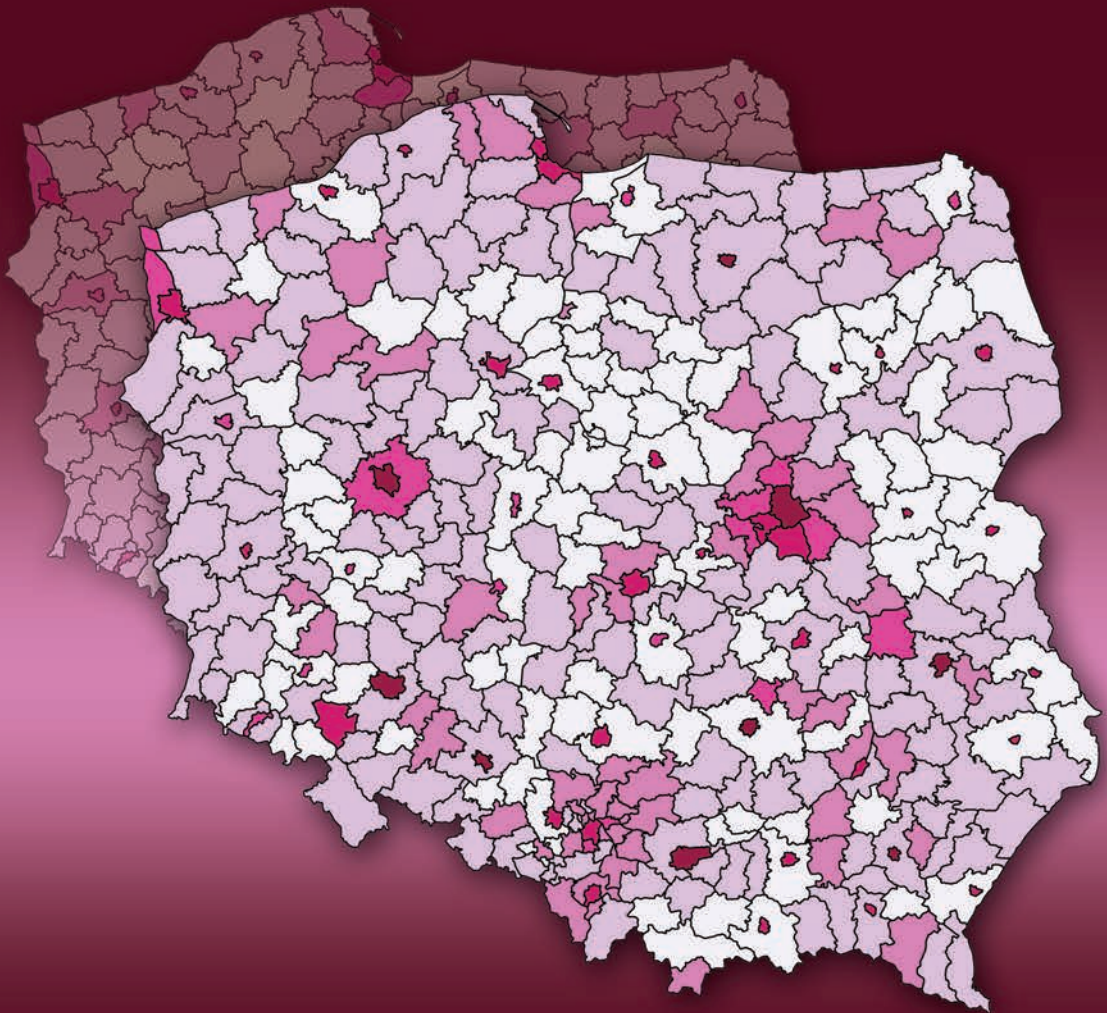


Territorial Cohesion: A missing link between economic growth and welfare

Lessons from the Baltic Tiger

edited by: John Bradley and Jacek Zaucha



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**A missing link
between economic growth
and welfare**

Lessons from the Baltic Tiger

The book presents the outcomes of the research by the Institute of Development in Sopot financed by the Polish National Science Centre as a project “Concept of the territorial cohesion in cohesion policy. Implications for Economic Growth” (no. 2012/05/B/HS4/04212).

The book also refers to and presents results of some ESPON projects in particular:

TeMo (lead partner Nordregio), SeGI (lead partner KTH Stockholm),

TRACC (lead partner Spiekermann & Wegener Stadt- und Regionalforschung).

“Territory is not necessarily a fixed entity enveloping all major aspects of social and political life within its boundaries. Rather, it is the object of negotiation and compromise, open to multiple interpretations.”

Andreas Faludi, *Territory:
An Unknown Quantity in Debates
on Territorial Cohesion*

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Gdańsk 2017

Authors:

John Bradley

Tomasz Brodzicki

Dorota Ciołek

Tomasz Komornicki

Zbigniew Mogiła

Jacek Szlachta

Janusz Zaleski

Jacek Zaucha

Editors:

John Bradley

Jacek Zaucha

Reviewer:

Kai Böhme

Cover design, typeset:

Magdalena Batko

Figures:

Magdalena Batko

Dorota Ciołek

Magdalena Matczak

Zbigniew Mogiła

Publisher:

Uniwersytet Gdański Katedra Makroekonomii

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ISBN 978-83-944797-4-9

We dedicate this book to the European Union hoping it will survive the stormy time and will continue offering peace, solidarity, and prosperity. We are grateful to the researchers who laid the foundations for a territorial approach to development to name here Andreas Faludi, Roberto Camagni, Peter Nijkamp.

*Jacek Zaucha, John Bradley, Jacek Szlachta,
Zbigniew Mogiła, Tomasz Komornicki,
Janusz Zaleski, Dorota Ciolek, Tomasz Brodzicki*

Table of Content

Chapter 1: General introduction (<i>John Bradley, Jacek Szlachta, Jacek Zaucha</i>)	11
1.1 How can we think better about regional policy?	11
1.2 Regional policy frameworks: first thoughts	13
1.3 Dimensions of regional policy design and evaluation	15
1.4 The organisation of the study	19
SECTION I:	
TERRITORIAL CONCEPTS AND FRAMEWORKS	23
Chapter 2: Territorial Cohesion: Origin, Content and Operationalization (<i>Jacek Zaucha, Jacek Szlachta</i>)	23
2.1 Key Spatial Concepts in Development Policy	23
2.2 Gradual Conceptualisation of the Territorial Dimension in the Context of EU	28
2.3 The Scope of the Conceptual Category of Territorial Cohesion and the Main Directions of Change	32
2.4 Main dimensions of Territorial Cohesion	35
2.5 Selected models of territorial cohesion	38
2.6 Operationalization of territorial cohesion through its quantification	41
2.7 Basic characteristics of territorial cohesion	44
Chapter 3: Polish development policy and its territorial dimension (<i>Jacek Szlachta, Jacek Zaucha, Tomasz Komornicki</i>)	49
3.1 The essence of development policy and its framework	49
3.2 Territorialisation of EU Cohesion Policy in the programming period 2014-2020	53
3.3 Development policy in Poland and its evolution	57
3.4 Territorialisation of development policy in Poland	62
3.5 Why the territorial dimension of Poland's socio-economic development and policy may be of interest to the world at large	67
3.6 Conclusions	70
Chapter 4: Cohesion as a territorial optimum (<i>Zbigniew Mogiła</i>)	73
4.1 Territorial utility	73
4.1.1 Definition	73
4.1.2 Extension of the neoclassical optimisation process	76
4.2 Modelling the territorial optimum	78
4.3 An empirical illustration of modelling the territorial optimum: Some implications for the policy-making process	84
4.4 Conclusions	91

SECTION II:	
TERRITORIAL EMPIRICAL ANALYSIS	93
Chapter 5 Territorial capital in Poland (<i>Tomasz Komornicki, Dorota Ciolek</i>)	93
5.1 Territorial Capital Based on Territorial Keys	93
5.2 Territorial capital as used in intraregional policy of Polish NUTS 2 regions	98
5.3 Territorial Key – Accessibility	102
5.4 Territorial key – Services of general economic interests	108
5.5 Territorial Key – Territorial capacities/endowments/assets	116
5.6 Territorial Key – City Networks	128
5.7 Territorial Key – Functional Regions	136
5.7.1 Functional regions as spatial units	136
5.7.2 Functional Regions as Synonym of the Economies of Agglomeration	138
5.8 The Relationship between the factors constituting territorial capital of Polish counties	142
5.9 Conclusions	146
Chapter 6 Territorial Capital and Polish Regional Development: a Neoclassical Approach (<i>Tomasz Brodzicki, Dorota Ciolek</i>)	147
6.1 Research frame for analysing interplay between territorial capital and growth in Poland	147
6.2 Estimating GDP per capita and TFP at the level of counties	148
6.3 Empirical verification of TFP determinants in Polish counties	152
6.4 Territorial capital components as determinants of Total Factor Productivity of Polish counties	157
6.5 Spatial Interactions	161
6.6 The relationship between factors constituting territorial capital in the context of economic growth	163
6.7 Conclusions	166
Chapter 7: Modelling territorial cohesion as an inter-related process (<i>Zbigniew Mogiła, Janusz Zaleski</i>)	169
7.1 Introductory remarks	169
7.2 A generic regional HERMIN modelling framework	170
7.3 Constructing interregional trade flows	176
7.4 Interregional territorial cohesion: preparing the simulation experiments	180
7.4.1 Changes made to the regional models	180
7.4.2 Simulating the impact of the interregional environment on economic growth	182
7.4.3 Scenario 1: Opening up interregional channels of trade	184
7.4.4 Scenario 2: Regional spillover of faster development in one region	186
7.4.5 Scenario 3: Reduction in development dynamics of the Mazowieckie region	188
7.4.6 Scenario 4: Increased support for the regions in eastern Poland	189
7.4.7 Scenario 5: Spillovers from strong to weak regions	192

7.5	Exploring the role of the interregional environment on the impacts of EU Cohesion Policy	194
7.5.1	CP impacts for a specific region: “no-links” case	194
7.5.2	CP impacts for a specific region: “with-links” case	196
7.6	Conclusions	199
	Annex 1	201

SECTION III: TERRITORIAL POLICY AND CONCLUSIONS **205**

Chapter 8: Territorial cohesion in Polish regional development policy as a process of adaptation to the specifics of a territorial unit *(Jacek Zaucha, Tomasz Komornicki, Jacek Szlachta)* **205**

8.1	Researching practical application of territorial cohesion in Poland	205
8.2	Territorial cohesion in strategic documents	206
8.3	Knowledge of territorial context as a prerequisite of territorial cohesion	210
8.3	Knowledge on behaviour of other development actors as a prerequisite of territorial cohesion	213
8.4	Territorial Dialogue – key precondition for adaptation of development policy to the territorial specificities	215
8.6	Good Practices	219
8.7	Conclusions	220

Chapter 9: Conclusions and policy recommendations *(John Bradley, Jacek Szlachta, Jacek Zaucha, Zbigniew Mogiła)* **223**

9.1	Introduction	223
9.2	Territorial policy: concepts and frameworks	224
9.2.1	Territorial cohesion: origin, content, and operationalisation	224
9.2.2	Polish development policy and its territorial dimension	226
9.2.3	Cohesion as a territorial optimum	228
9.3	Empirical studies of Polish territorial issues	229
9.3.1	Territorial capital in Poland	229
9.3.2	Territorial capital and regional development: a neoclassical approach	233
9.3.3	Modelling territorial cohesion as an inter-related process	236
9.4	Polish territorial policy in practice	237
9.4.1	Territorial cohesion: adaption to specific territorial units	237
9.5	Is Polish experience valid for the others?	239

Bibliography **243**

List of Tables **257**

List of Figures **259**

Chapter 1: General introduction

*“As in the past, so today: the real boundaries
in Europe are not between countries
but between prosperous urban centres
and a neglected and impoverished rural hinterland.”*

Tony Judt, *Post War: A History of Europe Since 1945*

1.1 How can we think better about regional policy?

The research sequence for national economies goes from theory to data, to empirical analysis, to models, and ends up with policy impact simulations. This simply doesn't work at the regional level. Theory in spatial economics is relatively new, complex, untested and suggestive rather than prescriptive (Fujita *et al.* 1999). Regional data are almost always scarce, and when available can be unreliable and often irrelevant to the needs of research into regional structure and development. Empirical analysis of regions has tended to be carried out on cross-regional panel data and tells us little of how specific regions — evolve and develop (Barro 1991).

From a different perspective, theory tells us that the period of intensifying international linkages revealed new comparative advantages. Among them is the notion of territorial capital. Economic density i.e. economies of agglomeration (World Bank 2009) or of networking plays an important role as a factor shaping prosperity and evolutionary resilience (Bailey, Turok, 2016). London stars as a global financial hub, Berlin becomes a European centre of innovative culture, Milano is a capital of design while Munich tries to establish itself as a research leader. All those cities are densely connected. Travelling by train from Brussels to Paris takes less than 2 hours.

All those factors are almost absent in the states that joined EU in 2004 — the new peripheries of the EU. Despite the increase in GDP and productivity in Eastern Europe, its connectivity is below EU average (e.g. there is no train connection between Vilnius and Warsaw), the majority of flows of goods, people and ideas go outside the region, intraregional flows are underdeveloped, the quality of social capital is at a very low level,

and the ability to cope with adverse economic shocks (mainly due to inferior quality of strategic governance) is limited (Gawlikowska-Hueckel, Szalchta 2014). The countries' development can be endangered by the so-called middle-income trap. For the region, it is of key importance not only to better exploit its knowledge and human capital endowments but also territorial capital as it has been done in Western Europe.

This tension between available data and information that can inform policies and new development challenges creates a very serious problem for regional policy designers and analysts. An important case is that of EU Cohesion Policy in states like in Eastern EU Europe, which receive substantial development aid and where the allocation of funds is heavily influenced at the national level, as are many elements of policy design, but where actual policies are implemented spatially in specific regions. The usual kind of macroeconomic policy impact analysis that is carried out with national models ignores the spatial aspects of the policies and examines the aggregate impact of all policies on the national economy (Bradley 2006; Bradley and Untiedt 2008; Bradley and Zaleski 2003a; 2003b; Bradley *et al.* 2006; Mogiła *et al.* 2010; Zaleski *et al.* 2014; 2015). However, the need to have a better understanding of regional economies, with a view to designing and evaluating regional policies, obliges us to review the manner in which we try to understand how a regional economy works, in the absence for regions of many of the data and models that are readily available at the national level. The Polish research project described in this book turned out to be a kind of a voyage of discovery and it led to the conclusion that previous methods of matching regional policy design with regional development needs could sometimes be deficient, and that this deficiency was exacerbated by the fact that the national macro (top-down) approach to policy impact analysis had become detached from the vital regional micro and spatial (bottom-up) approach that is an essential element of regional policy evaluation.

The task of getting national economic development strategy right is hard enough. However, the challenge of regional development strategy is even harder. Perspectives on the development challenges of the economies of the EU member states have been reasonably well articulated and systematic and have gradually become more effective as these economies progressively integrate with the wider Single Market. On the other hand, perspectives on the development of the constituent regions of national economies have tended to be partial, distorted, poorly organised and often ineffective.

Regional development perspectives tend to be *partial* because there is a natural tendency to focus almost exclusively on the role of public policy-makers and neglect private sector actors and actions as well as regional specifics. They can be *distorted* because from a mainly public policy perspective it is hard to understand the true potential and structural characteristics of regional economies and how they evolve and grow in an organic way. They are often *poorly organised*, not for lack of regional enthusiasm, but because it has proved extremely difficult to coordinate the many actors and layers of decision making that need to be involved. Moreover, they are often *ineffective* because there is usually a strong preference to rely on national strategic development frameworks with the hope that centralised policies will generate sufficient spill-over and trickle-down effects from core densely populated regions to peripheral, sparsely populated regions.

The result is a growing disappointment with EU Cohesion policy and development policy as such in many EU countries. It is clearly seen in particular in the Eastern part of the EU namely in Hungary, Slovakia and Poland. However, there is a substantial experience in the region on how to run development policy efficiently. The results, are not

entirely satisfactory, but progress can be clearly seen. Therefore, to counterbalance and prevent emerging risks of blaming development policies for what they were not responsible for one should first analyse their past performance and then sort out properly what did work and what failed to work. Territorial capital seems one of the key dimensions for such analysis.

The key objective of this book is to address these questions, using a range of new and innovative research approaches. Poland, a medium sized open economy of size similar to Spain, however, located in the new EU periphery, will be used as a case study due to its advance in propagating territorial dimensions of development policy. Although the research deals exclusively with Poland, the methodology and findings have much wider application to regional analysis and policy-making in all EU member states and make a significant contribution to the body of regional science.

1.2 Regional policy frameworks: first thoughts

Systematic development policy frameworks can help nations and their regions to be smart and aim for optimum outcomes with limited resources. They are essential in order to bring focus and synergy to the disparate policies that make up any modern national or regional development strategy. However, experience suggests that such frameworks often emerge as ex-post explanations of the outcomes of policies that were designed (or which emerged) in a less formal, eclectic fashion. It is not an ideal situation but is probably no less desirable than a slavish adherence to a rigid and prescriptive regional strategy that might turn out ex-post to be completely inappropriate. Nevertheless, strategic regional frameworks have an important role to play in identifying potential barriers to development or in distilling the lessons of development experience in nations and regions that may share some common characteristics. Formulating, documenting and using such frameworks represent some of the most fruitful ways that researchers can play a role in advancing regional development.

In general, there have been two very broad approaches to the study of regions. The first might be termed the ‘descriptive’ approach, which is based on the history of regions, their geographical features, the descriptive quality of their physical infrastructure, the characteristics and standards of their human resources (or ‘human capital’), the nature of their main economic activities, and their wider socio-demographic features. This ‘soft’ approach is popular and technically undemanding but tends to end up as a confusing mix of praise for the great unrealised potential of the region with appeals for something to be done about its serious problems but with no robust guidelines. The second approach might be described as ‘analytical’ and is typically based on an explicit economic or enterprise strategy framework and makes systematic use of data to examine the underlying economic structure and socio-economic mechanisms of the regions critically. The “descriptive” approach is useful in setting the context for the articulation of the “analytical” approach and should always be used in that way.

Within the ‘analytical’ approach to strategy formation, one possible way of looking at regional economies, such as the 16 Polish NUTS 2 regions (or voivodeships), is to regard them as spatially scaled down versions of the encompassing national Polish economy, but

which have at least some local policy autonomy, but not the full range of national policy freedom. It can be called a “macro-regional” framework. At the other extreme, one might regard regional economies as isolated production units (or export bases) with little or no internal structure or policy autonomy. This can be called an “export-base” framework. However, if we regard regions as an isolated unit of production, with very little local policy autonomy or initiative, then regional development policy reverts to being the concern of the national authorities. In such circumstances, the convergence prospects of any such lagging region are limited and depend almost entirely on how national policy towards the regions is designed and executed. Consequently, a lagging region risks being trapped semi-permanently in dependency, a situation that is often referred to as the *Mezzogiorno* problem, after the region of Southern Italy whose name has become synonymous with persistent regional underdevelopment and dependency. A useful approach to developing an analytical economic framework for the Polish regions starts off with the premise that they have different initial internal structures and the potential for some degree of policy autonomy, even if that potential is not always understood or realised.

Turning to a narrower focus on the enterprise sector of regions, the work of Michael Porter on competitive advantage has been influential in the formulations of national industrial strategies and has obvious – although as yet largely unanalysed – implications for regions (Porter, 1990). Porter asked how an economy (national or regional) can achieve international success in any particular industry or groups of industries. His answers identified four broad attributes (the competitiveness ‘diamond’) that shape the environment in which firms compete:

- Factor conditions: the availability and quality of the factors of production such as skilled labour, infrastructure, etc.
- Demand conditions: the nature of local and external demand for the industry’s product or service, where local demand can play a vital role in encouraging product innovation and improvement.
- Related and supporting industries: the presence or absence of supplier industries and related industries that are also internationally competitive.
- Firm strategy, structure and rivalry: the national conditions governing how companies are created, organised and managed.

Porter also suggested that there were different stages of competitive development during which various elements of the ‘diamond’ come into play. At the early stages, competitive development is driven by factor conditions and draws on low-cost labour and/or abundant natural resources. The next stage is investment driven, drawing from factor conditions and demand conditions as well as firm strategy, structure and rivalry (i.e. from three of the four diamond elements). In the final stage, competitiveness is driven by innovation and draws from the entire diamond. It is a particularly useful way of structuring the goals of regional policy but requires in-depth knowledge of the regional economy.

Another framework to emerge from a business research perspective is the ‘capability triad’ of Michael Best (Best 1990; 2001). The capability triad contains probably the most synergistic combination of insights drawn from the economic theory of the firm and the detailed history of the structural evolution of business practices. It is based on the interaction of three elements: a business model, production capabilities and skill formation. The most crucial policy implication to emerge from Best’s framework is that any overall programmes of change in the area of industrial policy require the close integration of the change programmes in each of the elements of the triad:

Rapid growth involves coordinated organisational changes in each of three domains: the business model, production capabilities, and skill formation. ...The three domains are not separable and additive components of growth, but mutually interdependent sub-systems of a single developmental process. ...No one of the three elements of the Capability Triad can contribute to growth independently of mutual adjustment processes involving all three elements. (Best 2001, 2).

The business model element of the triad describes how entrepreneurial firms can grow, based on the creation of new companies through technology diversification, inter-firm networks within open systems, and regional specialisation based on technological capabilities. The production capabilities element of the triad integrates ideas from operations management and strategy into a logical system of production models that drives home the lesson that competitive strategy and productive systems are bound together. The skill formation element of the triad provides a vital input to innovation and serves to facilitate the synergistic interaction and reinforcement of all three aspects. Finally, an important implication to emerge from Best's analysis is that overall programmes in the area of industrial strategy require the close integration over time and space of the change programmes that need to take place within each of the elements of the triad.

These various regional policy frameworks are analytical to varying degrees. The most analytical — the macro-regional framework — is usually incorporated into formal computer models that can be used to carry out forecasting and policy impact analysis. The Porter and Best frameworks are more like systematic taxonomies that provide ways of organising facts into sequences that are easier to link together in a policy-useful way. The combination of the “descriptive” approach with these analytical frameworks probably represents the best way to explore regional economies and to design and evaluate regional development policies (see Bradley and Best 2012 for a case study of Irish regional policy). In this book, we describe a range of research investigations that implements some elements of this kind of synthesis.

1.3 Dimensions of regional policy design and evaluation

One can plan and analyse regional policy in different ways, based on the above methodologies. Research experience suggests that there are three critical dimensions that have to be taken into account in any exercise of planning and analysis. The first dimension is spatial, to characterise the nature and extent of the regional economy being studied. Experience suggests that the optimal region or territory is unlikely to coincide always with any simple collection of existing administrative boundaries and that it can even cross international frontiers. Nevertheless, an effort must be made to identify the spatial extent of the region of relevance to the analysis, and the challenges posed by the policy needs of the Polish NUTS 2 regions is a particularly interesting case study.

The second dimension is sectoral, to identify a range of sectors which are uniquely suitable and adaptable for promotion within the designated region or territory. Clusters of enterprises rather than isolated enterprises are relevant here, where essential characteristics of clusters include the following:

- Firms do not compete alone in the national or global marketplace but as members of networked groups of firms. For this reason, we needed to examine network alliances and other forms of inter-firm relationships.

- Firms compete in the global marketplace by leveraging the skills, capabilities and knowledge bases of the regions in which they are embedded.
- Innovative firms make more than products: they advance the skills, capabilities and knowledge base of the region in which they conduct business. Moreover, the process by which innovative firms develop specific capabilities in pursuit of new market opportunities itself creates opportunities for other enterprises.
- The inter-firm processes by which skills, capabilities, and knowledge are deepened within a region can trigger the emergence of new sub-sector growth opportunities. In this way, a region's production base can be enhanced by the transition from declining to growing sectors.

The third dimension is institutional, to identify the kinds of co-operative policy frameworks and actions that are needed in the targeted region or territory if it is to have a greater prospect of participating in wider national and EU-wide prosperity. Research suggested that failures here tend to arise as a result of knowledge deficits (e.g. imperfect understanding of the structure of regional and cross-border economies); institutional jurisdictional issues (e.g. constraints on the operation of 'national' development agencies); policy and administrative gaps (e.g. small and under-resourced local government development functions and capacities); a lack of regional development focus by the university-level educational and research establishments and an inability to achieve close synthesis between them; and weaknesses in non-governmental socio-economic agencies (e.g. chambers of commerce and business organisations). The objective here would not be to design new institutions from scratch since neither the resources nor the political will are likely to favour such a root and branch approach. Rather, it would be to propose ways that elements of existing institutional policy frameworks can be improved and refocused to overcome the weaknesses caused by coordination failure, mainly by articulating a shared vision of the challenges faced within the border development zone.

The combination of these three dimensions – spatial, sectoral and institutional – provide a sound and coherent context for dealing with the exceptional challenges of lagging regions. For example, the identification of specific infrastructural deficits is best carried out where the spatial dimension is explicit, the sectoral issues are a key justification for policy action, and the institutional dimensions are supportive and facilitating. The three dimensions provide the natural context within which to generate specific development proposals, to do so in a way that facilitates the objective evaluation of likely achievable benefits, and to ensure that the appropriate institutional framework is in place to implement policy decisions.

These three dimensions (spatial, sectoral and institutional) are also relevant to both micro and macro perspectives on regional analysis, which have their specific objectives and methodologies. For example, the analysis of the impact and effectiveness of EU Cohesion Policy can proceed at different levels of investment aggregation, where the essential difference between these levels is the extent to which the rest of the economy is assumed to remain unaffected or unchanged while a specific policy initiative is investigated. These stages are usually denoted by the terms micro, meso, and macro in evaluations of EU Cohesion Policy.

In the case of an individual regional investment project (e.g., a particular stretch of road; a new harbour; a targeted training scheme, etc.), a conventional cost-benefit analysis

can be carried out, with competing projects ranked in terms of increasing internal rate of return. Such microanalysis, however, can give rise to obvious difficulties in relation to the need to evaluate the impact of complementarities, spill-over effects and externalities in the context of the overall Cohesion Policy programme. For micro impact analysis to be valid, the investment projects need to be sufficiently small and self-contained so that spillovers and externalities can be assumed to be second order.

Moving up the scale of aggregation, a grouping of, or the totality of projects targeted at a general or systemic problem (say, long-term unemployment or industrial competitiveness), could be evaluated in terms of how successful they were in attaining their designated priority objective (such as lowering the incidence of long-term unemployment or boosting domestic and export sales). Here the assumption that meso impact analysis can be carried out purely, or even mainly, in terms of its internal focused objectives is more difficult to sustain. Meso impact analysis can be carried out, but it leads inexorably to the need for complementary macro impact analysis.

Finally, the effectiveness of large EU Cohesion Policy Operational Programmes (OPs) or of the entire programme can be evaluated as an integrated whole. Given the often large size of the funding in relation to the size of the national and regional economies, and the obvious implications for domestic fiscal, monetary, industrial and regional policy, the evaluation of the impact of any large-scale programmes must be done a context that includes all relevant economy-wide feedbacks and interactions, attempting to account for all complementarities, spill-over effects, and externalities. In other words, it requires a macroeconomic or macro-regional perspective and demands formal national or regional economy models: input-output (I-O), macro-econometric, computable general equilibrium (CGE), growth models, etc.

Table 1.1 below sets out a scheme that enumerates some of the distinctions between micro and macro impact analysis and characterises the different emphasis each of the two approaches has over ten stages of the evaluation process.¹ Many of these stages are self-explanatory and are determined by the fundamental characteristics of micro and macro approaches to policy research. However, some stages require explanation. For example, in Stage 3 we suggest that for policy interventions at the level of individual projects or measures (i.e., a series of closely related projects) can be analysed using micro-economic approaches since spill-overs and externality effects can reasonably be assumed to be of second order. However, above that level, for Operational Programmes or the entire Cohesion Policy programme, the large size of the policy interventions forces one to adopt macro approaches to design and impact analysis since spill-over and externality effects can also be very large and cannot be ignored.

Turning to Stage 9, the crucial issue of the appropriate policy counterfactual arises. It is probably the most contentious issue in both micro and macro policy impact evaluation. The micro approach draws on techniques commonly used in experimental design in areas of science and medicine. However, the formal implementation of the “scientific” approach is fraught with difficulties. For example, it is seldom possible to design Cohesion Policy interventions at the project or measure level in the same fashion as in scientific experiments (i.e., one region gets a bridge while another, similar and equally deserving region, does not). However, an approximate application is sometimes possible to identify

¹ Table 1.1 does not include the meso approach to policy impact analysis since this is an uneasy blend of elements from both micro and macro approaches. Our objective is to try to clarify the distinctive features of the “purer” micro and macro approaches so that the appropriate mix can be derived for any meso analysis on a case by case basis.

with an adequate degree of precision “a population ‘similar’ to the target population” (Barca, 2009). In the macro approach, on the other hand, a formal counterfactual scenario can be defined fairly precisely by means of a “policy-off” model simulation. However, its reliability depends on the acceptability of the macro model being used as a true and accurate portrait of how economies function and how policy instruments affect economic processes.

Table 1.1. Stages in Cohesion Policy Impact Evaluation: Micro and Macro Approaches

	Stages	Micro (bottom-up)	Macro (top-down)
1.	First steps	Narrative description of regional economic context of intervention	Macro-sectoral description of national, regional, sub-regional economies
2.	Nature of data	Use whatever are available and gather the rest	Requires access to published national and regional accounting data
3.	Aspects of Cohesion Policy	Individual projects and measures	Operational programmes and aggregate programme
4.	Main formal techniques	Cost-benefit analysis (CBA)	Macro-sectoral policy modelling
5.	Timing	Mainly used ex-ante, but can be used ex-post (as in the CSIL studies)	Ex-ante, mid-term and ex-post
6.	Necessary inputs	Measured costs and benefits of Cohesion Policy investments	Model calibration plus inputs from micro research
7.	Nature of outputs	Informed value judgements based on CBA results	Quantification of impacts on macro-sectoral indicators using model simulations
8.	Treatment of externalities	Handled informally or ignored	Formalised, but needs inputs from micro research to link analysis to CP instruments
9.	Approach to identifying a policy counterfactual	Uses data of good quality and the robustness of the method to identify a population “similar” to the target population (Barca, 2009, p. 47)	Counterfactual is defined in terms of a “policy off” model simulation (Bradley, 2006b)
10.	Presentation of results	Narrative presentation with CBA inputs, focus on organisational aspects and efficiency of implementation	Uses macro-sectoral framework to describe impacts on the economy during implementation and post-implementation phases

Source: own elaboration.

Table 1.1 might suggest that the micro and macro impact evaluation approaches can be treated in isolation from each other, and behave like ships passing in the night. Review of the older literature on Cohesion Policy evaluation tends to confirm that this fairly rigid separation was a fact of life and the specialists in the two areas almost never talked to each other. However, if the quality and effectiveness of regional policy design and evaluation are to improve, this methodological apartheid must end. It is a key guiding objective of the present book.

Regional development appears to work best when national and regional, micro and macro perspectives are in harmony; when national policy-makers realise that the nation is merely the sum of its regions and territories, and regional policy-makers accept that co-operation is a two-way process. The knowledge gaps on the macro side (in particular, the calibration of policy externality effects) can only be treated if better and more focused micro research is carried out. On the other hand, the appropriate economic context in which policies are designed and evaluated can only be understood if some attempt is made to explore it using insights from macro-regional research, even if this is obliged to stop well short of constructing formal macro-regional models. In terms of the methodologies used in planning and evaluating regional policy initiatives, research suggests that inadequate frameworks and weak methodologies tend to lead to poor outcomes. A better balance between top-down (macro) and bottom-up (micro) analysis is essential if the scarce investment resources being devoted to EU Cohesion Policy are to be used to best advantage. These are not competing perspectives but are essential complements.

1.4 The organisation of the study

This study presents the results of research on the territorial dimension of economic growth, and development carried out during 2013–2015 by a group of Polish researchers with a background in economics, econometrics, economic modelling and economic geography. The objective of the research was to examine and interpret the concept of “territory” and the nature of “territorial policy” in more rigorous terms of economic models than has often been the case in the past. The material in the book analyses to what extent and in what way the concept of “territory” can help in harmonizing various development policies by combining different spatial scales and the treatment of territorial assets as a growth factor². Our primary aim is to mainstream territorial cohesion into economic considerations.

The origin of this type of research is in new economic geography (Fujita *et al.* 1999; Fujita and Krugman 2004; Fujita and Thisse 2002; Krugman 1991a; 1991b), literature that demonstrated convincingly that territory matters in the examination of economic processes (Zaucha 2007). New economic geography has shown that space can be introduced into rigorous macroeconomic models for the benefit of policy making, i.e., for extending the array of possible outcomes of policy intervention in line with preferences of different societies aggregated in the course of the public choice process. There is better understanding today that spatial policy has become a fully legitimated member of the family of macroeconomic policies and that the market can be used to some extent for its execution and implementation. This is a fundamental insight leading to a better understanding of such economic categories as territorial capital (Camagni 2008) or the place-based development paradigm (Barca 2009).

In Polish literature there is a vigorous debate on the spatial dimension of economic phenomena (see Brodzicki 2012a; 2012b; 2014a; 2014b; Churski 2010; 2014a; 2014b; Churski and Dominiak 2013; Churski and Hauke 2012; Gaczek 2006; 2010; Komornicki and Siłka 2011; Komornicki *et al.* 2015; Szlachta and Zaleski 2009b; Szlachta and Zaucha 2014; Zaucha 2007; 2011; Zaucha and Ciołek 2014). Of particular interest is the recently completed research on the vulnerability of Polish regions to macroeconomic

² The detailed results of the research have been presented in Polish in Zaucha (2015)

shocks (Gawlikowska-Hueckel and Szlachta 2014) and the ranking of Polish regions in this respect (Zaucha *et al.* 2014a). Until now, the problem has been that this discussion has taken place in Polish. An aim of this book is to provide access to its main findings for a wider European audience of regional policy researchers.

However, the book goes further by presenting a unique concept of territorial cohesion operationalized as the territorial optimum model. In other words, it seeks to optimise the application of the regional policy to ensure outcomes that promote territorial cohesion in its very deepest meaning. It analyses the existing methods of implementation of this concept in Polish regional policy. On this canvas, macroeconomic modelling is used to investigate what direction and what tools would enrich policy development activities at the level of both Polish regions and the EU. The results of these analyses are finally formulated as recommendations for the development policies of the EU and in Poland.

The book is divided into three main sections. Section 1 deals both with concepts and frameworks that have proved useful in the study of all aspects of territorial cohesion and introduces new and improved frameworks. A clear understanding of these issues is essential if the regional policy is to be grounded more firmly in the optimum use of the tools of policy design and analysis. Section 2 presents three empirical studies of Polish regions (at the NUTS 2 and LAU 1 level of spatial disaggregation), that are motivated by the material in Section 1. Finally, Section 3 turns to policy analysis and conclusions, where the Polish experience is described and evaluated, and offered as a compelling case study for use by other EU states where regional analysis and policy-making is not at such an advanced state.

In Section 1 we discuss three interrelated themes related to the competing concepts that are used to explore the goals of development. Chapter 2 deals with the terminology and nomenclature of development, distinguishing between the more familiar ideas of socio-economic development and the more complex objectives of territorial development. The meaning of territorial integration is then examined, contrasting it with territorial cohesion and pointing to the conflicts that can arise between them. Finally, we discuss the concept of territorial cohesion, highlighting the confusion that has been associated with this term in the past. Two existing frameworks that help systematise research into cohesion are presented: the Tequila model and the Star Model. The chapter concludes with a new and more integrative framework for discussion of cohesion, and this is used as an organising schema for the rest of the book.

Chapter 3 is designed to give the reader a detailed account of how recent EU-inspired development policy in Poland has been heavily influenced by the need to address the territorial dimension of the Polish economy. This linkage between development and territory has evolved from the earlier era of central planning into the post-1989 period of market liberalisation and has been particularly strong during the current period of EU Cohesion Policy for the programming period 2014-2020. It takes into account a complex series of development challenges, embracing the peripherality and under-development of Eastern Poland; the role of regional capitals and urbanisation; cities and their neighbourhoods; rural hinterlands; and the border areas of Poland's neighbours: Germany, the Czech Republic, Slovakia, the Ukraine, Belarus, Lithuania, the Russian Federation. Major themes treated include the unusual polycentric structure of Polish urbanisation; the extreme openness of the Polish territory; Polish membership of the EU; the opportunities provided by EU Cohesion Policy aid; the stress on decentralisation; and the sequence of major reforms of the Polish territorial system.

Chapter 4 provides a more theoretical approach to address the challenges of territorial development. Motivated by the rather limited extent to which neoclassical economic theory has been previously used to explore spatially-oriented analysis, it introduces the category of social territorial utility into the standard neoclassical optimisation paradigm and examines how this can generate novel insights into the quest for a kind of optimal approach to territorial development, i.e., one where the preferences of consumers and producers play out across space and outcomes are the best possible.

Section II consists of three chapters that present different kinds of empirical analysis of Polish territorial issues. Chapter 5 deals mainly with regional data and addresses one of the key dimensions of territorial cohesion that was first set out earlier in Chapter 2, namely territorial capital, broadly defined. In the absence of these kinds of region-specific data, it is hard to see how regional policy could be designed or adapted to regional specificity. Territorial capital is classified using the concept of what is termed “territorial keys,” which have five sub-categories: accessibility; services of general economic interest; territorial capacities, endowments, and assets; city networking; and functional regions. The specific data items within each sub-category are regarded as crucial indicators of regional development. Throughout the chapter the spatial distribution of these data are presented in a series of maps which provide a kind of regional development x-ray picture of the current state of Polish spatial development, the challenges faced in less advanced regions and the likely nature and causes of the success of the most advanced regions. The chapter concludes with an application of Principal Components Analysis, a statistical technique that is useful when there is a need to seek out and identify a small number of the main explanatory factors from a much larger set of possibilities.

Chapter 6 describes the use of spatial econometric techniques to examine the kinds of relationships that exist between Polish regional growth and territorial capital, i.e., the likely driver of that growth. It is an area of research where there are many international studies that explore the same relationship, but these are usually carried out at the level of national economies in an international comparison (Barro 1991). The study in Chapter 6 is carried out a very high level of spatial disaggregation, namely the Polish “county” or LAU 1 level. The reason for this is that Polish NUTS 2 regions (or voivodeships) are so internally diverse as to require a higher level of disaggregation (LAU 1) to disentangle the nature of the growth-territorial capital links. The actual relationship examined is that between productivity growth (more precisely, the growth of total factor productivity), and territorial capital, as described earlier in Chapter 5.

In Chapter 7 we adopt a macro-regional perspective, drawing on the extensive research on regional modelling of the Polish economy (Kudełko *et al.* 2012a; 2012b; Mogiła and Zaleska 2013; Mogiła *et al.* 2013; Zaleski *et al.* 2011; 2014). Macro models of each of the 16 NUTS 2 regions of Poland have been developed and have been extensively used to study each of the individual regional economies in isolation, and how they are impacted by policy shocks associated with the implementation of EU Cohesion Policy investment actions. However, the objective of Chapter 7 is to examine interrelations between the 16 NUTS 2 regions as each region is subjected to policy shocks, as well as the impacts on the regions themselves. Based on insights arising from modelling the territorial optimum (see Chapter 4), we must also examine the influence of the system of interregional relations between regions (e.g., between all other NUTS 2 regions). Such regional interrelations are likely to be both complementary and competitive in character, and by their nature, they are both highly specific and territorially non-replicable. The importance of the impact on the expected regional optimum cannot be overstated and

has high significance, where the system of interregional relations is made up of two main components. First, the economic characteristics of the individual regions, including their economic potential; dynamics of the main macroeconomic aggregates (GNP, gross fixed capital formation, the disposable income of the household sector, compensation of employees, private consumption, etc.); economic structure; the growth rate of technological development, etc. Second, socio-economic relations, related to the flow of goods and services as well as production factors (e.g., labour, physical capital and knowledge) and dependent on the nature of accessibility between the different regions.

As a consequence, the territorial optimum of a given region is formed within a specific spatial environment which has a unique and distinctive character. The system of interrelations which is complementary (e.g., in the sphere of branch and sector structure and of comparative advantages) and competitive (e.g., in the area of common sales markets and of the flow of production factors) can effectively boost or constrain the value of an expected optimum. Research measures which allow for the quantitative analysis of such relations require the development and use of formal macroeconomic models. In this study, the interrelated HERMIN models of the sixteen economies of the Polish NUTS 2 regions (or voivodeships) were applied as tools of investigation (Zauchna *et al.* 2015). In this chapter, a brief introduction to the Polish regional HERMIN system of models is presented. We then describe the nature of Polish inter-regional trade flows, since these provide crucial measures of the economic interrelationships between regional economies. The core of the chapter is a description of a series of simulation experiments using the system of sixteen regional models, where the different regions are interlinked through their trade flows. These explore how alterations in regional structures create consequences for other regions through spill-over effects and how the application of regional cohesion policies also create spillovers.

Section III consists of two chapters. Chapter 8 describes how the actual design and implementation of Polish territorial policy has operated in recent years. A series of searching questionnaires and interviews was used to see how actual practice compared with official programmes, guidelines, and exhortations. An attempt is made to examine the manner and the degree to which Polish regions succeeded in programming and enhancing their socio-economic development in line with the territorial optimum cohesion paradigm. The effect of such an approach produces territorially sensitive intra-regional policy, which is one of the main expressions of a serious treatment of the paradigm of territorial cohesion. Since Poland is relatively advanced in pursuing the concept of territorial cohesion as a vehicle of economic growth and welfare, in the chapter 9 we outline some lessons learned for those wishing to follow the Polish example. Those lessons stem mainly from bottlenecks that hamper adjustment of policies to the territorial specificities that arise in the course of rapid structural adjustment to the emerging requirements and demands of territorial cohesion. So the chapter is focused on challenges that the Eastern part of EU is still facing while constantly advancing the process dimension of territorial cohesion. The policy suggestions try to build on the existing strength of the development policies in the region rather than to propose their entirely new pattern. However, if the policy-makers wish to choose some opposite ideas and solutions (i.e. centralizing policy-making, limiting the number of development actors, capitalizing on conflicts instead of co-operation and social trust), this chapters should be treated as a post-mortem on policy territorialisation in Poland and the Eastern part of EU. At least somebody should continue saying that it has been a right way of policy-making requiring some changes but not a U-turn. The necessary changes are within our future reach.

SECTION I: TERRITORIAL CONCEPTS AND FRAMEWORKS

Chapter 2: Territorial Cohesion: Origin, Content and Operationalization³

2.1 Key Spatial Concepts in Development Policy

By the 1990s economic language had been extended by new spatial categories, but many of the most important spatial terms that appeared in European literature and policy documents were insufficiently defined. The three most important spatial categories used in development policy⁴ objectives are spatial development, spatial integration, and territorial cohesion. Frequently the adjective “spatial” is used interchangeably with the term “territorial”, but in both cases, the conceptual scope of these categories remains unchanged. Nevertheless, some geographers (e.g. Śleszyński 2009) indicated that both adjectives have different meanings in the realm of geographical sciences. An attempt to define more precisely the terms related to the spatial dimension of development policy is contained in the *Green Paper on Territorial Cohesion. Transforming Diversity into Strength* (CEC 2008).

From a historical point of view, the earliest concept is that of spatial development. Growth and development are among the most general and the most important policy objectives and usually carry a positive connotation, despite the negative external effects they can sometimes cause. They are broadly associated with satisfaction, fulfilment of human needs and human prosperity (Stiglitz *et al.* 2009).

The categories of socio-economic growth (or socioeconomic development⁵), and of territorial development, however, are not identical and need to be interpreted by different sets of rules. Socio-economic growth signifies a higher level of satisfaction of material and social needs as measured quantitatively for example by the level of GDP per capita and by employment rates. Territorial (or spatial) development, on the other hand, refers to the...” geographical distribution of the physical features in the built and natural environment and patterns and flows of human activity. It may also embrace the social, economic and cultural aspects of development” (Dühr *et al.* 2010, 32). In brief, territorial or spatial development requires changes of territorial structures (settlement structures,

3 This chapter (no.2) dwells on the results of the ESPON Project TeMo (Damsgaard *et al.* 2012), that inspired the authors to continue research on the consequences of territorial cohesion for growth. This is an updated and refocused summary of the annex to the TeMo interim report prepared by J. Zaucha.

4 Development policy (according to the amended Polish Act of 6 December 2006 on the principles of development policy) is a set of interrelated activities undertaken and implemented in order to ensure a sustainable development of the country, to provide socio-economic, regional, and spatial cohesion, as well as to increase the competitiveness of the economy and the creation of new jobs at national, regional, and local levels. This policy is spearheaded by the Council of Ministers (government departments) and local government units in accordance with their powers. This policy requires an assurance of the consistency of public actions taken by the above entities.

5 Growth is a quantitative phenomena whereas development both qualitative and quantitative.

transport infrastructure, natural structures, cultural landscapes, etc.) and the flows and connectivity between them. Their evaluation, however, requires normative considerations as part of public choice. Territorial development can be assessed only in relation to the objectives of spatial policy (the concept of spatial order), adopted following public selection procedures, such as, for example, territorial integration, nature, and landscape conservancy, or sustainable growth. The requirement of public choice stems from a market failure in respect to space management (Markowski 2014; Zaucha 2007, 111 – 117).

Socio-economic development takes place within a space that is conditioned by, for example, its territorial capital. Spatial development, however, cannot be equated with merely the territorial aspects of economic growth. Spatial development has its additional goals, which only indirectly relate to growth. Thus, spatial development can, but does not have to, support economic growth and development, and vice versa. Economic growth can, but does not have to, support territorial development.

The World Bank encourages and postulates the achievement of synergy between socioeconomic and territorial development (World Bank 2009). It recommends the promotion of the fastest growing economic urban centres (yielding the benefits of agglomeration) and linking the rest of the territory to them. The result is a spatial concentration of production and an acceleration of the GDP growth. The development of spatial structures such as transportation connections and functional regions in this kind of situation favours an increase in GDP and is subordinate to it. However, even a cursory reading of the National Spatial Development Concept (NSDC) (Ministry of Regional Development 2011d; Korcelli *et al.* 2010) already in force in Poland suggests a range of possible conflicts and a lack of synergies between the two categories. For example, within the framework of Objective 6: *Restoration and Consolidation of Spatial Order*; the introduction of legal regulations that prevent suburbanisation is foreseen. Also, in the context of Objective 4: *Formation of Spatial Structures Supporting the Achievement and Maintenance of High-quality Natural Environment and the Valuable Aspects of the Polish Landscape*, the emphasis is placed on preventing the fragmentation of habitats and creating solutions that help achieve spatial ecological relationships. As a result, the NSDC can sometimes reduce freedom of action to make use of space in pursuing economic activities. Investors can perceive it positively and then the GDP will continue to grow, or perceive it negatively, and then their withdraw may cause a slowdown in GDP growth. In contrast, other NSDC objectives are clearly pro-growth and promote an increase in the GDP – e.g. Objective 3: *Improving the Country's Territorial Accessibility at Different Spatial Scales through the Development of Transport and Telecommunications Infrastructure*. Thus spatial development needs to be assessed against policy targets and objectives such as territorial integration or territorial cohesion and not just against changes in GDP.

Summing up, we conclude that although sometimes socio-economic growth (or socioeconomic development) and territorial development reinforce each other (as in the case of territorial efficiency or territorial agglomeration benefits achieved through close cooperation), they may also be in conflict with respect to the allocation of space. Territorial development can be governed by its specific values and objectives (e.g. polycentric development) that can differ from smart, green growth that facilitates social inclusion. Both categories (socio-economic and territorial), however, are interrelated: for example, polycentric development can be interpreted as the need to stimulate GDP growth in a wider spatial system. As a result, entities benefiting from the “services” of a given territory benefit from a certain usefulness of both economic and spatial growth (e.g. thanks to the availability of jobs and also the beauty of cultural landscape).

At the European level, the concept of spatial development emerged with the work of groups of countries aiming to establish and adopt common development objectives of transnational territories (e.g. the territory of the entire EU or the more narrowly defined Baltic Region) and the process has been analysed in detail by Dühr *et al.* (2005). In the 1990s first macro-regional (VASAB 1994) and other European documents of this type (ESDP 1999) were elaborated. The spatial development options of ESDP for many years heavily influenced thinking about the essence of spatial development. As a result, a European body of research leading to better understanding of spatial development was formed, including: polycentricity associated with the strengthening of the urban regions; functional relations (networking and relations within functional areas); a certain level of equality in access to services of general economic interest; knowledge and infrastructure; and an emphasis on preserving and reinforcing the natural and cultural heritage potential, including cultural landscapes. The European Commission never received a mandate to design spatial development policy since responsibility for this remained at the national level. However, it gradually gained influence over its various elements within the framework of transportation policy, maritime, environmental, agricultural, and rural development policy, and, more recently, urban policy. A significant example in this respect is the EU directive providing the framework for Maritime Spatial Planning of the EU (CEC 2014b) that, however, identifies the objectives of the spatial development of maritime areas in an indicative manner only.

The concept of territorial integration emerged mainly due to intergovernmental cooperation (such as meetings of the Baltic ministers on planning and spatial development, leading to *Vision and Strategies around the Baltic Sea* – VASAB 2010; Zaucha 1998; Zaucha and Fischer 2009). In the early documents (VASAB 1994; 2001; Zaucha 1996), drawn up in the second half of the 1990s, the Baltic ministers pointed to the need to support the development and integration of the region, as well as to support spatial cohesion, traditionally understood, and defined as the reduction of disparities at the level of development in the Baltic area. However, only in the concept of “connecting potentials” (VASAB 2005) did spatial integration appear for the first time as an independent objective of the VASAB actions. It was repeated in the strategic documents that followed, but this category has never been defined by VASAB.

Territorial integration has become a popular political category since the development of territorial cooperation in the EU that sets development policy above administrative boundaries and proposes an integrated character, i.e., one that at the same time covers many areas of social and economic life (Doucet 2013). The INTERREG initiative, and subsequently the territorial cooperation objective of EU Cohesion Policy, meant that this integration was no longer perceived as a stopover on the way to economic and spatial development, but became an independent political objective⁶. The EU regulations, however, only appeared in the programming period 2014-20 in the context of transnational cooperation in Art. 2 concerning the European territorial cooperation objectives (CEC 2012c). The culmination of this process was the recognition of the integration of border areas as one of the priorities of the revised Territorial Agenda of the EU (Territorial Agenda 2011).

As pointed out by Doucet (2013), territorial integration is sometimes equated with economic integration because of broadly similar origins of both concepts. They are not, however, identical categories. Economic integration has a relatively precise definition based on flows of goods, capital, and factors of production. The stages of this process

⁶ For an elaboration of the role of territorial integration in the EU policy, see Doucet (2013).

(free trade, a customs union, common market, economic union /monetary and fiscal union, political union) were described by Balassa (1961) more than fifty years ago. Unlike economic integration, territorial (or spatial) integration has no such clear-cut definition or understanding. For instance, Vartiainen (2002) interprets territorial integration from the point of view of locality (a socio-spatial concept) as a core element of the multi-level settlement and community structure. Integration is, therefore, close to an interplay between local and global actions. Böhme *et al.* (2011,34) define territorial integration from the perspective of homogeneity. By “territorial integration” they mean:

...the process of reshaping functional areas to make them evolve into a consistent geographical entity; this entails overcoming the various negative effects stemming from the presence of one or more administrative borders, which hamper harmonious territorial development.

This definition puts emphasis on functionality and consistency. Viewed from that perspective, territorial integration requires a minimum level of connectivity between different types of territorial structures i.e. the creation of city networks, transport corridors, cross-border labour markets, cross-border development zones and ecological corridors. A common feature of the two types of integration is a reference to the space of flows as well as the necessity of involving public authorities at some stage of the process. In the case of economic integration, these are generally national authorities (or alternatively integration groups). In the case of spatial integration, these are the authorities of all levels of government, as this integration occurs at different geographical scales. The driving forces of economic integration are the decisions made in the field of macroeconomic policies (or, possibly, supporting the manufacturing sector through lobbying), while spatial integration plays a major role in infrastructure investment and locational choices of enterprises as well as in employment and purchasing decisions made by households.

The broadest definition of spatial integration has been proposed by Cornett and Snickars (2002). They consider spatial integration as the farthest-reaching concept of integration, embracing both economic and political integration but going beyond them to include also territorial factors facilitating co-operation and intensity of relations (see Figure 2.1 below). Such understanding of territorial integration assumes the existence of critical feedback loops since while political and economic integration is powered by spatial proximity and adjacency, socio-economic integration contributes, at the same time, to the improvement of connectivity/accessibility). According To Cornett and Snickars (2002), spatial integration includes features like:

- The development of specific, geographically defined systems of production such as industrial districts, clusters of industries, or systems of innovation;
- A system of urban networks defined according to specific functional links;
- The availability of a regional infrastructure linking the analysed areas together;
- The higher intensity of intraregional flows relative to the outside flows.

In some analyses, territorial integration is treated as part of territorial cohesion, but these two concepts are not identical. For example, territorial integration can be achieved through cooperation between large cities at the expense of smaller ones, standing then somehow in opposition to the dimension (target) of territorial cohesion that is polycentric development. However, in most cases, territorial integration supports territorial cohesion,

such as in the contribution to the creation of functional areas consistent with the idea of functional geography. ESPON⁷ researchers from the INTERCO⁸ project believe that “territorial cohesion is not possible without a high level of cooperation between the territories and between the entities, at every step of the political process” (ESPON 2012a).

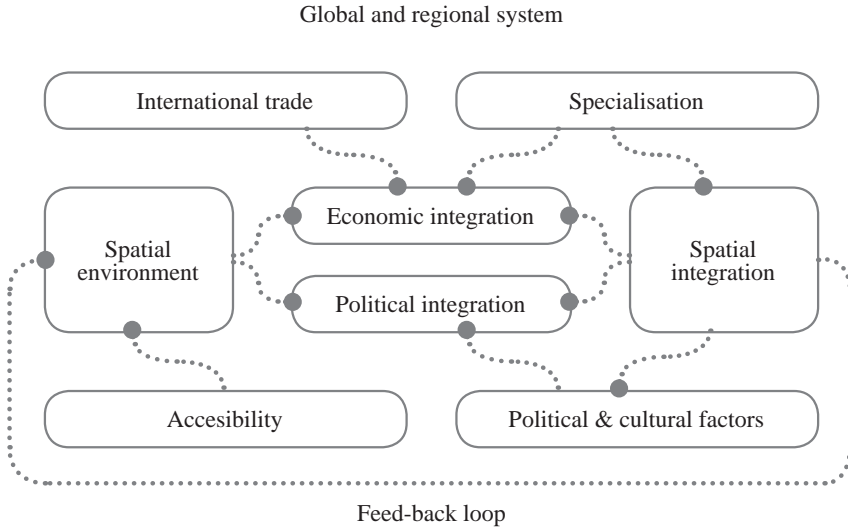


Figure 2.1 Spatial integration

Source: drawing on Cornett and Snickars (2002, 4)

The third spatial category that is most frequently indicated as a goal of development policy is the previously invoked spatial or territorial cohesion.⁹ Initially identified by VASAB as a reduction of the level of development disparities in space (as stated earlier), this category grew to become one of the main objectives of the EU Cohesion Policy, achieving a significance never before reached by the two concepts discussed previously as they operated mainly in the documents of local, regional, national, and macro-regional or in international cooperation. However, this happened in the absence of any precise definition of territorial cohesion.

It seems that the concept of territorial cohesion came into existence due to a growing awareness of the importance of territorial factors in achieving the main objectives of the economic policies of the EU and the EU Member States and in conjunction with

⁷ ESPON (the European Observation Network for Territorial Development and Cohesion) is the EU’s research program that analyses broadly understood spatial issues. Studies involve organisations from the EU Member States, as well as Iceland, Norway, and Switzerland. More information on the ESPON website: www.espon.eu

⁸ INTERCO – ESPON project Indicators of Territorial Cohesion. details can be obtained from the ESPON portal http://www.espon.eu/main/Menu_Projects/Menu_ScientificPlatform/interco.html

⁹ As indicated by Śleszyński (2009, 92), „the term „cohesion” is used in at least four or five basic senses to explain the characteristics of the area, region, or the system as:
 (1) the occurrence and intensity of links, and in particular, in an advanced form it can be:
 (2) correlation of means (cohesiveness);
 (3) internal unification (similarity, the lack of diversity);
 (4) complementarity, namely complementarity or complementation, in other words: substitution;
 (5) comparable characteristics and (or) the correctness of development.”

retaining a mandate in the field of spatial policy at the national level. EU authorities, unable to introduce into the EU *acquis* the notion of spatial development or spatial integration, have created a new concept, whose etymology refers to economic and social cohesion, and thus to the competence of the EU. It had to be “fuzzy” enough in order not to arouse resistance of the Member States governments. In this way, the EU bodies had the pretext to coordinate national actions in the area of spatial development as having an impact on the achievement of the main objectives of the EU Cohesion Policy. Over time, it turned out that this intuitive approach that combined spatial policy with economic and social policies brought tangible benefits, and thus territorial cohesion began to gain in popularity at the national and regional levels. The key to understanding the phenomenon of territorial cohesion emerged from the formation mechanisms of this category in the process of conceptualisation of the territorial dimension of the European integration.

2.2 Gradual Conceptualisation of the Territorial Dimension in the Context of EU

The conceptualisation of the territorial dimension in the European Community was a process associated with a gradual increase in the importance of Cohesion Policy. Already in the preamble to the Treaty of Rome in 1957, the following statement was adopted:

Anxious to strengthen the unity of their economies and to ensure their harmonious development by reducing the differences existing between the various regions and the backwardness of the less favoured regions, (the contracting countries – added by J.S.) have decided to create a European Economic Community – Treaty of Rome of 1957

It means that it was considered appropriate to undertake structural interventions at the European level, including the then six Member States, also within territorial systems, understood as the regional level. In the text of the Treaty of Rome, the regional dimension issues were also mentioned in a very soft manner in the descriptions of the European Social Fund and the European Investment Bank, as well as public assistance, allowing the Member States such activity determined by regional premises.

The deep reform of the European Community, called the Delors Package of 1988, fostered an appreciation of the territorial dimension which resulted in, among other things, an essential extension of the mission and an increase in the scale of the European Cohesion Policy funds. Beginning in 1993, the Maastricht Treaty on the European Union (European Union 1992) became the basis for the functioning of the EU. Article 130A of the Treaty contains the following entry:

In order to promote its overall harmonious development, the Community shall develop and pursue its actions leading to the strengthening of its economic and social cohesion. In particular, the Community shall aim at reducing disparities between the levels of development of the various regions and the backwardness of the least-favoured regions, including rural areas.

Of crucial importance was an increase of the share of the European Cohesion Policy from about one twentieth to about one-third of the EU budget expenditure. The adoption by the European Community of the Delors package led to the undertaking of programming for the territorial development of Europe. One expression of this was indicative documents prepared by the European Commission in cooperation with the Member States: *Europe 2000, the Development Community Guidelines of 1991* (CEC 1991) and the *Europe 2000+, Cooperation for European Territorial Development* of 1994 (CEC 1994).

The crowning achievement of the territorially oriented work became the *European Spatial Development Perspective* (ESDP 1999), adopted in 1999 at the Summit in Potsdam, as a result of work carried out in 1994-1999 by the then fifteen Member States. In the 1990s several transnational EU macro-regions were also identified, and territorial strategies were prepared for them. Regarding spatial issues, the precursor of this approach was the co-operation, ongoing since 1992, of the Ministers of development and spatial planning of the Baltic Sea region – VASAB. Within its framework, long-term documents programming the development at the level of the entire Baltic Europe were developed.

The growing importance and budget of the European Cohesion Policy were undoubtedly encouraged by further extensions, which not only increased the spatial extent of the European Union, but also generated the need for a territorialisation of European policies, among other things, due to the increasing spatial diversity recorded in the social, economic, territorial, but also political, cultural and environmental dimensions.

In the two next multiannual budgets and the European Union policy programming periods covering the years 2000-2006 and 2007-2013, the ESPON (European Spatial Planning Observation Network) research program was launched and used for monitoring and researching Europe's territorial development. Virtually all reports, atlases, and ESPON seminars, in which EU Member States, Iceland, Norway, Switzerland and Liechtenstein participate, took on different aspects of the territorial development of Europe. The ESPON program prepared, among others, the following forward-looking, territorially oriented reports: (1) *Territorial Futures. Spatial Scenarios for Europe*; (2) *The Territorial Scenarios on the Future of Europe*, and (3) *Europe in the World*. They determined the territorial future of Europe using scenarios in the time horizon up to the year 2030.

Some of the Presidencies of the European Union made a significant contribution to the conceptualisation of the territorial dimension. Specific achievements include Hungary (*Territorial Agenda 2011*) and Poland. During the Polish Presidency a wide range of documents for territorial cohesion was presented (Ministry of Regional Development 2011a; 2011b; 2011c). The report prepared as a background material for discussion of the Polish Presidency of the EU Council (Böhme *et al.* 2011) restarted EU-wide debate on the spatial dimension of development policies, as was the so-called issue paper of the Polish Presidency (Ministry of Regional Development 2011c). These documents set out how to use the territorial approach in practice to increase the effectiveness of socio-economic policy development of the European Union, its Member States and regions. Policies should be differentiated in terms of conditionality, thematic scope and financial instruments (repayable and non-repayable). It was also proposed that thematic concentration (introduced by the EU Commission) should be replaced with issue-based concentration, i.e. adapted to the specifics of the territory.

As a result of the growing importance of the territorial dimension, EUROSTAT and the national bureaus of public statistics of all the Member States (in Poland the Central

Statistical Office and Regional (or Voivodeship) Statistical Offices), statistical databases for territorial systems were developed. Across the European Union, in a universal way, a grid of areas of NUTS type (Nomenclature of Units for Territorial Statistics (in Poland -- Territorial Statistics Nomenclature) was adopted, in which the following levels were distinguished: NUTS 1, NUTS 2 and NUTS 3 (macro-regional, regional and sub-regional). It was accompanied by two local levels: LAU 1 and LAU 2 (Local Administration Unit 1 and 2).

Simultaneously, the progress in economic sciences (new economic geography: Fujita *et al.* 1999; Krugman 1991a; 1991b; and space of networks and flows: Castells 1998) led to the inclusion in the regional policy of European countries new aspects such as regional competitiveness, self-learning regions, endogenous development potentials, knowledge-based economy, information society, information and communication technologies. These theoretical concepts, in turn, were then translated by major international organisations such as the OECD and the World Bank into specific recommendations and economic policy solutions (OECD 2009a; 2009b; World Bank 2009).

The activity of international organisations created a framework for the conceptualisation of substantive assumptions and policy instruments of territorial systems in the Member States and the European Union. For example, the OECD paradigm was modified for competitiveness. Both, directly and indirectly, that meant prioritising the urban dimension and indicating, among others, the particular importance of the programming of socio-economic development in the territorial – primarily metropolitan – functional systems (Szlachta 2009). The World Bank also pointed out the importance of agglomeration economies for economic growth, proving that the success of socio-economic development of a country or a region is determined by a small number of the large urban centres (World Bank 2009).

The direct territorial environment of North Africa, Turkey, and Eastern Europe has had a growing importance on the social, economic, and territorial processes in the European Union. These regions, with a much lower level of socio-economic development, have been the source of strong migration pressure, of negative impact on the natural environment and various pathologies carried over to the area of the European Union (organised crime, drugs, corruption, etc.).

Another important factor in the growth of the importance of territorialisation of European and national public policies has been the deep economic crisis, which developed in the world economy beginning in 2008, and had one particularly strong impact on the Member States of the European Union. Hence the belief that territorialisation of public policies can promote the overcoming or reduction of the negative consequences of the economic crisis on the level of the Member States, regions, and cities. Thus local and regional potentials of the EU countries can be put to much better use.

The above-described prioritisation of the territorial dimension led to the granting of the status of a treaty to territorial cohesion. Pursuant to Article 3 TEU, territorial cohesion has become a legitimate part of the Cohesion Policy as a new objective of the European Union (EU). On the basis of Art. 2 of the Treaty of Rome and Articles 2 and 158 of the Treaty of Nice, the European Economic and Social Committee assumed that territorial cohesion can be defined as: “the task entrusted to the European Union in supporting a harmonious, balanced and sustainable development of economic activities across the EU” (ECO 2009,6).

The first visible effect was the publication by the Commission of the Green Paper on Territorial Cohesion (CEC 2008). The document pointed to the importance of the territorial dimension, which, according to its authors, has been present at the core of the EU structural policy since its inception (CEC 2008, 4). As can be seen from the report of Szlachta and Zaleski (2009a, 148) the paper foresees “four basic directions of the European Community’s impact on territorial cohesion:

- concentration, which is reflected in overcoming the negative consequences of differences in the density of economic functions,
- connecting the territories, reflected in overcoming the distance and increasing levels of accessibility,
- cooperation, reflected in overcoming divisions and
- addressing the problems of areas with specific geographical features.”

A significant contribution to the attempt at understanding the role of the territorial dimension in policy development (as a tool aiming at an integrative approach to territorial policy) was supplied by Barca a year later (2009). His concept, the so-called place-based approach, is intentionally focused on:

...the place-specificity of natural and institutional resources and of individual preferences and knowledge; the role played by the (material and immaterial) linkages between places; and the resulting need for interventions to be tailored to places. Barca (2009, 4)

It also emphasises the role of the proper organisation in the establishment of institutional processes and dialogue between endogenous and exogenous institutions (actors) of development. Barca does not refer to territorial cohesion. Rather, he addresses the territorialisation of policies and the territorial context, which should be taken into account when designing them. It, however, places him at the centre of the thesis about the importance of territory for development policy. Barca also indicates the conditions that must be met for the territorial context to provide added value and not be a barrier in the conduct of policy development. The essence of his concept is the ability to read, or to identify, the spatial conditions in the different scales, as well as the horizontal and vertical confrontation in targeting these insights to create the foundations of a policy of dialogue within the framework of multi-level governance. As indicated by the Ministry of Regional Development (Ministerstwo Rozwoju Regionalnego 2010a, 16), place-based policy is “(1) focused on the use of endogenous potential, territorial resources, and knowledge, and (2) allows for the implementation of interventions directed at development challenges, and precisely tailored to local conditions.” Other authors (Zaucha *et al.* 2013, 8-9) emphasise instead the institutional aspect, i.e. the necessity of dialogue between institutions administering the given territory and those representing the interests of the environment at large. More insight on strong and weak points of the place-based approach one can find in various reports and scientific analysis (e.g. Faludi 2015; CEC 2015)

2.3 The Scope of the Conceptual Category of Territorial Cohesion and the Main Directions of Change

Although included in the Treaty of Lisbon (Article 3) and becoming one of the main important horizontal objectives of the EU policies, territorial cohesion lacks a precise, commonly shared definition. On the contrary, it is the subject of different, sometimes conflicting interpretations (Farrugia and Gallina 2008, 33). It has been highlighted by many researchers (Böhme 2011, 2; Davoudi 2005; Doucet 2006; ESPON 2004b, 118; Faludi 2005; Farrugia and Gallina 2008, 7; Medeiros 2011, 11; Mirwaldt *et al.* 2008, V; Molle 2007, 98).

Böhme (2011, 2) even argues that

...over the last years, debates have shown that a precise definition of territorial cohesion is impossible. Because different groups of stakeholders focus on different dimensions of the territorial cohesion idea, any attempt to define it will exclude certain understandings and thus lead to a poorer result.

This view is shared by Mirwaldt *et al.* (2008, V), Zillmer and Böhme (2010, 1) who go so far as to say that a formal definition might be the end of the territorial cohesion use and popularity. However, the concept as such, though vague, has been appreciated and widely recognised (Dühr *et al.* 2010, 188-189), and even considered as a potentially powerful conceptual innovation by the Commission (Camagni 2011, 79). Territorial cohesion has been researched by prominent scholars and practitioners (e.g. Davoudi 2005; Eser and Böhme 2015; Faludi 2004; 2005, 2007; 2009a; 2010). Comparative analysis of different definitions and approaches to territorial cohesion, however, permits one to see an outline of the evolution of the essential points of understanding this category.

Faludi (2004, 1349) considers that the original focus of the concept of territorial cohesion has been in regional economic development (with emphasis on endogenous potential, linkages, collaboration and coordination of macroeconomic instruments). It seems, however, that the primary category, both in the Baltic Europe (see previously cited documents VASAB 1994; Zaucha 1996) and in the EU (e.g. in ESDP 1999, 26) had a social character. Faludi himself shares this opinion in his later studies (2009a) indicating that in the first attempts to use this category in the EU – the Treaty of Amsterdam of 1997 – it was related to the issue of access to services of general economic interest and the need for standards in this area in order to preserve the competitiveness of the less populous regions.

According to Hübner (2011), whose role as EU Commissioner has given this concept its strong position in the activities of the Community, territorial cohesion was present in the first EU Cohesion Policy in a hidden manner. The term itself was coined and popularised within the framework of the Assembly of European Regions (AER) in the mid-90s (Faludi 2009a; Mirwaldt *et al.* 2008, 4), but the territorial approach was evident earlier in the conditions of eligibility and rules of supporting projects from EU funds (Hübner 2011). Its essence was the statement of the fact that different regions require different financial assistance, for slightly different purposes and with the help of slightly different instruments. Hence the above mentioned narrow meaning of territorial cohesion of 1997 must be regarded as a tactical trick by the supporters of the thesis that space is of importance in economic and social processes. After 1997, the scope of the meaning of

territorial cohesion began to expand quickly. In this regard, the publication of the European Spatial Development Perspective (ESDP 1999) offering a common framework for the recognition of the territorial aspects relevant to the supranational level, was helpful. The aim of the supporters of the direction of change was the creation of a European system of spatial planning and management, or, rather, of human activity in space, like the French *Aménagement du territoire* (Faludi 2004). Territorial cohesion would provide the necessary foundations for this.

After being mentioned in the Treaty of Amsterdam, territorial cohesion was strongly emphasised in the Second Cohesion Report (CEC 2001). At that time it was territorial imbalances, spatial disparities, and the differences in the potential for development that were brought into focus. In this context Article, 158 of the Treaty was referred concerning the need of promoting a harmonious development of the Union as a whole. The same reasoning was repeated in the Interim Territorial Cohesion Report (CEC 2004a). In this document presenting spatial research results of Commission and ESPON (CEC 2004a, 3), territorial cohesion was seen as a balanced distribution of human activities, across the EU territory, i.e. as a territorial application of the sustainable development paradigm with focus on fair access to services of general economic interest in line with the Art. 16 of the Treaty. As a result, the meaning of the territorial cohesion got very close to the ESDP idea of polycentric development and was perceived as the vehicle for achieving other important objectives of EU.

The Third Cohesion Report (CEC 2004b) paid a lot of attention to territorial cohesion. As pointed out by Mirwaldt *et al.* (2008, 5), the report ensured a logical connection between territorial cohesion and objectives of the Lisbon Agenda, e.g., competitiveness, innovation (knowledge economy) and employment. It has provided a new break-through by extending the concept beyond the limits of territorial disparities and polycentrism. Moreover, also the disparities were analysed in this document in a much more detailed way by adding such challenges as the development of the regions with geographical handicaps, demographic changes or fragmentation of natural areas (the latter, i.e. fragmentation, without clear relation to the economic and social cohesion). One of the reasons for such strong focus on territorial cohesion in the document may have been the inclusion of the concept into Art. 3 of the draft EU Constitution. The additions to territorial cohesion were aimed at making the sectoral policies exerting a spatial impact and the regional policy more coherent. Thus the process dimension of the territorial cohesion was spelt out for the first time so strongly by the Commission. Also the need to improve territorial integration and encourage cooperation between regions was mentioned in this context. Moreover, in the document the Commission recognised for the first time that “the concept of territorial cohesion extends beyond the notion of economic and social cohesion” (CEC 2004b, 27), thus acknowledging the territorial cohesion as a development objective in itself.

Also, the EU Ministerial Conference on Territorial Development (2004, 16–17) emphasised that the territorial cohesion should be understood not only as a mere levelling of social and economic disparities across space but rather a coherent development of Europe as one entity (or mega-region). The emphasis was thus put upon providing more equal development opportunities in accessibility to transport and ICT infrastructure, science, and research, etc. Hence, the territorial cohesion should entail the coordination of sector policies in their spatial context (i.e. considering their contribution to the coherent European development) and the coordination of spatial development in the vertical direction (the EU Working Group on Spatial and Urban Development 2003, 32).

The Fourth Cohesion Report hardly offered a new insight into the meaning of the territorial cohesion, attributing the notion to the territorial disparities of GDP, suburbanisation, migrations, cross-border cooperation, polycentric development, access to key services and transport infrastructure (CEC 2007, XII-XIV and 59,100). However, this document continued the tradition of indirect interpretation of the territorial cohesion as a horizontal objective¹⁰ of the EU and therefore discussed the issue under different chapters i.e. in the context of various problems and policies and not in a separate section. In the report, territorial cohesion was present in various chapters and not in one place since it was related to different policies and not only to territorial development.

In the Territorial Agenda of the EU (Territorial Agenda 2007, 2) territorial cohesion is still perceived not as a developmental objective as a such (i.e. the desired state of territory) but rather as a “prerequisite for achieving sustainable economic growth and implementing social and economic cohesion.” However, just a year later in the Green Book (CEC 2008), the European Commission proposed a much radical approach, for the first time putting an integrated pattern of policy making and the state of territory (its diversity as a developmental resource) under the same heading. This interpretation raises the status of the territorial cohesion to that of an important developmental goal, by stating that the “territorial cohesion is about ensuring the harmonious development of all these places and about making sure that their citizens are able to make the most of the inherent features of these territories. As such, it is a means of transforming diversity into an asset that contributes to sustainable development of the entire EU.” (CEC 2008, 3). The motive of diversity as a development opportunity will be present in many other documents of EU dealing with territorial cohesion.

The Fifth Cohesion Report (CEC 2010) was the first in the series devoted directly to the economic, social and territorial cohesion put on an equal footing (which could be easily seen from the change of its title). Despite this, the report did not make any attempt to define the notion of territorial cohesion but at least provided some insight into its scope. The territorial cohesion was attributed to the access to services, sustainable development, ‘functional geographies’ and territorial analysis (CEC 2010, 24). The document underlined the need of territorial coordination of policies (at different geographical scales) and, while discussing the functional geography, applied some notions characteristic of the economics of flows.

When trying to get the actual meaning of the evolution described above, the key changes in the interpretation of the territorial cohesion that can be noticed are listed in the box below.

Evolution of the interpretation of territorial cohesion

- from a static concept of the state of a territory to a dynamic concept of policy integration in line with the specificity of the given territories,
- from the vehicle or instrument used to achieve the social and economic cohesion to a genuine, independent EU objective,
- from a redistributive approach advocating spatial equalisation of prosperity to the recognition of importance of territorial factors in the process of development and satisfaction of human needs

¹⁰ Such impression one can gain from reading of different parts of the report e.g. following statement: „As recognised in the EU Treaty (Article 16), access to services of general economic interest is of major importance in achieving economic, social and territorial cohesion.” (CEC 2007, 60)

2.4 Main dimensions of Territorial Cohesion

According to the Green Book (CEC 2008, 3), “territorial cohesion is about ensuring the harmonious development of all these places and about making sure that their citizens are able to make the most of inherent features of these territories. As such, it is a means of transforming diversity into an asset that contributes to sustainable development of the entire EU.” (CEC 2008, 3). The Territorial Agenda of EU 2020 (Territorial Agenda 2011) has not proposed a commonly shared definition of territorial cohesion. However, the process dimension of the concept has been once more strengthened by stating that the territorial cohesion “is a set of principles for harmonious, balanced, efficient, sustainable territorial development.” The following principles have been mentioned in this context: equal opportunities for citizens and enterprises wherever they are located; convergence between the economies of better-off territories and those lagging behind; development best tailored to the specificities of an area; as well as continued networking, cooperation and integration between various regions of the EU at all relevant territorial levels. However, simultaneously the document underlines the importance of territory as a developmental asset by stating that territorial cohesion should permit one to make the most of the territorial potentials.

Many researchers have tried to capture the meaning of territorial cohesion in a synthetic way. Two attempts e.g. by Mirwaldt *et al.* (2008,15) and Szlachta and Zaucha (2010, 162) are summarised in the boxes below.

Meaning of territorial cohesion:

- territorial cohesion as an emanation of endogenous and polycentric development;
- territorial cohesion as a synonym for reducing spatial disparities;
- territorial cohesion as creation of network connections; and finally
- as a guarantee of equitable access to knowledge services and infrastructure.

Mirwaldt et al. (2008,15)

Meaning of territorial cohesion:

- territorial cohesion as a means of enforcing territorial aspects in general, and in economy, social planning and decision-making in particular,
- territorial cohesion as a method of planning and development taking into consideration the territorial capital (potential) of places, settlements and regions, and their interrelations,
- territorial cohesion as an addition to economic and social cohesion, to include also the areas with geographic disadvantages (like mountain areas, islands, areas with severe climate, geographically remote areas or border areas).

Szlachta and Zaucha (2010, 162)

Both enumerations are heading towards similar direction by referring to spatial justice, the economy of flows and territorial capital although expressed in slightly different wording. They are in line with some others attempts e.g. INTERCO project (ESPON 2012a, part B, 11) and with five components of the territorial cohesion identified by Böhme *et al.* (2008) regarding policy implementation. However INTERCO project (ESPON 2012a, part B, 11) puts higher emphasise on inclusion, quality of life, ecological values and polycentricity as a specific aspect of territorial capital whereas Böhme *et al.* (2008) underline in addition to the “normal staff” the importance of external factors such as the impact of development on other territories, and the impact of various sectoral

policies at different levels as well as local and regional tacit knowledge and other endogenous resources as a prerequisite for the development of integrated strategies.

