

Local Fiscal Equalization Schemes as Instruments for Compensating Cities for Benefit Spillovers – Empirical Findings for Germany*

by

Martin T.W. Rosenfeld

Halle Institute for Economic Research, Dept. of Urban Economics, Kleine Maerkerstrasse 8,
D-06108 Halle (Saale), Germany, Phone: ++49 345 7753 750, Fax: ++49 345 7753 778,
Email: Martin.Rosenfeld@iwh-halle.de

and

Gerhard Heimpold

Halle Institute for Economic Research, Dept. of Structural Economics, Kleine Maerkerstrasse
8, D-06108 Halle (Saale), Germany, Phone: ++49 345 7753 753, Fax: ++49 345 7753 779,
Email: Gerhard.Heimpold@iwh-halle.de

*Draft version (June 2008) of a study presented at the RSA Annual International Conference
Regions: The Dilemmas of Integration and Competition, 27th-29th May 2008, University of
Economics Prague, Czech Republic

**- The paper represents work in progress. Please do not quote this paper without the
permission of the authors! -**

Key words:

Urban economic growth
Urban-suburban relationship
Local public services
Benefit spillovers
Suburbanization
Fiscal grant schedules
States and localities in Germany

Abstract

In urban or metropolitan regions, benefit spillovers from the provision of services in the core cities for private households and firms in the neighbouring suburban local units are quite common and lead to a sub-optimal provision of local public services and to losses in regional and national productivity.

There has been an extensive discussion on the question which governance could be appropriate to cope with benefit spillovers. One possibility are vertical intergovernmental payments. In Germany, like in other countries, Local Fiscal Equalization (LFE) schemes have been installed. Within LFE, the state level of government is paying grants to the local units. LFE has – among other goals – the task to compensate core cities for benefit spillovers. In a *first part* of the paper, the different LFE formulas in the German states to cope with benefit spillovers are discussed. The *second part* is based on empirical data on local revenues for a ten year period in two selected German states. In a first step, it will be shown to which extent the fiscal positions of the core cities and all other local units are changed by LFE: The “original” fiscal status of local units before LFE (= the spatial distribution of the local tax revenues) is compared with the “secondary” fiscal status after LFE. The expected result is that LFE indeed leads to a redistribution in favor of the core cities. In the second step of research, the question will be answered which types of suburban local units are participating to which degree in the redistribution: Are the adjacent local units of the core cities losing more money than those which are more distant away? Are local units which are mainly places of residence for private households losing more than localities which are places for private production? Are the wealthier localities paying more than the less wealthy ones? In a third step of research, it will be asked for the impact of different categories of grants (general grants / special purpose grants) on redistribution.

The paper’s *third part* is deriving implications from the empirical findings for spatial development and for public policy.

1. Introduction

In most urban or metropolitan regions, benefits from the provision of goods and services by the core cities are not spatially restricted to the territory of the core cities. Benefit spillovers from the core cities to private households and firms in the neighbouring suburban local units (which are “exploiting” the core cities and their taxpayers) are quite common phenomena. Following Mancur Olson’s “Principle of Fiscal Equivalence”,¹ the theory of Fiscal Federalism suggests that spatial (or: “horizontal”) benefit spillovers are leading the core cities to provide a sub-optimal amount of the local public service in question.

There has been an extensive theoretical discussion in public finance and in regional science on the question which governance structures could be most appropriate to compensate core cities for benefit spillovers. One possibility which is common in many countries is to use vertical intergovernmental payments (grants in aid from the state level of government to the core cities) to compensate core cities for benefit spillovers and to ensure that they provide the optimal amount of public services. The existence of benefit spillovers is the only clear “efficiency case” for vertical intergovernmental payments.

But what is the right way to compensate core cities for benefit spillovers within LFE? Are the existing grant formula able to support the core cities’ provision of goods efficiently? The last question may only be answered by looking at existing grant formula. In this paper, this will be done for the case of Germany and selected German states. In Germany, like in other countries, at the state level of government, Local Fiscal Equalization (LFE) schemes are installed for regulating the revenue situation of local units. Within LFE schemes, the states are paying grants in aid to the local units, thus changing the “original” spatial distribution of local public revenues (from taxes and user fees) between the local units. The LFE schemes have – among other goals – the task to compensate core cities or central places for benefit spillovers; different approaches are used by each state to achieve this task within the legal framework of LFE.

The following section 2 is presenting the view of economic theory at the problem of benefit spillovers. In section 3, these approaches and the differences in the LFE formula between the German states to cope with the problem of benefit spillovers are discussed. A theoretical analysis of these formula alone is not able to answer the question whether a compensation for benefit spillovers really takes place. Therefore, section 4 is based on empirical data on local public revenues for a ten year period for two selected German states (Baden-Wuerttemberg and Saxony-Anhalt) which differ in their economic structure and in their rules on benefit spillovers within LFE. In a first step of research, it will be shown to which extent the fiscal positions of the core cities and all other local units within the two states are changed by LFE schemes: The “original” fiscal status of the local units before LFE takes place (the spatial distribution of the local units’ tax revenues) is compared with the “secondary” fiscal status after LFE. In the second step of empirical research, we will answer the question which types of non-core local units are participating to which degree in the redistribution of funds: What is the impact of distance? Are the adjacent local units of the core cities losing more money than those local units which are more distant from the core cities? One could expect that the adjacent local units are profiting most from benefit spillovers. Are those local units which are mainly places of residence for private households losing more money than localities which are mainly places for private production? Are the wealthier localities paying more to the core cities than the less wealthy ones? In a third step of empirical research, it will be asked for the impact of different categories of grants within LFE on the spatial redistribution process: Is the

¹ See Olson 1969.

redistribution in favor of the core cities mainly due to unconditional grants in aid or to earmarked grants in aid?

The paper's final section 5 is asking for the impacts of the empirical findings on spatial development, for the implication for public policy and for the future need of research.

2. A theoretical view at the problem of benefit spillovers

2.1 The impact of benefit spillovers on urban development

According to the theory of Fiscal Federalism and Mancur Olson's famous "Principle of Fiscal Equivalence",² an efficient allocation within the public sector could only be achieved if (all) beneficiaries (individuals or private firms) of the goods provided by a certain jurisdiction are participating in financing these goods and in deciding on the desired level and structure of these goods. If there are beneficiaries outside a certain jurisdiction that are not included in financing and in deciding on the goods provided by this jurisdiction, "benefit spillovers" will occur. On the one hand, the external beneficiaries could not be forced by the jurisdiction in question to pay for the benefits they receive; some authors describe this as an "exploitation" of the core city by its neighbouring communities³. On the other hand, the external beneficiaries have not the right for taking part in deciding on the goods and on the amount of benefits they want to receive. These problems occur especially at the local level of government and in metropolitan regions with a core city (which is publicly providing more goods and is spending much more money on financing these goods than the surrounding local units).

The "exploited" core cities have less fiscal funds than in a situation where all private households and firms benefiting from the cities' services would have to pay for their benefits. This lack of money could provoke the core cities' decision makers to sub-optimal local public investments in infrastructure. This could lead to losses in regional and in national productivity. More relevant is the fact that the external beneficiaries have no possibility to state their preferences within the core cities' decision making processes. Only by chance a core city will provide a volume and a quality of goods which goes along with the needs of its external beneficiaries. The gap between the optimal level of output (which includes the preferences of the internal and the external beneficiaries) and what is provided by only taking into account the preferences of the inhabitants and firms within the core city could be closed if the core cities' neighbouring municipalities were putting money on providing the goods in question by themselves; but this would probably lead to higher costs per capita than if the core cities would increase their levels of output (with the possibility of economies of scale).

Furthermore, the opportunity for private households and firms to benefit from metropolitan services without paying for them by choosing their location in local units outside the core cities is stimulating the process of suburbanization and could lead to additional losses in productivity. Rational behaving actors may take use of this situation and move voluntarily from the core cities to local units in the neighbourhood, thus intensifying urban sprawl. Consequently, the costs of infrastructure for the core cities will increase, while their tax base is eroding – thus they will have less funds for spending on other local public provided goods.

² See *ibid.*.

³ See, e. g., Neenan 1970.

