

ISSN 2081-4461  
e-ISSN 2449-9781

NR 20  
(2020)

# BIBLIOTEKA REGIONALISTY REGIONAL JOURNAL

## Stanisław Korenik

Wrocław University of Economics and Business

e-mail: stanislaw.korenik@ue.wroc.pl

ORCID: 0000-0002-7629-0484

## POLARIZATION AND CONVERGENCE IN SOCIO-ECONOMIC SPATIAL DEVELOPMENT MODELS

---

## POLARYZACJA I KONWERCENCJA W SPOŁECZNO-GOSPODARCZYCH MODELACH ZAGOSPODAROWANIA PRZESTRZENNEGO

DOI: 10.15611/br.2020.1.05

JEL Classification: R11

© 2020 Stanisław Korenik

*This work is licensed under the Creative Commons Attribution-ShareAlike 4.0 International License. To view a copy of this license, visit <http://creativecommons.org/licenses/by-sa/4.0/>*

*Quote as:* Korenik, S. (2020). Polarization and convergence in socio-economic spatial development models. *Biblioteka Regionalisty. Regional Journal*, (20).

**Abstract:** The basic economic category that is analysed in modern economy is growth. Referring this phenomenon to socio-economic space, the problem of its uniformity arises. In spatial development concepts, it is assumed to self-align this phenomenon (neoliberal concepts) or to force it through interventionism (Keynesian concepts). However, phenomena such as polarization and convergence occur in all considerations. These phenomena are perceived differently in diverse theories and doctrines, which is the reason they have different meanings and expectations.

**Keywords:** economic growth and development, socio-economic space, polarization, convergence.

**Streszczenie:** Podstawową kategorią ekonomiczną poddawaną analizie we współczesnej gospodarce jest wzrost. W odniesieniu do przestrzeni społeczno-ekonomicznej pojawia się problem jego równomierności. W koncepcjach dotyczących rozwoju przestrzennego zakłada się samoistne wyrównywanie tego zjawiska (koncepcje neoliberalne) lub konieczność jego wymuszenia poprzez interwencjonizm (koncepcje keynesowskie). We wszystkich jednak rozważaniach występują takie zjawiska, jak polary-

zacja i konwergencja. Zjawiska te są różnie postrzegane w różnych teoriach i doktrynach. Dlatego też przypisuje się im różne znaczenia i ma się co do nich różne oczekiwania.

**Słowa kluczowe:** wzrost i rozwój gospodarczy, przestrzeń społeczno-ekonomiczna, polaryzacja, konwergencja.

## 1. Introduction

In many concepts aiming to describe the development of spatial units, the issue of leveling this phenomenon is included. This issue has become the basis for the construction of individual theories, often turning into the *idée fixe* of individual authors. This idea is particularly evident in concepts derived from the assumptions of Keynesian Economics (interventionism). However, neoliberal concepts also pointed to the occurrence in the natural space of a tendency (mechanism) to equalize marginal wages of production factors in interregional terms through the migration of capital from already developed (and therefore expensive) locations to relatively less developed (cheaper) locations. Therefore, this phenomenon should result in the natural levelling of the degree of development in socio-economic space in a natural way.

The extreme manifestation of this approach has become the pursuit of spatial unification in terms of socio-economic indicators. The elements of this type of undertaking are observed in the adopted doctrines of regional development in some Western European countries after World War II, and their echoes can be found in contemporary discussions. However, the oil crisis of the early 1970s has already shown the lack of realism in this type of activities and at the same time pointed out that space and phenomena occurring in it are much more complex. They are becoming increasingly multidimensional and it is impossible to reduce the subject of these considerations to simplified two-dimensional relations. The experience of the end of the 20th century and the beginning of this century has shown that this issue is much more complex and less predictable than would result from the previously adopted deterministic assumptions of economic processes.

Therefore, in considerations devoted to the processes of growth and spatial development in socio-economic terms, the phenomena of polarization and convergence are of great theoretical and practical importance, which are associated with the differentiation of socio-economic processes in space. The aim of the article is to indicate the place and evolution of polarization and convergence issues in the assumptions of theoretical models. For this purpose, the method of critical literature studies was adopted, during which the epistemological approach dominated in relation to the more important concepts of spatial development.

