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Exploring Regional Innovation Policies and Regional Industrial Transformation from a Coevolutionary Perspective: The Case of Małopolska, Poland

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abstract

This article aims to explain the role of regional innovation policies in regional industrial transformation (RIT) from a coevolutionary perspective. The empirical basis is the case study of Małopolska, a Polish region undergoing an industrial transformation in parallel with the launch and development of its innovation policies after the EU accession in 2004. To accomplish its purpose, our research extends the common coevolutionary theoretical framework with interaction mechanisms (IMs), that is, the outcome-oriented processes underlying policy-industry mutual influences, and thus explaining their coevolution. IMs allow us to better understand the reciprocal roles of policy and industry, and the major paths in industrial development and policy approach. The role of innovation policy in the Małopolska RIT can be described as predominantly accommodating and complementing industrial change with some level of proactive promotion of new industrial opportunities. Moreover, we observe reciprocal relationships with regional industry, rather than the unidirectional influence of this policy. This dynamic interaction enabled the evolution of policy to balance the exploitative and explorative approaches to industrial development.

Key words:
regional innovation policies
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EU innovation policies have been decentralizing to regions to support their industrial transformation; however, how regional innovation policies implement this mission is underexplored (Asheim 2019; Hassink, Isaksen, and Trippl 2019). To shed light on this process, complex policy-industry interactions need to be studied in the long term and multiscalar context (Gong and Hassink 2020). Consequently, this article aims to explain the role of regional innovation policy in the regional industrial transformation (RIT) from a coevolutionary perspective (Martin and Sunley 2015; Gong and Hassink 2019). Our research setting, the Małopolska region in Southern Poland, has a long tradition of mature and heavy industries; but more recently, the region also has new, unrelated industries emerging such as knowledge-intensive business services. Concurrently, innovation policies have been decentralizing in Poland since the EU accession, which calls for research in the processes and effects of regional innovation policies.

The theoretical foundations of our study are the coevolutionary perspective (Martin and Sunley 2006, 2015; Gong and Hassink 2019), the concept of RIT (Asheim 2019; Hassink, Isaksen, and Trippl 2019; Isaksen et al. 2019), as well as the concept of exploration and exploitation in industrial path development (Sirén, Kohtamäki, and Kuckertz 2012; Foray 2014; Grillitsch Asheim, and Nielsen 2022). We develop a longitudinal case study of Małopolska, based on the structured content analysis of secondary sources such as policy documents and evaluation reports (more than fourteen thousand normalized pages), the analysis of public statistics, as well as forty-five interviews with representatives of industry and policy.

This research provides theoretical and policy-relevant contributions. First, it contributes theoretically by extending the coevolutionary theoretical framework with interaction mechanisms (IMs), that is, the outcome-oriented processes underlying policy-industry mutual influences, and thus explaining their coevolution (Yeung 2019; Benner 2021). IMs allow us to better understand the reciprocal roles of policy and industry as well as the major directions in industrial development and policy approach, namely, the exploitation of extant capabilities and the exploration of new

economic areas. Second, we advance the literature on how innovation policies can contribute to RIT, in general (Foray 2014; Oinas, Trippl, and Höyssä 2018; Asheim 2019; Hassink and Gong 2019; Hassink, Isaksen, and Trippl 2019), as well as more specifically in the context of Poland (Stryjakiewicz 2009; Swianiewicz 2011; Pylak and Kogler 2021) and Central and Eastern Europe (CEE) (Smętkowski and Wójcik 2012). Third, our study adds to policy practice by addressing the challenges that might prevent RIT, and by revealing how regional innovation policies are implemented and why they assume particular roles. The case study shows how the Małopolska regional government tackles typical shortages to accomplish RIT, such as the lack of focus or excessive focus in the objectives and target industries, as well as an imbalance between extant capacities and the development of new industries (Wojnicka-Sycz 2020; Klincewicz, Marczewska, and Tucci 2021). By highlighting the implementation practice and the antecedents of policy roles, the study enhances proper evaluations of regional innovation policies.

In the following, we will present the research framework ("Conceptual Framework") and the methodological approach ("Methodological Approach"). Then we analyze the evolution of the Małopolska industry and policy after the EU accession in 2004 ("The Evolution of the Małopolska Industry" and "The Evolution of Regional Innovation Policies in Małopolska"). "Innovation Policies Coevolving with Industry" focuses on the policy-industry joint evolution paths and interactions, whereas the last section provides a discussion and conclusion.

