

Net Fiscal Flows and the Size of Cities

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Abstract Which regions contribute most to national growth? Do large cities ‘need’ more expenditure per capita? The relation between these two questions is the subject of a current German discussion, but it is of importance for other countries as well. What precisely is the issue? The substantial German fiscal equalization systems between states (*Länder*) and between communities assign estimates of higher expenditure need per capita to larger cities. This paper argues that this is justified, because, following the arguments of new regional economics, the modern agglomerations are of crucial importance for national growth. To maintain this role they have to be able to keep or receive enough public finance. To assess this, total public flows out of and into regions have to be taken into account. The relevant analysis shows that their contribution to upper-level (federal and *Länder*) finances is far above average, but that they receive relatively little from federal and *Länder* spending; consequently they experience large net fiscal outflows. The use of the abovementioned progressive scale of expenditure need in the equalization systems reduces this fiscal siphoning-off, at least to some extent.

Keywords Fiscal flows · Expenditure need · Regional economics · Convergence theory · Regional progressivity · Settlement structure

Saldo der öffentlichen Finanzströme und die Größe von Städten

Zusammenfassung Welche Regionen tragen am meisten zum nationalen Wachstum bei? „Benötigen“ große Städte mehr Ausgaben pro Kopf? Die Beziehung zwischen diesen beiden Fragen ist derzeit Gegenstand einer Diskussion in Deutschland, aber sie ist ebenso wichtig für andere Staaten. Der Gegenstand: Die quantitativ bedeutsamen deutschen Ausgleichssysteme zwischen Ländern und zwischen Gemeinden weisen den größeren Städten einen höheren Ausgabenbedarf pro Kopf zu. Dieser Beitrag argumentiert, dass dies gerechtfertigt ist, weil nach der neueren Regionalökonomie die modernen Agglomerationen von zentraler Bedeutung für das nationale Wachstum sind. Um diese Funktion aufrechtzuerhalten, müssen sie genügend öffentliche Mittel behalten oder erhalten. Um dies zu beurteilen, muss man die Gesamtheit der öffentlichen Finanzströme berücksichtigen, die in eine Region und aus ihr heraus fließen. Die entsprechende Analyse zeigt, dass Agglomerationen zu den Einnahmen der übergeordneten Ebenen weit überdurchschnittlich beitragen, aber verhältnismäßig wenig durch die Ausgaben dieser Ebenen erhalten. Folglich erfahren sie große finanzielle Nettoabflüsse. Der erwähnte Tarif des Finanzausgleichs, der nach dem Pro-Kopf-Bedarf progressiv ausgestaltet ist, vermindert zumindest teilweise diesen fiskalischen Abschöpfungseffekt.

Schlüsselwörter Fiskalische Finanzströme · Ausgabenbedarf · Regionalökonomie · Konvergenztheorie · Regionale Progressivität · Siedlungsstruktur

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1 Purpose and Outline of the Paper

A current German discussion is taken as a motive to apply a wider perspective: Is the existence of large cities linked in some way to the country's chances for national growth? The German issue: In the substantial fiscal equalization systems between the *Länder* (states), and between the communities of each individual *Land*, what might be called a progressive expenditure need scale is applied according to city size. This means that larger cities and consequently also the three city-states are assigned a higher need per capita than the rest. In detail this looks as follows:

- 1) Between the 16 *Länder* the three city-states are assigned the value of 135, compared with 100 for the rest of the country.
- 2) Within the *Länder* the values of the respective largest cities are as shown in Table 1.¹ Again the assigned expenditure need for them, e.g. in Baden-Württemberg and Niedersachsen, is almost twice as high as for the smaller communities (assigned with an index value of 100).

Both of these scales are currently under intensive discussion.² Equalization between the *Länder* is being considered by the Constitutional Court, where the *Länder* of Bayern and Hessen, which are on the side of those that pay into the system, are challenging this allocation of a higher expenditure need to the city-states, among other elements. Within some *Länder* a similar discussion has started as to the 'privilege', as it is called, for the larger communities.