## 2. Polarization in the description of spatial socio-economic phenomena

Nowadays (at the beginning of the third decade of the 21st century), the objective phenomenon occurring in the socio-economic space of developed countries (including Poland) is the intensification of polarization manifested, inter among others, in its anisotropization. This is associated with (1) the accumulation (concentration) of socio-economic activities in the immediate vicinity of dominant economic centres (usually large and modern urban centres) and (2) limiting these activities along with moving away from them. This process is the result of the simultaneous occurrence of two opposing phenomena, i.e. the concentration and deconcentration of socio-economic activities. On the one hand, they rely on the accumulation of economic and human activity in large, attractive urban centres, and resulting in the formation of complex metropolitan systems. On the other, they rely on the migration of people from these centres – this process is called concentrated dispersion. Nowadays, the lack of diffusion of innovation, the presence of the so-called ‘vortex effect’ and growing income from capital (Gawlikowska-Hueckel, 2002, p. 113) mean that as a result, individual spatial and socio-economic elements develop at different rates, which causes a growing diversity in the level of their development. This diversity deepens over time and ultimately leads to a high divergence of living standards in different regions.

The signalled phenomenon of growing disproportions between individual regions is irregular and subject to frequent fluctuations. At the same time, trends in the growth of disproportions are not constant (permanent in time), they may be subject to changes (e.g. trend reversal). In trying to explain and understand the phenomenon, it should be noted that the primary source is undoubtedly the general process of civilization development, which directly affects the forms of human economic activity and the phenomena accompanying them in socio-economic development in space.

The phenomenon of spatial polarization has been so far the subject of many studies, in which attempts were made to explain its essence and detect certain regularities. These studies resulted in the formulation of several theories, however their assumptions evolved over time, under the influence of changes in management processes. Polarization theories are related to the occurrence in space of the so-called growth poles. The theory of polarization was created and developed independently of one another, in the works by F. Perroux, A.O. Hirschman or G. Myrdal.

The creation of a polarization theory is attributed to the French economist Perroux, who first used the term growth poles (*pôle de croissance*) in the 1950s (Perroux, 1955). However, it should be remembered that the concept developed by him is sectoral and is considered in a hypothetical (abstract) economic space, not a geographical (physical) one. On the other hand, the approach that takes into account the spatial dimension more widely takes place in the studies by Hirschman and Myrdal. In “The Strategy of Economic Development”, Hirschman defines

economic growth as a process of the chain of sectoral imbalances, in which impulses of growth in the form of regressive and progressive couplings are transferred from the branches leading to the national economy. By forward linkage effects, the author understands the relations between cooperating business entities, while by backward linkage effects – phenomena caused by the demand for goods and services of other entities. The polarization of regional development in this approach is in the nature of opposites, i.e. polarization effects in the level of development between selected elements of space.

In turn, Myrdal tries to show the process of polarization itself, as well as its complex and diverse character. In his book “Economic theory and under-developed regions” (Myrdal, 1958), the author describes why in poor (but also rich) countries there are areas of rapid growth in wealth, and others – those characterized by high backwardness and poverty. The basis adopted to explain this phenomenon was the concept of circular, cumulative causation (Kowalski, 1981, p. 28). This resulted in – through the creation of developed and backward areas – the spatial differentiation of the level of development. The very principle of circular and cumulative causation is based on the assumption that one change in the elements of the socio-economic system in space causes changes in other elements of this system. Then, through feedback, it increases the intensity (accumulation) of mutual interactions, which in turn translates into the concentration of phenomena that trigger economic development. The author adopted the assumption that the free market always leads to an increase in spatial disparities in the level of development. However, the very intense development of an area causes two opposite phenomena in its environment: first beneficial, called the spread effect, which manifests itself in the transfer of economic activity directly or indirectly to backward areas. The second, opposite phenomenon is negative, more dominant in economic reality and concerns the so-called leaching effects of development; it is commonly known as backwash effect, and is essentially a reflection of the concept of cumulative circular causation.