Conceptual Framework

The Coevolutionary Perspective on Regional Innovation Policy

The evolutionary perspective is valuable for explaining regional industrial dynamics since it reflects the complexity of industrial change, including a plethora of actors and factors interacting within geographic space and time (Martin and Sunley 2006, 2015; Frenken 2007; Frenken and Boschma 2007). These complex interactions and causalities lead to regional dynamics and can be synthesized as the coevolution concept (Ter Wal and Boschma 2011). Recently, Gong and Hassink (2019) and Benner (2021) specified this concept from theoretical angles, focusing on the coevolution between industry and institutions, the latter understood both as rules, regulations, and related actors. The coevolutionary theorizing fits into the broader recent advancing and opening up of the paradigm of evolutionary economic geography toward a stronger institutional focus, including nonfirm actors and looking at different scales (Hassink, Klaerding, and Marques 2014; Martin and Sunley 2015; Hassink, Isaksen, and Trippl 2019).

The coevolution concept differentiates by focusing on the process of concurrent structural changes of two or a limited number of interacting populations, acknowledging multiscalar contexts (Ter Wal and Boschma 2011). The concept departs from the unidirectional impact of policies and holds that policies stem from interactions with industry, that is, mutual influences in policy design and implementation (Gong and Hassink 2019).

However, these mutual influences are underexplored in the literature on coevolution. Therefore, it is important to explore how interactions unfold, that is, to

investigate the processes underlying these feedback relationships (Brown and Mawson 2019). The overall process of coevolution represents the flow of interlocking decisions and actions of the considered populations marked by their structural changes (Ter Wal and Boschma 2011). The outcomes of coevolution are thus changes at the level of actors representing policy and industry (Frenken and Boschma 2007; Benner 2021). These changes are reflected in industrial structure (e.g., industrial paths) and policy directions (e.g., development objectives and measures) (Gross 2009; Murmann 2013; Yeung 2019). However, besides the direct outcomes for the coevolving populations, the consequences can reach the mesolevel of the social system and institutional rules of the game such as cooperation routines and conventions (Grillitsch 2015; Zukauskaite, Trippl, and Plechero 2017).

Within coevolution, we conceptualize *IMs* as a particular type of recursive and outcome-oriented processes through which the considered entities perform reciprocal influences[1] (Ring and Van de Ven, 1994; Langley et al. 2013; Yeung 2019). As *processes*, IMs encompass a flow of recurrent decisions and actions by relevant agents representing the populations (Ring and Van de Ven 1994; Langley et al. 2013; Yeung 2019). An example might be the process of knowledge exchange between industry and academia, involving contract settlements and project development by these entities (Gong and Hassink 2019). IMs are *recursive*, that is, they cut across coevolution phases, which supports their universality—continuous and recurrent, rather than incidental, nature (Ring and Van de Ven 1994; Langley et al. 2013). The *orientation to outcomes* refers to the nature of IMs as those processes that underlie policy-industry interactions toward structural changes in these populations (outcomes) (Gross 2009; Murmann 2013; Yeung 2019; Benner 2021). Consequently, IMs are substantively relevant since they drive coevolution. IMs are also theoretically valuable for explaining how coevolution happens through causal relations between agents' actions and outcomes (Yeung 2019).

IMs can be theoretically derived from the concept of multiscalarity in coevolutionary studies and empirically induced from the contextual specificity of the studied populations (Gong and Hassink 2019, 2020; Yeung 2019; Chen and Hassink 2020; Benner 2021). Multiscalarity suggests dynamics and processes arising from within coevolving populations as well as from their local, regional, national, and international contexts (Chen and Hassink 2020; Gong and Hassink 2020; Benner 2021). Therefore, IMs might be internally driven by the studied populations, that is, generated by actors and groups representing these populations, and externally driven, that is, stemming from other actors and groups at the regional, country, and international levels. The example of an IM internally driven by regional industry might be the entrepreneurial processes leading to industrial changes and affecting regional policy (Gancarczyk and Ujwary-Gil 2021; Łasak 2022). An IM internally driven by regional policy can be the process of negotiating development priorities among policy makers that exclude or include industrial interests, and thus affect both regional policy and business (Ring and Van de Ven 1994; Brown and Mawson 2019). Externally driven IMs could involve EU and country policy

[1]The notion of IMs in our article differs from another connotation of this term, often associated with mechanisms that intervene or mediate relationships, for example, in econometric models.

processes that frame regional policies as well as international or national economic transformations affecting regional industry and policy populations (Fothergill, Gore, and Wells 2019). These examples are indicative and not exhaustive given the initial phase of the IM conceptualization, where the comprehensive set of such processes has not yet been systemized. Although we can categorize IMs as multiscalar, internally and externally driven, they are also specific to the context of the studied populations (Yeung 2019; Benner 2021; Chen and Hassink 2020). Therefore, an exploratory case design is needed to recognize and describe IMs in the context of regional policy-industry coevolution.

