

MUNICIPAL COMPETITION FOR INHABITANTS UNDER POPULATION DECREASE¹

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Abstract

The **shrinking population** during the break-down, adaptation and recovery phase in **Estonian** social and political development enforces municipal competition among the municipalities. Competition for inhabitants is embedded in regional competition showing horizontal and vertical competition relations. Inhabitants' competition prevails indirectly through municipal **business promotion competition** and directly through **competition for inhabitants**. The competition shows **three phases**. A phase concerns zoning and long-term planning; a second one refers to negotiations with settlement firms and short-term actions to attract inhabitants followed by a phase of revisions of zoning and measures.

The oligopolistic industrial zoning model of **business promotion policy** points to the consequences of horizontal municipal competition also on population. Vertical influences on business promotion policy demonstrate a game-theoretic example of intergovernmental intervention from higher government on zoning. The negotiation phase in business promotion policy is modelled by a bilateral monopoly model between a municipality and a settlement firm. Horizontal regional competition highlights the implications on inhabitants' competition. An oligopoly model of **direct inhabitant competition** concerns the zoning in particular for housing. Furthermore, a model of public enterprise service and fee formation and of horizontal public firm competition shows inhabitants' competition in the second phase.

Forms of inhabitant competition concerning suburbanisation and using public debt, revenues such as taxes, fees and expenditures are mentioned. Finally, follows a discussion of **possible instruments** to regulate inhabitant competition.

Keywords: inhabitant competition, regional competition, business promotion, Estonian population development, regulation of inhabitant competition

JEL: D43, H11, J11, R14, R23, R51

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I. Introduction

A challenging phenomenon is shrinking cities (Nam, Richardson 2014). Many core cities in US, Europe and Japan loose population (Cox 2014). Population projections for China, Japan, South Korea, Western Europe, Central Europe, Eastern Europe (e.g. Russia, Ukraine), Western Asia, Iran, and Southern Europe indicate an overall urban shrinkage (Cox 2014). Often especially local governments counteract shrinking cities and municipalities by intensifying municipal competition through restructuring, fiscal measures such as tax reliefs, place marketing, etc. (Hospers 2014). Shrinking population and municipalities cause also municipal competition problems in Estonia.

Eurostat formulated **four scenarios** of population development under different conditions for Estonia (Soosaar 2005). On 1 January 2014, 1,315,819 persons lived in Estonia. According to a baseline variant the population decreases from 1.35 million (2005) to 1,121,144. The population of Estonia until 2050 is projected to shrink between 7% and 34% according to different birth rate and migration developments (Eurostat 2013).

The Estonian population development in the past was greatly influenced by the Second World War, by migration of German and Swedish speaking people, by the escape of Estonians, deportations to Siberia and the influx of people from the Soviet empire (Friedrich, Ülper, Ukrainski 2014). After the attainment of independence followed a **break-down phase** of population and economy, an **adaptation phase** and a **recovery phase** (Friedrich, Ülper, Ukrainski), reflected in Figures 1 and 2.

After the war, the **population** started to increase (**Figure 1: The development of the population in Estonia and GDP (real)**) mainly due to immigration, where a new industrial structure was one justification behind broader aims of Russification. This migrant population was concentrated mainly in areas which were created by the Soviet industrialization and formed a kind of separate language areas (e.g. industrial towns in north-east Estonia, ports and towns with military purposes, etc.). Considering the Soviet period, urbanisation processes accelerated with the Soviet production structure. These tendencies were also caused by the internal migration to the cities. The **central place system** strengthened the higher centres of Tallinn and Tartu shows the population changes during the three different decline phases by the annual population data of the Statistical Office of Estonia and alternative population change numbers (in the last two columns) according to the last two population censuses. A severe population drop occurred during the **break-down phase** in 1991 to 1996 was followed by a smaller one in the period 1997 to 2001 in the **adaptation phase** and an ongoing population decline in the **recovery phase** from 2002 to 2012. In the beginning of the 1990s, the country faced a significant drop³ in population. Emigration was quite modest in the break-

³ This was mainly due to the emigration of non-Estonians, but also to the drop in birth rates and emigration of Estonians.

down and adaptation phase, but has gained in importance in the recovery phase after EU accession (Anniste et al. 2012).

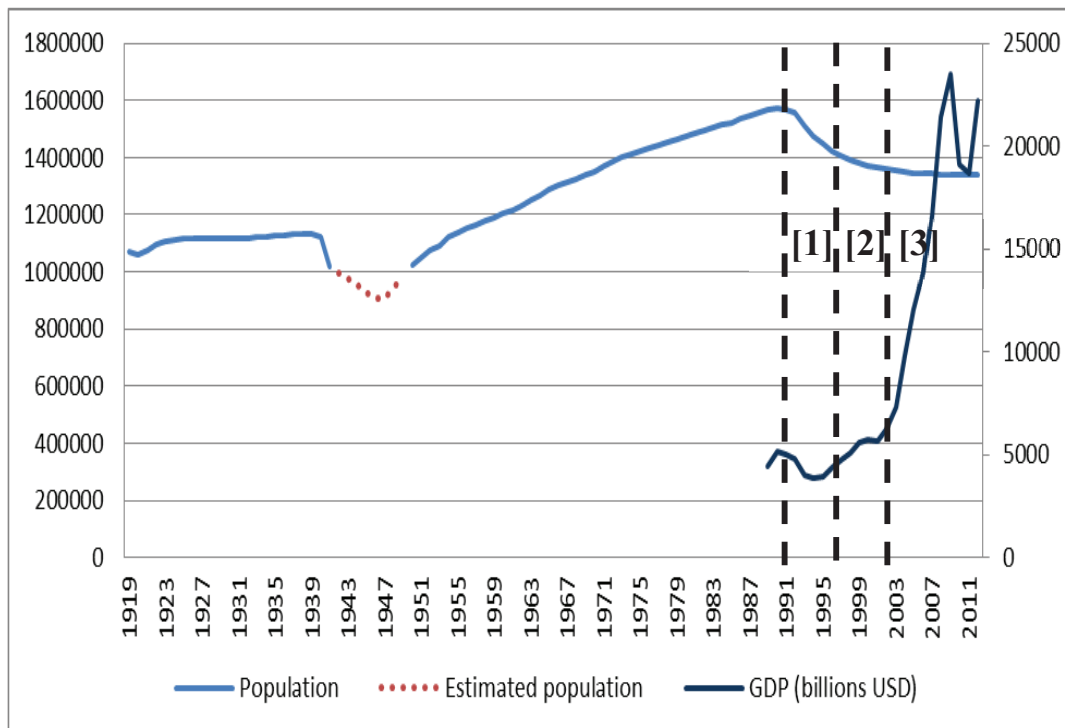


Figure 1: The development of the population in Estonia and GDP (real)
 Sources: *Statistics Estonia 2013, Trading Economics 2013 (Friedrich, Ülper, Ukrainski 2014)*

Note: Phases: [1] Break-down phase, [2] Adaptation phase, [3] Recovery phase.

The recovery phase was also characterised by the growing number of rural inhabitants among emigrants. The decline in the 1990s did not similarly affect the whole country. The **military withdrawal** – especially in Tartu and Paldiski – has affected the population size, services and production activities in border areas, but also in locations of specific military facilities. Border areas that were sparsely populated declined the most in relative terms (Saaremaa and Hiiumaa for example).

There are large regional differences in the development of population distribution too. The two largest towns of Estonia, **Tallinn and Tartu** have both lost population during all phases. For both towns the relative decrease was larger than in the whole of Estonia in the first phase and for Tallinn in the second phase as well. The census data show that a decrease in population is still continuing.

Table 1: Population changes in Tallinn and Tartu and surrounding counties

	Break-down (1)		Adaptation (2)		Recovery (3)			
	1991–1996		1996–2001		2001–2011		2000–2011	
	Abs.	Relat.	Abs.	Relat.	Abs.	Relat.	Abs.	Relat.
Estonia	- 142, 557	- 9.1%	- 58,23 3	- 4.1 %	- 26,76 5	- 2.0 %	- 75,59 7	- 5.5%
Tallinn	- 55,3 42	- 11.6 %	- 21,56 4	- 5.1 %	607	0.2 %	- 7,156	- 1.8%
Harju county without Tallinn	- 4,65 2	- 3.6%	1,800	1.5 %	2,889	2.3 %	34,40 1	27.5 %
Tartu	- 10,6 90	- 9.4%	- 2,149	- 2.1 %	2,533	2.5 %	- 3,569	- 3.5%
Tartu county without Tartu	-581	- 1.2%	-149	- 0.3 %	- 1,486	- 3.1 %	4,495	9.3%

Source: Friedrich, Ülper, Ukrainski (2014), Statistics Estonia 2013

Opposite changes have been taking place in the **hinterland municipalities** near the two towns. The decrease in population was a lot smaller for them in the first phase and was positive or only slightly negative in the second phase. Although the calculated population size shows a decrease in population in Tartu County, the census population numbers show a large increase for Tartu and Harju Counties during the recovery phase. The growth of some municipalities in those counties has exceeded 100%. The above mentioned changes can also be seen in Figure 3.

The development in population distribution has led to extensive commuting (Ahas et al. 2010). The net commuting balance of Tallinn was around 39,000 people and nearly 10,000 in Tartu. The actual number of **people commuting** to Tallinn and to Tartu is even bigger. A lot of inhabitants of Tallinn commute to the neighbouring municipalities, where many new factories have been built. In total, at least 380,000 people in Estonia are on a daily basis active (work, education and other regular daily activities) outside of their residence municipality (Ahas et al. 2010).

The decline in population differs regionally according to Figures 3 and 4. There was a severe drop in population in **southern Estonia** in Võru, Valga, Põlva and Viljandi counties; in central Estonia in Jõgeva, Rapla, and Järva counties, in north-east Estonia in Ida-Viru and Lääne-Viru counties and on the islands of the Baltic Sea Hiiu and Saare... At the same time, reduction as well. Reasons are shrinking birth rates and movement of population to the larger towns.

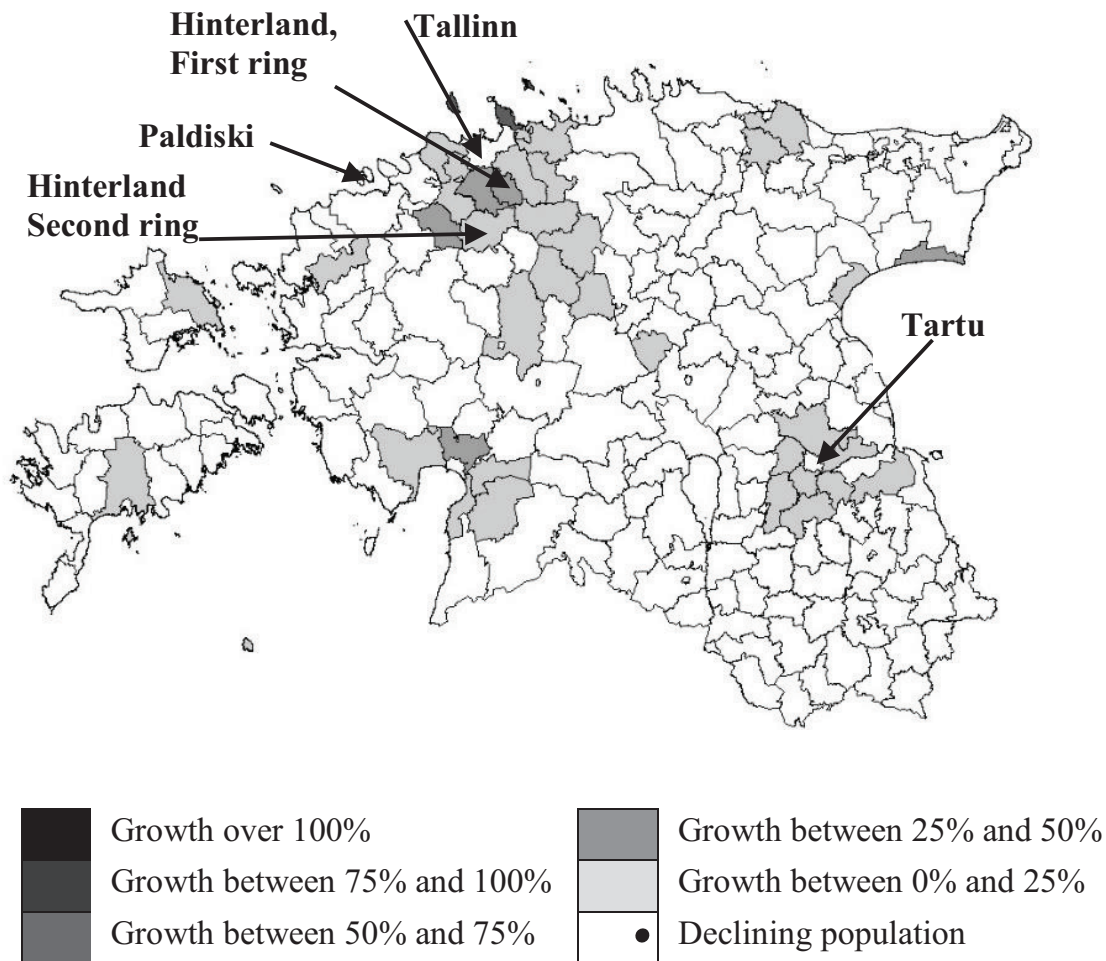


Figure 2: Population change in municipalities (break-down and adaptation phase)

Source: Friedrich, Ülper, Ukrainski (2014), calculation based on Statistics Estonia 2013

The **central place structure** in terms of population changed. It showed the decline of bigger towns like Tallinn, Tartu, Narva and Pärnu, some increases in the hinterland of Tallinn, Tartu and Pärnu and losses of the middle sized towns, especially in rural areas. In economic terms the functions of many places changed. Tallinn concentrated on services, Tartu on cultural services, Pärnu centred on tourism, and Narva lost functions because of the population movements and the decline and change of industries especially during the break-down and adaptation phase.