A continuation of the current reflection was the concept of a polarized region (*région polarisée*) developed by Boudeville (Kaźmierska, 1984, p. 26). Such a region is understood as a hierarchical and, at the same time, an integrated spatial system, in which the core is the metropolis and its dependent centres (in this case settlement units of different sizes) together with the dominated rural areas. A characteristic feature of this system is that socio-economic processes (exchange of goods, services and information as well as other transactions/contacts) occur in them with greater intensity than similar relations with the environment. In practice, the central centre is the regional pole of growth initiating, through development impulses (the spread of e.g. innovation), the creation of new socio-economic connections with other parts of the region and thus causing in them the phenomenon of economic growth (Boudeville, 1968, pp. 171-186).

J.R. Lasuen drew attention to the fact that the level of development of a given area depends only on its ability to absorb innovation from highly developed areas

(unfortunately, this approach overlooks endogenous development factors). In describing and explaining the phenomenon of polarization, a significant role is played by the book "A general theory of polarized development" by J. Friedmann (Rościszewski, 1974, pp. 18-33). The approach presented in it is defined by the concept of cores and peripherals. The basic assumption of this theory is that the development process is characterized by discontinuity in space (Rościszewski, 1974, pp. 18-33), which accumulates especially in large urban centres showing an upward trend, i.e. assuming the nature of polycentric development. The development process itself (in principle – its polarization), takes on a bipolar form. There is a core region and peripherals that make up the other regions. According to the author, there are four types of peripheral regions: upward transition – with the greatest chances for development; resource frontier – characterized by high incomes obtained by residents; downward transition – where a process of economic decline occurs; agricultural colonization – characterized by a low level of development and virtually no chance of improving the situation in the future. However, the centre is primarily a large urban centre, whose economic dominance is constantly increasing through the self-strengthening polarization mechanism; due to the occurrence of feedback effects, the core action extends to the further periphery.

Some successors and continuators of Friedmann's considerations state that the process of centre formation is dynamic, i.e. dependent on the emergence of new technologies, industries, etc. (in this perspective, peripheral regions may become centres). Others, however, say that spatial diversity is more static and therefore more permanent (Grosse, 2002, p. 29).

Using, among others, the above remarks and assumptions Friedmann formulated in 1986 a model of spatial and social development in which he showed the process of polarization in individual stages of economic development, i.e. pre-industrial, industrial and post-industrial development.

One of the latest approaches to the concept of space polarization is the concept of the growth pole theory (Grzeszczak, 1999, pp. 25, 26). This pole is made up of clusters of innovation, showing a natural tendency to concentrate, i.e. clustering. Clustering is nothing more than a phenomenon of spatial polarization (primarily an abstract discontinuous technical space).

Currently, new approaches to polarization in spatial development result from the growing belief that at the turn of the century (20th/21st) the phenomenon of polarization has deepened, both internationally (Gorzalak, 2000, p. 738), where there is an increasingly sharp division into rich countries and poor (the gap between them is constantly increasing), as well as in the space of individual countries. The intensification of the phenomenon of polarization is based primarily on the growing importance of large settlement centres, starting to seriously decide not only about their own development but also about the directions, pace and level of development of other areas. As a consequence, a small number of local metropolitan systems of the new type is created, which is characterized by strong closure (Korenik, 2001,

p. 8). This means that in the future the intensity of the space polarization process will be strengthened by a strong concentration of socio-economic activity in selected interconnected points of space. This can be analysed, among others, according to changes taking place on the housing real estate markets (Zakrzewska-Półtorak, 2019, pp. 226-238) or business services markets (Rynio and Zakrzewska-Półtorak, 2018, pp. 9-17). Polarization in this approach takes on a multi-faceted character, which replaces polycentric phenomena, and becomes an expression of the transition of the economies of highly developed countries to a complex network system.

### 3. The place of convergence in concepts of spatial development

The convergence theory is presented somewhat differently in the issues of shaping growth and development in space. Originally, this concept concerned only national economies, it was not until the end of the 20th century that it began to include smaller spatial units, including primarily regions. For this reason its assumptions are often automatically transferred to the perspective of, e.g. regions, which is not entirely justified.