The Coevolution of Regional Innovation Policies and Industry in the Process of Regional Industrial Transformation

RIT comprises changes in the regional industrial structure and related innovation system (Asheim 2019; Hassink, Isaksen, and Trippl 2019; Isaksen et al. 2019). These changes can be linked with industrial path trajectories such as path extension, renewal, branching, creation, and exhaustion (Grillitsch, Asheim, and Trippl 2018; Isaksen et al. 2019). Although related to individual path trajectories, RIT comprises overall industrial dynamics as configurations of different paths (Asheim 2019; Hassink, Isaksen, and Trippl 2019). These dynamics can be either progressive, that is, oriented on path renewal or creation, or regressive, leading to the overall path exhaustion.

Although the literature recognizes the referred types of path development, there is still a research gap in how these paths are accomplished and combined into RIT (Oinas, Trippl, and Höyssä 2018). The explanation might rest on interactions and coevolution of industry and innovation policies. In this process, policies can assume the role of contradicting (opposing industrial change), reinforcing (leading and strengthening industrial change), accommodating (adjusting to and following industrial change), complementing (supplementing and supporting industrial change), or substituting (proactively creating industrial change) (Helmke and Levitsky 2004; Zukauskaite, Trippl, and Plechero 2017; Fothergill, Gore, and Wells 2019; Hooton and Tyler 2019). Compared to the intentional roles performed by policy, the industry's influence on policies is largely decentralized and dispersed to interest groups (Fothergill, Gore, and Wells 2019; Hooton and Tyler 2019). Moreover, it depends on the inclusive policy-setting rules and the ability of enterprises to organize their interests (Foray et al. 2012). Acknowledging this specificity, the industry may contradict policy (industrial change develops against policy priorities) (Indergaard 2019), reinforce policy (industrial change leads and strengthens policy priorities) (Benner 2021), accommodate policy (complies with or adjusts to policy priorities), complement policy (supplement and support selected policy priorities) (Foray 2014), and substitute for policy (industry replaces policy in setting up development directions and measures) (Indergaard 2019). The referred roles can either support or impede the structural change toward progressive RIT.

Whether progressive RIT will be accomplished depends on the nature of changes produced by policy and industry interactions and roles. Considering an evolutionary and long-term perspective, RIT requires both *exploitation* of extant capabilities and

entrepreneurial *exploration* of opportunities in new economic areas (entrepreneurial discovery and expansion), acknowledging the specificity of a particular regional context (Sirén, Kohtamäki, and Kuckertz 2012; Foray 2014; Grillitsch 2015). The over-reliance on exploitation is one of the explanations of rigid specialization and lock-ins (Martin and Sunley 2006; Hassink 2010). Therefore, policy-industry interactions and roles should support a combination of exploitative and explorative development (Foray 2014).

A Research Framework of the Role of Innovation Policy in Regional Industrial Transformation from a Coevolutionary Perspective

The above theoretical considerations have been synthesized in Figure 1, which presents a research framework.

This research focuses on policy's role in RIT, based on interacting and coevolving with industry. Therefore, the framework recognizes the IMs that launch interdependencies between policy and industry and drive their mutual influences. The mechanisms can be considered multiscalar, both internally and externally driven (Yeung 2019; Chen and Hassink 2020). When interacting, policy and industry are expected to assume such potential roles as reinforcing, contradicting, supplementing, accommodating, or substituting their development priorities and implementation tools. RIT as a progressive change can be achieved by balancing these priorities and tools toward exploitation and exploration in industrial evolution.

The framework is naturally embedded in the long-term and multiscalar context, and seeks to identify the coevolving structural characteristics of industry and policy marking the pathways to RIT (the bottom of Figure 1) (Langley et al. 2013; Murmann 2013; Gong and Hassink 2019).

