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FISCAL FEDERALISM VERSUS RURAL DEVELOPMENT

Abstract

Rural development is usually equated with local development, i.e. comprehensive, long-term and multifariously conditioned evolutionary process of positive and desired quantitative and qualitative changes that are cumulatively manifested in better efficiency and productivity of economic operators and institutions and usability obtained by households. This process can be politically explained, modelled and controlled by reference to the traditional paradigm, the new rural development paradigm and recently also to the concept of cohesion policy in rural areas (Kierunki przeobrażeń..., 2015). It is difficult to find basic fiscal concepts and categories among the economic, social, environmental, political, institutional and cultural determinants. Whereas, for instance, taxes and other public levies, subsidies and grant-in-aid have a very strong effect on the financial potential of legal persons representing areas (e.g. gminas), production and cost functions, and development possibilities of companies and prosperity and life quality of rural residents. In this context, the basic aim of the paper is filling in the cognitive gap and extension of the political toolkit for controlling rural development. This was done by referring to the concept of fiscal federalism, approximating, e.g. the arguments for fiscal decentralisation and centralisation, mechanisms and effects of fiscal and interregional externalities along with instruments of their internalisation, to finally tackle the problem of optimisation of the size of local communities.

Keywords: fiscal decentralisation, fiscal federalism, Tiebout hypothesis, rural development, Buchanan's theory of club goods.

The basics of fiscal federalism

Fiscal federalism is understood as a subfield of public finance, which deals with the functions of different levels of state administration and their interrelations (Oates, 2001; Rosen and Gayer, 2013). The fiscal federalism theory differentiates between the normative and positive approach (Blankart, 2011). The former, in most general terms, focuses on the determination of the optimum size of a legal person representing an area, i.e. gmina (municipality), and drawing up principles of division of tasks, sources of their funding and responsibilities between all levels and types of units involved in state management. These are very comprehensive optimisation problems, which consider the diverse preferences of members of respective communities, economies and diseconomies of scale of provision of public goods/services, degree of integration of processes linked thereto and possibilities of contracting the above goods to respective markets. In practice, though, approximate principles are used most often, among which a central place is taken by the principle of subsidiarity. It states that a given function should, first of all, be implemented at the lowest level of the social organisational structure, i.e. family. Should its higher level, e.g. sołectwo[1] or gmina, prove to be more efficient in fulfilment of the function, it can be awarded to that level. This procedure is continued until all functions and tasks are allocated to respective levels and institutions. Consequently, pure public goods are divided into local, regional, national, supranational and global. This reasoning implies also that provision of local and regional public goods/services should be, in general, decentralised. Whereas economies of scale and regional network externalities (spillovers) speak for centralisation of fulfilment of social needs. The possibility to acquire some services in the market greatly modifies the process of indicating the minimum size of a legal person representing an area, sometimes making such considerations even unfounded. Hence, small gminas can better address the preferences of their residents and the accountability of their authorities can be easier. Extensive possibilities of efficient operation of such entities are also offered by different forms of cooperation under local government. Some suggestions, as regards the essence and practice of fiscal federalism, are also included in the works of H.R. Coase and C.A. Pigou. The former argues that negotiations between local governments as regards specific rights concerning, in general, internationalisation of externalities can lead to Pareto efficiency solution, if there is institutional compliance (congruence) between taxpayers or those incurring costs, decision-makers and beneficiaries (Coase, 1960). However, using the Pigou concept, it is possible to attempt at this efficiency by referring to the rarity of goods, thus imposing taxes or subsidising specified behaviours or services or externalities. Greater chances are allocated to the Coase's theorem (Blankart, 2011).

[1] The smallest unit of territorial division in Poland, including a village or neighboring villages – translator's footnote.

The positive theory of fiscal federalism treats legal persons representing areas as autonomous competing operators. Thus, there is an evident analogy to the functioning of the market mechanism. In line with the above, by analogy to the concept of "the invisible hand of the market", there coexist small, medium-sized and large local government units, just like in any industry branch there coexist small, medium-sized and large companies. The state management structure and optimum size of a legal person representing an area appear here as an endogenous process. Given the above, societies enact constitutions and legal acts or set up their equivalent institutions to have the ability to correct failures of this "specific" market, thus coming closer to the Pareto efficiency and guaranteeing rights and civil liberties.

The model/hypothesis of Tiebout takes the central spot in the positive theory of fiscal federalism (Tiebout, 1956). This economist focused initially on identification of preferences of the local communities, reaching a conclusion that their residents compare the costs involved in provision of goods in the form of paid taxes, mainly on real estate, with benefits obtained in exchange for them. If the relation is not satisfactory, they change their place of residence, famously termed as "feet voting". The entire hypothesis is a construct composed of the following assumptions:

- All local political actors express institutional agreement/congruence. Their preferences are well known and invariable over time. These actors also have complete information.
- There are no externalities that would reduce efficiency.
- Costs of mobility amount to zero and residents are able to find the most suitable combinations for them on a current basis: taxes, i.e. prices of a local public good – benefits from its "consumption".
- Unit costs of a public good are fixed and covered/financed by imposing taxes on properties, whose rates differ depending on community.
- The number of legal persons representing an area is limited, but sufficient to change the place of residence (Blankart, 2011; Brümmerhoff, 2011; Gruber, 2015; Rosen and Gayer, 2013; Stiglitz and Rosengard, 2015).

The idea behind Tiebout's hypothesis is presented in Figure 1. It shows four gminas which are to jointly satisfy the N demand for E_4 residents as regards one local public good. Each gmina "produces" the good, driven by minimisation of average costs (GDK_i). The point of their equation/intersection with respective curves of marginal costs (GGK_i) indicates the price of taking up residence in the imagined association of gminas, i.e. equivalent of imposing a tax on property. Tiebout sees these four gminas, by analogy to the industrial sector, as a specific industry branch. If there were more or less of them than four, the two of the aforementioned cost types would grow, which would be followed by a growth in property tax. Figure 1 shows also GDK_u curve illustrating the course of average costs of provision of supralocal public good, which, however, requires a greater scale to reach its optimum in the sense of Pareto.