In economic terms, convergence (in Latin *convergere*) is a part of the concept in which the effect of catching up by less developed countries with the most developed economies is assumed. Followers of this concept assume that the convergence may occur between a higher and less developed country, when the latter participates in the global economy and has such potential productivity options that will enable the accelerated growth process.

However, the literature on the subject indicates that the problem of the convergence, as a process of equalizing the level of development, is complicated. Therefore, for a clearer presentation of this issue, it was divided into different types, according to the course and specificity of the process – and thus the convergence of sigma ( $\delta$ ) and beta ( $\beta$ ) was distinguished. The first one occurs when the initial variation among individual economies measured by GDP per capita decreases over time. Two types can be distinguished in  $\beta$  convergence, namely conditional and absolute convergence. Conditional convergence assumes that individual economies strive for their own equilibrium states determined by specific features characterizing a given economy (primarily the level of investment in capital with particular emphasis on human or creative). As for absolute convergence, it is claimed that all countries strive for the same level of development (a steady state), but in practice this is only possible if their economies are homogeneous. When polyphonic sources of development occur, it is rather called conditional convergence.

A. Gerschenkron is considered one of the founders of the convergence theory (Gerschenkron, 1962), who pointed out that the possibility of rapid acceleration of development occurs in relatively underdeveloped countries. In his considerations he accepts that the liberalization of international exchange (which translates into

an increase in trade turnover) directly results in an increase in the overall efficiency of production factors and, as a result, an increase in the national income of the participating countries occurs. However, taking into account the assumptions of the neoclassical theory, it should be remembered that in the long run the growth rate is determined by the rate of technical changes. Thus, in the neoclassical analysis it is shown that the benefits obtained from foreign exchange do not have a lasting impact on the growth rate. Admittedly, they have a one-off effect of improving the overall efficiency of production factors until the exchange reaches an optimal level, which of course increases national income per capita, but does not improve the effects of socio-economic growth in the long run. It grows only in a temporary way and eventually stabilizes at the level determined by the rate of exogenously defined technical changes (Michałek, Siwiński, and Socha, 2007, pp. 15, 16).

This approach created the premise for the hypothesis of conditional convergence, i.e. the tendency to achieve higher economic growth by less developed countries. In order for such a phenomenon to occur it is necessary to adopt the assumption of decreasing marginal productivity of production factors. It follows that countries with, for example, less capital per employee achieve a higher growth rate, which decreases as this resource increases. As a result, under such international exchange, less developed countries have a chance to achieve faster economic growth. However, this does not have to lead to full convergence of national income levels on an international scale. To make this possible it is necessary to adopt additional assumptions, i.e. about the universal availability of technology, convergence of rates of accumulation of physical and human capital and the lack of other factors other than technology that differentiate the so-called overall factor efficiency. In fact, efficiency depends not only on technology but also on institutional, legal, social, political and cultural factors. In an open economy, convergence is additionally conditioned by the degree of external openness, which brings additional benefits from international trade and capital flows. If these assumptions are met it is possible to achieve the same levels of product per capita (Michałek et al., 2007, p. 16). The concept of club convergence, according to which the phenomenon of equalization of development level occurs only in individual groups of spatial units with similar economic structures and equipped with immobile production factors, takes a slightly different perspective on these issues, whereas the phenomenon of polarization begins to appear between individual groups (Wójcik, 2008, p 42). These assumptions provide an answer in the matter of the deepening dual model of the world economy development, consisting in the polarization of all countries into two groups dovetailing each other, and the basis is income per capita – so in practice dealt with divergence.

The convergence phenomenon is also applied in practice in relation to spatial systems. For example, referring to the EU situation, it is generally stated that convergence occurs between countries, but this is not quite the case across regions. The convergence phenomenon has been applied in many contemporary models of regional development, e.g. in the assumptions of New Economic Geography or in endogenous growth models.