Having all these in mind Mirwaldt *et al.* (2008,15) have tried to identify a different understanding of the functions of territorial cohesion: the strengthening of European solidarity (redistribution), and the promotion of competitiveness and innovation. Doucet (2006) also emphasises the attempt to connect radically different purposes in this category, i.e. the integration of sectoral policies and ensuring “spatial justice.” Key functions of territorial cohesion are listed in the box below.

Functions of territorial cohesion:

- strengthening of European solidarity,
- promotion of competitiveness and innovation,
- integration of sectoral policies.

Doucet (2006)

There are only a few comprehensive descriptions of the content of the category of territorial cohesion in the contemporary literature¹¹. Szlachta and Zaucha (2010) define not the territorial cohesion as such but the territorially coherent area of a country or region, describing it as a territory that would appear as a network of mutually linked functional areas of varied spatial ranges to render citizens an access to workplaces and public services indispensable for development and preservation of social and human capital. Markowski (2009, 78) defines territorial cohesion as a state territory, i.e. “a state of territory which guarantees the improvement of social and economic cohesion”.

The ESPON project TeMo¹² (Damsgaard *et al.* 2012) has elaborated definition of territorial cohesion encompassing both its static and dynamic dimensions. TeMo has interpreted this cohesion in the Baltic Sea Region (BSR) context as “an overarching (macro) goal of different types of policies, prompting them to support an integrated territorial development of the BSR “ (Damsgaard *et al.* 2012, 13). In this case, the integrated approach indicates the combined assessment of the influence of those particular policies on the territory of the Baltic Sea Region and the need for their horizontal and vertical harmonisation. Thus understood, policy integration aims at achieving partial objectives referring to the condition of the territory, and being identified in strategic BSR documents: “diminishing territorial divides; enhancing polycentricity of development; contributing to sustainable city (urban regions) development and their networking and cooperation; facilitating formation of functional regions in particular those related to innovations and the knowledge-based economy but also those with specific territorial endowments; promoting wise use of territorial assets (immovable assets or territorial capital); enhancing accessibility and connectivity and parity of access to transport and ICT infrastructure; diminishing pressure on the natural and cultural environment; and finally opening of the space of the Baltic sea for sustainable development” (Damsgaard *et al.* 2012, 13). In conclusion, according to TeMo, territorial cohesion indicates the need for integration and territorialisation of sectoral and action policies (making them territorial-oriented) in the situation when the desired condition of the Region’s space is described by the aforementioned partial objectives.

However, the prevailing attitude is to interpret the notion of the territorial cohesion in the context of the integrative policy-making process. For instance, Faludi (2009a) considers territorial cohesion as a “situation whereby policies to reduce disparities, enhance

¹¹ For more see Medeiros (2011, 12).

¹² TeMo „Territorial Monitoring for the Baltic Sea Region” project concerning the Baltic Sea Region.

competitiveness and promote sustainability acquire added value by forming coherent packages, taking account of where they take effect, the specific opportunities and constraints there, now and in the future. Territorial cohesion policy refers to measures promoting good territorial governance with the aim of achieving coherence as described". Medeiros (2011) defines territorial cohesion as the process of promoting a more cohesive and balanced territory, by (i) supporting the reduction of socioeconomic territorial imbalances; (ii) promoting environmental sustainability; (iii) reinforcing and improving the territorial cooperation/governance processes; and (iv) reinforcing and establishing a more polycentric urban system.

In documents of the Polish government, territorial cohesion was defined in a two-dimensional fashion: as a state and as a process: "territorial cohesion is a state of a given territory's development which is aspired to, in which the processes of exchange and flows in the economic and social spheres progress efficiently guaranteeing – socially and economically – an effective allocation of resources. Accomplishing territorial cohesion should be understood as a process which consists in such a manner of spatial shaping of the European Union so that the best possible development of unique potential of respective EU territories can be ensured for achieving development objectives of the EU – including socio-economic cohesion — through integrated growth management" (Polish Council of Ministers 2009, 33).

The farthest-reaching understanding of the concept of territorial cohesion has been proposed by the European Council of Spatial Planners. They perceive territorial cohesion not just as a means to achieve more efficient policymaking but rather as an overarching (macro) goal of policy, where the social, economic and spatial dimensions of territorial cohesion are aligned in three horizontally integrated policies: social, economic and spatial. In such a case territorial cohesion might be considered as "the connectivity of and among economic, social and physical systems, which enhances their overall effectiveness for innovative sustainable development" (Vogelij 2010, 2).

Despite all those described above attempts to endow territorial cohesion with a role of important, independent policy objective, there is a strong intellectual tendency in the literature to treat it only as a vehicle to achieve social and territorial cohesion. For example, Gorzelak (2009) suggests the need to interpret territorial cohesion in functional categories (regional integration) – and not compensatory ones. According to him, aspiring to achieve this cohesion should depend on eliminating "barriers and limitations resulting from spatial planning (see box below) which tend to reduce economic and social cohesion" (Gorzelak 2009, 64).

Spatial barriers hampering economic and social cohesion

- elimination of transport and telecommunications barriers in locations where their existence limits the possibilities of economic growth and satisfaction of social needs as well as the flow of people, goods and information between member states;
- good communication between the most important links of the spatial arrangement of Europe and member states – metropolitan areas – and of those centres with their regional neighbourhood and facilities;
- facilitating all endeavours of cross-border cooperation – both in the sphere of economic and social or cultural dimensions;
- creating transnational institutions dealing with management of special areas such as catchments endangered by floods or regions of a special natural significance etc;
- developing international networks of cooperation in the field of science and networks of interrelations between the R&D sphere and business.

Gorzelak (2009, 64-65)

The definitions and manners of perceiving the concept of territorial cohesion presented above indicate the lack of a unified interpretation in this field and the importance of practical actions assigning this category an appropriate meaning. Thus the notion of territorial cohesion is dependent on the socio-economic and political context, the development of knowledge (i.e. changes in how the role of the territory is perceived in vital economic, social and ecology-related processes) as well as the management culture and the manner of conducting growth policies. It appears that territorial cohesion might be characterised as a concept which is: general, comprehensive, directional, indicating the need for considering territorial conditions and factors in the processes of growth, development, integration and ensuring social justice.

2.5 Selected models of territorial cohesion

An extensive conceptual analysis of territorial cohesion was conducted by Camagni (2011) — the so-called “Tequila” model — and by Medeiros (2011), who proposed a “Star” model. The Tequila model, also appearing in the ESPON 3.3 project (ESPON 2005a, part 2, 77), enumerates the following components of territorial cohesion: (1) territorial quality, (2) territorial efficiency, (3) territorial identity (see Figure 2.2 below). The model is interesting in that it offers new insight into the territorial cohesion, compared to previously discussed documents and reports. Also, the approach to the territorial cohesion in this model is more comprehensive, since the model:

- acknowledges the key role of territory in growth achievement by stressing territorial aspects of competitiveness, efficiency in the use of territorial resources, etc.;
- underlines the importance of territorial factors for achieving eco-development;
- highlights the “territoriality” of many social factors, such as culture or social capital, that play important roles in sustaining growth but also in the direct satisfaction of human needs.

The Tequila model properly encapsulates different roles of territory that make the concept of territorial cohesion so complex. It shows territory as a growth resource (economies of agglomeration, natural resources, accessibility, etc.); an indispensable frame securing interactions between developmental agents (diffusion of values, attitudes and ideas etc.); a unit for addressing public policies; and finally, a public good satisfying human needs (cultural landscapes, lack of urban sprawl, transport infrastructure etc.). The model highlights the essential dichotomy of territory in human life. i.e., its function as the vehicle for achieving other important goals such as prosperity or social justice, and the role of the ultimate objective of human activities. Sometimes these functions reinforce each other, e.g., cultural landscapes can enhance tourism and increase the prosperity of a given place. However, in some cases, they might be in conflict. The model is in line with the understanding of territorial cohesion as provided in the report *Territorial State and Perspectives of the European Union* (Damsgaard *et al.* 2011) in which cohesion is seen as a concept amalgamating diverse development paradigms such as convergence (polycentricity), sustainability, territorial competitiveness and regional vulnerability.

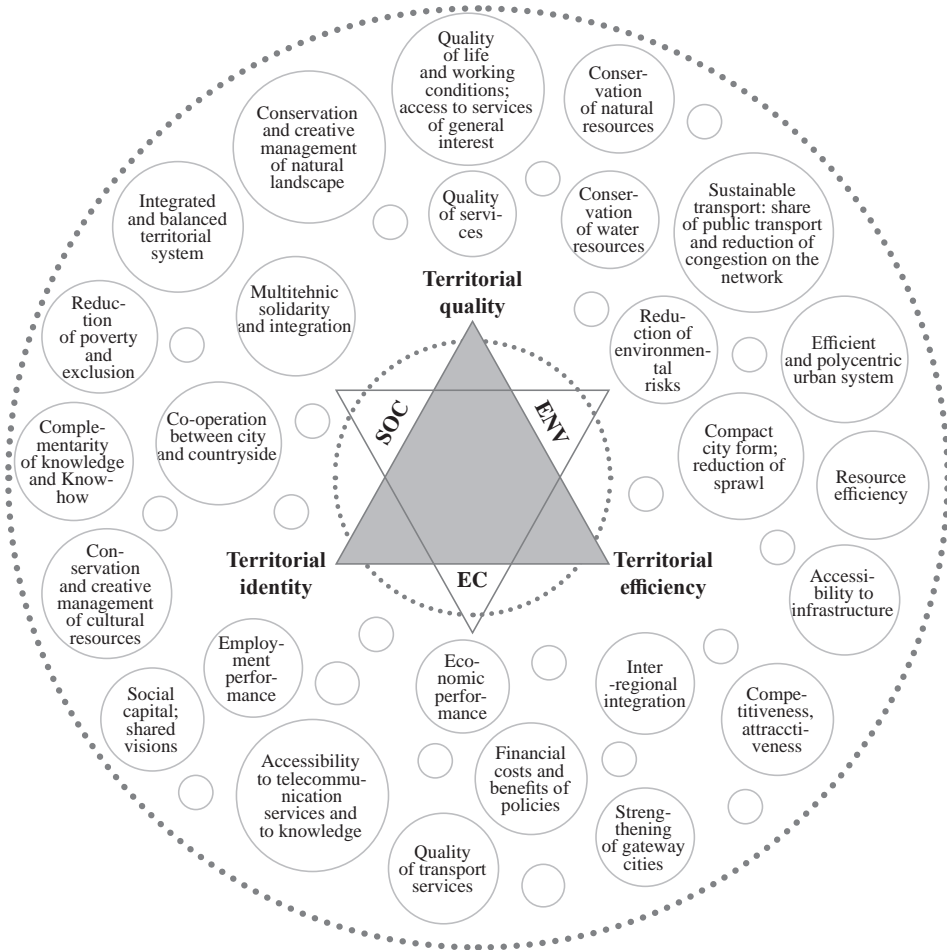


Figure 2.2 Components of territorial cohesion in the Tequila Model

Source: drawing on Camagni (2011, 61)¹³

The Star model proposed by Medeiros (2011, 17) originates in part from critical analyses of the Tequila model. In particular, Medeiros argues that the Tequila model does not provide a sufficiently prominent place to the concept of polycentric development and territorial governance and that it erroneously positions the idea of the territorial efficiency between economic and environmental dimensions, while it should cover all territorial dimensions including the social and institutional ones (Medeiros 2011, 19). The Star model features four dimensions (Figure 2.3 below):

- A socioeconomic cohesion dimension also referred to as the distribution dimension of territorial cohesion, is economic and social cohesion interpreted in the traditional way, treated as part of territorial cohesion pursued in order to alleviate excessive socioeconomic imbalances in space (the origin of the territorial cohesion concept).

¹³ The model has also been presented in Camagni (2005)

- An environmental sustainability dimension, following the ESDP idea of wise management of natural and cultural heritage under which environmental consequences of territorial processes should be considered, i.e. the contribution of territory to conservation and development of nature or climate change adaptation and mitigation, etc.
- A territorial polycentricity dimension (mainly morphology), following the ESDP idea of polycentric and balanced spatial development in the EU as a fundamental goal of territorial development also contributing to socioeconomic cohesion.
- A territorial cooperation/governance dimension, covering two aspects of one process – that of bringing territories closer together. Territorial governance is understood both as a “process of the organisation and coordination of actors to develop territorial capital in a non-destructive way in order to improve territorial cohesion at different levels” (Medeiros 2011, 22 drawing on ESPON 2006a, 13) and as territorial co-operation offering an alternative to the typical ‘hierarchical type of government’ (Medeiros 2011, 23) and permitting the integration of public and private actors in management of territories.

The main weakness of the Star model is its insufficient focus on competitiveness as a dimension of territorial cohesion linked to territorial capital or territorial potential.

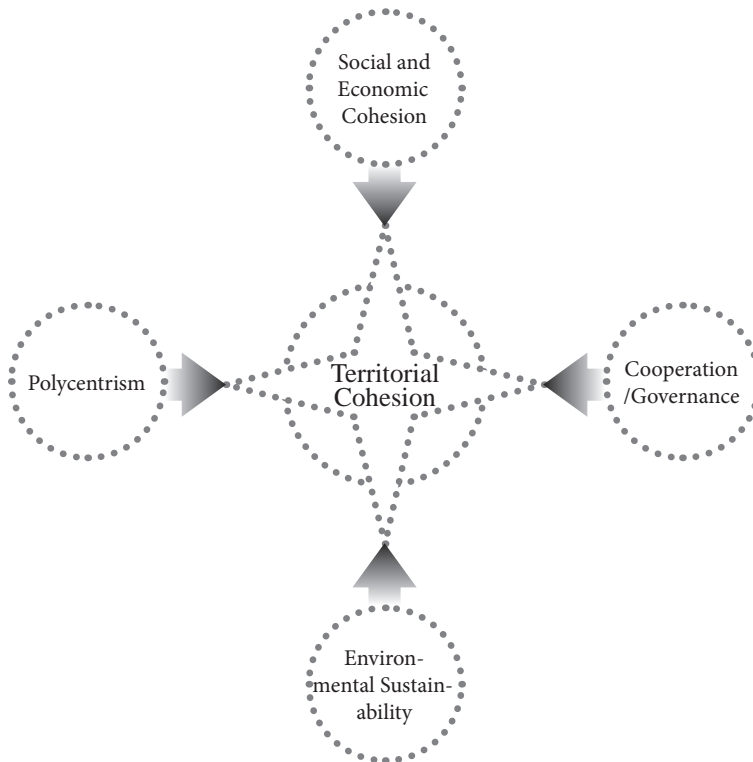


Figure 2.3 Components of territorial cohesion in the Star Model

Source: drawing on Medeiros (2011, 17; 2014, 20)

As a by-product of the search for territorial cohesion indicators, the INTERCO project also came up with proposals for main dimensions or even functions (roles) of territorial cohesion (referred to as facets of the territorial cohesion, thematic entrance points of the territorial cohesion or storylines) (Böhme 2011; Gløersen and Böhme 2011). The project identified the following, non-mutually exclusive storylines on territorial cohesion:

- territorial cohesion is about competitiveness that implies a strong focus on territorial potentials and the support of smart growth and the connectivity of Europe's economic centres but also on the diversity of territories as well as the diversity of factors,
- territorial cohesion is about balanced development focusing on European solidarity and stressing inclusive growth, fair access to infrastructure services and the reduction of economic disparities,
- territorial cohesion is about place-based policy-making, paying particular attention to local development conditions, identification and exploitation/use of tangible and intangible endogenous potentials, local networks (including clusters) and specificities of places and their comparative advantages,
- territorial cohesion is about the environment, an ecosystem approach, a resource-efficient and greener economy, and tackling climate change,
- territorial cohesion is about the need to maintain a dialogue with other sectors to strengthen the territorial dimension in various policy fields with the principal concerns on a better use of synergies between different policies (vertical and horizontal coordination) as well as on the actual costs of non-coordination.

2.6 Operationalization of territorial cohesion through its quantification

Measuring territorial cohesion is yet another attempt to operationalize and determine in a pragmatic manner the actual content of the concept of territorial cohesion. This clash between theory and the need for quantification turned out to raise tough questions. Despite numerous efforts, in the contemporary literature, one can find only four comprehensive conceptual attempts¹⁴ to elaborate the monitoring systems for territorial cohesion covering EU territory which was carried through to the end (Damsgaard *et al.* 2012¹⁵; ESPON 2012a¹⁶; Farrugia and Gallina 2008; Medeiros 2011). Also, an ESPON project

¹⁴ Also ESPON 3.3. project (ESPON 2006b) developed a comprehensive set of indicators related to the dimension of the development referred to as the 'quality', covering also the quality of the territory. Those indicators cannot, however, be taken as a system for measuring the territorial cohesion or territorial development. They rather measure the socio-economic development in space. Their direct attribution to the territorial cohesion by Prezioso (2008, 21) seems interesting but one should keep in mind that only some aspects of territorial cohesion are covered by them. The same is true with regard to OECD Regional Database that includes regional statistics for the OECD member countries on demography, regional economic accounts, labour market, social indicators. Those indicators measure mainly socio-economic development in space. Finally, the EEA (2010) also developed a list of potential territorial indicators to support the environmental dimension of territorial cohesion. That attempt covers mainly ecological aspects of the latter, though.

¹⁵ The TeMo project.

¹⁶ The INTERCO project.

called KITCASP aimed at developing a set of key indicators of territorial cohesion, economic competitiveness, and sustainable development, using the ESPON research and data set available in the case study. There were also some evident failures. The attempts of the ESPON project 3.2 to create the Territorial Cohesion Index (ETCI) did not bring about the expected results (Grasland 2008) and the conclusions from the research, as summarised by Farrugia and Gallina (2008, 34), were rather pessimistic. The authors pointed out that the existing statistical situation of the EU made it impossible to build any relevant index of territorial cohesion at the regional level which could embrace the three dimensions of the European Spatial Development Perspective.

Farrugia and Gallina (2008) made two attempts to measure territorial cohesion. Due to the lack of necessary information, the first, which has not brought expected results, was based on a three-dimensional operational definition of territorial cohesion (i.e., the three goals of that cohesion):

- equal access to services of general economic interest across the territory;
- avoiding territorial imbalances;
- polycentric territorial systems in urban and rural areas, i.e., ensuring that all inhabitants have development opportunities.

In the next attempt, which managed to calculate the numerical value of the synthetic index of territorial cohesion for 22 countries and, after a reduction in the number of indicators, for 52), territorial cohesion was narrowed down to the “ability of local population in the given territory to access services of general economic interest”, in accordance with the provisions of the Treaty of Amsterdam (Farrugia and Gallina 2008, 39). The following services were considered as services of general economic interest in the analysed study: transport, energy, communications, education, healthcare, and other necessary services. The availability of these services was measured.

Medeiros (2011) also made a quantitative assessment of the level of territorial cohesion using the previously discussed Star model. It was the first attempt to measure cohesion using comparable regional data for different periods. For each dimension of the Star model, Medeiros defined four components and identified three indicators to measure them.

For the socioeconomic component (distribution) they were: knowledge, income, and public services. For the co-operation and governance component, they were: participation, horizontal and vertical co-operation. For the polycentricity (morphological) component, they were: hierarchy, density, and connectivity. For the component of environmental sustainability, they were: energy, environment, and climate change.

Medeiros initially took into account a much broader list of indicators, but for various reasons in final calculations he used only ten: (GDP; physicians; tertiary education; INTERREG projects; voter turnover; city rankings; road density; Internet connections; renewable energy; wastewater treatment). It allowed him to calculate the index of territorial cohesion for regions in the Iberian and the Scandinavian Peninsula (accepted as a reference point for Spain and Portugal) for the years 1998 and 2008. For the Iberian Peninsula, the results were presented at the level of NUTS 2 regions and for the Scandinavian Peninsula at NUTS 3 level. However, when trying to extend his research to the entire EU territory (NUTS 2 level), the author encountered several constraints, mainly on

data availability. Therefore he managed to produce what he called “a Territorial Cohesion snapshot for 2008” using a much lower number of one-time indicators:

- for the socioeconomic dimension: competitiveness index and human development index (CEC, 2010),
- for cooperation/governance: cooperation intensity (ESPON 2006a);
- for polycentricity/morphology: polycentric index – available for NUTS 1, but adapted to NUTS 2 level (ESPON 2004c);
- for environmental/sustainability: environmental vulnerability index (CEC, 2010).

ESPON projects have encountered similar difficulties, i.e. lack of necessary information on territorial cohesion operationalized in relation to the objectives of development policies. However, they managed to circumvent this barrier partially by combining traditional indicators and their territorial approach. This kind of attempt was first undertaken by the project “INTERCO — Indicators of territorial cohesion” (ESPON 2012a). A characteristic feature of these efforts is their official recognition by the public administration, which is the body responsible for implementing territorial cohesion. This has been achieved by way of debate, and then sanctioned by a decision of the ESPON Monitoring Committee composed of representatives of the EU Member States and countries associated with them, representing public institutions endowed with the official mandate of supervision over territorial affairs and territorial cohesion. The indicators selection process combines scientific analysis and discourse with the final beneficiaries, i.e. the institutions shaping spatial policy (ESPON stakeholders).

The indicators were selected based on their relationship with the EU 2020 Strategy, the Territorial Agenda 2020, and in reference to the widely accepted goals of territorial cohesion. These indicators were therefore designed to ensure the measurement of such issues as reducing territorial inequalities in access to services; improving the environment; reducing poverty and social exclusion; development and intensification of regional innovation; and improvement of territorial governance. The indicators alluded to six dimensions of territorial cohesion identified (as the case was with the Star and Tequila models) by the objectives of territorial cohesion. These dimensions are: (i) Strong local economies ensuring global competitiveness; (ii) Innovative territories; (iii) Fair access to services, market and jobs; (iv) Inclusion and quality of life; (v) Attractive regions of high ecological values and strong territorial capital; (vi) Integrated polycentric territorial development (ESPON 2012a, 19). The imperative lying behind this research was to ensure continuity of the monitoring system. This situation put in privileged position indicators which are readily available and commonly used for years. Additionally, indicators and information to which politicians were accustomed and whose interpretation was understandable to them (e.g., simple indicators as opposed to composite indices) were more often included in the final list because of their usability for decision makers.

For every dimension, a “definite number of so-called ‘top indicators’ has been chosen by combining analytical processes with the dialogue with stakeholders when data availability and quality are limited” (ESPON 2012a, 16).

The NTERCO project confirmed that it ‘s hard to operationalize and measure such a complex and heterogeneous category as territorial cohesion. The solution to address this problem was the increased flexibility of indicators, that is the ability of the system to deal with different political objectives, and most of all abandoning of the concept of synthetic indicators in favour of measurement of particular dimensions of territorial cohesion.

The aforementioned TeMo project took a similar approach in territorial cohesion measurement. Like INTERCO, the TeMo project was conducted using dialogue with stakeholders; that is with VASAB member countries. The initial point for the construction of the measurement system was the analysis of Baltic spatial priorities contained in the strategic documents referring to the cooperation of ministers responsible for planning and spatial development of Baltic region countries (VASAB 1994; 2001; 2005; 2009; Zaucha 1996). Permanent priorities appearing at least in a few strategic documents have been chosen. In contrast to INTERCO, TeMo has accepted those records and arrangements. In this way, the “Baltic” definition of territorial cohesion was created (see the previous section) attributing territorial cohesion to the attainment of goals jointly agreed by VASAB countries for the spatial development of the Baltic Sea Region. By that definition, a choice of territorial cohesion dimensions was made. These dimensions included: economic performance and competitiveness; access to services, markets and jobs; social inclusion and quality of life; environmental qualities and innovative territories. They were depicted by conventional indicators that had a fine territorial resolution (based on various territorial typologies). The indicators used such variables as GDP per capita; the unemployment rate; multi-mode potential accessibility; self-assessed general health status; employment in technology and knowledge-intensive sectors. Their application in territorial cohesion measurement was possible due to their connection with territorial typologies. (TeMo identified many of them, for example, border, urban, rural and intermediary regions as well as low populated areas, and much more). This aspect of the approach is a added value of TeMo. Building on this, additional value-added will come from extending indicators to include those available on the city level (that is on the local level).

As in the case of the system of indicators suggested by INTERCO, the TeMo system is also characterised by a high degree of flexibility. The statistical information that is collected needs to be universal enough to make ex-post spatial analysis possible, whose scope and content may be subject to change in the future along with the new interpretation of territorial cohesion by European politicians.

2.7 Basic characteristics of territorial cohesion

Despite the fact that so many programs, analyses, models, and discussions were devoted to it, clarification of the precise meaning of the category of territorial cohesion remains quite elusive. It refers to territorial diversity (treated as an asset and a barrier in development), and it points to the need for balanced development of all regions, which is most likely the reason for its widespread use and general acceptance. However, after carrying out the previous analysis, one may be tempted to make certain generalisations about territorial cohesion.

Having in mind what was presented in this chapter one can easily notice that the notion of territorial cohesion has heavily influenced the research and scientific discourse in EU on the meaning and importance of territory for long-term socio-economic development and long-term well-being.

First, despite a lack of agreement over its referential scope, its content, interpretation (operational definition) and function, territorial cohesion has become a separate, independent objective of the EU and is put on par with economic and social cohesion.

Sometimes it is even treated as a general concept integrating the aforementioned cohesions. Developed in the policy domain, it has stimulated research and scientific discourse and acted as an interface between research and policy-making. It has happened despite or due to its vagueness and ambiguity that is sometimes treated as a drawback and sometimes as a strength of the concept.

Second, territorial cohesion is a dynamic and a very open concept, prone to various interpretations. It has evolved a lot in the course of its development, and it has been assigned (with time) with new and new policy roles and functions. As a capacious and enabling category it has been hoped to accommodate under one roof sometimes loosely integrated and even incompatible tasks such as enhancement of productivity coupled with territorial solidarity and justice. However, despite that, it has remained as a symbolic artefact, appealing to the minds of researchers and decision makers.

Third, in all those different functions territorial cohesion has featured some stable features and characteristics. It defines a need to take account of the specificity of the various types of territories in different types of human activity and intervention. It indicates that space is neither homogeneous nor neutral for economic processes, as is assumed by neoclassical models of perfect competition. It shows the need for temporal compromises, that is between long term and short term objectives, because spatial processes fit into the paradigm of long duration (the dimension of time is of great significance).

Fourth, territorial cohesion is by its nature integrative. According to ESPON research, it “focuses on territories, and not on sectors. Implementing territorial cohesion requires coordination of economic policy of member states as well as sectoral policy and UE actions” (ESPON 2012a, section C, 3). Thus it gave immense stimuli to the interdisciplinary research in this field. It has worked as a boundary-spanning object bridging economists, spatial planners, geographers, lawyers, people dealing with management and sociologists.

Fifth, territorial cohesion remains a complex concept unifying various other issues.

- The concept of territorial cohesion not only brings territory closer to the idea of intelligent, green development, fostering social inclusion, for example through the idea of territorial effectiveness, but it also places certain territorial values (the quality or utility of territory) above that of economic development (thus mitigating negative consequences of the application of modern economic model – Farrugia and Gallina (2008)). It has been pointed out by many researchers¹⁷: Schön (2005), notices that the objective of territorial cohesion is to strengthen both the endogenic potential and territorial justice (equality); Böhme *et al.* (2008), claim that territorial cohesion refers to the potential and weakness of territory.
- Therefore, cohesion should be treated as encouragement to strengthen the territorial dimension of public intervention, to merge traditional, socio-economic and spatial approach (e.g. Zaucha 2017). However, since both processes may aim at different objectives, the question remains how to achieve compromise or the optimum state.

However as a such, it is extremely difficult for modelling and operationalisation. Thus it does not fit at all into the traditional neoclassical mainstream economic rigorous

¹⁷ Also in Damsgaard *et al.* (2011) territorial cohesion is characterised as “harmonizing different development paradigms such as sustainability, convergence (solidarity between regions), and regional competitiveness” and using a normative statement that “the best balance of economic, environmental and social needs has to be specific to each particular territory”.

models without disaggregation into more compact components that can be more easily conceptualised, operationalized and measured. Such decomposition has been proposed below. It is based on the critical observation of the use of territorial cohesion in the day to day policy making processes in Poland mainly in reference to the development policy in a macro (i.e. national) scale.

Regarding cohesion as a macroeconomic category, it is possible to distinguish the following separate dimensions (Figure 2.4)

- a) policy territorialisation (e.g. by means of making policy more place-based),
- b) territorial assets (e.g. attaching greater attention to so-called territorial capital),
- c) the inclusion of territorial objectives as a legitimate part of the social welfare function (as a part of the public choice process).

Policy territorialisation means adjusting policies to the territorial context to make them more efficient and effective. It means in practice differentiation of objectives, instruments or ex-ante conditions for receiving public support for various regions in line with their specificities in order to increase GDP and prosperity of a given region. Territory plays here a minor role albeit it can be a major role of regional specificity (i.e. quality and density of transport network, the appearance of natural and cultural heritage, etc.). Here territorial cohesion is part of a public choice process focusing more on policy design than on policy goals and objectives.

Taking care of territorial assets should also be seen regarding policy efficiency and effectiveness but related to GDP increase. Its starting point is in the observation that such assets (in general terms institutions and geography (cf.: Rodrik 2002, 27) are instrumental in growth and development. The problem is a lack of a precise definition of territorial assets, but a kind of a policy consensus has emerged concerning their scope and nature. OECD 2001). In this context, the most frequently used term is a territorial capital more in-depth described in this book in chapter 5. It encompasses both genuine territorial assets such as economies of agglomeration, natural and cultural heritage or transport infrastructure and other quasi-territorial assets (i.e. non-movable or attached to the territory) such as social capital, or other local and regional institutions).

The inclusion of territorial objectives into social welfare functions means merging territorial and socio-economic development. Both are essential for human well-being. People enjoy not only their higher consumption of goods and services but also the accessibility of services of general economic interest or beauty of landscapes. Thus territory provides an important part of human satisfaction not always directly related to the production of goods and services. Development policy should take this into consideration and in the course of the public choice should come up with a right mix of economic social and territorial objectives.

The first two dimensions of territorial cohesion seem to have a direct and positive impact on economic growth traditionally understood. Governance (policy adapted to the specificities of different territories in order to improve the effectiveness of the intervention of public authorities) and the territory as a development asset fit together into the concept of endogenous growth, although the territorialisation of policies cuts across different spatial scales and different levels of government. Also for the third dimension, involving the relationship between territorial cohesion and quality of life, and objectives

of public choice identified above economic growth is important and raises the question of territorial utility. An example would be a polycentric settlement network, rigorous spatial planning (spatial order), or environmental protection. In typical growth models, those can sometimes act as retarding forces, if, for example, polycentric development occurs at the expense of major cities. From the point of view of a specific territory they may, however, be treated as something desirable.

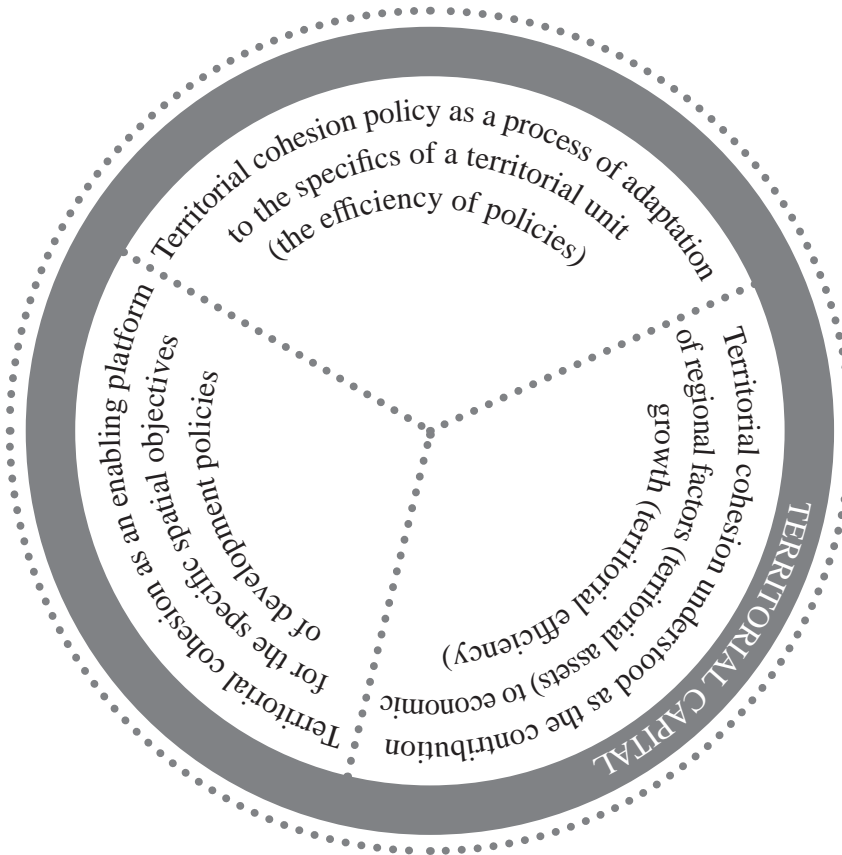


Figure 2.4 Territorial cohesion components from macro-economic perspective

Source: own elaboration

The proposed model in Figure 2.4 is different from the Star model and the Tequila model, mainly by distinguishing the component of the regulatory sphere and the real sphere, but also by direct references to economic growth. It will serve as a backbone in this book for further discussion on the practical operationalisation of territorial cohesion as a legitimate part of the macroeconomic models of growth and development. The territorial cohesion in its policy based dimension will be analysed in chapter 8 in its territorial capital dimension in chapter 5 and 6 and in its territorial utility dimension in chapters 4 and 7. However, first Polish development policy will be presented in chapter 3 in which we try to highlight all its territorial components and aspects.

Chapter 3: Polish development policy and its territorial dimension

In this chapter, we examine development policy in Poland and its territorial dimension. We do so as an introduction to facilitate a better understanding of the other chapters by readers not familiar with the situation in Poland. The chapter comprises five parts as follows: clarification of the key notions used and their theoretical foundations; presentation of the European context in which Polish development policy operates; presentation of the institutional grid of development policy in Poland and its origin and evolution; discussion of the territorial dimension of this policy; and finally, specification of the possible added value of Polish experience in this field for other EU states.

3.1 The essence of development policy and its framework

In Poland, development policy is defined in formal legislation — Polish Act of 6 December 2006 on the principles of development policy, as amended (Dziennik Ustaw 2014). It is considered as a set of interrelated activities undertaken and implemented in order to ensure the sustainable development of the country, to provide socio-economic, regional, and territorial cohesion, as well as to increase the competitiveness of the economy and the creation of new jobs at national, regional, and local levels. This policy is jointly implemented by the Council of Ministers (the national government of Poland) and local and regional governments in accordance with their competencies.

In line with this definition of development policy, in this book we consider an integrated mix of various policies (e.g. spatial, urban, educational, social, transport, environmental, industrial, and many others — see Figure 3.1) aiming at development as their ultimate objective. However, when discussing EU development policy, we will frequently refer solely to the EU Cohesion Policy, since it is one of the key elements of development policy at European level.

The notion of development has a normative character and can be defined only in the context of values and societal objectives shared by the given society. In the neo-classical school of economics, development means an increase in human well-being, usually narrowly understood as satisfaction achieved in the course of consumption of goods and services. It has been the prevailing approach, at least in mainstream economics in the pre-crisis period. Mainstream economics assumes that consumers maximise utility in a conscious, rational way when buying various goods and services (Blaug 1985, 295–296). Thus the rather fuzzy utility concept became one of the cornerstones of

the general equilibrium models. In this way, GDP per capita became the main measure of welfare and prosperity, despite all its defects and weaknesses (Stiglitz *et al.* 2009).

Standard economic models of growth did not take the natural environment into consideration. However at the fringe of mainstream economics a new development paradigm has evolved, i.e. one of sustainable development. It is of a more integrated nature since it pays equal attention to consumption as to social needs (social discrepancies) and the environment. Environmental resources are seen as developmental assets and are treated as a natural capital, similar to human or social capital (ESA 2011).

Despite all its positive features, one can argue that such an approach is still linear, static and deterministic, i.e. allowing hardly any room for analysing the dynamic interplay of persistence, adaptability and transformability across multiple scales and timeframes. Thus in the recent years the new paradigms of development, such as evolutionary resilience, have influenced the European development agenda (Davoudi 2012; 2016; Davoudi *et al.* 2016; Folke *et al.* 2010; Holling and Gunderson 2002; Walker *et al.* 2004;). Such resilience is understood as the ability of complex social-ecological systems to change, adapt, and transform in response to stresses and strains (Davoudi 2012). It pays proper attention to the ways of selecting developmental objectives, the possibilities of their correction, and to the significance of the quality of institutions and realisation of policy dealing with these topics. However, it has been criticised as neglecting core concepts of the functioning of the social sphere such as agency, conflicts, knowledge and power (Olsson *et al.* 2015), and intended or unintended linkages with neo-liberalism (Davoudi 2016; Walker and Cooper 2011). Therefore the debate on a more comprehensive approach to development has been continuing through entire Europe.

An important element of this discussion has been the recognition of the role of territory in development. Pioneering work was carried out by the OECD. The OECD territorial review series, issued in the 1990s and 2000s for particular countries, regions and metropolitan cities, enriched the territorial basis for public policies. The reports offered analysis and guidance addressing the territorial dimension of public policies and governance as exemplified by the reviews for Poland in 1992 and 2008 (OECD 1992; 2008). The new paradigm of regional policy developed or identified by OECD (2009, 36) highlighted such issues as endogenous (also territorial) potential, functional economic areas, integrated cross-sectoral projects, etc. The territorial denomination of the policies was infused into the public debate in the European Union through OECD territorial research. Within the OECD framework, the need to turn policies into territorially sensitive ones was clearly spelt out.

Theoretical essentials for the enhancement of the territorial dimension of public policies can be retrieved from the so-called evolutionary theory of economic growth. In contrast to the neoclassical theory, which perceived the main driving force to be capital and human resources, and to certain extent research and development, the evolutionary models concentrate on processes and interactions between elements of the economic structure (Seravalli 2009, 12-15). While in the neoclassical formulation this economic structure is believed to be stable, the evolutionary theory assumes that it constantly transforms, propelled by self-perpetuating local or regional processes. Such processes have a visible local (regional) specificity and are therefore hardly replicated from one area to another. In effect, the very same sectoral policy will yield different outcomes even in similar territories. For instance, as stipulated by the new economic geography, improved

accessibility may result in either growth or stagnation of regional economies, depending on their capability of sustaining development resources (Zaucha 2007, 87–88).

Enhancement of the territorial dimension of public policies may be termed policy territorialisation. One of the earliest attempts to define the territorialisation of policies was given in the 1997's OECD (1997, 143) regional competitiveness report as an outcome of coordination of local actions by the administrative and functional levels, which adds value to the efficacy of policies¹⁸. Territorialisation of development policy essentially means introducing the territorial dimension into policy (Zaucha *et al.* 2014b, 249). In practice, this may mean that the policy is conducted in such a way as to take into account the territorial context (i.e., different objectives and different tools to achieve them for various territorial units or areas) and/or including territorial capital. Policy based on the principle of an integrated territorial approach (i.e., territorially sensitive policy) emphasises the endogenous potential, both as existing potential and as potential that could be achieved by the territory, and adapts the intervention to the spatial (or territorial) context of local or regional specifics. The essence of this process is to combine the approaches of spatial and socio-economic development policies (Zaucha *et al.* 2013, 9). As previously noted, this is only a preliminary step in the process of territorialisation. Its full measure must also take into account other dimensions of territorial cohesions such as territorial utility (described in chapter 2) resulting from various combinations of economic, spatial, social, and environmental goals.

While OECD put emphasis on coordination of the administrative and functional levels, the intergovernmental cooperation within EU strove more towards upgrading territory to the status of development asset and towards cross-sectoral integration as key elements of policy territorialisation. The earliest intergovernmental document which pointed to the importance of territory in development policy was the previously mentioned *European Spatial Development Perspective* (ESDP 1999). Its results proposed territorial options, i.e., objectives of spatial development of the EU which paved the way for a territorial approach at the macro level in policy development. It contained the following objectives: polycentricity, transport integration and the wise management of the natural and cultural heritage (ESDP 1999, 19-20). In addition, the ESDP pointed out the need for a comprehensive approach to development through close cooperation and interaction: the so-called vertical and horizontal co-operation (ESDP 1999, 35-36).

A year later, the Council of Europe, European Conference of Ministers Responsible for Regional/ Spatial Planning (CEMAT 2000), developed the *Guiding Principles for Sustainable Spatial Development of the European Continent*, a document that highlights the territorial dimension of sustainable development. This document recommends a close coordination between spatial planning and sector policies.

In 2007, the ministers responsible for urban development and territorial cohesion in the EU countries adopted a *Territorial Agenda for the EU* (Territorial Agenda 2007). This document further reinforces the approach of the ESDP. The agenda was updated to *Territorial Agenda 2020* during the Hungarian presidency of the EU in May 2011 and identified six objectives of territorial development of EU encompassing: polycentricity of the settlement structure; integrated development in cities, rural and specific regions; strong local assets; territorial connectivity; as well as managing and connecting ecological, landscape, and cultural values.

¹⁸ The outcome of /.../ coordination of the administrative and functional levels exemplifies of what may be called 'policy territorialisation'.

As part of the ESPON research project, *European Territory 2050* was launched. The result of the work carried out in 2011-2014 was a report on long-term European territorial development (ESPON, 2014a). It pointed out the unique values of European territory that can be used by an active public policy at the European and the national level. It stressed the need to preserve the benefits of the open and polycentric European space. Also, it was found that territorial structures are very vulnerable and sensitive to economic cycles of disturbances. Therefore it proposed to examine how to strengthen the resistance of the different regions of the European Union to crisis phenomena (Gawlikowska-Hueckel and Szlachta 2014).

In this book we considered as policy territorialisation a process of introducing all three aspects of territorial cohesion (identified in chapter 2) to the given policy as its guiding principles and objectives. It means that policy should be adjusted to the specificities of the various territorial units it covers, should take into consideration (enhance and maintain) territorial capital as a development asset and should respect territorial utility that society wishes to enjoy from a given territory.

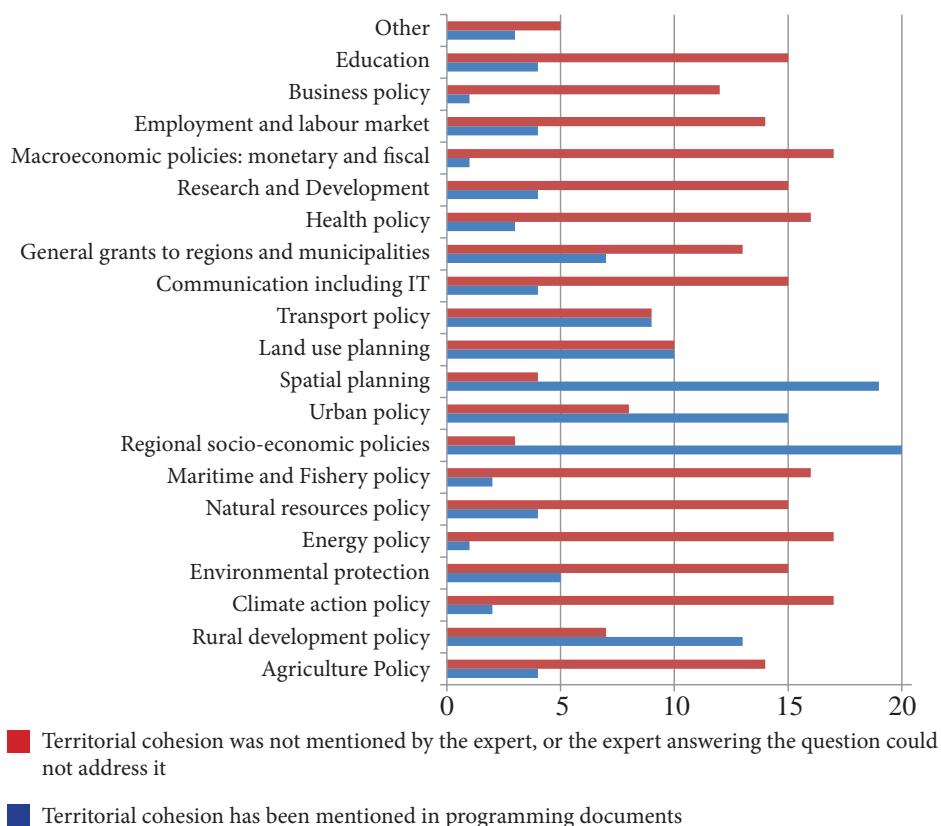


Figure 3.1 National policies in the EU Member States with respect to the concept of territorial cohesion

Source: calculations D. Świątek (Institute of Geography and Spatial Sciences) according to studies conducted for the NTCCP (Network of Territorial Cohesion Contact Points)

Policy implementation, however, does not keep pace with conceptualisation efforts. In 2012-2013, under the auspices of NTCCP (*The Network of Territorial Cohesion Contact Points*), a study was carried out on the extent of the territorial orientation of national and regional development policies (for an elaboration, see Zaucha *et al.* (2013)). It was possible to ascertain which were the most important policies that made use of the concept of territorial cohesion at the national level. It turned out that, despite efforts at the European level, this concept had penetrated mainly traditional policies related to space (urban and regional policies, rural development, spatial planning; Figure 3.1). To a lesser extent, this penetration concerned the policies of recognised territorial dimensions, e.g., environmental and transport policy. Territorial cohesion was rarely inscribed in other development policies, despite the fact that some of them should be implemented differently in different territories (e.g. health care policy; educational policy; or research and development). Thus the NTCCP study shows how distant general program guidelines remain from the practice of development programming.

3.2 Territorialisation of EU Cohesion Policy in the programming period 2014-2020

The EU framework has not been used so much for the conceptualisation of the notion of policy territorialisation although the EU plays a key role in its popularisation and implementation. Therefore the EU policy context is of vital importance for understanding territorialisation of development policy in Poland and will be presented in this chapter.

The key development goals of the EU are spelt out in the *Europe 2020 Strategy*. It is the basic document of the EU, designed to help it in creating economic growth and employment and regaining global competitiveness relative to the other main and leading countries of the world. Priorities defined therein are as follows:

- Developing an economy based on knowledge and innovation;
- Promoting a resource-efficient green and competitive economy; and
- Promoting a high employment economy that ensures high social and territorial cohesion.

Initially, the strategy excluded spatial and territorial aspects, and it disregarded European Cohesion Policy. As a result of a process of public consultation, Cohesion Policy was identified as an important instrument for the implementation of the *Europe 2020 Strategy* and references to territorial cohesion were included.

Two recent cohesion reports of 2010 and 2014 take into account not only the economic and social aspects of cohesion but also territorial aspects (CEC 2010; 2014a). In the *Fifth Cohesion Report* (CEC 2010) territorial cohesion was added to economic and social cohesion for the first time.

A paramount feature of this report is the analysis of various public policies regarding their spatial dimension (Table 3.1).

Table 3.1 The territorial dimension of EU policies

Policies with explicit territorial dimension	Policies with partial territorial dimension	Policies with no territorial dimension but with potential territorial impacts
<ul style="list-style-type: none"> • Competitiveness • Transport • Environment • Maritime policy • The Common Fisheries Policy 	<ul style="list-style-type: none"> • Research and development • Innovation and entrepreneurship • Information society and media • Poverty and social exclusion • Employment • Education • Gender perspective • Health • the Common Agricultural Policy • Climate 	<ul style="list-style-type: none"> • The Single Market • Trade • Energy • Economic and Monetary Union • The Lisbon Strategy

Source: CEC (2010, 197-198)

One can have some doubts regarding details of such a classification of individual policies, but addressing the spatial impact of policies as such deserves a positive assessment.

The *Fifth Cohesion Report* (CEC 2010) also proposes the implementation of Territorial Impact Assessment in order to determine territorial consequences of different policies for different local and regional territories. Such an analysis, conducted ex-ante, should take into account the impact on the economy (including the specific regions and sectors), society (in terms of social exclusion) and the environment (in terms of spatial planning) (CEC 2010, 195-197). In the next *Sixth Cohesion Report* (CEC 2014a) the following signs of territorialisation of the consideration of socio-economic development can be identified:

- A substantial expansion of the analyses of cities and urban policy, including, among others, the implementation of case studies for selected cities (including European capitals), analyses for metropolitan areas and functional urban areas;
- Territorialisation of many indicators available in previous cohesion reports at the level of member states or the level of NUTS 2 regions only;
- A much wider use of analytics in many areas carried out at the sub-regional level (NUTS 3 regions or LAU 1); and
- In the case of transport infrastructure, the introduction of maps and charts of physical layout and accessibility assessments. The effect of the *Sixth Cohesion Report* is to document the fact that the formation of territorial structures is essential for the socio-economic development of the European Union.

The *Sixth Cohesion Report* points indirectly to both traditional and new directions of intervention, conditioning the wider use of potentials of the European Union. For instance, it contains a description of the specific nature of territorial cohesion in rural areas (CEC 2014a, 188-190). The Common Agricultural Policy (CAP) is composed of two pillars, the first one offering market support and direct subsidies to EU producers and the second one supporting rural development programmes. The CAP has a strong territorial dimension under the second pillar, which is dedicated to the development of rural areas, including

economic, social, and environmental issues, based on a territorial approach, taking into account also the LEADER initiative dedicated to local development. This pillar brings together more than a quarter of the Common Agricultural Policy funds in 2014-2020. However, it was found that the first pillar of the CAP also has a significant territorial impact.

The *Sixth Cohesion Report* (CEC 2014a, 202) also identifies the most important changes resulting from acknowledging territorial cohesion: (1) growing the importance of access to services; (2) sustainable development; (3) functional geographical distribution, and (4) territorial analysis.

One can conclude that EU has made a considerable effort to analyse and identify the consequences of acknowledging the territorial dimension of its development policy. In the next paragraphs, we examine how it has influenced EU policy-making patterns.

The financial framework shaping the majority of EU development measures and interventions is given by Regulation of the European Parliament and the Council 1303/2013 of 17 December 2013. This regulation lays down common and general provisions on all European Structural and Investment Funds – ESI funds (European Union 2013). A novelty in the current programming perspective (2014-20) is a thematic concentration of the interventions under 11 thematic priorities. Such concentration is applied to counteract the scattering of the European Cohesion Policy resources in order to obtain a critical mass of interventions in the most relevant fields. However, its characteristic feature is the sectoral approach, rather than a territorial logic of formulating leading development themes in 2014-2020.

The aforesaid EU regulation (European Union 2013) stipulates in its preamble that “in order to increase the effectiveness and efficiency of the policies, it should be possible for the European Structural and Investment Funds to be combined into integrated packages which are tailor-made to fit the specific territorial needs.” It was assumed that the Member States would work to meet the territorial challenges of each region, in order to unleash their specific potential for development, helping to achieve the objectives of the *Europe 2020 Strategy*.

The annexes to the regulation define in more detail the *Common Strategic Framework*, (a framework EU document setting out the logic of the EU structural interventions in 2014-2020) and contain incentives for an integrated territorial approach. For instance, it is stipulated there that Member States shall ensure that programmes under the ESI Funds reflect the diversity of European regions in order to address territorial challenges and enhance an integrated territorial approach.

It was also said that partnership agreements with individual Member States should contain the following territorial elements:

- Analysis of the Member State’s or region’s characteristics, development potential, and capacity, particularly in relation to the key challenges identified in the Europe 2020 Strategy;
- Assessment of the major challenges to be addressed by the region or Member State, the identification of the bottlenecks and missing links, innovation gaps, including the lack of planning and implementation capacity that inhibit the long-term potential for growth and jobs;
- Assessment of the cross-sectoral, cross-jurisdictional or cross-border coordination challenges;

- Identification of steps to achieve improved coordination across different territorial levels, /.../ to deliver an integrated approach linking the Europe 2020 Strategy with regional and local actors.

For the implementation of an integrated approach to territorial development, the Commission proposed to:

- upgrade the urban policy from an analytical category to a fully fleshed-out Cohesion Policy intervention instrument and
- furnish Cohesion Policy with two new mechanisms to support the local and sub-regional activities:
 - Community Led Local Development – CLLD and
 - The Integrated Territorial Investment – ITI (CEC 2012a, 9).

The first mechanism is to support grassroots efforts defined by local stakeholders in accordance with local specificity and needs while taking into account the priorities set at higher levels. It is in line with the concept of territorially-directed (or place-based) policies. Local activities can be supported within the CLLD provided that they take place in areas of Member States defined in partner contracts concluded between the EU Commission and the member states. Under CLLD there is a noticeable integrated territorial approach, the territorial point of departure and recognition of the diversity of needs in different regions.

The second mechanism supports the consistency of policy and funding. An Integrated Territorial Investment (ITI) is an instrument which provides support for complex investments that need a combination of different financial sources. Therefore it is based on a prepared in advance “integrated investment strategy for a certain territory or functional area”(CEC 2012a, 9). Within this instrument, the territorial point of departure and reference to the concept of functional geography can also be seen. It assumes an integrated interaction by all European Cohesion Policy funds. ITI are primarily focused on urban areas, but may also apply to other areas.

An urban dimension of Community policies has become a new ingredient of development debate in the European Union. However, financial support for this policy is very limited, and its current shape may lead to a risk of its autonomous operationalisation in the member states and inconsistent support schemes and outcomes.

It seems that the solutions applicable in programming period 2014-2020 assume at least verbally a comprehensive approach to territorialisation, but unfortunately all those relevant provisions have been marginalised by shifting them out of the main body of the key documents to the Annex of the Regulation and limiting their financial impact. The Common Strategic Framework takes territorial priorities into account in its structure, but the proposed territorial instruments (ITI and CLLD) are of marginal importance regarding money allocation and their possible impact. The Urban policy will work at the margins of the mainstream interventions. The more far-reaching ways of territorialisation of the development policy of EU proposed by Doucet et al. (2014) have not been considered.

Summing up, it can be concluded that the proposed package of the 2014-2020 regional instruments is somewhat eclectic, and considers geographically oriented urban policy and local policies as the fundamental direction of the European Union territorial intervention. The logic of the mainstream interventions has not been changed considerably. However, at least new inspirations have been set out, an important message has been sent out, and the member states have received relevant stimuli to think over their development policy. They can freely use the EU inspirations for shaping their own development policies.

3.3 Development policy in Poland and its evolution

Poland is a medium size country in global terms, one of the 28 EU member states since 2004. The total area of Poland is 312,679 square kilometres making it the 9th largest national territory in Europe. With a population of over 38 million people, at the end of 2014, Poland is the sixth largest country in the European Union and the most populous post-communist member of the EU. Regarding GDP in purchasing power parity, according to International Monetary Fund Poland () ranked in 2014 as the 23rd country in the world (if excluding UE as a whole) and as the sixth EU member state, reaching the size of GDP of Argentina. The level of development measured by Human Development Index gives Poland the 35th rank in the world slightly above Slovakia, Portugal, and Hungary.

The development of Poland during the past twenty-five years has been a success story. As data provided by the World Bank indicate, Poland has experienced a constant increase of GDP since 1992, with an average annual growth rate of 5.1 per cent over the 1990s and 3.8 per cent between 2000 and 2010. In this period the GDP of Poland has almost quadrupled. In 2009 Poland was the only EU member state that did not experience a negative growth rate as a repercussion of the global economic crisis. In the period of economic slowdown (2008-13), the annual growth rate remained 2.7 per cent (Bogdan et al. 2015). In 1996 Polish GDP per capita adjusted for differences in purchasing power parity represented 38 per cent of EU-15 average. In 2014 it reached the level of 60 per cent.

However, the beginning was not easy. In 1989 Poland belonged to the group of centrally planned economies with almost a negligible role for the market and all decision centralised in the hands of the ruling Communist party. Democracy was suppressed and the elections had a facade character with only one voting list available. All policies were decided in the capital city Warsaw and the power of the executive dominated over legislative bodies. As a result, the function of local self-governments was reduced to the role of territorial representation of the state authorities (Zaucha 1999). In the 1980s the economic situation was difficult, that can be illustrated by an annual inflation rate above 600 per cent at the end of the decade.

When the Communist party was forced to relinquish the reins of authority in 1989 one of the most important dimensions of restoring growth in the country was the reconstruction of authentic self-government. The work started from the local level. It was realised in a Bill adopted by the Polish Parliament (Sejm) on 8th March 1990 that enabled genuine local self-government in cities and rural municipalities.¹⁹ In parallel, the institutions of civil society were restored, and development of NGOs was supported (Zaucha 1999). The provisions referring to territorial self-government have also been introduced into the constitution, adopted in 1997. The local government elections in May 1990 was the first democratic elections in Poland after World War II.

The legislative and auditing body of the commune is the Commune Council, and its executive organ is the mayor – *wojt* (in the case of rural communes), city mayor (in the case of towns) or the president of the city (in the case of cities). The members of the commune councils are elected in direct, secret, equitable and general elections. The same procedure applies to mayors since 2002.

According to the above mentioned Bill of 8th March 1990 on the territorial self-government, the scope of activities of the commune includes all public matters of local importance not reserved by legislation to other bodies (clause of general competence in all

19 Off. Jour. No. 16 pos. 95, No. 32 pos. 191, No. 34 pos. 199, No. 43 pos. 253, No.89 pos. 518.

local matters)²⁰. The tasks (precisely, legally defined objectives of commune's activity) are divided into commune's own tasks and delegated tasks. Among own tasks the following seem the most important: zoning order (land-use planning and management); management of real property; protection of the environment; local public transport; local technical infrastructure (local roads, water piping system, sewage system, provision of electrical energy and heating); utilisation of refuse; local cultural amenities (libraries, communal theatres); sport and recreational facilities; green terrain; marketplaces; communal cemeteries; public order and fire emergency services; elementary education; health care and social assistance services. Communes are endowed with their own financial resources (local taxes and shares in national taxes, revenues generated by communal property), that constitute around 50 per cent of their revenues, thus they are still dependent on subsidies from the national level being an important source of financing among others the delegated tasks.

The organs of the central government do not have decision-making competencies in the commune, and they enjoy only a limited scope of controlling competencies. The controlling competencies relate to two areas of activities of the municipality:

- the general regulation sphere (rules, resolutions concerning the whole population and regulating the functioning of the commune, etc.);
- individual-particular sphere (concrete decisions of the municipality's administration concerning individual cases).

During the first years of the Polish transformation, the decentralisation was limited to the local level. At that time 49 regions (voivodeships) existed, but they were territorial units of the central government. The governor (voivode) appointed by the government represented the "Centre" locally and acted only within the powers granted to him by the respective bodies of central administration. Thus the voivode did not run any development policy of the region. The governor was supported by the regional assembly, elected by municipal councils and mandated only with the tasks of advising, monitoring and discussing important issues for newly created local governments from a given region.

The second stage of the reforms aiming at decentralisation of development in Poland started only in 1995 (Zaucha 1999) and was successfully completed in 1999. It was decided to create a new echelon of the territorial self-government composed of several communes, called *powiat* (county) as well as to merge existing regions (voivodeships) and turn them into self-government ones. Figure 3.2. presents the map of Polish voivodeships and counties. As the result, since 1999 Poland has three types of territorial self-governments run by local and regional assemblies elected in direct and general elections. Also, executive bodies of Polish self-governments have a strong political position. Only the head of a region (the Marshal) is elected by the regional assembly whereas heads of counties (*starosta*) and mayors are also elected in direct and general elections by the citizens of a given territorial unit.

In a similar way as in the case of municipalities, both regions and counties have been endowed with their own and delegated tasks and with financial resources. However, regarding finances, the role of counties and regions are much smaller in comparison to the municipalities. The revenues of regions and counties (excluding cities with county rights) constituted in 2014 only 6 per cent and 8 per cent of the total for all types of the self-governments in Poland.

The main tasks of regional governments encompass the following items: enhancement of regional development (including international economic relations, promotion and labour market issues); provision of some regional public services such as higher

²⁰ Practically speaking, the clause is restricted through enumeration of the responsibilities of the commune, which leads to a presumption, that the commune performs only those tasks and only to this extent, as specified in the law.

education, specialised healthcare services and cultural activities; maintenance and development of social and technical infrastructure, i.e., regional roads, as well as prevention and rational management of cultural and natural resources, including regional spatial planning. Therefore self-governing regions (voivodeships) perform mainly developmental (guiding) functions while providing an only limited range of public services.

In contrast, counties are primarily responsible for supra-municipal public services such as secondary education, supporting the disabled, combating unemployment, some hospitals, and higher rank health facilities, county roads, specific types of welfare services. Those tasks are very diverse therefore counties usually, do not run a coherent development policy for its territory with the exception of the cities with county rights.



Figure 3.2 Division of Poland into NUTS 2 (voivodeships) and LAU 1 (counties) areas

Source: Institute of Geography and Spatial Organisation Polish Academy of Science (S. Goliszek)

As of 1 January 2015, there have been in Poland 16 regions, 314 counties, 66 cities being municipalities with county rights²¹ and 2,478 municipalities. The entire structure is a non-hierarchical one meaning that different types of territorial self-government in Poland are not formally subordinated to each other and can act independently. However, some mechanisms exist to ensure the coherence of development policy within the country, since Poland, according to its constitution, should remain a unitary country. The diversity of the types of self-government in a relatively large country like Poland reflects the concept of subsidiarity, i.e., the necessity to deliver some public goods and services at an appropriate territorial level that might vary in line with their nature. Accordingly, development policy has to be territorialised and run as a policy mix by public authorities accountable to citizens and mobilizing resources of different areal units.

²¹ Such a city performs simultaneously tasks of municipality and county/district.

The third stage of building the contemporary framework for development policy in Poland began with Polish accession to the EU in 2004. Poland became the biggest beneficiary of the support from EU Structural and Investment Funds for development purposes. The existing grid of territorial units was used for installation of the EU Nomenclature of Units for Territorial Statistics. Polish regions became NUTS 2 units, municipalities LAU 2 and counties LAU 1 ones whereas NUTS 1 and NUTS 3²² were established as artificial assemblies of regions and counties for statistical purposes only.

The development of the country (e.g., measured with conventional indicators such as GDP growth or fall of unemployment rate) has started to accelerate. Poland was furnished with relatively large financial resources for development. From the very beginning, it was decided that a significant portion of them should be decentralised and decided as close as possible to the citizens. Since 2007 sixteen regional operational programmes have been operated in Poland. They are designed and administered by Polish regional governments and approved by the EU Commission. In 2007-2013, the regional operational programmes amounted to approximately 25 per cent of the EU allocation for Poland, and in the current programming perspective 2014-2020, it is almost 40 per cent (i.e. €31.2 billion in absolute terms). Therefore, since 2007 the development tasks of regional governments have been matched with adequate resources that allowed them to run a fully fledged intraregional development policy. Decentralisation of management of EU Structural and Investment Funds is a deliberate decision of the Polish government in order to make development policy territorially sensitive, i.e., tailored to various needs and potentials that vary in space in such relatively large country like Poland.

Development policy in Poland is therefore run at national, regional and municipal levels. The municipality (LAU 2) which possesses extensive competencies in spatial (land use) planning, is the basic unit of local government. Municipalities carry out *Studies of Development Conditions and Directions* (which are obligatory) and of the *Local Spatial Development Plan* (which are optional). The study serves to decide on and inform about intentions, goals and ambitions for the use of the territory of a given municipality, whereas only local land use plans provide a legal basis for investments and other forms of use of land. Since the preparation of such plans is not mandatory therefore such plans covered in 2013 only 28.6 per cent of the area of Polish municipalities. For this reason, some investment projects are based on decisions of officials (so-called individual planning permissions), which tend to have a negative influence on spatial order and is one of the causes of uncontrolled suburbanisation. Municipalities can also enact development strategy, but in practice, it is done only by big cities.

The county does not have the power of spatial planning and development policy. However, it is a convenient and widely used statistical unit (region research tool; Dziewoński 1967). The reason is that municipalities are small, and many data are not available at this level. Some counties elaborate voluntarily socio-economic development strategies. Usually, this has been done by big and medium-size cities.

The NUTS 2 region (voivodeship) is that level with a strong formal mandate on development policy and spatial policy that are within the competence of regional authorities. Marshal's offices usually have departments or other organisational units responsible for spatial and regional socio-economic policy. It is at this level that two basic regional strategic documents are created: the *Voivodeship Development Strategy* and the *Voivodeship Spatial Development Plan*. The majority of those documents have been set up at the beginning of the previous decade and have been updated in recent years. They served as a basis

²² There are no administrative units of NUTS 3 level. Such division exists only for the needs of official and European statistics. It is the lowest level for which GDP data are aggregated. Since January 2015 there have been seventy two NUTS 3 units in Poland.

for *Regional Operational Programmes* managed by regional authorities in two EU-supported programming perspectives: 2007-2013 and 2014-2020. The significant scale of resources at the disposal of these programs ensures that they have a decisive impact on regional development within individual NUTS 2 regions (or voivodeships). Moreover, regional governments sign regional contracts with the central government, which enable them to influence central government's policy and investments on their territory.

Since 2007, in addition to the *Regional Operational Programmes*, one Operational Programme at a macro-regional level has been in effect in both EU programming perspectives. It covers the five least developed NUTS 2 regions (or voivodeships) of Eastern Poland: Warmińsko-Mazurskie, Podlaskie, Lubelskie, Świętokrzyskie and Podkarpackie) and is administered by the ministry in charge of regional policy. However, it has been based on an appropriate strategy for the development of Eastern Poland prepared by the central government and approved by the regions. Other Marshals have prepared or are preparing similar documents for certain other macro-regions in Poland. However, their impact on financial allocations from EU Structural and Investment Funds is indirect.

At the central government level, development is guided by two overarching documents the *Long-term National Development Strategy Poland 2030. The third wave of modernity* (Ministerstwo Administracji i Cyfryzacji 2013a) and the *Medium-term National Development Strategy till 2020* (Ministerstwo Rozwoju Regionalnego 2012a) which are the documents giving the framework for all national policies. The long-term strategy is an overall strategic document of the Polish government that identifies the major trends, challenges and scenarios of socio-economic development of Poland, as well as the directions of spatial management of the country with the aim to enhance long-term, sustainable development. The medium-term strategy is the main medium-term programming document of the country's development until 2020. It is complemented by the *National Strategy for Regional Development* (Ministerstwo Rozwoju Regionalnego 2010a) and *National Spatial Development Concept* (Ministry of Regional Development 2011d) and eight integrated strategies. The system of execution of development policy in Poland at the national level is described in Figure 3.3.

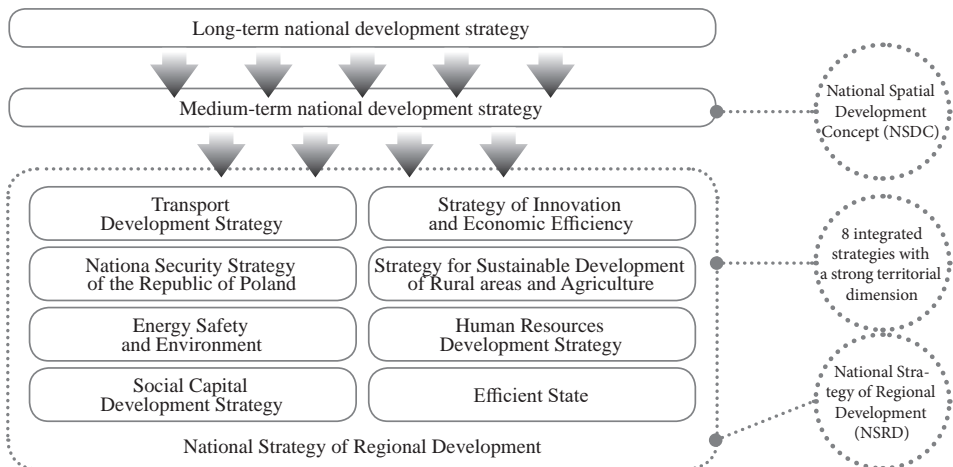


Figure 3.3 System of running development policy in Poland at national level – policy integration

Source: Zaucha et al. 2013, 33

3.4 Territorialisation of development policy in Poland

The report, commissioned by the Ministry of Regional Development to help conceptualise territorialisation, defines the term as reorientation of public policies in a way that enables the capture of territorially (regionally) formulated objectives or territorially visible impacts in their design and implementation (Matczak *et al.* 2010, 1). Hence, the public intervention ought to be set in a framework of ex-ante and ex-post evaluations geared at optimising their territorial effects. Matczak *et al.* (2010) pointed out that an essential pre-requisite for this concept of territorialisation is a genuine empowerment of the regional authorities – that is the provision of adequate means to let the regional authorities join this governance process – as well as an integration of regional policy with the horizontal and sectoral policy-making processes. “The horizontal and sectoral policies (bearing a distinct territorial profile) in the competence of the state administration shall be correlated with regional policy objectives through intra-governmental reconciliation (for sectoral policies) or consultation (horizontal policies)” (Matczak *et al.* 2010, 1).

Considerable effort has been made to implement those ideas between 2010–2012. The policymaking model worked out in Poland at that time promotes an integration of socio-economic and spatial policies. Such an approach is reflected in the country’s *Long-Term National Development Strategy*, which is to contain both socio-economic and spatial aspects and provides a framework for all other policies (Figure 3.3). Also, *The Medium-term National Development Strategy till 2020* put a focus on territorial cohesion. It can be seen in its goals and ambitions such as (Ministerstwo Rozwoju Regionalnego 2012a, 144-173):

- to provide access to and adequate standards of public services,
- to strengthen governance mechanisms for sustainable development and spatial integration of the development,
- to ensure full use of territorial potentials by creating institutional conditions, legal and financial resources for the implementation of development activities in the regions,
- to strengthen regional capital as development engines,
- to create conditions for the development of regional, sub-regional and local centres and to increase the potential of rural areas.

Moreover in the separate document named *Territorial Dimension of Strategic Documents* (Ministerstwo Rozwoju Regionalnego 2010b) the expected territorial features of the previously mentioned eight integrated strategies have been defined. They have been related to such items as diagnosis of the situation; forecast of development trends; strategic objectives of development policy; intervention directions (priorities); system implementation and financial framework; and performance indicators related to the NUTS and LAU classifications. Finally, the expected territorial dimension of each of these eight strategies was described. In addition to that, the territorial dimension of public policies is defined as: “the real effects of both sectoral and horizontal development initiatives, and legislation at the national and international level, felt at the local level” (Ministerstwo Rozwoju Regionalnego 2010b, 4).

Conceiving territorial cohesion as a new leading paradigm of the development policy in Poland, the subsequent functional-territorial approach has been put into motion. It has implied “a quest for new governance methods and regulatory frameworks to profit from theoretical opportunities resulting from pursuing of the territorially profiled development objectives” (Markowski 2011a). As a result, in Poland since 2010 there has been a constant shift towards empowering all development actors with necessary skills and knowledge helping them to become active in development policies and to bring them their own territorial perspectives.

At a national level, Poland has been inserting territorial elements to the other policies through two key documents i.e. *National Regional Development Strategy 2010–2020* – NSRD (Ministerstwo Rozwoju Regionalnego 2010a); and *National Spatial Development Concept 2030* – NSDC (Ministry of Regional Development 2011d).

The *National Spatial Development Concept 2030* is a key document for a spatial policy of the country (Ministry of Regional Development 2011d) and was adopted by the government in December 2011. Apart from general aims of spatial policy, the *Concept* also defines some functional areas for territorialisation of policies. The document has a considerable impact on regional spatial plans but unfortunately rather a low impact on the current medium-term sector policies.

For socio-economic development, i.e., regional policy, the *National Regional Development Strategy 2010-2020 Regions, Cities, Rural Areas* (NSRD) adopted in 2010 defines the objectives in space (Ministerstwo Rozwoju Regionalnego 2010a). It is a document of particular importance because it constitutes the first successful attempt at conceptualizing the territorial dimension of European standards. As the core principles of regional policy it specifies:

- Geographical concentration combined with Strategic Intervention Areas (ASI);
- Thematic concentration;
- Partnership and cooperation;
- Conditionality;
- Making decisions based on reliable information;
- Integrated territorial approach;
- Coordination, subsidiarity;
- Multi-level management process, regional development, and sustainable development.

Each of these principles was explained, and together they introduced new outline for territorialisation of public policies on the Polish territory. Under the provisions of the *National Regional Development Strategy 2010-2020*, the territorial features of the individual elements of the strategy and the desired scope of the territorial dimension in each of the integrated strategies were identified and named (Ministerstwo Rozwoju Regionalnego 2010b).

The *National Regional Development Strategy 2010-2020* also defines priorities of Polish regional policy:

- Supporting increased competitiveness of regions;
- Building territorial cohesion and preventing the marginalisation of problem areas,
- The creation of efficient, effective, partnership conditions for the implementation of development activities targeted towards territoriality;

The second priority is directly related to territorial cohesion.

These three priorities were then written out as intervention directions. Under the first priority they have a traditionally economic character. Under the second priority they have a purely spatial character and include: promoting national consistency in the system; support for rural areas with the lowest level of public access to goods and services determining development opportunities; restructuring and revitalisation of cities and other areas losing their existing socio-economic functions; overcoming the disadvantages associated with being located near the border areas, especially along the external borders of the EU; as well as increasing the availability of transport to provincial centres in areas with low accessibility. Thus it is a traditional understanding of territorial cohesion as a paradigm of equal opportunities. For the third priority, the following lines of intervention were proposed: strengthening the strategic dimension of regional policy; improving the quality of public policies, including their respective territorial orientation; rebuilding and strengthening the system of horizontal and multi-level coordination, and building up of the social capital for regional development through a network of cooperation between the different actors of regional policy. For this purpose, the impact of place-based paradigm is evident.

In the NSRD regional governments have been defined as some of the key actors in the development processes in territorial systems (place-based approach), also taking into account the growing importance of public entities at the local level. A new category introduced in the field of analytics and policies are Areas of Strategic Intervention (AIS) resulting from the proposed direction of intervention. For those areas different policy mixes and different ways of policy, execution should be provided.

At the level of regions, the so-called third generation of regional strategies of socio-economic development is in place. They were prepared in 2012-2013, generally reaching the target by 2020. Despite very different methodologies of individual strategies, the manner of approaching the territorial dimension in the regional strategies is exemplary (Szlachta 2014). All of them are territorialised mainly making use of the tool of AIS. Accordingly, also regional operational programmes have been territorialised as well.

Żuber (2010) – one of key architects of Polish development policy – emphasises that the programming essentials of the new regional policies (*National Regional Development Strategy 2010-2020*) and spatial policies (*National Spatial Development Concept*), with the created triad of competitiveness, cohesion and efficiency, assume the use of territorially diversified development potentials in attaining Poland's development objectives and earmark considerable financial resources within the framework of the EU Cohesion Policy to 'address spatial conditions'. The fundamentals ensuring territorialisation of the policymaking manifest themselves in:

- A new approach to development – from spatial diversities to territorial potentials,
- A remodelling of the state management model and provision of adequate coordination

and cooperation mechanisms through multilevel governance approaches,

- More prominent role of strategic debate on the role and impact of spatially-related policies,
- Better quality in the implementation of the public policies: integration of regional and spatial planning, multiannual financial planning frameworks, territorial monitoring and evaluation (Ministerstwo Rozwoju Regionalnego 2010b, 3).

However, such an approach has not been sufficiently supported by the European Commission. It became clear during the negotiations (between Polish regions and the European Commission) of regional operational programmes (ROPs). The Commission aimed at achieving as large as possible degree of similarity between ROPs regarding priority axis, allocation targets, and financial caps regardless of the regional context and needs. For instances, the share of money spent for railway system has not been related to the density of the infrastructure. Such standardisation or “one size fits all” approach is contradictory to the notion of territorial cohesion, e.g., its governance (place-based) or territorial capital dimensions. The only territorial elements universally present in these operational programs are Integrated Territorial Investments, reduced to regional capitals and their outer zones, and Community Led Local Development appears only in selected regions.

The European Commission Position Paper for Poland (the negotiation mandate of the European Commission concerning ESI Funds for 2014-2020) offers a valuable reading of the problems and development challenges the country is facing today (CEC 2012b). However, all the theses of this document have been formulated in a global manner for the entire country, with virtually no reference to the specifics of territorial development, including regional development. The country’s size and the diversity of the Polish territorial context make it a serious weakness of this document of the European Commission. As a result, the *Polish Partnership Agreement for 2014-2020* is not impressive in terms of territorialisation (Ministerstwo Infrastruktury i Rozwoju 2014). It includes in the chapter, entitled “The Territorial Dimension of Interventions” list of Areas of Strategic Intervention at the national level in the years 2014-2020. The following ASI were included:

- Eastern Poland (eastern NUTS 2 regions). These are areas with traditionally a very low level of economic development; a concentration of social problems; and low territorial accessibility.
- Regional capitals and their functional areas. Eighteen voivodeship centres (two voivodeships are two-centred) and the surrounding areas have a decisive impact on the socio-economic development of Poland.
- Cities and neighbourhoods, which need to be revitalised. Under the provisions of the regional strategic documents, and in collaboration with local partners, such areas should be defined, and local revitalisation plans prepared, taking into account social, economic and spatial aspects.
- Rural areas, in particular, those with the lowest level of access to public goods and services determining development opportunities.
- Border areas. Traditionally, areas along the borders of the country (land, and sometimes sea borders) were characterised by a generally low level of socio-economic

development. The soft (i.e. intra-EU) state borders benefit from the cross-border cooperation with partners from other member states. The situation is fundamentally different in areas along the external borders of the European Union, where, despite positive experiences the border divides, and these areas are exposed to various weaknesses.