The Tiebout model is criticised from different angles, although the case is quite straightforward, because the assumptions taken by Tiebout are a kind of representation of a perfect world. Whereas nowhere in the world, not even in the US, are people perfectly mobile, and the recent crisis further limited the will to change the place of residence into a more favourable combination: taxes – public services maintained in exchange. But, on the other hand, it is clear – on the example of the EU enlargement to the East – that the differences in income and life quality can become a very strong migration stimulus. The mechanism of "feet voting" is even more pronounced in case of immigration to Europe from Africa and Asia. Also competition is nowhere perfect, fiscal and spatial spillovers are also common and local product base undergoes strong erosion in the conditions of globalisation, while income and life quality disparities tend to continue at the very least (Hillman, 2009; Rosen and Gayer, 2013; Zimmermann et al., 2012). Despite these objections we should not be too quick to disregard Tiebout's works, since many empirical research confirmed validity of his theses, observations and political recommendations, at least partly (Cullis and Jones, 2009; Gruber, 2015; Rosen and Gayer, 2013). Moreover, Brümmerhoff is right underlining that it was mainly Tiebout that draw our attention to the significance of competition at the local level, in order to extend the offer of public goods, sometimes also to decrease their price and facilitate accountability of authorities (Brümmerhoff, 2011).

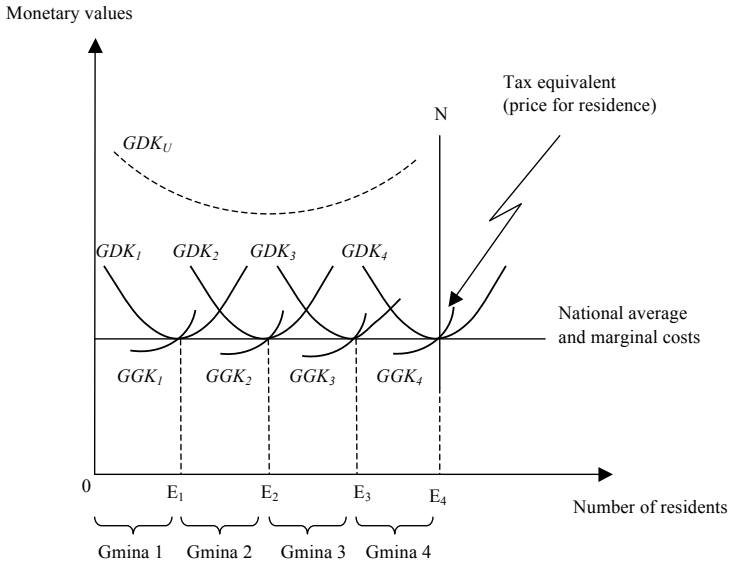


Fig. 1. The idea behind Tiebout's hypothesis. Key given in the text.

Source: own study based on: Blankart, B.Ch. (2011). Öffentliche Finanzen in Demokratie. *Eine Einführung in die Finanzwissenschaft, 8. Auflage*, Verlag Franz Vahlen, München.

The idea presented above is termed as a first generation theory of fiscal federalism, FGT (Oates, 1972). There is, however, a newer, second version thereof (a second theory of fiscal federalism, SGT) (Oates, 2005). It integrates the contemporary legacy of knowledge and practice in the field of public finance, microeconomy, theory of public choice, theory of information and regulation, industrial economy/trade, and theory of mechanism design and contracts. In SGT it is assumed that some government programmes actually led to deeper spatial differentiation of conditions and efficiency of provision of public goods. This is to result mainly from composite distribution of the impacts of regions on the central government and aspirations of the former to put their own preferences before the common interest. The second assumption is universality of information asymmetry in the policy processes and decisions, which, in general, speaks for decentralisation of provision of local and regional public goods. Then, it follows from the above that in the conditions of information asymmetry the higher level authorities have problems with monitoring the behaviours of subordinate units or units executing functions delegated to other economic agents. It is possible to try to counteract the phenomenon by imposing rigid budget constraints on subcentral units, thus encouraging them to rely on their own income. As part of a specific work division between the administrative centre of the country and lower levels of the government structure, the national authorities have to reduce the effects of stochastic external shocks. However, it always has to be taken into account that there will be forces integrating and disintegrating all administrative structures, and entire nations and their communities.

Fiscal and spatial spillovers

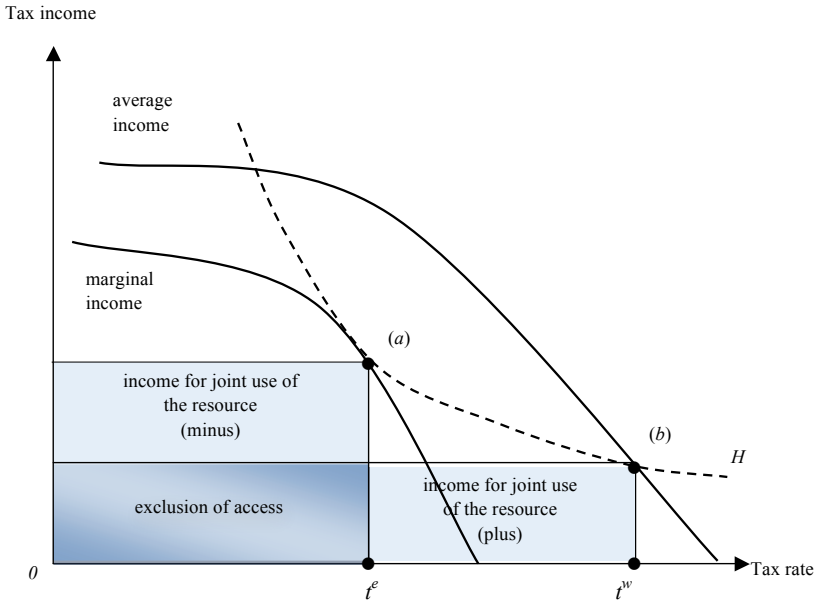
Already when characterising the Tiebout's hypothesis it was demonstrated that one of its basic assumptions is lack of spillovers. Whereas competition between legal persons representing an area results, e.g., in horizontal fiscal effects. This consists mainly in offering more beneficial principles of mobile capital taxation. Its extreme form is "the race to bottom". This term was popularised in public finance and environmental economy by Oates (1999, 2001) and has no straightforward Polish translation. Basically, it means competition between local governments to lower environmental standards only to attract mobile external capital. It is still controversial whether such competition actually exists. Oates argues that sometimes "the race to the top" is even possible, which means competition for the highest possible environmental standards. If, however, we assume that "the race to the bottom" is much more often the case, the funding of the contemporary agricultural policy gets increasingly more complicated. Farmers, after all, have limited possibilities of attracting foreign capital by drastic lowering of environmental standards, but then, their tightening increases the production costs. Their coverage with revenues on sales of market products is, as a rule, rather difficult because farmers at large are primarily "price takers".