These growth models try to eliminate the basic weakness of all neoclassical ones – which is the lack of explanation of the phenomenon of steady product growth per employee. It is determined by an exogenous variable unexplained in the model, i.e. the rate of increase in technical progress. This new approach incorporates technical progress into the model, which is treated as an explained variable. At the same time, these models offer a description of the factors determining the creation of new technologies. Another important change compared to neoclassical models is the rejection of the assumption that technology is fully available to all countries. Changes in the level of technology depend on expenditure on research and development (Michałek et al., 2007, p.17). In these models, the shape of the production function depends on knowledge. This means that funds directed to the research and development sector may be characterized by increasing, decreasing or constant revenues in relation to scale.

To conclude the above remarks – it should be realized that different shaping of growth rates and the level of income per employee is the result of the fact that the development of innovation can take place in different spatial units according to different scenarios. Thus, endogenous models show that there is no definite tendency for growth rates to converge or for per capita product levels between regions. Hence, the disparities may persist almost indefinitely.

Endogenous models also take into account the effects of the integration of countries and their regions with different levels of development and different possibilities of generating technical progress. It is assumed that the more developed regions are more technologically advanced and have an advantage in creating technical progress, while the less developed regions do not create new technical solutions. It should be remembered, however, that in conditions of progressive economic integration, technological imitation is possible. Expenses incurred in this respect are smaller than the expenditure on creating completely new technologies. Thanks to this, regions that follow a lower level of product per capita have a chance for faster development than more developed regions. The growth rate faster at this level, the larger the initial income gap between regions (Michałek et al., 2007, p. 18). Thus endogenous growth theories show that economic integration can contribute to real convergence.

#### **4. Conclusion**

The endogenous models discussed above help explain why in some situations convergence does not occur and polarization between regions increases. This is a direct reference to the assumptions of the polarization concept, which assumes that the richer the region, the faster it can develop. However, as it is more and more frequently noted, this regularity occurs when the economy is in the early stages of development, because well-developed regions rely on greater potential and adapt

innovation faster and more efficiently (Geodecki, 2006, p. 76), which translates into their faster development and the occurrence of interregional polarization. As a result, the sources of both polarization and convergence in individual models are different, as shown in the table below.

**Table 1.** Sources of polarization and convergence in neoclassical models and new growth theories

Theory	Neoclassical growth theory	New growth theories
Sources of convergence	Decreasing income from capital	Investments in human capital, diffusion of knowledge
Sources of polarization	Autarchy	Lack of accumulation of physical capital and low level of acquiring new innovations

Source: own study based on (Geodecki, 2006, p. 77).

With regard to the above table, it should be emphasized that in contemporary economic reality, all the participants of the world economy benefit from the liberalization and integration of global markets, but there is no equal distribution in both the territorial and social dimensions. Therefore, attempts at a new look at issues such as the polarization of spatial socio-economic structures and actions aimed at the convergence of development seem understandable. This is confirmed by the analysis of 55 EU regions made at the beginning of this century, which showed the progress of convergence at the level of regions, but it is emphasized that this process will not lead to the full equalization of the level of development, as each region is burdened with a specific stigma, i.e. path dependencies (i.e. the dependence of future phenomena on the current specifics of the development path) (Inglehart and Baker, 2000, pp. 19-51).

Summarizing the considerations to date, it should be pointed out that each of the existing theories of regional development assumes in advance that disproportions are unfavourable phenomena and sets out in their assumptions a set of tools to eliminate them. However, whether in each case this type of attitude is justified, and whether the use of developed tools will bring the expected result, it should be realized that it is not possible in every situation to focus on actions that absolutely increase the potential of the region, whether it is at a given stage – for example, in the final phase of the demographic transition. A given area may function in new conditions that deviate from the situation of highly developed regions but ensure a decent standard of living for its community. In this situation, the use of a normative approach would result in an attempt to ‘forcefully’ equalize the level of development, which is not justified in practice. As a result, the obvious solution from the point of theoretical models and adopted economic doctrines is not necessary in every situation, because first of all the period in which the phenomenon of disproportion occurred, its duration and tendency, and how dominant regions affect the dynamics of the entire

economy and individual elements of its spatial structure. It is also important to take into account the development phases of the studied area, because in the initial period leading regions always show greater dynamics.