What does an economist think of this? Which approach should be used? The reasoning in the public debate mostly focuses on distributional grounds: The service per capita between communities should be equalized so as to assure similar service across the country in any community. Consequently, the higher expenditure need assigned to large cities is regarded as a subsidy. In contrast, this paper chooses a growth-oriented perspective and therefore constructs a two-step argument:

- 1) Is the higher need factor really a 'subsidy', or rather a counterweight to high fiscal outflows? An empirical picture is sketched which contains all fiscal flows between communities or regions on the one hand and their respective *Länder* and the federal government on the other, thus looking, firstly, at equalization transfers, and then, secondly, finding out which regions profit on a net basis (Sect. 2).
- 2) After that, in order to evaluate the results, the paper draws on recent literature on the regional sources of

Table 1 City size scale for the largest city in selected *Länder*, in percent of population, 2006. (Source: Henneke 2006, p. 420, with adjustment for Bayern by the author H. Z.)

Land	City size scale	
	Population above:	Percent
Baden-Württemberg	600,000	186
Niedersachsen	500,000	180
Sachsen	55,000	162.5
Nordrhein-Westfalen	634,000	157
Bayern	500,000	150
Thüringen	200,000	150
Saarland	200,000	133
Hessen	50,000	130
Brandenburg	155,000	128
Sachsen-Anhalt	60,000	125

Some *Länder* apply modifications, for instance supplementary grants for city-counties. In other *Länder* an effect similar to that in the table is brought about by a central-place approach

national growth (Sect. 3). A frame of reference is thus selected, building on the 'generative' view of national growth, and a link to regional economic considerations is prepared (Sect. 3.1). Whereas the results of convergence theory suggest that the macroeconomic development and growth of regions is evenly distributed in the long run, the view of New Economic Geography leads us to the point where the modern agglomerations are revealed as the real driving forces of national growth (Sect. 3.2).

Eventually, summing up the arguments presented from the view of new regional economics, final conclusions are drawn.

2 Which Regions Profit from Net Fiscal Flows?

The German discussion on the progressive expenditure need scale focuses on expenditure needs and possible equalizing grants, refraining from consideration of other factors. The higher expenditure need of larger cities is seen as a subsidy being paid to these cities at the expense of the rest of the country. The argument does not take into account, however, where the money for the upper-level budgets comes from. It is to be expected that the larger cities, on a per capita basis, are also the ones that contribute most to total tax revenue. Therefore it is interesting to know how these large cities fare in the total picture of fiscal flows entering the city and leaving it.

Unfortunately, the last German study on total net fiscal flows on the regional level, i.e. cities and counties, on the one hand, and *Länder* and federal budget on the other hand, was published some 35 years ago (Zimmermann/Stegmann 1981). According to sources that occasionally draw up partial pictures of fiscal flows, this study has not been paral-

¹ Several of these cities are in fact larger than Bremen, which is the smallest city-state.

² For a more detailed view on the German discussion from an economic perspective see Zimmermann 2013.

Table 2 Distribution of inflowing expenditures from and outflowing revenues to upper-level governments, by regions, 1975, per capita of regional population. (Source: Calculated by the author from the data in: Zimmermann/Stegmann 1981)

Fiscal flows	Regions	
	Trier	Ludwigshafen
Outgoing taxes (to federal and Land government), DM p. c. ^a	1 752	4 338
Among which federal and Land share of income tax, DM p. c. ^a	576	1 812
Incoming fiscal flows (federal and Land government), DM p. c. ^a	2 796	1 712
Among which grants to local governments, DM p. c. ^a	585	286
Calculated net fiscal outflow (–) resp. inflow (+), DM p. c. ^a	1 044	–2 626
GDP, 1974, DM p. c. ^a	11 640	23 977
<i>Share of GDP 1974</i>		
Outgoing fiscal flows	15.1 %	18.1 %
Income taxes	5.0 %	7.6 %
Incoming fiscal flows	23.9 %	7.1 %
Grants	5.0 %	1.2 %
Net fiscal flows	9.0 %	–11.0 %

^aper capita

leed until today.³ Table 2 therefore shows the results of that earlier study, which took the *Land* of Rheinland-Pfalz as an example of differences between rich and poor regions and cities. Trier and its surroundings were at the time an example of relatively poor German areas, whereas Ludwigshafen, dominated by a large chemical complex, was and is among the rich regions. This can be seen by the difference in GDP per capita at that time, which was more than 1 to 2.