The globalisation and vertical integration processes in agribusiness can additionally weaken the economic condition most farms. To this, add the regional differences in conditions and efficiency of agriculture and thus competitiveness. The only solution is then subsidisation of production of market-based private goods created in agriculture. Thus, full production costs can be covered, but without direct internationalisation of externalities created therein. Consequently, the quality of the environment can be – paradoxically – deteriorated. An alternative is remuneration to farmers for additional costs involved in provision of environmental goods. At this point, farming extensification can be a threat as it can reduce production of market-based goods, especially if between market-based and non-market goods there are more or less fixed proportions in their coupled production. Then, environmental payments can be just a certain substitute for market-based goods. Even then the production of market-based goods can grow, when total profitability of farm's operation will improve. But if "production" of market-based and non-market goods is uncoupled (separated) or the coupling proportions change, then the quantity of the former goods can decrease when the relative productivity of the latter grows. At this point, it is necessary to note that the "greening" policy of direct payments in the EU and of provision of agricultural goods is closely linked to achievement of environmental goals as well. Additionally, there are the environmental subsidies included in the second pillar of CAP. Consequently, an agricultural producer can in different ways rank the aims to which he/she aspires and strategies corresponding thereto.

This capital helps to improve the status of technical infrastructure and, partly, funding of local and regional goods (Blankart, 2011; Graf, 2005; Scherf, 2011). But then, this infrastructure sometimes generates serious operation costs. The real problem is when the average costs of public services provision drop in the entire scope of the potential used for the purpose and additionally exceed the marginal costs. This may suggest establishment of surplus potential in services. Opposite the above there is the phenomenon of surplus demand for public services, i.e. the congestion effect. Empirical research do not settle whether in practice the surplus potential in services dominates over the congestion effect. The above fiscal effect can be also the consequence of "free riding" of the residents of neighbouring local or regional communities, who do not incur the costs of, for instance, creation of the infrastructure and its maintenance, but use the amenities offered to the general public. This effect is mostly caused by migration of the population. At that time, households do not consider that the average costs of provision of public goods increase (drop), when after population outflow (inflow) there is less (more) residents to cover the costs. As a consequence, the settlement network can develop in unfavourable conditions, additionally accelerated by agglomeration effects. The introduction of the subsidy and compensatory payment scheme is one of the remedial measures. Other instruments of internationalisation of the above effect should not be underesti-

mated as well, i.e. voluntary negotiations between communities and incentives to create varied links between them. Nonetheless, it has to be kept in mind that population migrations counteract capitalisation of the value of rare resources (e.g. land), which takes place upon emergence of some public programme or introduction of local taxes (Brümmerhoff, 2011; Stiglitz and Rosengard, 2015; Wiesner et al., 2014). In case of public intervention the group of actual beneficiaries, who usually are the owners of the aforementioned resources, does not have to correspond to the group of its addressees, because along with it their relative prices change. This is a proof of low efficiency of governmental redistribution of income and assets. One of the consequences of capitalisation is stopping spatial mobility and reallocation of resources.

If legal persons representing areas at all levels of administrative structure of a given country use the same tax base (the same type of tax), vertical fiscal effect appears (Blankart, 2011). This situation is tantamount with a well-known in microeconomy and environmental economy phenomenon termed as "the tragedy of the commons". The idea behind this effect is presented in Figure 2. It is clear that in case of the possibility to exclusively use a given tax, a legal person representing an area could use its rate equal to t^e, reaching an income on this account at point *a* on the curve of marginal income. If, however, other legal persons have had "access" to the same type of tax, the aforementioned unit would have to choose a rate of t^w to achieve the same fiscal income as before, which is presented by point *b*, but situated already at the curve of average income. The te rate is undeniably better from the perspective of social welfare than the competitive tw rate. Universal instrument of counteracting the above-outlined tax competition and threat in the form of emerging vertical fiscal effects is legal regulation of the principles of allocation of tax income from the same source between respective levels of local government. This does not automatically exclude conflicts in this context, since these proportions are not able to perfectly reflect the financial situation of gminas, poviats (counties), voivodeships and the central budget, not weakening the efforts of these levels to strengthen their own tax base. Therefore, the correction and compensatory schemes, created consequently all over the world, are never perfect constructs. Subsidies and grants used in them can, unfortunately, lead to deepening of the vertical and horizontal fiscal externalities themselves. The subsidies, and correction and compensatory grants are linked to one more threat, namely the emergence of "the flypaper effect". In general, this means a situation when regional or local authorities more willingly spent funds obtained from the central government under correction and compensatory mechanisms in the form of subsidies and grants than income obtained by residents, e.g. in the form of reduction of national taxes and their taxation with public levies and local charges (Gramlich, 1969; Henderson, 1968). Inman considers this as an anomaly because, in line with the principle of interchangeability of funds, their source should not affect their optimum allocation (Inman, 2008).



Key: t^e – linear optimum, on the basis of prosperity, tax rate imposed on the universal taxation base, from which other entitled entities were excluded; t^w – the tax rate referred to the equiaxed hyperbole enabling to obtain the same tax income as before.

Fig. 2. Vertical fiscal externality as an illustration of the problem of common use of resources ("the tragedy of the commons").

Source: own study based on: Blankart, B.Ch. (2011). Öffentliche Finanzen in Demokratie. *Eine Einführung in die Finanzwissenschaft, 8. Auflage*, Verlag Franz Vahlen, München.

Interregional/spatial effects/spillovers are positive and negative impacts of some legal persons representing area on other such units in their vicinity (Brümmerhoff, 2011; Nowotny and Zagler, 2009; Zimmermann et al., 2012). Their primary source is incompatibility of competences as regards tasks, expenditures and fiscal income, i.e. lack of fiscal equivalence, which is expressed in institutional incompatibility between beneficiaries of local and regional public goods, entities financing them, and persons and groups taking political decisions related thereto. If then a gmina is first to provide, for instance, a local public good, which is used also by neighbouring gminas, then the so-called spillout phenomenon happens, i.e. interregional external revenue. This, for example, can cover extension of the road network or recreational and leisure facilities. But when a gmina is first to use amenities created by neighbouring gmina/s the so-called spillin phenomenon occurs. What also often happens are interregional external costs, mainly in the form of spreading emissions of pollutants or as a result of irrational spatial management or in the form of the so-called tax exports, i.e. their transfer to territorial communities. Negative allocation effects, i.e. spill-

overs, which also means social welfare losses on that account, are the greater the smaller are local communities responsible for provision of a public good. An important determinant at this point are technical and technological characteristics of processes of "production" of the above goods. In general, it is assumed that the emergence of spillovers speaks for centralisation of the processes and use of horizontal level of fiscal compensation instruments. However, it needs to be kept in mind that each spillover internalisation strategy has to additionally consider that its source is also population migrations, changing, e.g., the size and stability of the local tax base, from which local public services should be funded in the first place.