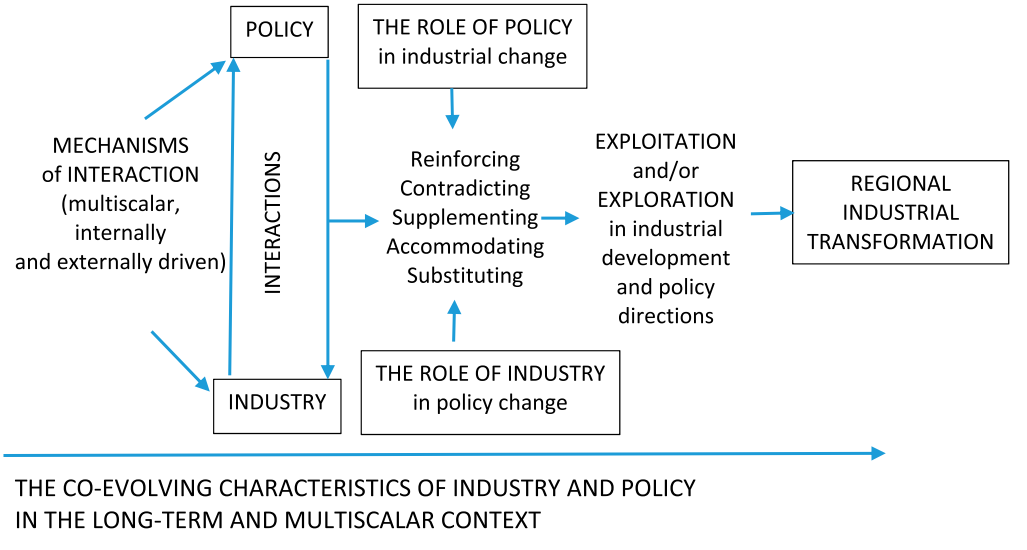

Figure 1. Research framework.
Source: Authors' elaboration.

Methodological Approach

Method and Case Study Selection

The current research is explorative in using a new, coevolutionary perspective to explain the role of innovation policies in RIT (Martin and Sunley 2015; Oinas, Trippl, and Höyssä 2018; Gong and Hassink 2019). Therefore, a single case approach is adequate for analytical generalization and theory development (Yin 2018).

The case study of the Małopolska region in Southern Poland after the accession to the EU in 2004 was selected based on the theory-driven criteria. First, the region underwent RIT throughout this period (MRGO 2012a, 2018b).[2] Second, within the referred time, the Małopolska government had both launched and implemented regional innovation policies; therefore, we can investigate a long-term experience in this area (Gancarczyk, Najda-Janoszka, and Gancarczyk 2020). Third, the region is relevant to track interdependencies among industry and policy since these actors have been actively negotiating their interests (MRGO 2015a; STOS 2017). Fourth, the evolution of regional innovation policies in Małopolska reflects and addresses the major challenges and shortcomings of regional innovation policies in Polish regions (GAP 2014; Gancarczyk, Najda-Janoszka, and Gancarczyk 2020), and in the transforming regions of CEE (Kardas and Kelchtermans 2021; Klincewicz, Marczewska, and Tucci 2021). Therefore, the case selection is based on universality, rather than unique characteristics (Yin 2018).

Research Procedure and Sources of Data

The research procedure follows a coevolutionary approach by investigating innovation policy in relationship with regional industry. Three steps were implemented, namely, (1) the identification of populations studied and their evolution paths in the multiscalar and historic context, (2) temporal bracketing of policy-industry coevolution phases, (3) the identification of the policy role in RIT as well as the IMs that underlie the reciprocal influences and coevolution of policy and industry (Gong and Hassink 2019).

Considering the first research step, the coevolving populations we study are Małopolska's regional innovation policy and industry after Poland's accession to the EU in 2004, within the regional, national, and EU contexts. Since coevolution concerns two or limited populations jointly evolving through interactions, we primarily investigate regional industrial and policy actors (Murmann 2013; Gong and Hassink 2019). Policy actors will include regional and local governments and business support organizations, while industry will comprise businesses and business organizations. Furthermore, we acknowledge academia as one of the key agents in innovation systems as well as the policies of the EU and the Polish central government.

"The Evolution of the Małopolska Industry" and "The Evolution of Regional Innovation Policies in Małopolska," describe the evolution of policy and industry as changes in their structural characteristics that mark new development stages (Ter Wal and

[2]Policy documents and policy evaluation reports cited in this article are included at the end of the references. For the sake of brevity, the names of the issuing organizations are abbreviated.