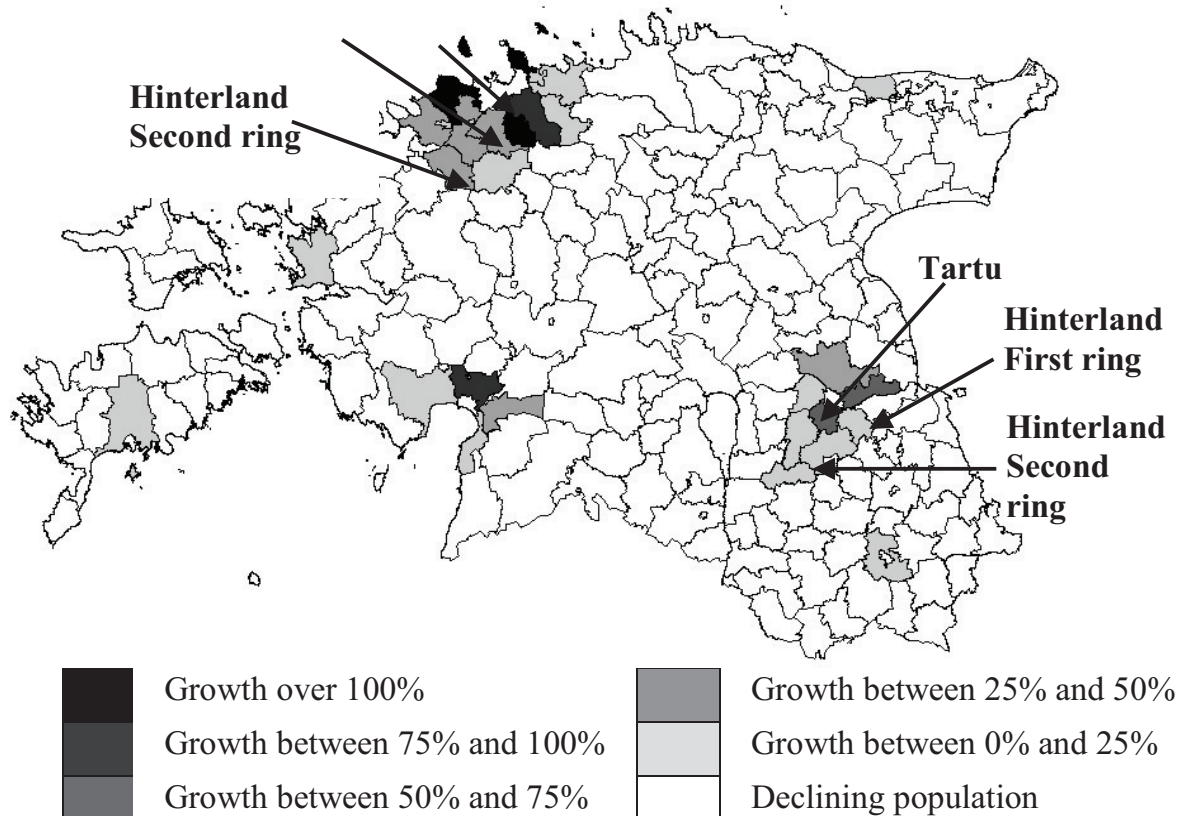


Figure 3: Population change in municipalities between 2000 and 2011 (recovery phase)

Source: Friedrich, Ülper, Ukrainski (2014), calculation based on Statistics Estonia 2013

As long-term economic local and national development depends considerably on the population development the bigger towns as well as the villages need stabilization of their population. **Competition for inhabitants** between regions and localities in Estonia, against competitors within the EU and worldwide becomes⁴ important. Municipalities have to compete fiercely (Mönnich 2005, 2007; Preuß 2009; Olm 2011). The competition for inhabitants is embedded in regional competition (Florida 2005) and an essential part of it.

Therefore, we tackle the following **research questions**:

⁴ They have to increase the number of inhabitants by reducing migration, increasing the birth rate, by attracting inhabitants.

- (1) What are the relations between regional competition and competition for inhabitants?
- (2) Which forms of inhabitant competition exist?
- (3) Which models could be helpful to explain the phenomenon?
- (4) How to regulate inhabitants' competition?

The first research question and second research question is tackled in the second section. The models are dealt with in the second and third section whereas the regulation is concerned in the fourth section.

II. Regional Competition by Inhabitants Competition

1. The Business Promotion Policy

Regional competition is a **differently defined** concept (Batey, Friedrich 2000). It refers to competition among exporting firms (Takayama, Judge 1971), local promotion of competing firms (Johnsson 2000), to promotion of competition for tourists (Funck 2000), competition between regions as systems of actors (Mueller 1989), competition to promote growth (Poot 2000), rivalry among agglomerations (Christiansen 2000), market processes to allocate activities and production factors among regions (Maneval 2000), competition among industrial districts (Petrobello 2000) or between clusters (Steiner 1998), and competition among functional regions (Dohse 2000).

Regional competition is also interpreted as competition of groups of neighbored economic subjects showing conflicts with groups in other regions (Buhr, Friedrich 1978), a game of survival of economic units living in a region against actors of other regions (Batey, Friedrich 2000) or a struggle of nations, ethnic groups, tribes, and clans of some regions, e.g. of the same belief and ideology (Batey, Friedrich 2000). The competition for inhabitants among regions is very topical (Mönnich 2005, 2007; Bartholomae, Popescu 2007; Preuß 2009; Olm 2011).

Here we concentrate dominantly on inhabitants' competition although this competition is also linked to the other ones. There is a **promotion policy to settle firms offering jobs and attracting additional inhabitants** called the first policy, and a **direct policy to attract well and appropriately educated migrants** and people we deal with called the second policy. In literature mostly the first policy is dealt with.

Regional competition differs according to **whom is competing**, e.g. continents, countries, states and provinces, municipalities, public offices, public and private enterprises, clusters, or households. We focus especially with the first policy on municipalities and with the second policy on households. Regional competition forms also depend on the phenomenon for **what competitors compete**, e.g. investors, firms to settle, development, infrastructure, taxation, environment, settlement of households, political results, production by private firms, settlement of public offices, gains in international trade, success of cultural institutions, tourists and inhabitants. Different regional competition results from **the ways the competitors compete**, e.g.

horizontal, vertical, micro and macroeconomic competition (see Figure 4). With both policy strategies these kinds of regional competition occur.

A **framework of analysis and description of regional competition** is needed as the definitions of regional competition are vague and many types of regional competition exist. The **workable competition concept** (Clark 1940; Kantzenbach 1966; Buhr, Friedrich Batey 1978; Batey, Friedrich 2000) provides such possibilities. It refers to:

- The **structure of competition** (e.g. number and type of competitors, horizontal and vertical competition, microeconomic and macroeconomic competition)
- The **process of competition** (e.g. degree of rivalry, co-operation, conflict resolution, behaviour of competitors, parameters of action), and
- The **result of competition** (e.g. goal achievement, capacity use, qualities, migration, evaluation by the state, municipalities, citizens)

There is a sequence of regional competition from competition structure to regional competition process to regional competition results. This is true for the first and the second policy.

For sake of simplicity, the **first policy municipal firm settlement competition is analysed firstly**. In the European Union about 92,750 municipalities⁵ exist (Stevens 2014), but there are also municipalities in Switzerland, Norway, Iceland, etc. involved in Europe-wide business promotion.

German and Estonian municipalities deal with regional competition: offices of town, city or county manager, the municipal parliament, business promotion office or a business promotion company. **The German competition structure** shows about 14,000 municipalities, where about 8,000 actively join horizontal business promotion competition for 450 manufacture settlements in manufacturing of over 25 jobs a year. In Germany 16 states and a federal government exist and sometimes the EU is involved. As Estonia is smaller the number of competitors is smaller, however, like Germany it has to face European-wide municipal competition as well.

The municipal **competition process** refers to **zoning**, the formation of industrial districts and the application of parameters of action in **negotiations** to attract firms. These parameters are: selling land, providing infrastructure, transport connection, access to sales markets, assistance to find high-skilled workers, environmental regulations, energy prices, access to special suppliers, subsidisation, promoting relation to public offices and jurisdictions, acceptable tax rates, by social and geographical environment and amenities (Friedrich 1977; Lindemann 1999; Blume 2003). The **competition results** concern citizens' income, employment, investment in municipality, improving the city budget and public production, more inhabitants, etc.

⁵ According to the stages of territorial reforms in the EU-member countries the number of municipalities vary (Hemenier 2009), e.g. 92,506 (2007) without Croatia

When establishing zones, the **market forms** are oligopolistic. In a **settlement of firms** bilateral monopolies and monopsonies often exist (see Table 2). A municipality undertakes zoning in a first **stage (1)**. In a second (**stage 2**) it negotiates settlements, and in a third **stage (3)** the municipality revises its zoning (Lindemann 1999).

An **oligopolistic industrial zoning model** was developed by Lindemann (Lindemann 1999; Friedrich, Lindemann 2000). Each municipality fixes its **zoning relation B_p** as a percentage

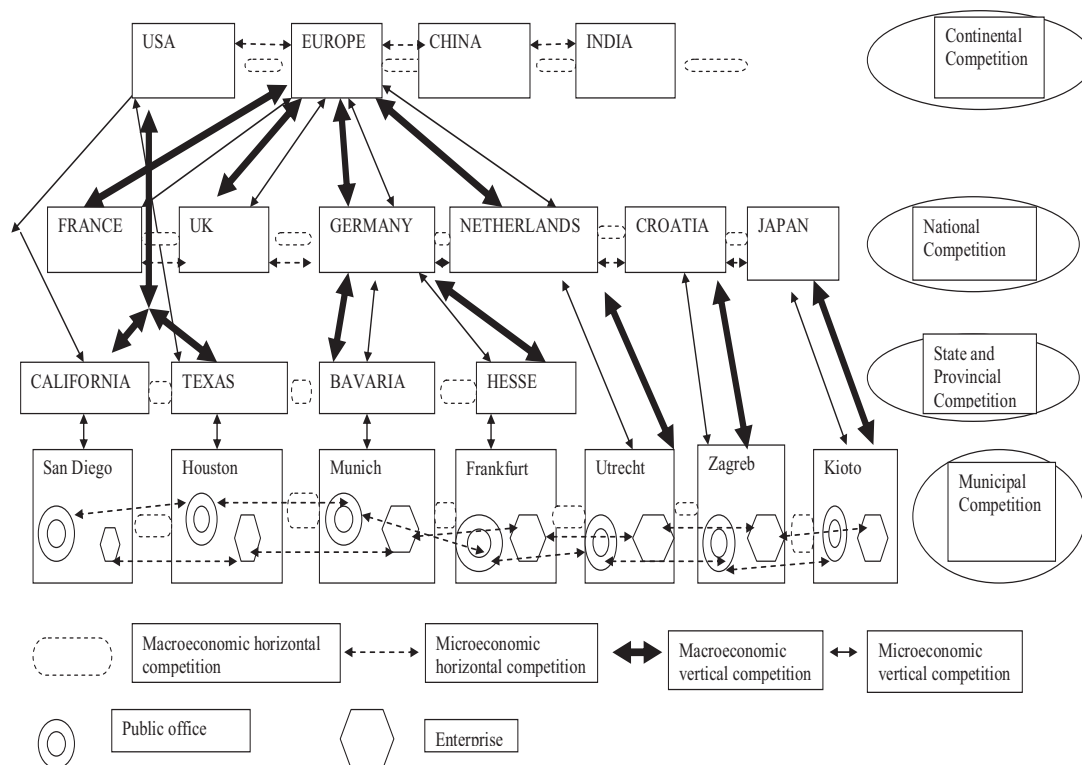


Figure 4: Features of regional competition

Source: Author's compilation

of a municipality's territory in such a way as to maximise utility, depending on private and public production. The municipalities finance the public production of the municipality from tax revenues and the sale of land to firms that locate there. The land revenues of a municipality also depend on those yielded in a competing municipality. Production functions exist for private production and the public production within the municipality. The adoption of cost-minimal production allows for the determination of net private production, land revenues and public production. The utility of both municipalities depends on its own and the competitors' percentage share of industrial zoning B_p (see Figure 5).

Table 2: Market forms in municipal competition for firms

Municipalities offering locations	Firms demanding locations			
		One	Several	Many
Municipalities offering locations	One	Bilateral Monopoly (often in settlement negotiations)	Demand restricted monopoly	Monopoly
	Several	Supply restricted Monopsony	Bilateral oligopoly	Oligopoly (often in zoning)
	Many	Monopsony (often in settlement negotiations)	Oligopsony	Competition

Source: Author's compilation

A **municipality attempts to maximise its utility** under the assumption that a competing municipality does not react. A **Launhardt-Hotelling solution** results in zoning. Autonomously behaving municipalities plan **large zones**. If they would maximise their common welfare they would plan smaller zones. By **differentiating the solution formulae** for welfare and the zone percentage to the parameters, one can identify the following competitive reactions of the municipalities: If municipality 1 experiences higher demand, line Bp1R shifts upward. The zone increases. If **productivity in industry increases**, the welfare of municipality 1 improves, since line Bp1R moves upwards. An **increase of wages** decreases the welfare of municipality 1, which would react by reducing the proportion of its industrial zone. The Bp1R line shifts downwards. Higher wages in the public sector will also cause lower welfare for municipality 1. As a compensatory measure an increase in the industrial area will take place. If the demand for industrial sites shrinks because of **population decrease** the line Bp1R shifts down and the municipality 1 decreases its zone. The contrary effect stems from a population increase. **Municipality 2** is affected and results change there. If in both municipalities the **population decreases**, the industrial zones shrink in both towns⁶.

If the **demand for industrial sites decreases** in municipality 1, the welfare of this municipality and the zone shrinks. Line Bp1R moves downwards.

⁶ The model also shows that an increase in population increases the industrial zoning activities. However, it is assumed that there is no crowding out effect by the necessity to increase the housing zone if the population and labour provision increases.

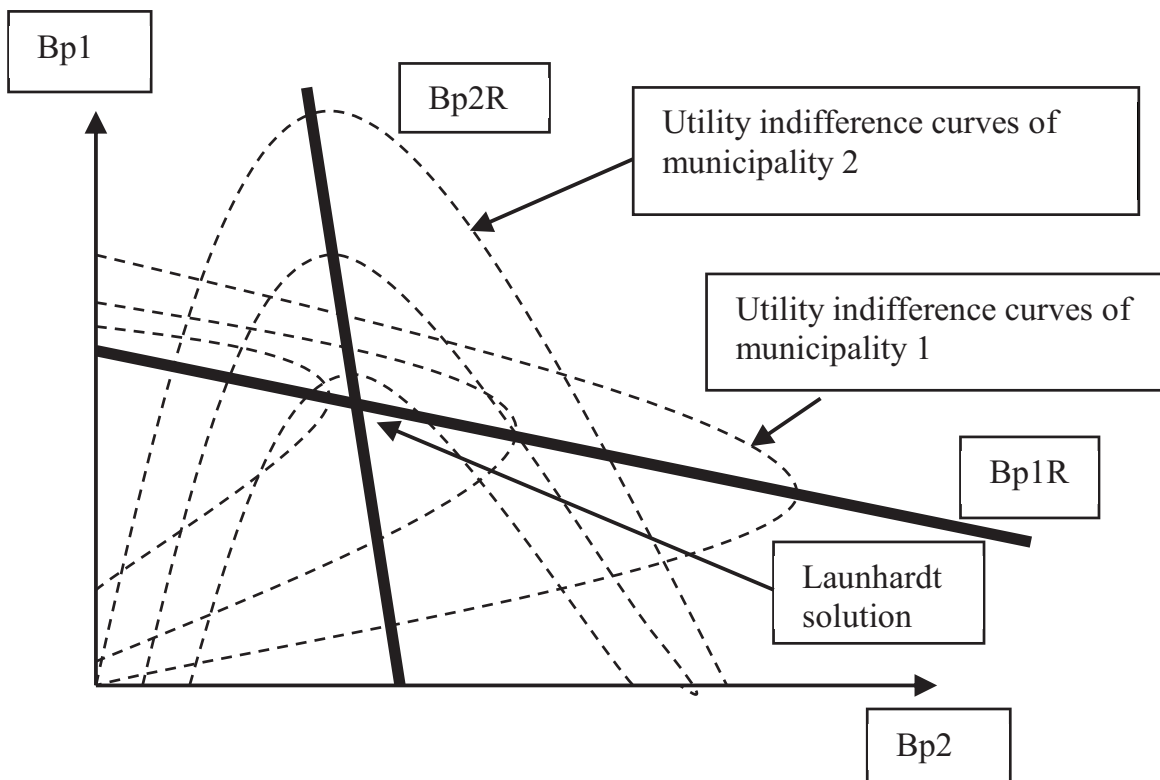


Figure 5: Launhardt solution of zoning competition for manufacturing firm settlements

Source: Similar to Lindemann (1999), Friedrich, Lindemann (2000)

Higher level governments might influence the zoning through special grants to create a zoning pattern that comes up to their wishes. Then, **vertical regional competition** prevails as well, which is highlighted by an example. Along with the zoning some communities establish industrial parks and districts⁷. There are four possibilities for industrial parks: a science park, a high-tech park, a manufacturing park, and a handicraft and small business park. The grant scheme should be as follows:

⁷ For a model of founding a promotion company, see Friedrich 2002; Friedrich, Popescu 2005; Friedrich, Popescu 2006; and Fladung, Friedrich 2008.