An in-depth analysis of spillovers was presented by, e.g., Brümmerhoff (2011). The author assumed that there are two gminas, one of which created an infrastructural facility and the other also uses the facility not taking part in its co-financing. This is an example of spillins and the other gmina acts like a typical free-rider. Furthermore, marking as GN_1 and GN_2 the marginal benefits obtained from infrastructural service by both gminas, and as GK the marginal costs of its provision (a simplifying condition was adopted, i.e. $GK = GN_1 = GN_2 = \text{const.}$), what we get is the following efficiency condition:

$$GN_1 + GN_2 = GK \tag{1}$$

At this point, Figure 3 should be referred to. If, in such case, the first gmina considers only the needs of its residents, their marginal benefit will be exactly equal to the marginal cost, which is expressed in the amount of OD. In such circumstances, the other gmina would not offer the service at all because for it there is $GK > GN_2$. But the socially optimal value of the service is in this case OE. This may take place when the first gmina, as part of voluntary negotiations, manages to convince the other gmina to co-finance the provision of the infrastructural service, making the marginal benefit curve ($GN_1 + GN_2$) to intersect with the marginal cost curve at point I. Another solution is the involvement of supralocal level, providing unit Pigou subsidy – indicated as z – which is, at the same time, equal to the final benefit EF obtained by the other gmina in order to make the first gmina agree to increase the size of the service to the socially optimum level. This level, however, has to know exactly the course of the function of benefits and marginal costs. In practice, the issue can be much more complicated, because the first gmina can, after all, benefit from the services offered by the other gmina as a free-rider. From the fiscal equivalence principle, it results that individual spillovers should be separately internalised; hence without their compensation, i.e. the use of net balance of mutual settlements. But the balance is more than enough to determine the allocative net benefits from internalisation of all spillovers.

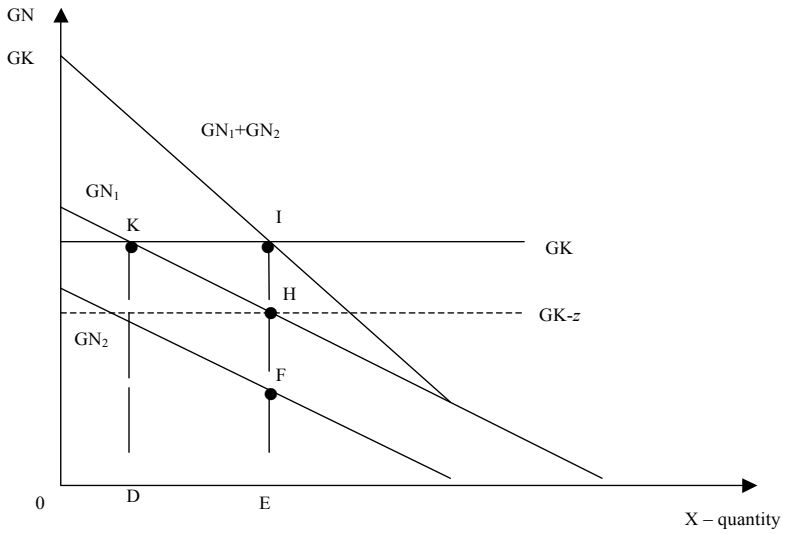


Fig. 3. The idea behind the interregional spillover. Key to the symbols was given in the text.
Source: own study based on: Brümmerhoff, D. (2011). *Finanzwissenschaft, 10. Auflage*, Oldenbourg Verlag, München.

Fiscal decentralisation

Decentralisation is usually understood as transfer of authority and fiscal authority, function, resources (material resources and funds) and responsibility to lower levels in any hierarchical management structure. As evident, such an approach has a universal value because it refers to both individual economic entity and to a state and various supranational systems. Centralisation of functions, resources and responsibility stands is opposition to decentralisation. Actually, the operating socio-economic and political systems each time seek for the most appropriate, in the given conditions and time, position in the continuum marked by: decentralisation and centralisation. The process of selection of the above point of equilibrium is, thus, a form of evolution and is broadly conditioned and related to two equally important phenomena, which are deregulation and liberalisation. Then, it is justified to refer to secondary decentralisation, i.e. decentralisation correcting the already existing solutions as regards division of power, resources and responsibilities between the centre and peripheries. Primary decentralisation may also appear, which is decentralisation introduced for the first time in a given country. Such case happened in our part of Europe at the beginning of the socio-economic transformation process staring at the end of the last century. In this context it comes as no surprise that decentralisation can to some extent fluctuate, namely, after a period of its acceleration it slows down in order to make secondary decentralisation reappear. From time to time decentralisation

becomes fashionable, e.g. in the 1990s. In this context fiscal decentralisation should be understood as transfer to lower levels of the administrative division of the country, authority as regards taxes and charges, and payments and rights to receive subsidies and grants from the superior levels (Bywalec, 2012).

An important term in fiscal federalism is the decentralisation theorem formulated by Oates (1972). It is also a sort of normative proposal. It states that in cases of no cost savings, centralised provision of local public goods and possible interregional spillovers, social welfare will always be at least that high (usually it is higher, though), if the levels of their consumption in each region correspond to the Pareto efficiency conditions as compared to the case in which this consumption would be identical in all regions (Oates, 1999). From the above it clearly follows that public goods should be provided – quite theoretically speaking – in decentralised schemes if they have regional and local character. The value of economic benefits possible to be obtained due to the use of decentralised "generation" of local public goods in comparison to the centralised system with identical country-wide level of their consumption depend on the price elasticity of demand and not differences in the costs of their offering between jurisdictions. These benefits, in general, change inversely proportional to the formation of elasticity of demand. But if the costs of "generation" are identical between the regions but the demand is different, then size of social welfare loss in centralised – identical country-wide – provision of goods and services of our interest grow in line with inelasticity of demand in *ceteris paribus* conditions. But if the source of differences in the efficient – in Pareto sense – level of "production" of the above goods and services are cost differences, then the profits from fiscal decentralisation remain in a relation contrary to the situation in which the differentiating factor is the size of demand. The profits then change in a manner compliant with the changes in the price elasticity of demand. It should be added that welfare loss caused by taxation acts the same, i.e. it changes in line with the direction of changes in the price elasticity of demand. Most of economic studies show that demand for local public goods is usually highly inelastic as regards their prices. This means that their decentralised provision and financing offers potentially significant improvement in social welfare. This argument strongly supports decentralisation reforms and is well-grounded in the positive economy, but it always has to be confronted with threats and limits of practical delegation of entitlements and public tasks to lower levels of local government.

A natural implication following from the aforementioned decentralisation theorem justifies decentralisation also for funding regional and local public goods. Additionally, such solution is also supported by the above information advantage of regional and local authorities over the national decision-making centre and universal, in most of the countries, formal and legal restrictions of arbitrary preference for some jurisdictions over the others.