In addition to the previously described five key Areas of Strategic Intervention in the *Partnership Agreement for Poland*, other areas of intervention were also named, such as sub-regional towns (requiring interventions other than revitalisation), which are essential for the development of many regions; ultra-peripheral regions isolated from the rest of the country; areas at risk of flooding in the river basin areas, estuary of the Vistula river (biggest depression in Poland); environmentally sensitive coastal zones that are subject to settlement expansion; and ecologically sensitive mountain areas subject to isolation. Therefore it is evident that almost all territorial elements of Polish development policy beyond ASI, ITI, and CLLD, even though co-financed from EU sources, are of an original Polish design. To be honest and entirely correct EU also owes a credit for enhancement of urban policy in Poland. However here the role of OECD should not be forgotten.

Urban policy is part of an attempt in Poland to introduce wider territorial measures. The inspiration came from OECD reviews of urban policies, which were a major inspiration for the shaping or modification of urban policy, as well as adjustments made on the basis of regional policy and planning. Such a review was conducted in 2011 also for Poland (OECD 2011).

The OECD in its review pointed out the need to build a national strategy for urban development in Poland and it indicated the need to increase the level of coordination between different administrative units, both on the same territorial level, as well as at various administrative levels. Particular attention was paid to the need to strengthen the fiscal capacity of cities. Among the recommendations for the Government, contained in the OECD report, there was indicated the need to: use a national urban strategy for integrating sectoral policies; develop policies reducing the negative impact of cities on the environment; reduce barriers to urban regeneration; prepare the next generation of multi-level public governance reform; as well as strengthen coordination in this field.

The Council of Ministers has adopted principles of urban policy in Poland in 2012 (Ministry of Regional Development, 2012b) and the policy itself. i.e. the National Urban Policy until 2023 was adopted by the Council in November 2015 (Ministerstwo Infrastruktury i Rozwoju 2015). Nowadays urban policy has been mainstreamed and incorporated into the development policy of the country.

In parallel to the introduction of the territorial dimension into its development policy Poland proactively promoted such an approach at the EU level. Poland has made a significant contribution to the process of introducing the territorial dimension into mainstream European Cohesion Policy. There has been a parallel development both of application-side actions, as well as in the field of theoretical considerations. Noteworthy is research on policy territorialisation towards the functional areas (Parteka and Gołędzinowska 2013) including marine ones (Cieślak *et al.* 2009; Zaucha 2012:2014a:2014b). Of particular importance were the previously mentioned activities carried out in the second half of 2011 during the Polish Presidency of the European Union (Ministry of Regional Development 2011a; 2011b), which constituted an important step forward in the conceptualisation of territoriality in the European Union and its Member States, including Poland.

3.5 Why the territorial dimension of Poland's socio-economic development and policy may be of interest to the world at large

Territorial dimension of social and economic development of Poland has been researched extensively (e.g. Churski 2010; 2014a; 2014b; Churski and Dominiak 2013; Churski and Hauke 2012; Komornicki and Siłka 2011; Komornicki *et al.* 2015; Świątek *et al.* 2013; Szlachta and Zauha 2012; 2014), but results are not widely known. At the turn of the 1980s and the 1990s about 40 countries made a more or less successful transition to a market economy. Poland is probably the most successful example of such a transformation from a centrally planned to a market economy. Many economic, social, cultural, political, but also territorial factors have contributed to this positive assessment. A right combination of these factors meant that in this group of countries Poland is characterised by the highest growth rate of its gross domestic product, the successful rebuilding of a very unfavourable traditional economic structure, as well as by positive changes in social structures, all recorded despite some negative phenomena such as low employment rate and diminished social security. An expression of the effective rebuilding of Poland's economic, social and territorial structures, was the country's effective response to the challenges arising from the global economic crisis that has developed since 2008 and has particularly strongly affected the countries of the European Union.

That is why it is important to address the following question: what characteristics of spatial structures and what territorial orientation of public policies have had the greatest significance for the advantageous socio-economic trajectory of Poland after 1990, in comparison with the countries that had begun with a similar or better position after the collapse of the centrally planned economies.

The following territorial elements can be identified, in no particular order:

1. The polycentric structure of the settlement network and of the Polish economy.

In all countries undergoing a systemic transformation a huge concentration of growth has taken place, and still takes place, in the capital city regions. This is related to the location of political authority there, as well as to the concentration of the high technology, knowledge-intensive service activities (Capello and Caragliu 2013, 25) and greatest openness to ties with foreign countries. This is very often accompanied by the relative degradation of the position of other centres that rely on more traditional factors of development. In Poland, apart from Warsaw's crucial role in the economy, culture, and science, there are also other major cities, such as Kraków, Łódź, Wrocław, Poznań, Katowice, Gdańsk, Szczecin and, to a lesser extent, several other sizeable urban centres. They each developed their zone of influence (or hinterland), which is subjected to a varying extent of diffusion processes in terms of economic, social, and innovative effects. Despite the general similarity of the situation, each of these centres has pursued its own development strategy, which meant a very different approach to development challenges, and also created a climate for the dissemination of best practices in territorial systems. These places were laboratories of cooperation standards between the central city and its hinterlands.

2. Openness to the external environment.

Partially the Polish success can be attributed to the proper acknowledgement of borders as a development asset and as a part of Polish territorial capital. Poland is characterised

by favourable geopolitical conditions resulting from its geographical location. The political division of Europe after the Second World War meant a profound socio-economic marginalisation of Poland, despite its central geographic location in Europe. It was accompanied by economic autarchy, restriction of foreign relations and lack of cross-border co-operation as a consequence of central planning. After 1990, when all of Poland's neighbours have changed, Poland concluded with them agreements on cooperation and good neighbourly relations and started to participate actively in macro-regional cooperation networks (e.g. Baltic Sea Region, Central Europe). It is of particular importance for Poland to have good neighbourly relations with Germany. The elimination of historical prejudice, the two countries' cultural and technological proximity, the use of complementary economic structures, as well as restoring the missing links in infrastructure has brought huge economic benefits for both partners. Germany has become Poland's largest economic partner, and this co-operation, often referred to as a model one, involves all regions of Poland. The cooperation with the Baltic Sea countries has been conducive to the spreading of values of the so-called Nordic model throughout this macro-region. Finally, Poland is situated along the external border of the European Union, and as such has sought to forge a positive relationship with the EU's eastern neighbours (Eastern partnership) in order to manage to avoid barriers to the model of development along the eastern border, despite unfavourable political conditions. This has meant a substantial modification of the open cross-border relations, which usually brings additional growth stimuli to all partners. Different Polish regions, depending on their location, have emphasised the uniqueness of cross-border relations with their closest neighbours. A different specificity of internal and external borders of the European Union depends on the specificity of these relationships. Being the second member state of the European Union in terms of the number of its neighbours, Poland is an excellent laboratory for assessing the significance of cross-border cooperation.

3. Polish membership of the European Union.

Already in 1991, Poland negotiated a provision in the Association Agreement to the effect that the purpose of the Association was eventual membership in the European Union. In the 1990s economic policy alignment, the course of the negotiating process and pre-accession programs (PHARE, ISPA, SAPARD) were subordinated to achieving membership in the European Union. Despite the various structural problems of Poland, since May 1st, 2004 it has been a member of this organisation along with nine other countries. It turned out that Poland has been very successful in adapting to the challenges arising from the obligations imposed on the Member States. From the outset, territorial issues were present in policy development and the allocation of funds from the EU Structural and Investment Funds. All Polish regions benefitted from the European integration, but the greatest benefit went to those based on large and powerful urban centres. The decentralised regional socio-economic structure proved to be very competitive, extremely resistant to negative phenomena arising from the global socio-economic crisis, perfectly adjusted to its place in the European context, development, and even civilisation. Each region developed its specific endogenous growth factors. In some regions those were the economies of agglomeration, in others, extraordinary landscapes or economies of border proximity (specific know-how of cross-border cooperation). The bottom line is that European integration benefitted all of Poland's sixteen NUTS 2 regions (voivodeships).

4. The wise application of European Cohesion Policy.

Due to the low level of development of the whole country as well as of its regions, after the accession Poland became the largest recipient of the EU Structural Funds and

the Cohesion Fund. It is widely believed that Poland is characterised by the highest efficiency and compliance with regulations and procedures that are in force concerning the absorption of the European Union funds. The use of funds allowed for a Europeanization of development policy in Poland and the acquisition of and reflection on such important concepts as territorial cohesion of the EU. Poland has adopted these concepts while adjusting them to its needs and conditions. For example, Poland has adopted the most decentralised model of implementation of the Cohesion Policy among the new member states and the regional level plays a very important part in this model. This is reflected in the high and steadily rising participation of assets under management at the regional level in the subsequent multi-annual programming periods (2004-2006, 2007-2013 and 2014-2020) based on regional operational programs. This approach made it possible to mobilise human and knowledge resources around policy development. Thus social acceptance of goals and development activities has improved and so has the ownership of strategic documents. Meantime, in most member states of the European Union, we are now dealing only with national programs or their overwhelming dominance due to the allocation of resources. However, Poland constitutes a special exception. In addition to that, the share of Polish own funds in the development projects co-financed by EU is the highest among the new member states. Decentralisation resulted in the mobilisation of internal funding. Therefore Poland is an interesting laboratory for researching territorial dimension of development policy in a multi-governance framework. Moreover, it is believed that Poland, both at the national and the regional level, has managed to keep the right balance of three areas of intervention of the European Cohesion Policy (infrastructure, human capital, and support for the business sector) and this has contributed to the generation of high socio-economic dynamics. The proportion varies in different regions depending on their conditions and specific development.

Just as important is the evolution of thinking about the role of development policy in Poland (i.e., EU Cohesion Policy). Now we can talk about the two segments of this policy: the traditional process-oriented policy to support convergence in territorial systems and helping to build a modern long-lasting and sustainable competitiveness of Poland and its regions. Part of this strategy is to invest in territorial structure, i.e., big cities and their functional areas. The basis for the spatial development of Poland is the concept of a metropolitan network, i.e., a network of major cities connected through an efficient transport infrastructure and telecommunications.

5. The doctrine of development policy based on decentralisation and planning.

In a country the size of Poland it is impossible to govern effectively and make use of development potentials based on two levels of decision-making: central (national) and local. This is due to, among others, the size of the country and the scale of differentiation of territorial structures. Except for a very short period immediately after 1990, when programming development was considered an undesirable legacy of the centrally-planned economy, since the beginning of this century Poland has had a set of valuable programming documents at the national level. These were mainly documents with a medium-term horizon, dedicated to the field of socio-economic programming and planning. After Poland's accession to the European Union, beyond the documents needed for the European Cohesion Policy strategies and medium-term perspectives were prepared, including regional development strategies, medium-term and long-term national development strategies, and integrated strategies for major public policies. After 1999 three successive generations of medium-term documents were also prepared for each of the regions, such as strategies for regional development; regional innovation strategies; and

regional spatial plans. Great importance was attached to the action plans for translating these projects into solutions and instruments of socio-economic policy and actions financed under the European Cohesion Policy. Planning is an essential feature of development policy in Poland. It is an important forum for dialogue, for the churning of ideas and creating innovation. It is worth emphasizing that despite various reservations, there has been a comprehensiveness and a continuity of vision and strategic thinking that takes into account multi-level governance. This positive assessment of the quality of strategic thinking in Poland may not disregard the critical perception of the provisions criticised among other things for their abundance and frequent failure to translate development policy into practice.

6. The depth of the reform of the territorial system.

All the countries with centrally planned economies were characterised by an atrophy of civil society and a lack of institutions of territorial government. At the beginning of the 1990s. Poland rebuilt its governments at the local level, and in 1999, at the regional level, which enabled a profound decentralisation in the conditions of a unitary state. This made it possible to implement multi-level governance. Moreover, systematic work was carried out aimed at creating the basis of a development policy based on dialogue with different actors. Local governments are equipped with exclusive competences, their own development resources, and the ability to acquire knowledge and information independently. A dialogue between the central government and local governments has been put in place. This reform has allowed the building of social capital, which is considered an important element of territorial capital. The challenge now is to better involve civil society in the programming and implementing of the development policy. This is the direction in which Poland is heading.

3.6 Conclusions

We have considered Polish development policy as a laboratory of new concepts and ideas. We argue that its territorialisation increased its efficiency and contributed to the success of Polish development. Such a conclusion should be treated only as a research hypothesis that needs further verification, but it is based on solid theoretical grounds (for detail see Zaucha *et al.* 2014b, 246-247, 255-256). The key features of Polish development policy can be summarised as follows. Firstly the policy is consciously based on active participation of different development actors, mainly public authorities, that have a legal mandate and the necessary financial means for its shaping. The policy is framed in a dialogue, dominated by the national level but constantly becoming open to the needs of other types of government (local and regional ones) and civil society. It offers a nice example of multi-level governance and place-based approach in line with Barca's (2009) proposal. Secondly, development policy pays attention to territorial assets. They are analysed in various strategic documents elaborated by almost all levels of government. However, as already indicated the impact of those documents on socio-economic development is limited. Although territorial capital is present in the development debate, it guides the allocation of money and resources in a somewhat unsystematic manner. An intellectual vehicle for translating territorial capital into growth in a policy friendly manner is missing. Such a vehicle is necessary to influence resource allocation at various

levels of governance. Finally, the genuine merging of the spatial and socio-economic approaches exists in Poland mainly at the highest national level with limited influence even on medium-term programming. The policy-making process is integrative from its design, but in practice, it is not ready to take into consideration complicated trade-offs and relations between objectives of spatial development and socio-economic development in space (missing spatial scenarios).

As far as territorial cohesion is concerned one can conclude that Poland has outstripped some other countries in terms of process dimension i.e. adapting development policy to territorial specificities, potential and conditions, it has been moving ahead with regard to territorial capital dimension and it is in infancy stage in considering territorial utility as important part of development policy. Poland has advanced in policy territorialisation by taking care of the territorial context and including territorial capital, but it neglects the importance of territorial utility. While analysing the territorial optimum model it is easy to see how little is known about the evolution of a given level of territorial utility, territorial impact (measured for a specific area, i.e., localised) of the intervention of public authorities or spatial interactions between different territorial units.

Therefore in the next chapters of the book we present some key points for advancing territorial cohesion in line with the outlined above progress. For conceptualizing those points, we use various sorts of Polish experience ranging from real policy achievements to research concepts that have been developed in Poland thanks to the territorial friendly attitude of Polish decision-making elites.

Chapter 4: Cohesion as a territorial optimum

4.1 Territorial utility

The concept of utility plays a major role in economic processes. Its emergence in the 19th century (Jevons 1911; Menger 2007; Walras 1954) clearly showed that the value of different assets is not exclusively dependent upon what is going on within the supply-side of the economy but also on how potential users evaluate various goods, services or resources. Over time, the category of utility has been approached from the social perspective. This line of reasoning implies that social utility goes beyond simple aggregation of individual preferences (Stiglitz 2000). Some authorities might even pursue policies – reflected in their social welfare functions — which make some groups of inhabitants worse-off but, however, allow the society as a whole to achieve greater welfare states. Following the idea of social choice, we analyse this heterogeneous territory with the heritage of utilitarianism in mind.

4.1.1 Definition

Regions are not territorially homogenous. They might contain such sub-areas as large agglomerations, second and third-rank cities, rural, border and natural areas, etc., whose attractiveness can differ considerably among residents. In other words, the territorial utility of regional sub-areas could be utterly diverse. Every individual may attach a different value to particular parts of their region. Some people prefer living in the city in order to seize economic and social opportunities, but they may also like spending their free time in rural areas of the region. Some residents function in the second and third-rank cities because their territorial utility is greater for them than that of large agglomerations (e.g., due to sentimental reasons). The territorial preferences of people affect socio-economic processes in the region, e.g., through the concentration of activities and agglomeration effects (Jacobs 1969; Marshall 1920; Porter 1990). However, the way individuals make use of territory (e.g., a NUTS 2 region) does not have to be in line with their expectations. It is conceivable that a significant part of a regional population would live on the peripheries and commute to cities for work. Sometimes, however, this could be difficult, if not impossible, due to undeveloped infrastructure system. Moreover, some businesses might be interested in undertaking investment outside economic centres of a region, but initial costs can be too high to incur for private capital (e.g., extraction

of natural resources may require a lot of search work which is beyond the capacity of the private sector). Hence, the expected territorial utility of individuals might not necessarily match any actual use of the territory of a region, and market processes alone are not able to correct that discrepancy. Looking at the spatial organisation of socio-economic activity one can only obtain limited knowledge about the real preferences of people in that area.

An individual's territorial utility of a region could be presented in microeconomic terms. Every resident has spatial preferences in terms of consumption (e.g., various possibilities of consumption – cities vs. rural areas), working place (e.g., various real income – agglomerations vs. second-order cities), amenities (e.g., pleasant weather, beautiful landscape, family, etc. – cities vs. natural areas) as well as businesses attach different value to particular subareas (e.g. externalities, natural resources – economic centres vs. peripheral areas).²³ Likewise, every inhabitant (or firm) is subject to budget (or cost) constraints, determining the level of satisfaction (or profitability). Relying on methodological individualism, one could attempt to obtain territorial utility (understood as the attractiveness of particular sub-areas of a region to individuals and firms) at the macro-level.²⁴ The outcome would be a combination of the territorial distribution of socio-economic activities.

Following models of spatial equilibrium, if one assumes homogenous individuals and perfect mobility of labour, everyone's utility in the region ought to be equalised (e.g., Gleaser and Gottlieb 2009). Furthermore, taking into account lessons drawn from New Economic Geography Models (e.g., Baldwin *et al.* 2003; Fujita *et al.* 1999; Fujita and Thisse 2002), the distribution of production capacities would be determined by centripetal and centrifugal forces resulting in the spatial equilibrium. The equilibrium would last until endogenous or exogenous impulses arose stimulating long-term spatial processes in the form of flows of people and capital.

Even though we maintain a highly restrictive assumption about the homogeneity of individuals and firms, there are some important factors which may prevent the spatial equilibrium from being in line with expected organisation of socio-economic activities in space. These are typically termed market failures.²⁵ They cause incomes as well as the cost of living (e.g. housing, commuting to work) and doing business to differ from those that would have prevailed in perfectly competitive markets. Take the following example. An individual prefers living in a small town in which he or she has their family, friends, which is located within the beautiful landscape and is not congested, rather than staying in a large agglomeration. However, it may be the case that, due to weak transport infrastructure, the individual lives in the agglomeration because it allows them to work making

23 It is easy to conceive that some people could decide to stay in their homeland on the peripheral areas of a region due to sentimental and cultural reasons, beautiful and peaceful landscape, etc. The decision is made even though it entails lower income and consumption. Apart from amenities one can indicate also factors of non-economical character that are likely to discourage people and companies from moving to certain locations. For instance, some businesses may not be interested in functioning in some areas where their activities could not correspond with the cultural code of inhabitants even though the location would be optimal for profit maximisation.

24 We use purposely the term of territorial utility also with respect to businesses in order to emphasise that certain subareas might be more economically (and sometimes non-economically) attractive to companies than other locations. However, costs of making use of them is too high to incur for private sector due to market failures (e.g. lack of transportation infrastructure). In other words, even though companies maximise their profits at a point in time by establishing facilities in different subareas they might not capitalise regional territory as they would prefer due to obstacles that could not be removed by market forces. That sort of reasoning and terminology will be helpful in discussing model of territorial optimum presented in Section 4.2.

25 The category of an internally diverse territory is, on the one hand, a significant factor affecting economic growth (e.g. through the effects of agglomeration), and on the other hand, it fits among the factors that cause market failure (due, among others, to the limited supply of public goods and incompleteness or lack of certain markets in remote areas, or macroeconomic disturbances). Those market failures might cause costs of functioning in space high enough to prevent people or businesses from making use of territory as they would prefer.

full use of their competences and expertise.²⁶ According to spatial equilibrium models (including NEG ones), the utilities in that example should be the same for people living both in large and small cities because there are adjustments between nominal income and costs of living at given amenities.²⁷ Under such circumstances, there would be no need for change (e.g., no need to move to another location). This line of reasoning might be, however, somewhat misguided. When individuals are conscious of market failures, which is quite conceivable, they expect that at any given time, elimination of such obstacles as weak time accessibility, a deficit in public services, incomplete markets or lack of certain markets could considerably increase their territorial utility. However, getting rid of those barriers generates high transaction costs and is usually impossible to carry out for the private sector. In our example, if regional authorities have undertaken investments in transport infrastructure, the individual could move to the small town and live there while commuting to the agglomeration for work.²⁸

The consciousness of market failures might cause inhabitants and businesses to strive for the elimination of barriers in order to take advantage of amenities in different sub-areas and to increase territorial utility. If this is channelled into social consensus which, in turn, shapes policies of regional authorities a new endogenous force arises to disturb the spatial equilibrium. Before the new equilibrium is reached, flows of labour and capital take place. Attempts are made to explain those movements by various theoretical concepts such as spatial equilibrium and NEG models as well as international trade theories based on the principle of comparative advantage. It should be emphasised, however, that none of those concepts touches upon the expected territorial utility which might be achieved at any specific time. The focus is placed rather on utility equalisation across different locations and mechanisms leading to this state.²⁹

Bearing in mind market failures as well as the fact that individual preferences could be time-variant and might differ significantly among peoples, we treat territorial utility as a result of social consensus which can be reflected in decisions of institutions with a formal mandate for development policy of the region.³⁰ This is of overriding importance as we want to apply this category to present our interpretation of territorial cohesion as a significant domain of public policies including EU Cohesion Policy (see Section 4.2 where the model of the territorial optimum is presented).

26 Weak time accessibility of some subareas could generate costs of transportation that could be too high for private sector to incur even though those locations offer good conditions for living, working or conducting business. In this case public intervention might be justified to eliminate market failures.

27 For instance, in second- and third-rank cities lower population and wages are compensated by lower costs of living and better amenities.

28 Likewise, firms may also need some assistance from public authorities to overcome market failures and get greater territorial utility. The motivations of extraction industry given at the beginning of this Section are a good example for that. What is more, when inhabitants pursue to get rid of market failures, e.g. through the pressure on public authorities, in order to increase their territorial utility it eventually might affect distribution of business activities. For instance, when in a subarea with pleasant weather public services are developed this could attract more and more retirees. That, in turn, would stimulate businesses to start their activities or to relocate to the subarea. The early history of Los Angeles should be mentioned here where well-off Midwestern retirees arrived to enjoy the climate (Gleaser and Gottlieb 2009, 19).

29 It is, in fact, maximisation of consumption under conditions that make it impossible to utilise territory with accordance to people's expectations. It should lead to utility equalisation across locations.

30 We might, of course, assume that current organisation of socio-economic activities in space reflects expected utility of all inhabitants of a particular region. If that assumption were true to life there would be no need for any alteration until the expectations change. No demand for any action (e.g. public intervention) would be articulated. If expected utility changed then it would entail flows of people and businesses in space to specify new territorial distribution of activities. The likelihood of that situation is highly theoretical.

Our definition of social, territorial utility of a particular region is twofold.³¹ Firstly, territorial utility is determined by assets with which each sub-area of the region is endowed.³² These include — among others — natural resources (taking into account the quality of the environment); the labour market; services (including public ones such as education, health, culture, public investments) as well as specific territorial characteristics such as the spatial order and landscape beauty which are not directly associated with production process. However, they affect well-being. Secondly, territorial utility is determined by time accessibility of each sub-area from the perspective of other sub-areas which belong to the region.

In order to demonstrate our interpretation of social territorial utility, we focus on an abstract region (designated by A) which consists of two sub-areas or sub-regions (designated by X and Y). When there is a rise in employment in sub-region X due perhaps to investments in R&D which improve competitiveness of X, other things being equal, we can describe this as an increase in territorial utility of sub-region X for residents of the whole region A. A similar effect might be achieved when the time accessibility of sub-region X improves as a result of better transport infrastructure interlinking X with Y more effectively.

According to the traditional neoclassical school, the most effective regulator of the processes taking place in the socio-economic sphere is the market. Therefore, postulates of minimal government intervention are formulated in its context. On the other hand, there is the neo-Keynesian tradition of justifying a top-down interference in the development processes. Aside from normative judgments, it should be noted that the adoption of the pure neoclassical approach would take expected territorial utility into consideration only partially, if not at all, due to market failures. Our concept of territorial utility implies that we take this category into account explicitly which will be shown in Section 4.2 where we present more formally the model of the optimum.

4.1.2 Extension of the neoclassical optimisation process

In considering the nature of growth and development, currently the most widely used mainstream economics approaches (i.e., neoclassical and endogenous growth models) do not explicitly take spatial issues into account. These models (Aghion and Howitt 1992; Eaton and Kortum 1999; Grossman and Helpman 1991a:1991b; Howitt 1999; Romer 1990; Segerstrom *et al.* 1990) do not include the category of territory as a separate factor of production and/or determinant of technological progress. Interdependencies between geography and growth are addressed by dynamic New Economic Geography models (e.g., Breinlich *et al.* 2013). However, the internal heterogeneity of particular locations is not explicitly taken into account within their frameworks.

While in the case of empirical studies of the supply side of the economy the neoclassical production function has undergone modifications oriented to take into account

31 The term territorial utility or spatial utility can be come across in the literature (e.g. Caroll *et al.* 2012; ESPON 2008; Munger and Munger 2015; Taylor 1986; Webster and Wai-Chung-Lai 2003). However, its definitions differ considerably from ours. In technical terms the category of social territorial utility is similar to potential accessibility indicators. However, in terms of interpretation and application they are not alike.

32 Subareas of a region may be both functional areas from which the region is comprised (such as agglomerations; second- and third-rank cities; rural areas; natural areas, etc.) or administrative areas which constitute the region.

spatially non-replicated factors (e.g., city system, social capital, natural resources) or partially replicated factors (e.g., human capital), relatively less emphasis has been put on implementation of territory within neoclassical utility theory. Narrowing the relationship between production and utility to the traditional neoclassical scheme is justified by assuming the lack of territorial heterogeneity and ignoring the importance of geographical and temporal distance. Relaxing these restrictions makes for a situation in which in the analysis of a given region the expected utility of its spatially differentiated assets needs to be considered. Bearing that in mind, we try to incorporate the category of territorial utility into the neoclassical optimisation process, and we aim to show using the model of the territorial optimum how it might determine the production of the whole region.

Figure 4.1 illustrates the process of optimisation, understood in terms of overlapping market mechanisms and social choice. This process starts with the individual decisions of market participants (a higher level of goods consumption implies a greater utility to the individual: Edgeworth 1961; Pareto 1906/1966), which are modified by the decisions of democratically elected representative authorities in the field of social justice (Stiglitz 2000) and social, territorial utility.

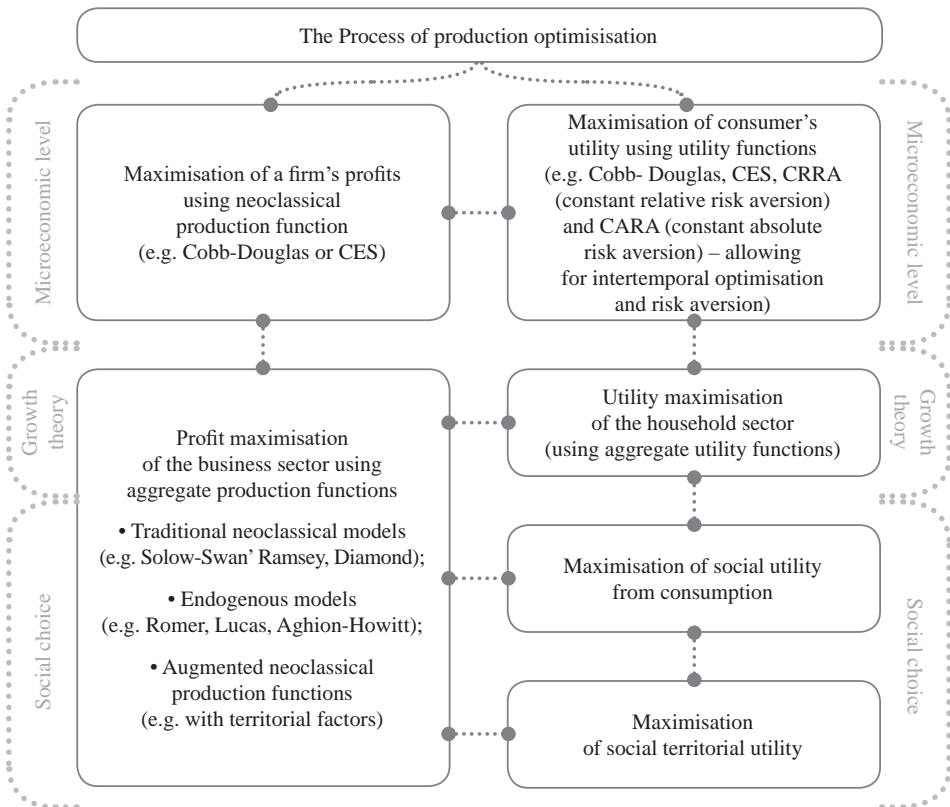


Figure 4.1 Optimisation in the context of economic growth models – the neoclassical paradigm and an attempt to complete it

Source: own elaboration

According to the concept of social choice, the Pareto-optimum which is based on the traditional neoclassical individualism might not be equivalent to what is acceptable from the point of view of the general public (Stiglitz 2000). Following this line of reasoning, we introduce the category of social, territorial utility.³³ Here, however, the choice is not between general levels of utility from consumption represented by various social groups, as in the case of social choice, but between expected utility levels from different combinations of consumption and GDP growth in space. In the next section, we combine the category of social, territorial utility with the augmented neoclassical production function within the framework of the model of the territorial optimum.

4.2 Modelling the territorial optimum

A model of the territorial optimum allows us to define and include in the paradigm of mainstream economics the category of territorial cohesion, and also organises its structure and indicates its position in the process of development. It allows a more precise operational definition of this category on the basis of growth and development economics.

Territorial cohesion should not be treated as an absolute category, i.e., the ideal state of the territory. Territorial cohesion permeates the concept of regional development defined as the process of raising the standard of living of the inhabitants of the region, both in material and the nonmaterial aspects, the foundation of which in the long term involves discovering and using as fully as possible its endogenous potentials. It constitutes both a determinant and an implication of regional development and should be analysed within its framework. The above gives the category of territorial cohesion a utilitarian nature and makes it possible to present it in the context of the territorial optimum.

The territorial optimum is defined as maximizing the synergistic use of territorial potentials of all sub-areas of the region at a given level of expected territorial utility, which is determined by social consensus being reflected, for example, by regional authorities. In order to illustrate this concept we assume that region R (e.g., a NUTS 2 unit) consists of two sub-areas (e.g., NUTS 3 units X and Y. We assume that X is a sub-area with a developed agglomeration whereas in Y a small town is located which might serve as a socio-economic centre for people from nearby hinterlands for whom commuting to the agglomeration in X is too expensive and time-consuming. Let us suppose further, that inhabitants of the whole region R, represented by their authorities, prefer living in the large agglomeration which opens up numerous opportunities for them in terms of business possibilities, labour market, public and private services, etc. Social territorial utility is reflected in the development policy of the regional

33 If regional authorities aim at maintaining the polycentric structure of cities because second-and-third rank cities represent high territorial utility for inhabitants of the region, it can limit the growth of regional GDP (as the World Bank (2009) assumes). That might be a result of lower concentration of socio-economic activity in the region and/or higher taxation, which is necessary to increase expenditure on peripheral cities and towns (e.g., to establish special economic zones there or provide public services, etc.). Nevertheless one should keep in mind that Barca's place-based paradigm (2009) assumes that polycentricity does not have to be a unequivocal regional GDP growth restriction thanks to a more intensive use of endogenous potentials, i.e. the use of idle assets.

authorities which supports the agglomeration (e.g., by improving spatial order, restoration work, high-quality public services, good accessibility to the outside of the region, etc.) whereas sub-area Y develops exclusively as a result of market forces. Under such circumstances, some inhabitants of Y are likely to migrate to sub-area X. The other residents of Y, who decide to stay, represent individual territorial utility which is different from the social choice. They might be worse off as a result of regional development policies (e.g., due to weak accessibility to the small town in Y from its hinterlands). However, the majority of residents are expected to reap benefits from more dynamic economic growth stimulated by increasingly greater externalities in the agglomeration. The interlinkages between X and Y might come down only to the supply of raw materials to the agglomeration. In the opposite case, when social consensus supports polycentric structure of cities (including second- and third-rank cities), agglomeration forces might develop more slowly. However, the standard of living of a greater part of inhabitants is expected to rise (e.g. due to better accessibility of subregional centres, a broader scope of public services and growing demand for employees, etc.). What is more, the above sort of public policy could make regional development more spatially sustainable. It is of great importance when there is an economic downturn on global markets that is expected to hit severely large metropolitan areas, especially those characterised by relatively monocultural economic structure (e.g., Detroit). Polycentricity might become itself a stimulus to production. It is conceivable that identification and development of endogenous potentials of different sub-areas as well as supporting interrelations (e.g. complementary interlinks) among them, would spur economic growth of the whole region.³⁴ In both of the above examples, regional product is maximised by decisions of individuals and businesses. However, different interventions in market failures imply different distributions of socio-economic activities. This, in turn, results in different economic outcomes. In more technical terms, regional GDP is maximised subject to expected social territorial utility.

The model of the territorial optimum, i.e., a formalised theoretical concept combining social, territorial utility with the production function, referring to the paradigm of mainstream economics has important implications for understanding development. In the pure neoclassical sense, where profit maximisation is the main objective, spatial heterogeneity of the region may result in the need to identify and develop endogenous potentials of its individual functional areas. It may, in turn, require the incurrence of costs and risks, which are often too high to be accepted by the private sector. Thus, without public intervention the potential of the region cannot be fully utilised. This is contrary to the demands formulated on the canvas of the endogenously oriented regional development policy which makes use of the new growth theory and the new economic geography (see Amin and Thrift 1992; Molle, and Cappellin 1988, after Churski 2008, 56). Territorial heterogeneity, of course, has consequences that go far beyond the neoclassical notion of economic growth. Intervention aimed at achieving expected territorial utility may result in a reduction of spatial differentiation of income and improving the standard of living of peripheral areas at the expense of weakening the benefits of agglomeration.³⁵ This effect will be evaluated by some as a sign of regional development and of a higher territorial cohesion, although the process of reaching it, through a system of redistribution of income, may limit economic growth.

34 For instance, complementary interlinks between IT companies (situated in the agglomeration X due to knowledge externalities and highly-skilled workers) and manufacturers located in Y (taking advantage of lower labour costs and raw materials) in order to create Smart Factory within Industry 4.0.

35 In economies with a higher degree of development, deconcentrating may be achieved in accordance with market processes (see Zaucha 2007, 65).

The formalised optimum model can be expressed as follows³⁶:

(4.1)

$$P_r[F_1(X_{11}, X_{12}, \dots, X_{19}), F_2(X_{21}, X_{22}, \dots, X_{29}), \dots, F_n(X_{n1}, X_{n2}, \dots, X_{n9}), M_r] \rightarrow \max$$

subject to: $U_r = z$

where:

i – an index of subarea, $i = 1, 2, \dots, n$;

P_r – the function of the territorial product of the region r ³⁷;

F_i – the production functions for a subarea i of the region r ;

X_{i1} – the vector of variables describing³⁸ the natural resources for production of subarea i ;

X_{i2} – the vector of variables describing the private material capital resources of subarea i ;

X_{i3} – the vector of variables describing the public capital resources of subarea i ;

X_{i4} – the vector of variables characterizing the transport infrastructure resources of subarea i ³⁹;

X_{i5} – the vector of variables describing the human capital resources of subarea i ;

X_{i6} – the vector of variables describing the social capital resources of subarea i ;

X_{i7} – the vector of variables describing the effects of agglomeration of subarea i ;

X_{i8} – the vector of variables describing the labour force of subarea i ;

X_{i9} – the matrix of variables describing the relationship of subarea i with the adjacent subareas (spatial spillovers at the intra-regional level);

M_r – the matrix of variables describing the relationship of the region r to its neighbouring regions (spatial spillovers at a multiregional level);

U_r – expected social, territorial utility of the region r (see formula 4.2 below);

z – the level appointed by public authorities.

U_r and its structure is given by the public authorities. Referring to the concept of accessibility indicators (including among others Forslund and Johansson (1995); Karlsson and Pettersson (2005), after Bröcker and Rietveld (2009), social territorial utility (U_r) is presented formally as follows:

(4.2)

$$U_r = \sum_{i=1}^n U_i$$

$$U_i = U_{ix1} + U_{ix2} + U_{ix3} + U_{ix10} + \dots + U_{ixm}$$

$$U_{ix1} = \log \sum_s \exp \{aX_{i1} - bC_{is}\}$$

36 For the purpose of our analysis of territorial cohesion we present the optimum model in its general static macroeconomic form. However, one should bear in mind that the model of the territorial optimum – as described above – might have a broader explanatory function as a part of neoclassical optimisation process. In that broader sense the formalised structure of the model can be analysed in the context of microfoundations allowing for dynamic aspects of individuals' behaviours.

37 In the case of overlapping subareas (e.g. functional areas) P must be corrected by parts common to the functional areas. In a simplified version, subareas may take the form of administrative units included in a given region.

38 Variables defining resources will be subject to the resource constraints of a given subarea.

39 In the context of the debate on the issue of territorial cohesion, it seems preferable to focus on transport infrastructure rather than on the time accessibility. The time accessibility may not exceed a certain limit, while infrastructure resources can be increased for a long time even when they no longer improve the time accessibility. In this way, we gain the ability of capturing the negative effects associated with overinvestment in transport infrastructure.

$$U_{ix2} = \log \sum_s \exp \{cX_{i2} - dC_{is}\}$$

$$U_{ix3} = \log \sum_s \exp \{eX_{i3} - fC_{is}\}$$

$$U_{ix10} = \log \sum_s \exp \{gX_{i10} - hC_{is}\}$$

...

$$U_{ixm} = \log \sum_s \exp \{wX_{im} - vC_{is}\}$$

$$C_{is} = g(X_{i4}, X_{s4})$$

where:

- U_r – expected social, territorial utility of the region r ;
- i – an index of subarea, $i=1, 2, \dots, n$;
- U_i – expected social, territorial utility of subarea i ;
- U_{ix1} – expected social, territorial utility of subarea i derived from natural resources;
- U_{ix2} – expected social, territorial utility of subarea i derived from private material capital resources;
- U_{ix3} – expected social, territorial utility of subarea i derived from public capital resources;
- $U_{ix10} \dots xm$ – expected social, territorial utility of subarea i derived from spatial assets not included in the production function (e.g. spatial order, the beauty of the landscape);
- s – all other subareas of the region r ;
- C_{is} – costs of interaction between i and s (e.g. costs of transportation);
- $X_{i1} - X_{i4}$ – as in the formula 4.1;
- $X_{i10} \dots, X_{im}$ – spatial assets of subarea i not included in the production function (e.g. spatial order, the beauty of the landscape);
- X_{s4} – transport infrastructure resources of all other subareas of the region r ;
- $a, b, c, d, e, f, g, h, w, v$ – weights.

A given level of social, territorial utility (U_r) and its structure ($U_i - U_n$) are the result of social consensus reflected in the policy of the public authorities. Hence, shaping goals and selecting appropriate instruments for their actions, public policy-makers may seek to achieve a maximum regional product at a given level of territorial utility.⁴⁰ The target territorial utility can be attained, through intervention in, for example: private material capital resources (X_2); public capital stock (X_3); other spatial assets ($X_{10} - X_n$); the costs of interaction (e.g. costs of transportation) between subareas (C_{is}) which are a function of the transport infrastructure resources (X_4).^{41 42} The latter channel should be

⁴⁰ In other words, public authorities may seek to optimise the level of territorial cohesion from the point of view of a regional community in the period.

⁴¹ Through these channels policy-makers might stimulate other assets such as: human and social capital as well as labour markets and agglomeration forces. For instance, interventions in the material resources of private capital (e.g. through stimulating investments by creating special economic zones or direct financial aid) are expected to have an effect on the attractiveness of the labour market (e.g. by attracting foreign direct investors) and the ability to generate income. Using the above mentioned channels makes it possible to make use of a particular subarea in the way which is expected by the regional society.

⁴² The intervention in the above mentioned categories is carried out through undertaking public investments and encouraging private ones. Different capital allocations (e.g. whether investments are oriented to support productive or non-productive areas) are expected to have different effects on total output of the regional economy. For instance, public expenditure to protect landscape would limit investments in, e.g., state-owned companies, and in turn, total output at a given time. Taking into account limited financial resources the expected social territorial utility might be achieved over a long period of time. Thus, it is likely to be a long-term process during which the target utility may also evolve as the social choice changes.

considered the most likely in the practical implementation of development policy. In the approach presented here, territorial cohesion is considered both in static terms (as the target optimum) and dynamic terms (as an integrated territorial approach in development policy focused on the achievement of that optimum).

The model of the territorial optimum integrates three dimensions of territorial cohesion: territorial assets, social choice (i.e., the way of implementing a policy that takes into account those assets), and territorial objectives. It has several significant advantages:

- it uses the output of mainstream economics to interpret the implications of the adoption of territorial cohesion as a development objective;
- it indicates the importance of spatial assets in the economic growth process (territorial product);
- it draws attention to the interactions between (functional) areas;
- it refers directly to one of the main spatial issues which is spatial heterogeneity (see polycentricity as the target of numerous strategic documents at the European and the national level);
- it takes into account a wider range of spatial characteristics that are not included in the production functions, such as spatial order or the beauty of the landscape. The territorial optimum model therefore suggests that the spatial dimension is important, and sometimes has an independent meaning (regardless of maximizing GDP);
- it indicates the need to take into account the territorial dimension in development policy not only at the level of the production function but also as an independent source of utility.

The concept of a territorial optimum includes both regional development determinants of a traditional neoclassical nature (physical capital X_2 and labour X_8) as well as intangible factors (including social capital X_6 and agglomeration effects X_7) often recognised as variables in augmented aggregate production functions. The issue of inequality in spatial terms is addressed at the level of social, territorial utility (U_p). Efforts to increase territorial utility – e.g., by improving the quality and accessibility of regional resources – can generate multi-directional and multi-dimensional effects. For example, the expansion and modernisation of transport infrastructure for a more efficient use of recreational resources of the region can contribute to an increase in the fiscal burden needed to finance road projects, railways, and airports. A probable implication of this kind of activity will be a reduction of investments in the private sector and a reduction in growth rate. On the other hand, the desire to increase private capital accumulation (e.g., in order to stimulate the inflow of foreign direct investment) with the expansion of the transport infrastructure system can significantly improve the dynamics of economic development, however, while at the same time increasing inequality in the territorial distribution of economic activity (Minerva and Ottaviano 2009, 87). In the future, all of these factors may cause a change of the characteristics of territorial optimum. The relationships between the territorial optimum concept with the “territorial keys” (Böhme *et al.* 2011; Zaucha *et al.* 2014b), a model of territorial cohesion of the Institute for Development (Figure 2.4) as well as territorial capital components according to Camagni (2008) are presented in Table 4. 1.

Table 4.1 The model of the territorial optimum in the context of “territorial keys”, the model of the Institute for Development and the territorial capital

Territorial product as a result of the use of territorial potentials of all functional areas of the region			
Territorial optimum	Territorial Key	Model of the Institute for Development	Territorial Capital Component According to Camagni
Natural Resources	Local assets associated with the given territory	Territorial cohesion understood as a contribution of the territorial factors to economic growth (territorial efficiency)	Public goods and resources
Labour resources	Local assets associated with the given territory	Territorial cohesion understood as a contribution of the territorial factors to economic growth (territorial efficiency)	-
Physical capital	As above	As above	Privet Fixed Capital and Toll Goods
Human capital	As above	As above	Human Capital
Social capital	As above	As above	Social capital Relational capital
Public goods (including transportation infrastructure)	Local assets associated with the given territory, accessibility, public services	Territorial cohesion as a platform of including specific spatial objectives into development policies	Public goods and resources, Intermediate, Mixed-Rivalry Tangible Goods, Connectivity and Receptivity;
Agglomeration effects	Local assets associated with the given territory, accessibility	Territorial cohesion understood as the input of territorial factors into economic growth (territorial efficiency)	Agglomeration Economies, Connectivity, and Receptivity, Relational Private services, Cooperation Networks
Socio-economic relationships between functional areas of the region as well as in interregional context	City networking, main centres, their functional regions	As above (space of flows)	Cooperation Networks
Social territorial utility (total utility of the functional areas of the region in the context of the interaction with other areas of the region)			
Territorial optimum	Territorial Key	Model of the Institute for Development	Territorial Capital Component According to Camagni
Accessibility to public services	Accessibility, city networking, main centres, their functional regions, public services	Territorial cohesion as a platform of including specific spatial objectives into development policies	-
Labour market accessibility (income)	Accessibility, city networking, main centres, their functional regions	As above	-
Accessibility of natural, cultural and recreational resources, etc.	Accessibility, city networking, main centres, their functional regions, public services	As above	-
Determination of territorial optimum (maximisation of territorial product at the expected level of the social territorial utility) by public authorities (in line with the model presented in Figure 2.4)			

Source: own elaboration based on Böhme et al. (2011); Camagni (2008)

4.3 An empirical illustration of modelling the territorial optimum: Some implications for the policy-making process

In order to capture empirically the multi-directional and multi-dimensional implications of social territorial utility one needs to incorporate the general form of the model of the territorial optimum into a comprehensive research tool. It might be a macroeconomic modelling framework, which enables us to reflect the most important inter-sectoral relations and feedbacks using at the same time techniques of spatial econometrics. The aim of this section is not so ambitious. We attempt instead to illustrate in a relatively simplified way how various territorial objectives affect the range of economic outcomes. That simplification, however, does not seem to distort the main idea behind the general and more complicated form of the model highlighted in Section 4.2. It is not our purpose to make any normative judgments in this chapter. What we aim is to show is the positive approach to territorial cohesion and its implications for regional development, an approach which might be utterly diverse due to differences in expected social, territorial utility reflected in policies of regional authorities.

For the purpose of the illustration, we chose the Polish NUTS 2 region of Dolnośląskie (see Figure 4.2). This is one of the economically strongest and affluent regions in Poland. However, its territorial composition is highly diverse. There are two sub-areas – Wrocław (capital city of Dolnośląskie and its prosperous urban agglomeration) and LGOM (abundant in copper resources) which dominate the entire NUTS 2 regional economy.⁴³ On the other hand, the NUTS 2 region also contains the Jelenia Góra and Wałbrzych lagging subareas. The first one is a tourist centre of the region, the other is an example of a sub-area that has been severely hit by economic transition and manufacturing decline and restructuring.



Figure 4.2 Sub-regions (NUTS 3 level) of the Dolnośląskie voivodeship

Source: own elaboration

⁴³ Legnica-Głogów Copper Region

In the empirical illustration of the territorial optimum model presented here, the expected territorial utility was approximated in two ways. First, by the availability of transport infrastructure determining the accessibility of the region. Preferences regarding regional accessibility reflected in infrastructural investments impact the productivity of all factors of production (TFP), which in turn affect the final volume of production of goods and services. Capital and labour productivity also depend, of course, on many other factors (such as spending on R & D, effective educational processes, the effects of agglomeration, learning-by-doing, etc.). In the empirical illustration of the territorial optimum model, it was, however, decided to pay particular attention to the transport infrastructure because it is a crucial component of this concept. TFP dependence on transport infrastructure is included in the following functional form:⁴⁴

(4.3)

$$A = (e e^{-\left(\frac{a}{I}\right)^\beta + c} + a_0) \Phi t$$

where:

A – TFP;

I – length of motorways and dual carriageways (km);

t – time trend;

a, β, a_0, Φ, c – structural parameters.

In addition to transport infrastructure, the expected territorial utility in our illustration was reflected by preferences in terms of the level of polycentricity in the region which was, in turn, approximated by agglomeration effects. For this purpose we applied the spatial intensity index (formula 4.4) (Bönte and Zhao 2010, 385–386; Zhao 2006, 5; 2007, 10) calculated using the geographical range (the weighted mean distance that indicates the degree of dispersion of economic activity – formula 4.5) (Bönte and Zhao 2010, 385–386; Zhao 2006, 5; 2007, 10;). In this illustration, calculations were made for physical capital, human capital and labour.

(4.4)

$$I_K = \frac{K}{\pi(D_K)^2}, I_L = \frac{L}{\pi(D_L)^2}, I_H = \frac{H}{\pi(D_H)^2}$$

(4.5)

$$D_K = \frac{\sum k_j D_j}{K}, D_L = \frac{\sum l_j D_j}{L}, D_H = \frac{\sum h_j D_j}{H}$$

where:

I_K, I_H, I_L – the spatial intensity index for physical and human capital and labour respectively in the region;

D_K, D_H, D_L – the geographical range index for physical and human capital and labour respectively in the region;

k_j, h_j, l_j – physical capital resources, human capital and labour in subarea j of the region;
 D_j – the distance of the subarea j from the centre of the region (its centroid in our example);

K, H, L – physical capital resources, human capital, and labour within the region, respectively.

⁴⁴ This analytical form draws upon work of Duggal *et al.* (1999; 2007, 489). Plotting the functional form on the graph one can see that it takes the “S” shape. It reflects declining marginal benefits from subsequent investments in transport infrastructure which are undertaken at the increasingly higher level of saturation with that sort of public capital.

The increase in the value of the spatial intensity ratio (I) indicates stronger agglomeration effects within and between individual sub-areas. It should be emphasised that higher values of the ratio can also indicate the emergence of new growth centres across the region, which are characterised by high dynamics in terms of the accumulation of physical and human capital and labour. Therefore, the action of regional authorities to strengthen the polycentric settlement system (including the development of public services, encouraging entrepreneurship and flows of factors of production, etc.) will result in an increase in agglomeration effects, if the undertaken actions effectively influence the concentration of production factors. In a situation where actions supporting various sub-areas of the region are not accompanied by adequate concentration trends of labour and capital, a reduction of agglomeration effects will be observed (reflected by the lower value of the spatial intensity ratio I).

The two categories presented above – transport infrastructure and agglomeration effects – are included in the following aggregate production function (Zhao 2006, 6; 2007, 14):⁴⁵

(4.6)

$$Y = F\left(\frac{K}{D_K^2}, \frac{L}{D_L^2}, \frac{H}{D_H^2}\right)$$

(4.7)

$$Y = AK^\gamma L^\delta H^\phi D_K^{-2\gamma} D_L^{-2\delta} D_H^{-2\phi}$$

where:

ϕ, δ, γ – structural parameters; all variables as in formulas 4.3–4.5.

Thus, it was possible to carry out simulations showing how the Dolnośląskie voivodeship real GDP would change in 2012 under different scenarios describing social, territorial utility.⁴⁶ Making the simplifying assumption that the economy of the region is in long-term equilibrium, the analysis aims to show how changes in preferences in terms of spatial aspects of development affect the GDP level through a reallocation of resources and changes in the productivity of their use. In other words, different territorial optimum variations in the Dolnośląskie voivodeship are presented and are achieved under different assumptions about social, territorial utility. Four scenarios were subject to analysis:

Scenario 1: Improved transport infrastructure

We assume the improved development of transport infrastructure in Dolnośląskie voivodeship by 200 km⁴⁷. The new infrastructure increases the accessibility of all sub-areas of the Dolnośląskie voivodeship equally (i.e., sub-areas of Jelenia Gora, Wałbrzych, Wrocław and LGOM). It does not cause changes in the concentration of socio-economic activity (Figure 4.3).

45 For detailed information about parameter estimation please contact the author at: mogila@poczta.onet.pl.

46 The most recent available Dolnośląskie voivodeship GDP value for 2012 in constant prices.

47 For the sake of consistency in the analysis one should take into account the method of financing public investments. In this case, it is assumed that 200 km of transport infrastructure have been financed by an increase in debt, whose repayment will take place after 2012. This procedure allows us to show the full impact of additional kilometres of motorways and dual carriageways on the GDP of Dolnośląskie voivodeship in 2012. Note, however, that in the analysis for subsequent years, the cost associated with debt repayment should be reflected in the limited resources of physical capital.



Figure 4.3 Scenario 1 – development of transport infrastructure in the subregions of Dolnośląskie

Source: own elaboration

Scenario 2: Enhanced Wrocław agglomeration

We assume strengthening the attractiveness and agglomeration effects of the city of Wrocław, financed by reducing the support for the other sub-regional centres (Jelenia Góra, Wałbrzych, and LGOM) (Figure 4.4).⁴⁸



Figure 4.4 Scenario 2 – Strengthening the attractiveness and agglomeration effects of the city of Wrocław at the cost of the other sub-regions

Source: own elaboration

⁴⁸ In the calculation of the indicators DK, DL and DH we assume a 5% reduction in production factors in the case of the following subareas: Jelenia Góra, Wałbrzych, and LGOM and direct those resources to the Wrocław sub-area.

Scenario 3: Sub-regional attractiveness

We assume a significant increase in spending to improve the socio-economic attractiveness of subregional urban centres (Jelenia Góra, Wałbrzych, and LGOM). In order to analyse this scenario, the assumption of long-term economic equilibrium of the Dolnośląskie voivodeship is repealed and it is assumed that additional production factors might be made available to the region, that will be effectively used in the production process. With this in mind, it is assumed that the concentration of labour and capital in all subareas of the Dolnośląskie voivodeship will increase. Two variants are adopted:

- a) An increase in the resources of production factors in the subareas of Jelenia Góra, Wałbrzych and LGOM by 160 per cent, and in Wrocław subarea by 5 per cent (e.g. due to increased interaction with other development centres in the region) (Figure 4.5).^{49 50}



Figure 4.5 Scenario 3a – A greater increase in resource concentration in the Jelenia Góra, Wałbrzych and LGOM subareas compared to Wrocław

Source: own elaboration

- b) An increase in the production factors in the subareas of Jelenia Góra, LGOM and Wałbrzych by 10 per cent, and in the Wrocław subarea by 5 per cent (e.g. due to increased interaction with other growth centres in the region) (Figure 4.6).^{51 52}

49 Such an increase in the resources of production factors allows for a higher value of GDP than the territorial optimum in Scenario 2. Implementing the measures undertaken in this option would require more funds than just those saved by reducing the financial support to the Wrocław agglomeration. Therefore, we assume that the support of peripheral areas would take place also by growing debt, whose repayment would reduce capital resources after 2012 and thus GDP.

50 It is assumed that the Wrocław subregion benefits from the greater prosperity of the other subregions (e.g. through more intense trade flows).

51 It is assumed that the Wrocław subregion benefits from the greater prosperity of the other subregions (e.g. through more intense trade flows). In order to make results of Scenario 3a and 3b more comparable we assume the same increase in resources in the Wrocław subregion in both variants.

52 In the calculation of indicators DK, DL and DH we assume adequate changes.



Figure 4.6 Scenario 3b – A modest increase in resource concentration in the Jelenia Góra, Wałbrzych and LGOM subareas compared to Wrocław

Source: own elaboration

Scenario 4: Sub-regional attractiveness plus improved transport infrastructure

We assume an increase in the socio-economic attractiveness of regional urban centres (Jelenia Góra, Wałbrzych, and LGOM) as well as the development of the transport infrastructure in Dolnośląskie voivodeship facilitating relations between subareas (combined scenarios 1 and 3b) (Figure 4.7).



Figure 4.7 Scenario 4 – An increase in resource concentration in the Jelenia Góra, Wałbrzych and LGOM subareas along with development of transport infrastructure in the subregions of Dolnośląskie

Source: own elaboration

In the case in which the preferences of the community of the Dolnośląskie voivodeship in terms of territorial utility could be subsumed in an increase in the accessibility of the major functional areas of the voivodeship (Scenario 1), then the GDP in 2012 would have been 2.1 per cent higher compared to the scenario with the ex-ante stock of infrastructure resources (see Table 4.2 below). Thus, the territorial optimum achieved is characterised by a higher volume of goods and services. It should be emphasised that in the illustration attention has been focused on the types of transport arteries largely impacting on the supply side of the economy (motorways and dual carriageways). Taking into account different types of roads (including county and municipal), one could adequately assess their impact on economic growth. It is expected that to a large extent this type of infrastructure would contribute to improving the standard of living through spatial development, although its impact on the economy could be neutral or negative (e.g., in the case where reallocation of resources limited private investment). In this case, the expected territorial utility could lead to an optimum state, where the maximum size of GDP would be limited for the sake of a higher level of intra-regional accessibility. In other words, an increase of territorial cohesion — in this particular example — could interfere with growth. In reality, the assumptions concerning territorial utility are much more complex and include, among others, concentration issues of socio-economic activity.

Scenario 2 largely reflects the approach promoted among others by the World Bank (2009), which is oriented towards supporting the major growth centres in the region. It is also a manifestation of neo-liberal preferences because even assuming no public intervention, a dynamic development of Wrocław can be expected. Stronger agglomeration effects generated by Wrocław, the capital of the Dolnośląskie voivodeship, would contribute to a GDP growth by 8.1 per cent relative to the value of the ex-ante concentration levels of socio-economic activities. Territorial utility defined in this scenario achieves a relatively high value of the territorial optimum. Transferring the regulation of spatial processes to market forces (centrifugal and centripetal among others) implies the movement of human and physical capital and labour towards the Wrocław agglomeration, where they can be effectively managed. High spatial intensity (I) contributes — in line with the concept of agglomeration economies — to higher-income that may be subject to diffusion in the region.

An increase in spatial intensity (I) is also achievable when there is an increase in the concentration of socio-economic activity in peripheral areas. Social preferences expressed in the decisions of regional authorities may be focused on the identification and development of the voivodeship's endogenous potential located outside the Wrocław agglomeration. This is all the more important because the spatial heterogeneity of the region is a potential source of market failure — among others, in respect of taking full advantage of territorial assets. In the context of the above, interesting insights are provided by analysing Scenario 3. The larger volume of goods and services in the region — compared to Scenario 2 — would be possible to achieve only with an increase in the accumulation of factors of production in each of the sub-areas (Jelenia Góra, Wałbrzych, and LGOM) by 160 per cent (Scenario 3a). This spatial structure of labour and capital resources seems unrealistic and striving to achieve it would be highly expensive and could limit — by the necessity to incur debt — opportunities for growth in the future. In the more likely scenario of peripheral support (Scenario 3b), the achieved optimum value is lower by almost half as compared to Scenario 2. The scale of the overall effects of agglomeration does not compensate for the cost of interaction between the growth centres in the region. A very important way to reduce these costs is a functional transport infrastructure. It is confirmed by the analysis of Scenario 4. Based on this it can be concluded that the support of the peripheral areas of Dolnośląskie voivodeship would lead to an increase

in real GDP by 6.3 per cent as compared to a situation in which Scenario 4 was not undertaken. The increase in the volume of production would be, however, 1.8 percentage points lower than the corresponding volume achieved in Scenario 2.

The choice of the expected territorial utility will determine in the end the maximum level of achievable GDP for the region. The higher economic efficiency represented by Scenario 2 may be confronted with the new paradigm of regional policy, which emphasises the need to strengthen the capacities and competitiveness of functional sub-areas (OECD 2009a), which in turn increases the resilience of the region as a whole to crises. Wider support of peripheral areas may also be justified in the context of territorial equilibrium. Here demands such as preventing excessive and dangerous concentration of activity by strengthening polycentricity; preventing excessive spatial inequality as far as business cycles and economic development are concerned; ensuring the availability of public services regardless of place of residence, and promoting networking were all articulated (Mirwaldt *et al.* 2008, after Begg 2011, 117).

Summary simulation results for the four above scenarios are presented in Table 4.2.

Table 4.2 GDP changes in Dolnośląskie voivodeship in 2012 for different social, territorial utility scenarios

Scenario	Changes of the spatial intensity index (I) relative to the actual value in 2012 (%)	Change of GDP in 2012 in relation to the value calculated using actual historical data ⁵³ (%)
1	-	2.1%
2	Ik (7.9%); II(8.0%); Ih(8.3%)	8.1%
3a	Ik (5.9%); II(3.,5%); Ih(24.8%)	9.9%
3b	Ik (4%); II(3.9%); Ih(4.8%)	4.2%
4	Ik (4%); II(3.9%); Ih(4.8%)	6.3%

Source: own elaboration

4.4 Conclusions

Although elements of spatially-oriented analysis have been long used to augment production functions, relatively less attention has been paid so far to the implementation of territory within the neoclassical utility theory. Taking into account territorial heterogeneity and the importance of geographical-temporal distance, we introduce the category of social, territorial utility and incorporate it into the neoclassical optimisation process aiming to show how it might influence the production process.

⁵³ Using our production function (Formulas 4.6-4.7).

Social territorial utility is firstly determined by assets with which each sub-area of the region is endowed. These include – among others natural resources (taking into account the quality of the environment); the labour market; services (including public services such as education, health, culture, public investments) as well as specific territorial characteristics such as spatial order and landscape beauty which are not directly associated with production process, however, they affect well-being. Secondly, territorial utility is determined by time accessibility of each subarea from the perspective of other subareas which belong to the region.

The expected social, territorial utility is shaped by social consensus and is reflected by public policies. It poses a new endogenous force to disturb the spatial equilibrium which is defined – among others — by NEG models as an utility equalisation across different locations. The theory of social, territorial utility shows that such an equilibrium may only be apparent. There might be strong endogenously driven motivations to change the spatial status-quo even though NEG models suggest otherwise. Those motivations may vary considerably among regions, and their source lies in market failures. With the model of the optimum, we clearly show that one ought not to analyse an economic optimisation without taking into account diverse spatial preferences.

The territorial optimum is defined as maximizing the synergistic use of territorial potentials of all subareas of the region at a given level of expected territorial utility which is determined by social consensus, being reflected by regional authorities. The model of the optimum allows us to define and include in the paradigm of mainstream economics the category of territorial cohesion and also organises its structure and indicates its position in the process of development. Its main implication is that territorial cohesion should not be treated as an absolute category, i.e., the ideal and universal state of the territory.

It is not our purpose to make any normative judgments in this chapter. The model of the territorial optimum presents a positive approach to territorial cohesion and its implications for regional development. The implications are likely to be very diverse due to differences in expected social, territorial utility reflected in policies of regional authorities. We illustrate this by carrying out a scenario analysis for the Polish NUTS 2 region of Dolnośląskie showing that even though some spatial structures generate more dynamic economic growth than others, they might not necessarily be of great utility for the particular regional community and, hence, might not maximise its development and well-being. Thus, the concept of the territorial optimum touches upon not only supply aspects of the use of a given territory — as many theories do — but also incorporates the possibility of highly diverse demand for territorial assets.

SECTION II: TERRITORIAL EMPIRICAL ANALYSIS

Chapter 5 Territorial capital in Poland

5.1 Territorial Capital Based on Territorial Keys

The term “territorial capital” was suggested for the very first time in the context of regional policy by the OECD in its publication *Territorial Outlook* (Wojnar 2013, 13).

Territorial capital refers to the stock of assets which form the basis for endogenous development in each city and region, as well as to the institutions, modes of decision-making and professional skills to make the best use of those assets. (OECD, 2001, 13).

Those assets might include:

- The area’s geographical location, size, factor of production endowment, climate, traditions, natural resources, quality of life or the agglomeration economies provided by its cities;
- Business incubators and industrial districts or other business networks that reduce transaction costs;
- Untraded interdependencies such as understandings, customs and informal rules that enable economic actors to work together under conditions of uncertainty, or the solidarity, mutual assistance and co-opting of ideas that often develop in clusters of small and medium-sized enterprises operating in the same sector (social capital) and lastly;
- Intangible factors, e.g., “something in the air”.

This listing, however, lacks a clear reference to such territorial growth factors as accessibility – so clearly distinguished by the World Bank (2009), or services of general interests as well as functional areas (despite the fact that there is a reference to networks in the economic context).

OECD (2001, 15-16) argues that such “territorial capital” generates a higher return for certain kinds of investments than for others since they are better suited to the area and use its assets and potential more effectively. This means that areas not only have Ricardian comparative advantages (*i.e.*, they are more competitive because of the relative costs of factors of production), but also absolute advantages, for they have unique assets. This goes to show that territorial capital presumes a uniqueness of each region in the spheres of spatial structure, socio-economic potential and factors which stimulate its development (Bański 2013, 56).

Markowski (2011b), on the other hand, believes that territorial capital is most frequently interpreted as accessibility to material and non-material factors within a given area which might form specific resources or limitations. He proposes the following definition:

Territorial capital signifies specific external profits produced and accessible as a result of the multifunctional interaction of users within a relatively separated territory. Territorial capital has a character of a spatiotemporally dynamic “complex club asset” available exclusively for the users (of the club) operating within the functional area. (Markowski 2011b).

On the other hand, Capello *et al.* (2009) understand by territorial capital a set of resources located on a given territory: material, cultural, organisational, social as well as genius loci of a given place which altogether condition the competitive potential of the territory. The localised nature of territorial capital has been underlined by Camagni (2011). For him, this capital may be seen as the set of localised assets – natural, human, artificial, organisational, relational and cognitive – that constitute the competitive potential of a given territory.

This approach in its full version contains the following elements (Figure 5.1 below) forming territorial capital (Camagni 2008):

- a) tangible (material) public goods: environmental and natural assets, cultural resources, social infrastructure,
- b) tangible (material) impure public and club goods: common assets and resources such as landscape or cultural heritage, private networks (for example, ITC),
- c) tangible (material) private goods: private capital, concrete external profits, toll roads which, similarly to club goods, are characterised by a possibility of exclusion, a failure – or rather a limited competitiveness – in terms of consumption-related applicability (for instance: licensing of motorways)
- d) mixed (tangible and non-material) public goods: agglomeration-related profits, clusters, connectivity or, in other words, using physical accessibility for effective exchange and obtaining information – as well as conducting transactions, intermediation between science and business, profiting from physical accessibility as well as the availability of services and information
- e) mixed (tangible and non-material) impure public and club goods: cooperative networks (strategic alliances in the spheres of research and development with the participation of public and private partners, other forms of a public-private partnership) as well as management of space and cultural resources (market plus government failure),
- f) mixed (tangible and non-material) private goods: relational market services (concerning, for example, technological transfer or transfer of research results by private companies, looking for partners and suppliers) or university-based enterprises of the spin-off type,
- g) intangible public goods: social capital (institutions, trust, reputation, the system of values, behavioural models,

- h) intangible impure public and club goods: relational capital (ability for joint actions and cooperation, qualifications in this sphere)
- i) intangible private goods: human capital (entrepreneurship, creativity, private knowledge), soft external benefits.

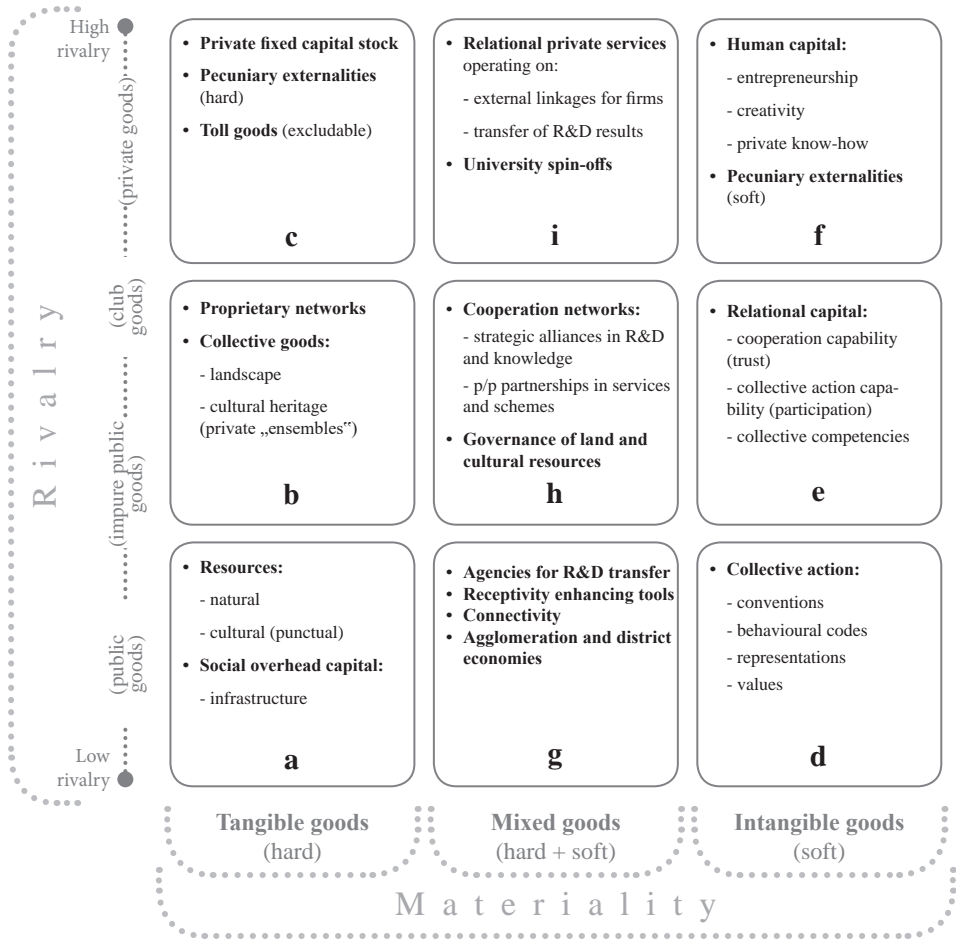


Figure 5.1 Typology of territorial capital components

Source: Camagni 2008

Respective definitions — although they differ from one another in details — indicate that territorial capital encompasses all factors which affect economic growth that have a non-mobile character. In other words, they cannot be easily transferred to a different location or replicated elsewhere. Territorial capital perceived in this fashion constitutes a heterogenic construct and encompasses phenomena analysed within various scientific disciplines, such as social capital, clusters or governance.

Our analysis is focused upon the relationship between growth and territorial capital. Therefore, we decided to operationalize territorial capital through the application of territorial keys which were created as a concept combining the Territorial Agenda of the EU 2020 with the Europe 2020 Strategy. The keys in question are accessibility, services of general economic interest, territorial capacities/endowments/assets, city networks as well as functional regions. They all constitute spatial indicators of growth (Böhme *et al.* 2011, Zaucha *et al.* 2014b).

Accessibility covers transport accessibility, accessibility to energy networks and e-connectivity. Such factors are essential though not sufficient preconditions for the creation of city networks and functional regions. They directly influence smart, sustainable and inclusive growth. They are a product of the infrastructure endowment and the availability of relevant services. As proven in relation to the new economic geography approach, changes in accessibility can have dramatic implications for the cumulative, self-reinforcing processes of economic development or implosion.

Services of general economic interest stand at the origin of the territorial cohesion concept. Such services are defined as *market and non-market services which public authorities class as being of economic interest and subject to specific public service obligations* (CEC 2000, 37). Services of general economic interest include electronic communications, postal services, electricity, gas, water, transport, labour market services, education, healthcare, childcare, social care, culture and (social) housing. Some of them will be instrumental in the promotion of smart, long-run growth (e.g., education as proved, for example, in Finland) while others are critical for inclusive growth (e.g., social care).

Territorial capacities/endowments/assets denote those immovable endogenous features of a given region that influence its growth. The long-run decline in transport costs and the intensification of global competition dramatically changed the specialisation and co-operation ties of many regions. Therefore, in line with the predictions made in the context of the new economic geography, we can observe the increasing role of immovable resources and endowments in sustaining the economic base of any given territory. One such example could be factors such as clusters, urban *milieu*, geographical location, cultural networks and natural, particularly, 'green' resources and ecosystem services as well as the level of social capital ("untraced interdependencies" according to OECD (2001,15)). Together with accessibility and services of general economic interest they form the necessary preconditions for city networking and the creation of functional regions.

City networks, i.e. interactions between metropolises and secondary growth poles (e.g. cities with superregional functions) constitute an economy of flows which is indispensable in sustaining and accelerating research, innovation and knowledge-creation, i.e. for smart growth, among other things. Networking requires both connectivity and the ability of a given place to initiate or be covered by different types of economic and social interactions. To this end, the existence of local developmental *milieus* is of primary importance.

A similar role to that of the city networks is performed by the concept of functional regions for coherent, contiguous territories (economy of places). Such regions are formed by adjacent territories tied together by intensive socio-economic relations. Functional regions cover both urban and rural space, integrating the rural economy within the enlarged labour market. One such example could be labour markets or educational areas served by a college or university. Their role in sustaining a critical mass for development and diminishing the level of vulnerability to external shocks has frequently been underlined in the economic and spatial analysis. Efficient functional, i.e. compact or sustainable, regions or larger cities are also of particular importance here since they contribute to agglomeration economies and formation of clusters.

There is a correspondence between the keys and the elements of territorial capital defined above (Camagni 2008). Accessibility, city networking, and functional regions correspond to mixed public and impure public goods (refer Figure 5.1 above). Territorial resources can be equated with tangible public and private goods as well as intangible public goods (social capital). Services of general economic interest also comprise mixed private goods. If we assume that territorial cohesion is an expression of a policy that utilises the spatial element and is oriented at the territorial capital (Figure 1.5), territorial keys can be recognised as a basis for the search of the measures for territorial cohesion.

Identification and selection of territorial keys in the Polish Presidency Background Report (Böhme *et al.* 2011) were a result of a thorough analysis of the so-called linking issues combining the content of the two documents mentioned above (Zaucha *et al.* 2014b). The selected keys are highly susceptible to territorial differences and the needs of the old and new EU member states. The system of the “keys” and corresponding linking issues are presented in the following Table 5.1.

Table 5.1 Territorial keys

Territorial keys	Linking issues
1. Accessibility	<ul style="list-style-type: none"> • Global accessibility • European and trans-border accessibility • National accessibility and daily accessibility between metropolises • Accessibility of the main, and secondary, centres (regional accessibility including services of general economic interest) • Modal split, public transport, intermodal transport change • E-connectivity • Access to energy networks
2. Service of general economic interest (SeGi) ⁵⁴	<ul style="list-style-type: none"> • Services of general economic interest (sparsely populated areas) • Access to services of general economic interest • Investing in education
3. Territorial capacities/endowments/ assets	<ul style="list-style-type: none"> • Territory-bound factors (local <i>milieus</i> etc.) • Local innovation systems & networks • Wise management of cultural and natural assets • Renewable and local energy production • Territorially-related characteristics for energy production • Revitalisation of cities
4. City networking	<ul style="list-style-type: none"> • Interactions between metropolises at the EU scale • Interactions between the main national growth poles, • Territory-bound factors (local <i>milieus</i> etc.) • Accessibility of metropolises and between metropolises
5. Functional regions	<ul style="list-style-type: none"> • Enlargement of local labour markets, • Critical mass of means through territorial cooperation, • Accessibility of secondary growth poles and regional centres • Public transport connections to regional centres. • Compact cities (sustainable cities)

Source: Zaucha *et al.* 2014b

⁵⁴ After the 5th Cohesion Report (CEC 2010), we used a concept of „services of general economic interest” that, includes education, healthcare and commercial, financial, and business services (in line with the Treaty of Amsterdam).

Henceforth, linking issues will serve as a basis for proposed indicators. Sample indicators listed in the Polish Presidency Background Report (Böhme *et al.* 2011) are not seen as final proposals. On the contrary, they were sometimes evaluated critically, bearing in mind the realistic possibilities of utilising measures in Polish conditions. This method of quantification of territorial capital, using the statistical data available in Polish conditions, is neither conclusive nor comprehensive. Rather, it is a means of examining what can be measured and how. The purpose of the present chapter is to identify possible indicators in order to operationalise the concept of territorial cohesion in general, and in particular, in Polish conditions. The measures will then be utilised to examine the influence of each element of territorial capital on economic growth in Poland in spatial terms (in Chapter 6)

Since the indicators put forward in the current chapter are to be the basis for introducing territorial capital into the growth model, three general rules are taken into account, as follows:

- the principle of relatively easy access to primary data,
- the principle of spatial variability (territorial diversity in the analysed area),
- the principle of susceptibility to possible interventions (indicators the value of which changes at least in the medium term and as a result of specific operations of different administrative levels).

The rest of the chapter is devoted to the quantification of the territorial capital in Poland and critical examination of the use of this category in the intraregional development policy in Poland. Since the original aim of territorial keys was to integrate socio-economic and spatial policies, first we checked to what extent such integration has been achieved in regional Poland. Then the short descriptions of the individual keys with references to the content of national strategic documents, especially the National Spatial Development Concept 2030 (Korcelli *et al.* 2010; Ministry of Regional Development 2011d) follows. Each description includes potential indicators that can be used in quantification of the “keys”. Moreover, availability of relevant data in the Polish conditions is discussed. At the end of the subsections below, a set of possible indicators is suggested. Each indicator is proposed only once, even if it is relevant to several territorial keys. The chapter is completed with some conclusions how to make better use of the category of territorial capital as a policy integrator.

5.2 Territorial capital as used in intraregional policy of Polish NUTS 2 regions

Under the in-depth inquiries (described in the other chapter 8) we have examined the way territorial capital is used by Polish NUTS 2 regions in their development policy.

The evaluation of the degree and the manner in which territorial capital, or has been, considered in the development policy of Polish regions was conducted through the use of the territorial key concept (Zaucha *et al.* 2014b). All of the NUTS 2 regions confirmed the use of four keys (accessibility; SeGi's; territorial assets; and functional areas).

The last of the keys, dealing with the city network, was mentioned in 13 out of 16 regions, the other ones having noted that this key can hardly be applied at the intra-regional level. This sort of answer corresponds, to some extent, with the lack of emphasis on the polycentric patterns as the determinants of territorial cohesion, already at the stage of defining it. Basic forms of taking advantage of territorial keys in regions were presented in Table 5.2.