2.2 General possibilities to cope with benefit spillovers between municipalities

There are several possibilities to cope with benefit spillovers and the problems they may cause:⁴ (a) financing cities's publicly provided goods by user fees, following the "benefit principle" of taxation, (b) voluntary inter-municipal agreements between core cities and the adjacent localities, (c) installing by state law horizontal grants from the adjacent local units to the core cities, (d) changing the administrative borders of the core cities,⁵ and (e) vertical grants from the state level of government to the core cities.

As to alternative (a), the implementation of user fees is not possible for most publicly provided goods, as there is no excludability from consuming these goods. (b) Voluntary agreements between those municipalities where the external beneficiaries are living and the core cities will only have a chance if the core cities have the possibility to cause costs for the adjacent municipalities in other fields. (c) State legislation on horizontal grants could be an efficient way to compensate core cities for spillovers; but there will be political pressure on the decision makers at the state level against such legislation by the inhabitants of the poorer adjacent localities. (d) Territorial reforms which would by definition make all beneficiaries of publicly provided goods by the core cities to inhabitants (and: taxpayers as well as voters within the decision making processes) of the core cities are – in theory – most appropriate to cope with spillovers; the "internalization" would be perfect! But in reality, the reach of benefits (and the size of the group of beneficiaries) is different for each publicly provided good. Therefore, for each good another administrative body (with a specific territorial size) would be necessary – this would lead to increased transaction costs within decision making and administering local public functions. Finally, alternative (e) could be a kind of "second best" solution to overcome the problems of the other ways to cope with spillover benefits. This may be the reason why in many countries, e. g. in Germany, vertical grants in aid are the most common measure to put money to the core cities, thus compensating them for existing externalities.

3. Institutional arrangements for coping with benefit spillovers: An examination of existing LFE formula in Germany⁶

3.1 A view at the German systems of LFE in general

According to the theory of Fiscal Federalism, LFE systems should have the main task to adjust for a misallocation of competencies between the different levels of government and / or for deficiencies in the allocation of public money for securing the optimal levels of output in each jurisdiction. Compensation for benefit spillovers is just one objective of LFE among other allocative aspects, and in reality, also distributional aspects are determining the existing LFE formula (as it is often claimed that the higher levels of government should have to take care for interlocal and interregional redistribution of income and / or public revenues).

Although the general idea of the LFE systems is that LFE should only be supplementary, e. g. that local units should be able to finance their provision of goods and services primarily with money from taxes or user fees, the reality in Germany – as in other countries – is quite different. The German LFE is one major source for financing all local units, also those which

⁴ For the following, see also e. g. Zimmermann 1999, pp. 80-83.

⁵ An equivalent measure would be to re-arrange the allocation of public tasks or functions between the municipal and the county or state level of government by transferring those tasks to the higher level of government which are relevant for benefit spillovers.

⁶ This section is based on Rosenfeld et al. (without year of publication) where the LFE formulas of six German states were analyzed.

are located within a quite prosperous economic environment. As to the system of local taxes, local governments are participating in the revenues from the German federal personal income tax and from the federal value added tax. The system for determining the allocation of the revenues from the two kinds of taxes mentioned to the individual localities is regulated at the federal level. It is a complex system with strong similarities to a local fiscal equalization system.

In addition, the municipalities have the competency to determine the taxes on real estate, taxes on enterprise profits, local taxes on expenses and excises and different categories of local user charges.

3.2 How LFE formula may try to compensate core cities for spillover effects

As the states, not the federal level is responsible for regulating the local level of government, the German LFE system differs from state to state. But in all states, there are some common features within their LFE legislation. The first step in the LFE process is the determination of the *total volume of fiscal equalization (Finanzausgleichsmasse)*. The total volume is assigned to two types of grants: unconditional grants (*Schlüsselzuweisungen*) and earmarked grants (*zweckorientierte Zuweisungen*).

With the calculation of the *fiscal need* cities' needs are accounted for, explicitly: Firstly, unconditional grants are distributed according to the types of municipalities, and, secondly, specific needs of the cities are taken into account on calculating their fiscal needs. By apportioning the shares of the different types of municipalities (municipalities within a county [*kreisangehörige Gemeinden*] or in the following: "MWC", free towns [*kreisfreie Städte*], and counties [*Kreise*]) in the total volume available for unconditional grants (*Schlüsselmasse*) the distribution of funds can explicitly be influenced in favor of or to the disadvantage of core cities, especially free towns. Thus, the distribution of the total volume of unconditional grants to the types of municipalities is the first element of the German LFE which can be used to target core cities and to compensate them for spillovers.

After the allocation of the total volume available for unconditional grants to the above-mentioned types of municipalities follows the actual calculation of the fiscal need. This calculation is based on a procedure which considers either the number of inhabitants of the municipalities or the status of the respective municipality within the central place system of the state. A further modification of this procedure may be practiced by considering specific fiscal needs of a municipality, e.g. operating costs for schools. The calculation and its possible modifications are also relevant elements which have the potential to allocate funds in favor of core cities.

Subsequently, in the process of determining the grants of an individual local unit, the fiscal need indicator is compared to the fiscal capacity indicator (*Finanzkraftmeßzahl*). If fiscal need exceeds fiscal capacity of a municipality, the difference between the two indicators is balanced by unconditional grants, but not to the full extent (due to the constitutional ban on leveling [*Nivellierungsverbot*]). The fiscal capacity indicator is not an explicit instrument to influence the fiscal endowment of cities. Some authors⁷ point to the possibility, though, that by not including some municipal taxes to the full extent (weighed at below 100 percent) in the fiscal capacity indicator, some kinds of municipalities may be favored over others.

Besides unconditional grants, LFE laws (significantly varying by state) foresee earmarked grants for specific needs (*zweckorientierte Zuweisungen*). Their allocation could be an additional instrument for compensating core cities for benefit spillovers.

⁷ Cf. e.g. Scherf 2003, pp. 11-13.

3.3 How LFE legislation in Baden-Wurttemberg and Saxony-Anhalt is coping with benefit spillovers

(1) *Determining the shares of different categories of localities at the main volume of unconditional grants*

As has been described in section 3.2, one possible instrument to allocate fiscal funds in favor of the core cities is the determination of the percentages of the *total volume of unconditional grants* for the free towns, the counties and the municipalities within the counties. Table 3.3-1 indicates the current rules for this step of fiscal equalization for the two states included in this study:

Table 3.3-1:

Allocation of the main volume of unconditional grants to different categories of localities
- in per cent -

(in brackets: percentages of a state's total population which live in counties [and in MWC] and in free towns, respectively)

States	Shares of the main volume of unconditional grants, allocated to the		
	Counties	Free Towns	MWC
Saxony-Anhalt	29,98 (78)	27,0 (22)	43,02 (78)
Baden-Wurttemberg	19,29 (82)	4,59 (18)	76,12 (82)

MWC = municipalities within counties.

Source: Compilation by IWH, according to the fiscal equalization laws of the states in question (FAG ST 2005, FAG BW 2006).

As the status of a free town is determined by the state legislation, it may be supposed that a state's free towns are those cities which have – according to the legislators – the highest propensity to create spillover benefits. The rules for determining the shares of unconditional grants in Baden-Wurttemberg show a tendency to prefer the counties and the MWC, while in Saxony-Anhalt, there is a preference for favoring the free towns, what could be interpreted as a step of compensating for spillovers.

(2) *Determining local fiscal needs with the help of “Inhabitant Weighting”*

The second instrument to allocate fiscal funds in favor of core cities that had been described in general terms in this paper's section 3.2 is the use of “inhabitant weighting factors” for the empirically existing numbers of inhabitants in the Free Towns, the counties and the municipalities within the counties (MWC). Table 3.3-2 indicates the current rules for this step of fiscal equalization for the states included in this study.

In general, the „inhabitant weighting“ – often justified with *Brecht’s Law* – is not an adequate instrument to reflect the economic potentials or the regional economic importance of a city.

Baden-Wurttemberg is using a lower weighting factors for free towns than for MWC. This indicates that this state is trying to allocate fiscal funds in favor of the suburban and the rural communities. For the larger MWC the highest weighting factors are in use. In Saxony-Anhalt, the rules on cities are inconsistent. While the free towns are favored in general (see above), the maximum inhabitant weighting factor is lower for the free towns than for the MWC. The result could be that some of the free towns are getting less money per capita than the MWC.