Table 3: Subsidisation of industrial districts and possible effects of park establishments

		Establishment		Total costs	Income	Inhabitants	Voters	Voters	
		Grant	Cost					(1) for government	(2) For opposition
Science park A1	Town 1	1,000	1,300	300	3,200	320	320	320	-320
Science park A2	Town 2	1,000	1,500	500	3,500	350	350	350	-350
High-tech park B1	Town 1	800	750	-50	4,000	400	400	400	-400
High-tech park B2	Town 2	800	600	-200	4,200	420	420	420	-420
Manufacturing park C1	Town 1	400	150	-250	5,500	550	550	550	-550
Manufacturing park C2	Town 2	400	140	-260	5,000	500	500	500	-500
Business park D1	Town 1	200	40	-260	2,500	250	250	250	-250
Business park D2	Town 2	200	60	-140	2,400	240	240	240	-240

Source: Author's compilation

There exists a **preference order** of the higher grant providing government: A1>C2>B1>C1>B2>D2>D1>A2

Table 4: Reaction of higher government to offers of the municipalities

Municipality		1	1	1	1
	Park types, strategies of municipalities	A1	B1	C1	D1
2	A2	A1	B1	C1	D1
2	B2	A1	B1	C1	D1
2	C2	A1	C2	C2	C2
2	D2	A1	B1	C1	D2

Source: Author's compilation

The municipalities offer the type of industrial park they want to establish. Matrix 1 in Table 5 shows the subsidisation results:

Table 5: Subsidisation matrix 1

Municipality		1	1	1	1
	Park types	A1	B1	C1	D1
2	A2	0, 1000	0, 800	0, 400	0, 200
2	B2	0, 1000	0, 800	0, 400	800,0
2	C2	0, 1000	400,0	400,0	400,0
2	D2	0, 1000	0,800	0,400	200,0

Source: Author's compilation

If the municipalities want to **maximise receiving the grants**, community 1 offers a science park and community 2 a high-tech park. However, municipalities might have other goals as well. If they want to minimise costs that means costs of establishment minus the grant the pay offs in total costs are given in matrix 2 in Table 6:

Table 6: Total costs matrix 2

Municipality		1	1	1	1
	Park types	A1	B1	C1	D1
2	A2	0, 300	0, -50	0, -250	0,-160
2	B2	0, 300	0, -50	0, -250	-160,0
2	C2	0,300	-260,0	-260,0	-260,0
2	D2	0,300	0,-50	0,-250	-140,0

Source: Author's compilation

Municipality 1 will concentrate on a manufacturing park and the municipality 2 on a high-tech park.

If there would be only a subsidy possible for one park, the following matrix develops.

Table 7: One and two park solutions

Municipality		1	1	1	1
	Park types	A1	B1	C1	D1
2	A2	1,500, 300	1,500, -50	15,00, -250	1,500,-160
2	B2	600, 300	600, -50	600, -250	-160, 40
2	C2	140,300	-260,750	-260,150	-260,40
2	D2	60,300	60,-50	60,-250	-140,40

Source: Authors' compilation

Municipality 2 chooses the strategy C2 (manufacturing park) and town 1 the business park without receiving a grant.

Other results are achieved if **income becomes maximised** and the parks must be approved by the higher government. Then the best solution for municipality 1 will be the science park if only one park gets approved. Municipality 2 can always be beaten. As Table 9 shows, not the highest employment is achieved. If the higher government accepts two suggestions then municipality 1 establishes the manufacturing park C1 and municipality 2 the manufacturing park C2.

Table 8: Income maximisation matrix

Municipality		1	1	1	1
	Park types	A1	B1	C1	D1
2	A2	0, 3,200	0, 4,000	0, 5,500	0, 2,500
2	B2	0, 3,200	0, 4,000	0, 5,500	4,200, 0
2	C2	0, 3,200	5,000, 0	5,000, 0	5,000, 0
2	D2	0, 3,200	0, 4,000	0, 5,500	2,400, 0

Source: Author's compilation

Table 9: Employment maximisation

Municipality		1	1	1	1
	Park types	A1	B1	C1	D1
2	A2	0, 320	0, 400	0, 550	0,250
2	B2	0, 320	0, 400	0, 550	420, 0
2	C2	0,320	500,0	500,0	500,0
2	D2	0,320	0,400	0,550	240,0

Source: Author's compilation

Employment maximisation and **inhabitants attraction** shows the same results according to the effects of the strategies chosen on pay-off.

If the pay-off reflects **voters** to be gained who vote in both municipalities in favour of the government the same result is achieved. If both municipalities compete in the case of only one park being approved, the solution A1 will win. When two parks are

allowed, again the two manufacturing solutions result. However, the results change if in one municipality governs a party that wants to attract the voters because the local government expects the new voters to vote in their favour and in the other municipality is governed by a party that dislikes the new voters.

When only one park is approved municipality 1 chooses C1, whereas municipality 2 avoids getting a park by suggesting A2. If this municipality has to build a park – as parks are politically in fashion – it tries to establish D2. Then the municipality government has to

Table 10: Votes maximisation

Municipality		1	1	1	1
	Park types	A1	B1	C1	D1
2	A2	0, 320	0, 400	0, 550	0,250
2	B2	0, 320	0, 400	0, 550	-420, 0
2	C2	0,320	-500,0	-500,0	-500,0
2	D2	0,320	0,400	0,550	-240,0

Source: Author' compilations

The negotiations with settlement firms after the industrial zones and districts have been established are highlighted by a **bilateral model of settlement negotiation** between a business promotion agency of a town and a potential settlement firm (Friedrich, Lindemann 1993; Feng, Friedrich 1993; Feng 1998). Extensions of them include further vertical and horizontal competition in the **bilateral monopoly** case.

A town (promotion agency) maximises **utility**, which depends on the volume of production of the new firm, its employment, the capital investment of the firm, the revenue from the real estate sale and a 'performance-oriented' subsidy that increases with the firm's production. The locating firm maximises its **net profit** by facing a demand relation, production function and cost function. A set of **possible contracts** is determined, which is related to the distribution of utilities in the park and the locating firm. This leads to a utility possibility curve. Out of these possible utility distributions a **Nash solution** for location negotiations is found. **Minimum utilities** point to opportunity benefits if no contract is concluded.

The solution is depicted in Figure 6. The mathematical formulation presents the ideas from Feng, Friedrich (1993)⁸. The utility possibility curve is determined by the possible profit conditions of the firm prevailing at the location in the town and also by the number of jobs the firm is offering to the town. If the population increases for

⁸ The utility functions are solved for the price F of the location and the output volume V. Therefore, receiving the indifference curves of the negotiators and where they touch the contract curve. Both negotiators possess minimum utilities N_{t0} and N_{u0} . The contract curve corresponds to utility possibility curve out of which by maximizing the Nash product $(N_t - N_{t0}) * (N_u - N_{u0})$ the solution point A is determined.

both negotiators the deal becomes more advantageous and the utility possibility curves moves up and to the right. A population decrease has the opposite effect if the utility functions – in particular of the town – do not change. If the utility of the town depends more on the migration volume the indifference curves of the town get steeper and it becomes willing to reduce the price of land of the promotion agency. The town offers more utility to the settlement firm.

The model is extended to the case of **supply restricted monopsony**. **Two towns** compete against each other for an industrial firm. Town 1 finds an **initial solution** with the firm at point A in Figures 7 and 8. Then, the firm negotiates with town 2 in order to improve its utility, taking the utility level resulting from point A as a yardstick for minimum utility. The next superior solution for the firm is then point B, followed by renegotiations with municipality 1 that lead to point C. Further negotiations lead to the **final solution**. Here, the minimum utility of the firm becomes so high that town 1 cannot offer another superior option.

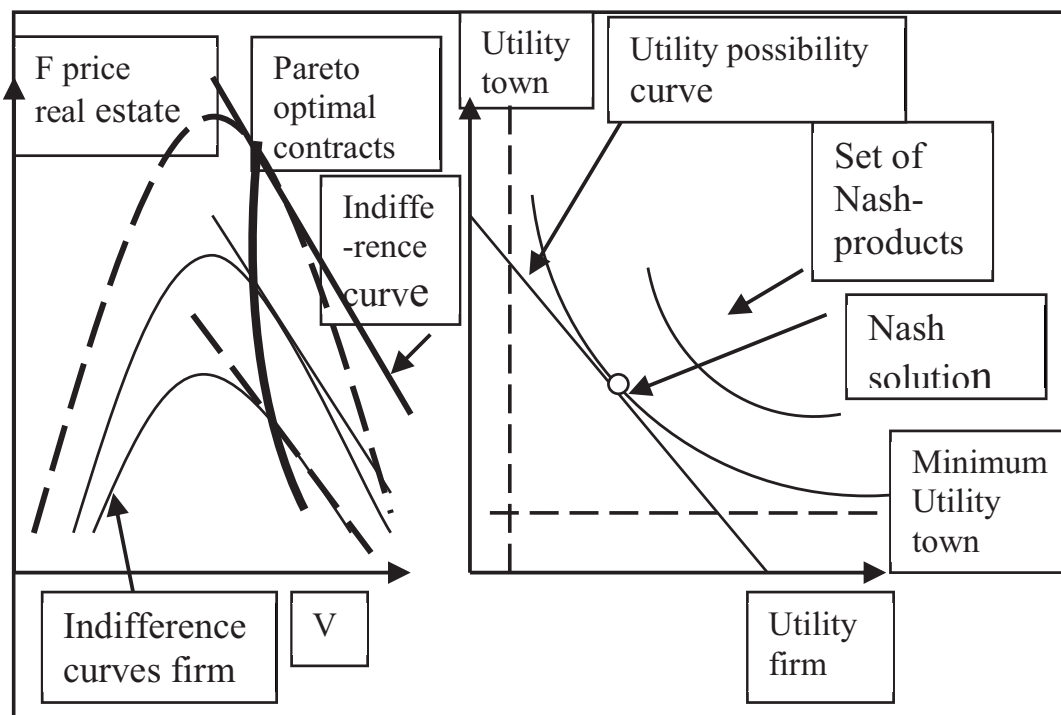


Figure 6: Contact curve and Nash solution in bilateral monopoly
Source: Similar to Friedrich, Lindemann (1993); Feng, Friedrich (1993)

From one step to another the real estate price shrinks. The utility of the firm increases until one of the towns gives up. The successful municipality offers local conditions that fit the firm best and where the firm allows the winning municipality a **large space with a utility frontier**. The settlement firm achieves possibilities to exploit the municipalities⁹. Normally the winning town may gain inhabitants.

⁹ This reflects a Tiebout approach to firms.

If **populations decrease** the utility possibility curves move inwards. Now the firm achieves less utility and according to the movements of the possibility curves the winning town may change. Again, there might be different goals and utility functions, e.g. political ones concerning voters, that lead to quite different results of the supply restricted monopsony.

There are also **macroeconomic horizontal and vertical public competition models** showing how in the case of population decreases the horizontal municipal competition is influenced by the fiscal policy of a higher ranked government (Friedrich 1986). The main

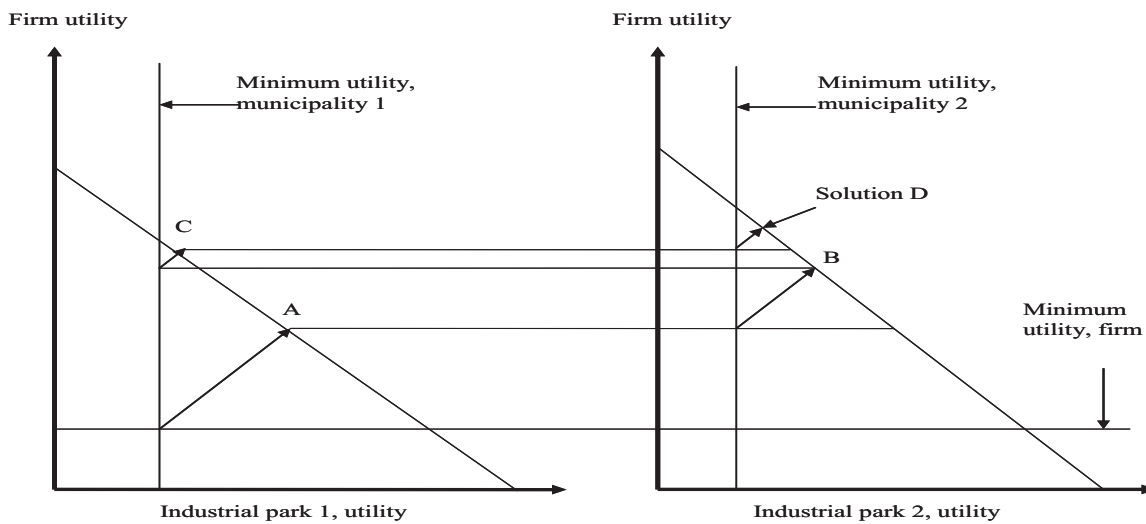


Figure 7: Supply restricted monopsony of settlement negotiations
Source: Similar to Friedrich, Lindemann (1993); Feng, Friedrich (1993)

findings are that fiscal policy of central state does not influence the position of municipalities in regional competition until this policy is not related to regional policy preferences. Although a population stagnation decrease takes place only drastic changes may influence the choice of competitive fiscal policy of municipalities. Wimmert (2011) has shown the effects on the growth of shadow sector and the official economy when the population shrinks.

2) Inhabitant Attraction Policy

The municipal policy to attract inhabitants directly concerns measures in the framework of zoning or individual launching projects and of fixing parameters for inhabitant attraction.