Table 5.2 Taking advantage of territorial keys

Territorial key	Application methods
Transport accessibility	<ul style="list-style-type: none"> • Separation within the spatial development plan areas of poor transport accessibility or peripheral areas • Accessibility as an indicator of monitoring the Development Strategy • Accessibility as an indicator for delimiting Area of Strategic Intervention • Improving accessibility as a strategic objective, priority area or direction in the spatial development plan • The basis for subregions delimitation
Services of general interest (SeGi)	<ul style="list-style-type: none"> • One or a few of Strategic Intervention Areas devoted to SeGi • Delimitation and inclusion in the Strategy of areas of poor accessibility to SeGi • One of the Strategy's sub-objectives • As the basis for evaluating projects submitted within the framework of Regional Operational Programmes • Defining individual accessibility standards and including them in the overall policy • Listing within the strategy specific service categories as priorities (e.g., medical, educational) • The basis for subregional delimitation
Local resources	<ul style="list-style-type: none"> • Delimitation of areas of specific potentials • Delimitation of areas characterised by deficiency • Delimitation of areas of cultural and natural heritage • Delimitation of an Area of Strategic Intervention connected with a specified resource (natural resources, landscape, country boundaries) • Delimitation of functional areas on the basis of resources • One of the Strategy's sub-objectives • As the basis for evaluating projects submitted within the framework of regional operational programmes • Local identification as the basis for the Development of Cross-border Infrastructure
Interrelations of municipal centres	<ul style="list-style-type: none"> • Emphasizing internal polycentric systems within the Strategy (e.g. Lubuskie, Tricity) • Network interrelations as the basis for delimitation of multipolar functional areas • Application of the measure of commuting times between cities – but mostly in a hierarchical system. • As the basis for evaluating projects submitted within the framework of regional operational programmes
Functional areas	<ul style="list-style-type: none"> • Delimitation of functional areas around the main centres • Functional areas as Strategic Areas of Intervention • Functional areas as Integrated Territorial Investments • As the basis for evaluating projects submitted within the framework of regional operational programmes • Perception of sub-regions as functional areas

Source: own elaboration on the basis of survey results from 14 regions

Some respondents remarked in their comments that the territorial keys are made use of mostly in the spatial development plans. An exception is the key of the functional areas, which appears both in the strategies and in the Regional Operational Programs. Simultaneously, the very responses indicate that two out of five keys have a “hard” character, finding immediate direct reflection in the spatial policy of practically all regions. These are, precisely, functional areas and transport-wise accessibility. At the same time, improvement in transport-wise accessibility is in several cases written down as a strategic objective, as a direction of action, etc. The keys of the SeGi’s and of territorial assets are also commonly applied, but their understanding is not uniform. In some regions, they constitute the basis for delimitation of the functional areas, or of Areas of Strategic Intervention (ASI), while in the other ones they constitute merely a complementary differentiating element. The key of city networking was usually understood by the representatives of the NUTS 2 regions as corresponding to internal connections. In many cases, it was identified with the traditional hierarchical pattern, along with the indication of the need for improvement of accessibility from the peripheral centres to the capital of the region. It was much less frequent to perceive the significance of the multi-directional interrelations between the towns inside the region (and even if so, this would most often apply to the towns located in the direct mutual neighbourhood). It was not seen so frequently (or at least it was not frequently declared) that there might be an added value resulting from the participation of the urban centres from the region in the network connections with other regions or at the international level.

Since various elements of the territorial capital are addressed under different policies (mainly spatial policy as pointed out by the respondents) the research was intended to evaluate the degree to which the policy of regional development was integrated, i.e., combined into a coherent whole of spatial and economic elements according to the necessity of recognizing territorial diversity and make use of territorial capital as a development asset. It was assumed that the best indicator of success would be the coherence of regional strategic documents and their mutual interaction.

As the main way of enabling the coordination of documents in regions, the respondents first mentioned the goal of ensuring consistency in the programming process. In this context, the various administrative processes were mentioned, along with discipline in the sequence of elaboration of the documents. The responses also emphasised the supervision over all the documents by the same team (department). There are a couple of regions, in which special separate teams were established in order to coordinate the strategic documents. Besides, it was deemed that an important instrument of coordination consists of the evaluation, both *ex-post* and *ex-ante*, as well as constant monitoring of the implementation of stipulations, contained in the documents, along with the internal system of cross-assessment of the documents being elaborated. Hence, in terms of principle, the objectives of spatial policy ought to be adapted to the goals contained in the *Regional Development Strategy*. Unfortunately, the “original sin” of *Regional Spatial Development Plans* is the lack of a territorial dimension in relation to socio-economic strategies. Moreover, in practice, it seems that the socio-economic strategies have been renewed much faster. In truth, in Poland, there is a predominance of the economic approach. It is the strategies that affect spatial plans and only in exceptional cases this relation is reversed. Some respondents even openly pointed out that *Regional Spatial Development Plans* cannot be adjusted so quickly because their elaboration is a time and resource consuming process requiring the collection of many pieces of evidence and their presentation in consistent graphical forms. Thus it seems that the treatment of the territorial capital as a development asset in many Polish regions still lacks a systematic approach.

The much better picture was obtained when analysing the use of the territorial capital for spatial differentiation of intraregional development policy. All of the responses indicated that the internal territorial divisions and specificities are accounted for in the development strategy and the operational programs. The most frequently used tool were Areas of Strategic Intervention (ASI). The problem lies in their correct delimitation and the use for the purpose of implementation of intra-regional policies. In order to make them serve really well the aim of territorialisation of policy, they should, above all, be delimited on the basis of crucial spatial characteristics of a given region (the most important elements of its territorial capital treated as a development asset). In practice, the delimitation of these areas is often carried out on the basis of negative criteria (related to the formerly delimited problem areas). Accessibility is used, but primarily as a measure of territorial handicap. However, some good examples also exist. For instance, in the Warmińsko-mazurskie region, some of the ASIs have a traditional or “problem-oriented” character while some, however, take advantage of a territory as an endogenous development asset: for example, a borderland area or development axis of three biggest regional cities. Moreover, such ASIs should find the reflection in strategic interventions, that is in Regional Operational Programmes (ROP). Only in some regions, this is the case. For instance in the Warmińsko-mazurskie and Pomorskie under a few priority axis of ROPs, there exist preferences for the selected ASI. There are also actions limited to the chosen ASI. However, this kind of work is not always conducted under the banner of territorial cohesion.

To reiterate this portion of considerations, it needs to be noted that Polish regions possess the instruments and the awareness necessary to conduct integrated development policy, and, in practice; they lean towards the traditional methods of conducting policy. With few exceptions, they do not implement the territorial cohesion concept in its dimension of territorial capital as a development asset as a part of their *Regional Development Strategy*. Whenever the division of money takes place, pragmatism takes over and obtaining money from the EU frequently becomes more important than the impact of its spending on a broadly-understood region’s development. In numerous cases, the cause can be traced back to the inflexible formal procedures of EU. This is in contrast with verbally declared efforts to treat development in a holistic fashion.

When summing up this part of our considerations, one should point out a distinct difference between the declarative understanding of the territorial cohesion, and its practical application in terms of paying attention to territorial capital (including the territorial keys). At the level of definitions, the majority of regional representatives agree on the importance of the role of endogenous factors of growth, referring to territory in positive categories. In the conduct of intra-regional policy, the dominating approach is already — instrumental, on the one hand, and more traditional, on the other. Finally, we arrive at a rather pessimistic statement, namely that in the practice of the internal policy of Polish regions, territory is seen more in a perspective of problems and not of assets. Yet, at the same time, a certain evolution of this approach can be observed, and even if it is to some extent forced by the regulations of the European Union. The in-depth inquiries have shown that one of the key barrier is lack of political will to better understand the territorial capital and its impact on the growth and development of the region. Therefore it would be more appropriate, to postulate more intensive work aiming to take into consideration the systemic territorial capital in intra-regional policies. What is lacking, however, are instruments concerning the evaluation of the influence of territorial capital on policies (and vice versa) or in general estimating this capital’s impact on growth and regional development.

5.3 Territorial Key – Accessibility

Spatial accessibility is a concept that has been used for a long time in the geographical and economic literature (i.e., Geurs and Eck, 2001; Gutierrez, 2011; Stępniaik and Rosik, 2013b). However, one can encounter numerous definitions of the term. Four basic measures of accessibility are used in the current applied research (for details cf. Komornicki *et al.* 2010):

- accessibility understood as the transport infrastructure (expressed, for instance, in road and railway network density);
- time (isochronal) accessibility, frequently equated to cumulative accessibility;
- potential accessibility, which includes all relations within a given set of regions (matrix approach), as well as their mass and time distance;
- person-based accessibility, including daily accessibility in the particular mode of transport.

In European sources, potential or, less frequently, isochronal accessibility (i.e., identical time) is most commonly used. Accessibility was included in the 5th EU Cohesion Report (EC 2010). Thus the perception of infrastructure development gained a territorial dimension to a larger extent. Analysis proved that not only transportation needs to be understood in the traditional sense are spatially diversified. They also indicated that investment efficiency (understood as the influence of investments on economic growth) varies significantly between each territorial unit (Wegener *et al.* 2005). Spatial accessibility, therefore, became a natural indicator, which can be used to evaluate the efficiency of investment operations in different spatial scales. Currently, it is commonly utilised in evaluating completed programmes (e.g. EU operational programmes) as well as for simulating the results of operations in the planning phase. Another benefit of the potential accessibility indicator is the fact that it takes into account any changes in the distribution of territorial mass, most frequently, population. Thus, in long-term comparisons, it is possible not only to observe the effects of changes in transportation infrastructure but also the results of migration movements taking place concurrently.

Furthermore, depending on the adopted model of the distance-decay function, the attractiveness of mass (destinations) can decrease faster or slower with the increase in distance. Therefore, it is possible to carry out analysis for short journeys (such as commutes) and long ones.

The European-scale research on potential accessibility has been conducted for years, mainly in German centres (Spiekermann, Schurmann 2007) and for the purposes of ESPON (2004b; 2004d; 2005b; 2010; 2012c; 2014b), i.e., ESPON projects 1.2.1., 1.1.3, 3.1, SeGI, FOCCI, TRACC. Moreover, some countries (Spain, Poland, and the Czech Republic, among others) are providing such analysis for their territories. The most frequently used level is NUTS 3 and the results are presented as an indicator juxtaposed with the European average (understood as ESPON space). The methodology employed, as well as the distribution of the demographic and economic potential in Europe, determine the highest values of the accessibility rate of the region which is designated “Pentagon” (with its core along the borders of Germany, France, Belgium and Luxemburg). It is natural for accessibility to decrease towards the peripheries of an examined area.

Distortions in the concentric distribution of the accessibility rate values stem from the distribution of large linear investments (motorways, high-speed rail) or infrastructure gaps (often caused by the natural environment or the legacy of the formerly highly formalised political borders). During periods of investment, progress in transportation (which has been observed in Poland over the recent years), the level of accessibility, seen from the European, national or regional perspective, becomes more diversified. Some areas which are relatively easily accessible from the core of the European Union remain peripheral on a national scale. A centre that is well connected on a national level may actually be poorly accessible from its hinterland, which has an influence on the size of the labour market and the accessibility of public services. This applies particularly to metropolitan areas, which struggle with permanent congestion.

Currently, the Polish Ministry of Infrastructure and Development is working on the modernisation of the Multimodal Transport Accessibility Indicator (WMDT II). The work is carried out by the Institute of Geography and Spatial Organisation of the Polish Academy of Sciences (IGSO PAS). The result of their work will facilitate the possibility to perform constant monitoring of the changes in both modal and multimodal accessibility. Moreover, the methodology will be unified with the one used in European research (ESPON TRACC) and the traffic models used in road and rail transport of passengers and goods.

Another important indicator is time accessibility, which, apart from the facility of cartographic presentation, raises a possibility to create standards ascribed to particular administrative units (e.g. a population living within an isochrone (or same time measure) delineating a regional labour market — say, 60 minutes — by any mode of transport or by public transport). On the basis of transit durations and their organisation, it is possible to analyse the mutual daily accessibility in networks of large cities.

The linking issues of the territorial key of accessibility also include modal shifts. Their unambiguous quantification is more difficult, as it must be based on the assumption that, in any conditions, a higher proportion of environment-friendly or public transport is more beneficial to territorial cohesion. The problem is posed by the very definition of the term “environment-friendly” as well as other factors operating in urbanised (especially metropolitan) and peripheral areas (including rural ones).

Problems with adequate data, on the other hand, may pose a difficulty in quantifying accessibility in terms of energy and telecommunication. Identification of one diagnostic indicator for the former is especially determined by energy demands as well as the situation, distribution and quality (including the length) of transmission networks. In the case of telecommunications accessibility, the indicator commonly used in Europe is the population of people who have access to the broadband Internet. This indicator, however, must be supplemented with the element of e-competence and possible financial factors. Analogous data at the local level is unavailable in Poland. Alternative measures that were employed in Poland (for the Mazowieckie region or voivodeship, in Polish nomenclature) are the number of Internet domains in districts/counties (or poviats, in Polish nomenclature) and the proportion of tax statements submitted online (Siłka 2014). The first of these indicators is more of an indirect than a direct illustration of economic activity. The second one is potentially more useful, since submitting tax returns online is determined by both infrastructure and competence.

The example of spatial accessibility shows a multitude of possible analyses of purely geographical character, which can be useful not only in carrying out the regional

policy (or cohesion policy) but also in gradually territorializing sector policies, especially transport policy, the urban policy as well as telecommunication and energy policies. The possibilities of employing accessibility indicators for the purposes of territorialisation are presented in detail in Table 5.3. The accessibility measures are also among the best methods of ascertaining the accessibility of services of general economic interest, a claim which will be discussed in the next subsection.

Table 5.3 Territorial key — accessibility — potential indicators

Linking issues	Indicators	Notes
Global accessibility	Time accessibility indicator relating to maritime ports and airports as global transport nodes	Optionally, the measure can be calculated separately for passenger transport and freight transport.
European and cross-border accessibility	Potential multimodal accessibility indicator (or separate ones for railway and road networks) calculated at the European level	Analyses for road transport exist (Rosik 2012), for other modes and multimodal transport, however, they will be available in 2015.
	Time accessibility indicators in regard to the junction points of neighbouring states' infrastructure networks	Optionally, it is possible to make analyses in a complete system for two neighbouring countries or regions divided by a political border (cf. Więckowski <i>et al.</i> 2014).
National accessibility and accessibility between metropolises	Potential multimodal accessibility indicator (or separate ones for railway and road networks) calculated at a national level	Optionally, the measure can be calculated separately for passenger and freight transport; the modernised WMDTII (multimodal accessibility indicator type II) will be available in 2015
	Daily accessibility indicator (0-1) between metropolises	The measure should be analysed mainly for public transport
Accessibility of the main and secondary regional centres (including the accessibility of services of general economic interest)	Time accessibility to the networks of centres at a regional (voivodeships) or subregional level, the percentage of population living within an isochrone (e.g. 60 minutes) from such centres	The measure should be analysed separately for individual and public transport; a modernised indicator for road transport will be available in 2015.
Modal split, public transport, intermodal transport	Proportion of more environment-friendly modes of passenger transport	The structure of the indicator is unequivocal and appears to be most transparent as regards to commuters using public transport within a metropolis
E-connectivity	Percentage of population with access to broadband Internet services	This indicator is not commonly available in Poland (there is only data regarding the supply that operators provide) and it should be additionally supplemented with the <i>e-literacy</i> (Internet skills) indicator
	Number of people filing the PIT (Personal Income Tax) tax return online	An alternative indicator, available and combining both the infrastructure and competence element. It is employed in the analyses within the project called Developmental Trends of the Mazovia Region (Siłka 2014). Using the percentage of people who submit the tax return online would be more adequate (as many people in rural areas are not PIT remitters).
Access to energy networks	Transmission network density	Difficulties in acquiring qualitative data

Source: own elaboration

In conclusion, most indicators enabling the evaluation of transport accessibility can be relatively easily estimated. They require the use of a standardised methodology and appropriate databases concerning the system and parameters of transport networks. The data provided by GUS, the Polish Central Statistical Office, are needed. The indicators of modal-split raise substantial doubts and the energy accessibility measures are heavily influenced by the access to adequate information of the spatial character. The telecommunications accessibility indicators need further methodological development.

The indicators used in the quantification of territorial capital are:

- potential road accessibility indicator calculated at the national level (WMDT II) (Figures 5.2 and 5.3);
- potential rail accessibility indicator calculated at the national level (WDDT II – road accessibility indicator) (Figures 5.4 and 5.5);

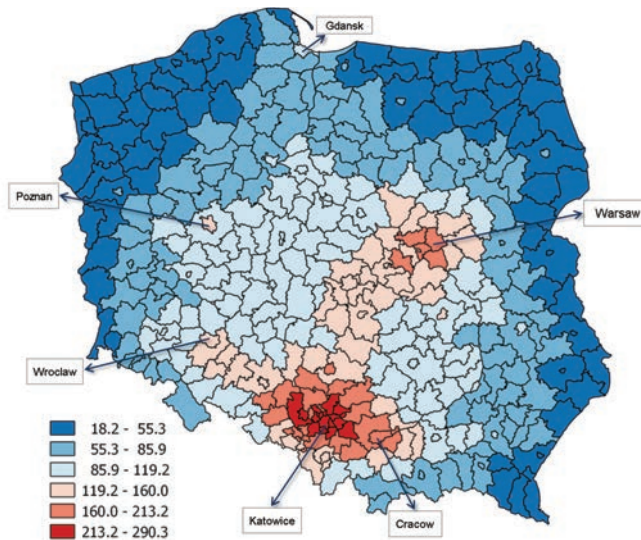


Figure 5.2 Potential accessibility to population in 2005 (average for Poland = 100)

Source: own elaboration on the basis of the data prepared by Marcin Stepniak (Ph.D.) from the Institute of Geography and Spatial Organisation Polish Academy of Science

Note: The average for Poland in 2005-2010 = 100

The best road accessibility is observed in Upper Silesia region (around Katowice) and Cracow as well as in the close vicinity of the capital city of Warsaw. The worst situation prevails in districts located along the eastern border and in the north-east and north-west of Poland. In the south of Poland, the area of relatively better accessibility extends to the Czech border. Larger peripheral areas formed along the remaining borders. Comparing 2005 and 2010 shows a significant improvement in the accessibility of the Tri-city metropolitan area (Gdańsk-Sopot-Gdynia) and the passage joining it with the centre of Poland as well as in the area of Poznań. The improvement was linked to the commissioning of several new motorway sections. The areas where the value of the indicator is the highest are concentrated around potential bi-polar systems of Cracow and Katowice as well as Warsaw and Łódź. The emerging picture confirms the thesis that improvement

of accessibility (including in peripheral areas) is determined mostly by transport investments which are located centrally (in spatial terms) or adjacent to the largest demographic and economic potentials.

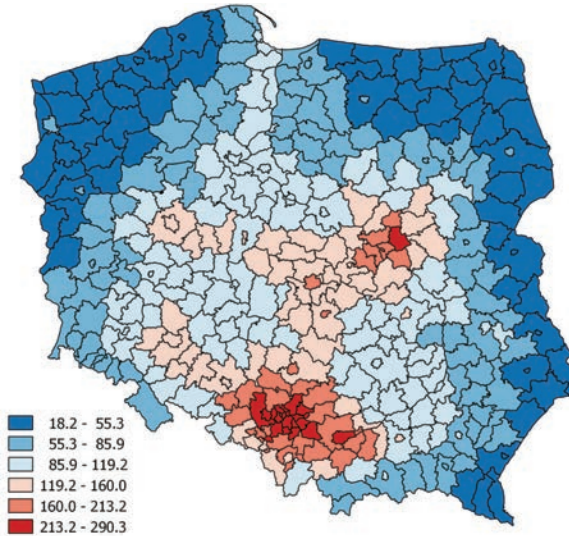


Figure 5.3 Potential accessibility to population in 2010 (average for Poland = 100)

Source: own elaboration on the basis of the data prepared by Marcin Stepniak (Ph.D.) from the Institute of Geography and Spatial Organisation Polish Academy of Science

Note: The average for Poland in 2005-2010 = 100

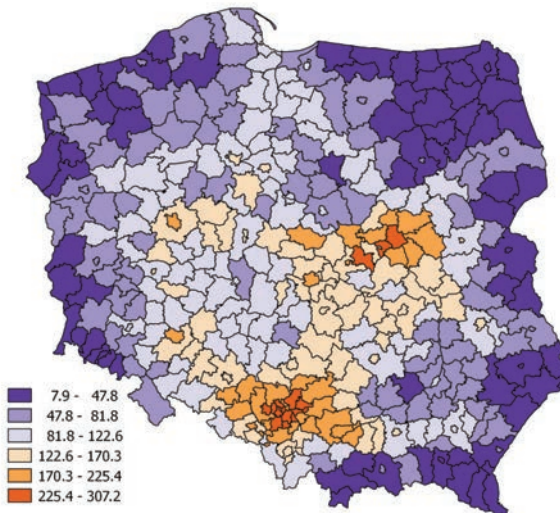


Figure 5.4 Potential rail accessibility to population in 2005

Source: own elaboration on the basis of the data prepared by Marcin Stepniak (Ph.D.) from the Institute of Geography and Spatial Organisation Polish Academy of Science

Note: The average for Poland in the years of 2005-2010 = 100

In order to reflect the spatial accessibility of particular regions, an evaluation of their potential rail accessibility was carried out as well. The value of this measure was calculated for 2005 and 2010 as presented in Figures 5.4 and 5.5. Certain regions have recorded a decline in rail accessibility in that period, which was a result of closing railway lines or decreasing speed as a consequence of progressive downgrading of some networks (through physical depreciation) or continuing renovation works. It turns out that the situation affected about one quarter of all the network sections.

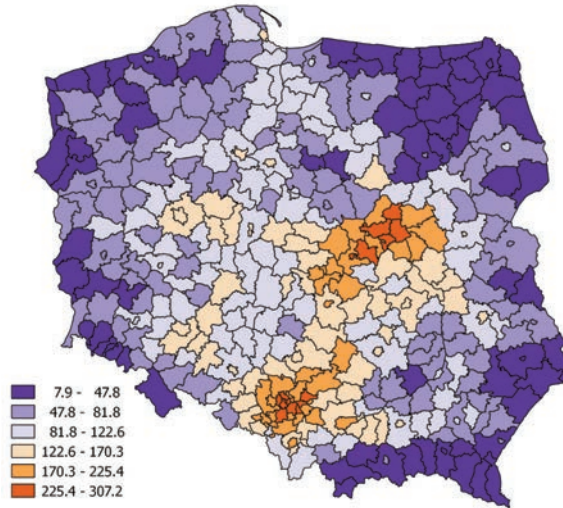


Figure 5.5 Potential rail accessibility to population in 2010 (average for Poland = 100)

Source: own elaboration on the basis of the data prepared by Marcin Stepiak (Ph.D.) from the Institute of Geography and Spatial Organisation Polish Academy of Science

Note: the average for Poland in the years of 2005-2010 = 100

The spatial system of potential rail accessibility is more closely related to the distribution of particular railway lines, which is a result of the lack of rail infrastructure in certain regions of the country as well as considerable disparities in terms of the transit speed (for example, very low speeds on regional lines). Consequently, there is a significant spatial polarisation of the indicator value. The worst rail accessibility can be observed in the north-east of Poland and the dense areas bordering with Ukraine and Slovakia. The area characterised by the highest value of the indicator encompasses the agglomerations of Warsaw and Upper Silesia (around Katowice city), with the second agglomeration for Cracow and Łódź. The distribution also includes major lines from Warsaw to Poznań and Gdańsk as well as from Cracow to Wrocław.

As previously noted, in contrast to the situation with respect to roads, during the time period from 2005 to 2010 there were no positive changes in rail accessibility of units. Therefore, it can be concluded that in that period, the increase in the territorial cohesion of the country was mainly determined by several large-scale road investments.

To summarise, the analysis presented above suggest strongly that infrastructural investments can measurably enhance the potential accessibility of particular areas. They

cannot, however, equalise all territorial disparities in this regard. On the contrary, large-scale investments can initially increase spatial polarisation as some units are much more accessible than others. Only a sustained and consistent process of development of the network can bring about a re-levelling of the disparities. However, their complete elimination is impossible due to the uneven spatial distribution of demographic and economic potentials.

5.4 Territorial key – Services of general economic interests

Accessibility to public services can be understood in three dimensions: *accessibility* (in spatial terms); *availability* (understood as the existence of particular service facilities in a given area, and *affordability* (understood as financial achievability of particular services). This division determines directives for social policy and other related sector policies. What is more, poor spatial accessibility may be a result of gaps in social infrastructure (e.g., insufficiently dense networks of certain facilities in total or ones that offer quality services e.g. medical services), transport infrastructure (or the Information and Telecommunication Technology (ICT) infrastructure; very limited individual access) as well as the existence and organisation of public transport (accessible for particular social groups). The gaps in transport infrastructure are characteristic of less developed states (e.g., new accession countries such as Poland and Romania) or geographically remote regions (e.g., Iceland). The ESPON SeGI project (ESPON 2014b) states in its final report that public transport itself is one of the significant types of services.

In the contemporary analysis, the scope of the term *service* is broader than its colloquial understanding and differs, to a certain extent, from the one emerging from the division into the three basic sectors of the economy. According to the Report of the ESPON SeGI project, *Services of General Interest* are defined as a “sum” of *Social Services of General Interest* and *Services of General Economic Interest*, including technical, telecommunications and postal infrastructure). *Social Services of General Interest* are, as stated in the project, the services within the markets for labour, education, healthcare, childcare and eldercare, welfare and social housing (ESPON 2014b).

The first set of indicators illustrating the Services of General Interest was proposed in the 4th EU Cohesion Report (CEC 2007; Marques da Costa *et al.* 2011). It comprised transport services (the density and the level of utilisation of motorways; the density and the level of utilisation of railway lines; the volume of air traffic, ship transport and regional accessibility to means of transport); energy services (energy consumption; the share of oil in energy consumption; energy network capacity), telecommunications services (access to high capacity networks; broadband access in urban and rural areas), health care services (availability of health care; accessibility of health centres; the number of hospital beds in relation to the number of population), and services connected with environmental protection (water access; water pollution and water treatment; waste generation). The set of indicators proposed above appears to be incomplete since it lacks certain kinds of services such as education) and inconsistent (since measures illustrating infrastructure are mixed with ones representing the volume of consumption, i.e., the utilisation of the infrastructure, e.g. transportation). This is related to the general problem of differentiating the indicators showing the situation of general interest services and the context of their operation (Marques da Costa 2013).

The indicators of the broadly understood provision of general interest services were tested with the use of factual statistical data at the European level and within the *case studies* in the TRACC (ESPON 2012b; 2014c) and ESPON SeGI (ESPON 2014b) projects. The ESPON TRACC project put forward alternative methods of determining accessibility to services by utilising an inverted measure of time accessibility (e.g., the number of higher secondary schools accessible within a travel time up to 30-minutes) and a measure of potential accessibility adopting the altered “mass” of the centres. The latter measures the accessibility to health care as the potential accessibility to medical doctors (whose number became the “mass” in the traditional model). Both measures were characterised by a higher spatial variability than in the case of traditional measures of service provision (e.g. density of facilities in relation to area or population size). Thus they fulfilled the criteria for the territorialisation of policies.

The ESPON SeGI project proposed an extensive set of 50 key indicators (Breuer and Milbert, 2013). Most of these were related to population number and therefore, illustrated the existence of different facilities and network systems in analysed units. In practice, a case study within the same project (Świątek *et al.* 2013; Stępniaak and Rosik 2013a) attempted an analysis of the level of services in different countries according to the same indicators. However, comparability of the data turned out to be limited.

The analyses carried out in the ESPON TRACC and ESPON SeGI (ESPON 2012b; 2014c; 2012c; 2014b) projects proved that Poland is relatively well and evenly equipped in such services of general interest as health care and upper secondary education. Despite that, there were imbalances in the available choice of facilities (hospitals, medical doctors, schools) near places of residence (in adequate time distance). The concentration of medical doctors is markedly larger than the concentration of population, which results in a wider choice in terms of health care in the largest centres. Major cities and medium-sized centres also offer a much wider range of available options regarding education facilities.

In the Polish *National Strategy of Regional Development*, poor access to public services was recognised as the leading cause of poor developmental prospects for some parts of rural areas. Furthermore, the *National Spatial Development Concept 2030* (Ministry of Regional Development 2011d) emphasised that areas of poor accessibility to services are distributed fairly randomly throughout the country. The basic types of services listed in this context are education, health care, culture and public utility services. The document suggests the need to establish standards of accessibility to services (both centrally by the competent government Ministries and at the level of the regions). The Ministry of Regional Development⁵⁵ made an attempt at delimitation of areas with the poorest accessibility to public services (understood as functional areas). The task turned out to be difficult (Komornicki 2014). In the first variant of the identification attempt, a method was adopted entailing the fulfilment of certain boundary conditions, each of which corresponded to one kind of service. A second variant, also considered, was partly based on transport accessibility to centres of different sizes.

Tests of the potential boundary conditions were carried out for the indicators representing the types of services described in the *National Spatial Development Concept 2030*. In the case of education, the number of higher secondary schools (schools which teach to the level of the matriculation examination) was analysed, since primary education is evenly distributed in space. The indicator defined in this fashion failed to take

⁵⁵ Presently the Ministry of Development.

into account the possibility of commuting (sometimes only a short distance) across county borders. Therefore, the evaluation of the indicator for the purposes of identification of poor accessibility was negative. In the case of health care services, the distribution of county saturation with basic health care facilities was studied. The acquired picture was evenly distributed in space. The decisive factor is the locally measured accessibility (travel time) and the quality of the facilities. In this case, the evaluation of the usefulness of the identification indicator was also negative. An alternative solution was found in the use of the aforementioned potential accessibility indicator, which substitutes the mass of units with a number of doctors. This solution includes an element of quality evaluation since there are more qualified medical professionals in large centres. Also, the potential accessibility to medical doctors suggests, to a certain extent, the possibility of choosing among medical doctors and health care facilities.

In the case of the availability of public infrastructure, it was possible to employ an indicator for the provision of water supply system, sewerage system or sewage treatment plants. The chosen measure was the percentage of population connected to the sewerage system. This choice is justified by the character of the Polish network of public services infrastructure. The water-pipe network was frequently extended without a parallel development of the sewerage system, which can result in a, leading to a potential environmental hazard. Also, the level of the sewage treatment service is sometimes worse than that of the sewerage system itself. The percentage of residents connected to sewerage system was used as the measure. The emerging picture was coherent and provided a basis for a positive evaluation of the indicator.

As far as access to cultural services is concerned, it was necessary to find an indicator illustrating the situation in peripheral areas as well. The number of cultural centres per 100,000 inhabitants was analysed for its usefulness as the measure. Once again, the picture obtained showed a relatively good provision of such facilities for the population of most regions of the country.

Finally, the study concluded that the most accurate picture of the provision of social infrastructure is presented by transport accessibility to the centres which offer relevant facilities. The assumption was that since basic-level facilities are evenly distributed across space (primary schools, health care units, cultural centres), the access to the services is better measured by the accessibility of higher-level facilities (secondary schools, institutions of higher education, specialist outpatient clinics, hospitals, cinemas and theatres) located in the nearest county and regional (or voivodeship) centres. Moreover, the sewerage system's availability to the population, which was positively evaluated in the first variant, was left as the third variable.

The study employed the time accessibility indicator based on the speed model of the Institute of Geography and Spatial Organisation Polish Academy of Science (Komornicki *et al.* 2010). In the case of access to county centres, a sharp boundary condition of 15 minutes was adopted. The aim was to delineate only the areas of very good transport accessibility to local service facilities.

To summarise, services of general interest are a territorial key characterised by considerable difficulties in the process of correct quantification. Many studies propose a very wide range of indicators. The most promising indicators in Polish conditions are those presented in Table 5.4.

Table 5.4 Territorial key – services of general interest – potential indicators

Linking issues	Indicators	Notes
Access to services of general interest	Density (level of provision) of certain facilities for particular types of services in administrative units (e.g. number of facilities per capita)	The indicator may fail to show the required territorial variability due to the universality of some public services
Services of general interest in sparsely populated and depopulating areas	Time accessibility to certain facilities (universities, hospitals) or time accessibility to centres of a particular category	The indicator meets expectations as regards facilities of a higher category; in other cases, a better option is presented by an inverted indicator which shows the choice of facilities available at a certain time to a resident of a unit
	Potential accessibility to medical doctors	The indicator is characterised by a high spatial variability, it efficiently reflects the available choice of medical services and includes a component of quality (specialist personnel)
Education infrastructure	Number of particular education facilities during a certain access time	There is an alternative, dynamic version which shows the development of education facilities. Its application must be carried out with caution, and demographic factors must be taken into account (the number of facilities may decrease without lowering quality in the conditions of depopulation)

Source: own elaboration

The following indicators were quantified for the purposes of the study:

- synthetic indicator for accessibility to higher-level services (time accessibility to county capitals) Figures 5.6 and 5.7;
- potential accessibility to a particular group of service providers (e.g. medical doctors) Figures 5.8 and 5.9;
- percentage of population connected to the sewage system Figures 5.10 and 5.11

For the purpose of illustrating the access of each county's citizens to the centres of a particular administrative level, average travel times (in minutes) to the nearest sub-regional town⁵⁶ – were determined – from the central point of a county to the centre of a subregional town.

⁵⁶ As subregional centres, the following were accepted: 49 towns with the former status of voivodeship (before 1999) as well as towns with the status of a county within the areas of conurbation (Upper Silesia and Tricity: Gdańsk-Gdynia-Sopot). Out of towns with the county status Świnoujście, Grudziądz, Jastrzębie, Wodzisław and Rybnik were not taken into consideration.

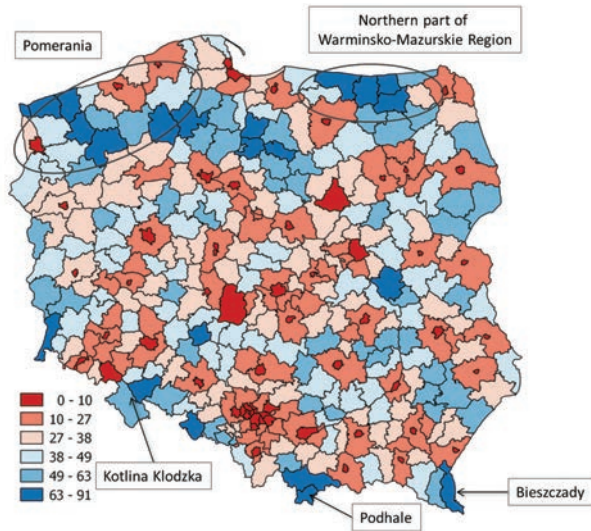


Figure 5.6 The average time of commuting to the nearest subregional town measured in minutes for 2005

Source: own elaboration on the basis of data prepared by Marcin Stepniak (Ph.D.) of Institute of Geography and Spatial Organization, Polish Academy of Sciences

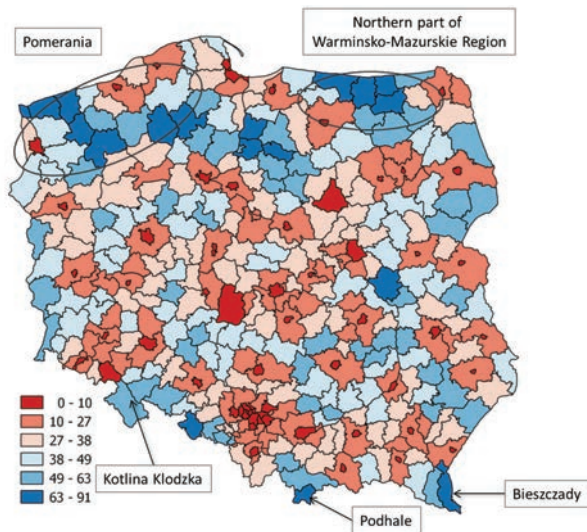


Figure 5.7 The average time of commuting to the nearest subregional towns measured in minutes for 2010

Source: own elaboration on the basis of data prepared by Marcin Stepniak (Ph.D.) of Institute of Geography and Spatial Organisation, Polish Academy of Science

Spatial distributions of accessibility level to services of general interest are associated with the density of settlement patterns. A superior situation might be encountered in the centre and south of Poland, while a markedly inferior one might be encountered in the north (Pomerania, with the exception of the coastal strip, the northern part of the Warminsko-Mazurskie Province). Among the regions clearly removed from the services at a subregional level, one can also enumerate: Bieszczady, Podhale, Kotlina Kłodzka as well as the southern part of the Polish-German borderland. Single counties representing a lower value of the indicator, however, are also situated further inland — creating a system of mosaic character. The distribution presented above precisely illustrates enclaves of low territorial potential. Development policy should concentrate here on enhancement of growth of subregional centres mainly county capitals.

Differences in spatial distribution of accessibility to subregional centres as between the years of 2005 and 2010 are not very significant. The effects of the infrastructure development are visible in isolated counties which were connected by new motorways or dual carriageways with the nearest large or medium-sized towns or cities.

Figures 5.8 and 5.9 below present an evaluation of *potential* accessibility to medical doctors in 2005 and 2010. It is, to a certain degree, a qualitative measure. While healthcare units (understood as an example of basic services of general interest) are distributed relatively evenly in Poland, basic service providers — in other words, doctors — remain significantly more concentrated in space.

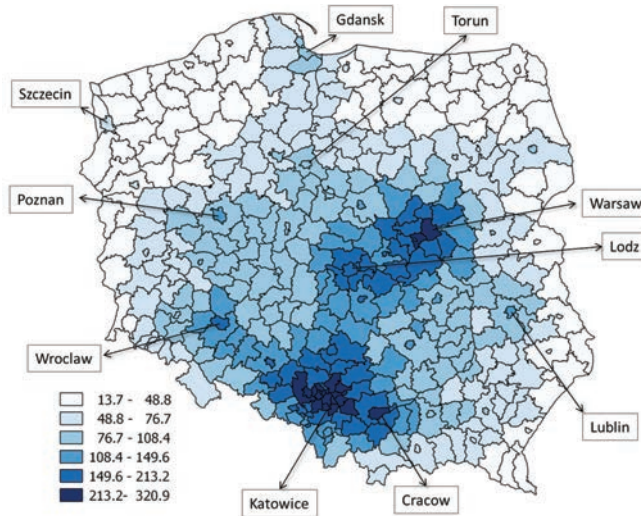


Figure 5.8 Potential accessibility to doctors in 2005 (average value for Poland = 100)

Source: own elaboration on the basis of data prepared by Marcin Stępiak (Ph.D.) of Institute of Geography and Spatial Organisation Polish Academy of Science

Note: average value for Poland between 2005 and 2010 = 100

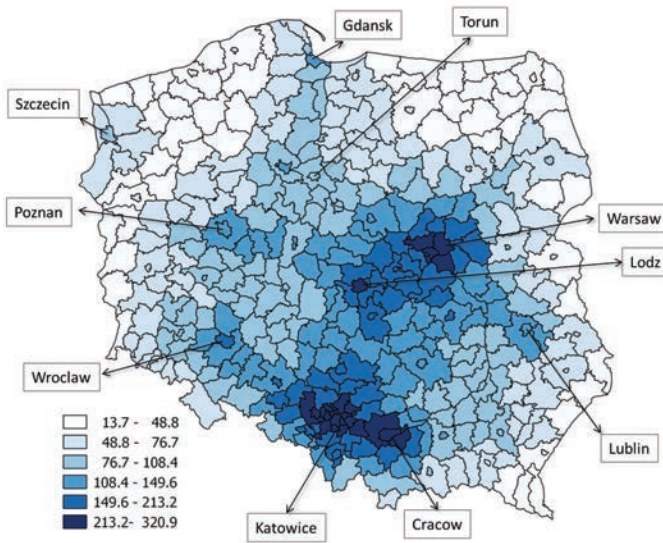


Figure 5.9 Potential accessibility to doctors in 2005 (average value for Poland = 100)

Source: own elaboration on the basis of data prepared by Marcin Stępiak (Ph.D.) of Institute of Geography and Spatial Organisation Polish Academy of Science

Note: average value for Poland between 2005 and 2010 = 100.

Interpreting the maps presented above, one might arrive at the conclusion that spatial diversification of accessibility to medical doctors is very similar to potential accessibility to population: the highest graded areas are Upper Silesia around Katowice city) and the areas around Cracow and Warsaw. However, in this case, it is evident that the situation is far superior in the areas of big city centres in which there are respectable medical universities, such as Łódź, Wrocław, Poznań, Gdańsk, Toruń, Białystok, Szczecin, and Lublin. This is caused by a very significant concentration of specialist healthcare establishments in those centres. Moreover, in the major cities there is also an additional concentration of private healthcare units. The applied indicator might be interpreted as the degree of possibilities to take advantage of various forms of healthcare. It appears only natural that it is highest in the major centres – with the best-developed accessibility in terms of the transportation network. Peripheral zones, despite relatively satisfactory indicators of traditionally understood the distribution of healthcare establishments, in this respect turn out to be deficient.

Those transformations in the period between 2005 and 2010 are more visible than in the case of the accessibility to services in subregional centres (the previous indicator). It results from the fact that doctors are concentrated to a larger degree in the largest centres — and those were more likely to benefit from the construction of higher grade roads. The transformations mentioned above illustrate an increasing polarisation of the indicator. One should not exclude the possibility that it is a consequence of the developing concentration of medical personnel in the largest centres.

The results obtained suggest that the increase in the quality of services of general interest (and simultaneously, potential possibilities of the intervention of a territorial

scharacter) may also take the form of developing transport networks as well as a potential policy of regionalising medical personnel, in addition to the traditional expansion of the healthcare unit network.

Another indicator of accessibility to services of general interest is the access to sanitation as measured by the percentage of population serviced by sewage networks. The value of this variable in 2003 and 2011 is presented in the following Figures 5.10 and 5.11.

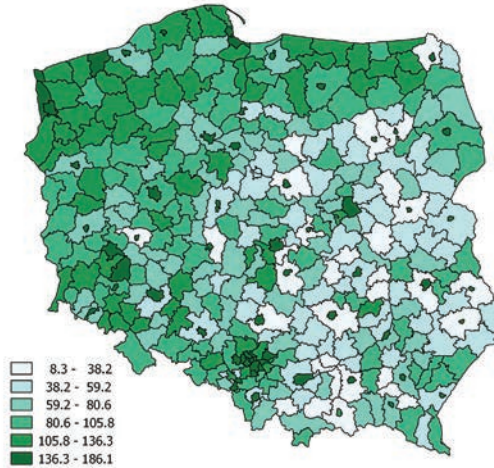


Figure 5.10 Percentage of population serviced by sewage networks in 2003 (average for Poland = 100)

Source: own elaboration on the basis of data from the LDB (Local Data Bank) base created by GUS (Central Statistical Office)

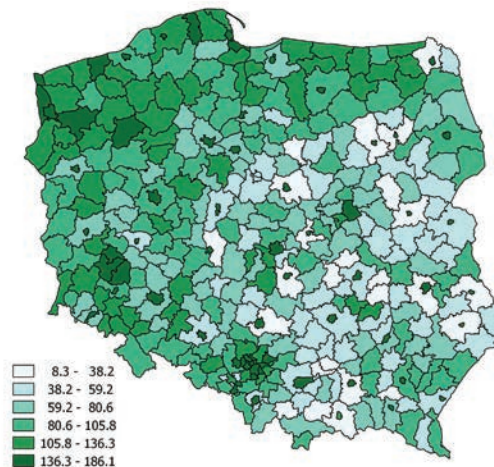


Figure 5.11 Percentage of population serviced by sewage networks in 2011 (average for Poland = 100)

Source: own elaboration on the basis of data from the LDB (Local Data Bank) base created by GUS

It is immediately evident that in sub-regional centres (in Poland — towns with “county rights”), a considerably larger portion of population has access to sanitation when compared with citizens of rural counties. In addition, the situation in the north-west of Poland is markedly superior in comparison with the centre and the south-east. The comparison of both temporal distributions indicates a slow development of sewage networks across the area of the whole country. The scale of this development is slightly larger in the south-east, which might be seen as a gradual evening out of territorial differences. The indicator of providing the population with infrastructural networks is easily subject to external intervention. This is especially evident in more densely populated regions. On the other hand, in less densely populated areas — as well as in zones of chaotic suburbanisation, the development of sewage networks constantly encounters the barriers of cost-effectiveness.

5.5 Territorial Key – Territorial capacities/endowments/assets

The use of the key of territorial assets is closely connected to the concept of endogenous development. Taking advantage of the region’s own resources lies at the very heart of defining territorial cohesion. The key of local resources may, to a certain degree, be associated with the notion of territorial capital as defined in OECD (2001). Territorial assets were placed rather pragmatically in this very broad category, the influence of which upon the processes of growth has a character that has been extensively researched.

Due to the nature of the key, the applied indicators need to have a relative character, comparing the role and amounts of local resources to the role and amounts of wider resources. In the Polish Presidency Background Report (Böhme *et al.* 2011), a series of indicators was suggested which illustrate local resources of territorial units, including:

- production of renewable energy,
- manufacturing of local products,
- diversification of rural areas,
- indicators of social status (electoral turnout, the activity of non-governmental organisations, the synthetic indicator)
- trails connected with the promotion of cultural heritage
- the number of jobs in sectors associated with the environment (*green jobs*)

In Table 5.5, these indicators are critically reviewed, especially owing to their ambiguity and significant lack of access to credible statistical data. A potential synthetic approach to the problem might concern the financial indicators illustrating the percentage of taxes which are locally relevant (Personal Income Tax – PIT, Corporate Income Tax – CIT, local taxes) in revenues for the budgets of local governments — as well as showing the scale of financial transfers flowing to local government from higher levels of government. However, financial indicators present the current state of using local resources and not their actual scale.

Table 5.5 Territorial key: territorial capacities/endowments/assets

Linking issues	Indicators	Notes
Territorial factors (specific features of local communities)	Electoral turnout	It seems more apt to employ the indicator connecting different types of elections, i.e., parliamentary and for local governments
	The number and activity of non-governmental organisations	Limited quality of overall data
Local systems and innovation-related networks	The number of inter-municipal associations (for instance, EU-related projects joined; unions of producers)	Data hardly available, obtainable mainly from EU projects
Managing cultural and natural assets	The surface of a unit covered by environmental protection (traditional system and NATURA 2000)	It is possible to apply the synthetic indicator allowing for the classification of areas protected due to the level of protection (cf. Degórski 2012)
	Number of facilities listed in the inventory of monuments	The inventories include facilities of very diverse significance and are difficult to employ in inter-regional comparisons – all the more so in the case of international ones – cf. ESPON ATTREG Final Report (ESPO 2013)
Renewable energy and local energy production	The percentage of renewable energy in local consumption	In Polish conditions, these data are difficult to obtain
Territorial resources for energy production	Environmental indicators illustrating the wind force, number of days with full sun exposure, energetic resources of surface water	Data are generally an outcome of studies concerning a specific issue – cf. studies carried out for the National Spatial Development Concept 2030 (Jasiulewicz 2008, Gasidło and Popezyk 2008); specifications of areas with potential possibilities to rely on their own energy resources more often than not have an individualistic character.
Local developmental milieu	Clustering degree. Indicators of industrial production and employment in industry	For the purpose of identification and evaluation of clusters, one might use indexes from the research by Brodzicki <i>et al.</i> (2012c); data concerning employment in industry are available on the basis of GUS-provided information
Urban regeneration	Resources for regeneration in the structure of local budgets	The qualitative element is essential – which illustrates the nature of regeneration.

Source: own elaboration

Environmental resources encompass both protected and open areas (which might also be treated in the categories of *ecosystem services*), as well as the assets of natural resources, space and production conditions for agriculture, forestry or fisheries. One such attempt at finding indicators for the so-called *green economy* was undertaken, in Hungary and employed such measures as the distribution of soils of the highest categories;

accessibility of groundwater; and revenue from small farms (Duray 2012). In Polish conditions, not all of the measures mentioned above could be used in the same way. One might wonder whether a large number of farms (land fragmentation) in Poland (especially in its south-eastern part) is not more of a problem than an asset with respect to the environment.

In a particularly clear fashion, the Polish Presidency Background Report (Böhme *et al.* 2011) emphasises the significance of regions' energy resources, especially including those belonging to RES. Data concerning this subject are available regarding specific kinds of renewable energy (cf. Gasidło and Popczyk 2008). Most frequently, it concerns climate-related issues (e.g., the number of windy and sunny days as the basis for the development of solar or wind power industries) or hydrographic specifications (hydro-power). Potential synthetic indicators and regionalisation often have a locally-specific character which prevents them from being employed as universal measures. The cultural heritage assets are equally difficult to quantify. The most frequently applied measure is the number of objects listed in specific registers. In reality, however, this kind of data is also locational-specific.

Indicators of human capital are relatively easy to measure. In spatial arrangements, data are available concerning numbers and percentages of the population possessing a specific standard of education (or failing to possess any diploma), as well as information regarding the results of lower-secondary school tests. One limitation is the lack of data continuity (since the data come from the National Population and Housing Census) and complications caused by migration (e.g., selective emigration of a better-educated portion of the population). Among widely applied indicators of social capital are electoral turnout, the number of non-governmental organisations, and participation in various associations. Out of those mentioned above, the most universal appears to be the turnout rate in local government elections.

Resources related to geographical location might be evaluated to a greater extent using a zero-one measure (i.e., the resource is either present or absent). According to various studies, examples of such resources include the location in areas of a tourist attraction (the coast, lake county, mountains); borderland (only in the conditions of borders with a specified level of permeability); transport hubs and corridors. What appears to present more problems is the application of indicators related to regeneration. The only available data are limited to cost-related indicators which are easier in quantification, mostly encompassing investments supported by the EU resources (www.mapafunduszy.gov.pl). In such a situation, it may turn out to be more appropriate to apply the general tendency to undertake local investments — measured, for example, by the percentage of investments in the expenditures of local governments' budgets.

Clusters are an essential determinant of the processes of economic development at the regional level (Ciołek and Brodzicki 2012a; 2012b; Brodzicki 2012b; 2014b). Other determinants include the inflow of direct investments (Brodzicki 2012c); the export base of respective regions (Brodzicki 2013; Brodzicki 2014a); and the diversification of the productivity level of Polish local governments. Clustering indicators may serve to quantify both the key of functional areas and local resources. In the latter case, they indicate the existence of a local developmental milieu and in the former, the benefits of agglomeration. For identifying and evaluating clusters in Polish conditions, Brodzicki's and Kuczevska's studies (2012) prove useful in that they identify various aspects of the potential influence of clusters on local economies. The accepted approach is similar to the one applied by Rodriguez-Pose and Comptour (2010) for the analysis of the influence of

clustering processes on the economy of regions at the NUTS2 level of European Union states. The obtained indicators have a simple interpretation and are spatially diversified.

For our present research, it was possible to quantify the following indicators:

- a) the synthetic indicator of coverage by protected areas (Figure 5.12)
- b) the rate of electoral turnout in self-government and parliamentary elections (Figures 5.13 and 5.14);
- c) percentage of the population with tertiary education (Figures 5.15 and 5.16);
- d) coefficients of clustering (Figures 5.17- 5.19) and industrial production (Figures 5.20-5.21).

For the approximation of physical and geographical resources, the quality and significance of natural environment were used, as represented by the indicator of coverage by protected areas. For all 379 Polish counties, a measure was established by applying the following formula (Degórski 2012)⁵⁷:

(5.1)

$$W_i = (Pa_i * 4 + Pb_i * 3 + Pc_i * 2 + Pd_i) / Ppow_i \quad i = 1, \dots, 379$$

where the respective symbols have the following definitions:

Pa – area of Natura 2000 regions (habitat-related Special Area of Conservation)⁵⁸ – weight 4

Pb – area of national parks and nature reserves – weight 3

Pc – area of Natura 2000 regions (bird-related Special Protection Areas) and landscape parks – weight 2

Pd – area of the protected landscape, documentation sites, ecological grounds, natural-landscape complexes – weight 1

Ppow – total area of a given county.

The construction of the indicator signifies that consideration was given to different degrees of significance of respective forms of protecting natural values of the region. Currently, in Poland the network of land areas of Natura 2000 encompasses approximately 20 per cent of the country's area. It includes 849 habitat areas and 145 bird areas. The application of the above measure is simultaneously connected with a considerable management of natural resources, in this case by their strict protection. In Figure 5.12 we present the value of the measure of coverage by protected areas in 2011.

In the process of interpreting the above map, what one might find surprising is the low estimates of values relating to areas situated on the coast of the Baltic Sea. This can be understood by the characteristics of the selected method, in which the highest significance is assigned to the areas of Natura 2000 (habitat-related), and a considerably lower one to

⁵⁷ In the original formula by M. Degórski, the areas of biosphere reserves and ecological corridors were also considered. However, due to the lack of generally available data concerning those forms of protection, they were not included in the value of the measure at the level of counties.

⁵⁸ The data concerning the area of Natura 2000 regions in counties comes from General Directorate for Environmental Protection.

the areas of Natura 2000 — bird protection. Another factor here is that the environmental values of the coast and sea are not directly taken into consideration. Regardless of those reservations, it needs to be emphasised that the largest resources connected with the natural environment are concentrated in peripheral zones, frequently along the country's borders. This suggests their spatial complementarity in relation to other discussed indicators of territorial capital. In addition, farther inland one can find enclaves of the environmental capital of a higher category, for example in the neighbourhood of national parks situated near urban agglomerations. The development of natural resources by its very nature is not subject to intervention. It can, however, be protected and additionally used for stimulating other non-interfering economic functions (for instance, tourism) which may be subject to the policy of territorial cohesion.

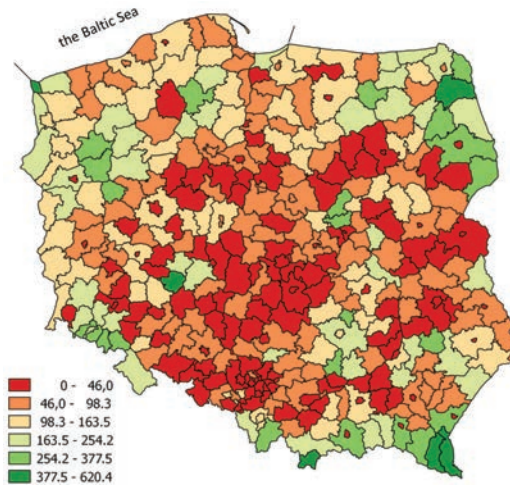


Figure 5.12 The synthetic indicator of coverage by protected areas according to Degórski

Source: own elaboration on the basis of data provided by GDOŚ (The General Directorate for Environmental Protection) and BDL GUS (Local Data Bank of the Central Statistical Office)

Another component of the territorial capital is regional social capital. The quantification of social capital – and, above all, the selection of proper variables — proves rather difficult. The most frequently applied measure for comparative studies is the electoral turnout. In accordance with the suggestion of Kowalski of Institute of Geography and Spatial Organisation, Polish Academy of Science, the synthetic indicator was established based on the electoral turnout in a given county which takes into consideration local government elections, parliamentary elections, as well as those to the European Parliament. The value of this measure was determined for two sub-periods: 2003–2007 and 2007–2011.

For the first sub-period, three average electoral turnouts were calculated for:

- local government elections of 2002 and 2006,
- parliamentary elections of 2005 and 2007,
- European Parliament elections of 2004.

Out of these three measures, a maximum value was selected for a given county, and this value was employed for the evaluation of social capital in a particular region.

In a similar fashion, for the second subperiod average values were calculated on the basis of electoral turnout in:

- local government elections of 2006 and 2010,
- parliamentary elections of 2007 and 2011,
- European Parliament elections of 2009.

The highest value out of those average electoral turnouts in given counties reflects the level of social capital in the second subperiod.

The applied procedure allows one to take into consideration diverse forms of social activity dependent on the type of a district. People living in big cities are to a lesser degree interested in local elections than people living in smaller towns and villages. As a consequence, taking into consideration exclusively local government elections would indicate a misleadingly low level of social capital in cities. Conversely, people living in bigger cities show a considerably higher activity in parliamentary elections and, in certain cases, in European Parliament elections. Employing the highest electoral turnout out of all three types of elections allows for the evaluation of the maximum potential electoral mobilisation, that is, the potential of social activity.

Below, in Figures 5.13 and 5.14, the spatial diversification of social capital is presented for the years of 2003-2007 and 2007-2011.

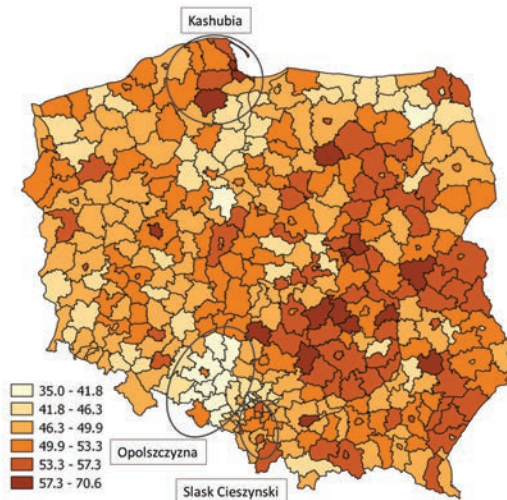


Figure 5.13 Social capital measured by the electoral turnout in the years of 2003-2007

Source: own elaboration on the basis of data provided by PKW (National Electoral Commission)

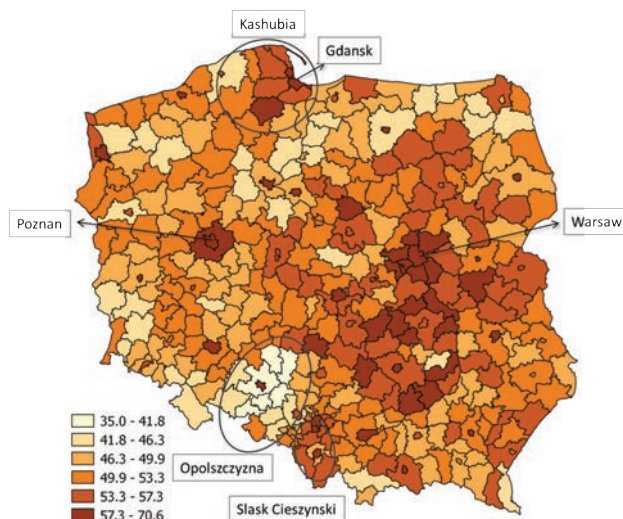


Figure 5.14 Social capital measured by the electoral turnout in the years of 2007–2011

Source: own elaboration on the basis of data provided by PKW (National Electoral Commission)

The areas which were subject to full – or nearly full – migration-related exchange of population after 1945 are characterised by a slightly lower maximum turnout.⁵⁹ A consistently high level of electoral turnout (regardless of district) is noted in big or medium-sized cities, and in rural regions such as Kashubia and Śląsk Cieszyński (South to Katowice at Polish-Czech border). The lowest values of the indicator (as in numerous other studies) were noted in Opolszczyzna. This is, however, a consequence of long-term unregistered migrations from Poland and an erroneous relation between the number of voters and an inaccurately calculated overall percentage of the population. It is worthwhile to note the rather significant differences in the measured level of social capital between certain medium-sized cities which are capitals of their regions (voivodeships) and their immediate surroundings.

While analysing distributions of electoral turnouts in both time periods considered, we notice a general improvement of the situation, especially notable in the neighbourhood of the largest cities such as Warsaw, Poznań or Gdańsk. It might be associated with the suburbanisation processes and relocation of socially active people to suburban regions of major metropolises.

Yet another component of the generally defined territorial resources of regions is human capital. For the needs of the present study, this capital is represented by the percentage of adult population with tertiary education. The data concerning this variable comes from the Population, and Housing Censuses of 2002 and 2011 and its diversification according to respective counties is presented in the following Figures of 5.15 and 5.16.

⁵⁹ In 1945 Poland as a country was shifted towards the West and the post-german territories were settled by the Polish migrants from present Belarus, Ukraine and Lithuania.

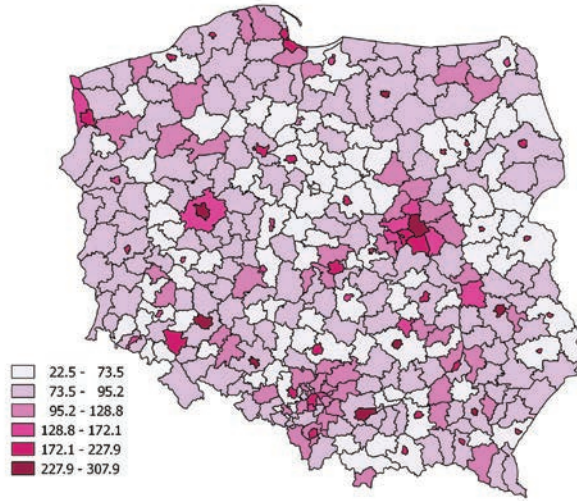


Figure 5.15 Human capital – the percentage of adult population with tertiary education in 2002 (the average for Poland =100)

Source: own elaboration on the basis of data from the Population and Housing Census in 2002

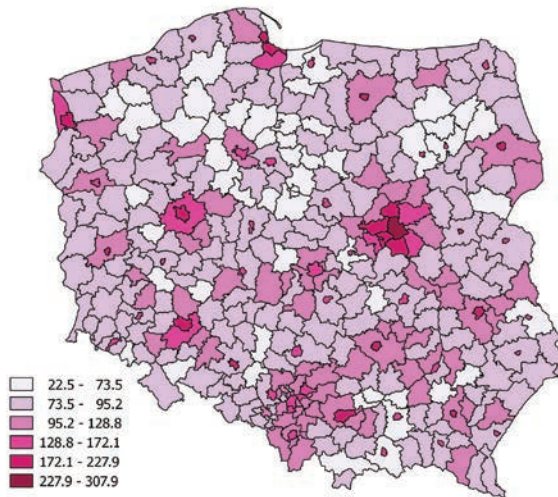


Figure 5.16 Human capital – the percentage of adult population with tertiary education in 2011 (the average for Poland =100)

Source: own elaboration on the basis of data from the Population and Housing Census in 2011

A higher percentage of people with tertiary education reside in sub-regional centres (cities with administrative “rights of a county”), both the largest and the smaller ones. In addition, a clearly visible phenomenon is the increase in the number of people with tertiary education in many counties; the number of counties representing the lowest category in this respect fell from 110 to 54. This is related to the post-1989 educational boom which led to the universality of tertiary education. Another cause is the gradual decline of the older, poorly educated generation. As a consequence, in 2012 one can observe a clear decrease in the spatial polarisation in the scope of the level of human capital, a phenomenon particularly visible in eastern and southern Poland. In current Polish conditions, it appears that the tertiary level of education gradually ceases to be an efficient measure of territorial capital. In this context, qualitative measures gain a higher significance.

For the purpose of identification and evaluation, three independent indexes of clustering were employed which reflect various aspects of the potential influence of clusters upon regional economies: the specialisation quotient (SQ); the diversity index (DIV); and the index of significance for the region’s economy (SIGMA).

The specialisation quotient (SQ) is the relation of the percentage of employment in clusters in a given region to the percentage of employment in clusters of the whole Polish economy.

$$(5.2) \quad SQ = \frac{\frac{E_{K,R}}{E_R}}{\frac{E_{K,PL}}{E_{PL}}}$$

This index indicates just how much stronger the specialisation (concentration) of employment is in clusters in a given region in comparison to the rest of the country. The specialisation quotient (SQ) has only non-negative values. SQ values exceeding 1 indicate an above average specialisation of a given region in comparison with the mean rate for the country.

The diversity index, on the other hand, reflects the existence of respective types of clusters in regions (in the basic approach, Porter differentiates 35 various groups of clustering sectors), thus reflecting a general level of cluster diversification (Porter 2003). The index accepts values from 0 to 100.

$$(5.3) \quad DIV_R = \frac{n_{K,R}}{N_K} \cdot 100$$

The index of significance (SIGMA) reflects the importance of clusters for the region’s labour market – the sum of squares of percentages of respective clusters in the labour market of the region. The sigma index can take values ranging from 0 to 10.000.

$$(5.4) \quad SIGMA = \sum_K^N \left(\frac{E_{W,K,R}}{E_R} \cdot 100 \right)^2$$

In Figures 5.17-5.19 the diversification is presented of the three specified indexes in Polish counties.

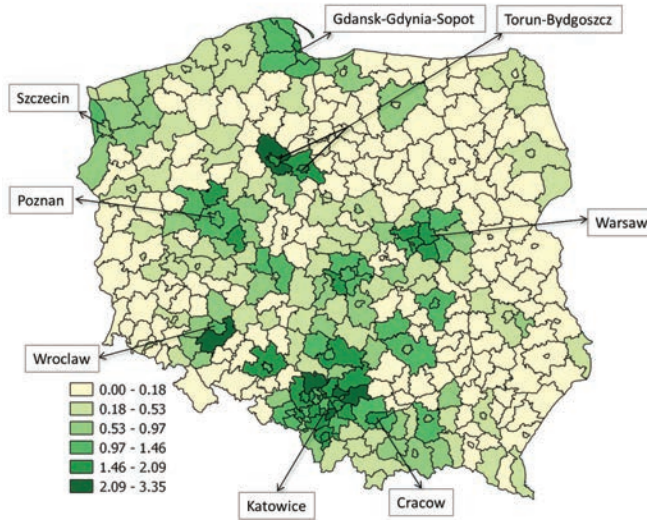


Figure 5.17 The specialisation quotient (SQ) in Polish counties in 2006

Source: own elaboration on the basis of studies by Brodzicki et al. (2012)

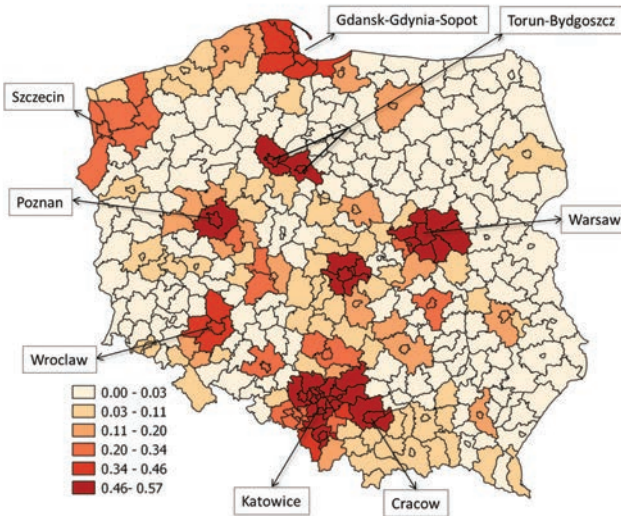


Figure 5.18 The diversity index of clusters in Polish counties in 2006

Source: own elaboration on the basis of studies by Brodzicki et al. (2012)

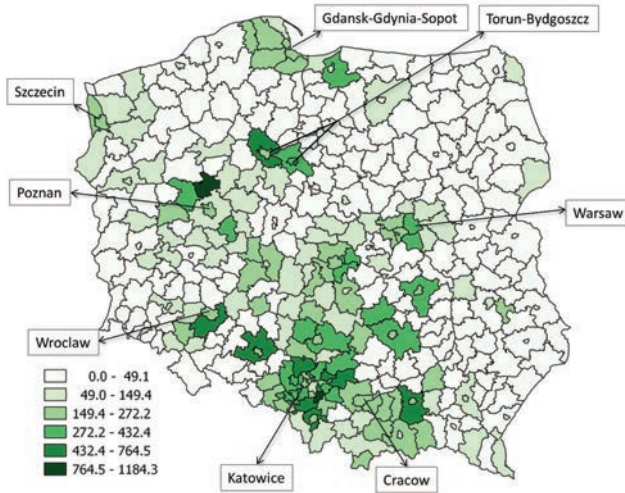


Figure 5. 19 The index of significance of clusters in Polish counties in 2006 (the average for Poland =100)

Source: own elaboration on the basis of studies by Brodzicki et al (2012)

The spatial distribution of the three above-mentioned indexes of clustering differs insignificantly as they present different aspects of a common phenomenon. Of decisive importance appear to be clusters located within the areas of metropolitan regions. Clusters reflect complex functional, vertical and horizontal connections among economic subjects and other regional institutions as well as the spatially limited spreading of knowledge (external effects of the MAR⁶⁰ type) which naturally develop in a long-term fashion.

In the source study, in accordance with Porter's (2003) approach, 35 groups of sectors were identified in which cluster structures could be found. In the case of the majority of those systems, the counties in which clusters were present were concentrated around a relatively small number of the bigger municipal areas. First of all, the existence of metropolitan clusters was identified that were based on the exceptional resources of those centres, both of their cores and complementing areas. Two-thirds of those were classified as ones at a high technological level and two thirds as systems at a medium-high technological level. They were mostly knowledge-intensive services. Around smaller cities, just as in the selected traditionally industrial cities, concentrated subjects classified as systems at medium-high and low levels of technology, were mostly of an industrial character. This might indicate a developing trend for the functional and non sector-based specialisations of Polish territory. Enterprises classified as low technological and/or labour-intensive dominated in the structure of a considerable number of counties situated far from larger municipal centres: mostly in the area of rural counties. They mostly represented the sector of agriculture and food economy as well as construction more evenly distributed in Poland, with a high level of product specialisation impossible to detect by using aggregated data (for instance, tomato production, etc.). The resources which determine the competitive superiority of enterprises classified as the discussed systems are relatively dispersed which leads to the situation that their spatial concentration is low. The above conditions have an obvious impact upon the spatial distribution of clustering indexes.

⁶⁰ MAR stands for Marshall-Arrow-Romer spillover of knowledge and ideas limited to the single industry.

An alternative for clustering indicators is the percentage related to employment rate in industry compared to the general employment rate in a given district. In Figures 5.20 and 5.21, the values of this measure are presented for 2005 and 2010.

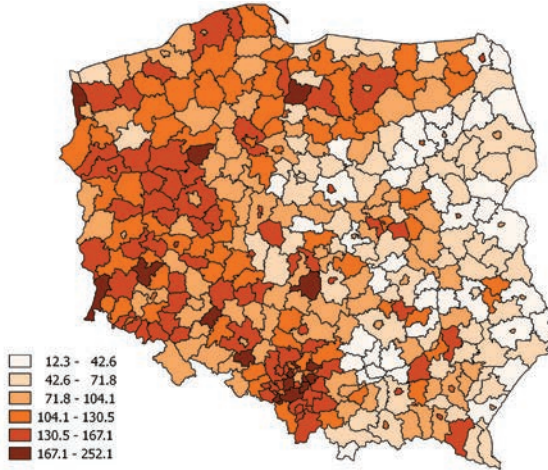


Figure 5.20 The percentage of people employed in industry in 2005 (the average for Poland =100)

Source: own elaboration on the basis of the data provided by BDL GUS

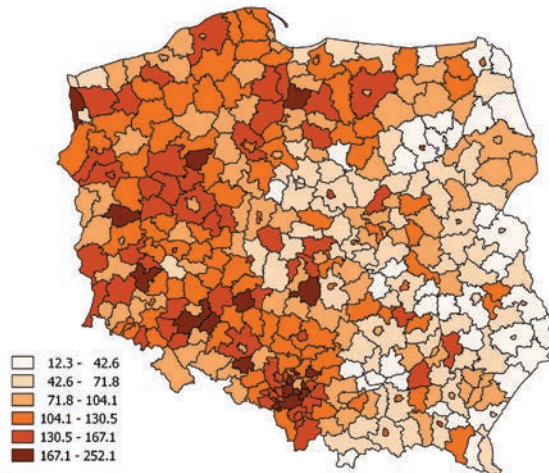


Figure 5.21 The percentage of people employed in industry in 2010 (the average for Poland =100)

Source: own elaboration on the basis of the data provided by BDL GUS

The percentage of employment in industry is considerably higher in counties of western Poland and visibly lower in those of eastern Poland. It also turns out that in the period of 2005-2010 there were no significant changes of this measure's diversification in counties.

5.6 Territorial Key – City Networks

The Christaller-devised classical system of links between a large central city and its surrounding areas gradually loses its significance as a determinant of diversification within socio-economic space (Komornicki *et al.* 2013). It is currently being replaced by the arrangement of a metropolitan system, encompassing a given country, continent, and even the whole world. Metropolitan agglomeration systems create a dynamic synergy of creative growth based on the rule of reciprocity, knowledge exchange and spontaneous creativity (Domański 2005). The condition behind the creation of benefits of such a system is connecting the centres by a modern transport and telecommunication network. On the other hand, the development of infrastructure frequently appears in response to demand in the form of economic, social or political interactions. The mutual nature of a metropolis might be based upon competition (on a global or state-limited market), correlations (the classical hierarchical system) or cooperation (network economy; Komornicki *et al.* 2013; Zaucha 2011). In practice, in the case of these types of interaction, another type of correlation might appear dominant. Castells (1998) formulated the theory of the space of flows. According to him, modern society is organised around various forms of flows: capital, information, technology, concepts, sounds and symbols. Those flows have become a process shaping the economy, policies and, above others, space. The spatial structure is defined not so much by places, but, predominantly, by the network of mutual links.

In the process of searching for indicators for the key of city networks, two basic approaches are possible:

- indicators illustrating the position and role of respective centres;
- indicators presenting relations between pairs of centres (collected according to the matrix depiction).

Both types of measures might be useful in the process of territorialisation of policies and, simultaneously, of defining territorial cohesion. In the first case, it is possible to classify cities by their position in relation to other centres and the policy aimed to strengthen their networking connections. In the second situation, the relations themselves become the subject of those policies which, for instance, might be an indication for territorially-oriented transportation policy (relation between the strength of socio-economic connections and the possibilities of mutual connections of transportation or telecommunications infrastructure).

Research concerning the connections between the largest Polish cities was conducted in the years of 2007-2010 in Institute of Geography and Spatial Organisation Polish Academy of Science (cf. Komornicki *et al.* 2013; Komornicki and Siłka 2011). The following measures were applied in it:

- demographic interdependencies (migration-related as well as relating to the percentage of concluded marriages),
- economic interdependencies (ownership-related and relating to branch office localisation),
- transportation-related interdependencies (infrastructure development and daily accessibility),

- telecommunications interdependencies (Internet),
- science-oriented interdependencies (project implementation, reviews of doctoral dissertations),
- political interdependencies (partnership agreements, memberships in organisations).

In the case of demographic measures, it is necessary to apply matrix data which are collected by GUS, but not officially published. In addition, in order to obtain a complete picture of the situation, it is necessary to gather data from the period of at least several years as single time periods are liable to be subject to distortion. In Polish conditions, the system of demographic connections is characterised by a surprisingly high degree of concentration along directions leading to the capital city.

In the case of economic connections, data might be found in commercial databases. The quality of those sources is frequently questioned as they do not take into consideration certain subjects that are often of considerable significance. The measure of transportation-related connections in inter-metropolitan relations can be the duration of transit, the speed of transit or indicators of daily accessibility, taking into consideration the organisational element in public transportation. Alternatively, it is also possible to apply zero-one measures illustrating whether a given city's data is connected to a specified means of transportation on an appropriate technical and organisational level (for example, if there is a motorway, railway of a speed limit exceeding 160 kilometres per hour or a direct airline between them). Information concerning internet connections is not entirely complete, but owing to the traffic level in the telecommunications network, it is possible to a certain extent to consider them as representative. Data concerning science-oriented and political connections come from appropriate databases (including OPI) and are generally relatively easy to obtain.

Within the same project, certain aspects of international relations (foreign trade and inward tourism) were analysed. In this particular case, the data were acquired from the Ministry of Finance or GUS and are also easily accessible. In both cases, however, it is not possible to specify the strength of connections with other cities, but only with countries (the direction of transit or nationality of foreigners occupying accommodation facilities).

The results of the project were used in typologies proposed in the Polish Presidency Background Report (Böhme *et al.* 2011). Studies indicated a clear division of the analysed system of cities into four groups (classes) differing in the intensity, structure and directions of inter-metropolitan interactions (internal as well as those with the surrounding areas). They are (Komornicki *et al.* 2013):

- Warsaw – strong connections with all domestic centres; intensive international connections, including those with certain closest metropolises; a very considerable concentration of unidirectional (capital city-bound) economic and migration-related connections; a considerable infrastructural barrier for the development of connections.
- Cracow, Poznań, Wrocław, Tri-city – metropolises characterised by slightly stronger links with other centres (that is: apart from Warsaw); increasing significance of international relations, although mostly directed at distant centres.

- Łódź and the Upper Silesian Conurbation – metropolises of a diverse character of connections; manifesting their presence in certain types of relations (for instance, the Upper Silesian Conurbation in relation to science-oriented connections; Łódź in the case of internet traffic) while simultaneously displaying a shortage of any other types of connections or their unidirectional orientation towards the capital metropolis (migrations); what is characteristic is that they are metropolises with a relatively efficient – and improving – transportation situation.
- Białystok, Lublin, Szczecin – peripheral metropolises with connections oriented exclusively towards the capital city (in the case of Szczecin, also towards Poznań); active in the area of borderland relations with single metropolises of the surrounding territories.