Table 3.3-2:
The spread of “Inhabitant Weighting” for the municipality level in Baden-Wurttemberg and Saxony-Anhalt in 2005/2006

States	Number of inhabitants		Spread of weighting (in per cent)	
	Minimum ^b	Maxium	Minimum	Maximum
Saxony-Anhalt	8,000 150,000	50,000 150,000	100.0 112.0 ^a	125.0 112.0 ^a
Baden-Wurttemberg ^c	3,000 -	600,000 -	100.0 100.0 ^a	186.0 100.0 ^a

^a Special rate for the free towns.

^b Up to this number of inhabitants, the minimum weighting factor is used for determining the fiscal needs of a municipality.

Source: Compilation by IWH, according to the fiscal equalization laws of the states in question (FAG ST 2005, FAG BW 2006).

(3) *Determining local fiscal needs according to the Central Place Concept*

The third instrument to allocate fiscal funds in favor of cities that has been described in section 3.2 is the use of a special weighting factor, according to the “centrality” a local unit has or should have (according to the states’ concepts for spatial planning). Table 3.3-3 indicates the current rules for this step of fiscal equalization for the two states included in this study.

As the table shows, Baden-Wurttemberg does not recognize the municipalities’ position in the central place hierarchy within its LFE formula. The indicators in Saxony-Anhalt are not bound to the degree of a centrality a city has reached empirically, but to a “normative” degree of centrality which is wanted by the state’s policymakers, according to their spatial development planning. With regard to Saxony-Anhalt, we have to state again that its rules on cities are inconsistent. The first step of LFE was in favor of the free towns; but as the special needs of central places are considered for the MWC only, this leads to a position which is less positive for the free towns and is not able to compensate the free towns for benefit spillovers, whereas such a compensation may take place for the MWC.

Table 3.3-3:

The consideration of special needs of central places by special weighting factors in Baden-Württemberg and Saxony-Anhalt

States	Spread of weighting (in per cent) for Central Places	
	Minimum	Maximum
Saxony-Anhalt ^a	4	8
Baden-Württemberg	- ^b	- ^b

^a The spread for central places is only used for MWC and is added to the inhabitant weighting; see FAG ST 2005, Anlage zu § 7 Abs. 2 Nr. 1.

^b No spread for central places included in the formula.

Source: Compilation by IWH, according to the fiscal equalization laws of the states in question (FAG ST 2005, FAG BW 2006).

(4) Refinement of the inhabitant weighting (supplementary extensions)

Beyond the inhabitant weighting as the main approach to determine the fiscal need of municipalities (“Hauptansatz”), in a number of states, refinements of the inhabitant weighting in the form of supplementary extensions (“Nebenansätze”) are practised.⁸ With regard to the two states considered, the relevant cases for treating local expenditures in the form of supplementary extensions are included in Table 3.3-4, which also shows whether core cities tend to benefit from this regulation.

Table 3.3-4

Fiscal expenditures considered in the framework of supplementary extensions within the LFE systems of selected German States and its impact on core cities

State	Fiscal expenditures considered in the form of a supplementary extension	Ex-ante assessment of the impact, which the treatment of the respective burden might have on core cities and the compensation of horizontal benefit spillovers
Saxony-Anhalt	not existent	-
Baden-Württemberg	costs for being locations of military forces;	0
	stationary accommodated policemen;	0
	students at universities and at universities of cooperative education (Berufsakademien)	+

+ = core cities benefit, 0 = an assessment regarding the spatial impact is impossible.

Source: Own compilation based on the respective laws on LFE (FAG ST 2005, FAG BW 2006).

The table shows, that a compensation for the core cities is either not existing or only a slight one. In other German states (which are not included in this study), there are more significant

⁸ A method of considering financial needs is assigned to the so called supplementary extensions when its results are added numerically to the results of the main estimate of the financial needs of a municipality. If it is not the case, the respective kind of expenditure is assigned to the specific purpose grants

rules in this context, e. g. the consideration of burdens in the context of operating the school system in some states tends to benefit the core cities. This assessment is based on the assumption, that certain kinds of schools (e. g. grammar schools, vocational schools and schools for handicapped children are located primarily in cities and not in rural areas.

(5) Earmarked grants

Apart from unconditional grants, the systems of state-local transfers usually also includes the provision of earmarked grants. Although this element is in use practically in all states, a certain differentiation is given in terms of the variety of purposes being subsidised by the individual states. As for the two states under consideration, the rules on LFE include earmarked grants for the following subjects (among other subjects):

- in Saxony-Anhalt: Municipal fixed asset investments, operating roads, public transport for pupils,
- in Baden-Wurttemberg: Investments for schools concerning their sports fields and gyms, investments for roads, investments for public transport systems, material costs for schools, operating roads, public transport for pupils.

Some of these subjects may be related to publicly provided goods with benefit spillovers for neighbouring municipalities – others may not. Therefore, as there are by law no weighting factors for the various subjects of earmarked grants, it is not possible to decide in general whether these regulations are able to compensate core cities for benefit spillovers.

4. Empirical findings for two German states⁹

4.1 General findings on the fiscal positions of the core cities and none-core local units and its change by LFE

Before presenting analytical findings regarding local revenues of the core cities and all other local units it seems necessary to clarify how it is possible to differentiate between core cities and none-core municipalities and how the non-core local units could be separated into the two groups of adjacent local units and peripheral local units. Here we use an categorization which was developed by the Federal Office for Building and Spatial Planning (BBR). This categorization is based on a functional understanding of urban regions. It uses data on commuting relations of the labor force. These data originally stem from the statistics of employees liable to social security schemes. The employee data are provided by the Federal Labour Agency (BA). Based on these data, BBR delineates *core cities* in Germany as metropolitan core areas of > 500,000 inhabitants and large cities of > 100,000 inhabitants (for this and the following delineation criteria see Bundesamt für Bauwesen und Raumordnung without year of publication). As a second spatial category territories are delineated which immediately border on the core cities (so called *outskirts*). As criteria for sorting territories to this category the population density (population plus net number of commuters) per km² > 500 and a positive commuting balance and/or a share of people who commute toward the core city of 50%. A third category consists of the functional area close to the core city (*closer suburbia*). Regions are subsumed under this category if at minimum 50% of the commuters who work outside the region where the live commute toward the core city/the outskirts. A

⁹ The authors express many thanks to the Statistical Offices of Saxony-Anhalt and Baden-Wurttemberg for the provision of local public finance data and population data used in this analysis.

fourth category (*wider suburbia*) is formed by territories where 25-50% of the people who work in other regions commute toward the core cities and their outskirts. The rest of a territory forms the fifth category – the so called *periphery*. For the analysis of local revenues, the five spatial categories are sorted to three generic terms: the core cities form a separate term. The outskirts and suburbia together form “adjacent local units”. The complementary term concerns “peripheral local units“, which consist of the wider suburbia and the periphery.

In the following sub-section for the three main spatial categories – “core cities”, “adjacent local units” and “peripheral local units”, the local revenues and how their allocation between the three categories of localities is changed by LFE are examined empirically.

4.1.1 The “original” fiscal status of local units before LFE

This sub-section provides an overview regarding the “original” fiscal status of “core cities”, “adjacent local units” and “peripheral local units”. “Original” fiscal status before LFE covers the local tax revenues. To be more precisely: the net volume of the tax revenues is recorded. Net volume means that the share of federal and state governments in the municipal trade tax (“Gewerbesteuerumlage”) is subtracted from the total volume of tax revenues.

To characterise the fiscal status of the respective groups of regions, we use relative values. Relative value means comparing the proportion the three spatial categories have on tax revenues with the proportion the three spatial categories have on the number of the inhabitants in the respective state. By subtracting the latter proportion from the former, the relative advantage or gap can be displayed. A positive value indicates a relative advance in terms of tax revenues, a negative value signals a relative gap.