With respect to the zoning, one can develop a **duopolistic zoning competition model**. There are two municipalities attracting inhabitants by assigning housing zones, labelled B_{hi} ($i=1, 2$) (see Figure 9 and Figure 10).

They or other land owners sell these zoned plots of land to housing firms or individual house owners. The **demand for land** depends on the real estate or land price p_{hi} ($i=1, 2$). The demand for land depends on the land housing price prevailing in the town and that of the competing town. The demand for housing in town decreases with a higher housing zone of the competing town. The demand increases if the housing price shrinks, which means one faces a falling demand curve with rising housing zones. Moreover, if the housing zone is enlarged there is less space in town for industrial and other activities. A crowding out effect takes place, which is considered by $\alpha_1 B_{h1}$ ($i=1, 2$). It diminishes the possible B_{hi} ($i=1, 2$).

The municipalities are interested in **increasing the number of inhabitants and the fiscal revenues**. Therefore, they evaluate the number of inhabitants related to B_{hi} ($i=1, 2$) by a value parameter z . The number of inhabitants is supposed proportional by α to the housing zone. This leads to the evaluation $z_1 * \alpha_1 * B_{h1}$. Moreover, the town evaluates by r possible revenues related to sales of housing area and a loss of revenues, which relates to the diminishing of zones for other purposes, e.g. industrial districts¹⁰. If the housing demand function is $p_{h1} = a_1 - b_1 * B_{h1} - c_1 * B_{h2}$ then the relative utility can be $r_1 * (a_1 - b_1 * B_{h1} - c_1 * B_{h2}) * B_{h1}$. Due to the crowding out the town loses $r_1 * \beta_1 * B_{h1}$ in utility. The three utility components result in the utility function depicted in Figure 9.

The competitive situation is depicted in Figure 10. In the **left upper part of the graph** the town 1 is shown with its demand curves and indifference curves. Where the indifference curves touch the demand curves the optimal solutions for a given planned housing zone of competitive town 2 is found. The respective optimal solutions depict the line R_1 . In the **lower right** positioned graph the same information is offered for the town 2. In the first quadrant the optimal responses of town 1 B_{hR1} and the optimal responses of town 2 labelled B_{hR2} are illustrated for a given housing zoning of the competing town. If both players act autonomously a **Launhardt-Hotelling solution** is determined at the crossing point of these two response lines. A duopoly solution of zoning to attract inhabitants is achieved.

Introducing other behavioural assumptions leads to different duopoly solutions according to von Stackelberg, Frisch, etc. (Krelle 1961; Ott 1986; Varian 2010). An interesting case is the Krelle behavioural assumptions that a competitor is reacting by his parameters of action only if he is forced by the competitor to lose utility (Krelle 1961; Friedrich 1986; Bartholomae, Popescu 2007). Then some parameter – here

¹⁰ The utility function can be in the form: $r_1 * (a_1 - b_1 * B_{h1} - c_1 * B_{h2}) * B_{h1} + z_1 * \alpha_1 * B_{h1} - r_1 * \beta_1 * B_{h1}$

zoning constellations – can be identified where the competitors do not change their housing zoning.

With the zoning competition the Launhardt-Hotelling solution again points to an extended zoning for housing. A collusion solution would lead to smaller housing zones in both competing towns. Such behaviour is found in real inhabitants' competition policy (Mönnich 2007).

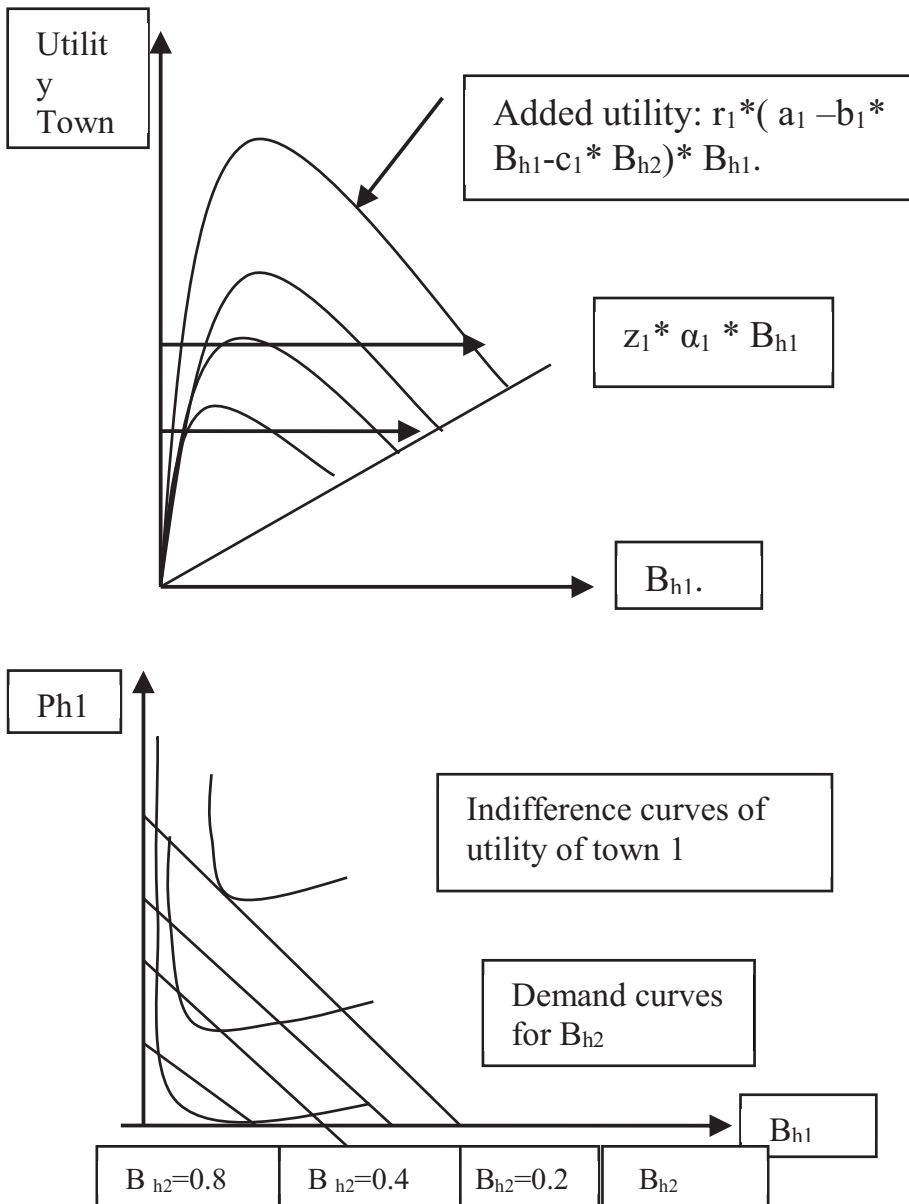


Figure 8: Town1 utilities and housing demand and indifference curves

Source: Author's compilation

In the framework of zoning or **long-term planning** (Buhr 2007) to change the location conditions in a community, other parameters are used as well. Examples are public services, infrastructure services referring to education, transportation, leisure, culture, etc. fees, and if possible taxation tariffs (e.g. taxes on second homes (Mönnich 2007))

and local fiscal policy. This competition can also take place for population relevant projects such as establishment of public offices like courts, institutes, police and customs directories, colleges, universities. In the framework of zoning or **long-term planning** (Buhr 2007) to change the location conditions in a community, other parameters are used as well. Examples are public services, infrastructure services referring to education, transportation, leisure, culture, etc. fees, and if possible taxation tariffs (e.g. taxes on second homes (Mönnich 2007)) and local fiscal policy. This competition can also take place for population relevant projects such as establishment of public offices like courts, institutes, police and customs directories, colleges, universities, hospitals, etc. Then, models of horizontal, but especially vertical competition are to apply. For this kind of competition in the field of planning similar models can be developed (for competition with population related expenses, see Bartholomae, Popescu 2007). **Tiebout model approaches** (Tiebout 1956; Postle 1993) are important. They point to special conditions, which might support decisions of households to migrate and move to another town. They relate to public services and fiscal burdens for households at different municipalities. Many approaches developed in migration theory to explain migration, are also helpful to explain features of zoning and planning.

The negotiation models mentioned are less appropriate as selling of land to households' takes place often through auctions. Moreover, with households no oligopolies or monopsonies often prevail. Housing markets are showing more competitors.

There are attempts to attract inhabitants through **changing the conditions of service provision** by public offices such as schools, homes for elderly people, hospitals, kindergarten, leisure facilities or public enterprises like municipal housing firms or other public enterprises.

In actual literature authors mostly deal with adaptations of public enterprises to lower demand and higher costs caused by population decrease or measures to prevent citizens from moving to other towns and less with activities to attract inhabitants. Municipal firms are actively used as a competitive municipal instrument with their service programme, investments, fees, service conditions, etc. (Brede 2007; Eichhorn 2007; Gottschalk 2007; Jenkis 2007; Milbradt 2007)¹¹.

A higher output V of a municipal firm accompanies (see Figure 11) a higher attractiveness for inhabitants X . The municipality may pursue some profit transfer from the firm or to achieve cost coverage. The public enterprise faces a demand curve for its services and it considers costs. The management of the public firm possesses a utility function, which refers to the output V produced and the labour input L . If the municipality wants – as in Germany normally required by law – to achieve at least

¹¹ A municipality may use a **public enterprise** to attract inhabitants, e.g. a housing firm, a public utility, a transportation firm or a cultural enterprise such as a theatre, a leisure firm such as a sports park, or a zoo.

cost coverage, the town performs the highest output V_X without loss of the public firm as shown in Figure 11.

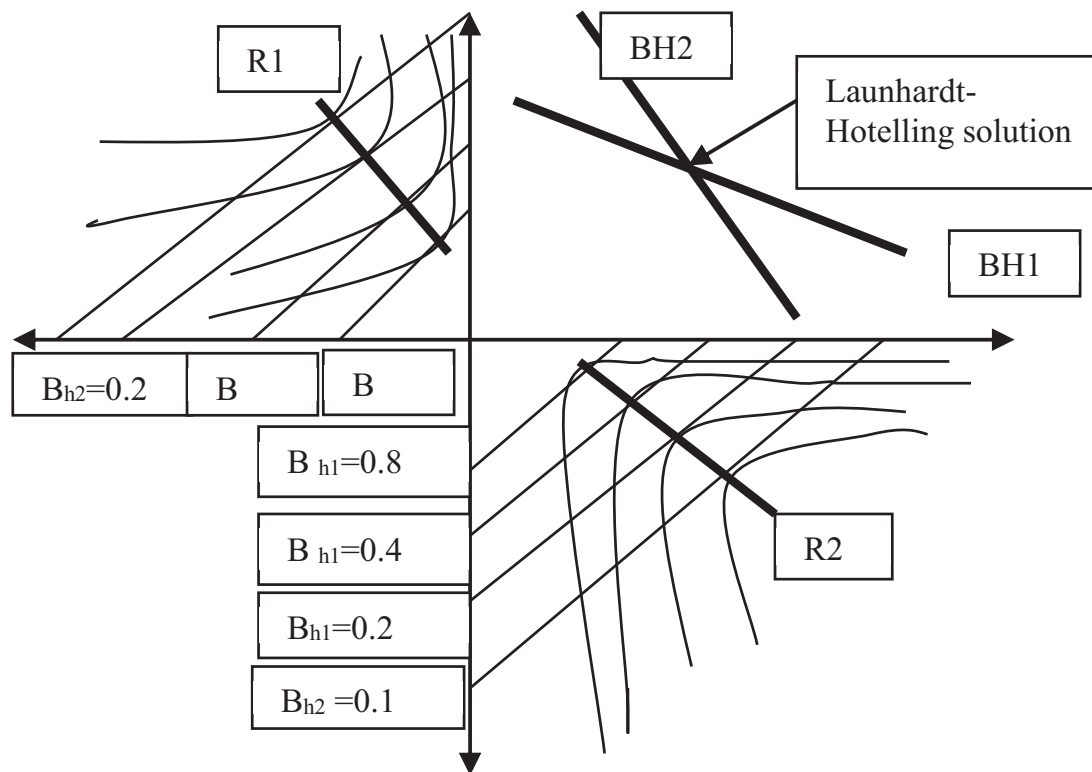


Figure 9: Launhardt-Hotelling solution of housing zoning competition for inhabitants

Source: Author's compilation

The thick curve in the right hand quadrant shows all possible output-labour-combinations that can be produced at cost coverage. The space within the thick curve shows such combinations that lead to profits. If the management maximises output, (utility $(V) \rightarrow \max$) then the thick dotted line shows an indifference curve of the management. The solution is with V_X and the price is P_X . Both municipality and management attract as many inhabitants as possible. However, the management may also evaluate the output V and the labour L positively. Then, the indifference curve of the management is not parallel to the L -axis. The output V_M and price P_M results. If the management maximises labour, this results in V_L and price P_L . If the management dislikes output, but prefers high employment at the same time, one obtains the output V_W and the price P_W .

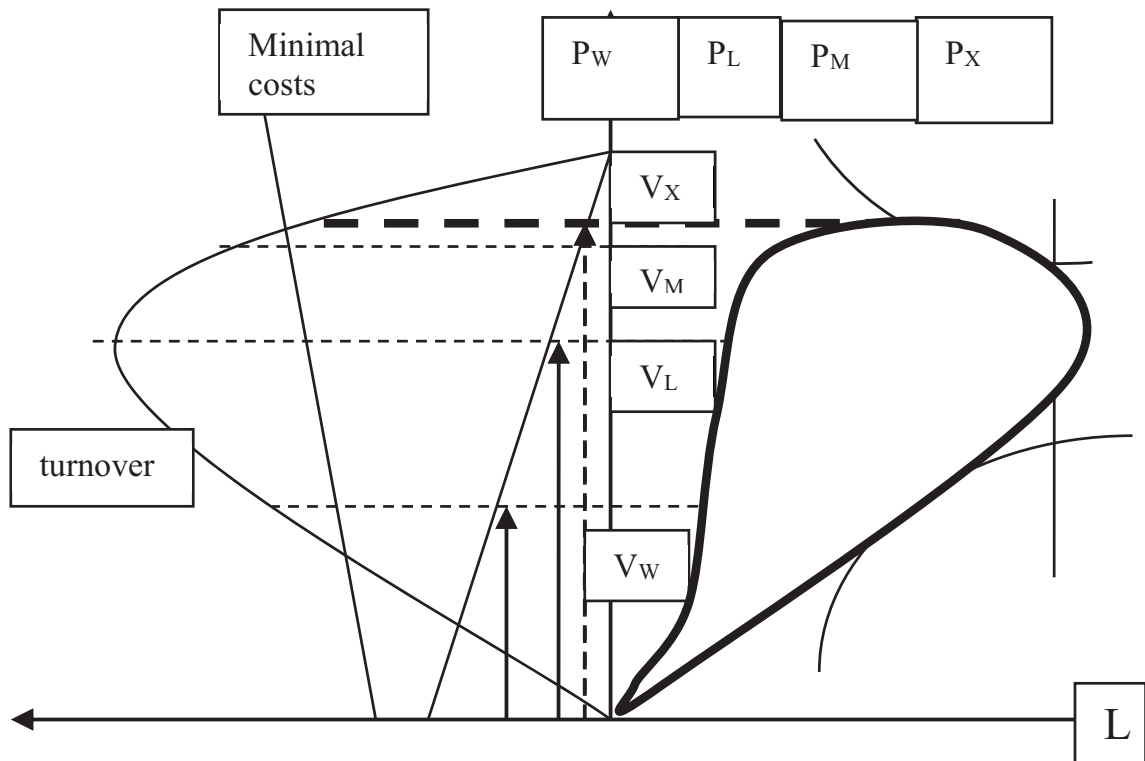


Figure 10: Inhabitants attraction by fees

Source: Author's compilation

The competition for inhabitants by **municipal enterprises** may be shown in an **oligopolistic context by establishment** of public firms **or by fee policy** of competing municipalities. Using fees as instrument of competition the solutions shows results depicted in Figure 20. The output delivered by municipal enterprise of municipality 1 depends on its own fee and that of the competing municipal enterprise 2. This condition prevails although for enterprise 2. Therefore, a sequence of optimal price settings according to the cost coverage condition and the utility function of the management of the enterprises follow for given prices of the competitor. They can be transmitted into a P_1, P_2 diagram. If both competitors act autonomously the crossing points of the transmitted “response curves” show the referring **Launhardt-Hotelling solutions**. The highest output is achieved and a best number of inhabitants are achieved where the V_X response lines cross. The worst situation of this competition is where the V_W response lines cross. There are 14 other solutions leading to different inhabitant attractions.