Table 5.6 Territorial key of the city network – potential indicators

Linking issues	Indicators	Notes
Interactions between metropolises in the EU scale	The size and structure of export from metropolises	There is insufficient information illustrating relations with specific foreign cities (and not countries)
	The number of tourists occupying accommodation facilities	There is insufficient information illustrating relations with specific foreign cities (and not countries)
	The strength of connections between private capital enterprises within international system	Relevant databases are not complete
	Partnership agreements between cities within international system	The evaluation of those agreements should also have a qualitative character
Interactions between major domestic growth poles	Demographic relations (migrations, marriages) in the matrix system	Data are available in GUS, but not published (access is paid)
	Economic relations in the matrix system	Relevant databases are not complete
	Telecommunication connections between centres (internet)	Only data on specified sample is available
	Science-oriented connections between academic centres (project implementation, reviews of doctoral dissertations)	Data is accessible after its ordering in relevant institutions (OPI)
	Sold industrial production per capita as a measure of "national export".	Data available except a group of units covered by statistical confidentiality
Territorial factors (specifics of local environments)	Possessing metropolitan functions, percentage of people employed in Research&Development sector, number of students in relation to 1000 citizens	Data should be aggregated for metropolitan areas or functional urban areas (FUA's) and not for cities within administrative limits
Accessibility within cities and between them	Daily accessibility between cities in public transportation	Data is available on the basis of time accessibility indicators as well as timetables
	The percentage of population within isochrone of 60 minutes (labour market) of commuting by means of public transportation to the centre of metropolis	Road transportation indicator after modernisation shall be available in 2015.

Source: own elaboration

In the Polish Presidency Background Report, potential indicators were specified mostly as relational measures, with the emphasis on cooperation in the fields of research and development as well as in international systems. Linking issues (Table 5.6) corresponding to this key also have a reference of this kind. A measure illustrating the situation of the centre itself is the so-called specific situation of local environments (difficult to quantify in the context of network systems) and metropolitan functions related to it.

To conclude, it appears easier – technically speaking – to use indicators illustrating the position of centres within their network (completed by their selected metropolitan functions) than to base any conclusions upon relational data (despite the fact that this type of data illustrates a spatial reality in a superior fashion).

For the purposes of this study, it was possible to quantify the following indicators:

- The number of foreigners occupying accommodation facilities in relation to 1000 citizens – Figures 5.22 and 5.23;
- The number of students in relation to 1000 citizens in 2012 (the average for Poland =100), Figure 5.24;
- Sold industrial production per capita in the years of 2007-2011, Figures 5.25 and 5.26;
- The relation between export and sold industrial production, Figures 5.27 and 5.28.

In Figures 5.22-5.23, the spatial diversification of the number of foreigners occupying accommodation facilities in the years 2005-2007 and 2008-2011 was presented ⁶¹.

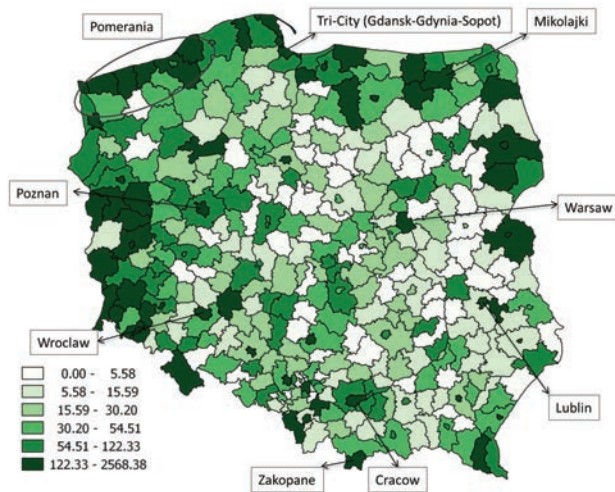


Figure 5.22 The number of foreigners occupying accommodation facilities in relation to 1000 citizens – average for the years of 2003-2007 (the average for Poland =100)

Source: own elaboration on the basis of data provided by BDL GUS

⁶¹ Owing to a significant range of values of the presented variable, counties were classified within six equally-numbered classes, that is, a quantile division was applied – unlike in the remaining cases where a Jenks optimization method (Jenks natural breaks classification method,) was used.

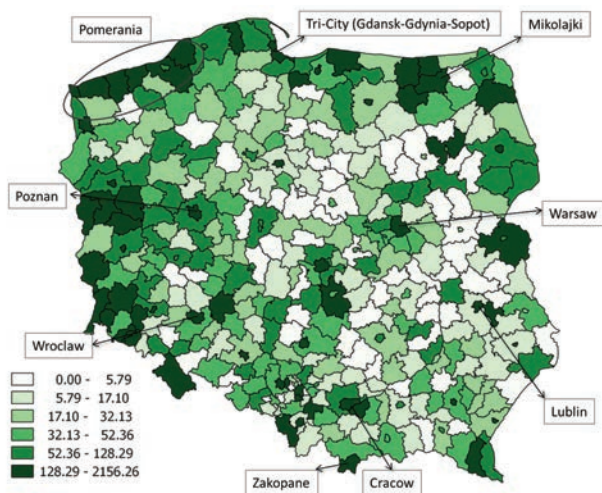


Figure 5.23 The number of foreigners occupying accommodation facilities in relation to 1000 citizens – average for the years of 2007-2011 (average for Poland =100)

Source: own elaboration on the basis of data provided by BDL GUS

The distribution of foreigners occupying accommodation facilities reflects the way the settlement network — as well as the tourist attraction value — is organised. The organisation of transportation network is also of a certain relevance. Foreign tourists are concentrated mostly in major cities — especially Warsaw (business-related journeys) and Cracow (itinerant tourism); in the second order, they choose Wrocław, Tri-city, Poznań, and Lublin. In addition, among regions attracting a large concentration of foreigners occupying accommodation facilities are areas of a high tourist attractiveness, especially in West Pomerania (Kołobrzeg) and in the Sudety mountains. In other tourist regions, the percentage of foreign tourists is significantly lower or at least concentrated in single centres (Zakopane, Mikołajki). The influence of the transportation network is reflected in the distribution of overnight stays of people travelling across Poland between Eastern and Western Europe. The concentration of such overnight stays can be found mostly in the neighbourhood of the German border. A better transportation accessibility — from Germany — of the specified tourist regions (Pomerania, the Sudety mountains) is also of a certain significance (in relation to other attractive areas).

Differences in distributions of foreigners occupying accommodation facilities between the two periods analysed are not significant. In the context of the territorial key of "city networks", they mostly concern an increase in the intensity of tourist connections generated by large cities (other than Warsaw and Cracow). Any potential intervention in the field of developing network connections should predominantly concern bigger centres.

Another indicator within the key of city networking is the number of students in relation to people inhabiting the area of a given territorial unit. Data concerning this category have been made available in the Polish public statistics only since 2012. As one can observe in Figure 5.24, a higher number of students is closely related to counties in which strong academic centres are situated. Extensive spheres outside major centres are also visible – inhabited by students taking advantage of local academic institutions and/or commuting to large cities. Areas of this type can be observed in the neighbourhood of Warsaw as well as in the area of Tri-city and in the south-east of Poland.

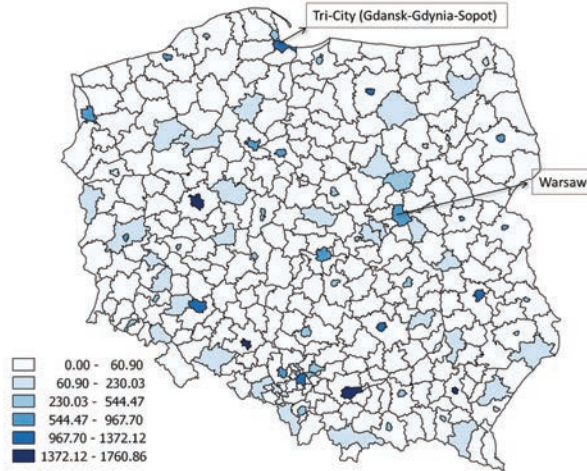


Figure 5.24 The number of students in relation to 1000 citizens in 2012 (average for Poland =100)

Source: own elaboration on the basis of data provided by BDL GUS

An indicator which is important from the point of view of creating city networks is also the value of sold production per capita. In Figures 5.25 and 5.26, the averages for two time periods are presented: 2003-2007 and 2007-2011⁶².

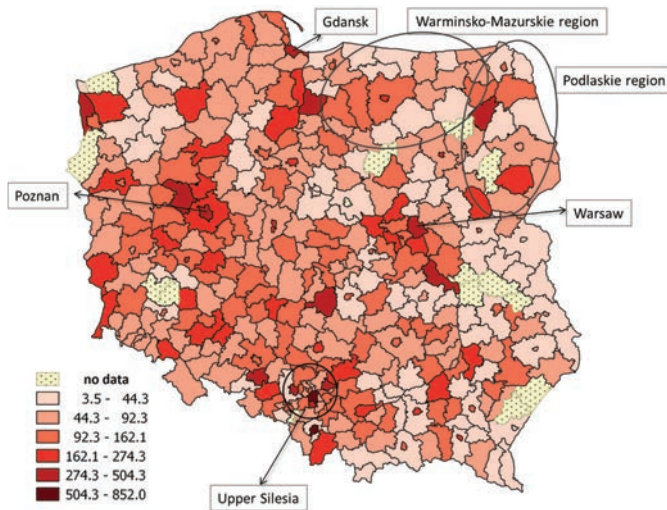


Figure 5. 25 Sold industrial production per capita in the years of 2003-2007 (average for Poland =100)

Source: own elaboration on the basis of data provided by BDL GUS

⁶² Owing to statistical confidentiality, GUS has not made available any data concerning sold production in counties in which most of this production is generated by one or two big production centres and it would be possible to approximately recreate those values for individual companies. Therefore, in certain cases there are no available data concerning sold industrial production per capita.

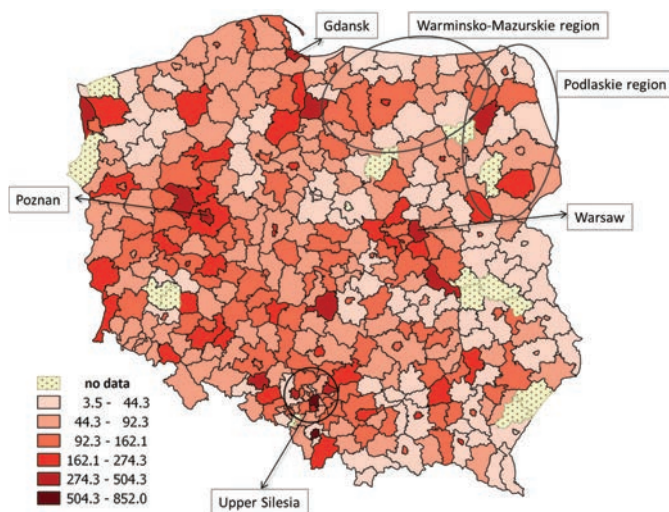


Figure 5.26 Sold industrial production per capita in the years of 2007-2011 (average for Poland =100)

Source: own elaboration on the basis of data provided by BDL GUS

The picture of both time periods (Figures 5.25 and 5.26) is relatively stable spatially. It reflects a level of industrialisation in relation to population density. Among other things, it additionally allows for identification of areas which are not traditionally perceived as industrial, while simultaneously relating to the number of citizens reflecting a significant territorial capital manifested by possibilities of production-related interactions with the environment. Certain counties of regions (voivodships) such as Warmińsko-Mazurskie and Podlaskie should be classified among such areas. On the other hand, the amount of sold production per capita of certain traditional industrial centres (including numerous cities of Upper Silesia) turns out to be relatively smaller. It could be interpreted as a less significant potential for entering into new external relations of an economic nature. The highest values of the indicator are noted in counties in which large production facilities are located – mostly in extractive, energetic and chemical sectors – or, in locations with significant investments of foreign capital as well as in large agglomerations (Warsaw, Poznań, Gdańsk). A high level of sold production per capita is also noted in counties with smaller, vibrant facilities such as dairy cooperatives. Counties of southeast Poland are those with the sold production of relatively lowest values.

The distributions obtained indicate that an increase in production potential is in certain cases possible through support for specific sectors which are strongly rooted in local resources (for instance, the dairy sector mentioned above). Taking this into consideration, industrialisation and re-industrialisation activities might be an effective tool of the territorial cohesiveness policy, also through the inclusion of less significant centres in transregional or even international networks of connections.

Another variable which appears to be crucial from the point of view of evaluating a region's ability to create economic connections is the amount of exports generated within this given region. A relation was established between the value of entire exports and the sold industrial production of a given district. The information⁶³ concerning exports at the level of counties was available for 2005 and 2009 (Figures 5.27 and 5.28).

⁶³ Owing to statistical confidentiality, in certain cases there are no statistical data available.

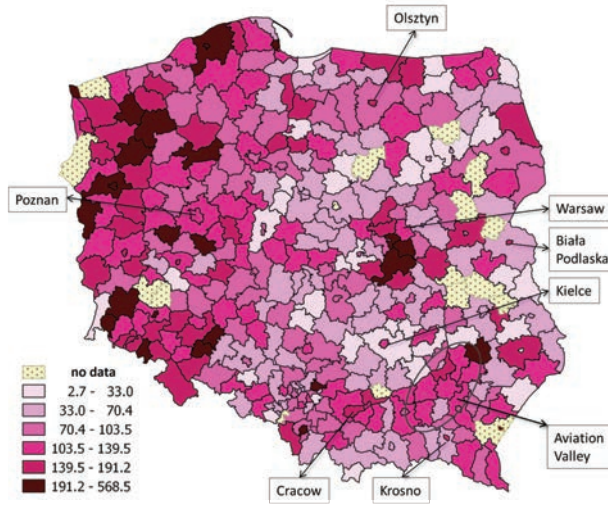


Figure 5.27 The ratio between export and sold industrial production in 2005 (average for Poland =100)

Source: own elaboration on the basis of data of DCMF prepared by the Institute of Geography and Spatial Organisation Polish Academy of Science

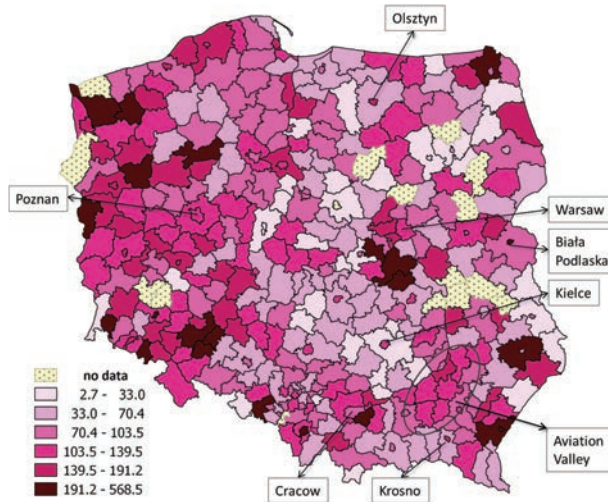


Figure 5.28 The ratio between export and sold industrial production in 2009 (average for Poland =100)

Source: own elaboration on the basis of data of DCMF prepared by the Institute of Geography and Spatial Organisation Polish Academy of Science

Transformations in the distribution of the role of export (understood as the basis for creating international connections) in the period of 2005-2009 were relatively insignificant. In spite of considerable transformations in the field of the export value itself (the first wave of economic crisis in 2008), the spatial distribution of the studied indicator remained stable. In both cases, what is noticeable is a more than proportional decrease of the role of exports on the west-east routes. The distribution is determined by the production sector and its domestic or international market orientation. The western sphere characterised by a significantly larger percentage of exports in sold production decreases in steps. On the remaining part of Poland's territory more clearly visible are "islands" of more pro-export local economies concentrated both in the neighbourhood of large centres (Warsaw, Cracow), in the so-called "Aviation Valley" of the Podkarpackie region (voivodeship) as well as in certain borderland spheres. Undoubtedly the economy of certain medium-sized cities such as Kielce, Olsztyn is pro-export and also out of smaller centres such as Biała Podlaska and Krosno (Komornicki 2012).

5.7 Territorial Key – Functional Regions

The character of the key of functional regions (or areas) differs slightly from the remaining ones proposed in the Polish Presidency Background Report (Böhme *et al.* 2011). This key illustrates predominantly a change in the approach towards the evaluation of spatial processes through breaking away from the administrative boundaries that have been used thus far. While employing such a notion it is not possible to specify a single universal set of indicators illustrating the territorial key of "functional regions". Each area represents a certain type of region (as understood by Dziewoński 1967), and simultaneously another subset of geographic space. According to such a perception, each functional region has a different set of characteristics that serve to define it. It is those very characteristics that we can illustrate by the use of indicators.

Of course, there exist other approaches towards functional regions, such as:

- overlapping units filling the socio-economic space;
- identity with the agglomeration factor in the socio-economic development.

In the former case, all units are subject to activities of different sector policies which shape the concept of their territorialisation. In the latter case, in the process of looking for indicators we need to refer to dynamics in the field of resource concentration (including material and human capital on the area of respective regions).

5.7.1 Functional regions as spatial units

In Poland, studies are being conducted on functional regions/areas understood as spatial units. To a large extent, they constitute an answer to regulations included in the new *National Spatial Development Concept 2030* (Ministry of Regional Development 2011d) which was concluded in 2011. One of the primary challenges is their appropriate delimitation. Delimitation-centred studies have a very long tradition in Polish and global socio-economic geography, encompassing the delimitation of industrial counties and functional urban areas and metropolitan areas. Today the problem concerns a wider range of issues. However, it is not always possible to choose a correct set of indicators because of availability and quality problems.

The new *National Spatial Development Concept 2030* classified over 20 different types of functional areas which, in theory, will become the subjects of policies that are territorial in nature. Their number is higher than in similar earlier documents and also higher than in the previously proposed version designed by an expert group (Korcelli *et al.* 2010).

Four basic types of such areas were delineated:

- specified in relation to the whole settlement system, delineated on the basis of the degree of urbanisation, encompassing municipal areas (centres and their functional spheres) and functional rural areas;
- specified on the basis of developmental potential owing to the appearance of the particular phenomenon within the field of spatial planning and conditions for the developmental policy in the macro-regional scale;
- specified owing to the possibility of encountering spatial conflicts connected with the manner in which advantage is taken of their natural and cultural potential;
- requiring restructuring and development of new functions while employing instruments which are appropriate for the regional policy.

In the document of the expert group (Korcelli *et al.* 2010), no final delimitation of functional areas was conducted, although in certain cases rather clear principles behind such delimitation were specified. One of relevant limiting factors is a shortage of appropriate indicators which would allow not only for the initial act of delimitation but also for the subsequent effective monitoring and evaluation of a potential intervention.

Of the Polish studies in the field, among the most advanced ones are delimitation analyses based on functional connections (Śleszyński 2013). In the Polish Presidency Background Report, functional areas were assigned five of the defined linking issues (Table 5.7). They concentrate around functional areas understood as local labour markets, accessibility of centres of medium size as well as their development. In addition, they indicate the role of compact cities as generating lower costs (including those related to environment). Such an understanding of the term of the functional area makes it a tool for abolishing the traditional division into rural and urban areas. As a consequence, the functional area is not exclusively a territorial issue, but rather an alternative way to perceive a territory. The authors of the above report included a very extensive range of exemplary indicators encompassing, among the others:

- Time accessibility by public transportation to regional centres;
- Dynamics of transformation concerning percentage of population of small and medium-sized towns (SMESTO);
- The level of control over suburbanisation (limiting it to areas along public transportation corridors);
- Commuting to work;
- Migrations between rural and urban areas;
- The level of transport-related congestion in cities.

Another area of interest identified was the need to differentiate cross-border functional areas, where the example used was the formation of secondary schools encompassing areas from two of neighbouring countries and cross-border labour markets. A portion of the proposed indicators is closely related to other previously discussed territorial keys, including the accessibility key and services of general interest as well as the key of city networking.

Table 5.7 Territorial key of functional areas (as spatial units) – potential indicators

Linking issues	Indicators	Notes
Expanding local labour markets	Commuting to work	In Poland, data concerning commuting are incomplete, but available in the matrix system for 2006 (communes; LAU2) and 2011 (National Population and Housing Census; counties; LAU1)
Increasing critical mass of centres owing to territorial cooperation	Changing the population number of centres and surrounding functional areas (FUAs)	A low quality of population-related statistics (especially those concerning migration) is a clear limitation in Poland
Accessibility of secondary growth poles and regional centres	Time accessibility of regional and subregional centres	A limitation is a proper choice of units considered as regional growth poles (especially if certain centres of lower than voivodeship level are to be those growth poles)
Communication relations with regional centres	Accessibility by public transport to regional and subregional centres	The indicator might be an absolute measure – but, simultaneously, it can also indicate a difference in the time of commuting between individual transport forms and public transport
Compact cities (sustainable cities)	The proportion of the population number in the central area and suburban zone	Interpretation of an indicator requires taking into consideration specific local conditions (for example, location in relation to elements of natural environment, protected areas, etc.)

Source: own elaboration

In such a situation, the most useful strategy appears to be not so much proposing rigid indicators (for those could differ as between types of functional areas), but rather suggesting indicators which facilitate the delimitation of such areas – without referring to the traditional administrative division. In Poland, such delimitation needs to take place at the municipal level. The most relevant among all of the indicators appear to be the relational ones of migration and commuting to work, but in Polish conditions, no such measures were available so that their interpretation could be conducted in the category of functional areas.

Therefore, it was finally assumed that for the requirements of quantifying territorial cohesion that it would be more appropriate to limit the efforts to indicators illustrating functional regions understood as synonyms of the agglomeration.

5.7.2 Functional Regions as Synonym of the Economies of Agglomeration

Specifying indicators illustrating the key of functional regions perceived in terms of the agglomeration factor (i.e., the region surrounding a specific centre which inspires its development), might be achieved through dynamic measures or the use of the methodology of spatial autocorrelation (cf. among the others Bivand 1981; Ratajczak 1980).

Measures conceived in such a fashion, however, do not correspond directly to linking issues lying at the foundations of delineating territorial keys (requiring a different layout for Table 5.8 below). The method of spatial autocorrelation may be applied in relation to measures illustrating the situation or to the simultaneously proposed dynamic indicators.

Dynamic indicators should take into consideration relatively extended periods since variability measured in the course of one year is not sufficient for an accurate evaluation of agglomeration trends. They can be partially based upon the same original data which would be applied in perceiving functional regions as spatial units.

The tendency for concentration of population and business activity requires a separate evaluation. In the former case, attention should be paid both to the general percentage of the population (demand concentration) and population in the working age (work resources concentration). In the latter, it is essential to pay attention to various aspects of business activities from the SME (small and medium enterprises) sector (the number of firms in the REGON register database system), through their production (sold production) to a quantifiable effect for the local communities (income from Corporate Income Tax – CIT).

Table 5.8 Territorial key of functional areas (as the synonym of the agglomeration factor) – potential indicators

Indicators	Notes
Long-term changes in the percentage of population in working age, relatively long-term change of the working population percentage	The suggested period is five or even ten years. Data are accessible in GUS (Central Statistical Office) resources, so the indicator could be calculated every year for previous years
Long-term migration balance	The proposed suggested period is ten years. Data are available in GUS resources, the indicator could be calculated every year for previous years
Long-term change in the number of business entities	The suggested period is five or even ten years. Data are available in REGON register database resources; the indicator could be calculated every year for previous years
Long-term change in the value of sold industrial production	The suggested period is five or even ten years. Data are available in GUS resources (only at the county level – with the exclusion of certain units covered by statistical confidentiality), the indicator could be calculated every year for previous years
Spatial autocorrelation of units taking into consideration the dynamics of changes concerning population in working age	Data are available in GUS – subject to a specified statistical procedure (Moran's I statistics ⁶⁴) complemented by local indicators of spatial association (LISA)
Spatial autocorrelation of units taking into consideration the revenues of communes from CIT calculated per capita	Data are available in GUS – subject to a specified statistical procedure (Moran's I statistics) complemented by local indicators of spatial association (LISA)

Source: own elaboration

Long-term changes in the percentage of population, business entities and sold production are possible for quantitative identification in Polish conditions, although the data are flawed due to statistical imperfections (for example, statistics concerning business entities illustrate entities which could no longer operate since the criterion was merely that of their registration).

In spite of those reservations, long-term trends indicate whether a given region possesses internal developmental mechanisms which — according to models of new economic geography and in the World Bank report of 2009 (World Bank 2009) – are mostly associated with profits resulting from agglomeration. The agglomeration factor is also referenced in classical methods of industrial districts delimitation based on the employment in industry (cf. Fierla 1987; Misztal 1970; Wrzosek 1972). In this fashion, they illustrated the level of concentration – and not processes of concentration (employment density and the condition of spatial continuity was used). In a later period, for the purpose

⁶⁴ Moran's I is a measure of spatial autocorrelation (spatial dependence) developed by P. Moran. Spatial autocorrelation is characterised by a correlation in a variable among nearby locations in space. Moran's I statistic can be used to transform a series of observations on a given variable to take account of the spatial correlation occur between the different spatial units. The exact definition of the statistic is presented in chapter 6.

of studying industrial structure the method of spatial correlation – Moran's I – was used as well (cf. Gierańczyk 2008; Smętkowski and Wójcik 2008).

Finally, for the present research, it was possible to quantify the following indicators:

- Long-term changes (5 years) in the percentage of people working in the county (Figures 5.29 and 5.30)
- Long-term net permanent migration – migration balance (in per cent related to the original percentage of the population in total) (Figure 5.31).

In the period of 2003–2007, in the majority of counties an increase in the percentage of working population was observed, while the period of 2007–2011 was characterised by decreases in this number. In the case of 27 counties, this decrease was larger than 7 per cent.

Significant differences in distribution for both time periods (cf. Figures 5.29 and 5.30) result partly from the fluctuating demographic situation. In the first period, there was still a widespread increase in the percentage of population of respective generations (perceived on a yearly basis) entering the labour market. Territorial differences are not significant and they result from the generally larger demographic resilience of eastern Poland and migrations to larger centres.

The second period (2007–2011) is characterised by a significantly larger spatial polarisation. The increasing amount of domestic migration was accompanied by an intensification of demographic processes as well as migrations abroad. Increases in the percentage of the population working in large cities (including Warsaw) were slower and simultaneously in large areas of Poland (especially in the north) a significant decrease in this category was noted. An opposite tendency was noted only in the Małopolskie and Podkarpackie regions (voivodeships).

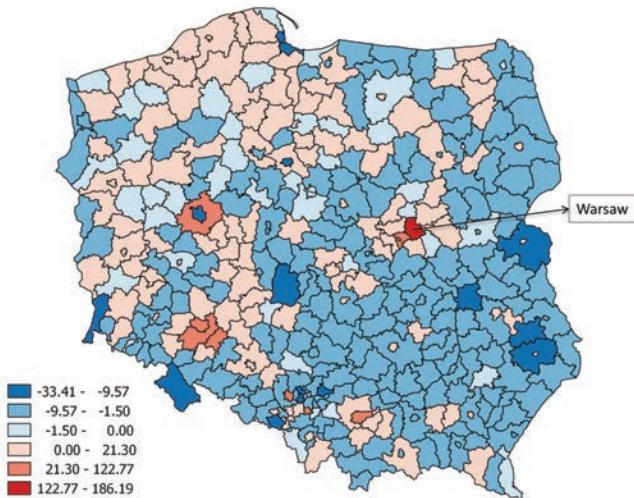


Figure 5.29 Long-term changes (5 years) in the percentage of people working in counties in the years of 2003–2007 (in %)

Source: own elaboration on the basis of data from BDL GUS

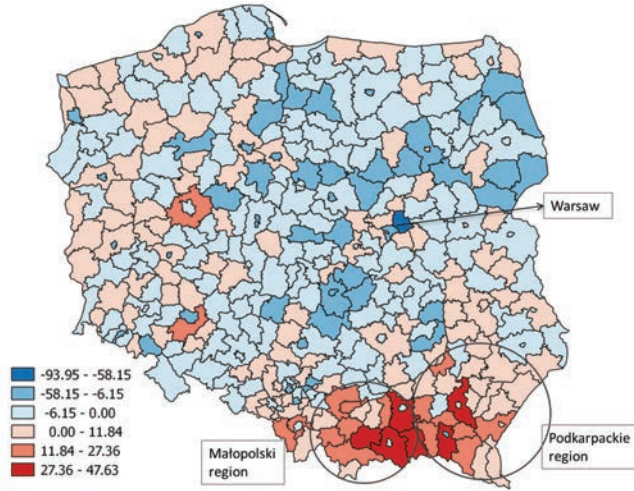


Figure 5.30 Long-term changes (5 years) in the percentage of people working in counties in the years of 2007-2011 (in %)

Source: own elaboration on the basis of data from BDL GUS

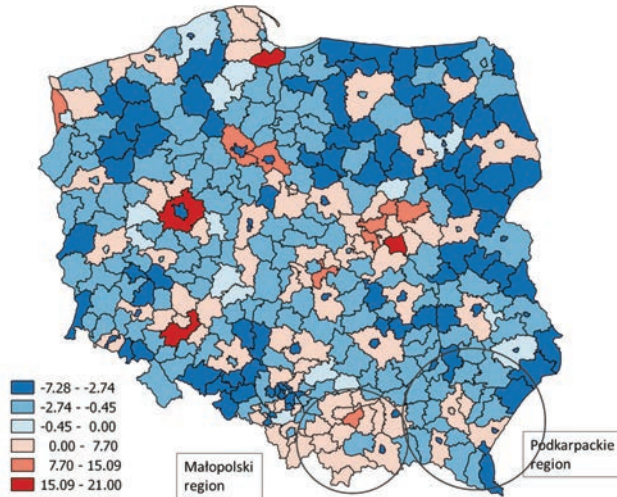


Figure 5.31 Net permanent migration in the years of 2004-2013 (in % of the total percentage of population in 2004)

Source: own elaboration on the basis of data from BDL GUS

Figure 5.31 illustrates a pattern in migration from most Polish counties. The largest migration was noted in counties in the north-east of Poland. It is apparent that suburbanisation is taking place in the neighbourhood of municipal centres: population from the areas of large cities is migrating to suburban zones. Counties which surround cities of medium size also tend to become similar to those surrounding large cities. The situation

in extra-metropolitan territories confirms these observations with respect to changes in the percentage of working population. The largest decreases concern northern Poland while extra-agglomeration increases are almost exclusively noted in the Malopolskie and Podkarpackie regions (voivodeships).

The results obtained concerning the distribution of migration contribute to an evaluation of the territorial key of “functional regions” in both of its meanings. From the point of view of identifying the agglomeration factor, they present a surprisingly polycentric picture of the Polish territory. The agglomeration factor does not limit itself to the largest cities (the Upper Silesian conurbation and Łódź are exceptions), but appears in most sub-regional centres (cities with the “status of county”; including former regional/voivodeship capitals). Alternatively, by perceiving the key of functional regions as spatial units, the resulting spatial distribution provides an useful means of delimiting such regions and, as a consequence, to construct an alternative division of Polish territory into functional areas of large and medium-sized centres as well as a relatively smaller remaining space. Such a division would require separate studies, but it might potentially constitute a preferable alternative for the increasingly less relevant traditional divisions into urban and rural territories.

5.8 The Relationship between the factors constituting territorial capital of Polish counties

In this chapter, we have examined the correlation between variables describing territorial capital. Relationships of this type have proved to be relatively weak, except for a correlation between the accessibility variables and those measuring clusters (see Figure 5.8 above). Also, worth noting is the low correlation of social capital (measured by voter turnout), with all other variables, in particular, those relating to exports, employment and clusters, which may suggest that social capital in Poland defined in this way does not translate well into an “economic” dimension of territorial capital.

Given that the territorial capital of the counties is a highly diversified category, it seemed reasonable to attempt to decompose the total variability of all factors describing its various dimensions. Our aim is not to create a synthetic measure (for this would be premature), but to analyse interrelationships of factors that constitute territorial capital, and exploring the diversity of Polish counties in this regard. For this purpose the technique of Principal Component Analysis (PCA) was used, which allows us to generate variables (or components) reflecting in a synthetic manner the analysed multidimensional category (represented by a number of variables), which will serve to characterise the notion of territorial capital. PCA is conducted in such a way that the first main component identified by it explains the largest element of variability of all factors that are taken into consideration. The second component identified explains the largest part of the remaining variance, etc. In addition, each component is orthogonal to all other components, which means that each component is uncorrelated with the others⁶⁵.

⁶⁵ Vectors whose direction is designated by each of the components intersect at a right angle.

Principal Component Analysis was carried out for variables described in this chapter, reflecting the territorial capital resources for a total of two sub-periods: 2003–2007 and 2007–2011. The set contains the analysis of nineteen geographically diversified variables that include:

- i. Potential road accessibility to population (Road Access),
- ii. Potential rail accessibility to population (Railway Access),
- iii. Accessibility within the region reflected by the number of the county population residing within a 60-minute drive from the centre of the region (voivodeship) (Internal Access),
- iv. Average travel time to the nearest subregional town, as a measure of access to administrative services (Admin Access),
- v. Potential accessibility of medical doctors (Doct Access),
- vi. Percentage of population served by sewerage systems (Sewerage),
- vii. Synthetic measure of the share of protected areas (Protected Areas),
- viii. Synthetic indicator of voter turnout, as a measure of social capital (Social Capital),
- ix. Percentage of adults with higher education, as a measure of human capital (Human Capital),
- x. Specialisation clusters index (Clusters),
- xi. Index of clusters diversity (Cluster Drivers)
- xii. Index of clusters importance for the economy of the county (Cluster Imp)
- xiii. Percentage of employees in the industry (Indust Empl)
- xiv. Ratio of the number of overnight foreigners to the number of inhabitants (Foreigners)
- xv. Ratio of students to the number of inhabitants (Students)
- xvi. Volume of industrial sold production per capita (Indust Prod)
- xvii. Share of exports in the industrial sold production (Export)
- xviii. Long-term changes (5 years) in the percentage of people working in the county (Empl Change)
- xix. Long-term (10 years) net permanent migration- migration balance (Migration).

Due to the fact that a longer travel time to the nearest sub-regional centre is equivalent to a more difficult access to administrative services, this variable was transformed into a stimulant (the inverse of the travel time). Table 5.9 presents correlation coefficients between all variables for which the principal component analysis was performed.

Using the PCA method, nineteen different components were identified, but only four of them were characterised by eigenvalues higher than 1, and therefore explained a significant part of the common variation of all the variables. The first four components represent more than 65 per cent of the total variability of all variables describing the territorial capital and therefore can be considered as the main component of multidimensional territorial capital. Each of the primary variables is represented to a different degree by individual components. Table 5.10 presents the factor loadings, i.e. the correlation coefficients of variables from four principal components.

Table 5.9 Correlation matrix between all the variables describing territorial capital resources

	Road Access	Railway Access	Internal Access	Adm Access	Doct Access	Sewerage	Protected areas	Social capital	Human Capital	Clusters	Cluster Drivers	Cluster Imp	Industr Empl	Foreigners	Students	Indust Prod	Export	Empl Change	Migration	
Road Access	1.000																			
Railway Access	0.899	1.000																		
Internal Access	0.364	0.421	1.000																	
Adm Access	0.414	0.423	0.347	1.000																
Doct Access	0.986	0.904	0.429	0.432	1.000															
Sewerage	0.127	0.182	0.303	0.427	0.133	1.000														
Protected areas	-0.404	-0.386	-0.170	-0.359	-0.386	-0.132	1.000													
Social capital	0.055	0.100	0.274	0.235	0.121	0.027	-0.061	1.000												
Human Capital	0.222	0.273	0.456	0.502	0.289	0.630	-0.166	0.450	1.000											
Clusters	0.658	0.642	0.412	0.419	0.667	0.230	-0.214	0.092	0.297	1.000										
Cluster Drivers	0.650	0.658	0.467	0.440	0.674	0.272	-0.214	0.136	0.341	0.913	1.000									
Cluster Imp	0.579	0.534	0.278	0.327	0.570	0.134	-0.181	0.008	0.175	0.926	0.723	1.000								
Industr Empl	0.345	0.329	0.052	0.166	0.287	0.476	-0.146	-0.287	0.091	0.406	0.364	0.395	1.000							
Foreigners	-0.125	-0.103	0.194	-0.010	-0.098	0.266	0.199	0.105	0.204	0.027	0.051	-0.015	-0.038	1.000						
Students	0.152	0.217	0.556	0.518	0.190	0.540	-0.215	0.370	0.644	0.208	0.265	0.092	0.006	0.226	1.000					
Indust Prod	0.312	0.308	0.264	0.246	0.307	0.329	-0.135	0.101	0.381	0.301	0.285	0.234	0.420	0.004	0.285	1.000				
Export	-0.094	-0.041	0.057	0.052	-0.090	0.230	0.090	0.000	0.154	0.035	0.049	-0.004	0.176	0.215	0.116	0.126	1.000			
Empl Change	0.049	0.043	0.233	0.041	0.062	0.012	0.053	0.012	0.053	0.117	0.105	0.111	0.003	0.054	0.088	0.024	0.073	1.000		
Migration	0.194	0.257	0.256	0.110	0.228	-0.153	0.003	0.125	0.144	0.438	0.474	0.343	0.116	0.039	-0.042	0.122	0.097	0.252	1.000	

Source: own elaboration

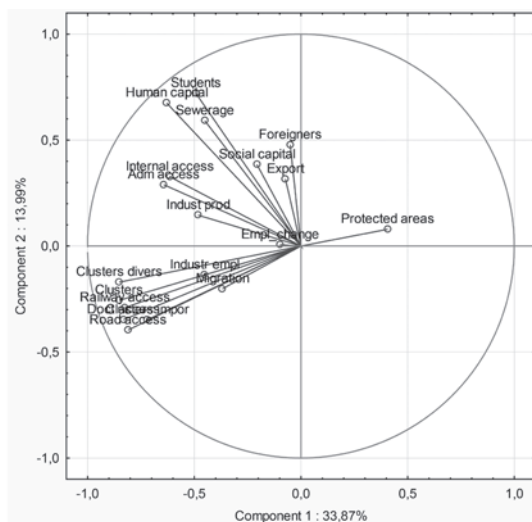


Figure 5.32 Territorial capital variables of the first and second principal component in two-dimensional space

Source: own elaboration

Table 5.10 Factor loadings of four principal components for all territorial capital variables

Component	Component 1	Component 2	Component 3	Component 4
Variable	Part of the total variation explained by the component			
	33.87%	13.99%	8.87%	8.57%
Road Access	-0.811	-0.396	-0.126	-0.191
Railway Access	-0.825	-0.291	-0.134	-0.155
Internal Access	-0.614	0.327	-0.223	0.195
Adm Access	-0.643	0.290	-0.151	-0.209
Doct Access	-0.832	-0.348	-0.184	-0.139
Sewerage	-0.451	0.592	0.435	-0.272
Protected areas	0.406	0.079	0.237	0.500
Social capital	-0.207	0.385	-0.589	0.205
Human Capital	-0.630	0.675	-0.073	-0.001
Clusters	-0.853	-0.256	0.108	0.254
Cluster Drivers	-0.852	-0.170	0.048	0.247
Cluster Imp	-0.720	-0.348	0.151	0.226
Industr Empl	-0.453	-0.136	0.723	-0.209
Foreigners	-0.050	0.478	0.177	0.373
Students	-0.493	0.721	-0.187	-0.104
Indust Prod	-0.482	0.146	0.322	-0.146
Export	-0.073	0.316	0.466	0.236
Empl Change	-0.098	0.006	0.016	0.479
Migration	-0.368	-0.202	-0.026	0.652

Note: shown in bold are the highest correlation coefficients between the principal component and the variable representing territorial capital

Source: own elaboration

The first principal component, which explains almost 34 per cent of the total variability of all factors taken into account, reflects to the greatest extent the diversity of variables describing accessibility, including both transport accessibility and the availability of services of general interest (e.g., administration and medical services). This component also shows a high degree of variables related to the functioning of the clusters in the counties. It can, therefore, be interpreted in the spirit of the analysis of the new economic geography as a reflection of the benefits of agglomeration. On the other hand, human capital, the number of students, the number of foreigners, as well as access to the sewerage system, is best represented by the second principal component, although the correlations, in this case, are significantly lower than for the first component. This component represents the dimension of knowledge, including openness to the world at large and advancement of civilisation. The third component of the index to a large extent describes the variability of employment in industry, exports and social capital (this time with the opposite sign). It can be interpreted as the ability to enter into external network connections of an economic nature. Other variables, such as long-term migration, long-term change in employment and the coverage of protected areas, are most closely correlated with the fourth component, except that the correlation of the last of these variables is negative, which means that this variable is spatially distributed differently than other variables. These components illustrate the temporal dimension of territorial capital (dimension of long duration).

Figure 5.32 shows how the original variables are situated in two-dimensional space defined by the first and the second principal component. In interpreting this figure, it can be seen that the variables describing transport accessibility and availability of medical services are very similar in direction. The similar direction also characterizes clustering variables, as well as employment in industry and migration. Close to each other are also the following variables: human capital, students, and sanitation, as well as social capital. The number of foreigners and export exhibit almost the same direction. Of all the variables analysed only the share of protected areas is not negatively correlated with the first principal component.

5.9 Conclusions

In this chapter we have examined the second dimension of territorial cohesion i.e. territorial capital. Both dimensions analysed so far (territorial capital and adapting policies to territorial specificity and potential) are mutually dependent. Considering territorial capital as an asset would require adjusting the development policy accordingly, and adapting the intervention of public authorities to this capital. Second, it means analysing the consequences of these interventions regarding the changes in the territorial capital. This development policy becomes, therefore, a continuous iterative process, whose goal is the synergy of various types of public intervention with respect to a given area or territory. Policies influence territorial capital, which in turn is subject to change (i.e., it grows or declines or changes its nature) and this calls for the modification of policies. Only such type of interactions might bring policy closer to the third dimension of territorial cohesion i.e. territorial utility.

However, in the application of territorial cohesion to the development programming process in Poland, a weaker emphasis is visible on territorial capital as a development asset, while stronger emphasis is visible on the manner of conducting the development policy in line with territorial specificities and potential. Although the Polish NUTS 2 regions apply by themselves the concept of territorial keys for identifying such specificities and potential, this is often done in order to determine the traditional problem areas, and not in terms of an instrument for involving the territorial capital in the strengthening of the regional development. It seems that territory as development asset is addressed in Poland (with exception of long-term development strategy) mainly in spatial policies but hardly in socio-economic ones. This is unsatisfactory from the point of view of enhancement of territorial cohesion since the impact of the strategic spatial documents on socio-economic development is limited as indicated in the chapter 3 on development policy in Poland. It is an example of so-called “silos” approach to policy-making or “silo mentality” as outlined by Faludi (2009b, 19). Hence, a need arises for more intensive work aiming at the consideration of the systemic territorial capital in the intra-regional policy.

The analysis presented in this chapter shows that the concept of territorial capital can be operationalized and even quantified in line with the existing territorial specificities. For instance, in Poland such a capital have four dimensions related to economies of agglomeration, knowledge, networking and long-lasting spatial processes. Thus it should be treated as a clear policy guidelines on what issues attention should be paid when developing territorial capital. But a key question remains how to introduce territorial capital into main stream development policy as one of key assets for growth and development. This issue will be discussed in detail in the next chapter — chapter 6.

Chapter 6 Territorial Capital and Polish Regional Development: a Neoclassical Approach

6.1 Research frame for analysing interplay between territorial capital and growth in Poland

Key theoretical foundations of the interplay between growth and factors related to territory are examined in several publications summarising and comparing different school of economics, different approaches and models (e.g. Capello and Nijkamp 2009; Brodzicki 2014b). In our analysis, we have used this knowledge extensively and our aim is to share Polish experience in this field. We have to note that the interaction between space (location) and the processes of accumulation (growth) is one of the most interesting and at the same time the most difficult areas of modern economic theory. The theoretical and empirical results to date are however largely unsatisfactory (Combes *et al.* 2008).

In this chapter, we present our research findings on the contribution of various elements of territorial capital (as defined in the previous chapter) to regional growth in Poland. Unlike most previous studies of the Polish economy that were conducted at the level of NUTS 2 regions (or voivodeships), the present study adopts a highly spatially disaggregated NUTS 4 level, i.e. counties, for which interactions and relationships of a spatial and territorial nature are particularly relevant⁶⁶. At this level of aggregation, the presence of diverse external effects and spillovers of development processes is also revealed. Consequently, this level of analysis is optimal for research purposes. Moreover, considering that the main object of the study is territorial capital, analysis at the level of regions (voivodeships) would lead to less precise generalisations. Each of the sixteen Polish NUTS 2 regions (or voivodeships) is so internally diverse that it's hard to talk about regularities occurring simultaneously throughout any individual region. Therefore, an analysis of economic growth mechanisms and determinants of growth, should be conducted in the Polish case at a level below that of the NUTS 2 regions (or voivodeships) if the study is to be able to explore the effect of endogenous (i.e., related to a given territory), characteristics of the region. Territorial capital, as a specific carrier of the concept of territorial cohesion, is significantly different from the classical factors of production such as physical capital or labour. Territorial capital cannot be considered as a factor directly responsible for changes in the volume of production since improvements in it do not lead directly to increases in production. However, taking into consideration the variables defined in the previous chapter (i.e., components of territorial capital), it would be expected that territorial capital can have an impact on the productivity of basic factors of production such as capital and labour. Thus, when defining the function of production, we assume that territorial capital does not affect production directly, but it affects total factor productivity (TFP) indirectly, contributing to an increase in the value of the production.

⁶⁶ For the territorial pattern of Polish authorities see Figure 7.1 and description of responsibilities of the different tiers of government added as a comment to this figure.

As indicated in previous chapters, the individual components of territorial capital are highly diverse in nature and should not be combined into a single index, especially in models seeking to quantify economic growth. Consequently, and in line with Brodzicki's (2012a; 2014a) investigation of the impact of infrastructure on the development of European countries or Polish NUTS 2 regions (or voivodeships), we decided to introduce territorial capital as a factor affecting the overall productivity of the economic system, and thus, as one of the factors accounting for the observed overall productivity. It was done using an econometric model in which the dependent variable was total factor productivity (or TFP) for Polish counties and the independent variables included elements of territorial capital. An attempt was also made to identify potential spatial interactions between counties. This required a determination of the value of the GDP of Polish counties: data that are not published in the public statistics of the Central Statistical Office of Poland (GUS). Also, and on the basis of those values, we utilised growth accounting to obtain the value of the TFP for Polish counties.

6.2 Estimating GDP per capita and TFP at the level of counties

Official Polish statistics concerning the GDP stream generated at the county level are not published, even though research suggests that it is precisely the counties that can be treated as complete local economic systems identified most closely with the given labour market, or the functional area⁶⁷. For the purposes of the present study, a further disaggregation of available statistical data on GDP at the NUTS 2 (or voivodeship) level was performed to the level of counties. The Central Statistical Office of Poland (GUS) publishes data on GDP at the level of voivodeships (NUTS 2) and the level of subregions (NUTS 3). However, the data for the sub-regions were not used, because they are the results of the decomposition of the voivodeships' raw data using a simple accounting method. Thus it was decided to use the voivodeships data in order to avoid any accumulation of errors as a result of further disaggregation.

To estimate the value of GDP at the county level, information on tax revenues of municipalities was used. This approach is based on the assumption that taxes are associated with the production emerging in the region. From this point of view, it would be most fitting to use the corporate income tax (CIT) paid in the given county. Because of the complexity of the tax system, however, this turned out to be impossible. CIT data include various kinds of tax exemptions (e.g. special economic zones) or the possibility of offsetting any losses from one year with the following year's taxes. Most likely the biggest problem in this consideration is the fact that in many cases the company headquarters, and hence the place where most taxes are actually paid, is in a different location from the place of origin of the product or service. Consequently, personal income tax information (PIT) was used in the disaggregation procedure of GDP. It should be emphasised that even in this situation, there is a problem of paying taxes outside of the place of work (place of the origin of production). It can, however, be assumed that the distortion is much smaller than in the case of CIT information use.

A drawback of using PIT information in this context is the fact that it is not paid by agricultural farms, and therefore, it is possible to underestimate the role of counties with

⁶⁷ This issue was described in greater detail by Brodzick and Kurczewska (2012)

a significant share of agriculture in the creation of the GDP. For that reason, additional information has been used concerning agricultural tax paid on agricultural activities⁶⁸.

According to the implications of older neoclassical growth theory, every economy in the long-term approaches a steady state in which the key to supporting further economic growth is a positive rate of technological progress⁶⁹. Technological progress in these early models is exogenous (Aghion and Howitt 2009; Barro and Sala-i-Martin 2003). This is confirmed also by the observed phenomenon that an accumulation of the classical factors of production, such as physical capital and labour, cannot lead to the continued growth of per capita output. According to growth theory, the growth rate of output is a weighted average growth rate of production factors: technology, labor, and capital. The weights are the shares of the remuneration of individual factors in income (Rapacki and Próchniak 2012, 85). New theories of growth of the first and the second generation (Lucas, Romer, Aghion and Howitt, Grossman and Helpman) also recognise the key role of technological progress, further endogenizing it, e.g., by introducing into the model a separate research and development sector.

According to Helpman (2008, 22), total factor productivity is the difference between the rate of growth of production and the growth rate of a weighted contribution of factor inputs. The growth rate of TFP is equated with an average growth rate of production efficiency and illustrates the pace of technological progress. According to Helpman, TFP shows the aggregated effect of various forms of technological advancement. Empirical studies indicate that TFP accounts for between 30 to 70 per cent of the variation in growth rates observed in various systems – whether international or interregional.

Most frequently, total factor productivity is calculated as a residual value, i.e. the so-called Solow residual, in the framework of growth accounting procedures derived from the neoclassical growth theory. Therefore, it should be emphasised that due to its residual character, TFP incorporates all shallow and deep (e.g. geographical or cultural) factors not directly related to the accumulation of factors of production present in the model (Barro and Sala-i-Martin 2003). This means that only a part of TFP reflects theoretically postulated technological progress or productivity in its pure economic sense.

While analysing the spatial distribution of TFP, specific attention should be given to localised knowledge spillovers effects and especially to so-called tacit knowledge⁷⁰. Knowledge spillovers operate primarily within economic sectors (intrasectoral spillover) as well as, to a more limited extent, between sectors (intersectoral spillover). Intrasectoral knowledge spillovers are referred to in the theoretical literature as MAR spillovers (from the names of Marshall, Arrow, and Romer), and the intersectoral type as the Jacobs spillovers (after Jane Jacobs). Both of these are the main driving forces determining the spatial concentration of sectors, leading to spatial agglomeration of economic activity and population, explaining the phenomenon of industrial districts (Becattini 1979), clusters (Porter 2003), as well as the emergence and development of cities, and of metropolitan centres, or so-called global cities. Theoretical literature also highlights the presence of an externality associated with increased competition – the so-called Porter spillover (after Michael Porter).

68 There is no income tax on agricultural activity in Poland.

69 At the steady state, all the key economic variables such as GDP per capita, capital per worker or per capita consumption, grow at the rate of technological progress. A zero rate of technological progress would signify economic stagnation.

70 These effects are localised, i.e. they decrease quickly and non-monotonically with distance. A twofold increase in the distance from the source of knowledge reduces the probability of absorption four times. Most of the knowledge spreads within approx. 50 km from its source (see e.g. Hanson 2000).

New Economic Growth (NEG) theories stress the existence of a spatial productivity structure, and thus of a spatial wages structure due to the correlation of real wages with productivity level (see, e.g. Combes *et al.* 2008). Accordingly, the level of TFP should be higher in cities with county rights (district rights), which are core centres, than in rural counties, i.e., in peripheral areas. TFP should achieve the highest level in core centres – poles of growth in Perroux's (1970) meaning of the term that is the major metropolitan centres of the country.

On the basis of determined time series of GDP in counties, the value of total factor productivity (TFP) was estimated. The assessment of the level of TFP for the Polish counties was carried out using growth accounting methods based on the decomposition of production resulting from the neoclassical Solow model (Solow 1956; 1957)⁷¹. It involves extracting the direct contribution to the growth of factors of production such as physical capital expenditures, human capital, and labour, as well as indicating which part of the increase is attributable to changes in their total productivity.

Using the assumptions of the neoclassical Solow-Swan model, the Cobb-Douglas function⁷² with constant scale effects⁷³ is the macroeconomic function of production. On the basis of this function the following formula for estimating TFP can be derived (equation 6.1):

$$(6.1) \quad TFP_{it} = \frac{y_{it}}{K_{it}^{\alpha}} \quad i = 1, \dots, n \quad t = 1, \dots, T$$

where $y_{it} = Y_{it}/L_{it}$ is average labour productivity, while $k_{it} = K_{it}/L_{it}$ is the value of equity attributable to one employee, Y_{it} is the value of GDP in county i in year t , K_{it} is the average value of physical capital in county i and in year t , L_{it} is the labour effort represented by the number of employees. The parameter α , on the other hand, is an estimate of the production elasticity for changes in capital obtained from estimation of the regional panel production function using the Generalized Method of Moments.

Also, because of the assumption of constant elasticity of production to the changes in capital for all counties in Poland seems to be overly simplistic and inconsistent with reality, different values of elasticity were estimated for different groups of counties. It turned out that the best criterion to reflect the diversity of the production function is a division of counties into the following three groups:

- Cities with county rights,
- Counties belonging to metropolitan areas identified in ESPON (2004a, 98–101) reports as MEGA of the III and IV order⁷⁴,
- Other rural counties.

71 This procedure was used to estimate TFP by, among others, Tokarski (2010).

72 Another possibility is to adopt a CES function of constant elasticity of substitution.

73 This function satisfies the so-called Inada conditions:

- positive, decreasing productivity of each of the factors of production,
- linear homogeneity of the function, which means constant advantages of scale,
- marginal factor productivity tends to zero with an increasing input of this factor.

74 As a criterion for the classification of counties into this group, the conceptualisation of functional urban areas of NUTS 2 (or voivodeship) cities designated in the Ministry of Regional Development (MRD) approach to integrated territorial investments, was used. Only major metropolitan areas mentioned in the reports Polish ESPON as MEGA of the III and IV order were used, i.e., the following areas: Warsaw, Gdańsk (Tri-City: Gdańsk-Gdynia-Sopot), Cracow, Szczecin, Poznan, Lodz, Wrocław, the Silesian conurbation around Katowice. The MRD spatial delimitation carried out at the municipal level adapted to the needs of the present study (county level) resulted in the assumption that any given municipality of the county qualifies the entire county as a functional urban area.

The above division appears at the same time to be consistent with the idea of a polycentric (hierarchical core-peripheries) model proposed for the analysis of the development of Poland at a disaggregated level. The obtained estimates of the level of production elasticity with respect to capital α enabled the determination of the level of TFP in all Polish counties in the years 2003-2011 (see Figure 6.1)

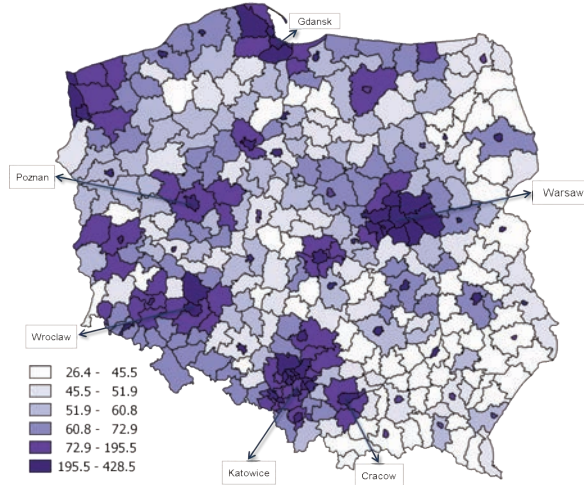


Figure 6.1 The estimated values of total factor productivity for the year 2011 (average for Poland = 100)

Source: own elaboration

Looking at the spatial distribution of the level of TFP in 2011 (Figure 6.1), it is clear that total productivity in Poland has the highest values in the metropolitan centres, and spills into their immediate surroundings. Warsaw's metropolitan counties are characterised by the highest total factor productivity. In line with our expectations based on the postulates of the new growth theory and economic geography, local peaks in the distribution of TFP, are also found in towns with county rights — the local growth centres. TFP also shows a downward trend as one moves from west to east, which is consistent with the regularities identified in the Polish economy.

The obtained results for Poland point in favour of the basic model of NEG of Krugman (1991a; 1991b) with the core-periphery setup or its dynamic versions (Baldwin and Forslid 1999; Baldwin *et al.* 2003) allowing for endogenous accumulation and growth. At the general level, Warsaw can be considered the core and the rest playing the role of the periphery. At a finer level of spatial disaggregation, one can clearly detect multiple cores arranged in a hierarchical manner (major metropolitan areas, local growth poles and so on). This reflects polycentric nature of development processes in Poland with the simultaneously dominant role of the capital region.

Next, the rate of TFP growth in the analysed period was determined. Spatial variations in the rate of growth are presented in the following map (see Figure 6.2). Analysing the differences in TFP growth rates in Polish counties shows that the greatest increase in TFP was recorded mainly in the districts belonging to the Mazowieckie region (or voivodeship) and in Lubin county (location of the biggest copper and silver mine in Europe). Warsaw

seems to generate particularly important spillover effects on the surrounding area, as we would expect from the major growth pole. However, many counties in the Podkarpackie region (or voivodeship) experienced an actual decline in total factor productivity.

In the context of the Baldwin and Forslid (1999) dynamic NEG model one can note that the clearly observed spillover effect which can be associated with knowledge spillover can play a major destabilizing force for the existing core-periphery setup – strong knowledge spillover in the model with increasing openness – decreasing transport costs (higher market accessibility due to accelerated infrastructure development) can defuse growth. Agglomeration effects related to superior capital accumulation in the cores are partially offset or neutralised leading to the emergence of a more balanced spatial structure over time.

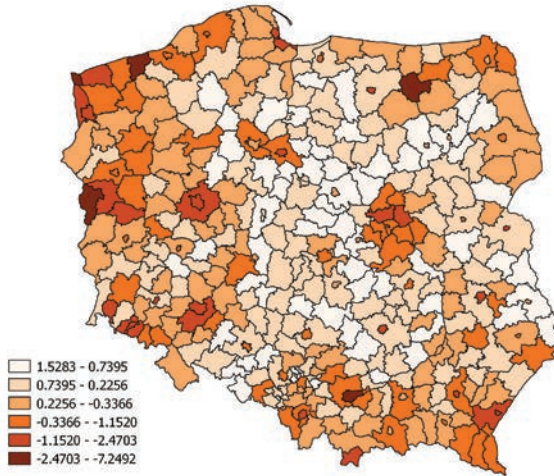


Figure 6.2 The average growth rate of total factor productivity for the period 2003–2011

Source: own elaboration

6.3 Empirical verification of TFP determinants in Polish counties

New theories of growth, which endogenise technological progress as an essential driving force behind long-term growth, significantly expanded the list of factors that can affect the level of total productivity with respect to the older neoclassical theory (Aghion and Howitt 1998; 2009). In relation to Poland this was shown, for example, in Florczak's study (2011). According to Florczak, in addition to knowledge capital that can be considered the main explanatory economic factor, TFP is also affected by social, demographic, and institutional conditions⁷⁵. This is consistent with the recent trend in the growth theory which is characterised by taking into account the deeper determinants of growth, including in particular the institutional conditions (eg. Acemoglu *et al.* 2001),

⁷⁵ Empirical analyses by Brodzicki (2014a) for the Polish regions pointed to the importance of openness and the quality of institutions in determining the level of economic development of Polish regions at NUTS 2 with a statistically insignificant impact of primary geographic conditions (physical geography). At the same time the second nature of geography associated with the current dislocation of population and economic potential, including the main industrial districts and metropolitan areas, plays a significant role.

and strictly exogenous geographical conditions (eg. Gallup and Sachs 1999). The creator and precursor of the deep determinants approach is Rodrik (2002). All of these potential determinants have been adopted in the present study as territorial capital's components.

Economic theory suggests the following as key determinants of the TFP level: knowledge capital and its associated research and development potential of the region as well as the structure of the economy. The industry is characterised by the highest level of productivity, resulting in higher levels of TFP in the context of industrial districts. The level of productivity is also higher in strong concentrations of population and in agglomerations of economic activity, which naturally favours large cities or metropolitan centres. Cities are also usually the location of major university and research centres, which, with localised knowledge spillover, gives them an extra edge over peripheral areas.

Analogous to Tokarski (2010), the following were considered as potential explanatory variables of TFP level: economic structure quantified by the share of employment in different sectors of industry (processing and mining considered together), as well as in market and non-market services (public). The introduction of these factors to the model, however, interfered with the results of other relevant variables — thus it was decided to omit them. At the same time, the separate procedure adopted for estimating the production function for the three types of counties indirectly takes into account the effect of varying economic structure.

Variables reflecting the potential of knowledge capital or R&D of individual regions are either unavailable (patents, patent applications, expenditure on research and development as a percentage of the production sold) or have a statistically insignificant impact on TFP — such as employment in research and development. Research and development sector is one of the spatially most concentrated sectors of activity (in particular in large metropolitan areas) and thus in most counties employment in R&D is close to zero according to official statistics.

As an approximation of the above, employment in the high-tech sectors of the processing industry (*High-Tech*) and knowledge-intensive high-tech market services as defined by EUROSTAT (Knowledge Intensive Services) (HT + KIS) was adopted. These sectors include the pharmaceutical industry, electronic and computer industry, and aviation industry as well as research and development, information technology and telecommunications. They are distinguished from all other sectors by having the highest ratio of expenditure on research and development to total sales

While the above point to explanatory variables that account for differences in TFP in various counties, localised knowledge spillovers, that is, MAR spillover, and Jacobs spillovers must also be taken into account. We introduce into the model explaining TFP intrasectoral MAR external effects (approximated by the variable designated as *clusters* — the index of cluster specialisation (SQ) obtained from the mapping of clusters developed by Brodzicki *et al.* (2012) as well as intersectoral Jacobs external effects (approximated by the variable designated as *DIV* — the diversification of economic structure index — the Herfindahl-Hirschman Index (HHI) for the number of entities in 222 3-digit groups PKD2004 for each entity).

An attempt was made to introduce a variable reflecting the intensity of competition in the region and thus capturing Porter's external effects. The number of companies registered in REGON⁷⁶, per square kilometre, was used as a general approximation of

76 REGON — National Official Business Register of Poland.

the intensity of competition in a given county. It turned out, however, it did not explain in any statistically significant way diversity in the TFP of Polish counties and therefore was omitted from further consideration. From a theoretical perspective, the ideal measure would be an indicator of the rate equal to one minus the Lerner index averaged for all economic sectors in the county. This index indicates the market power of the entity, i.e., the ability to determine the price above marginal cost (Cabral, 2000; Shephard and Shephard 2004; Tirole 1988). For obvious reasons, among which the most notable was the lack of access to microdata, the calculation of such a variable was impossible.

Also taken into consideration was a dummy variable representing the counties belonging to those previously described metropolitan areas defined on the basis of elaboration by ESPON and Ministry of Regional Development.

In accordance with the aim of the present study, elements of territorial capital were considered in addition to the above variables as determinants of TFP variation. Chapter 5 presented the development of the measures reflecting the level of territorial capital in Polish counties. Appropriate measures have been introduced into the econometric model explaining differences in TFP in Polish counties.

In the study, localised data are used, meaning that geographical location and mutual proximity may be relevant to the process being analysed. There may be both spatial heterogeneity of the analysed factors and a spatial dependence between regions, in other words, autoregression or autocorrelation in error term. The values of the variable under consideration in a given location determine and at the same time are determined by its realisation in other locations. This means tools such as spatial econometrics described by Arbia (2006) and Suchecki (2010) need to be used. A further discussion of the use of geographic information in economics can be found, among others, in Overman (2010).

Spatial autocorrelation for regions that are administrative units can have two main causes:

- Data are grouped according to their administrative units, and not functional areas that go beyond established boundaries,
- There is a real interaction between regions.

The most commonly used statistical test to check whether in the analysed relationship there is a spatial autocorrelation is the Moran's I test in which a sample statistic takes the following form (6.2):

$$(6.2) \quad I_W = \frac{\sum_{i=1}^n \sum_{j=1}^n w_{ij} (x_i - \bar{x})(x_j - \bar{x})}{\sum_{i=1}^n (x_i - \bar{x})^2}$$

where x_i represents the values of the variable analysed in the i -th location, and w_{ij} the weight matrix elements reflecting the relative position of regions i -th and j -th. Moran's I statistic can also indicate the weight matrix that best reflects the nature of the spatial relationship between the values of the variable in the different regions. Based on the significance of Moran's I statistics calculated for the TFP in the counties, the matrix of the second neighbourhood (defining neighbours as regions separated by one or two

borders) was considered as best reflecting the nature of the spatial correlation of this variable. This is probably due to the fact that most of the towns with county rights are surrounded by rural counties (the so-called bagels' problem), which is why the position matrix defined on the basis of the shared border for these regions would indicate only one neighbour potentially affected by this county. It seems, however, that the impact of cities on other counties is not limited to the counties immediately surrounding them, and can also spread to more distant counties. However, the impact is likely to depend on the size of the central site.

Spatial correlations between counties were considered in the form of three types of spatial econometrics models:

- Spatial Lag Model – SLM, in which the value of the dependent variable in a given region depends on the value of the same variable in the regions defined as neighbours;
- Spatial Error Model – SEM, in which the value of the variable analysed in the region is affected by disturbances from neighbouring regions;
- Spatial Durbin Model – SDM, which assumes a simultaneous consideration of spatial autoregression – the impact of spatially lagged values of the variable on its formation in different locations, and cross-sectional regression, which is the effect of spatially non-lagged and lagged exogenous variables.

Table 6.1 presents the results of evaluation of the model explaining the variability of TFP in Polish counties in the years 2003–2011. In the first stage variables considered as measures reflecting the territorial capital of each region were excluded from the model. These specifications are treated as a base specification for next specifications. The models were estimated by the Maximum Likelihood Estimator (MLE), as panel models, where the temporal dimension concerned two sub-periods (2003–2007, 2007–2011), for which the average levels of TFP were counted. Next to the previously defined variables in the models M3 and M4 (see Table 6.1), dummy variables were introduced corresponding to different NUTS 2 regions (or voivodeships), namely fixed effects for the voivodeships. The introduction of fixed effects for individual voivodeships is justified due to the significant regionalisation of development policy especially after Poland's accession to the EU (examples of which include the apparatus of voivodeship contracts; regional operational programs; the implementation of regional development strategies; and regional innovation strategies), and significant differences between regional innovation systems (RIS).

The results of tests favour the model of spatial autocorrelation of the error term (SEM) as the appropriate model for the considerations at hand. In the basic specification of the spatial lag model (SLM), a statistically significant, positive spatial autocorrelation of the TFP was obtained, suggesting some inter-county spillovers of total productivity, which is consistent with the theoretical literature on the subject. On the other hand, the importance of the spatial autocorrelation of the error term means that for a given county, TFP is affected by the values from other counties of variables not included in the model. It should also be emphasised that after the inclusion of dummy variables in the model for the voivodeships, the spatial effects (both SLM and SEM) are no longer statistically significant, which is reflected in the results of the Moran test (for the error) and the LM test (for the lag).

Table 6.1 Model accounting for the diversity $\ln(\text{TFP})$ in Polish counties in the years 2003–2011

Variable / Model	M1 (SLM)	M2 (SEM)	M3 (SLM)	M4 (SEM)
Constant	2.648 (0.849) ***	2.439 (0.854) ***	1.838 (0.877) **	1.611 (0.762) ***
Spatial autoreg. TFP	0.028 (0.045)	-	-0.046 (0.046)	-
Spatial autocorrel. error	-	0.3790(0.111) ***	-	-0.354 (0.166) **
$\ln(\text{HT}+\text{KIS})$	0.814 (0.066) ***	0.8852 (0.055) ***	0.862 (0.067) ***	0.858 (0.055) ***
$\ln(\text{DIV})$	0.708 (0.147) ***	0.746 (0.146) ***	0.883 (0.151) ***	0.858 (0.079) ***
$\ln(\text{clusters})$	0.100 (0.046) ***	0.090 (0.048) **	0.067 (0.047)	0.079 (0.049) *
Metropolitan areas	0.598 (0.065) ***	0.566 (0.071) ***	0.577 (0.065) ***	0.549 (0.066) ***
Mazowieckie	-	-	0.023 (0.052)	0.070 (0.047)
Łódzkie	-	-	-0.015 (0.052)	0.021 (0.062)
Małopolskie	-	-	-0.148 (0.061) **	-0.195 (0.062) ***
Śląskie	-	-	0.122 (0.085) *	0.156 (0.065) **
Lubelskie	-	-	-0.062 (0.085)	-0.054 (0.059)
Podkarpackie	-	-	-0.234 (0.085) ***	-0.342 (0.060) ***
Podlaskie	-	-	0.034 (0.096)	-0.008 (0.071)
Świętokrzyskie	-	-	-0.221 (0.096) **	-0.213 (0.080) ***
Lubuskie	-	-	0.087 (0.077)	0.059 (0.080)
Wielkopolskie	-	-	0.057 (0.056)	0.040 (0.053)
Zachodniopomorskie	-	-	0.182 (0.084) **	0.240 (0.062) ***
Dolnośląskie	-	-	-0.113 (0.070)	- 0.087 (0.036)
Opolskie	-	-	-0.067 (0.070)	-0.043 (0.084)
Kujawsko-pomorskie	-	-	0.222 (0.090) ***	0.204 (0.063) ***
Pomorskie	-	-	-0.024 (0.087)	-0.026 (0.065)
Warmińsko-mazurskie	-	-	0.133 ⁽⁶⁾	0.126 ⁽⁶⁾
R2	0.66	0.66	0.70	0.70
J-B Test	14.082 [0.001]	13.487 [0.001]	10.429 [0.005]	10.429 [0.005]
Breusch-Pagan Test	64.282 [0.000]	42.002 [0.000]	67.691 [0.000]	70.117 [0.000]
Moran I Test (error)	4.311 [0.000]	4.311 [0.000]	0.056 [0.955]	0.056 [0.955]
LM (lag)	0.400 [0.527]	0.400 [0.527]	1.052 [0.305]	1.052 [0.305]
Number of observations	379	379	379	379

Source: own elaboration

Explanatory notes:

- 1) Models estimated as panel ($T = 2$) models with spatial autocorrelation of error (SEM model) or spatial autoregression models (SLM) using MLE;
- 2) Neighbourhood regions are represented by the matrix of the neighbourhood of the second order because of the counties surrounding the cities with county rights. Matrix constructed as a queen matrix.
- 3) In parentheses next to the estimates of parameters, there are standard errors robust to nonspherical disturbances (the correction proposed by Kelejian and Pruch (2007)).
- 4) *** reflects a statistical significance of the parameters at a significance level of 0.01, ** for the level of 0.05, * for the level of 0.1.
- 5) The effects for individual voivodeships are estimated as deviations from the mean for Poland.
- 6) The value of the parameter was calculated taking the assumption that the sum of all voivodeships deviations from the mean is equal zero.

Drawing on these results, the SEM with a constant, employment in knowledge-intensive industry and high-tech market services (as an indirect measure of knowledge capital), diversity index HHI, the clustering index and the metropolitan variable (cores and outer counties for major metropolitan areas) are adopted as a base model.

When interpreting the estimation results, it should be noted that the impact of employment in the high-tech industry and market services is positive as expected and statistically significant at the 1 per cent level. Thus it can be concluded that in counties with a greater significance of technologically advanced sectors, and a higher level of knowledge capital, the value of TFP is greater. This is consistent with basic theoretical postulates. At the same time intra-sector MAR external effects (approximated by the variable on the clustering of the county economy) as well as cross-sector Jacobs effects (approximated by the index of differentiation of the economic structure HHI) are also important. The results are consistent with prior expectations. Knowledge, and thus productivity, is spilt over between entities located in space and, more broadly, in the system in the form of a triple helix, generating significant external benefits. This happens both within specialised clusters as well as in industrial districts or urban agglomerations. This confirms the presence of classic Marshallian external effects (Marshall 1879; 1890/1920; see also Fujita *et al.* 1999). Within concentrations or agglomerations knowledge flows through direct and indirect channels between businesses, universities, and units of research and development (Anselin *et al.* 1997), and the effectiveness of the flow, as we know, is mainly a function of reciprocal physical distance.

The potential impact of knowledge capital is reflected indirectly through the dummy variable (taking the value of 1) for metropolitan areas of cities which are the main research and university centres of the country. Its impact is positive and statistically significant.

Fixed effects are statistically significant only for some NUTS 2 regions (or voivodeships), which distinguishes them from the overall average, and from other regions. They are positive for the regions of Górny Śląsk (Upper Silesia), Zachodniopomorskie (West Pomerania) and Kujawsko-Pomorskie (Kuyavian-Pomerania), which may be related to their stronger than the average industrial base. In contrast, these effects are significant but negative for several south-eastern Polish NUTS 2 regions (or voivodeships): Małopolskie, Świętokrzyskie, and Podkarpackie. In this south-eastern area the determining factors are probably systemic or cultural, the so-called factors of long duration or path-dependent factors, such as the impact of the Austro-Hungarian partition (prior to 1918), strong cultural conservatism or underdevelopment of the transport system (outside of the Cracow part of Małopolskie region), which significantly reduce the efficiency of the economic system.

6.4 Territorial capital components as determinants of Total Factor Productivity of Polish counties

In the next step, individual components of territorial capital are introduced into the SEM model. The model is then estimated separately within the framework of each of the following territorial keys: territorial accessibility, public utility services, territorial endowments/capacities networking of urban centres and functional regions.

Table 6.2 presents the estimation results of models that take into account different approximations of territorial capital. Because the variable representing the potential road and rail accessibility and the doctors' accessibility are highly correlated with each other, they were introduced in three separate models (M5 – M7 in Table 6.2). In the next model, the variables taken into account reflect the territorial endowments/capacities of the region, which in this case are as follows: natural areas protected by law; social capital represented by the synthetic indicator of elections turnout; human capital, in this case the percentage of the population with higher education; and the percentage of workers employed in industry (M8). The next model uses the ratio of exports to production sold in the county and the number of foreigners staying in the region overnight to take into account the ability of the district to enter into economic networks (to reflect networking potential) (M9 – M10). Long-term change in employment (5-year) and long-term net migration (10-year) is intended to reflect the importance of functional areas for TFP (M11 – M12).

Table 6.2 Territorial capital in the model explaining diversity of ln (TFP) in Polish counties in the years 2003-2011

Variable	M5	M6	M7	M8	M9	M10	M11	M12
Constant	2.630 *** (0.867)	2.628 *** (0.859)	2.526 *** (0.891)	2.899 *** (1.076)	3.076 *** (0.813)	2.758 *** (0.856)	2.697 *** (0.844)	2.988 *** (0.868)
Spatial autocor. error	0.203 * (0.084)	0.301 * (0.129)	0.207 * (0.110)	0.499 *** (0.098)	0.354 *** (0.101)	0.373 *** (0.112)	0.203 *** (0.129)	0.359 *** (0.002)
ln (HT+KIS)	0.837 *** (0.066)	0.848 *** (0.057)	0.864 *** (0.067)	0.233 * (0.760)	0.797 *** (0.067)	0.786 *** (0.065)	0.821 *** (0.651)	0.885 *** (0.063)
ln (DIV)	0.716 *** (0.145)	0.737 *** (0.147)	0.719 *** (0.145)	0.637 *** (0.133)	0.681 *** (0.141)	0.717 *** (0.148)	0.738 *** (0.146)	0.695 *** (0.149)
ln (clusters)	0.137 *** (0.078)	0.116 ** (0.046)	0.134 *** (0.048)	0.088 * (0.041)	0.078 * (0.44)	0.093 ** (0.044)	0.109 ** (0.044)	0.101 ** (0.049)
Metropolitan areas	0.608 *** (0.065)	0.584 *** (0.072)	0.598 *** (0.066)	0.637 *** (0.623)	0.623 *** (0.064)	0.596 ** (0.185)	0.603 *** (0.603)	0.639 *** (0.077)
ln (road accessibility)	0.009 * (0.004)	-	-	-	-	-	-	-
ln (rail accessibility)	-	0.029 * (0.011)	-	-	-	-	-	-
ln (doctors accessibility)	-	-	0.008 * (0.003)	-	-	-	-	-
Protected areas	-	-	-	-0.053 ** (0.023)	-	-	-	-
ln (voters turnout)	-	-	-	0.105 (0.202)	-	-	-	-
ln (human capital)	-	-	-	0.298 *** (0.044)	-	-	-	-
ln (industry empl.)	-	-	-	0.061 (0.041)	-	-	-	-
ln (export/production)	-	-	-	-	0.048 * (0.028)	-	-	-
ln (foreigners)	-	-	-	-	-	0.015 ** (0.007)	-	-

Variable	M5	M6	M7	M8	M9	M10	M11	M12
Employment changes	-	-	-	-	-	-	-0.004 *** (0.001)	-
Migrations	-	-	-	-	-	-	-	-0.010 (0.006)
R2	0.66	0.66	0.66	0.69	0.67	0.67	0.66	0.67
Test J-B	11.958 [0.003]	13.977 [0.000]	10.429 [0.005]	10.439 [0.005]	11.254 [0.004]	12.313 [0.002]	14.109 [0.001]	12.748 [0.002]
Test B-P	63.891 [0.000]	64.155 [0.000]	67.691 [0.000]	56.660 [0.000]	59.578 [0.000]	42.253 [0.000]	46.710 [0.000]	41.336 [0.000]
Moran I Test (error)	3.981 [0.000]	4.609 [0.000]	3.687 [0.000]	8.006 [0.000]	5.574 [0.000]	3.970 [0.000]	1.981 [0.048]	1.658 [0.097]
LM (lag)	0.762 [0.383]	0.227 [0.633]	1.052 [0.305]	3.669 [0.105]	1.854 [0.305]	0.499 [0.479]	0.845 [0.358]	0.223 [0.637]
Number of observations	758	758	758	758	723	758	758	758

Source: own elaboration

Explanatory notes:

- 1) Models estimated as panel (T = 2) models with spatial autocorrelation of error (SEM model) or spatial autoregression models (SLM) using MLE;
- 2) neighbourhood regions are represented by the matrix of the neighbourhood of the second order because of the counties surrounding the cities with county rights. Matrix constructed as a queen matrix.
- 3) In parentheses next to the estimates of parameters, there are standard errors robust to non-spherical disturbances (the correction proposed by Kelejian and Pruch (2007)).
- 4) *** reflects a statistical significance of the parameters at a significance level of 0.01, ** for the level of 0.05, * for the level of 0.1.