Doing so, in both states under consideration the *core cities* show a relative advance in terms of tax revenues; this is the case for all years of the period 1995-2004 (for these and the following findings presented in this sub-chapter, see Annex, Table 1, category A). The *adjacent local units* in Saxony-Anhalt show a proportion of tax revenues in the sub-period 1995-1998 which is more or less equal to the proportion of population, later these regions show a growing relative advantage. The analysis of local tax revenues in Baden-Württemberg reveals a relative gap for the adjacent local units which became smaller in the second half of the period under consideration. Finally, the *peripheral local units* show a relative gap in terms of tax revenues in both states under consideration throughout the period analysed.

The relative positions of the three categories of regions seems plausible. The relative advantage of the core cities obviously results from their role as centres of economic activity which leads to respective tax revenues. Respectively, the gap of peripheral local units reveals the lack of economic activities as a source of tax revenues. An emerging relative advance of the adjacent local units in terms of tax revenues might be a result both of rapid suburbanization of population in the 1990ies, a process which took place in the western part of Germany step by step over four decades, while in East Germany the suburbanization took place in a fast motion manner after German reunification. Suburbanization led to population increase of the municipalities located close to the core cities. As a consequence, the respective municipalities benefit from growing income tax revenues. Another reason for an increasing share of tax revenues of adjacent local units regards tax revenues might be investments of firms which found it attractive to settle nearby but not in the cities.

4.1.2 The “secondary” fiscal status after LFE

This sub-section examines the “secondary” fiscal position of “core cities”, “adjacent local units” and “peripheral local units” after LFE. “Secondary” fiscal position” means the revenue status after Local Fiscal Equalization (LFE). As a result of LFE, a number of local units which show a poor “original” tax power receive grants from the state budget to equalize inter-local differences in terms of taxable capacity (“Steuerkraftunterschiede”) to a certain extent. For the recipients the fiscal position will be more comfortable after LFE. In this context the question might arise how the LFE changes the relative revenue position of the core cities, the adjacent local units and the peripheral local units? If the state governments have the target of compensating the core cities for benefit spillovers, an improvement of their “secondary” fiscal status should be visible which should take place at the expense of the adjacent local units. Regards the peripheral local units the “secondary” fiscal status after LFE should remain unchanged after LFE while in an economically poorer state the fiscal status should be lower after LFE.

With respect to the *core cities* and the *adjacent local units*, the changes expected indeed occurred, both in Saxony-Anhalt and in Baden-Wurttemberg (for these and the following findings presented in this sub-chapter, see Figure 1 and Annex, Table 1, category C in comparison with category A). The “original” advantage of core cities in terms of revenues was strengthened by LFE. In the course of time, the advance of the core cities has grown after LFE in Saxony-Anhalt, while it remained more or less unchanged in Baden-Wurttemberg.

Contrary, the fiscal position of the adjacent local units was less favorable after LFE than before. In Saxony-Anhalt the adjacent local units’ relative advance switched over to a relative gap (in comparison with the proportion of population). In Baden-Wurttemberg, the gap in terms of revenues underwent an increase after LFE. Regarding the peripheral local units, the effects of LFE differ between Baden-Wurttemberg and Saxony-Anhalt.

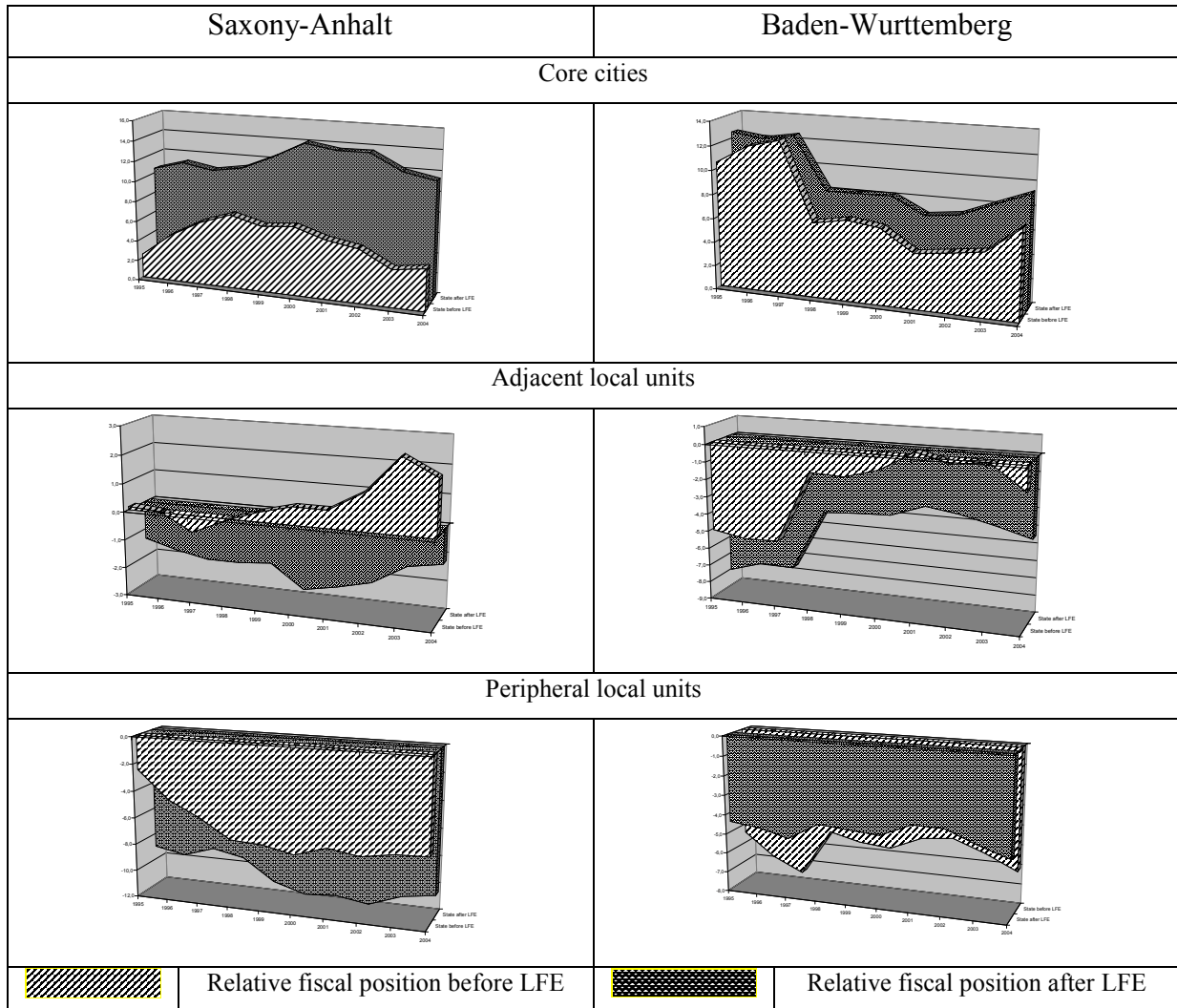
The secondary fiscal status of the *peripheral local units* reveals that the relative gap in terms of revenues became greater after LFE. The opposite occurred with respect to the peripherally located municipalities in Baden-Wurttemberg: The peripheral local units showed an original fiscal status which was characterised by a significant gap. After LFE the gap was still existent, but it became smaller. Obviously, Baden-Wurttemberg as an economically more prospering state afforded a certain degree of equalization in favor of peripherally located regions.

All in all, the comparison of the “original” fiscal status before LFE and of the “secondary” fiscal status indicates that LFE strengthens the core cities relative position in both states under consideration.

Figure 4.1.2-1:

Relative fiscal position^a of core cities, adjacent local units and peripheral local units in Saxony-Anhalt and Baden-Wurttemberg, before LFE and after LFE, 1995-2004

- percentage points -



^a Relative position means comparing the proportion the three spatial categories have on revenues with the proportion the three spatial categories have on the number of the inhabitants in the respective state. By subtracting the latter proportion from the former, the relative advantage or gap can be displayed. A positive value indicates a relative advance in terms of revenues, a negative value signals a relative gap.

Source: Diagram und calculation by IWH based on data provided by the Statistical Offices of the States of Saxony-Anhalt and Baden-Wurttemberg; the categorization of regions is based on a classification conducted by the Federal Office for Building and Regional Planning (BBR).