This corresponds to taxes earned and delivered in these two regions, for which the relation of income taxes delivered to the upper levels is more than 1 to 3. This can be interpreted as a progressive scale of outflowing tax money in relation to GDP. It results from the rationale of a progressive income tax and is insofar not a ‘burden’ for the region. But any money remaining within the region, for instance through an income tax reform, is nonetheless an advantage. Incoming fiscal flows are the other way around. The poor region receives much more in fiscal flows. On a net basis the fiscal flows are therefore negative for the rich region and positive for the poor region. The net result was, with 1 044 versus –2 626, consequently 1 to 2.5 in favour of the poor region. In this context it could be argued that the rich region profits from the second round of *Land* and federal purchases in all regions more than the poor ones. But this is outside the fiscal flows proper, and could be answered by pointing to that part of regional income in the poor region which is earned in the rich region by commuters.

This result of Table 2 changed the author’s perception of the desirable results of fiscal equalization. The table shows the result of equalization politics, and in this respect it documents the success of that policy. What still remains open is the question: How much does the rich region have to earn to finally carry the burden of this large net fiscal outflow, which amounts to about 10% of regional GDP? After all, considering national growth, German GDP must be earned by the sum of its regions. This is therefore the starting point for the following section to take a wider view than that of short-term equalization.

3 Frame of Reference: The Region as a Productive Unit

3.1 Selecting a Frame of Reference

If all regions taken together produce the national GDP, the question is which contribute more and are thus the actual regional sources of national growth.⁴ This view has long been termed the ‘generative’ view of national growth (Richardson 1979, p. 145–147). It sees the national rate of growth not as being given exogenously (which would be the ‘competitive’ view). Instead it is seen as the result of the various regional activities. The region is then, from a national perspective, a productive unit with a high or low production potential for private income and public revenue. The regional unit, in order to increase or at least retain its existing productive capacity, must be given (or allowed to keep) enough private and/or public funds and legal power to provide and retain its specific mix of productive inputs. This kind of self-financing of a region should enable it to realise its own advantage compared with the efforts of other regions to further their own growth.

To ease interpretation of the overall picture, the notion of regional progressivity vs. regressivity may be helpful. It sets the flow in relation to a regional indicator like GDP. The hypothesis behind such measurement is as follows: The progressive distribution (for instance the more than proportionate income tax withdrawal as a percentage of regional income) means a greater tax-paying burden on regions with a high tax base (which in the case of income tax are congruent with rich regions). This more than proportionate tax withdrawal from presumed growth-intensive regions inhibits their growth. The reverse applies to a regressive distribution.—To make such statements recourse to regional economics is necessary.

³ See report in Zimmermann 2011, p. 664.

⁴ The following is drawn from Zimmermann 1990, p. 246, 253.

3.2 Which Theory as a Basis?

At the core of the matter is the settlement structure of a given country, i.e. its system of small and large cities, and the question of which is best for national growth.⁵ For a long time convergence theory seemed to explain the development of the settlement structure properly.⁶

The intuition of convergence theory can be summarized by an analogy. Agglomeration regions, so to speak, slop over. Labour and land are scarce and thus expensive in these regions. The reverse is true for peripheral regions. There, both factors of production are available in abundance and thus are inexpensive. Consequently, according to this theory, economic activity moves into peripheral regions. The economic result consists of the equalization first of factor proportions and then of factor prices. Taken together, this leads to the convergence of regions in economic terms.

Since the 1990s a different perspective has prevailed in regional economics, derived from New Economic Geography. Maybe the most important name in this context is Paul Krugman, but Grossman, Helpman and others must be mentioned as well.⁷ From their perspective agglomeration regions are not a temporary exception within the process of economic growth which is then evened out by convergence. Instead, agglomerations are, so to speak, natural results of growth processes. At the heart of this perspective are the benefits of reduced transport costs for goods, services and—today especially important—information, which agglomerations offer. These reduced transport costs then permit the concentration of production in one place, whereas before, because of high transport costs, production had to be distributed regionally.