Possible benefits from any decentralisation can be captured as opposition of the losses in social welfare on account of centralisation. The latter, following the

1991 work of Oates, were very interestingly presented by Brümmerhoff, which was captured in Figure 4 (Brümmerhoff, 2011). There are two regions here, which are to provide to their residents a specific public good and their preferences are uniform only within the regions. These preferences were expressed by N_1 and N_2 demand curves. There are no economies of scale in the provision of public good, thus its cost per resident is fixed and amounts to p_0. Moreover, there are no fiscal or interregional spillovers. If a good is offered in a decentralised manner, the optimum values will amount, respectively, to x_1 and x_2. But if during political negotiations it was decided to apply the centralised scheme, the size of the service would amount to x_3 and it would be too large for the first region, but insufficient for the second one. This difference it the source of losses in social welfare. Therefore, the *ABC* triangle will mean exactly this loss for the first region. Formally it is the cost increase margin (x_1ACx_3 rectangle) over additional benefits (x_1ABx_3 trapeze). In case of the second region, welfare loss is illustrated by *CDE* triangle. Total welfare loss due to centralisation will grow along with deepening differences in preferences of the residents of local and regional communities. Its important determinant is also elasticity of demand for public goods against their cost and, in general, tax burdens imposed on residents, which in the literature is termed as the price of tax (Johansen, 1963). On the whole, the welfare loss grows when the demand is less elastic. Figure 4 presents this using new demand curves – N'_1 and N'_2, which were created by a turn of the primary curves N_1 and N_2 against points *A* and *E*.

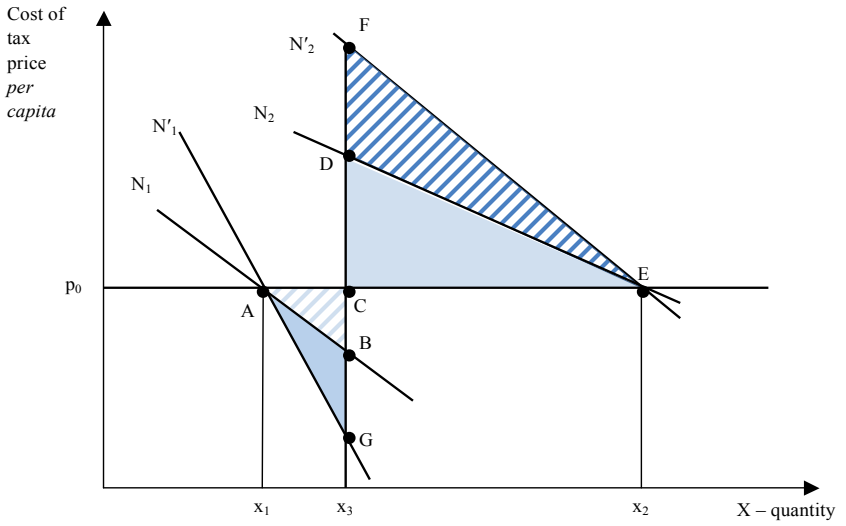


Fig. 4. Social welfare loss due to centralised delivery of public good. Key given in the text.

Source: own study based on: Brümmerhoff, D. (2011). *Finanzwissenschaft, 10. Auflage*, Oldenbourg Verlag, München.

Apart from public goods better matched to the preferences of the residents of subcentral units, hence more efficient allocation, the following are to opt for decentralised system:

- The possibility of citizens to impact the political decisions taken and their transparency and accountability of local and regional authorities;
- Better representation and protection of the interests of minority group residents;
- Inter-jurisdiction stimulation of economic and fiscal competition, experimentation and implementation of institutional and fiscal innovation;
- Provision of information and dissemination of knowledge and good government and administration practices at the local and regional level (Nowotny and Zagler, 2009; Rosen and Gayer, 2013; Scherf, 2011).

On the other hand, the decentralised systems pose two threats:

- In the form of efficiency losses on account of horizontal and vertical fiscal effects and interregional spillovers;
- Deepening differences in the division of income and assets of citizens, and differences in local and regional living conditions, and life and development opportunities caused, e.g. by different provision in natural resources and environmental amenities (Blankart, 2011; Stiglitz and Rosengard, 2015; Zimmermann et al., 2012).

Paradoxically, overabundance of natural resources can lead to problems, namely the so-called puzzle of natural resources curse. At the turn of 20th and 21st century this phenomenon was described by Sachs and Warner, indicating that between the resources and economic growth expressed in GDP *per capita* level, there is a negative correlation. Recently, Perez-Sebastian and Raveh tried to extend the knowledge on the sources of the above-mentioned puzzle and the impact that fiscal decentralisation has on it (Perez-Sebastian and Raveh, 2016). It should be added straight away that among the variables explaining the GDP *per capita* forming, there were the following resources: subsoil, land under cultivation, grasslands, forests and protected areas. Whereas fiscal decentralisation was captured as a share of own income of subcentral units in their total expenditure.

Perez-Sebastain and Raveh in the first part of their empirical analysis basically confirmed the arrangements of Sachs and Warner. Identical conclusions were also reached when the research sample was extended and the time series much prolonged. Except for independent variable "the subsoil resources", the other variables linked to land use were also negatively correlated with the GDP *per capita* ratio. "Fiscal decentralisation" variable acted in a similar manner.

The aforementioned two researchers reached, in the context, the conclusion that it is possible to attempt an explanation of the observed interrelations by two channels/mechanisms: political and market-based.

The former consists in intensified rent-seeking among authorities and intensified activity among interest groups and corruption in poor regions situated far away from agglomeration centres having extraordinary budget revenues due to newly discovered natural resources. Consequently the amount of provided public goods, total productivity of assets and production of other goods can be lower than natural resources. This leads directly to the emergence of the aforementioned "natural resources curse". This will happen when the negative effects of extraordinary income from exploitation of newly discovered resources in the given region spread to all other sectors in the given national economy.

The market channel boils down to the fact that making natural resources available for exploitation causes better position of such locations in the inter-jurisdiction fiscal competition, hence they can apply, e.g., lower tax rates, which attracts mobile capital. This is to the determinant of other regions, which can use all the resource of factors of production more efficiently. The risk of the curse and its range are multifariously determined, but the key place among them is taken by agglomeration spillovers linked to specialisation according to Marshall and Jacobian's diversification. In their analysis Perez-Sebastian and Raveh combined the above effects with decentralisation measure into an interactive segment. As a result, it was also negatively correlated with the growth rate of the real GDP per capita. The correlation was also negative when the independent variable was the interactive segment in the form of product of fiscal decentralisation ratio and natural resources. In general, it was concluded that the risk of the curse is higher in developing countries.