4.2 Degree of redistribution by types of suburban local units

4.2.1 Places of residence for private households vs. places for private production

As a next step, we have investigated whether there are differences regarding the degree of redistribution by LFE between places of residence for private households and places for private production. As an indicator for the identification of places for private production, the number of employees who have their workplaces in the respective municipality per 100 inhabitants is used. If the respective value is $\geq 150\%$ of the average value in the respective state, the respective local unit is classified as a place for private production.

The empirical findings show with respect to the adjacent local units in *Saxony-Anhalt* that LFE has been at the expense both of municipalities which are places of residence and of municipalities which are places of production (see Annex, Table 2). However, until 2001, the degree of redistribution at the expense of the respective localities was greater for places of production than for places of residence. This redistribution pattern seems plausible under the assumption that places of production show a relatively large taxable capacity. According to the rules of LFE, municipalities with a taxable capacity being equal to or greater than the fiscal need do not receive general grants by LFE. From 2002 onward, for the adjacent local units, the differences between places of residence and places of production disappear (cf. data for 2002 and 2004), and in 2003 the deterioration of the relative fiscal position is greater for places of residence than for places of production.

The redistribution pattern for the adjacent local units in *Baden-Württemberg* shows similarities with those recorded in *Saxony-Anhalt* until 2001. Redistribution has occurred at the particular expense of municipalities which represent places of production (see Annex, Table 3).

4.2.2 *Wealthier localities vs. less wealthier ones*

Focussing only on the general redistribution pattern among core cities and territories outside core cities does neglect the fact that in each of these types of regions wealthier and less wealthier local units exist. Therefore, the question comes up whether wealthier and less wealthier municipalities show different degrees of redistribution. The general objectives of LFE in mind, that is compensation for relatively low taxable capacity, it might be assumed that less wealthier municipalities are preferentially treated by LFE. In the Federal State of *Saxony-Anhalt*, for which our investigation revealed a redistribution for the benefit of core cities and at the expense of municipalities outside the core cities, it can be expected that the deterioration of the relative fiscal position of less wealthier local units outside the core cities is lower than in wealthier units (or even an improvement occurred).

To classify municipalities as being more or less wealthy, the business tax revenues per capita (mean 1995-2004) were used. The municipalities in the two states under consideration were assigned to six categories of municipalities in terms of their business tax revenues per capita (see Table 4.2.2-1).

The empirical findings gained from distinguishing between wealthier and less wealthier municipalities reveal a redistribution pattern which goes along with the expectations stated above: Less wealthier municipalities were treated preferentially. To illustrate: In general terms, LFE in *Saxony-Anhalt* sets preferences in favor of core cities and at the expense of the local units outside core cities (see sub-section 4.1.2). However, regarding adjacent local units, the consideration of their status as wealthier and less wealthier local units reveals that less wealthier regions' (category 3) fiscal position remains more or less unchanged after LFE while the wealthier municipalities (categories 4-6) experience a deterioration of their relative fiscal position (see Annex, Table 4). The same is the case with peripheral local units in *Saxony-Anhalt*, where less wealthier municipalities' fiscal position even undergoes an improvement which is not the case for wealthier local units.

With respect to *Baden-Württemberg*, some similarities are visible. Less wealthier local units which belong to the adjacent local units underwent an improvement of their relative fiscal position, while the remaining municipalities show a deterioration of their relative fiscal position (see Annex, Table 5). Regarding the peripheral local units, the overall picture, presented in sub-section 4.1.2 revealed a redistribution pattern by LFE which was in favor of this group of municipalities. Looking more in detail by distinguishing between less wealthier

and wealthier local units, only the less wealthier peripheral local units were favored. The core cities' fiscal position on average underwent an improvement by LFE. The relative improvement is at greatest for municipalities of the category 4, while it is lower for the categories 5 and 6, i. e. for the wealthier municipalities.

Table 4.2.2-1:

Categorization of wealthier and less wealthier local units and number of local units assigned to the respective categories, by spatial categories

Categories of wealthier/less wealthier local units (in terms of mean business tax revenues per capita 1995-04): for the purpose of classification, - / + 1 and - / + 2 standard deviations and the mean value are used as distinctive marks. The distinctive marks result in six categories. Categories 1, 2, 3 represent municipalities which show below average business tax revenues per capita, categories 4, 5, 6 represent municipalities showing above average business tax revenues per capita. For the categories 1 and 2, there is no local unit to be assigned to the respective categories.

Spatial Category	Categories of wealthier/less wealthier local units (in terms of mean business tax revenues per capita 1995-04)	Number of municipalities assigned to the respective categories Saxony-Anhalt	Number of municipalities assigned to the respective categories Baden-Wurttemberg
Core cities	3	- ^b	2
	4	2	10
	5	- ^b	3
	6	- ^b	1
	Total	2	16
Adjacent local units	3	84	253
	4	32	115
	5	2	28
	6	1	8
	Total	119	404
Peripheral local units	3	857	467
	4	139	161
	5	1	35
	6	4	28
	Total	1001	691
Units which can not be assigned to one of the spatial categories ^a	3	17	- ^c
	4	3	- ^c
	5		- ^c
	6	1	- ^c
	Total	21	- ^c
Total	3	958	722
	4	176	286
	5	3	66
	6	6	37
	Total	1143	1111

^a For 21 local units in Saxony-Anhalt information regarding their affiliation to the three categories of regions described above was not available. ^b No local unit is attributable to the respective categories of wealthier/less wealthier local units. ^c Regarding Baden-Wurttemberg, all local units were attributable to the three categories of regions.

Source: Categorization and calculation by IWH based on data provided by the Statistical Offices of the States of Saxony-Anhalt and Baden-Wurttemberg; the categorization of regions is based on a classification conducted by the Federal Office for Building and Regional Planning (BBR).

4.3 The impact of different categories of grants (unconditional grants / earmarked grants) on redistribution

As shown in section 3., Local Fiscal Equalization consists of different forms of grants: unconditional grants and earmarked grants. The beneficiaries of unconditional grants are free how they spend the grants. Contrary, earmarked grants are designated to be used by the beneficiary local units for funding specific kinds of expenditure. It lies in the nature of the latter, that they might be – in comparison with unconditional grants – the more appropriate way to compensate for benefit spillovers. That's why in this subsection we ask how the two forms of grants contribute to the redistribution analysed in sub-section 4.1.2.

For Saxony-Anhalt, the sub-section 4.1.2 has shown an improvement of the (relative) fiscal position of *core cities* after LFE. The improvement mainly results from the general grants (see Figure 4.3-1 and Annex, Table 1, category B). In addition, earmarked grants have contributed to a further improvement of the fiscal status of the core cities since 1999. This might be interpreted as the attempt of the state government of Saxony-Anhalt to strengthen the role of the large cities. In Baden-Wurttemberg, as shown in sub-section 4.1.2, a similar redistribution pattern for the benefit of core cities is visible. However, contrary to Saxony-Anhalt, earmarked grants do not contribute to a further improvement of the fiscal status of core cities in Baden-Wurttemberg.