Boschma 2011; Yeung 2019). These structural changes are outcomes of coevolution at the level of policy and industry actors, and we capture them empirically in industrial structure and paths and policy directions (Frenken and Boschma 2007; Murmann 2013; Yeung 2019; Benner 2021). For industry, these characteristics include the structure of industries and enterprises, and the innovation system performance (Ter Wal and Boschma 2011; Asheim, Isaksen, and Trippl 2019). For policy, the changing properties comprise governance structures, priorities, measures, and budgets (Brown and Mawson 2019).

In the second step (see "Innovation Policies Coevolving with Industry"), we identify coevolution phases. These phases are the result of higher-order temporal bracketing based on the knowledge of the interlocks between industry and policy paths (Hedström and Ylikoski 2010).

The third step resulted in the identification of IMs and the roles of policy and industry in achieving RIT. IMs were derived from matching the empirical observation of the coevolutionary phases with the theoretical framework of multiscalarity (Gross 2009; Langley et al. 2013; Yeung 2019; Benner 2021). Multiscalarity raised our alertness to the empirical processes potentially internally driven by the studied populations as well as externally driven by other actors from the various levels of environment (Yeung 2019). This conceptual lens was comprehensive enough to frame the research process and data triangulation but not to restrict the findings of the explorative case study. We also acknowledged the specifics of IMs to the context of the populations studied (Yeung 2019; Chen and Hassink 2020; Benner 2021). Therefore, the empirical derivation of IMs was additionally guided by the specificity of regional policy and industry in Małopolska (Uyarra 2010; Ter Wal and Boschma 2011; Yeung 2019). We focused the IM derivation on only those processes that contributed to the mutual influences with consequences for both populations (Gross 2009; Murmann 2013; Yeung 2019).

According to conceptual assumptions, the unit of our analysis is actors (coevolving populations) (Murmann 2013; Gong and Hassink 2019; Yeung 2019). However, regarding the method of empirical observations, we were unable to directly study the decisions and actions of the actors (Yeung 2019), so we derived them from artifacts (Wright et al. 2018). Consequently, we applied the analysis of secondary sources, including policy documents, evaluation reports, public statistics, and forty-five interviews with policy and industry representatives, conducted in the years 2006–20. The sources of data and research evidence are presented in Table 1. To avoid subjectivity and retrospection bias, the authors combine the most recent interviews and the interview material conducted within their earlier research or the research with their involvement as experts (Wright et al. 2018).

Purposive sampling of 113 policy documents and reports resulted in 68 items for further analysis (see Policy Documents and Reports in the References). The selection focused on the items directly referring to the Małopolska regional innovation policy's aims, measures, and outcomes, as well as related evaluation research subjected to scientific scrutiny regarding the applied research procedure (methodological rigor) and academic involvement. To analyze the consistency of the approach across policy dimensions, we developed a formal coding scheme and used Atlas software (Appendix).

Table 1

The Sources of Data and Evidence Used in the Research

Type of Data Source	Description	Research Evidence	
Policy and Policy-related Documents	**Regional strategies and plans, measures and budgets, evaluation reports, and other relevant research in the multiscalar context of the country, the EU, and local economies of Małopolska**	**Initial Sample (Number of documents)**	**Final sample (Number of Documents / Pages)**
Plans (regional, national, and EU levels)	Regional innovation strategies of Małopolska	8	8 (1655)
	Regional development strategies of Małopolska	4	3 (491)
	Other region-level documents	7	6 (115)
	National development plans	17	5 (710)
	Other national-level documents	2	2 (38)
	The EU framework programs	3	2 (95)
Measures & Budgets (regional, national, and EU levels)	Regional action plans	3	2 (183)3 (884)
	Regional operational programs	5	1 (194)
	National action plans	2	7 (1917)
	Sectoral operational programs	8	-
	EU action plans and policy tools	5	
Evaluation reports (regional, national, and EU levels)	Evaluations of regional innovation strategy	11	11 (1031)
	Evaluations of regional operational programs	9	6 (663)
	Evaluations of sectoral operational programs	5	1 (97)
	Other national level evaluations	2	1 (174)
	EU level smart specialization evaluations	2	1 (36)

(*Continued*)

Table 1 Continued.