This model assumes cost coverage policy of the municipalities, if the municipalities vary the cost coverage conditions in the direction of **profits** to be realised by the public enterprises then the response curves of the X, M, and L type move outwards in the P_1, P_2 diagram and that of the W type shifts inwards. Then, the possibilities of inhabitant attractions by public enterprise competition become less with the first three management types. If the municipalities allow for losses the reverse development can be expected. Even a change of managers in order to hire X-type managers can intensify the inhabitant competition activities.

An important competitive parameter is the establishment of **public agencies** for inhabitants' advertisement and attraction to recommend the core city as place for living and working. It also has a function in city politics as it always points to the importance of the inhabitants' development and proposes and develops measures to attract inhabitants. A city might concentrate on the settlement of rich older pensioners by developing special surroundings and environment, by promoting health services and sports fields and pools for elderly people, by promoting special public transport, and by promoting industries that takes advantage of older but highly qualified labour. A city might try to attract such inhabitants to decrease integration costs. Other cities try to attract students and youngsters who will later create new firms in the core city although losing some to the first or second ring communities.

III. Forms of Inhabitant Competition

The competition for inhabitants related to **suburbanisation processes** often leads to a three ring development (Mönnich 2007), such as around Tallinn (see Figure 3). Various reasons like rising income of people active in service industries, changing social behaviour to individualism, decreasing number of children and family size, influx of people from overseas, higher environmental desires, etc. increase the demand for living space in the core city. This demand is considered by developers and construction firms and supported by privatization of municipally or sale of cooperatively owned houses. As a result, land prices and rents increase. Many citizens and families start to look for a residence outside the city. There, new housing areas develop. In addition, those industries not closely linked to the CBD start to move to the surrounding villages and towns.

The **core city** loses inhabitants. The influx of newcomers from the countryside or other regions, mostly families with no children, does not compensate the losses in particular if a nationwide population stagnation or decrease takes place. People from overseas with low incomes and low demand for comfort migrate to the core city causing integration problems, which lead to further moves of the native population out of the core city. In particular, those families with children try to move. Location price sensitive business leaves too and retailers serving the new inhabitants settle in surrounding communities belonging to two rings. A **three ring structure** develops consisting of the core city, the first ring towns and the second ring communities. In the **first ring** the housing areas develop as people from the core town settle there. As the settlement density is not high and existing reserves of real estate in already existing housing zones there is space available. The land prices and rents are lower than in the core city and the construction of near home infrastructure is not very expensive. Part of the basic infrastructure is already available and the infrastructure of the core city can be used as well. If the process continues some citizens from the core city and the first ring towns move to towns of the **next ring**, where again real estate prices and land rents are cheaper as long as the additional costs in money and time of reaching the core city do not compensate these advantages.

The **core city** suffers from the loss of inhabitants by losing shares of income taxes and of business tax, by a tendency towards reduction of block grants, which are linked to population sizes, from losses of purpose grants for investments, from lower turnovers from fees, and less contributions from landlords and developers, etc. (Mönnich 2007). Moreover, there are increases of expenditures because of overhead costs of old infrastructure growing with the reduction of inhabitants (Jenkis 2007; Gottschalk 2007). New expenses stem from development and subsidisation of housing areas in the core city, the new infrastructure there, and expenses for infrastructure for theatres, traffic, and other non-cost covering activities provided by the core city. Integration costs for the city, and new interest payments for credits, expenses for social assistance and assistance in case of unemployment, pensions for public officials, etc. lead to further expenses. The fiscal net effect is mostly negative. One expects a

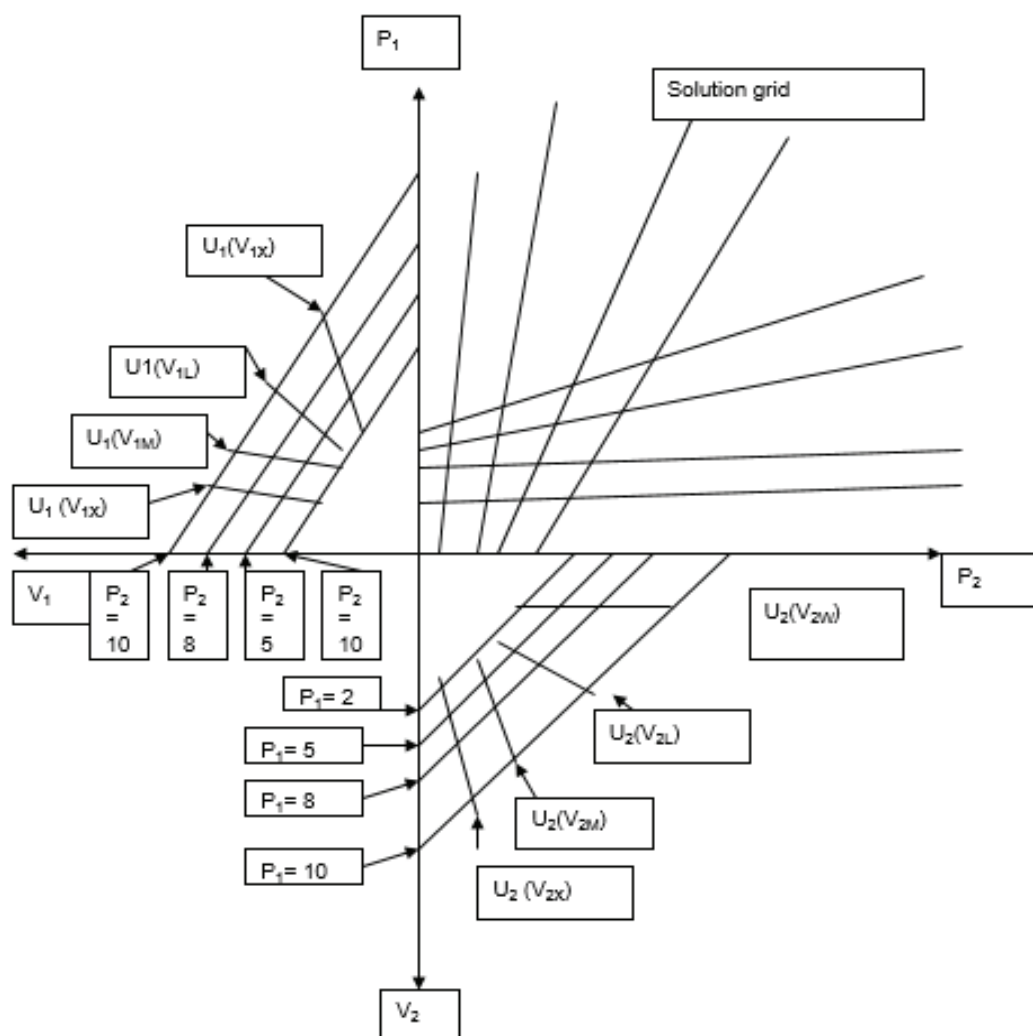


Figure 11: Competition duopoly to attract inhabitant through fee policy
Source: Authors compilation.

loss of about 3,000 to 5,000 euros per emigrating inhabitant for the city of Bremen (Mönnich 2007; Grötter 2013). The resulting budget deficit has to be financed by

public debt. Therefore, those core cities show not only falling numbers of inhabitants, but also increasing debts. In the surrounding towns, especially in the beginning of the development, the revenues of the towns increase more than the additional expenses. Their budget situation improves and there is a tendency towards budget surpluses or lower budget deficits. However, if the first ring towns also have to improve their infrastructure for kindergartens, primary schools, sports, roads, internet connections, pre-services of public utilities, the expenditures are increasing as well and budget deficits develop too although not as extreme as in the core city. The communities of the third ring gain in fiscal terms, which are experiencing budget surpluses or reduced deficits. The inhabitant competition is related to competition for public debts. However, these developments due to suburbanisation may become all negative with respect to population, if the overall national population shrinks drastically and the composition of the population change dramatically, as is happening in some European countries and might happen in Estonia in future as well.

Different patterns of inhabitant competition result from the first policy and the second one too. With the second, a city might consider reactions by the competing towns. The reactions of competitors, which compete by **relevant expenditures** to attract citizens, is tackled by Bartholomae and Popescu (2007), not differing between zoning, long-term and short-term competition. This is a competition for migrants from other regions or to prevent citizens from moving to other municipalities. It can be region-wide, nationwide or worldwide. Apart from expenditures, there might be other long-term parameters of actions as to provide special social conditions such as religious tolerance, political freedom, peace, the possibility to develop and populate new land, the decline in other regions, etc.

Other parameters of competition can be activated, especially **revenue parameters**, which can be applied according to principles of public finance. The principle of **fiscal equivalence** requires that the municipality should finance as until the marginal social benefits from migration equal the marginal social costs (Olson 1969; Postlep 1993; Zimmermann 1999). The **voting by feet**, by exit or Tiebout policy with respect to revenues implies taxation or another mode of finance, which opens a positive fiscal gap for citizens at the respective municipality to induce migrants from other communities and regions to come. Municipalities must have enough fiscal autonomy or they should receive special purpose grants or they are allowed to provide special subsidies in the course of regional policy of a higher rank jurisdiction or using intergovernmental regulation rules. There can be a tax rate or taxation competition if municipalities have enough fiscal autonomy. Then, the competition may lead to low tax revenues and financial restrictions causing an under-provision with public services (Sinn 1997)¹². The sale of municipal property or transfer of municipal property to settle migrants can be used as well. Sales models of real estate can be developed (Friedrich, Reiljan 2014). There might be also competition for public debts to allow to finance habitants' relevant expenditures and to keep the tax or fee load low for inhabitants and incoming migrants. The long-term problematic is that amortization

¹² There might occur a partly correction through the lowering of the fiscal gap.

load is with a smaller number of citizens, however, those municipalities winning in competition might have comparatively more inhabitants sometimes resulting in a not so high load per capita. It has to be discussed how the applications of **principles of fiscal federalism** touch the migration activities such as subsidiarity principle to allocate a task to municipalities, e.g. local population policy might be a task and financed by municipalities. The connexity principle to avoid unfunded mandates (Friedrich, Reliant 2014) deals with national population policies as far as municipalities become involved. The solidarity principle is for mutual assistance of municipalities and jurisdictions. Its application should ease the consequences of population decrease by redistribution of resources among municipalities, thus reducing the strength of inhabitants' competition. This leads also to the application of principles of intergovernmental fiscal relation and allocation of tasks and autonomy to different jurisdictions (Zimmermann 1983; Schaltegger, Frey 2003). For single measures concerning revenues the application of principles of taxation are to be questioned such as generality of taxation (Wagner 1890), the principle of coverage of expenses (Neumark 1970), the ability to pay principle (Musgrave 1959) and the benefit principle (Musgrave 1959; Neumark 1970). The latter principles are seldom followed in population competition as they are mostly oriented to solutions to maximise individual utilities of citizens. The appropriate competitive actions may constitute long-term (like zoning) or single measures.

IV. Policies to Influence Inhabitant Competition

The discussion of inhabitants' competition also points to the question how to regulate the inhabitant competition. This competition tends to be ruinous as in the short run no competitors leave the competition as municipalities do not disappear easily. However, some of their resources such as real estate do not easily leave the "market". In a country there might a rule of **minimum number of inhabitants** for municipalities exist, but normally a law is needed that a municipality and its organs disappear or that municipalities merge on a compulsory or enforced basis. Ruinous competition conditions also stem from high fixed costs of infrastructure equipment and possibilities of economics of scale with increasing number of inhabitants. (Munich 2007). This occurs with a shrinking number of inhabitants to higher **per capita infrastructure costs** and enforced inhabitant competition. A central place model shows that under conditions of shrinking population (Feng, Yang 2007), without an influx of population from abroad that as long as the inhabitant decrease is small, the big centres will gain and small centres will lose. If the population decrease becomes drastic the big centres have high fixed costs and inhabitants and firms are moving to smaller centres.

As mentioned above, cities act against this development by zoning, city renewal, infrastructure enlargement and activities by municipal firms and attraction of migrants from abroad. This enforces the fiscal stress of cities and increases integration problems and drives the middle income native citizens with middle sized incomes to leave the city even faster.

Planning measures introduced by higher rank governments may influence **zoning and regional planning** through the authorisation of land use plans or projects. The rules for these policies must comply with borders of different jurisdictions, their autonomy and their competences. A majority of voters in non-core centres and the influence of interest groups (Gatzweiler, Meyer, Milbert 2003) influence the formulation of regional policies of higher rank governments and the actions of non-core counties and municipalities. Such situations enforce the competition for inhabitants.

Newly introduced debt breaks for governments hinder municipal population policy as the debt finance becomes further restricted. Sometimes there are proposals to change the **intergovernmental fiscal relations** in a country. The block grants are related to inhabitants as fiscal need indicator depends on the inhabitant size. Fiscal capacity indicators correspond to receipts from municipal tax revenues and municipal revenues in shared taxes such as income tax in Estonia and Germany. Core cities would gain if the need indicators would be oriented more to integration problems and infrastructure capacities (Friedrich, Reiljan 2010), e.g. to the centrality of a place. Intergovernmental redistribution possibilities also depend on how long a shrinking population allows economic growth and higher revenues. Levies of special duties on construction land are discussed to support municipalities.

A policy and codification of laws for **merger of municipalities** enforces the degree of competition even more in the short run. After the core city has incorporated at least the first ring municipalities its situation may improve. However, many times the core city guarantees the incorporated municipalities part of their infrastructure in such a way that imbalances are not easily become reduced in future. At least an improvement for competition using the business promotion policies seems to improve the chances. Thus resulting solutions depend on the prevailing institutional, fiscal, economic and social circumstances and the merger laws.