Both measures of potential accessibility are statistically significant and have a positive impact on the level of TFP in counties, but only at the 10 per cent level of significance. The impact of accessibility by the national railway, however, is stronger. It may be related to the network of railway lines in Poland between major urban centres that generate particularly important stimuli for the spillover of knowledge. Road infrastructure in this respect is distributed in a more egalitarian manner beyond the dual carriageways and motorways. Investments in road and rail infrastructure that shape both external accessibility as well as internal accessibility of the individual regions, appear to have a positive impact on the level of TFP. It should be stressed, however, that the impact of infrastructure development in the region is more complex and not necessarily always positive (see e.g. Ottaviano 2008).⁷⁷ Within the territorial key “services of general interest”, the only indicator that could be introduced into the model proved to be the accessibility to doctors. Its impact is positive and significant at the 10 per cent level, but relatively weak. Other factors that make up public utility services have not been introduced into the model due to the insufficient spatial diversity of the variables representing them. Thus the territorial key of “public services within the territorial capital” turns out to be insignificant. It is not surprising since it is hard to find arguments in favour of a fundamental role of “services of general interest” in the development of the productivity of an economic system. They probably have more impact on the shaping of the attractiveness of settlement and the evaluation of the quality of life in individual counties.

⁷⁷ Elaborating on this subject, Ottaviano (2008) points out that the development of local infrastructure primarily affects the attractiveness of the region while the development of supra-regional infrastructure affects the region’s transportation accessibility. Both of these factors determine the market potential of the region, however, affecting placement decisions of entities and employees, which in turn translates into a balance of the centrifugal and centripetal forces and therefore affects the overall concentration or dispersion of economic activity.

As for the territorial endowments/capacities key, there is a significant impact on the level of total productivity of counties of the synthetic index of the coverage with protected natural areas (with a negative impact on the level of TFP), and on the clustering index SQ (part of the base specification with a positive impact: intra-sector spillover). The negative impact of the synthetic index “coverage with protected areas” is relatively easy to explain. A higher level of coverage, and thus allegedly a better quality of the environment, increases the attractiveness of settling and placement, e.g., of tourist services, but on the other hand, it is a restriction on the placement of industrial activities, especially the ones that can damage the environment. The result obtained speaks for the domination in Poland of the second factor (clustering index) in terms of the effect on the productivity of the economic system.

The measure of human capital approximated by the participation of the population with higher education in the county has a positive and a particularly strong effect. It should be emphasised at this point that this variable, in addition to the clustering index and the knowledge capital (variable HT+KIS), has the highest impact on the level of aggregate productivity.

The results obtained fit in well with the Crescenzi and Rodriguez-Pose hypothesis (2012; 2008) also spelt up in Rodriguez-Pose and Crescenzi (2008). The model also indicates the spatial amplification effect: the proximity of other regions investing significantly in the research and development sector is conducive to the development of neighbouring counties through the diffusion of knowledge and technology. As a matter of fact, this supports the hypothesis of cross-regional innovative growth poles. Skillful, simultaneous and complementary investments in transport infrastructure *and* (not *or*) human capital is crucial for the development of counties.

The impact of social capital, approximated by a synthetic indicator of voter turnout in three types of elections, has a statistically insignificant effect on the dependent variable. This is a surprising result, since social capital is considered, to be a factor of fundamental importance in regional economic thought, and to a lesser extent in mainstream economics. However, this finding can be explained. Social capital, with its very soft, heterogeneous and elusive nature, is very difficult to measure, and as such it cannot be introduced into the econometric model. Unfortunately, for the reasons previously explained, we lack reliable, systematically collected measures of social capital at the level of counties. It is impossible to use the data from the “Social Diagnosis 2013. Objective and Subjective Quality of Life in Poland” by Czapiński and Panek (2013) for that purpose. The insignificance of the rate of voter turnout, otherwise often used in literature, suggests that this variable does not properly reflect the social capital of the region.

Specifications M9 and M10 (Table 6.2) suggest that the impact of the networking territorial key – the networking of urban centres in international systems – is statistically significant and positive for both the rate of exports (the share of exports in sold production of the industry of individual counties), as well as for the number of foreigners staying overnight. It should also be emphasised that the export potential of Polish regions is largely associated with the level of concentration of economic activity in the region, in particular with the presence of industrial clusters (Brodzicki 2014a). The obtained result is in line with expectations present in the literature. Entering network relationships both in the domestic and primarily in the international system (a network of cities, the city network concept) has a significant impact on economic development.

In the last specifications of the model, the “functional areas” key is assessed by introducing into the base specification of long-term changes in the number of those employed (over the period of 5 years) and the long-term net migration rate. Their impact on the total

level of productivity appears to be either irrelevant (migration) or statistically significant, but negative as in the case of changes in the number of employees. Migrations do not substantially affect the total level of productivity, which is probably due to the wave of internal migration leading to the phenomenon of suburbanisation or so-called *urban sprawl*.

6.5 Spatial Interactions

The impact of variables reflecting the territorial capital in neighbouring counties on the level of TFP in a given county was also examined, leading to assessments described above (Spatial Durbin Model). The selection of variables reflecting territorial capital, that can affect the neighbouring regions was made by experts in the field of spatial economics participating in a research project.

This effect may occur for the following variables:

- Participation of human capital represented by the population with higher education,
- Clustering coefficient (in the immediate vicinity),
- Employment in the industry,
- Sold production of industry per capita,
- The share of exports in industrial sales,
- Long-term changes in the number of employed,
- Long-term net migration rate

Also, and to a lesser extent, we might include the synthetic indicator regarding the presence of protected natural areas. Variables taking into account the value of sold production (sold production per capita and the share of exports in the production sold) could not be taken into consideration at this stage of the modelling due to a lack of statistical data resulting from statistical confidentiality. The accessibility of region X does not affect the accessibility of region Y because it is already taken into account by this indicator.

The results of the assessment of models that reflect the impact of exogenous variables from neighbouring locations on the value of a dependent variable in a given region (Spatial Durbin Models) are presented in Table 6.3.

Table 6.3 The Impact of Territorial Capital of Neighbouring Regions on the Diversity of ln (TFP) in Polish counties in the period 2003-2011

Variable	M13	M14	M15
Constant	2.409 *** (0.901)	6.453 *** (0.845)	2.400 *** (0.897)
Spatial autocor. error	0.297 ** (0.013)	0.324 *** (0.117)	0.025 (0.143)
ln(HT+KIS)	0.876 *** (0.062)	0.081 (0.084)	0.879 *** (0.064)
Lag(HT+KIS)	-0.807 *** (0.215)	0.014 (0.236)	-0.447 ** (0.205)

Variable	M13	M14	M15
ln(DIV)	0.771 *** (0.142)	0.578 *** (0.122)	0.759 *** (0.143)
Lag(DIV)	0.015 (0.065)	-0.231 (0.142)	0.004 (0.065)
ln(clusters)	0.064 (0.050)	-0.003 (0.043)	0.083 (0.054)
Lag(clusters)	0.325 *** (0.111)	0.259 ** (0.109)	0.205 ** (0.100)
Metropolitan areas	0.643 *** (0.076)	0.635 *** (0.065)	0.639 *** (0.077)
Protected natural areas	-	-0.050 *** (0.018)	-
Lag (protected areas)	-	0.072 (0.059)	-
ln(human capital)	-	1.203 *** (0.098)	-
Lag(human captial)	-	-0.661 *** (0.300)	-
ln(industry employment)	-	-0.044 (0.044)	-
Lag(industry employ- ment)	-	0.263 *** (0.098)	-
ln(foreigners)	-	-	0.019 ** (0.009)
Lag(foreigners)	-	-	0.034 (0.014)
Change in Employment	-	-	-0.001 (0.002)
Lag(employment change)	-	-	-0.009 *** (0.003)
Migrations	-	-	-0.009 (0.007)
Lag(Migrations)	-	-	-0.004 (0.017)
R2	0.67	0.77	0.68
Test J-B	7.872 [0.019]	9.937 [0.011]	10.429 [0.005]
Test B-P	60.194 [0.000]	54.477 [0.000]	67.691 [0.000]
Moran I Test (error)	3.469 [0.000]	3.098 [0.000]	3.687 [0.000]
LM (lag)	2.941 [0.186]	3.845 [0.178]	1.052 [0.305]
Number of observations	758	758	758

Source: own elaboration

Explanatory notes:

- 1) Models estimated as panel (T = 2) models with spatial autocorrelation of error (SEM model) or spatial autoregression models (SLM) using MLE;
- 2) Neighbourhood regions are represented by the matrix of the neighbourhood of the second order because of the counties surrounding the cities with county rights. Matrix constructed as a queen matrix.
- 3) In parentheses next to the estimates of parameters, there are standard errors robust to non-spherical disturbances (the correction proposed by Kelejian and Pruch (2007)).
- 4) *** reflects a statistical significance of the parameters at a significance level of 0.01, ** for the level of 0.05, * for the level of 0.1.

Spatial autocorrelation of the error term is statistically significant other than for the M15 model. The essential variables of the base specification retain their statistical significance: this applies to knowledge capital approximated by share of employment in high-technology sectors, in the manufacturing industry, in knowledge-intensive market services, as well as to the diversity index and the variable metropolitan HHI. The clustering of a county loses its statistical significance, which may be related to the method of identifying clusters (on the basis of which the values of the variable representing clusters in the district were determined) used by Brodzicki *et al.* (2012). The structure of the index takes into account spatial correlation (employment in neighbouring counties) already at baseline. The impact of the neighbours' knowledge capital is negative, while the level of the neighbour's clustering has a positive impact (see above note). The importance of diversification of the economies of neighbouring counties for total productivity turns out to be insignificant. As for the territorial capital measures outside the clusters, neighbourhood effects are significant only in the case of employment in industry, where they are positive, and in the case of human capital and employment changes. The impact of key variables (values for each county) on TFP appears to be undisturbed and in line with previously obtained results (see Table 6.2).

6.6 The relationship between factors constituting territorial capital in the context of economic growth

As in the previous chapter, variables that constitute territorial capital were subjected to principal components analysis. However, this applied only to those variables that contributed to changes in the value of the total factor productivity of Polish counties. These were as follows:

- Potential road accessibility to population,
- Potential rail accessibility to population,
- Potential accessibility to medical doctors,
- Synthetic measure of the share of protected areas
- The percentage of adults with higher education, as a measure of human capital,
- Specialisation index clusters,
- The ratio of the number of overnight foreigners to the number of inhabitants,
- The share of exports in industrial sales
- Change in total employment over the period of five years.

Three of the nine components discussed above can be considered as the main component, where their eigenvalues are greater than one. These three components represent almost 70 per cent of the total variability of all variables included the analysis. Table 6.4. shows the correlations between the three main components and the nine territorial capital variables.

Table 6.4 Factor loadings for the three main components of the territorial capital variables relevant for growth

Component	Component 1	Component 2	Component 3
Constant	Part of the total variation explained by the component		
	41.70%	16.82%	11.22%
Roads Accessibility	-0.952	0.103	0.058
Railway Accessibility	-0.936	0.022	-0.004
Doctors' Accessibility	-0.960	0.057	0.054
Protected Natural Areas	0.504	-0.260	0.297
Human Capital	-0.421	-0.589	-0.244
Export	0.063	-0.645	-0.078
Foreigners	0.104	-0.744	-0.184
Employment Change	-0.049	-0.268	0.897
Clusters	-0.774	-0.209	0.105

Note: In bold were marked highest correlation coefficients between the main component and a variable representing territorial capital

Source: own elaboration

As previously discussed in Chapter 5, the first main component is the strongest measure of the volatility of the three types of accessibility, of clusters, and of the share of protected areas (with the opposite sign). Thus it can still be interpreted in terms of the benefits of agglomeration. The second component captures the best human capital, exports and the number of foreigners, so just as before, knowledge and openness but perhaps also the ability to enter into relationships with the other regions and foreign firms. In contrast, long-term change in employment is mainly represented by the third major component. It seems that it shows sensitivity to external macroeconomic shocks (such as a crisis).

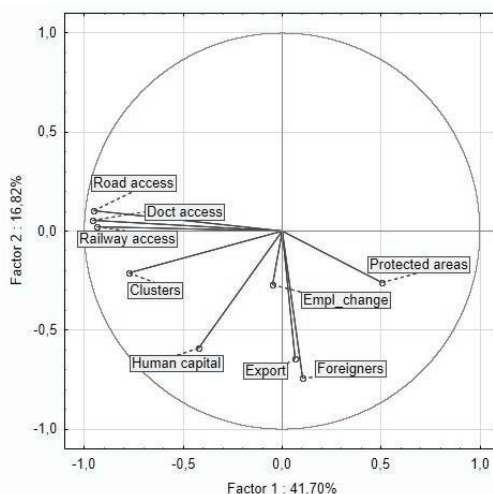


Figure 6.3 Territorial capital variables essential for growth in two-dimensional space of the first and of the second principal component

Source: own elaboration

Figure 6.3 (repeated from Figure 3.32) shows the original territorial capital variables on the plane described by the first two principal components. Again, there appears to be a high correlation between variables describing accessibility and exports and the number of foreigners. Spatial variability of the three principal components determined for significant growth variables representing territorial capital is presented in Figures 6.4-6.6.

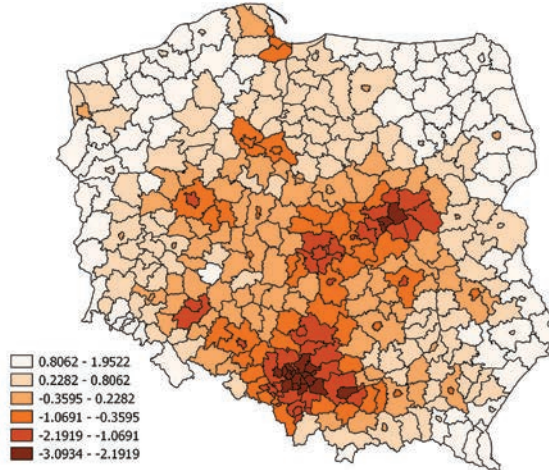


Figure 6.4 Spatial diversity of the first principle component of territorial capital elements essential to the growth of Polish counties in the years 2007–2011

Source: own elaboration

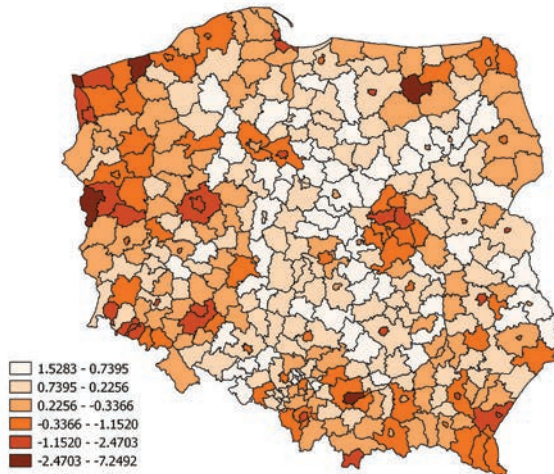


Figure 6.5 Spatial diversity of the second principle component of territorial capital elements essential to the growth of Polish counties in the years 2007–2011

Source: own elaboration

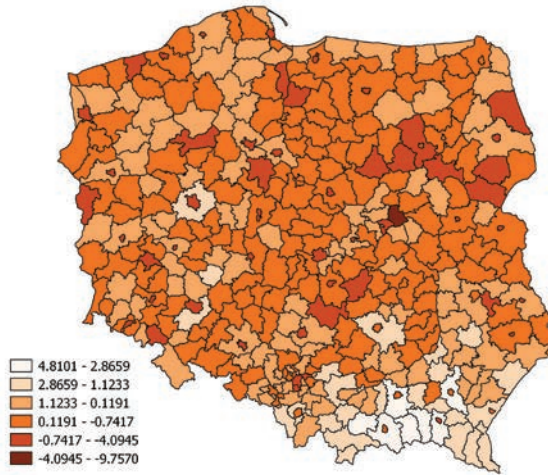


Figure 6.6 Spatial diversity of the third principle component of territorial capital elements essential to the growth of Polish counties in the years 2007–2011

Source: own elaboration

It turns out that due to the high correlation of the first principal component with variables reflecting territorial accessibility of counties (more than 0.9), spatial differentiation of this synthetic measure is very similar to the potential accessibility to the population (see. Figure 6.2).

6.7 Conclusions

Numerous empirical studies have shown that only about half of the observed variation in GDP per capita at different spatial scales can be explained by reference to the differences in factor endowments. Total productivity seems to be therefore crucial in explaining the phenomenon of growth and economic development.

Most of the territorial capital component under consideration is statistically significant and consistent with the expectations of the impact on the level of aggregate productivity of Polish counties. The impact of the territorial key of “public services” turned out to be statistically insignificant, except for a small influence of the accessibility to doctors. There was no significant importance of social capital. In this case, the outcome could have been determined by the difficulty in measuring and proper approximation of the differentiation of this characteristic of the region. Other components of territorial capital have a statistically significant impact on the level of TFP.

The most important components of territorial capital seem to be the following: the potential of human capital and the level of clustering of the economy (both recognised by us at the same time as an approximation of intra-sector knowledge spill-over). Slightly less important is the export base, and thus the level of internationalisation of the economy, and the domestic railway and road accessibility. The accessibility to doctors and the influx of tourists from abroad have the lowest importance. For some variables, there was

a demonstrated negative effect on TFP, for instance, coverage of protected natural areas, or changes in employment in the last five years.

The model's base specification, excluding the impact of territorial capital per se, explains most of the observed differences. This includes variables approximating knowledge capital, intra- and intersectoral knowledge spillover, as well as a metropolitan variable for the metropolis of III and IV MEGA order according to ESPON classification. The base specification of the model appears to be relatively resistant to changes in model specification.

It should also be emphasised that the introduction of additional variables approximating the impact of territorial capital does not bring any substantial improvement or increase in the explanatory power of the model. The fact that there is a significant spatial autocorrelation of error in the model indicates that variables from neighbouring regions significantly affecting the TFP in the region at hand were not included. This can also mean that variables used by us to approximate territorial capital are subject to significant measurement errors or do not fully reflect the essence of the capital. Most probably at stake here are deep determinants of economic development that are difficult to measure, such as wider cultural or social characteristics. At this stage, our research does not take into account the possibility of a non-linear impact of territorial capital on the level of TFP. This will probably be addressed in future research projects.

The main problem of the concept of territorial capital turns out to be its ambiguity and lack of precise delimitation, the difficulty in measuring individual components and the inability to consider the cumulative impact due to a high level of correlation of key variables. At the same time, non-territorial components of capital are hard to distinguish from the territorial ones. This will require clarification and further analysis. Notwithstanding the foregoing observations, the results confirm the hypothesis of a significant impact of certain territorial characteristics on the level of aggregate productivity of Polish counties, and thus, indirectly, on the pace of their development.

In relation to previous studies, the results obtained allowed for the new positioning of heretofore divergent results on the impact of individual factors of territorial capital on the overall level of productivity. These results are adequate for Poland but they seem to be reliable and can be applicable to other countries at a similar stage of development, i.e., on a growth path at the advanced stage of transition towards the fully-fledged functioning market economy. The general conclusion is that within this group of countries traditional developmental factors associated with territory, such as economies of agglomeration and immobile human capital operate to a full extent.

1. Human capital (in this case measured by the share of the population with higher education) is crucial in such countries as Poland. This complements the gap due to the divergence of results of existing research, e.g. Brunow and Hirte (2009) and Griliches and Regev (1995).
2. The results prove that the ability for industrial clustering is of major importance for Poland. We have utilised a novel approach applying specialisation quotient for clusters which had rarely been used for approximating the intrasectoral external economies of scale (MAR effects). Also, the previous research approach focused mainly on the sectoral dimension (e.g. Baldwin *et al.* 2007; Cingano and Shivardi 2004; Combes *et al.* 2008), bringing mixed results while we considered the impact on the entire economy. It led to a very important conclusion that in countries undergoing rapid economic transformation the benefits of agglomeration play a huge role and at this stage, there is no transition to the next stage of development described by the NEG models as a dispersion of economic activity. On the contrary, the concentration of economic activity boosts overall productivity.

3. In an analysis of spatial interactions instead of typical infrastructure endowment based measures, we have applied more intricate accessibility measures. It proved to be very useful and allowed as to abstract from problems related to the fact that quantitative infrastructure endowment does not always translate into its quality and thus isn't necessarily conducive to productivity or it may even reduce it. Greater accessibility favours economies of agglomeration (increases productivity), often due to network effects and not due to immediate proximity and thus complements SQ measures.
4. The weak significance of the extent of inetrantionalisation at the LAU level is a rather surprising result. Many previous studies identified its positive impact on the level of regional development at NUTS 2 level (e.g. Brodzicki 2014a). It turns out that in the case of EU Member states at an advanced stage of economic transition its impact on productivity is relatively insignificant.
5. The most interesting result, however, is the lack of significance of services of general interest and the negative impact on TFP of the landscape and wildlife preservation. This, in turn, points to the latent potential of the quality of life that does not translate into productivity at this stage of economic development. This indirectly confirms the hypothesis that countries such as Poland are in the first phase of NEG models where pro-agglomeration forces clearly dominate over dispersion-forces. But the question remains to what extent this result stems from the adoption of TFP rather than typical income measure indicating the level of economic development.

The impact of social capital is insignificant as well, but this could be a direct result of measurement problems at the level of districts (counties). Certainly, there is no link between the participation in elections and productivity. Civil society has no economic dimension. It may give rise to social exclusion, weak interregional solidarity and poor quality of public choice mechanisms that do not support the overall development process.

The obtained results also have important implications for the scope of development policy, in countries having similar development trajectory to Poland. Such policies should concentrate among others on:

- Further expansion of transport infrastructure conditioning the overall external and internal accessibility,
- Simultaneous large-scale investment in human capital development,
- Expansion of knowledge capital (including research and development potential) boosting knowledge generation capabilities and effective absorption of knowledge from outside,
- Stimulating the development of core areas which constitute particularly essential growth poles of Poland,
- Creating the potential for internationalisation of the economy and networking of cities.

The results also support the further implementation of cluster-based development policies.

We must also prepare for the second phase of development in accordance with the postulates of the NEG models when the dispersion is likely to occur and spatially immobile factors will gain importance.

In interpreting the results of the study, it is also important to point out the domination of market forces in economic processes and the critical role of the past, a kind of hysteresis, leading to the conclusion of general path-dependency in economic development.

Chapter 7: Modelling territorial cohesion as an inter-related process

7.1 Introductory remarks

Territorial cohesion emphasises spatial, economic, and social relations within a given region and their influence on growth within that area (e.g., a specific NUTS 2 region or voivodeship). It also facilitates the possibility of formulating value judgements regarding the effectiveness and benefits of these interrelations. However, based on insights arising from modelling the territorial optimum (see Chapter 4), we must also examine the influence of the system of interregional relations between regions (e.g., between all other NUTS 2 regions). Such regional interrelations can be both complementary and competitive in character and by their nature they are both highly specific and territorially non-replicable. The importance of the impact on the expected regional optimum cannot be overstated and has high significance, where the system of interregional relations is made up of two main components:

- Economic characteristics of the individual regions, including their economic potential; dynamics of the main macroeconomic aggregates (GNP, gross fixed capital formation, disposable income of the household sector, compensation of employees, private consumption, etc.); economic structure; the growth rate of technological development, etc.;
- Socio-economic relations, related to the flow of goods and services as well as production factors (e.g., labour, physical capital and knowledge) and dependent on the nature of accessibility between the different regions.

As a consequence, the territorial optimum of a given region is formed within a specific spatial environment which has a unique and distinctive character. The system of interrelations which is complementary (e.g., in the sphere of branch and sector structure and of comparative advantages) and competitive (e.g., in the area of common sales markets and of the flow of production factors) can effectively boost or constrain the value of an expected optimum. Research measures which allow for the quantitative analysis of such relations require the development and use of formal macroeconomic models. In this study, the HERMIN models of the sixteen economies of the Polish NUTS 2 regions (or voivodeships) were applied as tools of investigation.

In the next section we give a brief introduction to the Polish regional HERMIN system of models. The following section describes the nature of Polish inter-regional trade flows, since these provide crucial measures of the economic interrelationships between regional economies. We then describe a series of simulation experiments using the system of sixteen regional models, where the different regions are interlinked through their trade flows. These explore how alterations in regional structures create consequences for other regions through spillover effects and how the application of regional cohesion policies also create spillovers. The chapter concludes with a summary of our findings and contains one Annex.

7.2 A generic regional HERMIN modelling framework

Since the model is being constructed in order to analyse medium and long-term impacts of sectoral changes as well as Cohesion Policy on regional economies, there are three general and systemic requirements which it should satisfy:

- i) The model must be disaggregated into a small number of crucial branches or sectors which allows one at least to identify and treat the key sectoral shifts in the economy over the years of development;
- ii) The model must specify the mechanisms through which a “cohesion-type” economy is connected to its external world. The external (rest-of-national as well as the world) economy is a very important direct and indirect factor influencing the economic growth and convergence of the lagging EU regional economies, through trade of goods and services, inflation transmission, population emigration and inward foreign direct investment;
- iii) The construction of the model must recognise that a possible conflict may exist between actual situation in the region, as captured in a HERMIN model calibrated with the use of historical data, and the desired situation towards which the economy is evolving (or desires to evolve) in an economic environment dominated by wider forces of globalisation. In other words, design and calibration purely on the basis of econometrics using past data (even where feasible) are unlikely to be always appropriate.

The original framework design of a HERMIN regional model focuses on key structural features of the economy, of which the following are important:

- The degree of economic openness, exposure to trade with its external world, and response to external and internal shocks;
- The relative sizes and features of the externally traded and non-externally traded sectors and their development, production technology and structural change;
- The mechanisms of wage and price determination;
- The functioning and flexibility of labour markets with the possible role of international and interregional labour migration;

- The role of the public sector as well as the interactions between the public and private sector trade-offs in public policies;
- In a national HERMIN model, one would have to include monetary aspects, but these can be taken as exogenous at the regional level (i.e., they are determined at the national level).

In order to satisfy these requirements, the HERMIN regional framework has five sectors: manufacturing (a mainly (externally) traded sector); market services (a mainly non-externally traded sector); building and construction; agriculture; and government (or non-market) services.

Given the severe data and other restrictions that face modellers in the Polish regional economies, this is as close to an empirical representation of the traded/non-traded disaggregation as we are likely to be able to implement in practice. Although agriculture also has important traded elements, its underlying characteristics (e.g., traditional structure, price support and other aspects of the CAP) imply that it requires separate treatment. Similarly, the government (or non-market) sector is non-traded, but is best formulated in a way that recognises that it is mainly driven by policy instruments that are available — to some extent, at least — to policy-makers.

The internal structure of the HERMIN modelling framework can be best thought as being composed of three main blocks: a supply block, an absorption block and an income distribution block. Obviously, the model functions as an integrated system of equations, with interrelationships between all their sub-components. However, for expositional purposes we describe the HERMIN modelling framework in terms of the above three sub-components.

Conventional Keynesian mechanisms are only relevant for the short-term behaviour of a HERMIN model. For example, the implementational phase of Cohesion Policy has a demand component, as public expenditure is increased, but where the longer-term supply-side benefits have not yet appeared.

But the HERMIN model also has many neoclassical features in the longer term. Thus, output in manufacturing is not simply driven by demand. It is also influenced by price and cost competitiveness, where firms seek out minimum cost locations for production (Bradley and FitzGerald 1988). In addition, factor demands in manufacturing and market services are derived on the assumption of cost minimisation, using a two-factor CES production function constraint, where the capital/labour ratio is sensitive to relative factor prices. The incorporation of a structural Phillips curve mechanism in the wage bargaining mechanism introduces further relative price effects. Also, the Cohesion Policy mechanisms operate through the supply side of the model, at least in the medium to long-term.

Finally, the model handles the three complementary ways of measuring GDP in the national accounts, on the basis of output, expenditure and income (see Figure 7.1).

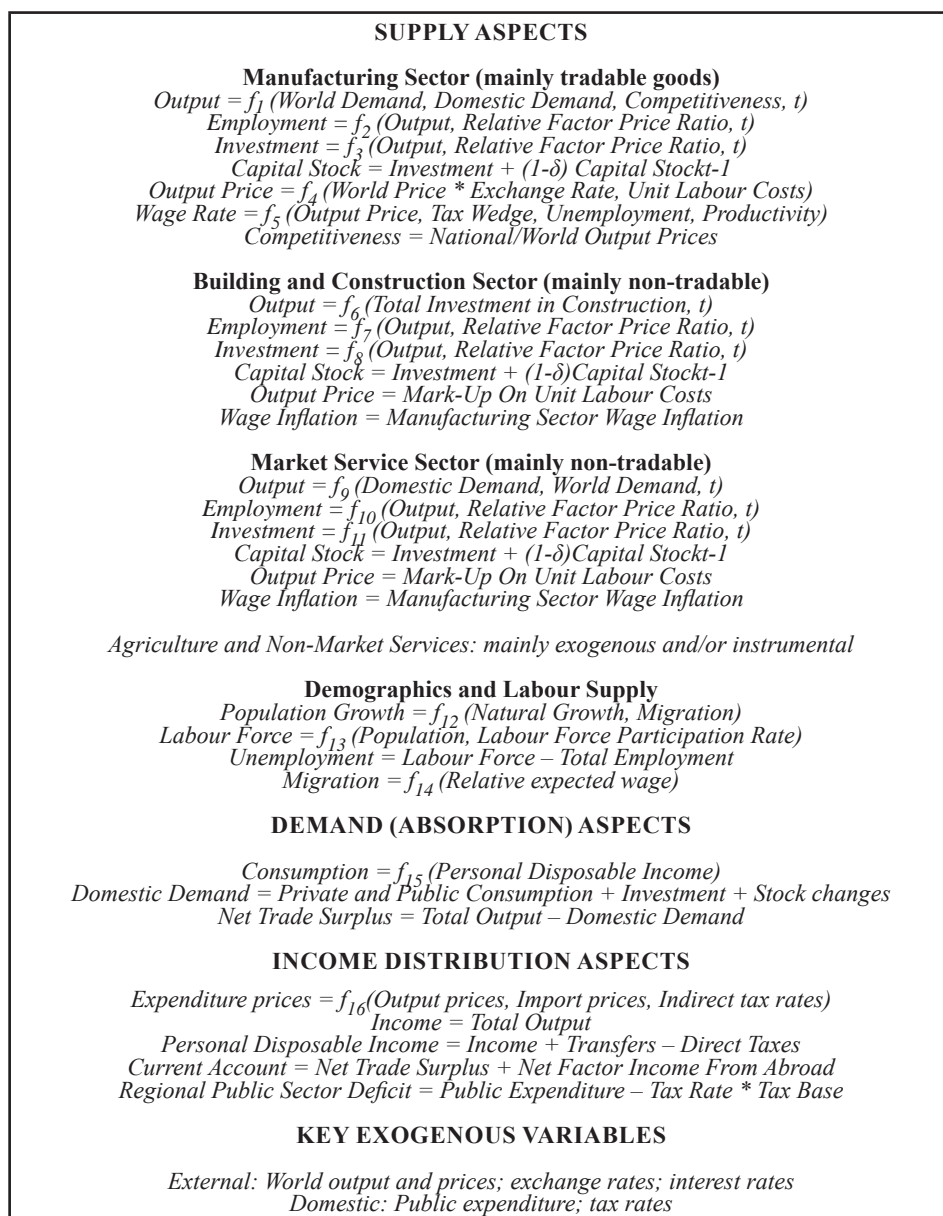


Figure 7.1 The HERMIN Regional Model Schema

Source: Bradley and Untiedt (2010)

The theory underlying the macroeconomic modelling of a small open regional economy requires that the equation for output in a mainly traded sector reflects both purely supply-side factors (such as the real unit labour costs and international price

competitiveness), as well as the extent of dependence of output on a general level of external demand. By contrast, domestic demand should play only a limited role in a mainly traded sector, mostly in terms of its impact on the rate of capacity utilisation. However, manufacturing in any but extreme cases will include a number of partially sheltered sub-sectors producing items that are partially non-traded. Hence, we would expect domestic demand to play some role in this sector, possibly also influencing capacity output decisions of firms. HERMIN posits a hybrid supply-demand equation of the form:

$$(7.1) \\ \log(OT) = a_1 + a_2 \log(OW) + a_3 \log(ULCT/POT) \\ + a_4 \log(FDOT) + a_5 \log(POT/PWORLD) + a_6 t$$

where *OW* represents the important external (or world) demand, and *FDOT* represents the influence of domestic (i.e., regional) absorption. We further expect *OT* to be negatively influenced by real unit labour costs (*ULCT/POT*) and by the relative price of domestic versus world goods (*POT/PWORLD*).

Fairly simple forms of the more Keynesian market service sector output equation (*OM*) and the building and construction output equation (*OB*) are specified in HERMIN:

$$(7.2a) \\ \log(OM) = a_1 + a_2 \log(FDOM) + a_3 \log(OW) + a_4 \log(ULCM/POM) + a_5 t$$

$$(7.2b) \\ \log(OB) = b_1 + b_2 \log(IBCTOT) + b_3 \log(ULCB/POB) + b_4 t$$

where *FDOM* is a measure of domestic demand and *OW* is a measure of “world” demand (in the *OM* equation) and *IBCTOT* is total investment in building and construction by all the other four sectors. The inclusion of the external demand term (*OW*) in the market services *OM* equation is to take account of regions that have large tourism, international transport services and other services that are internationally traded. The variables *ULCM* and *ULCB* are unit labour costs in market services and building and construction, respectively, and are deflated using the sectoral GDP deflators (*POM* and *POB*).

Output in agriculture is modelled very simply as an inverted labour productivity equation. We take the view that progress in reforming and modernising agriculture will depend on very specific conditions in each country. Basically, we summarise these complex processes in terms of the rate of productivity growth and the associated process of labour release from the sector.

$$(7.3a) \\ \log(OA/LA) = a_0 + a_1 t$$

Output in the public sector (*OGV*) is determined mainly by public sector employment (*LG*), which is a policy instrument. The identity reads as follows:

$$(7.3b) \\ OGV = LG * WG + OGNWV$$

where *OGV* is non-market services output (in current prices), *LG* is employment numbers, *WG* is average annual earnings and *OGNWV* is non wage output.

Macro models usually feature production functions of the general form:

(7.4)

$$Q = f(K, L)$$

where Q represents output, K capital stock and L employment. However, output is not necessarily determined by this relationship. We have seen above that manufacturing output is determined in HERMIN by a mixture of external and domestic demand, together with price and cost competitiveness terms. Having determined output in this way, the role of the production function is to constrain the determination of factor demands in the process of cost minimisation that is assumed. This is in contrast to the case of profit maximisation, where output and factor demands are all determined simultaneously, constrained by the production function.

Hence, given Q (determined as in equations 7.1 and 7.2a and 7.2b in a hybrid supply-demand relationship), and given (exogenous) relative factor prices, the factor inputs, L and K , are determined via optimisation behaviour of firms by the production function constraint. Hence, the production function operates in the model as a technology constraint and is only indirectly involved in the determination of output. It is partially through these interrelated factor demands that the longer run efficiency enhancing effects of policy and other shocks like the EU Cohesion Policy are believed to operate.

Ideally, a macro policy model should allow for a production function with a fairly flexible functional form that permits a variable elasticity of substitution. As the experience of several SOEs, especially Ireland, suggests (Bradley *et al.* 1995), this issue is important. When an economy opens and becomes progressively more influenced by activities of foreign-owned multinational companies, the traditional substitution of capital for labour following an increase in the relative price of labour need no longer happen to the same extent. The internationally mobile capital may choose to move to a different location than seek to replace costly domestic labour. In terms of the neoclassical theory of firm, the isoquants get more curved as the technology moves away from a Cobb-Douglas towards a Leontief type.

Since the Cobb-Douglas production function is very restrictive (with its assumed unit elasticity of substitution), we use the more general CES form of the added value production function and impose it on the manufacturing (T), the market service (M) and the building and construction (B) sectors. Thus, in the case of manufacturing:

(7.5)

$$OT = A \exp(\lambda t) [\delta \{LT\}^\rho + (1-\delta) \{KT\}^\rho]^{-\frac{1}{\rho}}$$

In this equation, OT , LT and KT are added value, employment and the capital stock, respectively, A is a scale parameter, ρ is related to the constant elasticity of substitution, δ is a factor intensity parameter, and λ is the rate of Hicks-neutral technical progress.

In both the manufacturing and market service sectors, factor demands are derived on the basis of cost minimisation subject to given output, yielding a joint factor demand equation system of the schematic form:

(7.6a)

$$K = g_1 \left(Q, \frac{r}{w} \right)$$

(7.6b)

$$L = g_2 \left(Q, \frac{r}{w} \right)$$

where w and r are the cost of labour and capital, respectively.

Although the central factor demand systems in the manufacturing (T), market services (M) and building and construction (B) sectors are functionally identical, they will have different estimated parameter values and two further crucial differences.

- First, output in the traded sector (OT) is driven by external demand (OW) and possibly by domestic demand (FDOT), and is influenced by international price competitiveness (PCOMPT) and real unit labour costs (RULCT). In the non-traded sectors, on the other hand, we tend to find that output (OM and OB) is driven mainly by domestic demand (FDM and IBCTOT, respectively), with only a very limited possible role for world demand (OW) in driving OM. This captures the essential difference between the neoclassical-like tradable sector and the sheltered Keynesian non-traded sector;⁷⁸
- Second, the output price in the manufacturing (T) sector is partially externally determined by the world price. In the market services and building sectors (M and B), the producer prices are determined as a mark-up on costs. This puts another difference between the partially price taking tradable sector and the mainly price setting non-tradable sector.

The modelling of factor demands in the agriculture sector is treated very simply in HERMIN, but can always be extended in later versions as satellite models where the institutional aspects of agriculture are fully included. We saw above that GDP in agriculture is modelled as an inverted productivity relationship. Labour input into agriculture is modelled as a (declining) time trend, and not as part of a neo-classical optimising system, as in manufacturing, market services and building and construction. The capital stock in agriculture is modelled as a trended capital/output ratio.

Finally, in the non-market service sector, factor demands (i.e., numbers employed and fixed capital formation) are exogenous instruments and are under the control of policy-makers, subject of course to fiscal solvency and other policy criteria.

HERMIN models of the Polish NUTS 2 regional economies were initially developed and used as separate models, i.e., including no inter-regional linkages (Bradley *et al.* 2006). However, in analyses concerning the impacts of Cohesion Policy on regional economic growth, interregional interactions need to be included. This poses some serious difficulties because of the lack of data concerning the inter-regional flows of goods, services and factors of production. The difficulty in obtaining such data constitutes the main obstacle in defining the likely inter-regional influences.

⁷⁸ When we refer to a sector as being “non-traded”, we mean that its output is only sold locally and is not exported, nor is it subject to direct competition from imported substitutes. Many service sector activities fall into this category.

For the present analysis inter-regional trade flows were estimated on the basis of the gravity model, to be described below. We first describe how these inter-regional trade flow data were constructed. Then, we explain how the necessary inter-regional trade flow mechanisms were incorporated into an augmented inter-linked system of sixteen NUTS 2 regional models. Using the new system of interlinked regional models, we then proceed to carry out series of simulation experiments that explore the role of the interregional links and their policy consequences.

7.3 Constructing interregional trade flows

In HERMIN models the simplifying assumption is made that the only internationally traded sector (i.e., the only sector whose output is subject to exchange with its external environment) is manufacturing. Of course, in the context of the continual development of information and telecommunications technologies, services of various kinds have begun to be traded internationally and between regions. In addition, an element of manufacturing activity can be, effectively, non traded either internationally or between regions. But at the present stage of Polish regional development, these simplifications concerning the HERMIN sectors appear to be acceptable.

Only at the NUTS 2 (or voivodeship) level is it possible to find, or construct, statistical data on inter-regional trade processes.⁷⁹ Trade flows between voivodeships can be estimated on the basis of data concerning industrial production for the period of 2000–2012 (Polish Central Statistical Office – Local Data Bank). Assuming that the entire production is exported, and drawing on data of the Customs Chamber in Warsaw concerning the flow of international exports in the regional structure (2000–2012), a portion out of the industrial production of each voivodeship can be separated which related to inter-regional exchange.

The challenge now is to allocate the total of the interregional component of trade carried out by any specific region to the other fifteen NUTS 2 regions. This process of regional trade allocation was carried out using two plausible criteria: regional GDP (or economic potential, henceforth “potential”) and inter-regional time accessibility (henceforth “accessibility”).⁸⁰ The approach used was that employed in gravity models (Lewandowska-Gwarda and Antczak 2010, 226–236) as well as in indicators of potential accessibility (Rosik 2012, 24). The geographical structure of regional exports is presented in Tables 7.1 and 7.2, based on two separate systems of weights derived from inter-regional accessibility and regional potential.

⁷⁹ On the NUTS 2 (or voivodeship) level in Poland, regional policy in its territorial dimension can be most fully explored. The NUTS 2 level was chosen as the main sphere of intervention within the framework of regional policy conducted both by central authorities and self-governments at this regional level (Ministerstwo Rozwoju Regionalnego 2010a). In addition, for the years of 2014–2020 the instruments of EU Cohesion Policy generally refer to either the national or the NUTS 2 level.

⁸⁰ In the analysis, data were applied concerning the commute times using private cars between different capitals of every voivodeship. In the case of the Lubuskie and Kujawsko-Pomorskie voivodeships, an arithmetic average of temporal accessibility was chosen for Zielona Góra and Gorzów Wielkopolski as well as Bydgoszcz and Toruń, respectively. The data used were made available by the team of T. Komornicki of the Institute of Geography and Spatial Organisation, Polish Academy of Sciences (PAN). The elaboration of the data was carried out by Marcin Stępniaik.

Table 7.1 Geographical structure of regional exports using economic potential weights

From a region:	Into a region:																
	Export weights to the rest of Poland	Dolnośląskie	Kujawsko-Pomorskie	Lubelskie	Lubuskie	Łódzkie	Małopolskie	Mazowieckie	Opolskie	Podkarpackie	Podlaskie	Pomorskie	Śląskie	Świętokrzyskie	Warmińsko-Mazurskie	Wielkopolskie	Zachodniopomorskie
Dolnośląskie	0.41	0.00	0.02	0.02	0.01	0.03	0.03	0.10	0.01	0.02	0.01	0.03	0.06	0.01	0.01	0.04	0.02
Kujawsko-Pomorskie	0.68	0.06	0.00	0.03	0.02	0.04	0.05	0.16	0.01	0.03	0.02	0.04	0.09	0.02	0.02	0.07	0.03
Lubelskie	0.72	0.06	0.03	0.00	0.02	0.05	0.06	0.17	0.02	0.03	0.02	0.04	0.10	0.02	0.02	0.07	0.03
Lubuskie	0.41	0.04	0.02	0.02	0.00	0.03	0.03	0.09	0.01	0.02	0.01	0.02	0.05	0.01	0.01	0.04	0.02
Łódzkie	0.75	0.07	0.04	0.03	0.02	0.00	0.06	0.18	0.02	0.03	0.02	0.05	0.10	0.02	0.02	0.07	0.03
Małopolskie	0.67	0.06	0.03	0.03	0.02	0.04	0.00	0.16	0.02	0.03	0.02	0.04	0.09	0.02	0.02	0.07	0.03
Mazowieckie	0.66	0.07	0.04	0.03	0.02	0.05	0.06	0.00	0.02	0.03	0.02	0.05	0.11	0.02	0.02	0.08	0.03
Opolskie	0.71	0.06	0.03	0.03	0.02	0.04	0.05	0.16	0.00	0.03	0.02	0.04	0.09	0.02	0.02	0.07	0.03
Podkarpackie	0.60	0.05	0.03	0.02	0.01	0.04	0.05	0.14	0.01	0.00	0.01	0.03	0.08	0.02	0.02	0.06	0.02
Podlaskie	0.73	0.06	0.03	0.03	0.02	0.05	0.06	0.17	0.02	0.03	0.00	0.04	0.10	0.02	0.02	0.07	0.03
Pomorskie	0.47	0.04	0.02	0.02	0.01	0.03	0.04	0.11	0.01	0.02	0.01	0.00	0.06	0.01	0.01	0.05	0.02
Śląskie	0.61	0.06	0.03	0.03	0.02	0.04	0.05	0.16	0.01	0.03	0.02	0.04	0.00	0.02	0.02	0.07	0.03
Świętokrzyskie	0.78	0.07	0.04	0.03	0.02	0.05	0.06	0.18	0.02	0.03	0.02	0.05	0.10	0.00	0.02	0.07	0.03
Warmińsko-Mazurskie	0.63	0.06	0.03	0.02	0.01	0.04	0.05	0.15	0.01	0.02	0.01	0.04	0.08	0.02	0.00	0.06	0.02
Wielkopolskie	0.58	0.05	0.03	0.02	0.01	0.04	0.05	0.14	0.01	0.02	0.01	0.04	0.08	0.02	0.02	0.00	0.02
Zachodniopomorskie	0.50	0.04	0.02	0.02	0.01	0.03	0.04	0.12	0.01	0.02	0.01	0.03	0.07	0.01	0.01	0.05	0.00

Source: own elaboration on the basis of data provided by the Ministry of Finance, GUS and data made available by the team of T. Komornicki (The Institute of Geography and Spatial Organisation, Polish Academy of Sciences (PAN). Elaboration of data due to M. Stepniak)

Table 7.2 Geographical structure of regional exports using inter-regional time accessibility weights

From a region: \ Into a region:	Export weights to the rest of Poland	Dolnośląskie	Kujawsko-Pomorskie	Lubelskie	Lubuskie	Łódzkie	Małopolskie	Mazowieckie	Opolskie	Podkarpackie	Podlaskie	Pomorskie	Śląskie	Świętokrzyskie	Warmińsko-Mazurskie	Wielkopolskie	Zachodniopomorskie
Dolnośląskie	0.41	0.00	0.02	0.01	0.03	0.03	0.03	0.02	0.08	0.02	0.01	0.02	0.05	0.02	0.01	0.04	0.02
Kujawsko-Pomorskie	0.68	0.04	0.00	0.03	0.05	0.06	0.03	0.05	0.03	0.02	0.03	0.09	0.03	0.03	0.06	0.07	0.04
Lubelskie	0.72	0.03	0.04	0.00	0.03	0.05	0.05	0.09	0.04	0.08	0.06	0.03	0.04	0.08	0.04	0.04	0.03
Lubuskie	0.41	0.04	0.03	0.02	0.00	0.03	0.02	0.02	0.03	0.01	0.01	0.02	0.03	0.02	0.02	0.06	0.06
Łódzkie	0.75	0.05	0.05	0.04	0.04	0.00	0.05	0.08	0.05	0.03	0.03	0.04	0.06	0.07	0.04	0.08	0.03
Małopolskie	0.67	0.05	0.02	0.03	0.03	0.04	0.00	0.03	0.07	0.05	0.02	0.02	0.17	0.07	0.02	0.03	0.02
Mazowieckie	0.66	0.03	0.05	0.06	0.03	0.08	0.04	0.00	0.03	0.03	0.06	0.03	0.04	0.06	0.05	0.04	0.02
Opolskie	0.71	0.12	0.03	0.02	0.04	0.05	0.08	0.03	0.00	0.03	0.02	0.02	0.12	0.04	0.02	0.04	0.03
Podkarpackie	0.60	0.04	0.02	0.07	0.02	0.04	0.07	0.04	0.04	0.00	0.03	0.02	0.06	0.07	0.03	0.03	0.02
Podlaskie	0.73	0.03	0.05	0.07	0.03	0.06	0.04	0.10	0.04	0.04	0.00	0.04	0.04	0.05	0.07	0.04	0.03
Pomorskie	0.47	0.03	0.07	0.02	0.03	0.03	0.02	0.03	0.02	0.02	0.03	0.00	0.02	0.02	0.06	0.04	0.03
Śląskie	0.61	0.06	0.02	0.02	0.03	0.04	0.14	0.03	0.09	0.04	0.02	0.02	0.00	0.05	0.02	0.03	0.02
Świętokrzyskie	0.78	0.04	0.04	0.07	0.03	0.08	0.10	0.07	0.05	0.07	0.04	0.03	0.08	0.00	0.03	0.04	0.03
Warmińsko-Mazurskie	0.63	0.03	0.07	0.04	0.03	0.05	0.03	0.07	0.03	0.03	0.06	0.08	0.03	0.04	0.00	0.04	0.03
Wielkopolskie	0.58	0.05	0.06	0.02	0.07	0.06	0.03	0.04	0.04	0.02	0.02	0.03	0.03	0.03	0.03	0.00	0.04
Zachodniopomorskie	0.50	0.03	0.04	0.02	0.08	0.03	0.02	0.03	0.03	0.02	0.02	0.03	0.03	0.02	0.02	0.06	0.00

Source: own elaboration on the basis of data provided by the Ministry of Finance, GUS and data made available by the team of T. Komornicki (The Institute of Geography and Spatial Organisation, Polish Academy of Sciences (PAN)). Elaboration of data due to M. Stępiak

The switch between using “accessibility” criteria and economic “potential” criteria has a clear impact on the intensity of the derived trade flows in the interregional system. For the purpose of illustrating these differences, we present below the significance of other regions as trade partners of a selected single region, i.e., the Dolnośląskie voivodeship, using both variations:

- Geographical structure of exports of Dolnośląskie determined exclusively on the basis of GDP of other regions (“potential,” Figure 7.2a);
- Geographical structure of exports of Dolnośląskie determined exclusively by the accessibility of other voivodeships (“accessibility,” Figure 7.2b).

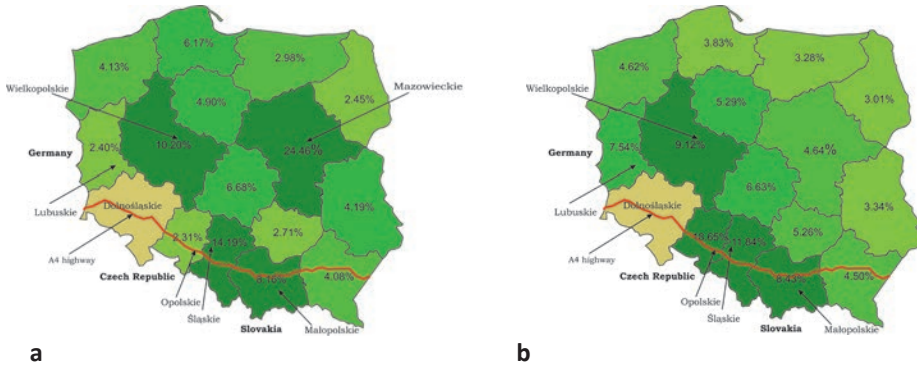


Figure 7.2 Geographical structure of interregional exports of Dolnośląskie in 2012 using two approaches: (a) Based on “potential”, and (b) Based on “accessibility”

Source: own elaboration on the basis of data provided by the Ministry of Finance, GUS and data made available by the team of T. Komornicki (The Institute of Geography and Spatial Organisation, Polish Academy of Sciences (PAN). Elaboration of data due to M. Stępiak⁸¹

Assuming that the spatial distribution of the exports of any specific region is determined exclusively by the “potential” of regions (Figure 7.2a), one notices the dominance of the economically strongest voivodeships (as measured by their GDP): above all, Mazowieckie (24.5 per cent) and Śląskie (14.2 per cent). Representing the other extreme are the neighbouring regions of Dolnośląskie that have low GDP: with trade shares of Opolskie (2.3 per cent) and Lubuskie (2.4 per cent).

However, in the situation where the interregional (or geographical) structure of trade flows was determined exclusively by the “accessibility” of respective regions (Figure 7.2b), exports of Dolnośląskie are predominantly directed at voivodeships through which the A4 motorway runs: i.e., Opolskie (18.7 per cent) and Śląskie (11.8 per cent). It should be noted that the trade position of regions which are direct neighbours of Dolnośląskie (i.e., Lubuskie and Wielkopolskie) is relatively weaker because of their poor transport infrastructure network communication links. The trade share of the Lubuskie voivodeship (7.5 per cent) is lower than that of the Małopolskie voivodeship, which is connected to Dolnośląskie by the A4 motorway (8.4 per cent).

⁸¹ Technical assistance during the map-making process was provided by Monika Szwed, Wrocław Regional Development Agency.

7.4 Interregional territorial cohesion: preparing the simulation experiments

7.4.1 Changes made to the regional models

For the purpose of incorporating inter-regional trade links in the system of separate regional models, the following changes were implemented within behavioural equations of each of the HERMIN regional models:

In the equation representing the influence of world demand on a given region (OW) and the economic processes taking place in its neighbouring regions, variables were introduced which use Gross Value Added (GVA) in the manufacturing sector (OT) in other regions. The various voivodeship trading partners were assigned significance on the basis of the intensity of interregional trade.

(7.7)

$$OW_j = \exp(XWW_1 * \log(OT_1) + XWW_2 * \log(OT_2) + \dots + XWW_{15} * \log(OT_{15}) + XWZ_1 * \log(IP_1) + XWZ_2 * \log(IP_2) + \dots + XWZ_k * \log(IP_k)),$$

where:

- OW_j – world demand of the j region,
- XWW_i – i region's share ($i = 1, 2, \dots, 15$) in the export of j region,
- XWZ_l – l country's share ($l = 1, 2, \dots, k$) in the export of j region,
- OT_i – Gross Value Added (GVA) of i region,
- IP_l – industrial production of l country.

Combining external demand (OW) with regional Gross Value Added (OT) forms the first channel of interregional links in the system. It allows for the evaluation of the impact of EU Cohesion Policy actions on any specific region, but taking into account the spillovers associated with inter-regional trade. In accordance with equation 7.7, external demand in a given region is a function both of world demand (i.e., demand originating outside Poland) and of Gross Value Added (OT) of other voivodeships. Gross Value Added (GVA), on the other hand, remains under the influence of demand and supply effects of financial interventions introduced within the framework of the Cohesion Policy.

The equation illustrating Gross Value Added (OT) in the manufacturing sector in any specific region was augmented by a variable approximating imports (IMP), which are endogenous. Imports were modelled as a function of gross disposable income ($YRPERD$) and public funds allocated within the framework of the EU Cohesion Policy ($FUND$) which flow to other regions, for instance, as a result of purchasing investment goods.⁸²

⁸² FUND variable is applied exclusively in counterfactual analyses which are carried out to specify the impact of financial intervention (e.g. EU resources) on socio-economic processes. For the purpose of this study, an assumption has been made that the percentage of funds flowing to other regions (c) equals the ratio of total EU funds allocated in a given region and total gross fixed capital formation in a given region. When one takes a look at the values of c coefficient across regions it seems that the assumption is in line with structural underpinnings of regional economies in Poland. It turns out that poorer and more agriculture-oriented voivodeships are characterised by greater values of the c coefficient. This, in turn, implies that they are forced to spend a greater part of their financial support (e.g. EU funding) on imports of investment goods produced in richer and more industrialised Polish regions. On the other hand, more affluent and economically stronger voivodeships with the developed manufacturing sector are much more self-sufficient and less dependent upon importation of machinery and equipment from the poorer ones.

(7.8)

$$IMP = b_1 + b_2 * YRPERD + c * FUND$$

(7.9)

$$\log(OT) = (a_1 + a_2 * \log(OW) + a_3 * \log(FDOT) + a_4 * \log(ULCT/POT) + a_5 * \log(POT/PWORLD) + a_6 * \log(IMP) + a_7 * TOT),$$

where:

- IMP** – import value of a given region⁸³,
YRPERD – gross disposable income of the household sector of a given region,
FUND – public funds allocated within the framework of the Cohesion Policy – assigned to a given region,
 $a_1, \dots, a_7, b_1, b_2$ – structural parameters,
 c – percentage of funds flowing to other regions.

Introducing the variable of import (IMP) creates a channel which allows us to observe a negative impact on the economy of any outflow of public funds to other regions. Simultaneously, it allows for an appropriate correction of the scale of demand effects generated by financial transfers in an analysed region. Another channel enabling the consideration of interregional relations was created by introducing into the equation for the price index in the industrial sector in the external environment of a given voivodeship (PWORLD) variables presenting deflator of Gross Value Added in this sector (POT) in remaining fifteen regions.

(7.10)

$$PWORLD_j = \exp(XWW_1 * \log(POT_1) + XWW_2 * \log(POT_2) + \dots + XWW_{15} * \log(POT_{15}) + XWZ_1 * \log(P_1) + XWZ_2 * \log(P_2) + \dots + XWZ_k * \log(P_k)),$$

where:

- PWORLD_j** – the price index within the industrial sector in the external environment of j region,
XWW_i – i region's share ($i=1,2,\dots,15$) in export of j region,
XWZ_l – l country's share ($l=1,2,\dots,k$) in export of j region,
POT_i – deflator of Gross Value Added in the industrial sector of i region,
P_l – the price index of the l country's industrial production.

The above modification not only allowed for endogenisation of the influence of interregional relations on the price generating processes in a given voivodeship but also provided an opportunity to specify how those interrelations influence its cost competitiveness in the context of implementing EU Cohesion Policy.

The changes presented above concerning the structure of HERMIN models of the economies of Polish voivodeships made it possible to create a coherent analytical system which reflects the main interregional economic relations.

The results of simulations are now presented which were conducted using the system of interlinked regional HERMIN models as described above. The main purpose of the study was to establish how the unique structure of the interregional economic environment might influence individual voivodeships as well as Cohesion Policy impacts on their economies. Exogenous treatment of economic tendencies taking place on the territories of foreign trade partners (Germany, France, etc.) allowed us to focus on the territorial feedbacks and relations between voivodeships.

⁸³ Imports refer to both domestic and foreign flows.

The study has a character of sensitivity analysis. Two areas were taken into account:

- The impact of changes in the interregional environment on the average annual growth rate of regional GDP (2005 prices) in the period of 2013-2025;
- The impact of the interregional environment on the effects of the European Union's Cohesion Policy (EU funds and national public co-funding within the National Development Plan for 2004-2006 as well as the National Strategic Reference Framework for 2007-2013).

While the first approach allows for the direct examination of the interregional environment impacts on economic processes taking place in specific voivodeships, the second one focuses on the effectiveness of Cohesion Policy within a specific external context.

7.4.2 Simulating the impact of the interregional environment on economic growth

The system of interrelated regional HERMIN models of the NUTS 2 (or voivodeship) economies was used for the purpose of deriving the likely impact of the nature of the interregional environment on regional economic growth. A series of five "scenarios" was simulated, as set out in Table 7.3:

Table 7.3 Regional growth simulation scenarios

Scenario	Structural characteristics of voivodeship economies	Measure of interregional trade
Scenario 1 (reference)	No changes, i.e., no policy or other interference in GDP baseline projections of voivodeships generated by the system of HERMIN models.	The assumption made that key determinant of regional exports is exclusively the economic "potential".
		The assumption made that the key determinant of interregional trade structure is the "accessibility" of export destination.
Scenario 2	An increase in the importance of industrial sector in Zachodniopomorskie. Through a modification of the time trend (TOT) in the equation for manufacturing GVA (OT) the share of manufacturing sector in GVA of the region was gradually increased so that in 2025 it was 5 per cent higher in relation to scenario 1 (reference).	Regional "potential".
		Regional "accessibility".
Scenario 3	Slowing down of the technical progress dynamics and of the growth rate of GVA in the sector of market services (OM) and the manufacturing sector (OT) in Mazowieckie. Technical progress was decreased fourfold through the parameter values reflecting Hicks-neutral technical progress in the manufacturing sector and market services sector (TT and TM variables). The average GVA dynamics in the manufacturing sector and market services sector in the period of 2013-2025 was reduced by 2 percentage points through making temporary changes of TOT and TOM respectively in GVA equations in the industrial sector (OT) and market services sector (OM).	Regional "potential".
		Regional "accessibility".

Scenario	Structural characteristics of voivodeship economies	Measure of interregional trade
Scenario 4a	Enhancement of technical progress in Podlaskie voivodeship. Technical progress was enhanced by a fourfold increase of the parameter values reflecting Hicks-neutral technical progress in the industrial sector and market services sector (TT and TM variables).	Regional “potential”.
		Regional “accessibility”.
Scenario 4b	Enhancement in relation to the growth rates of GDP in the industrial sector in Podlaskie voivodeship. The average GVA dynamics in the industrial sector in the period of 2013-2025 was increased by 2 percentage points while applying time trend of TOT in GVA equations in the industrial sector (OT).	Regional “potential”.
		Regional “accessibility”.
Scenario 5	Limitation of dynamics of technical progress and growth rate of GVA in the sector of market services and the industrial sector in Mazowieckie, Dolnośląskie, Pomorskie, Wielkopolskie, Małopolskie and Śląskie voivodeships. Technical progress was slowed down by a fourfold decrease of the parameter values reflecting Hicks-neutral technical progress in the industrial sector and market services sector (TT and TM variables). The average GVA dynamics in the industrial sector and market services sector in the period of 2013-2025 was reduced by 2 percentage points while applying temporal changes of TOT and TOM respectively in GVA equations in the industrial sector (OT) and market services sector (OM).	Regional “potential”.
		Regional “accessibility”.

Source: own elaboration

The following is a brief explanation of the purpose of these five scenarios. Scenario 1 is designed to explore the impact of opening up interregional channels of trade. In other words, we compare the case where the region operated as a closed economy relative to all other Polish regions to the case where the region can trade with other Polish regions as well as with the global economy. The latter, i.e., the world economy, is treated as exogenous to all Polish regions and, indeed, to the Polish national economy. But the performance of the other Polish regions is endogenous. The two alternative interregional measures are examined separately (i.e., “potential” and “accessibility”). This scenario has a reference character for the remaining four scenarios.

In the case of Scenario 2, we select a specific Polish NUTS 2 region (Zachodniopomorskie) and analyse the possible influence of faster industrial development in this region and how it might spill over into the economies of other Polish regions. We do this for the two different trade pattern assumptions, i.e., interregional trade driven by “potential” and “accessibility”. Zachodniopomorskie is a region where the economic transition from the former regime of central planning contributed to a serious decrease in the industrial sector’s significance. Compounded by the limited national accessibility of the region, this led to a deterioration in its competitiveness. Consequently, it appeared interesting to study how the future development of the manufacturing base in Zachodniopomorskie might spill over into economic growth in other regions. Conducting such a simulation can also explore the evaluation of the role of industrial policy in shaping territorial cohesion on an interregional level.

In Scenario 3, an attempt was made to identify the consequences of reducing economic growth of the Mazowieckie NUTS 2 region (or voivodeship) as the economically strongest region in Poland. The NUTS 2 region of Mazowieckie includes the Warsaw urban agglomeration, where Warsaw is by far the largest and most central city in Poland. Such a scenario is, of course, purely hypothetical. But it permits exploration of the role of the Mazowieckie voivodeship (or, strictly speaking, the Warsaw urban agglomeration) for the territorial cohesion of the other Polish regions.

The main purpose of Scenario 4 is to explore how greater and more effective support for the NUTS 2 regions (or voivodeships) in eastern Poland might affect other regions. However, there is a distinction made here relating to changes concerning the technological level of voivodeship's economy (Scenario 4a) and of its economic structure (Scenario 4b).

In the final Scenario 5, we explore the possible consequences of a deterioration of economic situation in the economically strongest regions of Poland. These are as follows: Mazowieckie, Dolnośląskie, Pomorskie, Wielkopolskie, Małopolskie and Śląskie. As in the previous scenarios, we study how the measure of interregional trade (i.e., "potential" driven versus "accessibility" driven) can affect the outcome.

7.4.3 Scenario 1: Opening up interregional channels of trade

Allowing for interregional trade connections is seen to have significant effects on economic performance of Polish regions (see Figures 7.3; 7.4a and 7.4b) which confirms the importance of such relations for economic and policy-making processes. No simple pattern arises from the analysis, however, although some interesting outcomes might be emphasised. Firstly, the most industrialised and economically strong region in Poland – Dolnośląskie is expected to be worse-off due to growing expansion and competitiveness of other voivodeships. This region specialises in relatively high value-added and export-oriented sectors such as automotive and production of household appliances as well as copper mining which rely heavily on global economic processes. As interregional channels of trade are opened up this voivodeship tends to import more from the rest of Poland (e.g. less value-added products such as processed food, etc.) than it exports to other Polish regions. The overwhelming majority of its external sales go outside the country. Secondly, allowing for interregional trade flows enables us to take into account competitive advantages of poorer voivodeships which are more agriculture-oriented and characterised by lower labour costs or specialise in more traditional manufacturing production. As it is shown in Figures 7.4a and 7.4b, all the least affluent Polish regions (Lubelskie, Świętokrzyskie, Podkarpackie, Podlaskie, Warmińsko-Mazurskie) reap benefits from interregional trade connections. Finally, the outcome of opening up interregional channels of trade for Mazowieckie with the capital city of Warsaw seems to be insignificant. It indicates that the economically strongest region exports to the rest of Poland, however, it is at the same time one of the main export destinations for other voivodeships which attempt to make use of their competitive advantages and sell their products on the largest market in Poland.

Scenario 1 – presented in the two variations of how interregional trade is distributed – is of the nature of a reference outcome, based upon historical characteristics. It has not been subject to any additional modifications (for example, based on expectations concerning specific growth tendencies). Changes in the geographical structure of interregional trade do not – by themselves – play a decisive role in affecting economic growth (see Figures 7.4a and 7.4b). It is only after being combined with growth tendencies and other changes taking place in respective regions that it gains significance. To illustrate it further, one could use the example of the Opolskie voivodeship.⁸⁴ In a situation in which this region gained an easier access to the dynamically developing Pomorskie and Wielkopolskie voivodeships (Figure 7.4a), it would provide a boost towards a higher dynamics of its GDP. If, in contrast to scenarios presented in Figures 7.3 and 7.4a, the real production rate in the two regions

⁸⁴ Obviously, for the purpose of illustrating the influence of interregional environment on GDP, one can also use examples of other voivodeships.

referred to above was significantly lower, it would result in a decrease in economic growth of the Opolskie voivodeship despite the lack of barriers in terms of access to more distant export destinations. Furthermore, this kind of spatial economic system leads to a situation in which the Opolskie voivodeship functions less effectively when “accessibility” of other regions constitutes the key factor determining the structure of export (Figure 7.4b). The significance of changes of structural character for the macroeconomic environment that take place in respective regions is illustrated in the subsequent scenarios.

Scenario 1

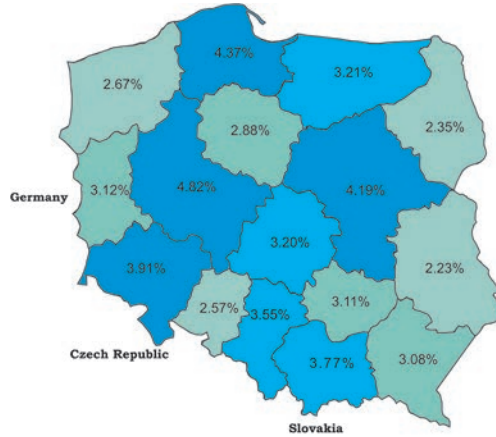


Figure 7.3 The real growth rate of regions (average for the period 2013-2025: per cent) Baseline scenario (no interregional trade connections)

Source: own elaboration

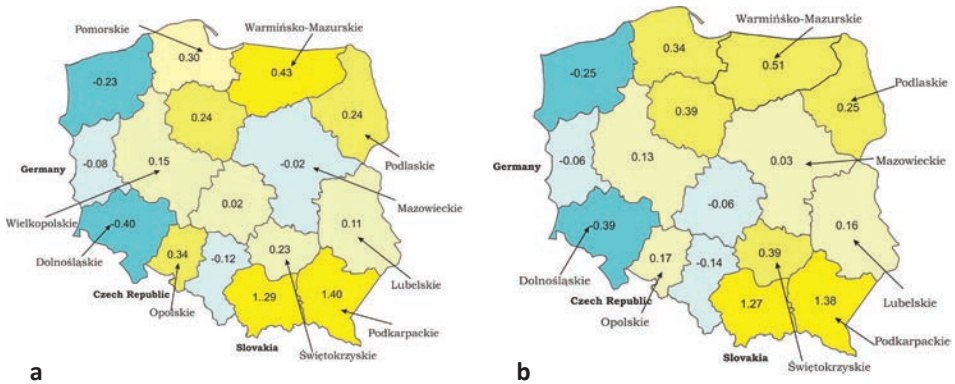


Figure 7.4 The differences in average real growth rate of regions (2013-2025) caused by opening up interregional trade channels. (a) Scenario using regional “potential” minus the baseline scenario (b) Scenario using “accessibility” minus the baseline scenario (percentage points)

Source: own elaboration

7.4.4 Scenario 2: Regional spillover of faster development in one region

The boost in the role of the industrial sector in the NUTS 2 region of Zachodniopomorskie is reflected in the dynamics of its GDP presented below (Figures 7.5; 7.6a and 7.6b) in comparison to the reference scenario (Figures 7.3; 7.4a and 7.4b). The effect on the economic growth of Zachodniopomorskie is greater when no interregional trade connections are assumed (compare Figures 7.5; 7.6a and 7.6b). This is mainly due to relatively high orientation of this voivodeship to the markets outside of Poland the growth of which is set exogenously.

At the same time higher disposable income of households in Zachodniopomorskie is partly spent on goods from other Polish regions. In the case of the scenario variation in which the geographical structure of interregional trade is exclusively dependent on the economic “potential” of the regional export destinations (Figure 7.6a), faster development of Zachodniopomorskie most strongly affects the regions of Łódzkie, Opolskie, Świętokrzyskie and Śląskie (in both direct and indirect fashion⁸⁵) which are characterised by a relatively high exposure to interregional exports⁸⁶ as well as a high rate of industrialisation⁸⁷ (compare Figures 7.6a and 7.4.a). Hence, the results of the stimulation of an industry sector in Zachodniopomorskie indicate that among main beneficiaries are poorer and middle-income industry-oriented voivodeships rather than high-income Polish regions with large and competitive production capacity as one could have expected. This might imply that when there are no transport barriers a stimulus to industry in one individual voivodeship is more likely to spur utilisation of endogenous assets of economically weaker regions with the industrial potential. Economic performance of more affluent voivodeships (e.g. Dolnośląskie, Mazowieckie, Pomorskie) seems to be determined largely by what is going on outside Poland. An exception is Śląskie – the third richest voivodeship in Poland (in terms of GDP per capita in 2012) — in the case of which industrialisation of Zachodniopomorskie has a relatively significant effect. In other words, an impulse in the economy of Zachodniopomorskie along with elimination of transport barriers are expected to stimulate those branches of Śląskie industry which are not exclusively oriented to exports outside Poland. As one can see this scenario provides us with thought-provoking results on how rich regions are sensitive to improvements in infrastructure combined with supply-side shocks in the rest of Poland (e.g. resulting from industrial policies). However, it seems to be of greater importance to analyse the opposite relation, namely, how economically strong voivodeships highly dependent upon global markets might affect other Polish regions. We touch upon that issue in the next scenario.

In the variation which assumes the use of “accessibility” for interregional trade structure, the regions that are most affected by spillovers from Zachodniopomorskie are Lubuskie, Wielkopolskie, Łódzkie, Opolskie and Świętokrzyskie (Figure 7.6b). This is obviously a consequence of links to regions that are easily accessible from Zachodniopomorskie (Lubuskie and Wielkopolskie)⁸⁸ as well as an enhanced industrial sector combined with a strong involvement in interregional exports (Łódzkie, Opolskie and

85 Indirect effects consist in taking advantage of faster growth in other regions that is induced by higher growth in the economy of Zachodniopomorskie.

86 Exports of Łódzkie, Opolskie, Świętokrzyskie and Śląskie to the rest of Poland amount to: 75%; 71%; 78%; 61% of their total exports respectively (see: Tables 7.1 and 7.2.).

87 The shares of industry in total GVA (2012) in Łódzkie, Opolskie, Świętokrzyskie and Śląskie amount to: 30.0%; 30.0%; 26.4%; 35.7% respectively. The analogous share for Poland is 26.5%.

88 Even though Pomorskie is a neighbouring region of Zachodniopomorskie their transport interlinks do not provide good time accessibility between those two voivodeships (see: Tables 7.1 and 7.2).

Świętokrzyskie). The cases of the Łódzkie, Opolskie and Świętokrzyskie regions indicate that even when there are transport barriers for interregional exchange, the main beneficiaries of enhancement of Zachodniopomorskie industrial economy are not only the regions with which it has the best transport links. A high percentage of industrial goods sent to other regions as a share of total exports of Łódzkie, Opolskie and Świętokrzyskie, creates a situation where these regions take advantage of an impulse provided by the economy of Zachodniopomorskie.

Scenario 2

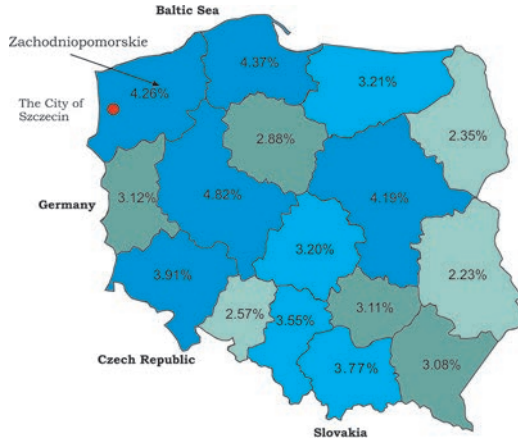


Figure 7.5 The real growth rate of regions (average for the period 2013-2025: per cent) Baseline scenario (no interregional trade connections)

Source: own elaboration

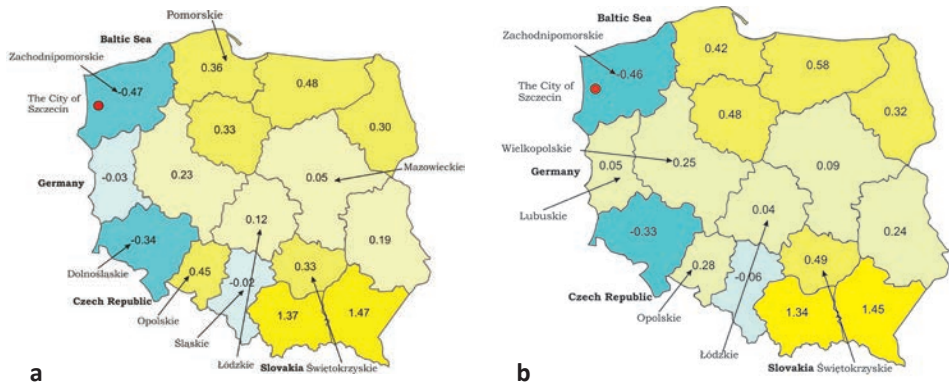


Figure 7.6 The differences in average real growth rate of regions (2013-2025) caused by opening up interregional trade channels. (a) Scenario using regional "potential" minus the baseline scenario (b) Scenario using "accessibility" minus the baseline scenario (percentage points)

Source: own elaboration

7.4.5 Scenario 3: Reduction in development dynamics of the Mazowieckie region

As was noted above, Mazowieckie is not expected to be strongly affected by an introduction of interregional trade flows (see Figures 7.7; 7.8a and 7.8b). However, a fall in the rate of growth of the Mazowieckie region (which includes Warsaw, the capital city of Poland) negatively affects other regions (Figures 7.8a and 7.8b) in relation to the reference scenario (Figures 7.4a and 7.4b).

In the case where interregional trade structures are determined by the criterion of economic “potential” (Figure 7.8a), a reduction in growth in the Mazowieckie region affects most significantly the regions for which it constitutes an important export destination (e.g., Łódzkie, Opolskie, Świętokrzyskie and Śląskie). However, exceptions in this respect are Lubelskie, Podlaskie, and Warmińsko-Mazurskie, which are characterised by a lower significance of the industrial sector in the economy, the products of which are predominantly subject to interregional exchange.

Scenario 3

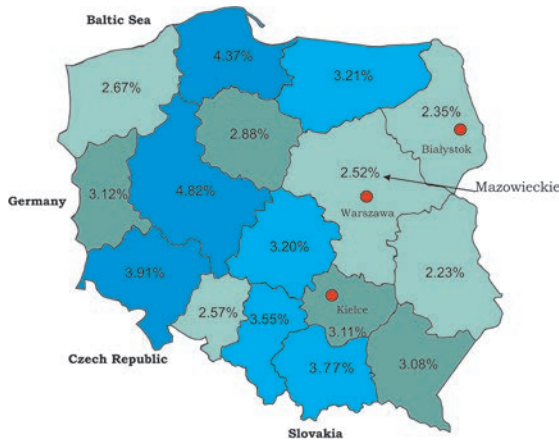


Figure 7.7 The real growth rate of regions (average for the period 2013-2025: per cent) Baseline scenario (no interregional trade connections)

Source: own elaboration

In the variation that uses “accessibility” to define the structure of interregional trade (Figure 7.8b), the regions most affected are the neighbouring economies of Łódzkie, Kujawsko-Pomorskie, Lubelskie, Podlaskie, Świętokrzyskie and Warmińsko-Mazurskie. However, a significant influence is noticeable also in more remote regions (e.g., Opolskie and Śląskie), which is a consequence of the relatively high involvement of those regions in goods exchange on the domestic market. Comparing and contrasting the results presented in Figures 7.8a and 7.8b one might state that development of trade connections among regions due to improvements in transportation system increases significantly impacts of the economy of Mazowieckie on other Polish regions. That conclusion becomes of great importance when development policy is intended to support spill-overs from growth poles (such as Warsaw) to economically weaker cities (e.g. Kielce – the capital

city of Świętokrzyskie or Białystok – the capital city of Podlaskie). Under such circumstances Mazowieckie with the city of Warsaw closely interrelated with foreign metropolitan centres become an important gateway for impulses (e.g. demand and supply-side shocks) from the global economy which are then transmitted to other parts of Poland. In Scenario 3 we presented the consequences of negative shocks. The significance of the negative impulses generated in the Polish growth centres and passed over to the rest of Poland is discussed in Scenario 5. Before doing that we try to answer the question of how economic shocks in poorer and agriculture-oriented voivodeships affect other regions through the structure of interregional connections.