Type of Data Source	Description		Research Evidence
Other reports, including local-level research related to regional policy in Małopolska	Research reports and evaluations in particular areas of the region's economy and administration (labor market, information and consulting, research and development, knowledge-intensive business services)	16	7 (576)
	Foresights	4	1 (164)
	Total number	113	68 (9023)
Interviews	**Interviews among the Agents from the Policy-related and Industry Populations**	**Interview Dates**	**Number of Interviews; Evidence**
Interviews with industry agents	Interviews with 4 companies-beneficiaries of the investment support; semistructured, Skype-enhanced interviews with a focus group	2020[1]	1 (a transcript of the focus group interview)
	Interviews with high-growth entrepreneurs in Małopolska; (two-round direct, structured and semistructured interviews (2 start-ups and 4 mature enterprises)	2014-2015[2]	6 (audio-recorded, transcribed narratives)
	Interviews at one enterprise–a policy beneficiary (semistructured and direct interviews—2 interviews with the owner-manager, 7 interviews with the company's top and middle management)	2013-2014[3]	9 (audio-recorded, coded information)
	Interviews with representatives of business organizations (semistructured, direct interviews)	2014[2], 2007[4]	4 (interviewer's notes)

Interviews with policy-related agents	Interviews with representatives of regional government institutions (direct, semistructured interviews)	2018[5] 2006-2007[4]	4 (1 audio-recorded and transcribed, 3 interviewer's notes)
	Interviews with representatives of nonprofit business support organizations involved in the public provision of business services (direct, semistructured, as well as e-mail and Skype-enhanced interviews)	2020[1] 2014-2015[2] 2007[4]	21 (1 transcribed, 2 interviewer's notes, 18 coded information)
		Total number	45

[1] PMID, Polish Ministry for Investment and Development (2020). *The evaluation of the regional investment support in the area of strengthening the small- to medium-sized enterprise (SME) competitiveness within regional operational programs 201420, research commissioned to the consortium of Evalu Sp. z o.o.*, STOS, Wise Europa. Interviews with Małopolska high-growth SMEs regarding the policy support for dynamic enterprises.

[2] NSCP, National Science Centre, Poland (2014-2017). *The process of SME growth. Combining the resource-based and transaction cost approaches*, Research Project No. 2013/09/B/HS4/01938. Interviews with Małopolska high-growth SMEs regarding the policy support for dynamic enterprises.

[3] ESF, European Social Fund, Małopolska Agency for Regional Development (2013-2014). *Strategy for the innovation network development of the ZET Transport company*, Research and Development Project No. MARR/1427/2013/DZPP. Interviews investigating the role of public grants and support organizations in the innovation development at the ZET company, a beneficiary of the EU support in Małopolska.

[4] PMSHE, Polish Ministry for Science and Higher Education (2006-2008). *The evaluation of effectiveness and efficiency of the support policy SMEs)*, Research Project No. H02D 021 30. The interviews focused on the rationale, outcomes, and processes of the EU support for SMEs in Małopolska.

[5] EURIPER, EC Erasmus+ Jean MonnetProjects (2017-2019). *EU Regional and Innovation Policies and Peripheral Regions/EURIPER; Educational and Research Project No.* 587410-EPP-1-2017-1-ES-EPPJMO-PROJECT. The interview explored the processes of setting up priorities, measures, and budgets of the Małopolska innovation policy.

The Evolution of the Małopolska Industry

1998–2003—The Preaccession Period

The Małopolska region was restored in 1999, following nationwide administrative reform (PJL 1998). Kraków, as the regional capital and old capital of Poland, was a recognized science and education center. Although twelfth by area, Małopolska held the fourth position by population and the fourth position by the share of the country's gross domestic product (GDP) among sixteen regions (Statistics Poland 2022a). The regional economy featured a high polarization, as exemplified by an almost four times difference in unemployment rates between the least and the most developed county (Statistics Poland 2022b). Before the EU accession, Małopolska was a below-average-income area in Poland, with an industrial structure dominated by heavy and mature industries (MRGO 2005). Nevertheless, explorative efforts by a few local information and computer technology (ICT) enterprises, some of them being spin-offs from local technical universities, and the first foreign research and development (R&D) subsidiaries concentrated in Kraków, initiated new path creation (OME 2012). The preaccession period laid the foundation for the strong position of former state-owned employers, new ventures emerging after the launch of the market economy, and foreign direct investment (FDI).