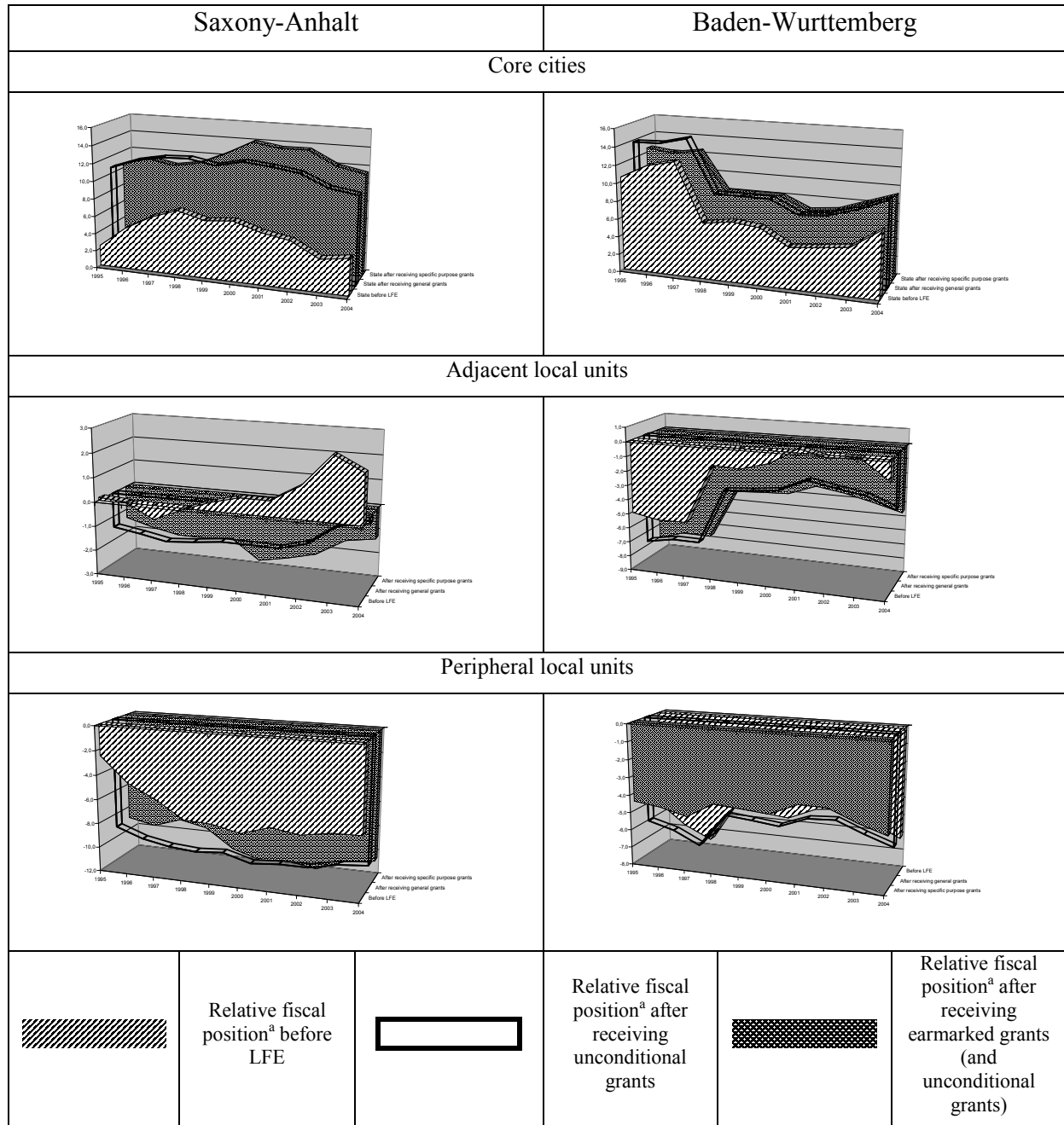
Subsection 4.1.2 has shown that *adjacent local units'* relative fiscal position is lowered after LFE. In both states unconditional grants contribute to a redistribution of financial resources which is at the expense of the respective group of municipalities. The same is (to lower extent compared with unconditional grants) the case with earmarked grants.

Peripheral local units undergo, as subsection 4.1.2 reveals, different changes regarding their fiscal status after LFE: In Saxony-Anhalt the improvement of the relative fiscal status of core cities is at the expense of adjacent local units *and* of the peripheral local units, too. Mainly, the redistribution occurs by unconditional grants. Only in the first years (1995-1998) of the period under consideration a certain redistribution in favor of the adjacent local units in Saxony-Anhalt by means of earmarked grants is visible which is replaced later by providing additional support for core cities. Contrary, in Baden-Wurttemberg, earmarked grants contribute to a reduction of the relative gap in terms of revenues in peripheral local units. I. e., the State of Baden-Wurttemberg which is one of the most prospering states in Germany affords a certain equalization-oriented policy in favor of municipalities which are located peripherally.

Figure 4.3-1:

Impact of different categories of grants (unconditional grants / earmarked grants) on redistribution

- percentage points -



^a Relative position means comparing the proportion the three spatial categories have on revenues with the proportion the three spatial categories have on the number of the inhabitants in the respective state. By subtracting the latter proportion from the former, the relative advantage or gap can be displayed. A positive value indicates a relative advance in terms of revenues, a negative value signals a relative gap.

Source: Diagram und calculation by IWH based on data provided by the Statistical Offices of the States of Saxony-Anhalt and Baden-Wuerttemberg; the categorization of regions is based on a classification conducted by the Federal Office for Building and Regional Planning (BBR).

5. Conclusions for spatial development and for public policy

The general result is that in the two selected German states, LFE indeed leads to a redistribution of fiscal funds from the suburban regions to the core cities which may be interpreted as a compensation for benefit spillovers. But as the compensation is done by general grants in aid, one could not be sure that specific benefit spillovers will be considered in a sufficient way by the decision-makers of the core cities. This means, that probably the core cities will not tend to decide on an efficient allocation of public resources, from a regional or national point of view.

As has been shown, the compensation occurs at the expense of the adjacent local units in both states under consideration; in Saxony-Anhalt, also the more distant localities have to “pay” in favor of the core cities. This could be explained by assuming that the “rich” state of Baden-Württemberg has the resources to distribute money towards its poorer and peripheral localities.

The findings presented have shown that LFE schemes have a clear direction (although this is not written in LFE rules) in favor of efficiency. But we are not able to answer the question whether the current degree of compensating for benefit spillovers is the right one – and whether the existing rules have a positive influence on the allocation of resources within the core cities. These questions have to be answered with the help of future research.

References

- Bundesamt für Bauwesen und Raumordnung (without year of publication): Laufende Raumbbeobachtung - Raumabgrenzungen. Stadtregionale Einzugsbereiche, in Bundesamt für Bauwesen und Raumordnung, Homepage, Raumbbeobachtung, Werkzeuge, Raumabgrenzungen, in: http://www.bbr.bund.de/cln_005/nm_103086/DE/Raumbbeobachtung/Werkzeuge/Raumabgrenzungen/StadtregionalePendlerEB/stadtregionen.html#Start, accessed on 14/08/2007, no pagination.
- FAG ST (2005): Finanzausgleichsgesetz (FAG) in der Fassung der Bekanntmachung vom 14. Oktober 2005. Fundstelle: GVBl. LSA 2005, S. 646, in: http://st.juris.de/st/gesamt/FinAusglG_ST2005.htm, accessed on 20/03/2006.
- FAG BW (2006) Gesetz über den kommunalen Finanzausgleich (Finanzausgleichsgesetz - FAG) in der am 1. Januar 2006 geltenden Fassung, in: <http://www.fm.badenwuerttemberg.de/sixcms/media.php/2347/FAG%20Stand%20010106.pdf>, accessed on 15/03/2006.
- Neehan, W. B. (1970): Suburban-Central City Exploitation Thesis: One City's Tale, National Tax Journal, XXIII, 2, pp. 117-139.
- Olson, M. (1969): The Principle of „Fiscal Equivalence“: The Division of Responsibilities among Different Levels of Government, in: American Economic Review, Vol. LIX, 2, Papers and Proceedings, pp. 479-487.
- Rosenfeld, M. T. W.; Heimpold, G.; Nerré, B. (without year of publication): How Government Cares for Cities: Fiscal Grant schedules in Germany and their Impact in Urban Areas, in: http://www.wiwi.uni-regensburg.de/moeller/SocialpolitikDateien/Tagungen/Kiel_2006_Dateien/ProgrammJahrestagung2006_1-Dateien/RosenfeldPaper.pdf, accessed on 05/09/2007.
- Scherf, W. (2003): Sachgerechte Verteilung staatlicher Finanzaufweisungen, Justus-Liebig-Universität Giessen, Fachbereich Wirtschaftswissenschaften, Finanzwissenschaftliche Arbeitspapiere, Arbeitspapier Nr. 66, in: <http://www.uni-giessen.de/~g21024/download/ap/66.PDF>, accessed on 05/04/2006.
- Zimmermann, H. (1999): Kommunalfinanzen. Eine Einführung in die finanzwissenschaftliche Analyse der kommunalen Finanzwirtschaft, Baden-Baden: Nomos Verlagsgesellschaft. (= SCHRIFTEN zur öffentlichen Verwaltung und öffentlichen Wirtschaft; 163).