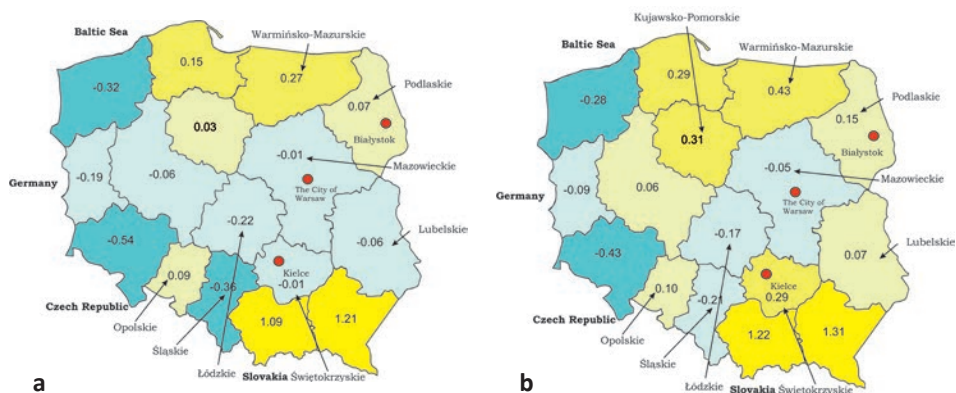


Figure 7.8 The differences in average real growth rate of regions (2013-2025) caused by opening up interregional trade channels. (a) Scenario using regional “potential” minus the baseline scenario (b) Scenario using “accessibility” minus the baseline scenario (percentage points)

Source: own elaboration

7.4.6 Scenario 4: Increased support for the regions in eastern Poland

The main purpose of Scenario 4 is to explore how increased and more effective support for the NUTS 2 regions (or voivodeships) in eastern Poland might affect other regions. Due to the nature of the development challenges facing the eastern Polish regions, we carry out this scenario in two different ways: a distinction is made relating to changes concerning the technological level of the eastern region economy (Scenario 4a) and relating to how it might be restructured (Scenario 4b). We select the eastern region of Podlaskie as a typical underdeveloped region. In both scenarios (4a and 4b) opening up interregional channels of trade benefits Podlaskie due to its relatively high involvement in exports to the rest of Poland (73 per cent of total exports).

First, it was assumed that the region experiences a fourfold increase in the growth rate of technological progress (Figures 7.9; 7.10a and 7.10b). While comparing the results obtained with the reference scenario (Figures 7.4a and 7.4b), it is noticed that a possibility

of a more effective and innovative application of production generates a relatively insignificant effects within the given region. This is due to the relatively low sensitivity of the sector structure of GVA created within Podlaskie, where the share of industry in the regional economy is one of the lowest in the whole country and a high percentage of agricultural sector is highly characteristic when compared to other regions.⁸⁹

Scenario 4a

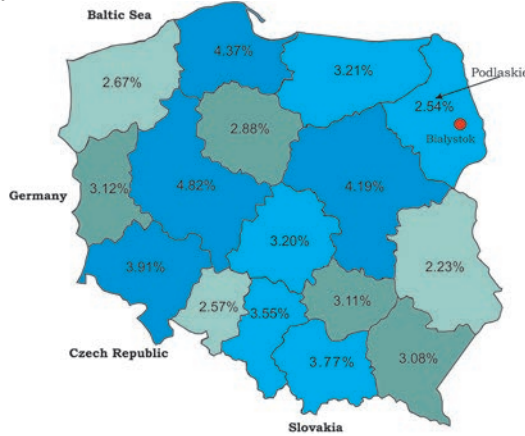


Figure 7.9 The real growth rate of regions (average for the period 2013-2025: per cent) Baseline scenario (no interregional trade connections)

Source: own elaboration

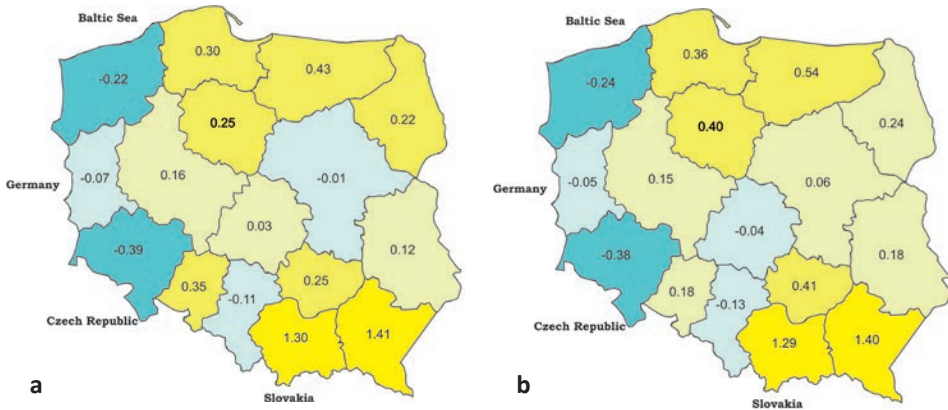


Figure 7.10 The differences in average real growth rate of regions (2013-2025) caused by opening up interregional trade channels. (a) Scenario using regional “potential” minus the baseline scenario (b) Scenario using “accessibility” minus the baseline scenario (percentage points)

Source: own elaboration

⁸⁹ The shares of agriculture in total GVA (2012) in Poland and Podlaskie amount to 2.9% and 7.6% respectively. The analogous shares of industry are 26.5% and 20.6% respectively.

Scenario 4b

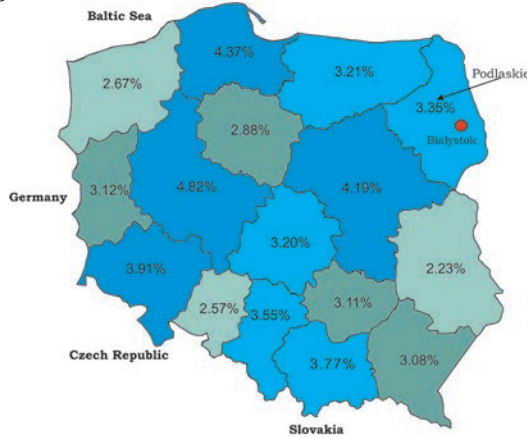


Figure 7.11 The real growth rate of regions (average for the period 2013-2025: per cent) Baseline scenario (no interregional trade connections)

Source: own elaboration

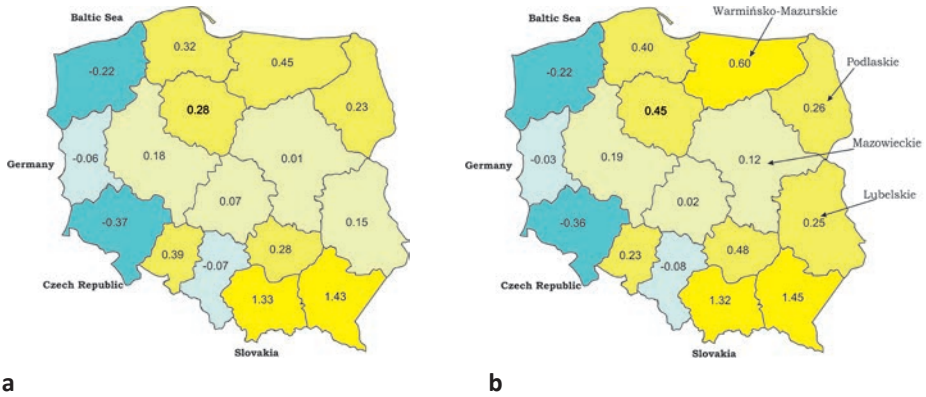


Figure 7.12 The differences in average real growth rate of regions (2013-2025) caused by opening up interregional trade channels. (a) Scenario using regional “potential” minus the baseline scenario (b) Scenario using “accessibility” minus the baseline scenario (percentage points)

Source: own elaboration

Industry, owing to its characteristics, is the sector characterised by a relatively high capability of absorbing new technology, where a higher growth of labour and capital productivity (*total factor productivity*) translates into a higher economic growth. The significance of industry for regional development suggested a variation of the first version of Scenario 4 where we impose an increase of the share of industry

in the GVA of Podlaskie (Figures 7.11; 7.12a and 7.12b). This suggests that a pre-condition for enhancement of development of economically weaker regions is a combination of innovation (both novel and imitative) and changes of a structural character directed at the increase in the degree of industrialisation.⁹⁰ Focusing exclusively on pro-innovation activities, conducted separately from industrial policies, is likely to be counterproductive. Enhancing the growth of GDP of Podlaskie by approximately an annual average of 1 percentage point in relation to the reference scenario only translates to a small degree into economic growth of other regions. This is a consequence not only of a relatively insignificant economic potential of Podlaskie. Of more significance is the spatial scale of the changes. A stronger impact of the regional environment on the economy of a given region would come about as a result of complex transformations taking place in more regions, as would arise as a consequence of an implementation of an effective regional policy embracing, e.g., all of the currently underdeveloped eastern regions.

Greater impacts of structural changes in Podlaskie on other regions are seen in the “accessibility” variation. Unlike in the “potential” case, Podlaskie is here one of the main export destinations for such regions as Mazowieckie, Lubelskie, and Warmińsko-Mazurskie. This, in turn, allows the positive effects generated in Podlaskie to be transmitted more strongly in an indirect fashion to other voivodeships (compare Figures 7.12a and 7.12b with 7.4a and 7.4b).

7.4.7 Scenario 5: Spillovers from strong to weak regions

In the final Scenario 5, we explore the possible consequences of a deterioration of the economic situation in the economically strongest regions of Poland: Mazowieckie, Dolnośląskie, Pomorskie, Wielkopolskie, Małopolskie and Śląskie. As in the previous scenarios, we study how the measure of interregional trade (i.e., “potential” driven versus “accessibility” driven) can affect the outcome.

The results of simulations carried out within this scenario confirm that the wider the spatial scale of any changes, the stronger their impact will be on other regions. Any weakening of the country’s main economic centres, which are strongly connected with other Polish regions through the city network, spills over into poorer voivodeships. The most affected regions are Łódzkie, Opolskie and Świętokrzyskie which have a relatively high involvement in interregional trade (75 per cent; 71 per cent and 78 per cent of their total exports) as well as relatively high industry’s share in total GVA.⁹¹ High interregional accessibility causes an intensification of negative effects through the increase in the number of links with the strongest economies (see Figure 7.14a in comparison with the Figure 7.14b).

⁹⁰ This increase would include traditional branches such as the food processing industry, which have a crucial developmental potential in Podlaskie. Simulations (not reported here) which assumed an increase of significance of market services confirmed the more important role of the industrial sector in stimulating economic growth based on innovation.

⁹¹ The shares of industry in total GVA (2012) in Łódzkie, Opolskie and Świętokrzyskie amount to 30.0%; 30.0% and 26.4% respectively. In the case of Poland, the analogous share of industry is 26.5%.

Scenario 5

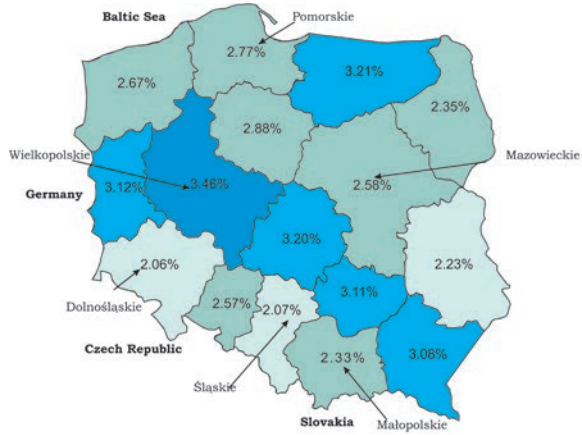


Figure 7.13 The real growth rate of regions (average for the period 2013-2025: per cent) Baseline scenario (no interregional trade connections)

Source: own elaboration

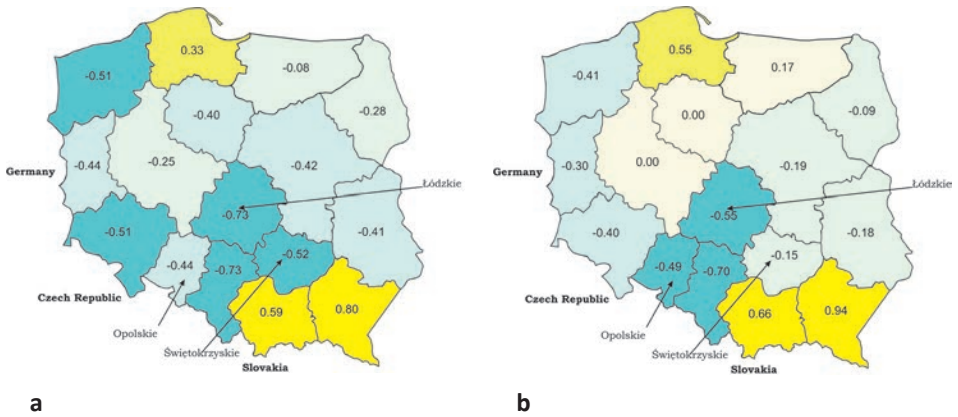


Figure 7.14 The differences in average real growth rate of regions (2013-2025) caused by opening up interregional trade channels. (a) Scenario using regional “potential” minus the baseline scenario (b) Scenario using “accessibility” minus the baseline scenario (percentage points)

Source: own elaboration

7.5 Exploring the role of the interregional environment on the impacts of EU Cohesion Policy

The system of regional HERMIN models permits us to evaluate the effects of EU Cohesion Policy as it is implemented under National Development Programme (NDP 2004-2006) and National Strategic Reference Framework (NSRF 2007-2013) for all of the sixteen Polish NUTS 2 regions (or voivodeships). EU financial resources constitute an important policy instrument influencing territorial cohesion and the individual regional HERMIN models can be used to evaluate the likely direct impacts on each region considered in isolation from interactions with other regions.

An important issue then arises, i.e., evaluating the effects of the “leakage” of the impacts of the use of EU funds on a specific region through interregional trade with other Polish regions. The impact of a cohesion policy on economic processes is estimated through creating a series of four scenarios. The first scenario is a projection of a given region’s growth where EU financing of Cohesion Policy is available to each region but where there are no interregional trade links. In other words, the trading environment external to the given region is assumed to be exogenous. We refer to this scenario as “CP-no links”. The second scenario assumes the absence of the EU financing to the given region, but continues the assumption of no interregional trade links. We refer to this scenario as “no CP-no links”. Comparing the two scenarios, we are able to quantify the likely impact of the NDP/NSRF on the economy of the specific region in the “no-links” case.

These two scenarios are now repeated, but this time we use the inter-linked version of the 16 regional models. So, the third scenario is a projection of a given region’s growth where CP finance is available to each region and there are interregional trade links present. We refer to this as “CP-with links”. Finally, we assume the absence of the EU financing to the given region, but use the inter-linked system of regional models. We refer to this scenario as “no CP-with links”. Comparing the two scenarios, we are able to quantify the likely impact of the CP on the economy of the specific region in the “with-links” case.

7.5.1 CP impacts for a specific region: “no-links” case

Comparing and contrasting “CP-no links” and “no CP-no links” scenarios (Figures 7.15a and 7.15b) positive impacts of the EU funding in all 16 Polish regions are seen. This is the result of demand-and supply-side effects. The former (demand effects) are associated with the Keynesian multiplier mechanism and last for a short period of time (e.g. several quarters). The latter (supply effects) develop gradually with the expansion and modernisation of the technical infrastructure, an increase in knowledge and skills as well as with the expansion and upgrade of machinery and equipment in enterprises. They manifest over the long run and are relatively sustainable. The differences in the scale of CP impacts among the Polish NUTS 2 regions are determined by the varied magnitude of the above-mentioned effects. An important factor which is likely to influence the scale of CP impacts is obviously the EU funding expressed, however, as a share of GDP. The Polish regions which reap the greatest benefits from CP are Warmińsko-Mazurskie and Podkarpackie (see Figure 7.15c). These are the voivodeships characterised by the highest ratios of the EU funding to GDP – 38.5 per cent and 36.1 per cent, respectively. If CP effectiveness, however, were exclusively determined by the real scale of the EU financial injections policy-making would be an easy and mechanical activity which is not the case.

Taking a closer look at Podlaskie and Lubelskie – two regions with relatively high EU support (30.0 per cent and 30.2 per cent of GDP respectively) one notices that they are not among the main beneficiaries of CP, at least expressed in terms of the percentage

increase in the level of their GDP. The sources of that modest CP effectiveness may lie in their economic structures which are characterised by relatively low industrial shares in total GVA as well as the relatively high contribution of agriculture to total product.⁹² The industry sector is most likely to become a principal vehicle to convey the EU funding into supply-side effects (e.g. innovations and significant increases in total factor productivity) – especially in lagging behind regions such as Podlaskie and Lubelskie which lose competition with economically stronger metropolitan centres such as Warsaw, Wrocław, Kraków, Gdańsk or Poznań in terms of attracting providers of high technology services such as IT or R&D services. Other factors that are expected to differentiate the magnitude of the CP impacts among regions are also: the scale of the temporary Keynesian multiplier effect; initial stocks of infrastructure, human capital and R&D; the economic structure of the EU funding; the rate of technical progress and other economic structural characteristics.

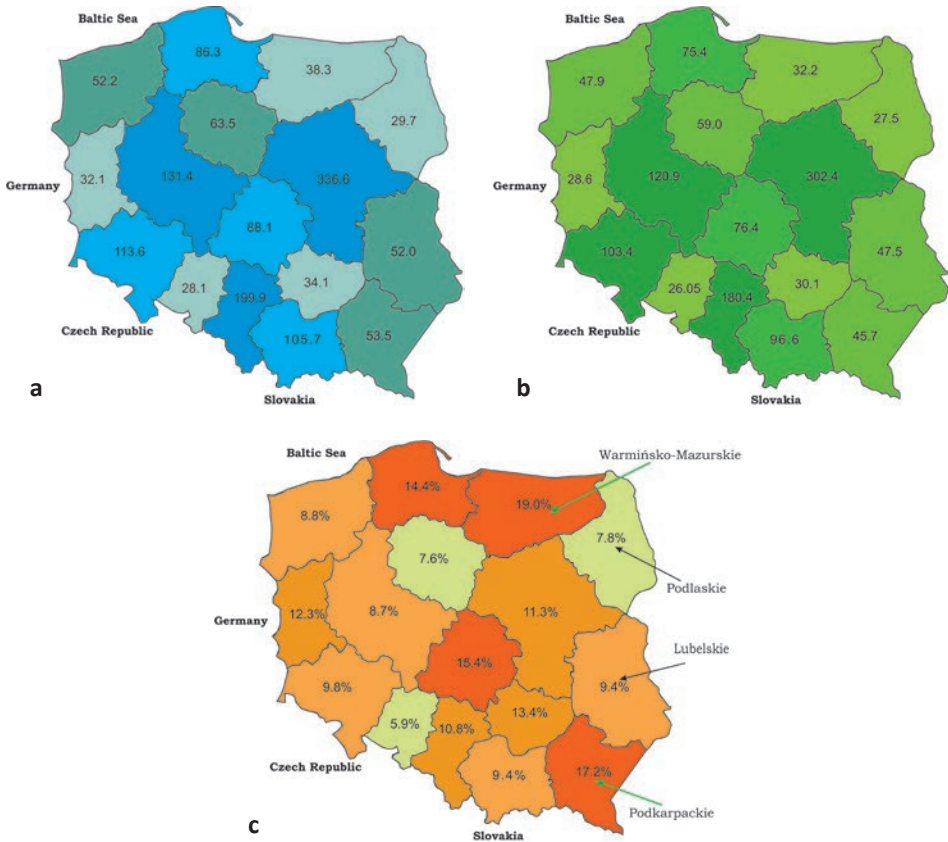


Figure 7.15 GDP level at constant prices (PLN bln) in 2015 in: (a) "CP- no links" case and (b) "no CP- no links" case and (c) CP impact on GDP level (%)⁹³

Source: own elaboration

⁹² The shares of agriculture in total GVA (2012) in Poldlaskie and Lubelskie amount to 7.6% and 5.7% respectively (Poland 2.9%). The analogous shares of industry are: 20.6% and 20.9% respectively (Poland 26.5%).

⁹³ The percentage impact is the difference between the GDP values in "CP – no links" scenario and "no CP- no links" scenario divided by the value of GDP level in "no CP-no links" scenario. Taking CP impact on GDP of Dolnośląskie as an example one can state that GDP level in this region is expected to be higher by 9.8% in comparison to the hipotetical situation when CP were not implemented.

7.5.2 CP impacts for a specific region: “with-links” case

The interrelated system of regional economies gives rise to transmission of the CP effects among voivodeships. Fund flows between regions take place through export stimulated by demand for investment and supplying goods. It contributes to the enhancement of economic growth in a voivodeship to which transfers from other regions arrive. In this case, we deal with a growth effect of a demand-side character further reinforced by Keynesian multiplier effect. Simultaneously, in a region from which funds flow out through the import of goods, there is a limitation of the scale of short-term demand-side effects – and thus, the Cohesion Policy’s influence on economic growth is also reduced. Interregional relations also concern the supply-side effects generated by the EU funds. An additional increase in the GDP in the long run after the employment of funds generates an increase of disposable income which might be partially used for purchasing goods and services coming from other voivodeships.

When endogenously modelled interregional trade connections are implemented, the CP outcomes change across regions. Some regions are made worse-off as interregional trade flows are present (Dolnośląskie, Lubuskie, Mazowieckie, Małopolskie, Podkarpackie, Pomorskie, Warmińsko-Mazurskie, and Zachodniopomorskie). The remainder reap benefits (compare Figures 7.16c with 7.15c). A general explanation for that differentiation is relatively straightforward. The winning regions can use the EU fund-driven external demand to boost their economies whereas, in the case of the other voivodeships, their imports stimulated by CP are not offset by the positive effects of greater sales to the rest of Poland. In other words, benefits resulting from increased exports owing to EU funds do not compensate losses caused by the import of goods from other voivodeships. There are various explanations for this finding. Firstly, it is worthwhile to mention a relatively lower involvement of particular voivodeships in interregional exports (Dolnośląskie: 41 per cent of the entire export; Lubuskie: 41 per cent; Pomorskie: 47 per cent; Zachodniopomorskie: 50 per cent), which limits the possibility to take advantage of the demand and supply-side effects of Cohesion Policy.

Secondly, the outcome of the EU financial injection might be decreased by greater imports — not only in the CP implementation when machinery and equipment expenditures take place but also in the long run when the CP-driven income might be spent on goods and services from the rest of Poland. More intense imports determine negatively GDP level through the Keynesian multiplier mechanism. Comparing and contrasting values of the investment multipliers between “no-links” case and “with-links” case one can see that Dolnośląskie, Lubuskie, Mazowieckie, Małopolskie, Podkarpackie, Pomorskie, Warmińsko-Mazurskie and Zachodniopomorskie are characterised by a relatively significant decline in the demand-side effects when interregional trade flows are taken into account (see Table 7.4 in Annex 1).⁹⁴

Thirdly, the other type of multiplier seems to play a role in differentiating the scale of CP impacts between “no-links” case and “with-links” case. This is a foreign trade multiplier showing the amount by which GDP of a region will be raised by a unit increase in external demand (see Table 7.5 in Annex 1). In the case of: Lubuskie, Małopolskie, Podkarpackie, Warmińsko-Mazurskie and Zachodniopomorskie this multiplier reaches relatively lower values which implies that external demand shocks do not have big effects on those regions when opening up interregional channels of trade — e.g. due to relatively small share of the industrial sector (mainly tradable) in total GVA (Małopolskie, Warmińsko-Mazurskie and Zachodniopomorskie) or a weak transmission of the shocks from the industry to other less tradable sectors (Lubuskie and Podkarpackie).⁹⁵ There is a wide

⁹⁴ Investment multiplier shows how much GDP (at constant prices) changes in response to a change in some exogenous variable (in this case investment at constant prices).

⁹⁵ The shares of industry in total GVA (2012) in Małopolskie, Warmińsko-Mazurskie and Zachodniopomorskie amount to 22.8%; 25.1% and 20.7% respectively (Poland 26.5%).

range of factors that might determine the magnitude of both Keynesian and foreign trade multipliers: e.g., the marginal propensity to consume and import; economic structure and interdependencies between sectors; labour/capital intensity of individual sectors; the relative price of labour and capital, etc. An in-depth analysis of those multiplier determinants ought to be carried out for each voivodeship. For the purpose of our research, however, it is sufficient to stress that the scale of CP impacts in the “with-links” case is largely dependent upon a combination of 1) involvement in interregional exports; 2) the magnitude of the Keynesian multiplier and 3) the magnitude of the foreign trade multiplier.

Taking as an example Opolskie – the voivodeship characterised by the highest positive change of CP impact in comparison to the “no-links” case (compare Figures 7.16c and 7.17c with 7.15c) – one can state that this region is relatively open to interregional trade flows (71 per cent of its total exports goes to other Polish voivodeships); with a significant role of the industry sector (30 per cent of total GVA); with relatively high values of the Keynesian multiplier as well as the second highest value of the foreign trade multiplier (see Tables 7.4 and 7.5 in Annex 1). The values of multipliers might suggest a relatively lower propensity to import which is conceivable when we take into account the fact that Opolskie is characterised by large labour migration to Germany. This, in turn, decreases imports as well as raises bargaining position of labour force in Opolskie. The stronger position of employees and their pressure on higher wage rates may intensify the effects of external demand shocks taking place through the foreign multiplier mechanism.

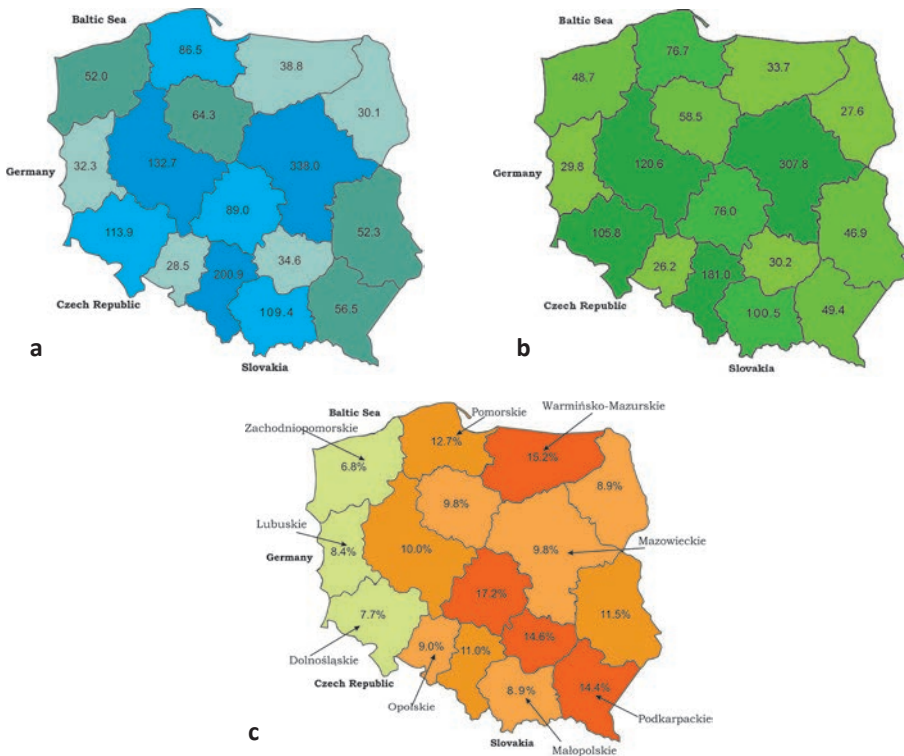


Figure 7.16 GDP level at constant prices (PLN bln) in 2015 in: (a) “CP- with links” case and (b) “no CP- with links” case and (c) CP impact on GDP level (%) – “POTENTIAL” VARIATION

Source: own elaboration

Comparing the “potential” and “accessibility” variations (Figures 7.16c and 7.17c) one can see that for the vast majority of regions CP impacts are expected to be higher in the latter scenario. It results from the fact that in the accessibility case the bulk of regional exports is not largely directed to more affluent regions (such as Mazowieckie, Śląskie, Dolnośląskie) which are characterised by relatively lower CP impacts (e.g. due to greater initial endowment in material and human capital stocks). Thus, in the “accessibility” variations numerous voivodeships benefit more from greater CP effects – both demand and supply-side- in economically weaker regions. Some exceptions are Łódzkie, Śląskie and Świętokrzyskie where CP impacts on their GDP are lower in the “accessibility” case than in the “potential” one. It might imply that economic environment with time accessibility playing a significant role in determining trade flows makes their economies more vulnerable to imported goods. Different geographic structure of interregional trade flows might determine, e.g., different relative prices of labour and capital and, in turn, the response of manufacturing and market services sectors to external CP shocks.

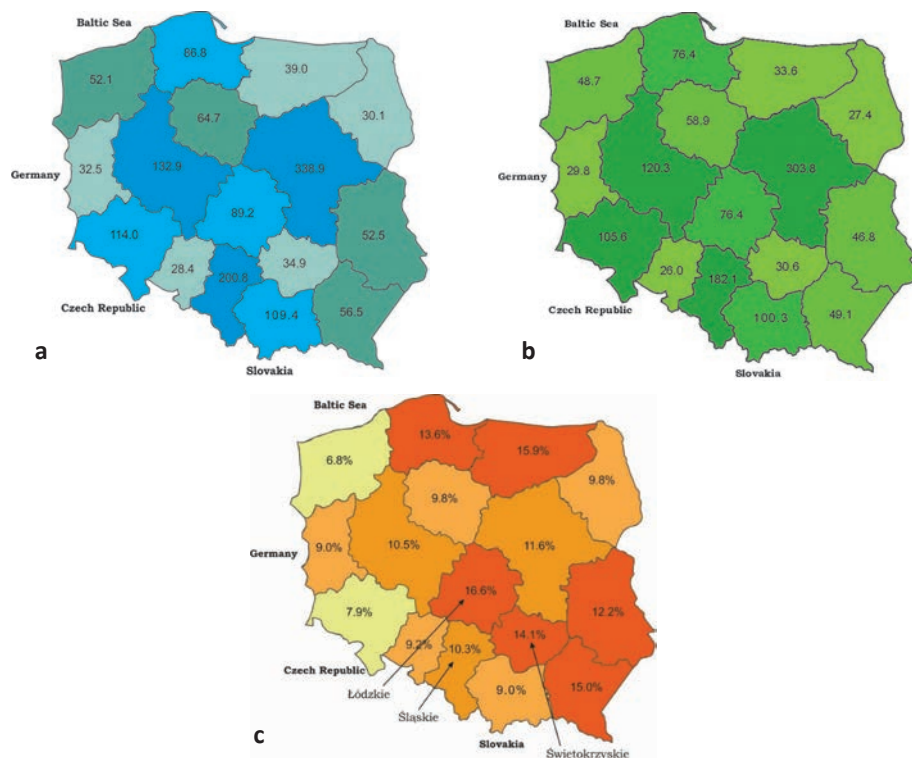


Figure 7.17 GDP level at constant prices (PLN bln) in 2015 in: (a) “CP- with links” case and (b) “no CP- with links” case and (c) CP impact on GDP level (%) – “ACCESSIBILITY” VARIATION

Source: own elaboration

It is shown in the values of the foreign trade multipliers for the three regions in question (see Table 7.5 in Annex 1) where Łódzkie, Śląskie and Świętokrzyskie are characterised by a great deal lower values of foreign trade multipliers in the “accessibility” case in comparison to the “potential” one. It should be remembered that any changes in the economic characteristics of regions and their trading partners might alter the magnitude of CP impacts. For simplicity, in our research we assume continuation of historical tendencies in the Polish regions since our main aim is to show how interregional

environment (in the “potential” and “accessibility” variation) affects CP effectiveness in individual voivodeships. However, any changes in economic specifics caused by other factors than the EU funding (e.g. other policies; changes in global demand and supply, etc.) may also considerably influence CP effectiveness.

7.6 Conclusions

Every region functions in its specific interregional environment. But through the structure of socio-economic connections, regions affect each other. Hence, territorial cohesion of an individual voivodeship – viewed as a territorial optimum- is determined by what is going on in other regions (e.g. their economic structure, technological progress, changes in aggregated demand and supply, crisis resilience, etc.). The scale of this determination depends upon interregional connections. Due to lack of data we concentrate only on interregional trade flows and take into account two variations of determination of the trade structure: based on a “potential” criterion and on an “accessibility” criterion. Furthermore, we assume that industry is a main tradable sector in the Polish NUTS 2 regions. This assumption seems not to be oversimplified since high-tech services in Poland which are subject to external trade are provided in the main metropolitan centres (e.g. Warsaw, Wrocław, Poznań, Kraków, Gdańsk) and do not account for a great proportion of total regional production. As an example of the Irish economy shows, however, it is expected that high-tech services will grow in importance over time. This, in turn, will entail necessary modifications of the sectoral structure of the HERMIN modelling framework – especially in the case of more affluent regions. Another assumption which we make concerns the fixed structure of interregional trade flows. If there are no unexpected occurrences (e.g. global crisis, war, etc.), the spatial structure of trade flows seems to be stable in the medium term on which we focus in our research. This can be explained by the difficulty in expanding to new markets; firms’ willingness to stay in markets with which they are familiar and whose specifics they know; long-term contracts, etc.

Taking into account the above-mentioned assumptions, we analyse how structural changes, as well as CP interventions, affect the development of Polish NUTS 2 regions through the network of interregional trade flows. Research models in general and economic models, in particular, are only simplifications of real economic processes. The great challenge is not to oversimplify what is happening within and between regions. With the novel system of interrelated HERMIN models, we try to face that challenge by taking into account economic specifics of all the 16 voivodeships. This, in turn, allows us to draw several conclusions concerning territorialisation of development policies which might be carried over to the real policy-making process. They are as follows:

- The spatial system of interregional dependencies constitutes – along with national macroeconomic policy – an important factor affecting resilience of Poland and its voivodeships to economic turmoil. Weakening of major economic centres of the country that are strongly linked with global markets through metropolitan networks spills over onto poorer regions. It, in turn, leads the whole country – through the system of interregional connections – onto the path of sluggish growth or recession. Hence, it is increasingly important to strengthen the competitiveness of metropolitan centres as a safety measure against negative global tendencies. This postulate is particularly vital in the pursuit of interconnected polycentric networks of cities (including *second-order & third-order cities*) which is strongly promoted in documents concerning the territorialisation of development policies (e.g. Territorial Agenda 2011);
- The structural changes in individual voivodeships translate in a relatively insignificant fashion into other regions. The role of interregional environment increases when demand or supply-side shocks appear in numerous voivodeships at the same

time. Joint appearance of structural changes in Polish regions (e.g. as a result of industrial policy) is likely to constitute a crucial factor affecting economic development of a given voivodeship. It has an important implication for development policies pointing to great importance of combining an approach oriented at specifics and internal diversification of regions (*place-based approach*) with a complex structural intervention in all voivodeships (*top-down approach*). Even an optimal place-based policy might produce unsatisfactory effects when it is pursued in an unfavourable interregional environment (e.g. due to no complementarity of regional infrastructure systems; lack of collaboration between regional authorities; insufficient pace of structural changes in some regions due to the weak quality of governance or high indebtedness; public support negatively affecting market competition, etc.). Hence, taking into consideration both intra and interregional territorial systems will always maximise effects of development policies led by central and regional authorities;

- The development of infrastructural links increasing time accessibility between regions (postulated, for instance, in CEC (2012b)) does not guarantee their stronger interactions – although it increases chances of those interactions taking place. Of vital significance here are characteristics of respective regional economies and their specifics. As HERMIN-based simulations show counterintuitively, it is conceivable that the main beneficiaries of structural changes in one region might be voivodeships that are located far away, however, with competitive production capacity and high exposure to interregional trade. It implies that infrastructure investment must be accompanied by corresponding structural policies. Otherwise, expenditure on development of transportation systems will improve people's standard of living but its impact on economic growth will not be satisfactory;
- The pro-innovation support of economically weaker regions carried out in separation from spatially oriented industrial policy is likely to be counterproductive. This conclusion is particularly important in relation to territorialisation of development policy in Poland. In numerous high-level documents (e.g. Ministerstwo Rozwoju Regionalnego 2010a; Ministerstwo Infrastruktury i Rozwoju 2014), support was approved for poorer voivodeships of Poland mostly characterised by an insignificant role of industrial sector and relatively low level of technological and organisational advancement. A prerequisite of effective R&D investments is spatial coordination of public intervention within the framework of two spheres: industrial and innovation policy. Treating the above elements separately might lead to a low effectiveness of public support or even to no effects;
- Interregional trade clearly influences the effectiveness of public intervention in the form of Cohesion Policy. The HERMIN-based analysis does not confirm that the trade connections benefit richer voivodeships at the cost of economically weaker regions. The net effect of benefits resulting from the CP-driven exports and losses associated with additional imports (leakage) is mostly determined by: the degree of region's openness to interregional trade; its economic structure as well as fiscal and foreign trade multiplier mechanisms. The impact of the above factors on interregional transfer of CP effects should be taken into consideration in the process of designing financial interventions by public authorities. It would enable a correct selection of resources for regional economies and, at the same time, limit the likelihood of overestimation or underestimation of the value of their financial support. Furthermore, taking into account interregional trade connections would significantly increase the quality of analyses conducted within the framework of territorial impact assessment – in particular those of counterfactual character;
- Our modelling approach, however, failed to provide an answer to the question of the impact of interregional interaction on the territorial utility. In this area, additional research is necessary. What is more, further dimensions of interregional relations such as capital flows and migrations ought to be taken into account in the future.

Annex 1

Table 7.4 Keynesian investment multipliers – 16 Polish NUTS 2 regions⁹⁶

Keynesian investment multipliers “no-links” case																
	DL	KP	LB	LD	LL	ML	MZ	OP	PD	PK	PM	SL	SW	WL	WM	ZP
2013	0.84	0.81	0.62	0.78	0.67	1.18	1.74	0.75	0.66	0.63	1.11	0.99	0.78	1.03	0.71	1.08
2014	0.92	0.86	0.65	0.83	0.70	1.31	2.17	0.79	0.70	0.66	1.25	1.07	0.83	1.12	0.76	1.17
2015	0.95	0.88	0.65	0.85	0.70	1.37	2.34	0.80	0.71	0.67	1.30	1.10	0.85	1.15	0.78	1.17
2016	0.95	0.88	0.64	0.85	0.69	1.39	2.39	0.80	0.71	0.67	1.31	1.10	0.85	1.15	0.77	1.14
2017	0.96	0.89	0.63	0.85	0.68	1.39	2.42	0.80	0.71	0.67	1.32	1.11	0.86	1.16	0.77	1.11
2018	0.96	0.89	0.62	0.85	0.67	1.39	2.45	0.80	0.71	0.67	1.34	1.12	0.87	1.18	0.76	1.08
2019	0.97	0.89	0.62	0.86	0.66	1.39	2.47	0.81	0.71	0.67	1.35	1.14	0.88	1.20	0.75	1.06
2020	0.98	0.90	0.61	0.86	0.66	1.39	2.50	0.81	0.71	0.67	1.37	1.17	0.89	1.22	0.74	1.03
2021	0.98	0.90	0.60	0.87	0.65	1.39	2.53	0.81	0.71	0.67	1.38	1.19	0.90	1.24	0.73	1.01
2022	0.99	0.90	0.59	0.87	0.64	1.39	2.55	0.81	0.71	0.67	1.40	1.22	0.91	1.26	0.72	0.99
2023	1.00	0.90	0.58	0.88	0.64	1.39	2.57	0.80	0.71	0.66	1.41	1.25	0.92	1.29	0.71	0.96
2024	1.00	0.90	0.58	0.88	0.63	1.39	2.59	0.80	0.71	0.66	1.42	1.28	0.93	1.31	0.70	0.94
2025	1.01	0.90	0.57	0.89	0.63	1.39	2.61	0.80	0.71	0.66	1.43	1.32	0.94	1.35	0.70	0.92
Average	0.96	0.89	0.61	0.86	0.66	1.37	2.41	0.80	0.71	0.66	1.34	1.16	0.88	1.20	0.74	1.05
Keynesian investment multipliers “potential” case																
	DL	KP	LB	LD	LL	ML	MZ	OP	PD	PK	PM	SL	SW	WL	WM	ZP
2013	0.55	0.76	0.40	0.72	0.66	0.91	1.30	0.71	0.60	0.49	0.91	0.78	0.70	0.91	0.56	0.80
2014	0.53	0.79	0.37	0.75	0.69	0.95	1.49	0.74	0.62	0.49	0.97	0.79	0.73	0.95	0.56	0.79
2015	0.53	0.81	0.36	0.76	0.69	0.97	1.56	0.75	0.63	0.49	0.99	0.79	0.74	0.97	0.57	0.78
2016	0.52	0.81	0.34	0.76	0.67	0.98	1.58	0.75	0.62	0.49	0.99	0.79	0.74	0.97	0.56	0.75
2017	0.51	0.81	0.33	0.76	0.67	0.98	1.61	0.75	0.62	0.48	1.00	0.79	0.74	0.98	0.55	0.74
2018	0.51	0.82	0.33	0.76	0.66	0.99	1.65	0.75	0.62	0.48	1.01	0.79	0.75	0.99	0.54	0.73
2019	0.51	0.82	0.32	0.76	0.65	0.99	1.68	0.75	0.62	0.48	1.02	0.80	0.75	1.00	0.53	0.71
2020	0.51	0.82	0.31	0.77	0.64	0.99	1.71	0.75	0.62	0.47	1.03	0.81	0.76	1.02	0.52	0.70
2021	0.50	0.82	0.30	0.77	0.63	0.99	1.74	0.74	0.62	0.47	1.04	0.83	0.76	1.03	0.51	0.69
2022	0.50	0.83	0.29	0.77	0.62	1.00	1.77	0.74	0.62	0.46	1.05	0.84	0.77	1.05	0.50	0.69
2023	0.50	0.83	0.28	0.78	0.62	1.00	1.80	0.74	0.62	0.46	1.06	0.86	0.78	1.07	0.49	0.68
2024	0.49	0.83	0.27	0.78	0.61	1.01	1.83	0.74	0.62	0.46	1.07	0.87	0.78	1.09	0.48	0.67
2025	0.49	0.83	0.26	0.79	0.61	1.02	1.86	0.74	0.62	0.45	1.08	0.89	0.79	1.12	0.47	0.67
Average	0.51	0.81	0.32	0.76	0.65	0.98	1.66	0.74	0.62	0.47	1.01	0.82	0.75	1.01	0.53	0.72

⁹⁶ DL – Dolnośląskie; KP – Kujawsko-Pomorskie; LB – Lubuskie; LD – Łódzkie; LL – Lubelskie; ML – Małopolskie; MZ – Mazowieckie; OP – Opolskie; PD – Podlaskie; PK – Podkarpackie; PM – Pomorskie; SL – Śląskie; SW – Świętokrzyskie; WL – Wielkopolskie; WM – Warmińsko-Mazurskie; ZP – Zachodniopomorskie.

Keynesian investment multipliers “accessibility” case																
	DL	KP	LB	LD	LL	ML	MZ	OP	PD	PK	PM	SL	SW	WL	WM	ZP
2013	0.56	0.73	0.42	0.68	0.67	0.88	1.43	0.72	0.61	0.49	0.92	0.72	0.64	0.90	0.55	0.78
2014	0.54	0.76	0.39	0.70	0.69	0.91	1.68	0.74	0.63	0.48	0.99	0.71	0.65	0.95	0.55	0.77
2015	0.54	0.77	0.37	0.71	0.69	0.93	1.77	0.75	0.64	0.48	1.01	0.71	0.66	0.97	0.56	0.76
2016	0.53	0.77	0.36	0.70	0.68	0.94	1.80	0.75	0.64	0.48	1.01	0.70	0.66	0.97	0.55	0.74
2017	0.52	0.77	0.35	0.70	0.67	0.94	1.83	0.75	0.64	0.48	1.02	0.70	0.66	0.97	0.54	0.72
2018	0.52	0.78	0.34	0.70	0.66	0.94	1.86	0.75	0.64	0.47	1.03	0.70	0.66	0.99	0.53	0.71
2019	0.52	0.78	0.33	0.70	0.65	0.94	1.89	0.75	0.64	0.47	1.04	0.71	0.66	1.00	0.52	0.70
2020	0.52	0.78	0.32	0.70	0.65	0.94	1.93	0.75	0.64	0.46	1.05	0.72	0.66	1.01	0.51	0.69
2021	0.51	0.78	0.31	0.71	0.64	0.95	1.96	0.75	0.64	0.46	1.06	0.73	0.66	1.03	0.50	0.68
2022	0.51	0.79	0.30	0.71	0.63	0.95	1.99	0.75	0.64	0.46	1.07	0.74	0.67	1.05	0.49	0.67
2023	0.51	0.79	0.29	0.71	0.62	0.95	2.02	0.74	0.64	0.45	1.09	0.75	0.67	1.07	0.48	0.66
2024	0.51	0.79	0.28	0.72	0.62	0.96	2.05	0.74	0.64	0.45	1.10	0.76	0.67	1.09	0.47	0.66
2025	0.50	0.79	0.27	0.72	0.61	0.96	2.08	0.74	0.64	0.44	1.11	0.78	0.68	1.11	0.47	0.65
Average	0.52	0.77	0.33	0.70	0.65	0.94	1.87	0.74	0.64	0.47	1.04	0.73	0.66	1.01	0.52	0.71

Source: own elaboration

Table 7.5 Foreign trade multipliers – 16 Polish NUTS 2 regions⁹⁷

Foreign trade multipliers “no-links” case																
	DL	KP	LB	LD	LL	ML	MZ	OP	PD	PK	PM	SL	SW	WL	WM	ZP
2013	5.6	3.9	4.3	4.2	2.8	3.9	3.3	4.5	2.8	3.9	4.3	5.3	3.8	4.6	3.5	3.3
2014	6.0	4.2	4.6	4.6	3.0	4.4	4.2	4.7	3.0	4.2	4.9	5.8	4.1	5.1	3.7	3.7
2015	6.3	4.3	4.9	4.8	3.1	4.6	4.6	4.9	3.1	4.4	5.1	6.0	4.3	5.3	3.9	3.8
2016	6.3	4.4	5.0	4.8	3.2	4.6	4.7	5.0	3.2	4.5	5.2	6.0	4.4	5.3	4.0	3.8
2017	6.4	4.4	5.1	4.9	3.3	4.7	4.7	5.1	3.3	4.6	5.3	6.1	4.5	5.4	4.1	3.8
2018	6.5	4.5	5.2	5.0	3.3	4.7	4.7	5.2	3.3	4.7	5.3	6.2	4.6	5.4	4.2	3.8
2019	6.5	4.5	5.3	5.0	3.4	4.8	4.7	5.3	3.4	4.7	5.4	6.3	4.7	5.5	4.2	3.8
2020	6.6	4.6	5.4	5.1	3.4	4.8	4.7	5.3	3.4	4.8	5.4	6.4	4.8	5.5	4.3	3.7
2021	6.6	4.6	5.4	5.1	3.4	4.7	4.6	5.4	3.5	4.9	5.5	6.4	4.8	5.6	4.3	3.7
2022	6.7	4.6	5.5	5.1	3.5	4.7	4.6	5.4	3.5	5.0	5.5	6.5	4.9	5.6	4.4	3.6
2023	6.7	4.6	5.6	5.2	3.5	4.7	4.5	5.5	3.5	5.0	5.5	6.6	4.9	5.6	4.4	3.6
2024	6.7	4.7	5.7	5.2	3.5	4.7	4.5	5.5	3.6	5.1	5.5	6.7	5.0	5.7	4.4	3.5
2025	6.8	4.7	5.7	5.2	3.6	4.6	4.4	5.6	3.6	5.1	5.6	6.7	5.1	5.7	4.5	3.4
Average	6.4	4.5	5.2	4.9	3.3	4.6	4.5	5.2	3.3	4.7	5.3	6.2	4.6	5.4	4.2	3.7

97 DL – Dolnośląskie; KP – Kujawsko-Pomorskie; LB – Lubuskie; LD – Łódzkie; LL – Lubelskie; ML – Małopolskie; MZ – Mazowieckie; OP – Opolskie; PD – Podlaskie; PK – Podkarpackie; PM – Pomorskie; SL – Śląskie; SW – Świętokrzyskie; WL – Wielkopolskie; WM – Warmińsko-Mazurskie; ZP – Zachodniopomorskie.

Foreign trade multipliers “potential” case																
	DL	KP	LB	LD	LL	ML	MZ	OP	PD	PK	PM	SL	SW	WL	WM	ZP
2013	4.12	3.83	2.99	4.23	2.95	3.28	2.96	4.41	2.71	3.40	3.66	4.69	3.64	4.32	2.93	2.44
2014	4.05	4.01	2.93	4.42	3.10	3.42	3.33	4.60	2.81	3.44	3.88	4.74	3.78	4.57	2.95	2.47
2015	4.15	4.13	3.03	4.55	3.19	3.55	3.48	4.74	2.90	3.58	4.02	4.86	3.91	4.72	3.04	2.50
2016	4.19	4.16	3.12	4.58	3.22	3.61	3.51	4.80	2.94	3.68	4.06	4.90	3.97	4.76	3.09	2.48
2017	4.26	4.21	3.20	4.63	3.27	3.69	3.53	4.87	2.99	3.78	4.12	4.97	4.04	4.82	3.15	2.48
2018	4.33	4.26	3.28	4.69	3.32	3.76	3.55	4.95	3.04	3.89	4.19	5.07	4.13	4.89	3.22	2.48
2019	4.40	4.32	3.36	4.74	3.37	3.83	3.57	5.03	3.09	3.99	4.25	5.17	4.21	4.96	3.28	2.47
2020	4.46	4.37	3.43	4.80	3.42	3.90	3.59	5.11	3.14	4.09	4.31	5.26	4.30	5.03	3.34	2.46
2021	4.52	4.42	3.51	4.85	3.47	3.96	3.61	5.19	3.19	4.18	4.37	5.35	4.38	5.09	3.39	2.45
2022	4.57	4.47	3.58	4.89	3.51	4.02	3.62	5.26	3.24	4.27	4.42	5.44	4.46	5.16	3.44	2.43
2023	4.63	4.51	3.65	4.94	3.55	4.07	3.62	5.33	3.28	4.36	4.48	5.53	4.53	5.22	3.49	2.40
2024	4.67	4.56	3.73	4.98	3.60	4.12	3.63	5.40	3.33	4.45	4.52	5.62	4.61	5.28	3.53	2.36
2025	4.72	4.60	3.80	5.02	3.64	4.16	3.63	5.47	3.37	4.53	4.56	5.71	4.68	5.33	3.57	2.32
Average	4.39	4.30	3.35	4.72	3.35	3.80	3.51	5.01	3.08	3.97	4.22	5.18	4.20	4.94	3.26	2.44
Foreign trade multipliers “accessibility” case																
	DL	KP	LB	LD	LL	ML	MZ	OP	PD	PK	PM	SL	SW	WL	WM	ZP
2013	4.14	3.74	3.13	4.06	3.04	3.22	3.00	4.59	2.83	3.42	3.74	4.31	3.52	4.25	2.97	2.40
2014	4.08	3.87	3.07	4.17	3.19	3.33	3.50	4.76	2.93	3.45	3.97	4.29	3.57	4.50	2.97	2.41
2015	4.18	3.99	3.18	4.29	3.29	3.45	3.70	4.90	3.03	3.58	4.12	4.39	3.68	4.65	3.07	2.43
2016	4.23	4.03	3.26	4.33	3.32	3.51	3.72	4.95	3.07	3.68	4.17	4.43	3.75	4.69	3.13	2.42
2017	4.29	4.09	3.35	4.38	3.37	3.58	3.73	5.02	3.12	3.78	4.23	4.51	3.83	4.76	3.19	2.42
2018	4.36	4.16	3.42	4.44	3.43	3.66	3.75	5.10	3.18	3.89	4.30	4.61	3.92	4.82	3.26	2.42
2019	4.43	4.22	3.50	4.49	3.48	3.73	3.75	5.18	3.23	3.99	4.36	4.71	4.01	4.89	3.33	2.42
2020	4.49	4.28	3.57	4.55	3.53	3.79	3.76	5.25	3.29	4.08	4.43	4.80	4.09	4.95	3.39	2.41
2021	4.55	4.33	3.65	4.60	3.58	3.85	3.77	5.32	3.34	4.18	4.49	4.89	4.17	5.02	3.45	2.39
2022	4.61	4.39	3.72	4.64	3.63	3.91	3.77	5.39	3.39	4.27	4.54	4.98	4.25	5.08	3.51	2.37
2023	4.66	4.44	3.79	4.69	3.67	3.95	3.77	5.46	3.43	4.36	4.59	5.07	4.33	5.13	3.56	2.35
2024	4.70	4.49	3.86	4.73	3.72	4.00	3.76	5.52	3.48	4.44	4.64	5.15	4.41	5.19	3.60	2.31
2025	4.75	4.53	3.93	4.76	3.76	4.03	3.75	5.58	3.53	4.52	4.68	5.24	4.48	5.24	3.64	2.27
Average	4.42	4.20	3.49	4.47	3.46	3.69	3.67	5.15	3.22	3.97	4.33	4.72	4.00	4.86	3.31	2.39

Source: own elaboration

SECTION III: TERRITORIAL POLICY AND CONCLUSIONS

Chapter 8: Territorial cohesion in Polish regional development policy as a process of adaptation to the specifics of a territorial unit

8.1 Researching practical application of territorial cohesion in Poland

In the previous chapter (see Chapter 2) the concept of territorial cohesion was presented. It emphasised three main dimensions of territorial cohesion: territory as a development asset; the process dimension of development policy (place-based policy-making or, in other words, dialogue-based policy adaptation to the territorial specificity); and the utility of a given territory as an outcome of a public choice process, i.e., the trade-off between spatial and economic goals. We now examine the way the process dimension of territorial cohesion is implemented in Poland.

This chapter presents the results of research on the process dimensions of territorial cohesion in the development policy of Polish NUTS 2 regions (or voivodeships). An attempt is made to examine the way and the degree to which Polish regions succeeded in programming and enhancing their socio-economic development in line with the territorial cohesion paradigm. The effect of such an approach produces territorially sensitive intra-regional policy, which is one of the main expressions of a serious treatment of the paradigm of territorial cohesion. As previously mentioned, Poland is advanced in this field. In this chapter we outline some lessons learned for those wishing to follow the Polish example. Those lessons stem mainly from the bottlenecks hampering adjustment of the policies to the territorial specificity appearing in the course of rapid adjustment of development policy in Poland to the demands of territorial cohesion. So the chapter is focused on challenges Poland is still facing while constantly advancing the process dimension of territorial cohesion.

However, while focusing on necessary improvements we should keep in mind what has already been achieved, i.e., the positive experience of Poland outlined in the previous chapters such as a formal frame for multi-level governance, discretionary financial resources matching the competencies of public stakeholders, development policy based on adequate doctrine, openness to the Europeanization, etc. So in this chapter we want to show how we might improve an already good policy process. Those improvements identified by us seem relevant not only for Poland, but also for other EU countries with a strong territorial dimension in their development policy. They form an important part of European territorial cohesion heritage and experience.

The results described in this chapter come from research based on in-depth inquiries (structured as a questionnaire-based survey), conducted with the offices responsible for the development of provinces (primarily with departments of Marshall Offices). Theoretical papers dealing with territorial cohesion (e.g. Camagni 2011; Medeiros 2011), as well as the place-based concept (Barca 2009), provide the background for this analysis. The regional level was chosen since in Poland territorial cohesion was first promoted at national level. So by examining regional governments we could better understand to what extent this concept has penetrated the other development actors.

We have assumed that the introduction of a process dimension of territorial cohesion requires not only suitable legal frameworks but also paying attention to some behavioural and non-material aspects. Among them the most important aspects include the mental shift on the part of decision-makers; adequate knowledge to be shared by various development actors in order to adapt policies to territorial specificities; understanding of the needs, intention and impacts of the actions of all participants of the programming process; and finally, active dialogue between them supported by relevant policy instruments. All of these should be treated as necessary foundations for authentic as well as formal adjustment of policies to the territorial conditions. So we checked those conditions and requirements as to how they are met in practice.

8.2 Territorial cohesion in strategic documents

First, we analysed whether representatives of Polish regional bodies responsible for programming and implementing intraregional development policy know and understand the concept of territorial cohesion. In other words, we tried to examine to what extent this concept is important for shaping intraregional development policy in Poland and what are the expectations of regional governments out of it.

Most of the regions (voivodeships) have used the notion of territorial cohesion in the regional strategic documents. In the case of the *Development Strategy*, all of the NUTS 2 regions make reference to territorial cohesion, while in the case of the spatial development plan, in only one region is the respective reference not made.

In the development strategies, territorial cohesion appears most often in the context of the determination of the *Functional Areas* (FuAs) and the *Areas of Strategic Intervention* (ASIs). In some cases, territorial cohesion is mentioned among the strategic objectives or development challenges. In other cases, the term is used only when referring to the national documents (*National Spatial Development Concept 2030*), or to the European ones. Some strategies contain the notion of spatial cohesion, which can be identified with territorial cohesion. In the case of spatial development plans, some of the plans were claimed to be attributed as a rule to territorial cohesion. In some others, the term was mentioned at the level of goals (as a part of visions, missions, and general objectives).

A more direct reference to documents of the European Union and the use of EU technical language can be observed in the provisions of *Regional Operational Programmes* (ROP). The document *Europe 2020*, and the concepts of social exclusion and the human development index (HDI) are mentioned in the context of territorial cohesion. The term appears among the objectives of ROPs and in the wording of priority axes.

Summing up, we conclude that the notion of territorial cohesion appears in the documents analysed, but its role is highly differentiated, ranging from one of the objectives of the strategy, up to just placing it in the “vocabulary.” This differentiation is certainly partly due to the timing of elaboration of the particular texts. In the older plans or strategy documents, the term is only just mentioned, while in the newer ones it sometimes plays an essential role. At the same time, it is evident that the respective authors perceived territorial cohesion in different ways, and this fact exerted an influence on the place and context of the application of the notion.

These initial observations show that the understanding of territorial cohesion varies among Polish regions. In many cases, it was shallow and related to “programming correctness”. However it has gained popularity in the course of time, and its use has become more and more conscious. In subsequent research, we tried to deepen this observation by examining what aspects of territorial cohesion described in the literature have been in practice recognised by Polish regional programming elites.

There is no absolute uniformity between different understandings of the notion of territorial cohesion (as revealed in the in-depth inquiries) and the ways of referencing them in regional planning documents. The very first differentiating element is the perception of territorial cohesion either as an instrument for attaining other goals or as a sort of an ideal ultimate state of harmonised policies effectively adjusted to the territorial specificities (conforming to the definition by Markowski 2009). The former perception (i.e., cohesion as an instrument) dominates in the Polish regions. Usually, territorial cohesion is treated by many regional officers as an instrument for redistribution, i.e., securing additional development funds for less prosperous areas be it from regional, national or EU budgets.

The second differentiating element relates to the different emphases concerning issues of the levelling out of the socio-economic disparities and supporting the endogenous factors of development. Most regions (voivodeships) base their definitions on both of these issues, i.e., for them territorial cohesion is both “spatial justice” and territorially-sensitive “development”. However, some of them treat territorial cohesion as essentially identical to socio-economic cohesion, only being attained by other means (i.e. by building up of endogenous, i.e. linked to a given territory, the growth potential/assets of the region). In other cases the issue of endogenous factors is treated as the most important, accompanied by the differentiation of the spatial policy across various territories. It was most frequent in each of the regions that several elements were mentioned simultaneously as shaping jointly the understanding of territorial cohesion (the frequencies of their specification are provided in Table 8.1). Then, only joint consideration of these very different elements determines the practical perception of the concept of territorial cohesion.

Table 8.1 Elements referred to in the definition of territorial cohesion

The defining element	Number of NUTS 2 regions referring to the element
Development based on endogenous factors	11
Levelling out of the socio-economic disproportions	8
Functional areas and territorial differentiation of policies	7
Functional cohesion, connectedness, and spatial accessibility	7
Joining of potentials and building of regional identity	4
Services of general economic interests	3

Source: own elaboration

Regarding the most commonly encountered ways of interpreting territorial cohesion, Polish regions understand it, primarily, as a method of planning and development, accounting for the territorial capital (assets), the settlement network, and the regions themselves, and their networking (see Szlachta and Zaucha 2010). To a certain degree, the responses also contain the functional approach, mainly through the indication of the functional regions as separate subjects of the policy implemented in the regions. A consideration of the areas featuring disadvantageous geographical features appears in just one single response. Of the defining elements, given by Medeiros (2011), the most often indicated is the levelling out of the social and economic differences across space followed – indirectly – by improvement of the territorial management process (through the reference to the functional regions). At the same time, the interviewees rarely mentioned the environmental equilibrium, the polycentric urban system, or collaboration in management. Some responses clearly refer to the definitions appearing in Polish governmental documents (endogenous potentials), and to the interpretation path of Gorzelak (2009), where the functional (integrative) factor is underscored, as more important than the equalizing one. It is also characteristic that regions do not perceive these approaches as alternatives. Functional connections and levelling out of differences are indicated simultaneously as the elements jointly defining territorial cohesion. It should also be underlined that the responses do not convey the content indicating the integrative role of territorial cohesion (i.e. sometimes postulated its superiority with respect to sectoral policies).

When relating the responses to the sense of the notion of territorial cohesion as provided in Böhme *et al.* (2008), it should be reiterated that the respondents noted only some of the components listed there. These were the endogenous potentials and the parity of access to infrastructure and services. At the same time, one rarely finds in the responses any unambiguous treatment of territorial diversity as a development asset. The responses also lack the element of external connections of the region (influence, exerted on other territories and the impact from the nationally implemented sectoral policies). Likewise, the elements of governance, associated with the extraction of so-called tacit knowledge, are also omitted.

On the other hand, special attention ought to be paid to the appearance in the answers provided of virtually all the territorial keys, defined in the attempts of territorializing the document Europe 2020 (Zaucha *et al.* 2014b). Those keys, in short, are the links between socio-economic and spatial development. Some responses mention directly the functional regions, city networks, accessibility, and services of general economic interest (SeGi's). In almost all responses the element of territorial resources appears. Since the very concept of the territorial keys had not been known to the respondents to the questionnaire, their answers constitute evidence for the correctness of the keys' approach, especially in its operational sense. This is also evidence that territorial cohesion, at least in the Polish case, has the potential to integrate originally very distinct types of policies, i.e., spatial and socio-economic ones.

Summing up, it can be stated that the representatives of the regional authorities display a relatively good orientation with respect to territorial cohesion, but their comprehension of the notion is usually narrower than that presented in theoretical studies. The ambiguity of the answers provided is, to a certain extent, a reflection of the lack of homogeneity at the theoretical level and at the European level. Territorial cohesion is usually correctly associated by them with the conduct of an appropriately directed development policy and with the use of the endogenous regional potential. A narrow understanding of the notion is, to a certain degree, determined by its use in the projects and programmes of the European Union. However, it seems that territorial cohesion is mainly limited to socio-economic concerns. Polish regional elites do not treat it as an opportunity to adjust some other policies to the territorial specificities, such as environmental policy or even spatial policy. It also seems that they put territorial cohesion in an auxiliary position with respect to social and economic cohesion.

The specific features of the understanding of the notion of territorial cohesion by the Polish regions (with respect to theoretical studies, as well as with regard to European documents) can be summarised by:

- Very limited references to the natural environment as a component of the territorial cohesion;
- Frequent emphasis on the element of connections, though almost exclusively in the context of development of infrastructure, but not the very intensification of interactions, and even less so the cooperation between the territorial units and the expansion of the network structures;
- Frequent direct and indirect references to the evening out of the disparities between regions, as a superior goal;
- Lack of references to polycentric development.

In the last point this is certainly the consequence of the geographical level at which the study was carried out, polycentrism being more often defined at the national level. However, it is significant that there are no suggestions related to the strengthening of other centres in the region, except for the regional capitals. Equilibration of development is rather supposed to be based on levelling out of the traditional centre-periphery dichotomy, with the periphery being identified with rural areas and possibly also small towns. Attention was more often paid to the role of functional links and of accessibility in the NUTS 2 regions to the main metropolitan centres. On the other hand, it is difficult to indicate any other regional regularities that differentiate the way of understanding territorial cohesion.

The lesson learned that may be of wider international interest is that in Poland the term of territorial cohesion has been introduced without any proper policy debate involving all levels of governance. The concept, as it is, seems sound. It has stood the test of the time. It has been positively assessed by all respondents taking part in the survey. It has stimulated important policy-oriented discussions in the regions. The key essence of paying attention to territorial specificities (in terms of endogenous potentials and functional geography) has been properly identified. But it seems that a broad public debate and experience sharing would make the use of the concept more informed as distinct from intuitive. Also such a discussion would lead to better understanding of all dimensions of territorial cohesion.

Another striking outcome is that none of the respondents had any problems in elaborating on the process dimension of territorial cohesion and had problems only partially and indirectly on the territorial capital dimensions (accessibility, networking, identity), while the territorial utility has not been referred at all. Thus it seems that when enhancing territorial cohesion, the starting point should be in the process dimension (i.e. adjustment of policies to territorial characteristics and needs) which seems easily understandable for stakeholders. Such attempts exist in many countries under the flag of multi-level governance for instance in federal ones (e.g., policies of the federal member states in Germany or policies in German metropolitan functional areas) but in many cases the number of policies adjusted to territorial specificities in a form of a dialogue is limited. Thus territorial cohesion might broaden the scope of such adjustment and put more focus on proper analysis of the territorial context. The other dimensions of territorial cohesion need better promotion and explanation before the process of their introduction can start.

8.3 Knowledge of territorial context as a prerequisite of territorial cohesion

The territorial orientation of policies, whether those conducted by the central authorities or those implemented by the regional or local authorities, requires sound knowledge of the given territory, its problems and development opportunities, as well as mechanisms of development or stagnation. This knowledge is the primary condition necessary for the implementation of territorial cohesion along all of its dimensions. In order for it to become the starting point to territorial dialogue, a definite degree of objectivity is needed (i.e., evidence-based knowledge), along with standardisation. This knowledge cannot only have an intuitive character, even though tacit knowledge is an important constituent. Such knowledge should be gathered and verified continuously and should allow for the formulation of forward-looking judgments, and not only for the retrospective analyses.

It is common among Polish regional bodies to collect and process statistical data available in the public domain. The assessment of the significance of this manner of gaining knowledge is also high (Table 8.2). When this approach is insufficient, it is usually complemented by expert reports contracted from researchers, state statistical offices and consultancies. In some regions the departments of the Marshalls' offices or the regional spatial planning bureaus are also among key knowledge providers, but many respondents indicate the importance of information obtained from other public authorities (e.g., self-governmental units) and institutions subordinated to the Marshalls' offices, such as, for instance, regional labour offices or regional centres of social welfare. In this context one can also mention various other kinds of reports (SEA⁹⁸ reports; the monitoring report from the implementation of the regional development strategy; and reports on the state of spatial development of the region). However, all those efforts have had an ad hoc character. Their intensification was usually related to elaboration of the regional strategic documents. The picks were in line with the beginnings of the EU programming perspectives. Only a few regions have managed to establish systems for the systematic gathering and interpretation of information related to their development. But those systems differed among regions. Another disadvantage is that territorial information collected in a well established national and supranational systems (e.g. Eurostat or the Central Statistical Office in Poland), although comparable over time and space, in many cases does not respond to regional or local challenges and problems. Whereas tacit knowledge collected within any region in the form of various types of reports and documents is often incompatible with the information collected by the other development actors.

To change this situation the Ministry of Regional Development (recently renamed as the Ministry of Economic Development) introduced a system of national and regional territorial observatories. Regional governments have been also obliged to prepare periodical assessment reports i.e. reports on the state of spatial development of the region. This initiative was welcomed by regional governments. As a consequence of in-depth inquiries, we have revealed that Polish NUTS 2 regions assign high significance to the establishment of systems of continuous regional monitoring. And the frequency of such approaches to knowledge gathering is higher in Poland than in other European regions examined by Zaucha *et al.* (2013, 20). An important number of Polish regions has put high hopes on the establishment of the regional territorial observatories (RTOs). Noteworthy

⁹⁸ SEA – Strategic Environmental Assessment, is a compulsory procedure with regard to plans, policies and programmes ensuring proper inclusion of environmental and other sustainability aspects. It is regulated by the SEA Directive of the EU.

in this process is the role of central government, which covered quite high transaction costs and through legal provisions coupled with a dialogue and consultations did its best to ensure compatibility of the systems of gathering and processing information across various spatial scales (at least regional and national).

Summing up, regional Poland is undergoing a process of change in the ways of gaining knowledge of the regional system. Increasing emphasis is placed on the creation of consistent systems as well as on sharing of existing knowledge. Legal regulations, such as the duty of elaborating reports on the state of spatial development of the region, are moving the entire programming system in a correct direction and induce the demand for sound knowledge of the region. The same demand comes from the requirement of elaborating the strategy of Integrated Territorial Investments (ITI). Moreover, the mental shift is accompanying those legal advancements since the evaluations of the above-described process by regional programming and planning bodies are quite high.

Table 8.2 Methods of gathering and processing (for the use of development policy and spatial policy) knowledge of spatial development and socio-economic development by voivodeship authorities and/or administrations

	Number of regions indicating given instrument (class of instruments)	Rate of significance in the scale of 1 to 6	Number of answers used
Territorial observatories	11	5.5	11
Gathering, processing official statistics data	10	5.5	10
Expert assessment and analysis (commissioned)	10	5.3	10
Process of strategy and/or spatial plan preparation for region and monitoring of its implementation (including specialist web pages), preparation of regional spatial planning state report	8	6.0	8
Own studies and analyses of Marshals' offices employees and/or studies and analyses of Regional Office for Spatial Planning	7	4.7	7
Land Information System and spatial information systems in Poland	7	5.4	7
Information obtained from regional government institutions such as Regional Centre of Social Policy, Regional Labour Office	6	4.4	6
National conferences and conferences with different level self-governments, formal and informal meeting	4	6.0	4
Other active methods (e.g. research, modelling)	4	5.40 ⁹⁹	5
Other passive methods (e.g. information from local government reports based on EU documents)	3	4.5	4

Source: own elaboration based on survey results

⁹⁹ The result is lowered by dissatisfaction with modeling, otherwise it would be 6.

The manner of sharing knowledge is a separate issue. By sharing knowledge the development actors can adjust policies of the other stakeholders in a voluntary way. This can be done without issuing official statements or exerting informal pressures within the governance system. However, analysis of the results of in-depth inquiries suggests that the regional authorities do not have a clear understanding of this aspect. Most frequently mentioned vehicles of influencing other policies are processes resulting from legal requirements, i.e., issuing opinions on and agreeing upon the content of strategic regional documents by the central administration, and vice versa, consulting and proposing changes and issuing opinions on the governmental documents from the side of the regional self-governmental bodies. Among the channels of routine sharing of information respondents mentioned most often websites, conferences, briefing the national authorities in the context of direct meetings, discussions during the routine meetings of the regional Marshalls and, sporadically, publications and reports. Yet, to a large extent these are passive methods. The situation is different with respect to sharing of knowledge with other regions. Here, side by side with consultations and electronic information, informal contacts have become most important, meetings of Marshalls and members of the regional boards, including those during the Marshalls Convention¹⁰⁰, as well as all kinds of projects and grass-roots initiatives. One example can be the preparation of macroregional strategies covering a few regions. In the course of this process the participating regions improved mutual understanding of their development potential and challenges and agreed on joint development measures in order to capitalise on possible synergies. However, this was one-time initiative. The borderland regions also mentioned, for example, cooperation with Germany – both in the framework of the European Territorial Cooperation projects and the jointly undertaken studies — as an important forum for sharing knowledge.

Altogether, the process of sharing knowledge constitutes currently a weak side of implementation of territorial cohesion in the context of integration of the development policies in Poland. Knowledge is accumulated, but information management is often random.

The lesson to be shared with a wider international audience is that access to updated and reliable knowledge is of great importance for advancing implementation of territorial cohesion in EU. This knowledge is a key precondition for adjusting policies to territorial specificities and needs. If such adjustment should be done in a form of a dialogue between various stakeholders, consistency of knowledge among territorial scales matter. Different participants involved in programming and policy implementation should have access to a compatible set of knowledge and information. The Polish example shows that consistent systems of territorial knowledge can be established neither as grass-root initiatives (suffering from low compatibility) nor as top-down systems (suffering from rigidity). A middle way is the best option.

The second lesson learned is that existence of systems of gathering and processing territorial knowledge and data although important, is insufficient. A learning process is necessary to promote proactive use of knowledge and knowledge sharing. Preparation of periodically published territorial analysis related to key development documents is a necessary but insufficient move into a right direction. In this context, a need to strengthen interim and ex-post assessments in order to measure actual results achieved across all levels of territorial set-up sounds like a truism. However, the evaluation should be coupled with proactive dissemination of the knowledge on the territorial context to key stakeholders. The Polish example of preparation of macroregional strategies shows the importance of such efforts and the possibility to achieve voluntarily policy coordination as a consequence.

¹⁰⁰ Marshalls meet frequently under rotated chairmanship of one of them to discuss important issues for regional self-governments.

8.3 Knowledge on behaviour of other development actors as a prerequisite of territorial cohesion

Adaptation of development policy to territorial specificities and potential requires a sound knowledge of such a policy and estimation of its territorial impact.

The respondents, asked whether they evaluate the influence of supra-regional policies (national and European ones) on the socio-economic development and spatial structures of their region, answered positively, i.e., nobody chose the answer that such analyses are not conducted. However, a significant share (seven out of sixteen), indicated the option “partly”, which may signify that these activities are in some manner limited. The comments attached give rise to a conclusion that this reply is closest to the truth – also regarding those who confirmed the fact of conducting analyses of this type. As a rule, they are carried out mostly during the preparation of strategic documents of a given region and from the perspective of their compliance with the *National Spatial Development Concept* and other strategic documents of the national government. Evaluations which concerned the allocation of EU resources or when the European Union announced important development-oriented documents (e.g. Trans-European Transport Networks and cross-border areas), are also popular. Another opportunity happens when the government announces the outlines of new policies. In this context, the most frequently referenced policy was the transport-related one. Those are actions of a one-off (most frequently performed only once in the EU programming period) and passive character. As one respondent indicated, in spite of the fact that those kinds of evaluations are conducted – “what fails to be analysed is the influence of those policies on the development, for instance, of regional GDP”.

There is, however, an evident shortage of frameworks and instruments in those types of analyses. The most frequently cited were the following methods: external expert opinions; consulting the Ministry of Infrastructure and Development as well as analyses performed by the Convention of Marshals. The evaluation of those instruments was relatively negative, which signifies that there is a considerable deficiency in this area. More positively evaluated were specific tools selected by only a few regions such as: diagnoses of the regions’ condition (for the purpose of drafting strategic documents); individual expert opinions and informal analyses of Marshals’ Offices; as well as discussions concerning the topic during the Regional Council of Development (advisory body composed of different stakeholders). The shortage of methods used for conducting such analyses can be evidenced by a significant number of individually applied solutions that signifies that regions differ in their approaches to this question.

Also symptomatic is a narrow scope of evaluation of sub-regional policies and behaviour of non-public stakeholders. In the remarks and in the discussion with our interlocutors only in very few cases could we identify any attempt to analyse the influence beyond the governmental sphere, e.g., impact of activities of business or non-governmental actors. For instance in the Pomorskie region a project aiming at rehabilitation of some city areas was preceded with negotiations on the scope and depth of such rehabilitation in which actors from outside the public domain should be involved. Those negotiations could reveal the possible impact of activities of those actors on a given area subject to rehabilitation. It seems that a key reason for neglecting the impact of private and civic development actors is the difficulty in revealing their plans and intentions. Therefore such analysis, if conducted, was usually limited, for example, to concrete investment projects. However, this is an important barrier for the better involvement in intraregional development policies of any actors without formal jurisdiction (as suggested by Faludi 2005). Understanding their impact is also a critical precondition for building regional social capital (i.e., mutual trust).

It is not only the regional authorities that analyse the policies of other authorities and entities – their own policies are analysed by others as well (Table 8.3). Respondents confirmed that this indeed takes place; however, they concluded that the scope of those analyses is too narrow and — at the central level — frequently limited merely to checking the formal compliance of regional-level documents with the country’s strategic documents.