The **compulsory merger of municipalities** is not easy to arrange as municipalities need a win-win situation from the merger, which in suburbanisation between the core city and the first ring town is seldom the case. A higher government might offer the municipalities many fiscal and other advantages such as infrastructure improvements to enable them win-win situations. With a compulsory merger in Estonia in some cases the fiscal results of the mergers do not look very promising (Reiljan, Jaansoo, Ülper 2013).

Public purpose associations are more successful. They can be established as FOCJ (Functional Overlapping Competing Jurisdictions) for population policy purposes (Friedrich, Popescu 2005, 2006) or public purpose associations for special infrastructure services such as transportation, water provision, cultural services, etc. There are also some for business promotion, e.g. the planning association of Halle/Leipzig (Friedrich, Nam 2013). The public purpose infrastructure associations serve to achieve cheaper provision solutions and touch more indirectly the inhabitant competition. Public Planning Associations are more directed to joint development and

also population policy, in form of a district – like the “Region Hannover” – that shows competences switched partly from the member municipalities to the new municipal jurisdictions. Some tasks are coordinative with respect to the member municipalities and for others the region is fully responsible¹³. The region has an influence on the regional planning, zoning, and many parameters of business promotion and infrastructure, thus partly regulating the inhabitant competition of the member municipalities. Therefore, the competition between core city and ring municipalities becomes regulated and coordinated. However, the competition with municipalities outside the region and with other metropolitan regions becomes even fiercer.

In general, the attempts to regulate competition for inhabitants must be embedded in an **active population policy** at all levels of government to increase the birth rate, to reduce the brain drain, to improve education and to steer the integration processes in order to maintain the native population, to enable the survival of the national states and the European Union as well as to stand the population pressure from overseas.

V. Summary

Estonia has experienced a **decrease of population** due to various reasons such as political shocks, transformation times, and changing economic conditions, change of social values with respect to family and children and emigration. After Estonian independence one can distinguish a break-down phase with a severe population, an adaptation with a population decrease and a smaller shrinking during the recovery phase. The population is expected to shrink from 1.35 million to about 1.12 million. Many municipalities lost inhabitants especially in the north-west of Estonia, in central Estonia, in southern Estonia and on the islands. Suburbanisation processes take place and core cities become surrounded by a first ring and a second ring municipality development. This happens especially around Tallinn and partly around Tartu. Commuting increases and a **fierce competition for inhabitants** among municipalities develops.

Inhabitant competition is part of **regional competition** with its features of horizontal, vertical, microeconomic and macroeconomic features. It can be characterised by a workable competition concept that highlights the competition structure, the competition processes and the competition result of competition for inhabitants. Two different mainstreams of competition are mainly considered. One is a **policy to promote business** to gain indirectly inhabitants and the other **policy is to attract inhabitants directly** in various ways. In both competition types **zoning** or long-term measures play a role, the establishment of agencies for business promotion, industrial parks or city advertising, and **negotiations** with settlement firms, measures of municipal enterprises and attraction measures of municipalities, etc. to increase population. The results of the policies might induce **revisions of zonings**, plans, etc.

¹³ Tasks of the region are in the field of transportation, health, general and vocational education, business promotion, security, environment, construction, real estate management, finances, IT management, contacts to the EU, etc.

Business promotion policy by zoning shows oligopolistic competition with other municipalities. In policies of negotiations with settlement firms mostly monopsonistic situations or bilateral monopolies prevail. An **industrial oligopolistic zoning model** by Lindemann (1999) shows that with autonomous behaviour of municipalities in zoning, the industrial zones are planned too large. The model allows determining changes in zoning if land demand, factor prices change and productivities vary. If the population decreases the industrial zones are planned smaller.

A **game-theoretic example** is used to show the influence of vertical competition on the horizontal business promotion zoning competition. The zonings have to be approved by a higher rank government that possesses a preference order related to possible zonings referring to science parks, high-tech parks, industrial parks and business parks, which the municipalities are free to plan. The different types of parks are related to different increases of municipal population. There are two competing municipalities. The higher government applies a subsidisation scheme. Solutions are evolved if the municipalities want to maximise grants, the income, employment, the number of additional inhabitants and the number of additional voters voting for the respective municipal government in power. The solution if only one park is allowed to be established is the most preferred by the higher government. If two parks are allowed the municipalities - choose according to the inhabitant effects they expect - different ones. The solutions change depending on which party is in power in the two municipalities.

A **bilateral model of settlement negotiation** between a business promotion agency of a town and a potential settlement firm shows the settlement solution from business promotion. It allows detecting effects on the negotiations and settlement contract, if the population increases and decreases, and it shows the contract effects if the municipality develops higher priority for more inhabitants. Extensions of the model include further horizontal competition with other municipalities. The firms are going to exploit the municipalities. Those with a larger population tend to win the competition more easily, if all other conditions are given.

With respect to direct inhabitant attraction an **oligopoly zoning model**, e.g. for housing, is introduced too. A Launhardt-Hotelling solution of inhabitants' attraction by zoning is determined. Other assumptions on behaviour of the municipalities in oligopolistic competitions lead to differing solutions. Similar approaches to include inhabitants' competition can be developed for long-term infrastructure planning. Tiebout models are applicable as well. A **model of delivery by public enterprise** shows how municipal firms can be used to attract inhabitants and stresses the role of management of those firms to shape the attraction policy. The model allows also expressing the vertical influence of municipality on the management in favour of inhabitants' attraction. The influence of horizontal inhabitant competition by public firms is elaborated. It leads to many different oligopoly solutions. Inhabitant competition in suburbanisation processes leads to a competition for public **debts**. Other forms of inhabitant competition concern the use of **expenditure**

parameters in oligopoly situations and in Tiebout models. Further forms lead to tax competition and to other forms refer of **revenue competition** like fee competition.

As inhabitant competition leads to ruinous competition, **regulation of inhabitants' competition** becomes important. Interference in infrastructure planning and zoning, regional policy, changes of intergovernmental fiscal relations, merger of municipalities by law, compulsory merger of municipalities, the establishment of functional overlapping competing jurisdictions – FOCJ – and special public purpose associations are means to regulate inhabitants' competition. Above all, an active population policy at all levels of government to increase the birth rate, to reduce the brain drain, to improve education and to steer the integration processes should reduce ruinous inhabitants' competition and stabilize European countries and Estonia.

References

1. **Ahas, R., Silm, S., Leetmaa, K., Tammaru, T., Saluveer, E., Järv, O., Aasa, A., Tiru, M. (2010)**, Regionaalne Pendelrändeuring. Lõpparuanne, Tartu.
2. **Anniste, K., Tammaru, T., Pungas, E., Paas T. (2012)**, Emigration after EU enlargement: Was there a brain drain effect in the case of Estonia? Tartu University FEBA Working Paper No. 87.
3. **Bartholomae, F, Popescu, A. (2007)**, Regionen im Wettbewerb um Bevölkerung, in: Infrastrukturprobleme bei Bevölkerungsrückgang, Feng, X., Popescu A., (eds.), Berlin, pp. 251–276: Berliner Wissenschafts-Verlag.
4. **Batey, P., Friedrich, P. (2000)**, Aspects of Regional Competition, in: P. Batey, P. Friedrich, (eds.), Regional Competition, Heidelberg 2000, pp. 3–33: Springer.
5. **Blume, L. (2003)**, Kommunen im Standortwettbewerb, Baden-Baden: Nomos.
6. **Brede, H. (2007)**, Anpassungsstrategien kommunaler Infrastrukturbetriebe an gesunkene Bevölkerungszahlen, in: FOCJ als Mittel regionaler Kooperation, in: Infrastrukturprobleme bei Bevölkerungsrückgang, Feng, X., Popescu A., (eds.), Berlin, pp. 65–73: Berliner Wissenschafts-Verlag.
7. **Buhr, W., Friedrich, P. (1978)**, Wichtige Aspekte der Konkurrenz zwischen kleinen Regionen, in: Konkurrenz zwischen kleinen Regionen, Competition among Small Regions, W. Buhr, P.Friedrich, (ed.), Baden-Baden, pp. 11–39: Nomos.
8. **Clark, J. M. (1940)**, Toward a Concept of Workable Competition, The American Economic Review, Vol. 30(2), pp. 241–256.
9. **Cox, W. (2014)**, International Shrinking Cities: Analysis, Classification, and Prospects, in: H. W. Richardson, Ch. W. Nam (eds.), Shrinking Cities, A Global Perspective, New York 2014, pp. 11–27: Routledge.
10. **Eichhorn, P. (2007)**, Demographischer Wandel als Herausforderung für kommunale Unternehmen in Deutschland, in: Infrastrukturprobleme bei Bevölkerungsrückgang, Feng, X., Popescu A., (eds.), Berlin, pp. 65–73: Berliner Wissenschafts-Verlag.

11. Eurostat (2013), EUROPOP (2010) Database, Available at <http://epp.eurostat.ec.europa.eu/portal/page/portal/population/data/database>.
12. Feng, X. (1998), Die chinesische "Treuhandanstalt" Ein Instrument für die Umwandlung des Wirtschaftssystems in der Volksrepublik China, Baden-Baden: Nomos.
13. Feng, X., Yang, Q. (2007), Raumstrukturelle Effekte des Bevölkerungsrückgangs, in: Infrastrukturprobleme bei Bevölkerungsrückgang, Feng, X., Popescu A., (eds.), Berlin, pp. 49–64: Berliner Wissenschafts-Verlag.
14. Feng, X., Friedrich, P. (1993), Ansätze einer Theorie des Verkaufs von Treuhandvermögen an Kommunen, Jahrbuch für Sozialwissenschaft, Vol. 44, pp. 233–277.
15. Fladung, L., Friedrich, P. (2008), Finanzierung eines Wirtschaftsförderungs-FOCJ, in: FOCJ als Mittel regionaler Kooperation, F. Bartholomae, P. Friedrich, Lehrstuhl für Finanzwissenschaft, Diskussionspapier Nr. 50, München, pp. 23–47: Universität der Bundeswehr München.
16. Florida, R. (2005), The Flight of the Creative Class: The Global Competition for Talent, New York: Harper Business
17. Friedrich, P. (1976), Standorttheorie für öffentliche Verwaltungen, Baden-Baden: Nomos.
18. Friedrich, P. (1977), Modelle kommunalen Industrieansiedlungswettbewerbs, in: Über Wachstum und Wachstumslenkung, R. Funck (ed.), Karlsruher Beiträge zur Wirtschaftspolitik und Wirtschaftsforschung, Vol. 6, Karlsruhe, pp. 19–90: Technische Universität Karlsruhe.
19. Friedrich, P. (1986), Regional Competition under Stagnation, in: Fiscal Decentralization, P., Friedrich, P. van Rompuy, Baden-Baden 1986, pp. 85–133: Nomos.
20. Friedrich, P. (1987), Ausrichtung der Preisbildung öffentlicher Unternehmen am Grenzkostenpreisprinzip bei differierenden Marktformen, in: Grenzkostenpreisbildung öffentlicher Unternehmen, GÖWG, (ed.), Schriftenreihe der Gesellschaft für öffentliche Wirtschaft und Gemeinwirtschaft, Heft 16, Berlin, pp. 90–129: Nomos.
21. Friedrich, P. (2002), Functional, Overlapping, Competing, Jurisdictions-FOCJ – An Instrument of Regional Competition, in: Urban Regions: Governing Interacting Economic, Housing, and Transport Systems Development, J. van Dijk, P. Elhorst, J. Oosterhaven, E. Wever, Nederlandse Geografische Studies, No. 303, pp. 237-263.
22. Friedrich, P. (2009), Grenzen der Kommunalwirtschaft aus der Sicht der Volkswirtschaftslehre, in: Neue Grenzen städtischer Wirtschaftstätigkeit, Ausweitung versus Abbau, P. Haug, (ed.), Schriften des Instituts für Wirtschaftsforschung Halle, Baden-Baden 2009, pp. 15–44: Nomos.
23. Friedrich, P., Lindemann St. (1993), Die Treuhandanstalt ein Instrument zum Aufbau des Föderalismus?, in: Finanzierungsprobleme der deutschen Einheit I. Die Treuhandanstalt ein Instrument zum Aufbau des Föderalismus?, in: Finanzierungsprobleme der deutschen Einheit I, H. Hansmeyer (ed.), Berlin, pp. 77–174: Duncker und Humblot.

24. **Friedrich, P., Nam Ch. W. (2013)**, Innovation-oriented Land-use Policy at the Sub-national Level: Case Study Germany, in: *Studies in Regional Science*, Vol. 43, No. 2, pp. 223–242.
25. **Friedrich, P., Popescu A. (2005)**, FOCJ als Instrument der Bevölkerungspolitik, in: *Seminarbericht 48, Gesellschaft für Regionalforschung*, (ed.), Heidelberg, pp. 143–159: GFR Heidelberg.
26. **Friedrich, P., Popescu A. (2006)**, FOCJ as Institution of Population Policy, in: *New Members – New Challenges for the European Regional Development Policy*, T. Markowski, M. Turala, (Eds.), Warsaw, pp. 228–242: Polish Academy of Sciences.
27. **Friedrich, P., Reiljan, J. (2014)**, The Unfunded Mandates in Local Governments Financing Crises Experiences from Estonia, *CES-ifo*, Vol. (in print).
28. **Friedrich, P., Nam, Ch., Reiljan (2010)**, Local Fiscal Equalization in Estonia: Is a Reform Necessary? *Review of Urban and Regional Development Studies*, Vol. 22, pp. 165–180.
29. **Friedrich, P., Ülpers, A., Ukrainski, K. (2014)**, Shrinking Cities and Processes in Estonia, in: H. W. Richardson, Ch. W. Nam (eds.), *Shrinking Cities, A Global Perspective*, New York, pp. 119–137: Routledge.
30. **Gatzweiler, H.-P., Meyer, K., Milbert, A. (2003)**, Schrumpfende Städte in Deutschland? Fakten und Trends, *Informationen zur Raumentwicklung*, Vol. 10/11, pp. 557–574.
31. **Gottschalk, W. (2007)**, Die kommunale Energiewirtschaft unter Bedingungen der Liberalisierung und des Bevölkerungsrückgangs, in: *Infrastrukturprobleme bei Bevölkerungsrückgang*, Feng, X., Popescu A., (eds.), Berlin, pp. 185–195: Berliner Wissenschafts-Verlag.
32. **Grötker, R. (2013)**, Arm und reich, Brand ein Wissens, in: <http://ww.brandeis.de/wissen/neuland/land-bremen/arm-und-reich/html> (latest access 20.7.2014).
33. **Hermenier, H. (2009)**, Sub-national Governments in the European Union: Organization, Responsibilities, and Finance, in: *Balancing Democracy, Identity and Efficiency*, Council of European Municipalities and Regions, (ed.), Brussels, pp. 4–7: ECMR.
34. **Hospers, G.-J. (2014)**, **Urban Shrinkage in the EU**, in: H. W. Richardson, Ch. W. Nam (eds.), *Shrinking Cities, A Global Perspective*, New York, pp. 47–58: Routledge.
35. **Jenkis, H. (2007)**, Die alternde und schrumpfende Bevölkerung ein städtebauliches Problem, in: *Infrastrukturprobleme bei Bevölkerungsrückgang*, Feng, X., Popescu A., (eds.), Berlin, pp.161–184: Berliner Wissenschafts-Verlag.
36. **Josselin, J.-M., Marciano, A. (2004)**, Federalism and Subsidiarity in National and International Contexts; *Handbook of Public Finance*, J.G. Backhaus, R.E. Wagner, (eds.), Heidelberg: Springer.
37. **Kantzenbach, E. (1966)**, *Die Funktionsfähigkeit des Wettbewerbs*, Göttingen 1966: Vandenhoeck und Ruprecht.