In the light of these arguments, it is reasonable to state that disparity in the level of development is a natural phenomenon, and it becomes more important to activate the development of individual regions at their own pace adapted to their capabilities rather than levelling differences at all costs and striving for convergence taking the form of 'unification'. Finally, referring to the second law of dynamics (also called the law of entropy), according to which every aspiration to achieve balance in a complex and dynamic system, including spatial, results in an increase in disproportion, disorder is adequate to the expenditure incurred (Korenik, 2011, p. 6).

## References

- Boudeville, J. R. (1968). Pojęcie przestrzeni i regionu u ekonomistów francuskich. *Biuletyn KPZK PAN*, (48).
- Gawlikowska-Hueckel, K. (2002). *Procesy rozwoju regionalnego w Unii Europejskiej*. Gdańsk: Wydawnictwo Uniwersytetu Gdańskiego.
- Geodecki, T. (2006). Procesy konwergencji i polaryzacji w regionach Unii Europejskiej. *Zeszyty Naukowe Akademii Ekonomicznej w Krakowie*, (714).
- Gerschenkron, A. (1962). *Economic backwardness in historical perspective, a book of essays*. Cambridge, Massachusetts: Belknap Press of Harvard University Press.
- Gorzelał, G. (2000). Trwałość i zmiana: historia, transformacja i przyszłość polskich regionów. *Ekonomista*, (6).
- Grosse, T. G. (2002). Przegląd koncepcji teoretycznych rozwoju regionalnego. *Studia Regionalne i Lokalne*, (1).
- Grzeszczak, J. (1999). Bieguny wzrostu a formy przestrzeni spolaryzowanej. *Prace Geograficzne, IGiPZ PAN*, (173).
- Inglehart, R., and Baker, E. (2000). Modernization, cultural change and the persistence of traditional values. *American Sociological Review*, (65).
- Każmierska, E. (1984). Aspekt terytorialny systemów gospodarczych. In J. Reguński (Ed.), *Miasto i jego władze. Studia nad ekonomiczną teorią rozwoju miasta*. Wrocław: Ossolineum.
- Korenik, S. (2001). Procesy rozwoju regionów na przełomie wieków. In A. Kożuch (Ed.), *Od administrowania do zarządzania w gminie i powiecie*. Siedlce: Wydawnictwo Akademii Podlaskiej.
- Korenik, S. (2011). *Region ekonomiczny w nowych realiach społeczno-gospodarczych*. Warszawa: CeDeWu.
- Kowalski, J. S. (1981) Teorie rozwoju regionalnego w świetle koncepcji szwedzkich. *Biuletyn KPZK PAN*, (141).
- Michałek, J. J., Siwiński, W., and Socha, M. W. (2007). Realna i nominalna konwergencja – podstawy teoretyczne i implikacje praktyczne. In J. J. Michałek, W. Siwiński, and M. W. Socha (Eds.), *Polska w Unii Europejskiej: dynamika konwergencji ekonomicznej*. Warszawa: Wydawnictwo Naukowe PWN.
- Myrdal, G. (1958). *Teoria ekonomii a kraje gospodarczo nierozwinięte*. Warszawa: PWG.
- Perroux, F. (1955). Note sur la notion de „Pole de Croissance”. *Economie Applique*, 8(1-2).
- Rościszewski, M. (1974). Ogólna teoria rozwoju spolaryzowanego. *Przegląd Zagranicznej Literatury Geograficznej*, (1-2).

- Rynio, D., and Zakrzewska-Półtorak, A. (2018), Diversification of the spatial distribution of entities providing business services – the case of Lower Silesia. In J. Slavík, and L. Povolná (Eds.), *Social and Economic Development & Regional Policy. Adaptation of Post-Industrial Society to Global Changes: Conference Proceedings* (pp. 9-17), Faculty of Social and Economic Studies Jan Evangelista Purkyně University in Usti nad Labem.
- Wójcik, P. (2008). Dywergencja czy konwergencja: dynamika rozwoju polskich regionów. *Studia Regionalne i Lokalne*, (3).
- Zakrzewska-Półtorak, A. (2019). Differences in the prices of residential premises on the primary and secondary real estate market in Wrocław between 2010 and 2017. *Biblioteka Regionalisty*, (19), 226-238.