Optimisation of the size of local community

Traditionally, the size of the above community in public finance is understood as the number of its residents. Universally, the deliberations on the optimisation of the size of the community refer to the theory of club goods presented in 1965 by Buchanan (1965). These goods include resources and services, for which the principle of no competition in their joint use is not binding. This means that some competition is accepted as far as it will not exceed the so-called congestion level. The access to these goods is hence limited to a certain group of physical and legal persons, termed as club or association, which is ready to finance their provision (Brümmerhoff, 2011; Nowotny and Zagler, 2009; Zimmermann et al., 2012). In general, it can be assumed that club goods are actually imperfect local public goods. The Buchanan theory itself is a convenient tool to research the congestion problem, i.e. more intensive than usual use of a specific good or service, and optimisation of the size of alliances, cooperation between legal persons representing areas and thus, e.g., gminas and inter-gmina and gmina-poviat associations.

Figure 5 explains the idea behind the Buchanan concept. The concept assumes that the club members are characterised by identical preferences as re-

gards public and private goods (Mueller, 2003). At the time of the club establishment specific fixed costs are created (*F*) which are subject to degression principle; hence, they can decrease in a specific section when the number of club members grows (*N*). However, allowing another member to the club generates some marginal costs (*MC*). But it needs to be cleared out straight away that this refers to mental costs. These are positive when a given club member prefers to benefit from the service independently and negative if the member prefers the presence of other people. Thus they show the effects of congestion. They have to be compared to the marginal benefits (*MB*), which reflect, e.g., the fact of fixed costs degression. Equilibrium, i.e. club size optimum (N_0), will be achieved at the point of intersection of the *MC* and *MB* curves.

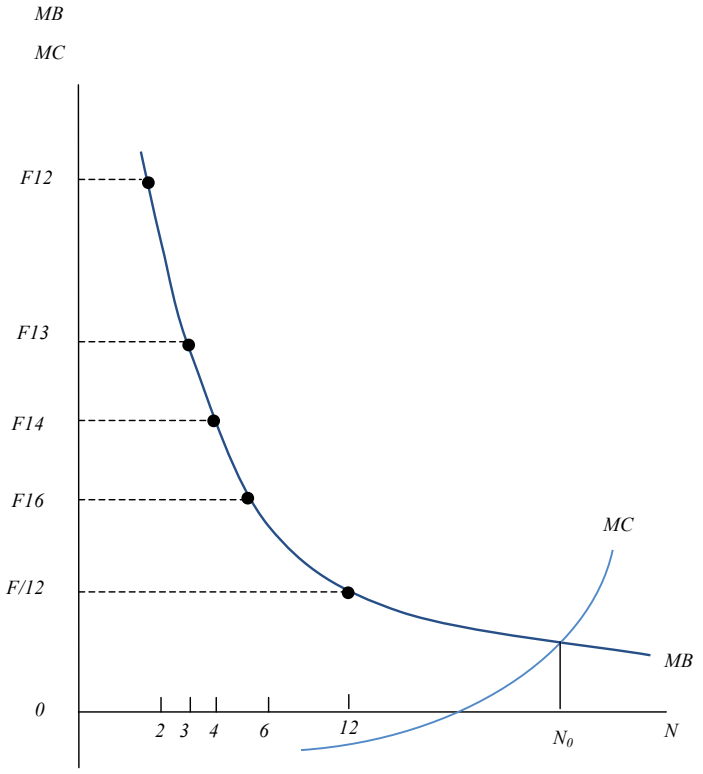


Fig. 5. Designation of optimum club size. Key to the symbols was given in the text.

Source: own study on the basis of: Mueller, C.D. (2003). *Public Choice III*. Cambridge University Press, New York.

The theory of club goods can be generalised in a manner presented by Mueller (2003). In this case, utility of a representative club member follows from availability of private goods (X), public goods (G) and the club size (N) which is expressed as $W = U(X, G, N)$. Fixed costs of club operation (F) are reflected by the unit price of a relevant good (P_g). In case of a private good, this price is reflected in parameter P_x. Each club member is marked by the same utility function, identical income (Y) and incurs a fixed payment for club membership (t). This person will aim at maximisation of its total utility from consumption of private and club goods. This means that in case of the latter – in line with reality – competition between clubs is allowed. In this context, Mueller maximises the following Lagrange function:

$$L = U(X, G, N) + \lambda(Y - P_x X - t) \tag{2}$$

Because a club has to have a balanced budget, t has to meet the condition. If t, in the above function, is replaced we get the following result:

$$L = U(X, G, N) + \lambda(Y - P_x X - F / N - P_g G / N) \tag{3}$$

Maximising function 3 as regards X, G and N we get the conditions of the first level of existence of the maximum:

$$\frac{\partial L}{\partial X} = \frac{\partial U}{\partial X} - \lambda P_x = 0 \tag{4}$$

$$\frac{\partial L}{\partial G} = \frac{\partial U}{\partial G} - \lambda P_g / N = 0 \tag{5}$$

$$\frac{\partial L}{\partial N} = \frac{\partial U}{\partial N} + \frac{\lambda(F + P_g G)}{N^2} = 0 \tag{6}$$

From formulae 4 and 5 it follows:

$$N \frac{\partial U / \partial G}{\partial U / \partial X} = \frac{P_g}{P_x} \tag{7}$$

From the above it follows that the amount of offered club goods has to meet the Samuelson condition to make this compliant with the Pareto optimum, i.e. the marginal sum of substitution rate for club goods with private goods has to be equal to the relation between their prices.

Whereas from the formulae 5 and 6 it follows:

$$N = -\frac{\partial U / \partial G}{\partial U / \partial N} \cdot \frac{F + P_g G}{P_g} \tag{8}$$

From the above it follows that greater number of the club members increases congestion $(\partial U / \partial N < 0)$. But N will still be higher than zero (formula 8). Optimum size of the club will drop when the growing congestion results in growing feeling of discomfort. But the degression in fixed costs will speak for increasing the number of people in the club.

Procedures optimising the size of local communities absolutely have to consider that they provide multiple public goods of varied economies of scale (Blankart, 2011; Brümmerhoff, 2011; Gruber, 2015; Nawotny and Zagler, 2009; Stiglitz and Rosengard, 2015). Brümmerhoff very comprehensively analyses these interrelations (Brümmerhoff, 2011). The author considers two local public goods: G_1 and G_2 as well as costs of their joint and separate provision per community resident. On the one hand, there is a phenomenon of superadditive cost function:

$$K(G_1 + G_2) > K(G_1) + K(G_2), \tag{9}$$

but, on the other, also subadditive cost function:

$$K(G_1 + G_2) < K(G_1) + K(G_2) \tag{10}$$

Figure 6 demonstrates such cases.