38. **Krelle, W. (1961)**, Preistheorie, Tübingen und Zürich 1961: Mohr und Polygraphischer Verlag.
39. **Lindemann, St., (1999)**, Theorie und Empirie der regionalen Wirtschaftsförderung, Baden-Baden: Nomos.
40. **Lindemann, St., Friedrich P. (2000)**, A Two-levelled Approach to Municipal Competition, in E. Bojar, (ed.), Competition and Coexistence in the Process of European Integration, Warsaw, pp.99–126: Polish Scientific Publishers PWN.
41. **Milbradt, G. (2007)**, Der demographische Wandel als politische Herausforderung- Das Beispiel des Freistaats Sachsen, in: Infrastrukturprobleme bei Bevölkerungsrückgang, X. Feng, A. Popescu, (eds.), Berlin, pp.75–89: Berliner Wissenschafts-Verlag.
42. **Mönnich, E. (2005)**, Wissenschaftliche Beiträge - Ruinöse Einwohnerkonkurrenz - Eine Analyse von Suburbanisierungsproblemen am Beispiel der Region Bremen, Raumforschung und Raumordnung, Vol. 63, pp. 32–46.
43. **Mönnich E. (2007)**, Einwohnerkonkurrenz bis zum Ruin? Folgen der Suburbanisierung am Beispiel der Region Bremen, in: X. Feng, A. Popescu (eds.), Infrastrukturprobleme bei Bevölkerungsrückgang, Berlin, pp. 277–300: Berliner Wissenschaftsverlag.
44. **Musgrave, R. (1959)**, The Theory of Public Finance: A Study in Public Economy, New York: McGraw-Hill.
45. **Nam, CH.W., Richardson, H.W. (2014)**, **Shrinking Cities**, in: H. W. Richardson, Ch. W. Nam (eds.), Shrinking Cities, A Global Perspective,,: New York, pp. 1–7: Routledge.
46. **Neumark, F. (1970)**, Grundsätze gerechter und ökonomisch rationaler Steuerpolitik, Tübingen : Mohr.
47. **Nõmmik, S. (1979)**, Eesti NSV majandusgeograafia, Tallinn: Valgus.
48. **Olm (2011)**, Wenn Städte um Bürger buhlen, in: Immobilien, Stuttgarter Zeitung vom 30.4.2011, www.Reschl_heochele.de//Auszug_aus_der_Stuttgarter_Zeitung_30.4.2011_30.April_2011pdf (latest access 1.7.2014).
49. **Olson, M. (1969)**, The Principle of Fiscal Equivalence, The division of responsibilities among different Levels of Governments, The American Economic Review, Vol. 59, pp. 479–487.
50. **Ott, A.E. (1986)**, Grundzüge der Preistheorie, Göttingen: Van den Hoek and Rupprecht.
51. **Postlep, R.-D. (1993)**, Gesamtwirtschaftliche Analyse kommunaler Finanzpolitik, Baden-Baden: Nomos.
52. **Preuß, Th. (2009)**, Was kostet ein Baugebiet, Infrastrukturelle Folgekosten der Siedlungsentwicklung im Bereich Wohnen, Wissenschaft und Umwelt, Vol. 12, pp. 31–40.
53. **Reiljan, J., Jaansoo, A., Ülper, A. (2013)**, The Impact of Amalgamation on the Financial Sustainability of Municipalities in Estonia, Public Finance and Management, Vol. 13, pp.167–194.

54. **Schaltegger, Ch., Frey, R. (2003)**, Finanzausgleich und Föderalismus: Zur Neugestaltung der föderalen Finanzbeziehungen am Beispiel der Schweiz, in: Perspektiven der Wirtschaftspolitik, Vol. 4, pp. 239–258.
55. **Sinn, H.-W. (1997)**, How much Europe? Subsidiarity, Centralisation and Fiscal Competition, Scottish Journal of Political Economy, 1994, Vol. 41, pp. 85–107.
56. **Soosaar, O. (2005)**, Estonian Population and Employment Projection for the Next Half Century, Kroon and Economy, No. 2, pp. 5–14.
57. **Stevens, A. (2014)**, Mayors in Europe, City Mayors Government, London: http://www.city_mayors.com/government/Europe_mayors.html (last access 13.8.2014).
58. **Tiebout, C. (1956)**, A Pure Theory of Local Expenditures, [Journal of Political Economy](#), Vol. 64, pp. 416–424.
59. **Varian, H.R. (2010)**, Intermediate Microeconomics, A Modern Approach, Eighth Edition, New York, London: Norton & Company.
60. **Wagner, A. (1890)**, Finanzwissenschaft, Zweiter Teil, Theorie der Besteuerung, Gebührenlehre und allgemeine Steuerlehre, second edition, Leipzig: C.F. Winter.
61. **Wimmert, W. (2011)**, Wirkungen des Bevölkerungsrückgangs auf die offizielle Wirtschaft und die Schattenwirtschaft Wirkungen des Bevölkerungsrückgangs auf die offizielle Wirtschaft und die Schattenwirtschaft, Berlin: Deutscher Wissenschaftsverlag.
62. **Zimmermann, H. (1983)**, Allgemeine Probleme und Methoden des Finanzausgleichs, in: Handbuch der Finanzwissenschaft, F. Neumark (ed.), Tübingen, pp. 3–52: Mohr.
63. **Zimmermann, H. (1999)**, Kommunal финанzen, Baden-Baden 1999: Nomos.

KOMMUNALE KONKURRENZ UM EINWOHNER BEI BEVÖLKERUNGSRÜCKGANG

Peter Friedrich¹

I. Die Bevölkerungsentwicklung Estlands

Auch für Estland wird mit einem **Bevölkerungsrückgang** gerechnet. Ein Basisszenario von Eurostat geht von einem Rückgang von 1.315.819 Einwohnern auf 1.121.144 Einwohner aus. Die vergangene Bevölkerungsentwicklung wurde besonders vom zweiten Weltkrieg geprägt, der zu Umsiedlungen, Flüchtlingsströmen, Deportationen sowie Ansiedlungen aus der Sowjetunion führte. Nach der Erlangung der neuerlichen Unabhängigkeit folgte eine **Zusammenbruchsphase** für die Bevölkerung und die Wirtschaft (1991-1996), eine **Anpassungsphase** (1997-2001) und eine **Erholungsphase** (2002-2012). Nach dem Krieg wuchs die Bevölkerung aufgrund der Zuwanderungen im Zuge der Sowjetisierung, der sowjetischen Industrialisierung, und der sowjetischen Urbanisierung. Es entstanden Gebiete und Kommunen mit russischsprachiger Bevölkerung. Die Städte Tallin und Tartu gewannen an Bedeutung im System zentraler Orte. Während der Zusammenbruchsphase hatten Mitglieder der russischen Minderheit das Land verlassen. Dies betraf besonders Militärstandorte. Abwanderungen aus peripheren Gebieten fanden insbesondere in der Erholungsphase nach dem EU-Beitritt statt.

Tallin, Tartu Pärnu und Narva haben während aller Phasen Einwohner verloren. Allerdings haben die in einem ersten und zweiten Ring um die drei ersten Kernstädte sich befindenden Gemeinden Einwohnerzuwächse erfahren. Die Zahl der täglich reisenden Pendler beträgt mindestens 380 000 Personen. Insbesondere in Südland, in Nord-Ost-Estland und in Zentralestland sowie auf den Inseln haben sinkende Geburtenrate, Abwanderungen und die wirtschaftlichen Umstellungen zu **Bevölkerungsverlusten** geführt. Die Mittelzentren in Agrargebieten haben besonders Bevölkerung verloren. Tallin wurde zum Servicezentrum, Tartu zum Bildungszentrum und Pärnu zur Touristikstadt.

Für die Gemeinden Estlands erlangt die lokale, nationale und auch die weltweite **Konkurrenz um Einwohner** und Talente an Bedeutung. Deshalb wird in diesem Beitrag dem Zusammenhang zwischen regionaler Konkurrenz und der Einwohnerkonkurrenz nachgegangen. Nach den Formen der Einwohnerkonkurrenz wird gefragt, Modelle zur Analyse der Einwohnerkonkurrenz erarbeitet und auf Regulierungsmöglichkeiten des Einwohnerwettbewerbs verwiesen.

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II. Einwohnerkonkurrenz im Rahmen regionaler Konkurrenz

1. Die Wirtschaftsförderungspolitik

Regionale Konkurrenz wird recht unterschiedlich definiert, aber Einwohnerkonkurrenz ist ein Teil davon und - wie erwähnt - für Estlands Gemeinden sehr wichtig. Sie findet ihren Ausdruck, zum einen in dem gemeindlichen Bemühen. Firmen und Verwaltungen anzusiedeln, um über das Angebot von Arbeitsplätzen für Einwohner attraktiv zu werden. Dies ist eine indirekte Einwohnerattrahierung, die wir als **erste Konkurrenzpolitik** bezeichnen. Eine **zweite Konkurrenzpolitik** versucht, direkt Einwohner und Talente zur Standortwahl und zum Leben in einer Gemeinde zu veranlassen.

Regionale Konkurrenz erfährt verschiedene Ausprägungen je nach dem **wer konkurriert**, z.B. Kontinente, Staaten, Gemeinden, Unternehmen, **um was konkurriert wird**, z.B. Investoren, Einnahmen, Einwohner, und **auf welche Weise** die Konkurrenz ausgetragen wird, z.B. horizontal zwischen Gemeinden, vertikal mit höheren Gebietskörperschaften, mikroökonomisch oder makroökonomisch. Hinsichtlich der ersteren Konkurrenzpolitik stehen wirtschaftsfördernde Gemeinden im Mittelpunkt, während die zweite Konkurrenzpolitik sich auf Einwohner konzentriert.

Zur Verdeutlichung dieser Politiken greifen wir auf das Konzept des „**workable competition**“ zurück, in dem die **Struktur der Konkurrenz** beschrieben wird, z.B. Anzahl der konkurrierenden Gemeinden, der **Prozess der Konkurrenz** Beachtung findet, z.B. Grad der Rivalität, und auf das **Konkurrenzresultat**, z.B. gewonnene Firmen, Anzahl von Einwohnern, abgestellt wird. Aus der Konkurrenzstruktur folgt der Konkurrenzprozess, der zu einem Konkurrenzergebnis führt.

Bezüglich der **ersten Konkurrenzpolitik** ist festzustellen, dass die **Konkurrenzstruktur** in der EU von den etwa 92700 Gemeinden geprägt wird, von denen etwa 50000 manchmal als Konkurrenten um Firmen auftreten. In Deutschland existieren über 13000 Gemeinden, von denen etwa 8000 Wirtschaftsförderung gezielt betreiben. Allerdings ist die Zahl der industriellen Ansiedlungsunternehmen mit über 25 Arbeitsplätzen sehr gering. Der **Konkurrenzprozess** betrifft in einer ersten Phase die Bauleitplanung, und die Bildung von Gewerbeparks. Ferner folgt der Einsatz von Verhandlungsparametern, z.B. Grundstücksverkäufe, in der Phase der **Ansiedlungsverhandlungsphase**. Der Konkurrenzserfolg betrifft, z.B. Einkommenserhöhungen, Arbeitsplätze zuziehende Einwohner. Je nach Konkurrenzserfolg findet eine Revision der Bauleitplanung in einer **dritten Phase** des Konkurrenzprozesses statt.

Die **Form der Konkurrenz** ist in der Bauleitplanung oligopolistisch zu anderen Gemeinden. In der Verhandlungsphase herrschen meist bilaterale Monopole und Monopsonie vor.

Ein **Oligopolmodell** zur Bauleitplanung von Lindemann (1999) zeigt zwei Gemeinden, die den Anteil von Gewerbeflächen an ihrem Territorium planen. Sie maximieren ihren Nutzen, der von der Höhe der privaten und der öffentlichen Produktion in der jeweiligen Gemeinde abhängt. Die Gemeinden finanzieren sich über Steuereinnahmen und mittels der Erlöse aus Grundstückverkäufen. Die Nachfrage nach Grundstücken hängt von den Preisen in beiden Gemeinden ab. Mögliche Ansiedlungsunternehmen maximieren ihren Gewinn. Für eine gegebene Gewerbeflächenplanung einer Gemeinde bestimmt die Konkurrenzgemeinde ihren günstigsten Gewerbeflächenanteil. Verhalten sich die Gemeinden autonom, so resultiert eine Launhardt-Hotelling Lösung. Über die Bestimmung des Arbeitseinsatzes lassen sich die erforderlichen Arbeitskräfte und Einwohner ermitteln. Die Gemeinden weisen tendenziell große Gewerbeflächen aus. Das Modell erlaubt die Bestimmung von Bauleitplanungsänderungen im horizontalen kommunalen Wettbewerb bei Änderungen von Bevölkerung, Preisen, Produktivitäten, usw.

Ferner lassen sich Beispiele für **Spiele zwischen einer übergeordneten Gebietskörperschaft**, die die Bauleitplanung und Gewerbeparks bezuschusst, **und zweier konkurrierender Gemeinden** bilden. So wird der Einfluss vertikalen Wettbewerbs verdeutlicht. Die übergeordnete Gebietskörperschaft besitzt eine Präferenzordnung bezüglich der möglichen Projekte, und sie setzt Zuschüsse oder Genehmigungen als Strategien ein, während die Gemeinden bestimmen, welches Projekt sie jeweils zur Vorlage bringen. Die Lösungen werden davon geprägt, inwiefern die übergeordnete Gebietskörperschaft ein oder zwei Projekte erlaubt, welche Präferenzen diese Gebietskörperschaft besitzt, welche Ziele die konkurrierenden Gemeinden verfolgen und welche Wirkungen die Projekte hervorrufen. Lösungen bei kommunalen Einwohnerattrahierungsabsichten werden ebenfalls aufgezeigt. Die übergeordnete Gebietskörperschaft ist nicht sicher, dass ihr die Gemeinden jene Alternative bieten, die von ihr am höchsten bewertet wird. Interessant sind insbesondere Konstellationen, bei denen politisch unterschiedlich regierte Gemeinden regierungsfreundliche oder oppositionelle Wähler erlangen können.

