Landsberg or the District of Fürstenfeldbruck within the same region. It has such a strong effect on the region's labor productivity that—apart from the second-placed District of Starnberg—all other districts fall short of the region's average, even the third-placed City of Munich.

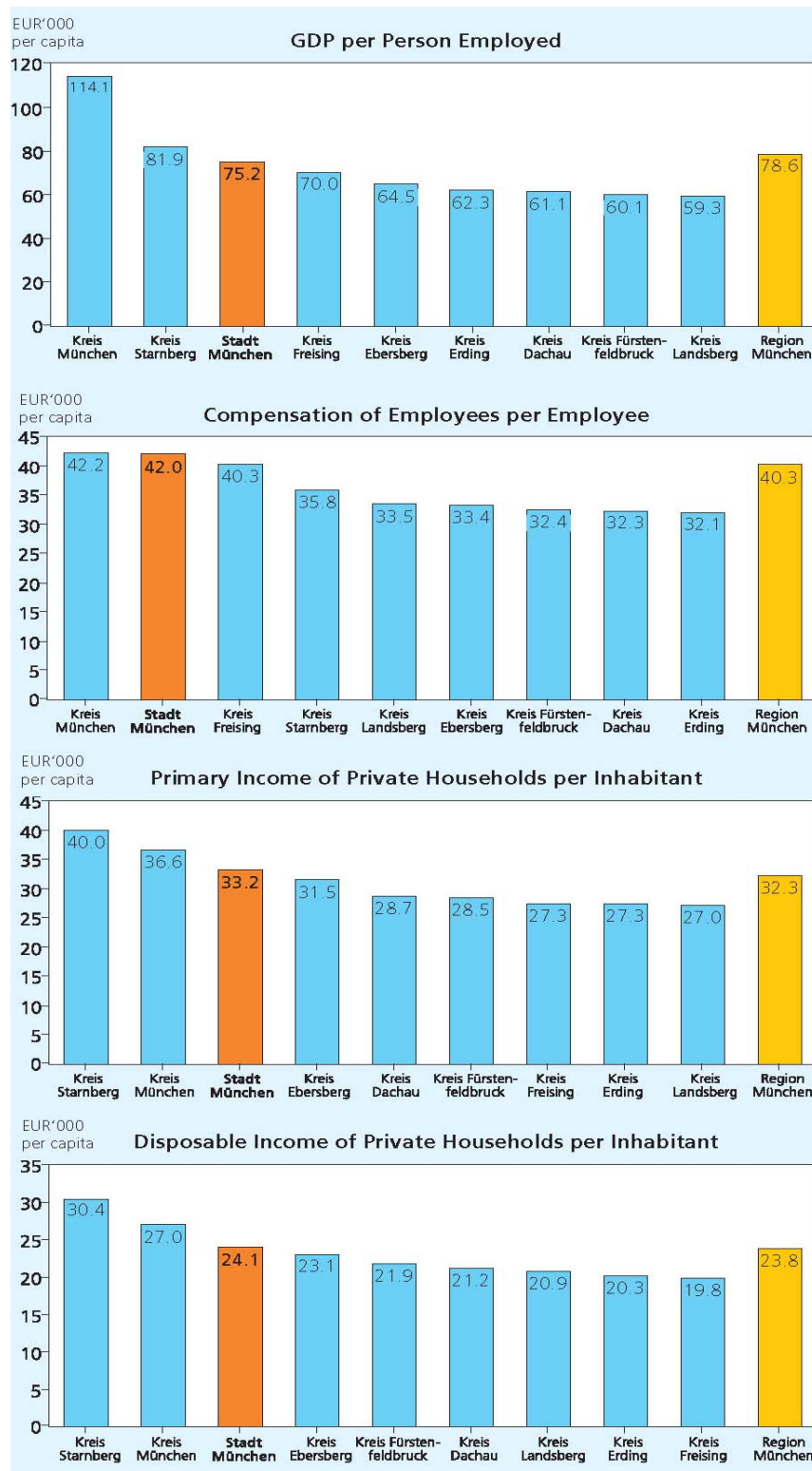


Figure 5 Economic Indicators of the Region of Munich

Regarding the compensation of employees per employee, the City of Munich, however, obtains nearly the same value as the leading District of Landkreis Munich. In addition, the gaps in the value of this indicator are

significantly reduced both to the third-placed District of Freising and to the remaining six districts.

The primary income of private households per inhabitant shows greater interregional disparities within the Region of Munich but nevertheless, not to the extent of the Region of Frankfurt. The top is clearly achieved by the District of Starnberg with an income of €40,000 per inhabitant which is only surpassed by the Hessian District of Hochtaunus in Germany. The District of Starnberg which is located around the Lake of Starnberg southwest of Munich is particularly attractive for high-income residents who work in other parts of the region, in the City of Munich or in the District of Landkreis Munich, for example. The City of Munich obtains the third place with some distance to the District of Starnberg and the second-placed District of Landkreis Munich. The per-capita income of the City of Munich is above the region's average. Insofar, the situation in Munich is different again to that in Frankfurt. And it is worth mentioning that Munich's residents receive the highest primary income per inhabitant of all major cities analysed here. At the end of the ranking scale are the more rural districts far from the center like the districts of Landsberg, Erding and Freising. It is interesting to remind that the District of Freising achieved the third or fourth place within the Region of Munich regarding the indicators based on the area of production, i.e., the compensation of employee and the GDP per capita.

Switching over to the disposable income of private households per inhabitant, the District of Freising drops to the last place within the Region of Munich. It is therefore suffering the same fate as the already mentioned very industrialized districts of Gross-Gerau or Böblingen with also well paid employees. Apart from this effect, the transition from primary to disposable income causes again a levelling of the income values and leads to some changes in the ranking of the districts.

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