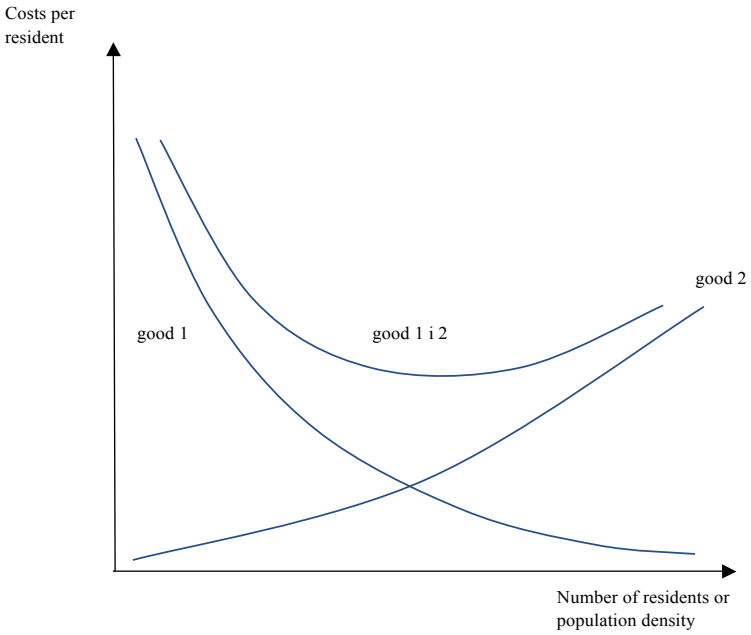


Fig. 6. Possible course of cost function for provision of local public goods.

Source: own study based on: Brümmerhoff, D. (2011). *Finanzwissenschaft, 10. Auflage*, Oldenbourg Verlag, München.

Known from the Buchanan theory, fixed costs degression, when the number of club members grows, can be used also to analyse the drop in tax burdens per local community resident. Marginal tax savings (*GE*) can be expressed then in the function of total tax income (*T*) and the number of community residents (*S*) as follows:

$$GE = d\left(T / s\right) / ds = -T / s^2 \tag{11}$$

But then, along with a higher number of people in the community or increased population density there emerge the costs of provision of higher supply of public goods and inconveniences linked to congestion. Total increase in marginal costs (*GK*) will influence in the direction of smaller community (Brümmerhoff, 2011). Optimum number of its residents will be, thus, at point s^*, i.e. at the intersection between the *GE* and *GK* curves, which was shown in Figure 7.

A very interesting and well operationalised classification of rural development components was presented by E. Erjavec and K. Erjavec (2014). It will be used for synthetic but quality-oriented analyses of the impact of its fiscal determinants considered in the paper. It was presented in Comparison 1. In general it can be stated that these determinants have different impact on rural development and sometimes are even neutral to it. It is quite understandable since we

use certain aggregates, because the very fiscal determinants remain in different relations towards each other, not fully recognised yet, while rural development has omnidirectional character resulting from interaction between fiscal and non-fiscal variables. The latter can even sometimes dominate.

Further research should continue works on the conceptual models and conduct in-depth quality analyses striving to integrate the traditional public finances with behavioural finances, theory of public choice and theory of mechanism design and contracts, fiscal policy, environmental and organic economics and neo-institutionalism. Quantitative studies should be started simultaneously. There already is a quite rich set of tested tools to conduct empirical analyses. First of all, this concerns the side of spatial econometrics, which deals with estimation of function of response to fiscal impulse and spatial fiscal multipliers (Breustedt and Habermann, 2008). Hedonic models will also be extremely useful and special regression models to examine the impact of addressed agricultural subsidies and for local governments (Feichtinger et al., 2014; Weiss 2014; Morawets, 2014). In this context, Comparison 1 can be the point of reference for expectations concerning the behaviour of regression coefficients in estimated empirical models. The input-output technique should also be used as it recently experiences a renaissance (Kratena and Streicher, 2014). Finally, what we need is an entire family of econometric interregional and intersectoral models, static and dynamic ones, partial and total equilibrium, which will allow to smoothly go from the level of local units to the worldwide problems (Kratena and Streicher, 2014).

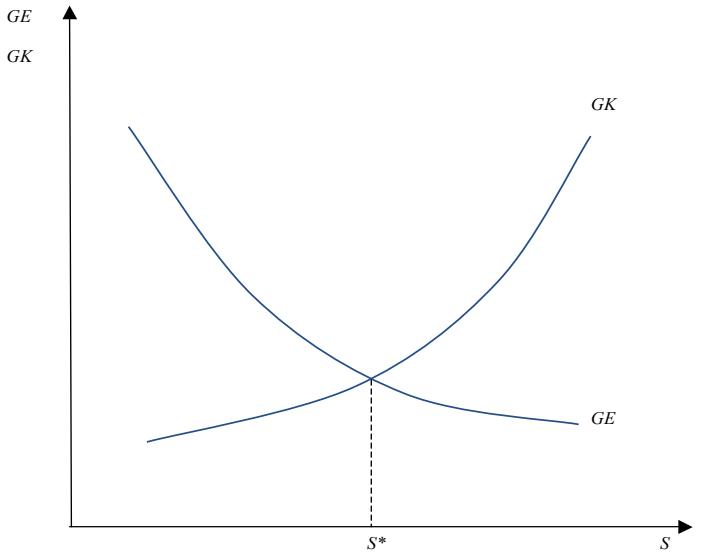


Fig. 7. Optimum size of local community. Key given in the text.

Source: own study based on: Brümmerhoff, D. (2011). *Finanzwissenschaft, 10. Auflage*, Oldenbourg Verlag, München.

Comparison 1

Synthetic quality impact analysis of fiscal instruments characterised in the paper on rural development

Fiscal determinant	Rural development components:		
	knowledge and innovation transfer	increased competitiveness, dynamism, elasticity and viability of economic operators	food chain integration and better risk management
Tiebout hypothesis	it can encourage to at least preserve the attractiveness of a given location for its residents and economic operators	undoubtedly it tightens competition, including also unfair one, because of the historical and political privileges	it can sometimes lead to disintegration of the food chain and to higher risk of certainty of supply; but these interrelations are neither strong nor univocal
Fiscal externalities and spillovers	they can be an obstacle since they favour spatial fragmentation and deteriorate climate for innovations; but then, they can be a result of fiscal preferences for innovators; sensible tax and subsidy scheme can facilitate internalisation of the above effects and fiscal and financial innovations on the basis of advanced technologies, termed as fintech	too deep vertical and horizontal financial imbalance and intensified spillovers can be the result and the cause of fierce competition, including fiscal; this, certainly, leads to strong polarisation of the situation of economic operators and significant changeability in their competitive position	encouraging spatial fragmentation concerns also the food chain which deepens regional differences in its development perspectives and impact on the local and regional economics and business cycle; undoubtedly this complicates risk profiling and management
Fiscal decentralisation	it can have a positive effect as far as it will fall within the limits of the local entrepreneurship processes and preferences of the private and public sector, and the overall socio-political climate; but what can be the actual challenge is intensified fragmentation of the country and scarcity of the innovation and knowledge creation base	it stimulates a broadly-conceived competition, which has positive effects (better efficiency and productivity), but also negative ones in the form of growing fiscal imbalances, fragmentation and depopulation of some regions	it can have a certain positive effect as far as there is an increase in the fiscal potential of local governments and financial potential of companies and households; these interrelations are not clear or important, though
Theory of club goods as a concept of optimisation of the size of local community (e.g. gmina)	only a club, which is in some artificial manner strongly isolated, can be an obstacle; in general lack of connections will dominate	equal, sensibly regulated intra-club and inter-club competition is desired because it strengthens in the long-term endogenous development mechanisms	local communities as clubs do not seem to be an obstacle to deeper integration and better efficiency of the food chain; it can be thus considered that these phenomena are neutral towards each other

Comparison 1 cont.