Zur Erläuterung der Einwohnerwirkungen und der Wirtschaftsförderungskonkurrenz in der Verhandlungsphase wird das Modell eines **bilateralen Monopols** zwischen einer Gemeinde und einem Ansiedlungsunternehmen vorgestellt. Die Gemeinde möchte ihre Einnahmen aus Steuern und Grundstückverkauf maximieren, das Unternehmen zu hohen Investitionen sowie zum Angebot vieler Arbeitsplätze über Grundstückspreisreduktionen veranlassen. Das Unternehmen maximiert seinen Gewinn. Es werden mögliche zwischen den beiden Verhandlungspartnern pareto-optimale Vertragsalternativen ermittelt. Die beiden Verhandlungspartner verlangen Mindestnutzen aus dem Ansiedlungsdeal. Sie spiegeln Opportunitätsnutzen wider, die sich für die Verhandlungspartner ergeben, wenn kein Vertrag geschlossen wird. Es resultiert ein kooperatives Spiel, bei dem eine Lösung entsprechend der Maximierung des Nashproduktes der Nutzenzuwächse gefunden wird. Man kann ermitteln, wie viele Arbeitsplätze die Gemeinde gewinnt. Bei Bevölkerungsanstieg vergrößert sich der Nutzenraum beider Verhandlungspartner. Ein Bevölkerungsrückgang mindert den

Nutzen der Vertragspartner. Gewinn für die Gemeinde die Einwohnerattrahierung an Bedeutung so sinkt der Preis des Standortgrundstückes tendenziell. Das Modell wird zum **Modell eines Monopsons** erweitert, um den Einfluss konkurrierender Gemeinden auf die Verhandlungen aufzuzeigen. Das Ansiedlungsunternehmen benutzt eine erste mögliche Vertragslösung mit einer Gemeinde, um günstigere Ansiedlungsangebote von einer konkurrierenden Gemeinde zu erhalten. Sie fordert als Mindestnutzen von der zweiten Gemeinde jenen, den es von der ersten Gemeinde bei Vertragsabschluss erhielt. Dadurch wird eine Nashlösung mit der zweiten Gemeinde erzielt, die die Lösung für das Ansiedlungsunternehmen verbessert. Eine Sequenz von Verhandlungsschritten resultiert, die endet, wenn eine Konkurrenzgemeinde auf ihren Mindestnutzen reduziert wird und die Verhandlungen beendet. Bevölkerungsrückgang verringert die Nutzenräume. Geschieht dies in unterschiedlicher Weise in den Gemeinden, so können die Konkurrenzgewinner wechseln und das Ansiedlungsunternehmen vermag einen geringeren Ansiedlungserfolg erzielen.

Makroökonomische Modelle vertikaler **fiskalpolitischer Konkurrenz** haben hingegen aufgezeigt, dass die Wahl der Konkurrenzstrategien der Gebietskörperschaften nur bei drastischen Veränderungen der Bevölkerung Variationen erfahren.

2. Direkte Einwohnerattrahierungspolitik

Für diese Politik ist ebenfalls die Phase der Bauleitplanung, eine Phase kurzfristiger laufender Konkurrenzmaßnahmen von Bedeutung. Im Rahmen der Bauleitplanung steht nun der Ausweis von Wohngebieten im Mittelpunkt. Wiederum wird ein **Bauleitplanungsmodell als Oligopol** zwischen Gemeinden skizziert. Die Gemeinden fixieren den Anteil der Wohngebiete am jeweiligen Gemeindegebiet. Sie maximieren ihren Nutzen aus dem Einwohnerzuwachs und den Einnahmen. Der Nutzen ist von der Einwohnerzahl abhängig, die mit dem Umfang des Wohngebietes einhergeht. Ferner sind mit dem Wohnflächenausweis und Flächenverkauf Einnahmen verbunden, die Nutzen stiften. Opportunitätsnutzenverluste entstehen aus entgangenen anderen Flächennutzungen. Die Verkaufspreise für Wohnflächen hängen sowohl von den Preisen, der betrachteten Gemeinde als auch von jenen in der Konkurrenzgemeinde ab. Die Gemeinden verhalten sich autonom und es entsteht eine Launhardt-Hotelling-Lösung, die wiederum eine Tendenz zu hohem Wohnflächenausweis reflektiert. Eine höhere Einwohnerdichte erhöht den Nutzen und damit auch den Ausweis von Wohngebieten. Eine Einwohnerreduktion und geringere Flächenverkäufe verringern den prozentualen Ausweis von Wohnflächen. Bei Berücksichtigung anderer Annahmen über das Verhalten der Duopolisten resultieren andere Anteile von Wohnflächen in den Gemeinden. Es lassen sich auch Situationen schildern, bei denen beide Gemeinden ihre Planungsprozentsätze nicht ändern. Andere in der Bauleitplanung zu berücksichtigende Infrastrukturprojekte, die Auswirkungen auf die Gewinnung von Einwohnern haben, werden erwähnt. Ferner

zählen dazu auch langfristig angelegte Planungen und Maßnahmen bis hin zu Steuersenkungen oder –erhöhungen.

Das **Verhandlungsmodell** ist für die Verhandlungsphase weniger relevant, da dort andere Marktformen vorherrschen, da mittels Auktionen oder unter Berücksichtigung mehrerer Käufer verkauft und verhandelt wird. Allerdings gewinnt in dieser „Verhandlungsphase“ die **Servicegestaltung seitens kommunaler Unternehmen** Bedeutung für die Gewinnung von Einwohnern. Dies mag im Rahmen familienpolitischer Maßnahmen oder der Versorgung mit anderen Infrastrukturleistungen geschehen, bei denen, z.B. Fahrpläne, Gebühren auch kürzerfristige Änderungen erfahren. Soweit sich mit erhöhten Leistungen und günstiger Gebührengestaltung Einwohner gewinnen lassen, kann ein Modell eines öffentlichen Unternehmens mit Monopolstellung hilfreich sein, um zu zeigen, wie die Wertungen des Managements einerseits und die Gewinn- und damit auch die gemeindlich bedingte Tarifpolitik die Ausbringungsmengen des öffentlichen Unternehmens und seine Einwohnerattrahierungspolitik bestimmen. Zur Einwohnergewinnung führen öffentliche Unternehmen mit einem hohen Grad an Leistungsfähigkeit und günstiger Gebührengestaltung in der Verhandlungsphase. Auch zwischen diesen Gemeindeunternehmen kann Konkurrenz mit solchen in anderen Gemeinden auf dem Absatzmarkt herrschen. Ein **Duopolmodell zwischen zwei kommunalen Unternehmen** zeigt ebenfalls Launhardt-Hotelling-Lösungen auf. Sie variieren gemäß den Managementtypen des Führungspersonals, z.B. resultieren bei Kostendeckung 16 Lösungen bei vier Managementtypen. Kombinationen von Managementtypen und Gewinnvorgaben erlauben wiederum andere Lösungen. Bei geringen Gewinnvorgaben und Managementtypen, die große Ausbringungsmengen anstreben, bieten beide Gemeinden ein umfangreiches Engagement zur Einwohnerattrahierung. Weitere oligopolistische Verhaltensannahmen lassen sich in das Modell einfügen.

Einige Gemeinden gründen extra **Agenturen**, um für die Standortwahlentscheidung von Haushalten in ihrer Stadt zu werben.

III. Weitere Formen der Einwohnerkonkurrenz

Neben den beiden grundsätzlichen Einwohnerpolitiken in den kommunalen Konkurrenzphasen existieren auch weitere Bedingungen, die zu besonderen Formen von Einwohnerkonkurrenz führen. Dazu zählt vor allen Dingen die Einwohnerkonkurrenz im Zusammenhang mit **Suburbanisierungsprozessen**. Diese führt zu einer ringförmigen Gemeindeentwicklung. In einer Kernstadt, z.B. Bremen, Tallin, führen ökonomische Veränderungen zur Serviceindustrie, verändertes Sozial- und Familienverhalten, außereuropäische Zuwanderungen und wachsende Umweltempfindlichkeit der Einwohner zu wachsendem Wohnflächenbedarf. Einwohner der Kernstadt suchen Wohnstandorte in Umlandgemeinden. Verschiedene einwohnergebundene Unternehmen folgen. Die Kernstadt verliert Einwohner und Einnahmen und versucht über ein erweitertes Wohn- und Infrastrukturangebot gegen zu halten. Dies führt zu erhöhtem Schuldenstand der

Kernstadt. In einem ersten Ring von Gemeinden steigen die Bevölkerung und die Wirtschaftstätigkeit an; dort entstehen neue Wohn- und Gewerbegebiete. Da die Grundstückspreise erschwinglich sind und die Infrastruktur der Kernstadt weitgehend zur Verfügung steht und solche Gemeinden im Finanzausgleich öfters gewinnen, erfahren diese Gemeinden zunächst keine beträchtlichen Verschuldungen. Dies ändert sich, wenn dort der Urbanisierungsgrad stärker angestiegen ist, weil nun Unternehmen und Einwohner in Umlandgemeinden eines zweiten Entwicklungsgrades ausweichen. Diese Gemeinden erfahren eine Verbesserung ihrer Finanzlage. Sie sind Gewinner in der Einwohnerkonkurrenz so lange die Gesamtbevölkerung eines Landes nicht dramatisch einbricht.

Besondere Formen der Einwohnerkonkurrenz sind auch mit dem Einsatz verschiedener Aktionsparameter im Konkurrenzkampf verbunden. So wird die Konkurrenz mithilfe von bestimmten **Ausgabenarten** angesprochen. Die Folgen lassen sich ebenfalls im Rahmen von Oligopolmodellen aufzeigen. Andere langfristig wirkende Parameter betreffen spezielle **soziale Bedingungen** wie religiöse Toleranz, Freiheit, Sicherheit, freie Flächen, die Vermeidung von Niedergang wie in anderen Regionen. Ferner sind Konkurrenzmaßnahmen mit den **kommunalen Einnahmen** verbunden. Das **Prinzip fiskalischer Äquivalenz** verlangt, dass eine Gemeinde so lange Einwohnerzuwanderung finanziert, bis die kommunalen Grenznutzen der Zuwanderung ihren kommunalen Grenzkosten entspricht. In Anlehnung an **Tiebout** gestaltet sich die Ausgestaltung der kommunalen Konkurrenz um Einwohner über „**voting by feet**“. Die privaten Haushalte vergleichen das monetäre Äquivalent der Leistungen, die sie in einer Gemeinde erhalten, mit den monetären Aufwendungen, die ihnen an einem Ort zugemutet werden und wandern in die günstigsten Gemeinden. In einigen Ländern werden dafür örtliche Steuersatzvariationen seitens der Gemeinden eingesetzt, in anderen Ländern geschieht dies hauptsächlich über Grundstücksverkäufe und Infrastrukturangebote.

Große Bedeutung kommt dem oben schon besprochenen Konkurrenzangebot bezüglich **öffentlicher Unternehmen** zu. Auch andere Aktionsparameter als Mengen und Preise können die Unternehmen und Gemeinden zur Einwohnergewinnung einsetzen, z.B. familienfreundliche Bezugsbedingungen, Qualitäten, usw.

IV. Politiken zur Regulierung der Einwohnerkonkurrenz

Die Einwohnerkonkurrenz weist Tendenzen zu **ruinöser Konkurrenz** auf, da die Konkurrenten zumindest auf kürzere Sicht den „Markt“ nicht verlassen, ihre Flächen weiterhin angeboten werden können und hohe fixe Kosten pro Einwohner Gemeinden veranlassen, ihre Einwohnerbasis zu vergrößern. Ein Modell zentraler Orte von Feng (2006) ohne kompensierende Bevölkerungszuwanderung aus anderen Ländern zeigt, dass Gemeinden mit besonders hohen Fixkosten bei beträchtlichem Bevölkerungsrückgang Einwohner und Unternehmen an kleinere Orte verlieren. Gemeinden könnten zur Existenzaufgabe gezwungen werden, wenn in der Verfassung eines Landes eine **Mindesteinwohnerzahl** für die Existenz einer Gemeinde vorgeschrieben ist. Eine solche Vorschrift könnte im Zuge einer Territorialreform

auch eingeführt werden. Sie wird allerdings kurzfristig die Bevölkerungskonkurrenz noch verstärken. **Freiwillige Eingemeindungen** sind schwierig zu erzielen, da für die beteiligten Gemeinden eine win-win Situation eintreten muss. Dies ist nicht immer der Fall und unterstützende Maßnahmen seitens übergeordneter Gebietskörperschaften lassen sich nicht einfach allgemein gesetzlich konzipieren. Im bestehenden Rechtsrahmen könnten öffentliche Unternehmen und **Zweckverbände** gegründet werden, die die Gebietsentwicklung, Wirtschaftsförderung und die Bereitstellung von einwohnerwichtigen Leistungen gemeinsam und in Kooperation betreiben. Man mag auch sogenannte **FOCJ** (Functional – Overlapping – Competing-Jurisdictions) gründen, die Zweckgemeinden für die Erstellung bestimmter Leistungen darstellen können. Einen vergleichsweise engen Zusammenschluß bieten **Planungsverbände**, z.B. der Planungsverband Hannover, wo gemeindeübergreifende Aufgaben gemeinsam als Verbandsaufgabe erledigt werden. Schließlich ist auch an die Gründung von **Gesamtgemeinden**, von kommunalen Bezirken wie in Bayern, usw. zu denken, die Teile der einwohnerrelevanten kommunalen Aufgaben, z.B. Flächennutzungsplanung, als Gesamtgemeindefaufgabe erledigen, während die Mitgliedsgemeinden sich grundsätzlich ihren eigenen Aufgaben widmen.

Weiterhin sind Eingriffe übergeordneter Gebietskörperschaften im Zuge der Regionalpolitik und der **Raumplanung** vorstellbar, die allerdings auch die garantierte Autonomie kommunaler Planungen berücksichtigen müssen. Ferner spornt diese Möglichkeit die Gemeinden geradezu zur Einwohnerattrahierung an, da mit einer erhöhten Einwohnerzahl auch der politische Einfluss in überörtlichen Gebietskörperschaften steigt. Schließlich könnten auch **Finanzausgleichsregelungen** Änderungen erfahren, um Gemeinden mit größeren Familien, höheren Kinderzahlen und mit Integrationsproblemen im Zuge der Bedarfsindikatorenfestlegung zu helfen sowie Schwierigkeiten der Infrastrukturanpassungen mittels Zweckzuweisungen zu überbrücken. Besondere Abgaben für Flächenentwicklungen sind zu diskutieren.

Insbesondere ist eine intensivere **Bevölkerungs- und Familienpolitik** aller Gebietskörperschaften auch auf kommunaler Ebene erforderlich, um die Geburtenrate zu erhöhen, die Abwanderung aufzuhalten, die Ausbildung junger Menschen zu verbessern, die Integration von Zuwanderern durchzusetzen, um die einheimische Bevölkerung zu erhalten, das Überleben der Nationalstaaten und der europäischen Union abzusichern und dem Bevölkerungsdruck aus Übersee zu begegnen.