Table 8.3 Number of regions who claimed that impact of their strategic documents had been evaluated by national, local and regional governments ¹⁰¹

National level				Local level			Other regions				
yes	no	partially	I do not know	yes	no	partially	yes	no	partially	by way of exception	I do not know
9	1	3	1	11	0	3	8	1	3	1	1

Source: own elaboration on the basis of survey results from 14 regions

On the other hand, at the local level the analyses of the development policies of the region are being carried out in connection with the process of consultations/elaboration with regard to the regional or local documents. There are two reasons of interest of local governments in regional strategic documents. In the first case, the issue is to have the regional documents (in particular – the *Regional Operational Program*, ROP – but also the regional strategy and the regional spatial plan) in line with municipal investment plans and ideas. For example, such documents to a certain extent can limit the development capacities of the municipalities by not ensuring proper road connections. The local governments want to avoid that. In the second case, the analysis of regional priorities has been done in order to find the best ways of approaching the money available at the regional level (under *Regional Operational Programmes*). Reference to regional priorities in local strategies might help local governments to obtain grants from ROPs. The reason is that among the granting criteria usually is one on conformity of the project applying for finance with regional strategies and programmes. Thus even formal conformity is important and local governments analyse regional documents in order to find such a link/anchorage point.

Such analyses are also carried out by neighbouring regions. Some respondents emphasised that it happens only in extreme cases when those regions show interest in elements of the strategy that affect their development (e.g., common problems, infrastructural or ecological corridor, tourism, etc.).

The set of instruments for conducting analyses of this type, and the framework within which it transpires, is very limited. The basic instruments of such evaluations were external expert opinions and individual analyses of responsible institutions. Polish questionnaire respondents have not mentioned some new instruments currently discussed in Europe, like Territorial Impact Assessment. The majority of respondents considered consultations of strategic documents and procedures related to the formal and legal course of drafting planning documents as the main framework for conducting such impact assessments. In relation to these impact assessment efforts mostly positive reactions tend to appear, but only two regions gave the highest grades. Therefore, a certain feeling of inadequacy appeared. Only certain regions mentioned other types of assessment frameworks such as informal meetings and consultations — but their evaluation was not high. Ex post and interim evaluations did not play important role in this context. Only two regions mentioned them as a framework of impact assessments.

¹⁰¹ This question was answered by 14 regions.

Summing up, analyses of the impact of strategies, plans and programmes are conducted by public actors in the development process on whom they exert some type of influence. However, they seem rather narrow and of a routine character. The set of instruments and frameworks of those activities, however, are mostly limited to consultations, opinions and negotiations. There are no such categories as synergy or construction of joint potentials. There is a predominant formalistic effort to avoid conflicts and maintain general agreement. Among the instruments, there are no vertical or horizontal think-tanks, joint groups, etc. There are signs, however, that territorial contracts (formal agreements between national government and regions) and partnership contracts (formal agreements between regional and local self-governments) will gradually improve this situation in Poland.

The lesson from the Polish experience to be shared more widely is that although knowledge of the impact of policy/behaviour of other development actors is an important precondition for successful introduction of territorial cohesion, the progress in this field is limited. Governmental actors usually pay attention to each others' policies but they are content with an ad-hoc and non-systematic approach. A pragmatic approach prevails (e.g., conflict avoidance, improving absorption of EU money) over more strategic consideration to achieve real orchestration of policies and their adjustment to territorial specificities in line with the concept of territorial cohesion. The solution would be a joint development of some systematic impact assessment instruments. Since this would require a combination of experience and know-how from different countries, a general recommendation is to start such a work jointly by the EU countries or regions. Such instruments should cover not only the impact of public policies but also the impact of activities and investments of private sector actors and institutions of civic society. The focus should be not only on conflicts but also on possible synergies. In addition, good practices showing why such assessments improve efficiency and effectiveness of the policies should be collected and disseminated.

The second lesson is the importance of an institutional programming framework for inducing and enhancing work on proper impact assessments. The contractual types of frameworks extended beyond mere consultations and based on fair distribution of rights and responsibilities for programming development policies might provide stimuli for development of the impact assessments instruments and methods. Also the role of compulsory ex-post and interim evaluation should be changed. Evaluations should be more focused on results and seriously treated as an input to programming.

8.4 Territorial Dialogue – key precondition for adaptation of development policy to the territorial specificities

Territorial dialogue is a vehicle for adaptation of development policy to territorial specificities. Such dialogue is possible if its participants reveal their expectations and aims, and they are able to listen and be open to the opinions of the others. Territorial dialogue consists of a kind of matching process for the opinions of various actors in the decision game. Its result is mutually convincing and a kind of development consent. Such a dialogue requires also appropriate institutional fora and supportive instruments.

Territorial dialogue is a necessary condition for improvement of the effectiveness of conduct of development policy in the framework of the multi-level governance system. It enables a better use of the local or regional specificity (e.g., conditions, mechanisms, endogenous potentials, including territorial capital), and, at the same time, makes it possible to limit the negative influence of local and regional selfish interests and perceptions from

the perspective of the narrow interests of a given “place”, without considering a broader (e.g. national or European) development context. Thus, for instance, the administrators of large cities bear actual responsibility with respect to their respective electorates mainly for the development of these cities, despite the enormous impact, exerted by these cities on the functioning of the entire country. Territorial dialogue may make such limitations less obstructive.

From the perspective of the regional level, the initial condition for the dialogue, in addition to possessing objective knowledge, consists in the skill of communicating to other actors of the development game the development priorities of a given territorial unit and the conditions for their realisation (e.g., expectations as to the behaviour of the other actors).

Regional authorities, when asked about the ways of expressing their expectations with respect to other actors of the development game, indicated the traditional forms, e.g., issuing of opinions on and agreeing upon the content of documents between the levels of public administration. Yet, some additional ways of expressing these types of expectations have also appeared: revealing expectations in the strategic documents (the option most often selected) and issuing individual positions by the Boards or Regional Assembly on concrete matters, as well as “soft” and “informal” ways (i.e., the exchange of information and talks in the framework of cooperation with other regions and other decision makers).

Formal channels for providing opinions were ranked highest, while both informal actions and stating expectations in strategic documents, were ranked a little lower. These results demonstrate the enduring significant importance of the legal framework for the shaping of territorial dialogue in Poland. Positive assessment of the efficiency of recording (or placing) expectations in strategic documents, which may seem an excellent solution, must be appreciated. However, only two regions ranked this way of communicating their expectations highest. This indicates that expectations stated in these documents are not in fact a subject of complete and thorough analysis by other participants of development game. Hopefully, the territorial contract instrument will change things, and those expectations will become a key element of the negotiating mandate, will be taken into consideration and will be discussed. Highly innovative actions have appeared, such as negotiated mandates for integrated territorial investment or functional urban areas, or concrete projects initiated by the Marshal that subsequently integrate stakeholders from the entire region and created informal networks for exchange of opinions.

When asked about the framework of territorial dialogue, respondents most frequently listed new instruments: territorial forums (composed of various stakeholders); territorial contracts; integrated territorial investments (ITI); and Strategic Intervention Areas (ASI) (the option chosen most often); partnership contracts (territorial contracts between communes and voivodeship); as well as other agreements and contracts such as entering into a new cooperation with regions and maintaining cooperation with neighbouring regions (also from other countries). Also popular were more traditional frameworks such as the cooperation within the Convention of Marshals (mostly average grades) or public consultations.

The new dialogue frameworks injected by the EU were very popular and most positively graded (and had a higher significance) than traditional actions, although there were very few highest grades for ITI and ASI. This indicates that there exists large room

for improvement and optimisation in this area. More seldom were mentioned contracts between regional and local governments (i.e., partnership contracts) and regional territorial forums (i.e., different types of networks composed of a broad spectrum of stakeholders).

In comparison with the results from other countries., the level of satisfaction from the territorial dialogue was much higher in Poland. In the European study by Zaucha *et al.* (2013, 37), 48 per cent of respondents considered that dialogue does not function or is not satisfactory in their countries. Moderate satisfaction dominates, on the other hand, in Poland. The averages obtained (based on a scale of 0 to 6) were uniformly high: 4.8 with respect to the “downward” dialogue, and 4.6 with respect to the “upward” dialogue. This result can be treated as a general approval for the key directions of changes in programming and implementing development policy in Poland and increased openness to the sub-national stakeholders. Perhaps it is even a kind of an advance credit given as a result of the hope that current trends will continue. Such an impression might appear because a high appreciation goes hand in hand with a critical assessment of existing shortcomings hampering the dialogue. The respondents mentioned a lot of limitations to correct dialogue and concentrated on problems in relations between regions and municipalities, on the one hand, and between regions and the Ministry of Infrastructure and Development, on the other hand. The most important group of barriers are as follows:

- Barriers associated with the selfish attitude and the apprehension as to cooperation at the local level. This is connected with the perceptible opposition of interests between the levels of region and municipality, as well as between the particular units of the territorial self-government. In addition, municipalities often do not perceive the need for integration of actions and policies. They often undertake dialogue only in the situations when it is linked to the possibility of acquiring resources such as EU funds.
- Barriers associated with legal stipulations, bureaucracy and the setting of competencies at the central and regional levels. Respondents emphasised the excessive burden of formal duties, with which the regions have to deal (at the expense of concentrating on the development policy). A separate significant problem turned out to be the insufficient coordination between the actions undertaken in the framework of the Cohesion Policy and those undertaken with the support from the Program of Development of Rural Areas.
- Barriers associated with the flow of information and conduct of consultations. In this field primarily the shortcomings of the functioning at the central level were pointed out (Ministry of Infrastructure and Development), mainly in terms of insufficient information policy and excessively fast schedules of consultations with the regions. Also, difficulty in reaching a broad spectrum of businesses (as the participants of consultations), was emphasised, which already becomes apparent at the regional level.
- Barriers associated with broadly conceived social capital, among which wrong understanding of the concept of integration and manipulation of information, were mentioned. In this context, the limited transparent way of proceeding was also underlined, which might result from the lack of mutual trust between the actors of spatial policy. Further, demanding attitudes of the representatives of the local authorities with respect to the regions were noted, partly linked to the lack of knowledge as to the division of competences.

An important conclusion from this part of the study is that shortcomings to territorial dialogue appear virtually in the entire country. This may mean that the foundation for these shortcomings is not due to the level of socio-economic development of the regions. The reasons for the less than satisfactory dialogue ought, therefore, to be sought first of all in the deficiencies of a more general nature. Local conditions constitute in this matter only an additional element. One of the experts (from outside the regional authorities), even pointed to the existence of a specific barrier related to a general mental problem with decision making on the part of officials and civil servants. He noted that there are often considerable reservations with respect to making decisions concerning spatial diversification of actions and policies. Civil servants are especially afraid to decide on the territorial concentration of investments (and resources). After conducting all in-depth inquiries, the most surprising for us was that all answers on the way the territorial dialogue functions in Poland were about its framework, while methods and instruments have not been mentioned. On the basis of assessing the existing policies we can conclude that their adaptation to the territorial context in Poland is done mainly at the level of objectives (priority axis and measures). The conscious differentiation of financial sources (e.g., grants versus loans) is progressing but without any clear territorial dimension. The exceptions are the EU Structural and Investment Funds that pay attention to the level of GDP per person according to general EU regulations. Finally, territorial conditionality is almost non-existing.

At a first glance, Poland can be treated as a model country with regard to scope, efficiency and importance of a territorial dialogue for adjusting policies to territorial specificities and potential. All key elements for the proper functioning of such a dialogue have been installed and participants in the dialogue are in general satisfied. However, a closer look reveals some problems. Thus the lessons learned to be shared with a wider international audience are the following.

Firstly, satisfaction with a territorial dialogue cannot be treated as a good measure of its success. A proper way is assessment of its result (in terms of adjustment of policies to territorial specificities) or at least assessment of the functioning of its key ingredients, at it has been done in this study.

Secondly, a proper institutional framework of dialogue can only partially be provided by the EU level, but to respond to territorial diversity it should be complemented with national specific and even regional specific instruments. The existence of such instruments should be positively assessed and appreciated by EU bodies. The European Commission can propose some common minimum denominator, but should avoid standardisation in this field.

Thirdly there is a need for a EU-wide discourse on what comprehensive adaptation policies to territorial specificity should look like in practice. It seems that such adjustment should go beyond the level of objectives and priorities. It might also cover conditionality and sources of finance. But the key lesson learned is the importance of a culture of dialogue. This means a mental shift and recognition of the necessity to understand the other stakeholders. An example is the Polish case, of little practical impact of revealing development expectations towards other stakeholders in regional strategic documents. Without the creation of a culture of openness in programming and implementation of development policies, the existing legal provisions will not suffice to mitigate local and regional selfish interests or to alleviate red tape barriers or to diminish manipulation of information.

8.6 Good Practices

The in-depth inquiries revealed also the very active attitude of Polish regions for implementing process dimension of territorial cohesion. The respondents were asked about those innovations and good practices regarding territorial cohesion that, in the opinion of the authorities and public administration representing them, are most highly valued, significant and worth spreading. As a result, a list of fifty such categories was created. Over half (twenty-six) of the good practices (or proven solutions) pertain to the implementation of the “*place-based*” paradigm in the intra-regional policy. The practices concern: communicating and informing the stakeholders; processing and obtaining information; consultation; participation and organisation of stakeholders; forms/instruments of territorial dialogue such as Integrated Territorial Investments or local government contracts; and finally, very comprehensive alterations in the whole intra-regional policy and methods of carrying it out. These methods, as the most interesting issue, will be briefly described.

- **Local government (or partnership) contracts** are instruments similar to territorial contracts in that they bind the local and regional governments. In the Zachodniopomorskie and Pomorskie regions, such contracts are made with local governments that organised themselves (with a minimum of three units plus broad participation of non-public and public partners) in order to solve a specific problem or stimulate development. Such agreements should produce a diagnosis for the area covered by the agreement and prepare a strategy resulting in investments that should be drawn into an indicative list (non-competitive procedure) in the regional operational programme (ROP). Municipalities and counties are aware that only a few local government contracts will be signed, but they have unlimited freedom to form agreements.
- **Strategic Programmes** translate the strategic goals of the regional strategy into specific tasks and list the entities responsible for their fulfilment, cost estimates and localisation of actions. Within these programmes, cooperation and communication take place between different stakeholders, e.g., experts, Marshals’ offices, regional labour offices, Investor Support Centres and many others. Thus, complex multi-sectoral programs are created, such as labour market or creative time programmes (tourism, culture and education).
- **Initiating development through leadership**, i.e., encouraging local stakeholders to cooperate thanks to active incentives from the Marshal’s Office was tested in the Warmińsko-mazurskie region. These actions are of a network character and allow for a compromise between the interests and priorities of different stakeholders. The *Cittaslow* initiative¹⁰² can serve as an example. It is a movement founded in Italy aiming at improving the quality of life in towns by slowing down its overall pace, especially in a city’s use of spaces and the flow of life and traffic through them. The Marshal’s Office deemed this type of development beneficial for the cities in the region. It urged them to learn about the concept, analyse its effects in cities that follow it and establish a partnership with these units. The support of the Regional Operational Programme of the Warmińsko-Mazurskie Region occurred only when international cooperation started producing visible effects in order to avoid the absorption bias as a reason of cities to join the initiative.

¹⁰² This is the network of cities building community spirit within cities in order to improve the quality of life of citizens. More information is available from the website: <http://www.cittaslow.org/>

- **Planning across administrative borders of counties and municipalities** have been tested in Malopolskie region. The municipalities and counties were asked to voluntarily form planning and programming sub-regions. A sub-region council was constituted in each sub-region. They are advisory and consultative bodies within the framework of the regional strategy and regional operational programme. Fifty per cent of their members are local government representatives and the other fifty per cent are social partners: scientific communities; representatives of economy; and associations (non-governmental organisations). All policies fit into this territorial grid and they are territorialised accordingly.

8.7 Conclusions

It seems that Polish regions are on the correct path towards the implementation of territorially diversified intraregional development policy also in comparison to their EU peers (Zaucha, Komornicki 2017). All of the component elements necessary to this end are present in their development policies to various degrees. Owing to leadership at the national level, a positive turn is taking place in the methods of gathering knowledge. A system of territorial observatories is emerging. However, the issue of compatibility of knowledge and information gained on various spatial scales remains unresolved. The weakest link in the system lies in the ways of sharing knowledge acquired, where passive methods dominate. There are no new ideas on managing development through knowledge sharing. There are fewer problems concerning the interaction with other actors of the development game. Owing to new instruments (e.g., integrated territorial investments, territorial contracts), this dialogue becomes increasingly intensive, and, in view of the improving methods of acquiring knowledge, also increasingly substantive.

As a result of the analysis presented in this chapter, some general rules facilitating adaptation of development policy to the territorial specificity and potential in a multi-level governance framework can be identified.

Firstly, appropriate legal provisions might be a right vehicle for triggering the entire process. They should provide the architecture of policy-making facilitating the multi-level dialogue and inclusion of different types of development actors, including those without formal jurisdiction. In the Polish case this involved the conscious decentralisation of the management of EU Structural and Investment Funds, the establishment of formalised dialogue fora (such as territorial contracts, Integrated Territorial Investments), as well as genuine consultations with respect to national documents. A key precondition is putting all development actors on equal footing. This means endowing them with discretionary power, knowledge, and financial means to bring territory-specific issues to the policy programming and implementation debate. Of course in the countries with a traditional culture of dialogue and negotiation (e.g. Scandinavia), this observation might be less relevant but in many other member states it still makes sense. Legislation has the potential to start a “snowballing” effect. It removes obstacles and initiates and encourages new types of thinking. In the Polish case the concept of territorial contracts has been creatively adapted by regional governments who started to conclude similar contracts with local governments (partnership contracts). The legislation created a wave of new regional initiatives and innovations that have formed a critical mass that has redirected the programming process.

Secondly, methodological aspects should be addressed. There is a deficit of instruments facilitating adaptation of policies to territorial needs. For instance, in the Polish case a barrier is in the deficiency of instruments for evaluation of behaviour of other development actors. Polish regions are active in development of different types of instruments mainly related to the process dimension of territorial cohesion. But this needs time and experience. Therefore pooling resources, making use of interregional and even international projects, might help. In some cases there is a need to ensure coherence between instruments developed for different territorial scales. Here an authentic plea arises for pro-active involvement of some coordinating body in order to cover high initial transaction costs. A positive example can be the establishment of a network of territorial observatories in Poland, coordinated by Ministry of Regional Development (recently renamed to the Ministry of Economic Development). Joint elaboration of instruments is a promising way for demonstrating positive impact of Europeanization of policy programming and policy implementation.

Thirdly, those “hard” measures should be accompanied with the soft ones, aimed at the promotion of the concept of territorial cohesion, facilitating its understanding and identification of benefits for various bodies that should participate in policy programming and implementation. This is an important condition for shifting attention of regional and local governments from outcomes (absorption of funds) to the output results and from formal to voluntary compliance in implementing territorial cohesion. This is still work-in-progress for Poland to create a territorial cohesion culture in programming and implementing development policy at various spatial scales. Such effort should encompass all types of development actors including also mass media and various agents shaping opinion of the general public.

Chapter 9: Conclusions and policy recommendations

“(The) challenge to debilitating arrangements occurs more often in places with more open public debate and political processes, better capability for independent research, and greater exposure to the pressure of ‘crises’ of new technology or competition from foreign or related domestic markets.”

Mancur Olson, *Power, and Prosperity*

9.1 Introduction

The material in this book illustrates the common experience that policy discussions that take place at the level of a national economy usually occur in a simpler context than policy discussions concerning the regions of a nation. For example, the tools of economic analysis tend to be better developed at the national level, in terms of data, quantitative research and of models of the economy. The paradox is that we often appear to understand more about the national economy than we do about its constituent regions, even when the national economy is simply the aggregation of the economies of its regions. In addition, policy-making at the national level, although not without its internal stresses and tensions, is under the control of a single government that can act in the collective national interest and which has access to many of the appropriate policy instruments required to achieve national goals. Most of these policy instruments are designed to apply across the whole national territory and are not region-specific, such as fiscal policy, monetary policy, labour market policies, education policies, social welfare and income distribution policies, etc. Of course, there can be asymmetric, region-specific consequences of national policies. For example, less developed regions with higher rates of unemployment will tend to be net beneficiaries of income redistribution policies, and more developed regions with lower rates of unemployment will tend to be net contributors. Also Nijkamp argues that negative economic effects of monetary policy may last longer in peripheral regions than in central areas (Nijkamp 2010, 17–18).

However, the research in this book illustrates why national policies can be rather blunt instruments with which to address specific regional development problems. In some cases, such as a policy of income distribution between richer and poorer regions, a poor region risks being left in a state of long-term dependency, such as in the *Mezzogiorno* region of Southern Italy or the eastern regions of Poland. So most nations design and operate region-specific policies where an effort is made to shape them to address challenges that are identified within regions, whose causes can be traced to specific local factors as well as to

wider national and/or global factors. The key aim of this book was to illustrate the stages that have to be gone through in order to place such regional analysis and regional policy making on a sound and more rigorous footing, drawing on the rich research material and experience of the Polish regions. In this respect, Poland is a very useful illustrative example within the European Union since its regional administrative structures are well developed, but they stop short of being those of a fully federalised state (such as the Federal Republic of Germany). Most other EU member states also fall into this category, which makes the Polish experience of wide relevance to the future of regional policy in Europe.

In this concluding chapter we review the lessons learned from the Polish research using the three-part division of the work in the form of an overall summary. In Section 1 we discussed three interrelated themes that are related to the competing concepts that are used to explore the goals of development. First, we reviewed the terminology and nomenclature of development, distinguishing between the more familiar ideas of socio-economic development and the more complex objectives of territorial development. Second, an account was given of how recent EU-inspired development policy in Poland has been heavily influenced by the need to take into account the territorial dimension of the Polish economy in the context of EU regional development aid packages (e.g., Structural and Cohesion Funds). Third, a novel theoretical approach was proposed to systematise and explore the conceptual challenges of territorial development.

In Section 2 we presented three different kinds of empirical analysis of Polish territorial issues. The first dealt mainly with regional data and addressed one of the key dimensions of territorial cohesion: namely, territorial capital, broadly defined. The second described the use of spatial econometric techniques to examine the kinds of relationships that exist between Polish regional growth and territorial capital, i.e., the most important driver of that growth. The third adopted a macro-regional perspective to explore inter-regional dependencies, drawing on the extensive research on regional modelling of the Polish economy.

In Section 3 we reviewed in Chapter 8 how the actual design and implementation of Polish territorial policy has operated in recent years and examined the manner and the degree to which Polish regions have succeeded in programming and enhancing their socio-economic development in line with the territorial optimum cohesion paradigm. The concluding Chapter 9 is forward oriented. It presents some general lessons learned aiming at a broader international audience, and in particular the research community. Here we also present some suggestions for the further research.

9.2 Territorial policy: concepts and frameworks

9.2.1 Territorial cohesion: origin, content, and operationalisation

In Chapter 2 we drew attention to the confused state of the nomenclature widely used in the treatment of territorial cohesion. This ambiguity of language, such as between socio-economic development and territorial development, is not just a semantic issue. In fact it has made it much more difficult to specify the precise nature and scope of regional development challenges as well as their two-way relationship to national development challenges, i.e., to understand the aggregation of regional consequences for the national economy as well as the downstream consequences for regions of national policies. It also had consequences for the systematic design of spatial development policy in the member states of the EU, since this still remains primarily a national rather than an EC responsibility.

As we discussed, EU policies in this area have evolved in a rather unsystematic and piecemeal fashion through specific rather than generic policy areas such as transport, the environment, energy, agriculture and urban policies. Only very recently have the issues of territorial integration and specifically the integration of border areas been assigned high importance and distinguished from the related and more familiar concept of EU economic integration. The feedback loop between these two concepts was shown to be complex, but needs to be understood if effective territorial cohesion goals are to be achieved.

The gradual evolution and extension of the territorial dimension in EC policy-making have been described in terms of the series of formal *Cohesion Reports* published approximately every three years by DG Regional Policy. For example, at the time of publication of the *Third Cohesion Report* in 2004, the view was emerging that territorial cohesion should be understood not only as a mere levelling of social and economic disparities across space, but rather as a coherent development of Europe as one entity (or mega-region), with emphasis placed on better and more equal access to various kinds of infrastructure and knowledge. Over the period since the First Cohesion Report in 1996, the key changes in the interpretation of territorial cohesion were identified as:

- Movement from a static concept of the state of a territory to a dynamic concept of policy integration appropriate to the specific characteristics of a given territory;
- A shift from treating it as the vehicle or instrument used to achieve social and economic cohesion to treating it as a genuine, independent EU objective;
- A switch from a redistributive approach that advocated spatial equalisation of welfare levels to the recognition of the importance of territorial factors in the process of development and satisfaction of human needs.

Given the complexity of the concept of territorial cohesion, there is an obvious need to have a systematic model, or more correctly, a taxonomy, that sets out the main constituent elements and their interrelationships. Two such models were described in Chapter 2: the so-called “Tequila” model and the “Star” model. In the “Tequila” model, three elements of territorial cohesion are emphasised and used to organise the main driving forces: quality, efficiency and identity. The “Star” model identifies four organising dimensions of territorial cohesion: socioeconomic (or distribution); environmental (or sustainability); poly-centricity (or territorial balance); and cooperation/governance (bringing territories closer together). Neither framework was completely comprehensive or satisfactory. Furthermore, these two frameworks are qualitative in nature and are not very useful when one attempts to quantify or measure territorial cohesion.

Some important, robust generalisations can be extracted from our discussion of the rather elusive concept of territorial cohesion and these form the guiding context for the research described in the book chapters. First, in spite of a lack of agreement over its definition, scope, content, interpretation and function, territorial cohesion has evolved to become a separate, independent objective of the EU and is put on par with economic and social cohesion. Second, territorial cohesion is a dynamic and very open concept, prone to various interpretations but very useful as an attractive focus of research. Third, in all those different functions territorial cohesion has featured some stable features and characteristics and serves to point policy design in fruitful directions. Fourth, territorial cohesion is by its nature integrative and points to the need for inter-disciplinary approaches in a field that has tended to be dominated by one discipline, economics. Fifth, although territorial cohesion remains a heterogeneous concept, it serves to unify a wide range of other inter-related issues (social inclusion, “green” development, territorial quality, etc.).

When territorial cohesion is regarded as an overarching organisational framework, we distinguished three crucial separate dimensions that served as an organising framework for the research reported in this book.

- Territorial policy (e.g., adjusting policies to the territorial context (place-based) to make them more efficient and effective)
- Territorial capital (e.g., the contribution of regional factors (territorial assets) to economic growth (territorial efficiency))
- Territorial utility (e.g., cohesion as an enabling platform for the specific spatial objectives of development policies).

This suggested the specification of a new three-dimensional Territorial Cohesion Components (or TCC) model which differed from the “Star” and “Tequila” models mainly by distinguishing the component of the regulatory sphere and the real sphere, but also by direct references to economic growth. This was used as the backbone in this book for further discussion on the practical operationalisation of territorial cohesion as a legitimate part of mainstream macro-economic models of growth and development. Territorial cohesion in its policy based dimension was analysed in chapters 3 and 8; in its territorial capital dimension in chapters 5 and 6; and in its territorial utility dimension in chapters 4 and 7.

9.2.2 Polish development policy and its territorial dimension

Policy implementation in the area of territorial cohesion tends to lag behind advances in theory and conceptualisation. In view of its geographical location within Europe and its spatial configuration, it is not surprising that Poland was far in advance of the European Commission in its territorial policy innovation. In the context of the generally successful transition of the Polish economy from central planning to market mechanisms and in view of the general principles of territorial cohesion, Chapter 3 explored the characteristics of spatial structures and territorial orientation of public policies that have had the greatest significance for the advantageous socio-economic trajectory of Poland after liberalisation in 1990. Six main factors were identified.

The polycentric structure of the settlement network and of the Polish economy.

In many economies undergoing a systemic structural transformation a large concentration of growth often takes place in the immediate vicinity of the capital city regions. However, this is very often accompanied by the relative neglect and decline of the relative position of other centres that rely on more traditional factors of development. In Poland, apart from Warsaw’s crucial role in the national economy, culture, and science, there are also many other major cities, such as Kraków, Łódź, Wrocław, Poznań, Katowice, Gdańsk-Gdynia, Szczecin and, to a lesser extent, several other sizeable urban centres. In every case they too were able to develop their zone of influence or hinterland. Despite some similarities in their development challenges, each of these centres has pursued its own development strategy and created a climate for the dissemination of best practices in territorial systems. In effect, these places were laboratories of cooperation standards between the central city and its hinterlands.

Openness to the external environment

After 1990, when all of Poland's neighbours changed, Poland concluded with them agreements on cooperation and good neighbourly relations and started to participate actively in macro-regional co-operation networks (e.g. Baltic Sea Region, Central Europe). Different Polish regions, depending on their location, emphasised the uniqueness of cross-border relations with their closest neighbours. Poland became an excellent laboratory for assessing the significance of cross-border cooperation.

Polish membership of the European Union.

From the outset in 2004, territorial issues were present in policy development and in the allocation of resources from the EU Structural and Investment Funds. All Polish regions benefitted from the European integration, but the greatest benefit went to those based on large and powerful urban centres. The decentralised regional socio-economic structure proved to be generally very competitive, extremely resistant to negative influences and pressures arising from the global socio-economic crisis, and well adjusted to its place in the European context. Each region developed its own specific endogenous growth factors. In some regions these were the economies of agglomeration; in others, extraordinary landscapes or economies of border proximity (specific know-how of cross-border cooperation). The bottom line was that European integration benefitted all of Poland's sixteen NUTS 2 regions (voivodeships).

The wise application of European Cohesion Policy.

Due to the low level of development of the whole country as well as of its regions, after its accession Poland became the largest recipient of the EU Structural Funds and the Cohesion Fund. The use of funds allowed for a Europeanization of development policy in Poland and for the acquisition of and reflection on such important concepts as territorial cohesion within the EU. Poland has adopted these concepts while adjusting them to its own particular needs and conditions. For example, Poland adopted the most decentralised model of implementation of EU Cohesion Policy among the new member states and the regional level played a very important part in this model. This was reflected in the high and steadily rising participation of assets under management at the regional level in the subsequent multi-annual programming periods based on regional operational programs. In contrast, most other EU member states focused excessively on national programs and centralised allocation of resources. Here, Poland was an exception. Decentralisation resulted in mobilisation of internal funding. Therefore Poland is an interesting laboratory for researching the territorial dimension of development policy in a multi-governance framework. Moreover Poland, both at the national and the regional level, has managed to keep a good balance between expenditure on the three areas of intervention of the European Cohesion Policy: infrastructure, human capital, and support for business sector, and this has contributed to the generation of high socio-economic impacts.

The doctrine of a development policy based on decentralisation and planning.

Except for a very short period immediately after 1990, when programming development was considered an undesirable legacy of the centrally planned economy, Poland has prioritised development at the national level, with a medium-term horizon. After Poland's accession to the European Union, focus shifted to embrace both national and regional development strategies, medium-term and long-term national development strategies, and integrated strategies for major public policies.

The depth of the reform of the territorial system.

All of the countries with previously centrally planned economies had been characterised by an atrophy of civil society and a lack of institutions of territorial government. At the beginning of the 1990s Poland rebuilt its governments at the local level, and in 1999, at the regional level, which enabled a profound decentralisation in the conditions of a unitary state. This made it possible to implement multi-level governance. Local governments were equipped with exclusive competences, their own development resources, and the ability to acquire knowledge and information independently and a dialogue between the central government and local governments was put in place.

For these reasons, Polish development policy can be considered as a laboratory of new concepts and ideas. Territorialisation increased efficiency and contributed to the success of Polish regional and national development. Policy making was consciously based on active participation of different development actors, mainly public authorities, that have a legal mandate and the necessary financial means for its shaping. Policy was framed as a dialogue, dominated initially by the national level but gradually becoming open to the needs of other types of government (local and regional ones) and civil society. It offered an attractive case study of multi-level governance and a place-based approach in line with Barca's (2009) proposal.

Development policy paid attention to territorial assets. They were analysed in various strategic documents elaborated by almost all levels of government. However, the impact of those studies on socio-economic development has been limited and although territorial capital is present in the development debate, it continues to guide the allocation of money and resources in a somewhat unsystematic manner. Finally, the genuine merging of the spatial and socio-economic approaches exists in Poland mainly at the highest national level with limited influence even on medium-term programming. The policy-making process is integrative from its design, but in practice, it is not yet fully ready to take into consideration complicated trade-offs and relations between objectives of spatial development and socio-economic development in space.

9.2.3 Cohesion as a territorial optimum

The taxonomy frameworks developed in Chapter 2 (i.e., the “Tequila”, “Star” and “TCC” models) were useful in systematising and prioritising the many different components of territorial cohesion policy. However, they fell far short of the modelling frameworks that are available for use in the narrower field of economic development planning. In Chapter 4 we described a novel attempt to inject elements of territorial preferences into a standard neoclassical model of utility maximisation. Although elements of spatially-oriented analysis have been long used to augment production functions, relatively less attention has been paid to the implementation of territory within neoclassical utility theory. Taking into account territorial heterogeneity and the importance of geographical-temporal distance, the category of social territorial utility was incorporated into the neoclassical optimisation process aiming to show how it might influence the production process.

The concept of a “territorial optimum” was defined as maximising the synergistic use of territorial potentials of all the sub-areas of a region at a given level of expected territorial utility determined by social consensus (i.e., by regional policy-makers). With

the model of the optimum one ought not analyse an economic optimisation without taking into account diverse spatial preferences. The model of the territorial optimum integrates three dimensions of territorial cohesion: territorial assets, social choice (i.e., the way of implementing policy that takes into account those assets), and territorial objectives, and can be used to illustrate how various territorial objectives can affect the range of economic outcomes.

The case study of the Polish NUTS 2 region of Dolnośląskie presented in Chapter 4 explored the kinds of choices and trade-offs that commonly arise in designing territorial cohesion policy. Choice 1 was the desire to improve region-wide transport infrastructure to increase sub-region access. Choice 2 was to enhance the agglomeration effects of the regional capital, Wrocław. Choice 3 was to improve the socio-economic attractiveness of the poorer sub-regional urban centres. Choice 4 was to combine choice 1 (transport infrastructure) with choice 3 (sub-regional attractiveness). The choice of the expected territorial utility will determine in the end the maximum level of achievable GDP for the region. The higher economic efficiency resulting from Choice 2 may be offset by the desirability of strengthening the capacities and competitiveness of sub-regions in order to enhance the resilience of the region as a whole in the face of external crises. Wider support of peripheral areas may also be justified in the context of territorial equilibrium by demands to prevent excessive and dangerous concentration of activity by strengthening poly-centricity; to prevent excessive spatial inequality; to ensure the availability of public services regardless of place of residence, and to promote networking. The attractiveness of the simple model of the territorial optimum is that it makes the consequences of different policy choices explicit and, to a limited degree, provides a quantitative ranking system.

It is not the purpose of the model of the optimum to make any normative judgments as to the best policy choices. The model presents a positive approach to territorial cohesion as well as to its implications for regional development where the implications are likely to be very diverse due to differences in expected social territorial utility reflected in policies of regional authorities. The case presented, based on Dolnośląskie, suggested that even though some spatial structures generate higher and more dynamic economic growth than others, they might not necessarily be of optimum utility for the particular regional community and, hence, might not maximise its development and well-being. The concept of the territorial optimum touches not only upon supply aspects of the use of a given territory – as many theories do – but also incorporates the possibility of highly diverse demand for territorial assets.

9.3 Empirical studies of Polish territorial issues

9.3.1 Territorial capital in Poland

The second element in the TCC model presented in Chapter 2 was designated “territorial capital” and has close inter-dependencies with the first element, “territorial policy”, that was initially discussed in Chapter 4. Considering territorial capital as an asset has profound implications for the design and implementation of territorial policy since it requires both the adaptation of policy interventions to this capital as well as the need to analyse the impacts of any interventions on territorial capital. This turns regional

development policy into a continuous and iterative process, whose goal is the synergy of various types of public intervention with respect to a given area or territory, bringing it closer to the third TCC dimension of territorial cohesion, i.e., “territorial utility”.

The empirical implementation of the concept of “territorial capital” represented the biggest challenge for researchers and policy-makers. In the past regional policies have often been designed in a context where knowledge of the fundamental characteristics and potentials of the target areas was patchy and inadequate, leading to badly structured policies and disappointing results. The material presented in Chapter 5 represented a new and innovative attempt to address this failing. Having reviewed the various approaches to defining “territorial capital”, the concept of “territorial keys” was elaborated. This was a five-part classification system designed to drill down into the core defining components that drive regional development processes.

The five “keys” were as follows:

- 1) Accessibility: Transport accessibility, accessibility to energy networks and e-connectivity.
- 2) Services of general economic interest: Electronic communications, postal services, electricity, gas, water, transport, labour market services, education, healthcare, childcare, social care, culture and (social) housing.
- 3) Territorial capacities, endowments and assets: Immovable endogenous features of a given region that influence its growth.
- 4) City networking: Interactions between metropolises and secondary growth poles (e.g. cities with superregional functions) constitute an economy of flows which is indispensable in sustaining and accelerating research, innovation and knowledge-creation, i.e. for smart growth, among other things.
- 5) Functional regions: Adjacent territories tied together by intensive socio-economic relations.

Since the indicators put forward in Chapter 5 were designed to be the basis for introducing territorial capital into the growth model, three general rules were followed. There had to be relatively easy access to primary data; there had to be spatial variability within the data; and the indicators had to be susceptible to policy interventions. The territorial capital data were presented in the form of maps, colour coded to emphasise how the indicator values in each case were distributed over the Polish territory and highlighting differences between regions and sub-regions.

With respect to the “accessibility” key, the analysis suggested strongly that while infrastructural investments can measurably enhance the potential accessibility of particular areas, they cannot, however, equalise all territorial disparities in this regard. On the contrary, large-scale investments can initially increase spatial polarisation as some units are much more accessible than others. Only a sustained and consistent process of development of the network can bring about a re-levelling of the disparities. However, their complete elimination is impossible due to the uneven spatial distribution of demographic and economic potentials.

With respect to “services of general economic interest”, accessibility to public services was examined in three dimensions: accessibility (in spatial terms); availability (understood as the existence of particular service facilities in a given area); and affordability (understood as financial achievability of particular services). The conclusion was that the most accurate picture of the provision of social infrastructure was presented

by transport accessibility to the centres which offer relevant facilities. Since basic-level facilities tend to be fairly evenly distributed across space (e.g., primary schools, health care units, cultural centres), access to “services of general economic interest” is better measured by the accessibility of higher-level facilities (secondary schools, institutions of higher education, specialist outpatient clinics, hospitals, cinemas and theatres) located in the nearest county and regional (or voivodeship) centres. To summarise, the correct quantification of services of general economic interest is characterised by considerable difficulties and requires a very wide range of indicators.

With respect to “territorial capacities, endowments and assets”, taking advantage of the region’s own resources lies at the very heart of defining territorial cohesion. However, here there were very serious difficulties with data availability. The largest territorial resources connected with the natural environment were found to be concentrated in peripheral zones, frequently along the country’s borders. This suggested their spatial complementarity in relation to other indicators of territorial capital. In addition, farther inland one can find enclaves of environmental capital of a higher category, for example in the neighbourhood of national parks situated near urban agglomerations. However, the development of natural resources by its very nature is not subject to intervention. It can, however, be protected and additionally used for stimulating other non-interfering economic functions (for instance, tourism) which may be subject to the policy of territorial cohesion. Attempts to quantify territorial social capital using electoral turn-out were not very robust. Human capital was measured by the percentage of the population with tertiary level education. In recent years one observed a clear decrease in the spatial polarisation of the level of human capital, a phenomenon particularly visible in eastern and southern Poland. In current Polish conditions, it appeared that the tertiary level of education gradually ceases to be an efficient measure of territorial capital and qualitative measures are likely to gain a higher significance.

Three independent indexes of clustering were employed in order to capture various aspects of the potential influence of clusters upon regional economies: the specialisation quotient (SQ); the diversity index (DIV); and the index of significance for the region’s economy (SIGMA). The spatial distribution of these three indexes of clustering are rather similar since they present slightly different aspects of a common phenomenon. Clusters located within the areas of metropolitan regions were of decisive importance since they reflect complex functional, vertical and horizontal connections among economic subjects and other regional institutions as well as the spatially limited spreading of knowledge which naturally develop in a long-term fashion. But these effects were also found when comparing eastern Poland with western Poland. The percentage of employment in industry was considerably higher in the counties of western Poland and visibly lower in those of eastern Poland, and over the period of 2005-2010 there were no significant changes of this measure’s diversification in counties.

With respect to “city networking”, in the process of searching for indicators for the key of city networks two basic approaches were possible: indicators illustrating the position and role of respective centres; and indicators presenting relations between pairs of centres. Both types of measures are useful in the process of territorialisation of policies and of defining territorial cohesion. In the first case, it is possible to classify cities on the basis of their position in relation to other centres and the policy aimed to strengthen their networking connections. In the second situation, the relations themselves become the subject of those policies which, for instance, might be an indication for territorially-oriented transportation and communication policy.

Analysis indicated a clear division of the system of cities into four groups or classes, differing in the intensity, structure and directions of inter-metropolitan interactions (internal as well as those with the surrounding areas). They were:

Warsaw: Strong connections with all domestic centres; intensive international connections, including those with certain closest metropolitan areas; a very considerable concentration of unidirectional (capital city-bound) economic and migration-related connections; a considerable infrastructural barrier for the development of connections.

Cracow, Poznań, Wrocław, Tri-city (Gdańsk-Gdynia-Sopot): Metropolitan areas characterised by slightly stronger links with other centres (that is: apart from Warsaw); increasing significance of international relations, although mostly directed at distant centres.

Łódź and the Upper Silesian Conurbation (around Katowice): Metropolitan areas of a diverse character of connections; manifesting their presence in certain types of relations (for instance, the Upper Silesian conurbation in relation to science-oriented connections; Łódź in the case of internet traffic) while simultaneously displaying a shortage of any other types of connections or their unidirectional orientation towards the capital city (migrations); what is characteristic is that they are metropolitan areas with a relatively efficient – and improving – transportation situation.

Białystok, Lublin, Szczecin: Peripheral metropolitan areas with connections oriented exclusively towards the capital city (in the case of Szczecin, also towards Poznań); active in the area of borderland relations with single metropolises of the surrounding territories.

Efforts to examine and quantify this “city networking” key showed that it was easier to derive indicators illustrating the position of centres within their network (completed by their selected metropolitan functions) than to develop indicators and base any conclusions upon relational data. This is unfortunate since relational data illustrate spatial reality in a deeper fashion than positional data.

With respect to “functional regions”, this key illustrates a change in the approach towards the evaluation of spatial processes through breaking away from the commonly used administrative boundaries. Each functional region has a different set of characteristics that serve to define it and the challenge was to illustrate those characteristics by appropriate indicators. Two approaches were discussed. The first, functional regions as spatial units, was difficult to operationalise due to lack of appropriate data. The second, functional regions treated in terms of economies of agglomeration, could be operationalised using data on the tendency for concentration of population and business activity. In the former case, attention was focused on both the general percentage of population (demand concentration) and population in the working age (work resources concentration). In the latter, it was essential to pay attention to various aspects of business activities from the SME (small and medium enterprises) sector, through their production (sold production) to a quantifiable effect for the local communities (e.g., corporate tax income). In spite of reservations concerning the quality of the data, long-term trends indicate whether a given region possesses internal developmental mechanisms which, according to models of new economic geography, are mostly associated with profits resulting from agglomeration.

The results obtained concerning the distribution of migration contribute to an evaluation of the territorial key of “functional regions” in both of its meanings. From the point of view of identifying the agglomeration factor, they presented a surprisingly polycentric picture of the Polish territory. The agglomeration factor is not limited to the largest cities

(the Upper Silesian conurbation and Łódź being exceptions), but appears in most sub-regional centres (cities with the “status of county”; including former regional/voivodeship capitals). Alternatively, by perceiving the key of functional regions as spatial units, the resulting spatial distribution provides an useful means of delimiting such regions and, as a consequence, to construct an alternative division of Polish territory into functional areas of large and medium-sized centres as well as a relatively smaller remaining space. Such a division would require additional research, but it might potentially constitute a preferable alternative for the increasingly less relevant traditional administrative divisions into urban and rural territories.

In summary, our analysis identified a distinct difference between the normative understanding of territorial cohesion and its practical application in terms of territorial capital. At the level of definitions, the majority of regional representatives agree on the importance of the role of endogenous factors of growth, referring to the concept of territory in positive terms. In the conduct of intra-regional policy, the dominating approach is a mixture of both instrumental and traditional practices. However, in the practice of internal policymaking in Polish regions, the territory is seen more in terms of “problems” than of “assets.” A gradual evolution of this approach has been observed, encouraged by the regulations of the European Union. But a key question remains how to introduce territorial capital into mainstream development policy as one of the key assets for growth and development. This issue was taken up in Chapter 6.

9.3.2 Territorial capital and regional development: a neoclassical approach

The research described in Chapter 6 was motivated by the fact that empirical studies of regional growth have shown that only about half of the observed variation in GDP per capita at different spatial scales can be explained by reference to the differences in factor endowments (e.g., labour and fixed capital). A better understanding of the determinants of total productivity growth in regions is essential in explaining the phenomenon of regional growth and economic development.

Territorial capital, as a specific carrier of the concept of territorial cohesion, is significantly different from the classical factors of production such as physical capital or labour input. Territorial capital cannot be considered as a factor directly responsible for changes in the volume of production since improvements in it do not lead directly to increases in production. However, taking into consideration the variables defined in the previous chapter (i.e., components of territorial capital), it would be expected that territorial capital can have an impact on the productivity of basic factors of production such as capital and labour. This was done using an econometric model in which the dependent variable was total factor productivity (or TFP) for Polish counties (i.e., the NUTS 4 level) and the independent variables included elements of territorial capital.

Most of the territorial capital components examined in Chapter 5 had a statistically significant impact on the level of TFP and were consistent with the expectations of the impact on the level of aggregate productivity of Polish counties. However, the impact of the territorial key of “public services” turned out to be statistically insignificant, except for a small influence of the accessibility to doctors. There was no significant importance of social capital. In this case, the outcome could have been determined by the difficulty in measuring and proper approximation of the differentiation of this characteristic of the region.

The most important components of territorial capital were identified as the potential of human capital and the level of clustering of the economy (both recognised as an approximation of intra-sector knowledge spill-over). Slightly less important was the regional export base, and thus the level of internationalisation of the economy, and the domestic railway and road accessibility. The accessibility to doctors and the influx of tourists from abroad have the lowest importance. For some variables, there was a demonstrated negative effect on TFP, for instance, coverage with protected natural areas, or changes in employment in the last five years.

The model's base specification, excluding the impact of territorial capital, explains most of the observed differences. This includes variables approximating knowledge capital, intra and inter-sectoral knowledge spillover, as well as a metropolitan variable. The base specification of the model appears to be relatively resistant to changes in model specification.

It should also be emphasised that the introduction of additional variables approximating the impact of territorial capital did not bring any substantial improvement or increase in the explanatory power of the model. The fact that there was a significant spatial autocorrelation of error in the model indicates that variables from neighbouring regions significantly affecting the TFP in the region at hand had been omitted. Most probably at stake here were deep determinants of economic development that are difficult to measure, such as wider cultural or social characteristics. At this stage, the research the possibility of a non-linear impact of territorial capital on the level of TFP was not examined.

The main problem of the concept of territorial capital turns out to be its ambiguity and lack of precise delimitation, the difficulty in measuring individual components and the inability to consider the cumulative impact due to a high level of correlation of key variables. At the same time, non-territorial components of capital are hard to distinguish from the territorial ones. Nevertheless, the results confirm the hypothesis of a significant impact of certain territorial characteristics on the level of aggregate productivity of Polish counties, and thus, indirectly, on the pace of their development.

In relation to previous studies, the results obtained allowed for the new positioning of heretofore divergent results concerning the impact of individual factors of territorial capital on the overall level of productivity. These results were derived for Poland, but they seem to be reliable and are likely to be applicable to other countries in a similar stage of development. The general conclusion is that within this group of countries traditional factors of development associated with the territory, such as economies of agglomeration and immobile human capital, operate to a full extent. The following is a summary of the main findings.

First, human capital (in this case measured by the share of the population with higher education) is crucial in such countries as Poland.

Second, the results prove that the ability for industrial clustering is of great significance for Poland and points to a very important conclusion: in countries undergoing rapid economic transformation the benefits of agglomeration play a huge role and at this stage there is no transition to the next stage of development described by the NEG models as dispersion of economic activity. On the contrary, the concentration of economic activity boosts overall productivity.

Third, in the analysis of spatial interactions instead of typical infrastructure endowment based measures we applied more intricate accessibility measures. It proved to be very useful and allowed as to abstract from problems related to the fact that quantitative

infrastructure endowment does not always translate into its quality and thus isn't necessarily conducive to productivity or it may even reduce it. Greater accessibility favours economies of agglomeration (increases productivity), often due to network effects and not due to immediate proximity and thus complements SQ measures.

Fourth, the weak significance of the extent of internationalisation at the highly disaggregated LAU (Local Administrative Unit) level is a rather surprising result since many previous studies identified its positive impact on the level of regional development at NUTS 2 level. It turns out that in the case of EU Member states at an advanced stage of economic transition its impact on productivity is relatively insignificant.

Fifth, the most interesting result, however, is the lack of significance of "services of general interest" and the negative impact on TFP of the landscape and wildlife preservation. This in turn points to the latent potential of the quality of life that does not translate into productivity at this stage of economic development. This indirectly confirms the hypothesis that countries such as Poland are in the first phase of NEG models where pro-agglomeration forces clearly dominate over dispersion-forces. However, the question remains to what extent this result stems from the adoption of TFP rather than typical income measure indicating the level of economic development.

The impact of social capital is insignificant as well, but this could be a direct result of measurement problems at the level of districts (counties). Certainly, there is no link between the participation in elections and productivity. Civil society has no economic dimension, although it may give rise to social exclusion, weak interregional solidarity and poor quality of public choice mechanisms that do not support the overall development process.

The results obtained also have significant implications for the scope of development policy, in countries having similar development trajectory to Poland. Such policies should concentrate among others on:

- Further expansion of transport infrastructure conditioning the overall external and internal accessibility,
- Simultaneous large-scale investment in human capital development,
- Expansion of knowledge capital (including research and development potential) boosting knowledge generation capabilities and effective absorption of knowledge from outside,
- Stimulating the development of core areas which constitute particularly essential growth poles of Poland,
- Creating the potential for internationalisation of the economy and networking of cities. The results also suggest the further implementation of cluster-based development policies.

We must also prepare for the second phase of development in accordance with the postulates of NEG models when dispersion will occur, and spatially immobile factors will gain importance. In interpreting the results of the study, it is also important to point out the domination of market forces in economic processes and the critical role of the past, a kind of hysteresis, leading to the conclusion of general path-dependency in economic development.

9.3.3 Modelling territorial cohesion as an inter-related process

In the analysis of the previous chapters it was assumed that every region functions in its own specific interregional environment, but that environment is assumed to be exogenous to the region. In other words, changes in the external environment can affect what is happening inside the region, but what is happening inside the region does not affect the external environment. In economic terminology, this is the classic “small open economy” assumption.

However, through the structure of socio-economic connections, regions will affect each other. Hence, territorial cohesion in every region, viewed as a territorial optimum, will be determined by what is going on in every other region (e.g., their economic structure, technological progress, changes in aggregated demand and supply, crisis resilience, etc.) in a process of dynamic interdependence. The importance of this inter-dependence will depend upon the nature and strength of the interregional connections.

Due to lack of data the analysis in this chapter looked only at the consequences of only one aspect of socio-economic connections, namely interregional trade flows. It was only possible to access inter-regional trade data at the NUTS 2 level and the challenge faced was to come up with a mechanism that determined trade between regions. Two plausible mechanisms were examined: the first used regional GDP (or economic “potential”); the second used a measure of inter-regional time accessibility (henceforth “accessibility”). Switching between using the “accessibility” and economic “potential” criteria had a clear impact on the intensity of the derived trade flows in the interregional system. Strong regions dominate trade when “potential” criterion is used. Well connected regions dominate trade when the “accessibility criterion is used.

These inter-regional trade flow mechanisms were used to construct an inter-linked system of sixteen NUTS 2 HERMIN macro models that had previously been used only in stand-alone mode. Two kinds of simulation exercises were then carried out. The first explored how the characteristics of growth in any specific region could spill over to other regions. The second explored how a major policy shock, such as that generated by EU cohesion policy in any specific region, would spill over to affect adjoining regions. The following is a summary of the main findings of the simulation-based analysis.

First, the spatial system of interregional dependencies constitutes — along with national macroeconomic policy — an important factor affecting resilience to the economic turmoil of the national economy and its NUTS 2 regions. Any weakening of the large economic centres that are strongly linked with global markets through metropolitan networks will spill over into poorer regions, and in turn, lead the whole country — through the system of interregional connections — into sluggish growth or recession. Hence, it is increasingly important to strengthen the competitiveness of metropolitan centres as a safety measure against negative global tendencies.

Second, the structural changes in individual regions do not have any major consequences for other regions. However, the importance of the role of inter-regional environment increases when demand or supply-side shocks appear in numerous regions simultaneously. Joint appearance of structural changes in Polish regions (perhaps as a result of national industrial policy) is likely to constitute a crucial factor affecting economic development within any given region. This has important implications for development policies pointing to great importance of combining a place-based approach

with a top-down approach. Paying attention to both intra and inter-regional territorial systems will maximise the impacts of development policies implemented simultaneously by central and regional authorities. Even an optimal place-based policy might produce unsatisfactory effects when it is pursued in an unfavourable interregional environment.

Third, improved infrastructural links between regions do not always generate stronger interactions, even if it increases the probability that such interactions will occur. Of vital significance here are characteristics of respective regional economies and their specifics. Perhaps counter-intuitively, it is possible that the main beneficiaries of structural changes in one region might be regions that are located far away, but which have competitive production capacity and high exposure to interregional trade. Hence, infrastructure investment should be accompanied by corresponding structural policies.

Fourth, any pro-innovation support of economically weaker regions carried out in isolation from the spatially oriented industrial policy is likely to be counter-productive. Thus, a prerequisite of effective R&D investments is spatial coordination of public intervention in both industrial and innovation policy. Treating the above elements separately might lead to a low effectiveness of public support or even to no effects.

Fifth, interregional trade was found to enhance the effectiveness of EU cohesion policy in that the analysis suggested that trade connections do not benefit richer regions at the expense of economically weaker regions. The net effect of benefits resulting from the CP-driven exports and losses associated with leakages through increased imports is influenced by a range of factors: the degree of a region's openness to interregional trade; its economic structure; and fiscal and foreign trade multiplier mechanisms. The impact of the above factors on interregional transfer of CP effects should be taken into consideration in the process of designing financial interventions by public authorities. It would enable a correct selection of resources for regional economies and, at the same time, limit the likelihood of overestimation or underestimation of the value of their financial support. Taking into account interregional trade connections can significantly increase the quality of territorial impact assessments.

9.4 Polish territorial policy in practice

9.4.1 Territorial cohesion: adaption to specific territorial units

Chapter 8 pulled together the various strands of territorial policy and reviewed how the actual design and implementation of Polish territorial policy has operated in recent years. It posed a question as to whether and to what extent the actual design and implementation of territorial policy were influenced by the theoretical and practical frameworks and analysis discussed in the previous chapters. In other words, was there any significant mental shift on the part of decision-makers; was adequate knowledge shared by various development actors in order to adapt policies to territorial specificities; was there an understanding of the needs, intention and impacts of the actions of all participants of the programming process; and finally, was active dialogue between them supported by relevant policy instruments.

First, we analysed whether representatives of Polish regional bodies responsible for programming and implementing intraregional development policy were familiar with and understand the concept of territorial cohesion. We concluded that the notion of territorial cohesion appears in the documents that were analysed, but its role is highly differentiated, ranging from incorporating it as one of the objectives of the strategy to just treating it casually. In summary, regional policy-makers displayed a relatively good understanding of the concept of territorial cohesion, but their comprehension of the notion was usually narrower than that presented in theoretical studies. The ambiguity of the answers provided is, to a certain extent, a reflection of a certain degree of confusion even among theorists and even at the European level. Territorial cohesion is usually correctly associated with the conduct of an appropriately directed development policy and with the use of the endogenous regional potential. Any narrow understanding of the notion is, to a certain degree, determined by its use in the projects and programmes of the European Union. However, it seems that territorial cohesion is mainly limited to socio-economic concerns. Polish regional policy-makers seem reluctant to treat it as an opportunity to adjust other policies to territorial specificities, such as environmental policy or even spatial policy. It also seems that they put territorial cohesion in subservient position with respect to social and economic cohesion. An implication that is likely to be of wider international interest is that the term “territorial cohesion” is often introduced without any proper policy debate involving all the different levels of governance.

Second, we analysed whether policy-makers had a sound knowledge of the given territory, its problems and development opportunities, as well as mechanisms of development or stagnation, since such evidence-based knowledge is a prerequisite for the implementation of territorial cohesion in all of its dimensions. With respect to data, we found that only a few regions had managed to establish systems for the systematic gathering and interpretation of information related to their development, but even then there was no standardisation between regions. Territorial information collected in well established national and supranational systems (e.g., EUROSTAT or the Central Statistical Office in Poland), although standardised and comparable over time and space, in many cases did not respond to regional or local challenges and problems. In summary, regional Poland is undergoing a process of change in the ways of gathering knowledge of the regional system. Increasing emphasis is being placed on the creation of consistent systems as well as on sharing of existing knowledge. But the process of sharing knowledge constitutes a weak side of implementation of territorial cohesion in the context of integration of development policies. Knowledge is accumulated but information management is often random.

Third, we examined the extent to which regional policy-makers engage in analysis of the impact of strategies, plans, and programmes that are conducted by other public actors in the development process on whom they exert some type of influence. We found such engagement to be rather narrow and of a routine character, limited mainly to consultations, opinions and negotiations, and predominantly formalistic efforts to avoid conflicts and maintain the general agreement. Although knowledge of the impact of policy/behaviour of other development actors is an essential precondition for the successful introduction of territorial cohesion, progress in this field was limited. There was a clear need for an institutional programming framework for inducing and enhancing work on proper impact assessments, extending beyond mere consultations and based on fair distribution of rights and responsibilities for programming development policies.

Fourth, we examined territorial dialogue used as a vehicle for adaptation of development policy to territorial specificities. Territorial dialogue is a necessary condition for improvement of the effectiveness of conduct of development policy in the framework of

the multi-level governance system. It enables a better use of the local or regional specificity (e.g., conditions, mechanisms, endogenous potentials, including territorial capital), and, at the same time, makes it possible to limit the negative influence of local and regional selfish interests and perceptions from the perspective of the narrow interests of a given “place”, without considering a broader (e.g. national or European) development context. In comparison with the results from other countries., the level of satisfaction from the territorial dialogue was much higher in Poland, although serious barriers persisted (e.g., selfishness, fear, bureaucracy, lack of resources, lack of training, etc.). Without the creation of a culture of openness in programming and implementation of development policies, the existing legal provisions will not suffice to mitigate local and regional selfish interests or to alleviate red tape barriers or to diminish manipulation of information.

Fifth, an effort was made to establish attitudes to innovations and good practices regarding territorial cohesion that, in the opinion of the authorities and public administration representing them, are most highly valued, significant and worth spreading. A diverse range of practices emerged, of which the following were the most common: formal partnership contracts between similar as well as different levels of regional government; strategic programmes that translate the strategic goals of regional strategy into specific tasks and list the entities responsible for their fulfilment, cost estimates and localisation of actions; public authority leadership in the formation of networks to encourage compromise between the interests and priorities of different public and private stakeholders; planning across administrative borders of lower levels of local government.

9.5 Is Polish experience valid for the others?

In all chapters some conclusions and lessons learned have been presented from an international and not just from a Polish perspective. However here we want to describe more general thoughts that stem from our research.

In this book a new theoretical concept of territorial cohesion is presented which entails significant implications for policy design and programming of development. It formally combines two aspects of territorial cohesion: the one associated with the comprehensive utilisation of endogenous supply-side potentials of all territories within a region; the other which touches upon highly diverse demands for territorial assets. Whereas the former type of territorial cohesion is broadly in line with the Barca’s place-based policy perspective, the latter goes further than this idea and concentrates on the utilitarian aspects of territorialisation of development. The concept of territorial utility is what specifically distinguishes our concept of territorial cohesion from the place-based paradigm. We demonstrated that mechanical territorialisation that strives for the greatest utilisation of endogenous potentials of every functional area of an individual region — as the Barca’s report suggests — represents mainly the supply-side of the far more complicated story. When one allows for the “demand for territorial assets”, recommendations with respect to policy-making is likely to differ significantly from those derived from the narrower place-based approach. Only by linking these two perspectives can one think of the spatially differentiated region in a territorially cohesive manner. We take a further step and incorporate our concept of territorial cohesion into the macro-model of growth. As a result, using a formal mainstream language it is shown how the maximisation of economic growth of a region is subject to changes in its territorial utility. This in turn implies that economic growth interlinks with the regional welfare through the territorial dimension.

There remain some open question coming out from our research, and we summarise these in what follows.

First, surprisingly interesting results were achieved when combing territorial categories with those related to growth and development. So far it was restricted mainly to the notion of territorial capital (either as a whole or to its essential parts) and sometimes to the concept of distance and agglomeration economies (Zaucha *et al.*, 2015, 87-163). Our research showed that a more systematic approach is necessary, and a spatial framework for researching growth is possible. Those additional elements are related to spatial interdependencies, differences between the place of investment and place of impact, as well as to the importance of territorialisation of policies. However, territorial capital remains as a very promising starting point for enhancing growth in the global economy since immobile growth factors might determine the resilience of many regions and clusters, diminishing their vulnerability to external economic shocks and improving their adaptive capacity. All these would need further research.

Second, it might be the case that the role of territorial endowments can differ along the stages of growth and development. This is only a plausible hypothesis but is in line with the expansion of growth theory from just paying attention to labour and capital (Solow 1956; 1957), then adding external economies and knowledge (Lucas 1988; and Romer 1990), and then considering also institutions and geography (Rodrik 2002). It is reasonable to assume that territorial factors are likely to play different roles at different stages of the prosperity achieved. Our research highlighted the importance of human capital and clusters for Polish TFP in line with the ideas of Lucas and Romer. But Poland continues to climb up a prosperity ladder. Thus it would be important to make comparative studies for other regions and countries at the other end of the growth process. Perhaps in more affluent countries the quality of landscapes and natural beauty might play a greater role than in Poland as a growth factor attracting highly skilled labour, creative entrepreneurs and adequate businesses. Perhaps relational or social capital will start influencing the TFP positively only when the labour costs exceed some thresholds that Poland is only now approaching. If this is the case, one can expect that the regions considered now as peripheral and less attractive for settlement might regain their competitive advantage in the future. If this hypothesis is borne out in practice, entirely different policies would be required which would focus on diminishing income inequalities, building the middle class, limiting market forces in wage determination and facilitating flows of ideas and knowledge spill-overs in space and distant work.

Third, an open question remains as to how to add territorial utility to the growth or development model. Conventional growth models usually assume a direct relation between the quantity of goods and services and the utility obtained by societies. The paradigm of sustainable development has challenged this simplistic assumption. A similar question applies to territorial utility. Can we add it in practice to the legacy of Romer and Lucas via TFP? We do not have answers here, but we know that real life decision processes usually take this utility into consideration as proposed in our thinking about the territorial optimum. For instance, this utility influences our individual decisions where to live and work, where to spend free time (and money). But it is also taken into consideration when preparing regional development strategies or spatial plans. An outstanding research issue concerns the changes of the level of such utility over time. Research carried out in the environmental field shows that richer societies derive larger utility from the same or similar ecosystems than less prosperous ones (Ressurreição *et al.* 2012). If this is the case also with territorial utility, one should anticipate this in current development

policy-making. However, it is not clear how this can be done in practice. The starting point should be in researching territorial utility patterns and mechanisms.

Fourth, territory is closely linked to the notion of governance. Specific features of territories would require policy differentiation and an appropriate policy mix of top-down and bottom-up interventions. This will add to policy efficiency which is very significant in a time of scarcity of budgetary resources. However, our research also shows that such a policy mix should also pay attention to the effects and results induced in the other territories than those at which it is directly aimed. The external, inter-regional context/environment creates a separate specific territorial factor that must be taken into account to ensure that regional policy produces desirable effects. Territorial independencies come to the forefront, in a context where policy-makers are poorly equipped to address this issue in more systematic and quantitative (nonspeculative) way. The interlinked HERMIN models described in Chapter 7 provided an initial advance in this challenging policy area.

Fifth, TFP is to some extent a microeconomic phenomenon, or at least it is influenced by both micro- and macroeconomic factors. In our research this aspect has been hardly touched upon. However, there is a need to check how territorial factors, the policy mix and territorial utility influence, in turn, the behaviour of local enterprises and how they influence their competitiveness. So far the answer is more or less clear for clusters. For the other factors, it remains open. Perhaps here some qualitative research offers more promising outcomes. For instance, Komornicki *et al.* (2015) showed that in Polish circumstances with respect to the resilience of enterprises, according to their representatives, the highest influences were factors related to demand and then to costs, accessibility and availability of human capital. Territorial factors such as social capital, the quality of life, local development milieu and institutional capital were assessed by enterprises as less important with social capital scoring the lowest.

Poland is now engaged in the preparation of its new, medium-term development strategy. It has been named *Strategy of Responsible Development (Strategia Odpowiedzialnego Rozwoju)* and combines socio-economic and spatial approaches by paying attention to territorial capital, the place-based development paradigm, putting the focus not only on metropolitan regions but also at peripheral ones, and addressing social challenges and constraints. This strategy is based on an assumption that territory matters for growth. Pilot projects are envisaged for the development of peripheral areas by activating and better exploiting their territorial endowments. A place-based policy paradigm will be used to that end and a formal policy manual on that is under elaboration. An open question remains whether this or a similar approach is appropriate only for larger and more regionally complex countries like Poland and to what extent smaller countries who may be tempted by the perks of policy centralisation might benefit from following Polish territorial example.

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List of Tables

Table 1.1.	Stages in Cohesion Policy Impact Evaluation: Micro and Macro Approaches	18
Table 3.1	The territorial dimension of EU policies	54
Table 4.1	The model of the territorial optimum in the context of “territorial keys”, the model of the Institute for Development and the territorial capital	83
Table 4.2	GDP changes in Dolnośląskie voivodeship in 2012 for different social, territorial utility scenarios	91
Table 5.1	Territorial keys	97
Table 5.2	Taking advantage of territorial keys	99
Table 5.3	Territorial key — accessibility — potential indicators	104
Table 5.4	Territorial key – services of general interest – potential indicators	111
Table 5.5	Territorial key: territorial capacities/endowments/assets	117
Table 5.6	Territorial key of the city network – potential indicators	130
Table 5.7	Territorial key of functional areas (as spatial units) – potential indicators	138
Table 5.8	Territorial key of functional areas (as the synonym of the agglomeration factor) – potential indicators	139
Table 5.9	Correlation matrix between all the variables describing territorial capital resources	144
Table 5.10	Factor loadings of four principal components for all territorial capital variables	145
Table 6.1	Model accounting for the diversity $\ln(\text{TFP})$ in Polish counties in the years 2003–2011	156
Table 6.2	Territorial capital in the model explaining diversity of $\ln(\text{TFP})$ in Polish counties in the years 2003-2011	158
Table 6.3	The Impact of Territorial Capital of Neighbouring Regions on the Diversity of $\ln(\text{TFP})$ in Polish counties in the period 2003-2011	161
Table 6.4	Factor loadings for the three main components of the territorial capital variables relevant for growth	164
Table 7.1	Geographical structure of regional exports using economic potential weights	177
Table 7.2	Geographical structure of regional exports using inter-regional time accessibility weights	178
Table 7.3	Regional growth simulation scenarios	182
Table 7.4	Keynesian investment multipliers – 16 Polish NUTS 2 regions	201
Table 7.5	Foreign trade multipliers – 16 Polish NUTS 2 regions	202
Table 8.1	Elements referred to in the definition of territorial cohesion	207
Table 8.2	Methods of gathering and processing (for the use of development policy and spatial policy) knowledge of spatial development and socio-economic development by voivodeship authorities and/or administrations	211
Table 8.3	Number of regions who claimed that impact of their strategic documents had been evaluated by national, local and regional governments	214

List of Figures

Figure 2.1	Spatial integration	27
Figure 2.2	Components of territorial cohesion in the Tequila Model	39
Figure 2.3	Components of territorial cohesion in the Star Model	40
Figure 2.4	Territorial cohesion components from macro-economic perspective	47
Figure 3.1	National policies in the EU Member States with respect to the concept of territorial cohesion	52
Figure 3.2	Division of Poland into NUTS 2 (voivodeships) and LAU 1 (counties) areas	59
Figure 3.3	System of running development policy in Poland at national level – policy integration	61
Figure 4.1	Optimisation in the context of economic growth models – the neoclassical paradigm and an attempt to complete it	77
Figure 4.2	Sub-regions (NUTS 3 level) of the Dolnośląskie voivodeship	84
Figure 4.3	Scenario 1 – development of transport infrastructure in the subregions of Dolnośląskie	87
Figure 4.4	Scenario 2 – Strengthening the attractiveness and agglomeration effects of the city of Wrocław at the cost of the other sub-regions	87
Figure 4.5	Scenario 3a – A greater increase in resource concentration in the Jelenia Góra, Wałbrzych and LGOM subareas compared to Wrocław	88
Figure 4.6	Scenario 3b – A modest increase in resource concentration in the Jelenia Góra, Wałbrzych and LGOM subareas compared to Wrocław	89
Figure 4.7	Scenario 4 – An increase in resource concentration in the Jelenia Góra, Wałbrzych and LGOM subareas along with development of transport infrastructure in the subregions of Dolnośląskie	89
Figure 5.1	Typology of territorial capital components	95
Figure 5.2	Potential accessibility to population in 2005 (average for Poland = 100)	105
Figure 5.3	Potential accessibility to population in 2010 (average for Poland = 100)	106
Figure 5.4	Potential rail accessibility to population in 2005	106
Figure 5.5	Potential rail accessibility to population in 2010 (average for Poland = 100)	107
Figure 5.6	The average time of commuting to the nearest subregional town measured in minutes for 2005	112
Figure 5.7	The average time of commuting to the nearest subregional towns measured in minutes for 2010	112
Figure 5.8	<i>Potential</i> accessibility to doctors in 2005 (average value for Poland = 100)	113
Figure 5.9	<i>Potential</i> accessibility to doctors in 2005 (average value for Poland = 100)	114
Figure 5.10	Percentage of population serviced by sewage networks in 2003 (average for Poland = 100)	115
Figure 5.11	Percentage of population serviced by sewage networks in 2011 (average for Poland = 100)	115
Figure 5.12	The synthetic indicator of coverage by protected areas according to Degórski	120
Figure 5.13	Social capital measured by the electoral turnout in the years of 2003–2007	121

Figure 5.14 Social capital measured by the electoral turnout in the years of 2007–2011	122
Figure 5.15 Human capital – the percentage of adult population with tertiary education in 2002 (the average for Poland =100)	123
Figure 5.16 Human capital – the percentage of adult population with tertiary education in 2011 (the average for Poland =100)	123
Figure 5.17 The specialisation quotient (SQ) in Polish counties in 2006	125
Figure 5.18 The diversity index of clusters in Polish counties in 2006	125
Figure 5. 19 The index of significance of clusters in Polish counties in 2006 (the average for Poland =100)	126
Figure 5.20 The percentage of people employed in industry in 2005 (the average for Poland =100)	127
Figure 5.21 The percentage of people employed in industry in 2010 (the average for Poland =100)	127
Figure 5.22 The number of foreigners occupying accommodation facilities in relation to 1000 citizens – average for the years of 2003-2007 (the average for Poland =100)	131
Figure 5.23 The number of foreigners occupying accommodation facilities in relation to 1000 citizens – average for the years of 2007-2011 (average for Poland =100)	132
Figure 5.24 The number of students in relation to 1000 citizens in 2012 (average for Poland =100)	133
Figure 5. 25 Sold industrial production per capita in the years of 2003–2007 (average for Poland =100)	133
Figure 5.26 Sold industrial production per capita in the years of 2007–2011 (average for Poland =100)	134
Figure 5.27 The ratio between export and sold industrial production in 2005 (average for Poland =100)	135
Figure 5.28 The ratio between export and sold industrial production in 2009 (average for Poland =100)	135
Figure 5.29 Long-term changes (5 years) in the percentage of people working in counties in the years of 2003-2007 (in %)	140
Figure 5.30 Long-term changes (5 years) in the percentage of people working in counties in the years of 2007–2011 (in %)	141
Figure 5.31 Net permanent migration in the years of 2004-2013 (in % of the total percentage of population in 2004)	141
Figure 5.32 Territorial capital variables of the first and second principal component in two-dimensional space	144
Figure 6.1 The estimated values of total factor productivity for the year 2011 (average for Poland =100)	151
Figure 6.2 The average growth rate of total factor productivity for the period 2003–2011	152
Figure 6.3 Territorial capital variables essential for growth in two-dimensional space of the first and of the second principal component	164
Figure 6.4 Spatial diversity of the first principle component of territorial capital elements essential to the growth of Polish counties in the years 2007–2011	165
Figure 6.5 Spatial diversity of the second principle component of territorial capital elements essential to the growth of Polish counties in the years 2007–2011	165
Figure 6.6 Spatial diversity of the third principle component of territorial capital elements essential to the growth of Polish counties in the years 2007–2011	166

Figure 7.1	The HERMIN Regional Model Schema	172
Figure 7.2	Geographical structure of interregional exports of Dolnośląskie in 2012 using two approaches: (a) Based on “potential”, and (b) Based on “accessibility.”	179
Figure 7.3	The real growth rate of regions (average for the period 2013–2025: per cent) Baseline scenario (no interregional trade connections)	185
Figure 7.4	The differences in average real growth rate of regions (2013–2025) caused by opening up interregional trade channels. (a) Scenario using regional “potential” minus the baseline scenario (b) Scenario using “accessibility” minus the baseline scenario (percentage points)	185
Figure 7.5	The real growth rate of regions (average for the period 2013–2025: per cent)	187
Figure 7.6	The differences in average real growth rate of regions (2013–2025) caused by opening up interregional trade channels. (a) Scenario using regional “potential” minus the baseline scenario (b) Scenario using “accessibility” minus the baseline scenario (percentage points)	187
Figure 7.7	The real growth rate of regions (average for the period 2013–2025: per cent) Baseline scenario (no interregional trade connections)	188
Figure 7.8	The differences in average real growth rate of regions (2013–2025) caused by opening up interregional trade channels. (a) Scenario using regional “potential” minus the baseline scenario (b) Scenario using “accessibility” minus the baseline scenario (percentage points)	189
Figure 7.9	The real growth rate of regions (average for the period 2013–2025: per cent) Baseline scenario (no interregional trade connections)	190
Figure 7.10	The differences in average real growth rate of regions (2013–2025) caused by opening up interregional trade channels. (a) Scenario using regional “potential” minus the baseline scenario (b) Scenario using “accessibility” minus the baseline scenario (percentage points)	190
Figure 7.11	The real growth rate of regions (average for the period 2013–2025: per cent) Baseline scenario (no interregional trade connections)	191
Figure 7.12	The differences in average real growth rate of regions (2013–2025) caused by opening up interregional trade channels. (a) Scenario using regional “potential” minus the baseline scenario (b) Scenario using “accessibility” minus the baseline scenario (percentage points)	191
Figure 7.13	The real growth rate of regions (average for the period 2013–2025: per cent) Baseline scenario (no interregional trade connections)	193
Figure 7.14	The differences in average real growth rate of regions (2013–2025) caused by opening up interregional trade channels. (a) Scenario using regional “potential” minus the baseline scenario (b) Scenario using “accessibility” minus the baseline scenario (percentage points)	193
Figure 7.15	GDP level at constant prices (PLN bln) in 2015 in: (a) “CP- no links” case and (b) “no CP- no links” case and (c) CP impact on GDP level (%)	195
Figure 7.16	GDP level at constant prices (PLN bln) in 2015 in: (a) “CP- with links” case and (b) “no CP- with links” case and (c) CP impact on GDP level (%) – “POTENTIAL” VARIATION	197
Figure 7.17	GDP level at constant prices (PLN bln) in 2015 in: (a) “CP- with links” case and (b) “no CP- with links” case and (c) CP impact on GDP level (%) – “ACCESSIBILITY” VARIATION	198

The book edited by John Bradley and Jacek Zaucha is indeed a missing link. Not only does it show how territorial cohesion bridges between economic growth and welfare, more importantly it is the missing link in academic literature linking the conceptual work of territorial cohesion to reality.

The book stands in line with Jaques Robert's book on the European territory (Robert, 2014) and illustrates concretely what territorial cohesion means. While most publications on territorial cohesion stay at the conceptual level (see Camagni, 2006; Davoudi, 2009; Faludi, 2010), this present book goes beyond that. The book skilfully draws together the various discussions about what territorial cohesion could mean and takes the debate than one step further. Following the conceptual parts, the book illustrates how various facets of territorial cohesion can be measured. It translates it into concrete and measurable aspects which can be applied to the Polish context.

The use of the concrete Polish examples makes the book valuable and distinguishes it clearly from other books on the topic. In doing so, the second section of the book actually accomplishes two things in one go. Firstly, it makes the idea of territorial cohesion become more concrete and real than what most previous publications in the field managed to achieve. Second, it showcases Polish territorial developments and policies, which have not received the attention they deserve in recent international academic debates.

The book has actually a twofold focus and can attract two different target groups: (a) academics and professionals that want to deepen their understanding of territorial cohesion, and (b) scholars that want to learn more about the territorial dimension of Poland.

Kai Böhme*

* Dr Kai Böhme is founder and director of Spatial Foresight, a private consultancy and independent think tank in the area of European territorial policies and research with team members located in Luxembourg, Germany, France and Spain.