Fiscal determinant	Rural development components: reconstruction, protection and extension of the potential of agro-services and ecosystem services provision	better efficiency of allocation of all resources, support for low carbon economy and decarbonisation of the economy, and the adaptability to climate change	promotion of social and economic inclusion, poverty reduction, better social and spatial mobility
Tiebout hypothesis	omnidirectional impact; better reflection of local preferences can concern also environmental services but striving at maximisation of the relation between benefits and taxes can be harmful to nature	greater transparency of decision-making process and faster accountability of politicians stimulate better efficiency, but the size of the local community can limit the obtained economies of scale and range	it definitely stimulates spatial mobility, counteracts free-riding, but it requires large involvement of the citizens and thus it also includes the potential to improve the quality of life, although it leaves little space for social inclusion based on broad redistribution
Fiscal externalities and spillovers	they can have a negative impact when provision of environmental and agri-environmental services requires supralocal coordination, and often also subsidisation; positive impact can sometimes appear if there is the race to the top	locations with higher fiscal potential have greater possibilities to stimulate processes of improvement in the integrated efficiency and shift to low carbon technologies and climate friendly technologies; their advantage can increase over time	high intensity of these effects will in general foster social exclusion, peripherisation and depopulation of certain areas; this can sometimes extend development perspectives for extensive activities
Fiscal decentralisation	final effect depends mainly on the intensity of the race to the bottom and the race to the top; negative correlation between decentralisation and equilibrium should also be taken into account (risk in the form of the so-called puzzle of the natural resources curse)	omnidirectional impacts are possible, but it cannot be excluded that locations which are already more efficient and are more environment-oriented and more focused on climate protection will keep "running away" from the other locations; net benefits for the entire country can be, however, poorly felt because of the supralocal character of the climate change and large part of pollution emission	in general, negative effects will predominate, especially in long run and when the correction and compensation system is inefficient, in the form of intensified disparities, imbalances and depopulation of some regions
Theory of club goods as a concept of optimisation of the size of local community (e.g. gmina)	interregional spillovers are a serious counterargument for decentralisation of provision of eco- and agro-services, but to keep balance – better reflection of social preferences in the above scope speaks for club solutions	surplus service potential, mainly infrastructural one, in the business environment and, on the other hand, emergence of congestion phenomena hinder improvement in the private sector efficiency, while efficiency of provision of local public services is strongly determined by the manner of their contracting (public procurement vs in-house system)	if the club is too hermetic, it hinders social inclusion and spatial socio-economic integration; too small a club has no fiscal possibilities to efficiently solve problems from the area of social policy and the situation is not significantly changed by the possibility to create club associations

Source: own study.

Conclusions

Fiscal federalism is a subfield of public finance, which attempts to offer, e.g. political recommendations concerning the best place for the accountability for provision of public goods in the administrative structure of the country. Many among them has locally and regionally limited range of impact; hence they should be in general provided and funded in a decentralised manner. The problem complicates, though, in case of agriculture where public goods generation is very often coupled with production of market-based goods. This is a strong argument for centralisation of their funding and seeking correction and compensation mechanisms that would also support rural development. This does not exhaust the complexities that exist here, since there commonly appear horizontal and vertical fiscal and interregional spillovers. Their internationalisation is not at all easy and dominance among tools used for the purpose, i.e. subsidies and grants, poses a risk of permanent dependence of extensive rural areas on support from the central budget. Such circumstances have to be constantly considered because the aim is to optimise the size of the local community. It is also expedient to keep a simple fact in mind: rural development is a component of regional, spatial and socio-economic development of the entire country. Thus, it should be carefully designed, monitored and coordinated and the fiscal issues have to be considered on the basis of their interaction with its other determinants.

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FEDERALIZM FISKALNY A ROZWÓJ WIEJSKI

Abstrakt

Rozwój wsi zazwyczaj utożsamiany jest z rozwojem lokalnym, a więc złożonym, długotrwałym i wielorako uwarunkowanym ewolucyjnym procesem pozytywnych i pożądanych zmian ilościowych i jakościowych, których łącznym wyrazem jest poprawa efektywności i produktywności podmiotów i instytucji ekonomicznych oraz użyteczności uzyskiwanej przez gospodarstwa domowe. Proces ten objaśniany, modelowany oraz sterowany politycznie może być przez odwołanie się do paradygmatu tradycyjnego, nowego paradygmatu rozwoju obszarów wiejskich, a ostatnio także do koncepcji polityki spójności tychże obszarów (Kierunki przeobrażeń..., 2015). Wśród determinant ekonomicznych, społecznych, środowiskowych, politycznych, instytucjonalnych i kulturowych rozwoju wsi wprost trudno doszukać się nawet podstawowych koncepcji i kategorii fiskalnych. Tymczasem, przykładowo, podatki i inne daniny publiczne oraz dotacje i subwencje bardzo mocno oddziaływają na potencjał finansowy terenowych osób prawnych (np. gmin), funkcje produkcji i kosztów, możliwości rozwojowe firm i dobrobyt, a także jakość życia mieszkańców wsi. W tym kontekście podstawowym celem artykułu jest wypełnienie luki poznawczej i poszerzenie zestawu narzędzi politycznego sterowania rozwojem wiejskim. Uczyniono to przez odwołanie się do koncepcji federalizmu fiskalnego, przybliżając m.in. argumenty na rzecz decentralizacji i centralizacji fiskalnej, mechanizmy oraz skutki fiskalnych i międzyregionalnych efektów zewnętrznych wraz z instrumentami ich internalizacji, by na końcu zająć się problemem optymalizacji wielkości wspólnot lokalnych.

Słowa kluczowe: decentralizacja fiskalna, federalizm fiskalny, hipoteza Tiebouta, rozwój wsi, teoria dóbr klubowych Buchanana.

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