Annex, Table 1:

Relative position^a of core cities, adjacent local units and peripheral local units in Saxony-Anhalt and Baden-Wurttemberg in terms of revenues before LFE, after receiving unconditional grants and after receiving earmarked grants (and unconditional grants) 1995-2004

Status of revenues: A = before LFE; B = after receiving unconditional grants; C = after receiving unconditional grants plus earmarked grants, i. e. after LFE

Spatial category	Status of revenues	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
Percentage Points											
<i>Saxony-Anhalt</i>											
Core cities	A	2.3	4.7	6.3	7.3	6.5	6.8	5.8	5.3	3.7	4.1
	B	10.7	11.7	12.3	12.4	11.9	12.6	12.3	11.8	10.4	10.0
	C	10.4	11.3	10.7	11.2	12.5	14.1	13.6	13.7	12.1	11.5
Adjacent local units	A	0.1	0.0	-0.6	-0.1	0.3	0.6	0.6	1.3	2.6	2.0
	B	-1.5	-1.6	-1.8	-1.7	-1.6	-1.6	-1.6	-1.3	-0.4	-0.2
	C	-1.4	-1.7	-1.9	-1.9	-1.8	-2.6	-2.4	-2.1	-1.4	-1.2
Peripheral local units	A	-2.5	-4.6	-5.7	-7.2	-7.3	-7.8	-7.1	-7.4	-7.0	-6.9
	B	-9.1	-10.0	-10.4	-10.6	-10.4	-11.0	-10.8	-10.8	-10.3	-10.1
	C	-9.0	-9.4	-8.7	-9.2	-10.8	-11.5	-11.3	-11.7	-10.8	-10.4
Units which can not be assigned to one of the spatial categories ^a	A	0.1	-0.1	0.1	-0.1	0.4	0.4	0.6	0.8	0.8	0.9
	B	-0.1	-0.1	-0.1	-0.1	0.1	0.0	0.2	0.3	0.3	0.3
	C	-0.1	-0.1	-0.1	-0.1	0.0	0.0	0.0	0.1	0.1	0.1
<i>Baden-Wurttemberg</i>											
Core cities	A	10.5	12.0	12.7	6.2	6.7	6.4	4.6	4.9	5.3	7.4
	B	13.8	13.9	14.6	8.7	8.7	8.7	7.2	7.5	8.5	9.8
	C	12.5	12.1	12.6	8.2	8.2	8.2	6.9	7.2	8.3	9.4
Adjacent local units	A	-5.1	-5.4	-5.4	-1.3	-1.4	-0.8	0.3	-0.2	0.0	-1.4
	B	-7.7	-7.4	-7.4	-3.4	-3.3	-3.1	-2.2	-2.6	-3.0	-3.7
	C	-8.0	-7.5	-7.5	-4.0	-3.9	-3.8	-3.1	-3.4	-3.9	-4.4
Peripheral local units	A	-5.4	-6.6	-7.3	-5.0	-5.4	-5.5	-4.8	-4.7	-5.3	-6.0
	B	-6.1	-6.5	-7.2	-5.2	-5.4	-5.6	-5.0	-4.9	-5.5	-6.1
	C	-4.5	-4.6	-5.0	-4.2	-4.3	-4.4	-3.8	-3.8	-4.4	-4.9
Units which can not be assigned to one of the spatial categories ^c	A	-	-	-	-	-	-	-	-	-	-
	B	-	-	-	-	-	-	-	-	-	-
	C	-	-	-	-	-	-	-	-	-	-

^a Relative position means comparing the proportion the three spatial categories have on revenues with the proportion the three spatial categories have on the number of the inhabitants in the respective state. By subtracting the latter proportion from the former, the relative advantage or gap can be displayed. A positive value indicates a relative advance in terms of revenues, a negative value signals a relative gap. ^b For 21 local units in Saxony-Anhalt information regarding their affiliation to the three categories of regions described above was not available. ^c Regarding Baden-Wurttemberg, all local units were attributable to the three categories of regions.

Source: Calculation by IWH based on data provided by the Statistical Offices of the States of Saxony-Anhalt and Baden-Wurttemberg; the categorization of regions is based on a classification conducted by the Federal Office for Building and Regional Planning (BBR).

Annex, Table 2:

Degree of redistribution^a in the course of LFE in the State of Saxony-Anhalt by spatial categories and by categorising local units as places of residence and places of production

Places of Production: Local units where the number of employees (persons liable to social insurance, as of 30/06/04) is $\geq 150\%$ of the mean value in the State of Saxony-Anhalt; places of residence: Local units where the number of employees (persons liable to social insurance) is $< 150\%$ of the mean value in the State of Saxony-Anhalt.

Spatial Category	1 = Places of residence 2 = Places of production 0 = no data available for an assignment to one of the above mentioned categories	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
		Percentage Points									
Core cities	2	8.1	6.6	4.5	3.9	6.0	7.3	7.8	8.4	8.4	7.4
	Total	8.1	6.6	4.5	3.9	6.0	7.3	7.8	8.4	8.4	7.4
Adjacent local units	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	1	-0.6	-0.6	-0.5	-0.4	-0.9	-1.2	-1.2	-1.7	-2.3	-1.6
	2	-0.8	-1.1	-0.9	-1.4	-1.2	-2.1	-1.8	-1.7	-1.7	-1.6
	Total	-1.5	-1.7	-1.3	-1.8	-2.1	-3.2	-3.0	-3.4	-3.9	-3.2
Peripheral local units	0	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.1
	1	-2.9	-1.4	2.3	3.1	1.7	1.7	1.9	1.8	2.6	1.6
	2	-3.6	-3.4	-5.4	-5.3	-5.3	-5.5	-6.3	-6.2	-6.4	-5.2
	Total	-6.5	-4.8	-3.0	-2.0	-3.5	-3.7	-4.2	-4.2	-3.8	-3.5
Units which cannot be assigned to one of the spatial categories ^b	1	-0.2	-0.1	-0.2	-0.1	-0.4	-0.4	-0.6	-0.7	-0.7	-0.7
	Total	-0.2	-0.1	-0.2	-0.1	-0.4	-0.4	-0.6	-0.7	-0.7	-0.7

^a Degree of redistribution means the difference between the relative fiscal position of the respective group of municipalities after LFE and before LFE. A positive value does mean that a relative advance in terms of revenue becomes greater after LFE or a relative gap becomes smaller. A negative value reveals that a relative advance in terms of revenues becomes lower after LFE or a relative gap shows an increase. Relative position means comparing the proportion the three spatial categories have on revenues with the proportion the three spatial categories have on the number of the inhabitants in the respective state. By subtracting the latter proportion from the former, the relative advantage or gap can be displayed. ^b For 21 local units in Saxony-Anhalt information regarding their affiliation to the three categories of regions described above was not available.

Sources: Calculation by IWH based on data provided by the Statistical Office of the State of Saxony-Anhalt; the categorization of regions is based on a classification conducted by the Federal Office for Building and Regional Planning (BBR).

Annex, Table 3:

Degree of redistribution^a in the course of LFE in the State of Baden-Wurttemberg by spatial categories and by categorising local units as places of residence and places of production

Places of Production: Local units where the number of employees (persons liable to social insurance, as of 30/06/04) is $\geq 150\%$ of the mean value in the State of Baden-Wurttemberg; places of residence: Local units where the number of employees (persons liable to social insurance) is $< 150\%$ of the mean value in the State of Baden-Wurttemberg.