2004–2011—After the EU Accession and throughout the Economic Crisis

In this phase of industrial evolution, the important events were Poland's accession to the EU and the economic crisis in 2007–09. The EU accession opened European markets enabling the local firm expansion, ensured the infusion of structural funds, and accelerated FDI. Challenged by the crisis, some of the heavy and mature manufacturing, such as metallurgy, mining, and metal industries, recorded job reductions (European Commission 2022c). Still, the general base of heavy and mature industries remained dominant in the region's employment (European Commission 2022c).

The macroeconomic slowdown negatively affected Małopolska's entrepreneurial dynamics, particularly, in the area of innovation-based and growth-oriented start-ups (GAP 2014). At the same time, the EU accession, cost pressures from the crisis, Kraków's qualified human resources, and numerous research institutions, attracted FDI in the business services sector (BSS) (OME 2012). Combined with the decline in mature and heavy industries, these factors stimulated industrial structural changes.

In 2009–11, the FDI-based BSS recorded the highest employment dynamics, ranging from 36 percent to 77 percent growth for particular services (ABSL 2020; Statistics Poland 2022b). Moreover, the period laid foundations for clustered high technology and creative industries, such as ICT, particularly, video games, biotech, and leisure (OECD 2019). The knowledge-intensive activities increasingly concentrated around the capital metropolis, maintaining the economic polarization (ABSL 2020).

Over the period 2004–11, Małopolska was a moderate innovator, making 54 to 57 percent of the EU average, but at the same time, it belonged to Polish top performers in R&D investment (European Commission 2010, 2012). However, there was a gap between the investment in R&D (i.e., the input characteristics) and the innovative performance (output characteristics). The share of innovative enterprises dropped down by almost 50 percent, evidencing a weak knowledge commercialization (Statistics Poland 2022b). Despite positive dynamics,

regional product and related wages were still much below the EU and the national average (in 2011, GDP per capita in purchasing power standard represented 58 percent of the EU and 65 percent of Poland's average) (European Commission 2022a).

From 2012 Onward—New Path Growth and Path Extension

Beginning in 2012, the external drivers of industrial growth were favorable macroeconomic conditions. The input into R&D and innovation potential continued to advance, but more importantly, this potential started to raise the innovative and entrepreneurial performance.

Although Małopolska's position among moderate innovators remained persistent, it featured significant progress, from 57 percent to 70 percent of the EU mean score (European Commission 2012, 2016, 2017, 2019). Foreign subsidiaries were the major investors in innovation, and they recorded the best innovation output among Polish regions (Statistics Poland 2022b).

Between 2012 and 2018, the highest employment dynamics were again reported in BSS, generating 23 percent of Kraków's employment and making it the world's sixth-largest BSS center (OECD 2019; ABSL 2020). The path toward knowledge-based industries was strengthened by a vibrant community of innovative and high-growth start-ups, taking advantage of the technology park and business incubators (OECD 2019; Statistics Poland 2020). Another dimension of new industrial trajectories can be revealed through Małopolska cluster dynamics in emerging industries (EOCIC 2019). Małopolska has been acknowledged at the forefront of biopharma, blue growth, digital, environmental, experience, logistical services, and medical devices industries. These areas were primarily the targets of the structural funds at the country level, and the accumulated central and regional investment proved effective in several Polish RITs (EOCIC 2019).

In parallel with advancements in knowledge-intensive activities, the mature manufacturing continued its dominance. Over 2012–18, the highest employment dynamics were recorded predominantly in medium-low and low-technology manufacturing (European Commission 2022b, 2022c).

In 2012–18, the regional growth by GDP per capita, progressed from 59 percent to 65 percent of the EU average, which was still lower than the country mean (European Commission 2022a). Despite the advancement, there is a need for further wealth creation and internal cohesion (OECD 2019). Overreliance on external investment might lead to being excessively specialized and vulnerable to technological substitution jobs (OECD 2019). Consequently, the referred economic growth phase calls for a continuing transformation toward internal value-added capacity.

The Evolution of Regional Innovation Policies in Małopolska

Regional Innovation Policy Development—Regional Innovation Strategy 2005–2013

The task of building the innovation potential of the region became the direct responsibility of the regional authorities of Małopolska after the territorial reform of the state in 1999 (PJL 1998). Hence, the scope and structure of the first Regional Innovation Strategy (RIS) 2005–13 (MRGO 2005) reflected the general priorities of the Regional

Development Strategy of Małopolska (MRGO 2000), which focused on intraregional consolidation and cohesion.