At the same time additional economies of scale can come into play, because typically larger enterprises can produce (up to a certain limit) at less cost than small ones. Thereby cost is reduced and, furthermore, it becomes possible to offer higher wages for more qualified labour, which in turn increases the efficiency and effectiveness of production in these agglomerations. In addition, scientific findings related to the so-called knowledge economy, for ‘creative milieus’ etc. have to be mentioned.⁸ Of interest may be the notion that the creation and dissipation of innovations may develop, among other things, from a ‘half-hour contact potential’ which means the possibility to meet important and creative people within the distance covered during half-an-hour’s

travel. As a result there seems to be far-reaching agreement that modern agglomerations are the driving force of national growth in high-income countries like Germany.⁹ This does not of course inhibit that other regions in the country also may show considerable growth,¹⁰ but these are likely to have a more limited effect on the volume of national GDP and its growth rate.

This tendency in regional economics also means that there is a conflict between far-reaching regional equalization on the one hand and a policy of furthering national growth on the other. What does this mean for the current German debate about the progressive expenditure needs scale in the equalization systems? And what holds true for Germany, would apply to any country with similarly far-reaching equalization systems.

4 Conclusions Drawn

Apparently distribution objectives alone are too limited to shape such large fiscal systems as the German equalization systems between the *Länder* and between communities. They can only be justified under the assumption that national growth, so to speak, falls from heaven and does not need to be cared for by shaping the ‘right’ settlement structure, in particular the system of cities.

Regarding growth objectives both German equalization policies (between the *Länder* and between communities), as far as they aim at city size, are therefore basically correct. At least they exert a countervailing influence against the overall equalization effect:

- 1) The bonus for the larger cities inside the 13 *Länder* (beside the city-states) makes up—at least partially—for the justifiable higher cost per capita. There is a dedicated literature that studies large cities across the world and usually shows that large cities, when compared to the rest of the country, have much higher expenditure per capita (for details see the analysis in Wissenschaftlicher Beirat 2013, p. 41, table A.1). This higher per capita expenditure is due only to a small degree, if at all, to higher production costs for public services in these large cities.

⁵ For the following see Zimmermann 2007, p. 9–10.

⁶ Barro/Sala-i-Martin 2003, who argue for countries and for regions within countries, may be seen as leading proponents of convergence theory. Their ideas on this subject are spelled out in detail in Barro/Sala-i-Martin 1992. For an overview see Zimmermann 2004.

⁷ As to the relevant elements of theory also outside of regional economics proper, see Zimmermann 2004.

⁸ For an overview see Zimmermann 2004.

⁹ German experience from Baden-Württemberg points to the contrary of convergence theory: the top counties with above-average growth remain in this position over time, and the same is true for a great number of ‘losers’ (Wagner 2008). Also from Germany, a recent study shows that smaller communities provide public goods less efficiently than large ones (Geys/Heinemann/Kalb 2013); for an overview of the studies on local efficiency see Rosenfeld 2013. This element of local public goods efficiency is an additional argument for the importance of agglomerations, with the bulk of the argument being based on private sector performance.

¹⁰ For a discussion of such growth regions far away from metropolitan areas see Zimmermann 2007, Part 3, p. 10–15.

It is rather the case that the majority of the extra costs are caused by what Oates calls the zoo-effect (Oates 1988), namely the fact that larger cities simply provide more types of services than smaller ones, for which the zoo is a good example.

- 2) The bonus for the three city-states is similar to what they would have received inside the average *Land* system. It should be noted, however, that the budgets of the city-states also contain the expenditure for typical *Land* functions (Büttner/Schwager/Stegaescu 2001, p. 7, 80). Therefore, it is appropriate that the present expenditure need factor of 135 for the three city-states is considerably below the average factor for the largest city in the other *Länder*, as they appear in Table 1.

Taken overall, these arguments suggest that the new regional economics, which highlights the importance of modern agglomerations for national growth, should be considered in internal discussions in Germany and other countries¹¹ about whether larger cities should be assigned a higher expenditure need per capita in the course of equalization. The answer is a clear 'yes'. This is not a 'privilege' or a subsidy, but a contribution to national growth.

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¹¹ A higher need factor for larger cities is found in other countries as well (Büttner/Holm-Hadulla 2013, p. 16).