Spatial Category	1 = Places of residence 2 = Places of production 0 = no data available for an assignment to one of the above mentioned categories	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
		Percentage Points									
Core cities	1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	2	2.0	0.1	-0.1	2.0	1.5	1.9	2.3	2.3	3.0	1.9
	Total	2.0	0.1	-0.1	2.0	1.5	1.9	2.3	2.3	3.0	1.9
Adjacent local units	1	0.5	1.4	1.3	-0.4	-0.2	-0.4	-0.5	-0.7	-1.2	-0.7
	2	-3.4	-3.5	-3.5	-2.3	-2.4	-2.5	-2.8	-2.5	-2.6	-2.3
	Total	-3.0	-2.0	-2.2	-2.7	-2.5	-3.0	-3.4	-3.2	-3.9	-3.0
Peripheral local units	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	1	4.4	4.7	4.5	2.1	2.1	2.2	2.3	2.0	1.8	2.0
	2	-3.4	-2.8	-2.2	-1.3	-1.0	-1.2	-1.2	-1.1	-0.9	-1.0
	Total	1.0	1.9	2.3	0.8	1.1	1.1	1.1	0.9	0.9	1.1

^a Degree of redistribution means the difference between the relative fiscal position of the respective group of municipalities after LFE and before LFE. A positive value does mean that a relative advance in terms of revenue becomes greater after LFE or a relative gap becomes smaller. A negative value reveals that a relative advance in terms of revenues becomes lower after LFE or a relative gap shows an increase. Relative position means comparing the proportion the three spatial categories have on revenues with the proportion the three spatial categories have on the number of the inhabitants in the respective state. By subtracting the latter proportion from the former, the relative advantage or gap can be displayed. ^b For 21 local units in Saxony-Anhalt information regarding their affiliation to the three categories of regions described above was not available.

Sources: Calculation by IWH based on data provided by the Statistical Office of the State of Baden-Wurttemberg and of data, provided by the Federal Statistical Office and the Statistical Offices of the German Laender; the categorization of regions is based on a classification conducted by the Federal Office for Building and Regional Planning (BBR).

Annex, Table 4:

Degree of redistribution^a in the course of LFE in the State of Saxony-Anhalt by spatial categories and by categorising local units in terms of business tax revenues per capita

Categories of wealthier/less wealthier local units (in terms of mean business tax revenues per capita 1995-04): for the purpose of classification, - / + 1 and - / + 2 standard deviations and the mean value are used as distinctive marks. The distinctive marks result in six categories. Categories 1, 2, 3 represent municipalities which show below average business tax revenues per capita, categories 4, 5, 6 represent municipalities showing above average business tax revenues per capita. For the categories 1 and 2, there is no local unit to be assigned to the respective categories.

Spatial Category	Categories of wealthier/less wealthier local units (in terms of mean business tax revenues per capita 1995-04)	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
		Percentage Points									
Core cities	4	8.1	6.6	4.5	3.9	6.0	7.3	7.8	8.4	8.4	7.4
	Total	8.1	6.6	4.5	3.9	6.0	7.3	7.8	8.4	8.4	7.4
Adjacent local units	3	-0.4	-0.2	0.1	0.3	0.1	-0.1	-0.1	0.0	0.1	0.3
	4	-1.1	-1.4	-1.0	-1.6	-1.2	-1.9	-1.9	-1.7	-1.8	-1.6
	5	0.0	-0.1	-0.1	-0.1	-0.3	-0.3	-0.2	-0.2	-0.1	-0.2
	6	0.0	0.0	-0.4	-0.3	-0.7	-0.8	-0.8	-1.5	-2.0	-1.7
	Total	-1.5	-1.7	-1.3	-1.8	-2.1	-3.2	-3.0	-3.4	-3.9	-3.2
Peripheral local units	3	-3.1	-0.7	3.4	4.0	2.7	3.0	3.3	3.5	3.2	3.2
	4	-3.4	-4.0	-5.8	-5.3	-5.7	-6.2	-7.3	-7.4	-6.7	-5.4
	5	0.1	0.2	-0.2	-0.4	-0.3	-0.2	-0.1	-0.1	-0.1	0.0
	6	-0.1	-0.3	-0.4	-0.3	-0.2	-0.3	-0.1	-0.3	-0.2	-1.2
	Total	-6.5	-4.8	-3.0	-2.0	-3.5	-3.7	-4.2	-4.2	-3.8	-3.5
Units which cannot be assigned to one of the spatial categories ^b											
	3	-0.1	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0
	4	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	0.0	0.0	-0.1	-0.1
	6	0.0	0.0	-0.1	0.0	-0.4	-0.3	-0.5	-0.7	-0.6	-0.6
	Total	-0.2	-0.1	-0.2	-0.1	-0.4	-0.4	-0.6	-0.7	-0.7	-0.7

^a Degree of redistribution means the difference between the relative fiscal position of the respective group of municipalities after LFE and before LFE. A positive value does mean that a relative advance in terms of revenue becomes greater after LFE or a relative gap becomes smaller. A negative value reveals that a relative advance in terms of revenues becomes lower after LFE or a relative gap shows an increase. Relative position means comparing the proportion the three spatial categories have on revenues with the proportion the three spatial categories have on the number of the inhabitants in the respective state. By subtracting the latter proportion from the former, the relative advantage or gap can be displayed. ^b For 21 local units in Saxony-Anhalt information regarding their affiliation to the three categories of regions described above was not available.

Sources: Calculation by IWH based on data provided by the Statistical Office of the State of Saxony-Anhalt; the categorization of regions is based on a classification conducted by the Federal Office for Building and Regional Planning (BBR).

Annex, Table 5:

Degree of redistribution in the course of LFE in the State of Baden-Wurttemberg by spatial categories and by categorising local units in terms of business tax revenues per capita

Categories of wealthier/less wealthier local units (in terms of mean business tax revenues per capita 1995-04): for the purpose of classification, - / + 1 and - / + 2 standard deviations and the mean value are used as distinctive marks. The distinctive marks result in six categories. Categories 1, 2, 3 represent municipalities which show below average business tax revenues per capita, categories 4, 5, 6 represent municipalities showing above average business tax revenues per capita. For the categories 1 and 2, there is no local unit to be assigned to the respective categories.

Spatial Category	Categories of wealthier/less wealthier local units (in terms of mean business tax revenues per capita 1995-04)	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
		Percentage Points									
Core cities	3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	4	1.4	1.3	0.8	1.2	1.1	1.2	1.2	1.1	1.2	1.1
	5	0.6	0.0	-0.1	0.6	0.4	0.6	0.5	0.7	1.0	0.6
	6	0.0	-1.2	-0.9	0.2	0.0	0.0	0.5	0.5	0.8	0.3
	Total	2.0	0.1	-0.1	2.0	1.5	1.9	2.3	2.3	3.0	1.9
Adjacent local units	3	2.1	2.8	2.5	0.7	0.7	0.7	0.6	0.4	0.0	0.3
	4	-1.3	-0.8	-1.0	-1.0	-1.0	-1.1	-1.3	-1.1	-1.4	-0.9
	5	-2.7	-2.4	-2.3	-1.7	-1.4	-1.6	-1.6	-1.5	-1.7	-1.5
	6	-1.0	-1.6	-1.4	-0.8	-0.9	-0.9	-1.0	-1.0	-0.8	-0.8
	Total	-3.0	-2.0	-2.2	-2.7	-2.5	-3.0	-3.4	-3.2	-3.9	-3.0
Peripheral local units	3	5.0	5.3	5.0	2.4	2.5	2.6	2.8	2.6	2.4	2.5
	4	-0.9	-0.2	0.0	-0.1	0.1	-0.1	-0.2	-0.3	-0.4	-0.2
	5	-1.2	-1.1	-1.0	-0.6	-0.5	-0.6	-0.6	-0.7	-0.6	-0.5
	6	-2.0	-2.1	-1.8	-1.0	-1.0	-0.8	-0.9	-0.7	-0.6	-0.7
	Total	1.0	1.9	2.3	0.8	1.1	1.1	1.1	0.9	0.9	1.1

^a Degree of redistribution means the difference between the relative fiscal position of the respective group of municipalities after LFE and before LFE. A positive value does mean that a relative advance in terms of revenue becomes greater after LFE or a relative gap becomes smaller. A negative value reveals that a relative advance in terms of revenues becomes lower after LFE or a relative gap shows an increase. Relative position means comparing the proportion the three spatial categories have on revenues with the proportion the three spatial categories have on the number of the inhabitants in the respective state. By subtracting the latter proportion from the former, the relative advantage or gap can be displayed.

Sources: Calculation by IWH based on data provided by the Statistical Office of the State of Baden-Wurttemberg; the categorization of regions is based on a classification conducted by the Federal Office for Building and Regional Planning (BBR).