Simultaneously, due to the integration of Poland into the EU in 2004, the RIS closely followed the financial support lines from EU structural funds. To ensure compliance with the Lisbon Strategy regarding R&D (EC 2003), several comprehensive analyses of the region's innovative potential were carried out (Frydrych 2006; Kopyciński and Mamica 2006). The defined measures targeted key broad areas of science, entrepreneurship, and business environment; however, due to a strong cohesion focus, a priority was given to infrastructural and institutional support (approximately 80 percent of the total budget—MRGO 2005, 2007). As in other EU regions, academia was the most impactful stakeholder (Guzzo, Gianelle, and Marinelli 2018); hence, the funding was primarily transferred to universities and business support organizations, rather than to enterprises (five of eleven tactical tasks targeted academia and R&D institutes, and eight tasks were coordinated by those institutions located in Kraków—MRGO 2005). Nonetheless, the overall budget of the first RIS was relatively tight, due to limited EU funds available at the regional level (25 percent of the overall EU funding).

Innovation Policy Development—Regional Innovation Strategy 2014–20

The work on the next RIS, RIS 2014–20, started immediately after the introduction of the new Europe 2020 Jobs and Growth agenda (EC 2010) and in parallel with new programming at the national level (MRGO 2012b; MAD 2013; ME 2013). However, the focus on the regional smart specialization (RSS) emerged later (2014) when the RIS became an obligatory instrument of the Cohesion Policy.

Following the mandatory procedural steps of the RIS3 Guide (Foray et al. 2012), a greater emphasis was placed on regional stakeholder participation in the strategy development. The four rounds of public consultations in 2012–15 reflected a growing interest and concern regarding the concentration of public intervention in areas defined as RSS. This approach brought substantially more diverse stakeholders; that is, academic representation was balanced by business and local networking context (MRGO 2014a–2018a). Consultations resulted in the extension of the initial proposal based on foresight studies and focused on four high-tech areas (KPT 2010; MRGO 2012a). The extended RSS included seven specializations, ranging from the established to newly expanding industries (GAP 2014; MRGO 2015d).

Further work on the detailed description of the RSS strategy was also conducted in a partnership framework determined by regulations (MRGO 2015b). The partnership included cross-sectoral working groups with a diverse and balanced representation (MRGO 2015c). Although the efforts were strongly focused on defining boundaries of RSS at the expense of the interlinkages between them (ASM 2016; EU-Consult 2017), the new RIS supported business innovations and entrepreneurial potential. Instruments targeted at businesses have accounted for almost 40 percent of the RIS budget, and nearly half of them have been managed regionally (MRGO 2014a–2018a; MIED 2015). Moreover, there was a greater recognition for the business–science cooperation in the commercialization of R&D (MSAP UEK 2017), as evidenced by a four times increase in budget share and the introduction of grants for spin-offs. The new turn was reflected across priorities, measures, and budget structure of the RIS as a comprehensive action plan (MRGO

2011). Nevertheless, substantial reliance on EU funds (62 percent of the total budget), as well as the orientation on R&D infrastructure and business support institutions (72 percent of the total budget), was maintained (MRGO 2014a–2018a; MRGO 2014b).

Innovation Policies Coevolving with Industry

In "The Evolution of the Małopolska Industry" and "The Evolution of Regional Innovation Policies in Małopolska," we have identified distinct evolution phases of policy and industry, based on the changes in their structural characteristics. These phases follow partially different time slots, due to the specificity of policy planning periods and industrial dynamics. However, they also overlap and feature mutual influences between the populations studied. We have synthesized the policy and industry evolution paths into coevolution phases linking both phenomena (Figure 2). Consequently, Figure 2 is an analytical generalization of the findings. Coevolution phases represent higher-order constructs that enable us to reveal how policy and industry actors interact to produce explorative or exploitative direction, and how this translates to the paths of RIT. After the temporal bracketing of policy-industry coevolution, we identified IMs, that is, recurrent processes driving policy-industry influences and cutting across the coevolution phases. IMs proved multiscalar and originating at the level internal to policy and industry as well as at the international, country, regional, and local levels. Despite these varied origins, they affected the interactions of policy and industry actors.

In the *preaccession period,* 1998–2003, industrial and innovation policies were absent at the regional level, and industry organic development substituted for innovation policy (Figure 2). These processes were based on extant industrial competencies and led

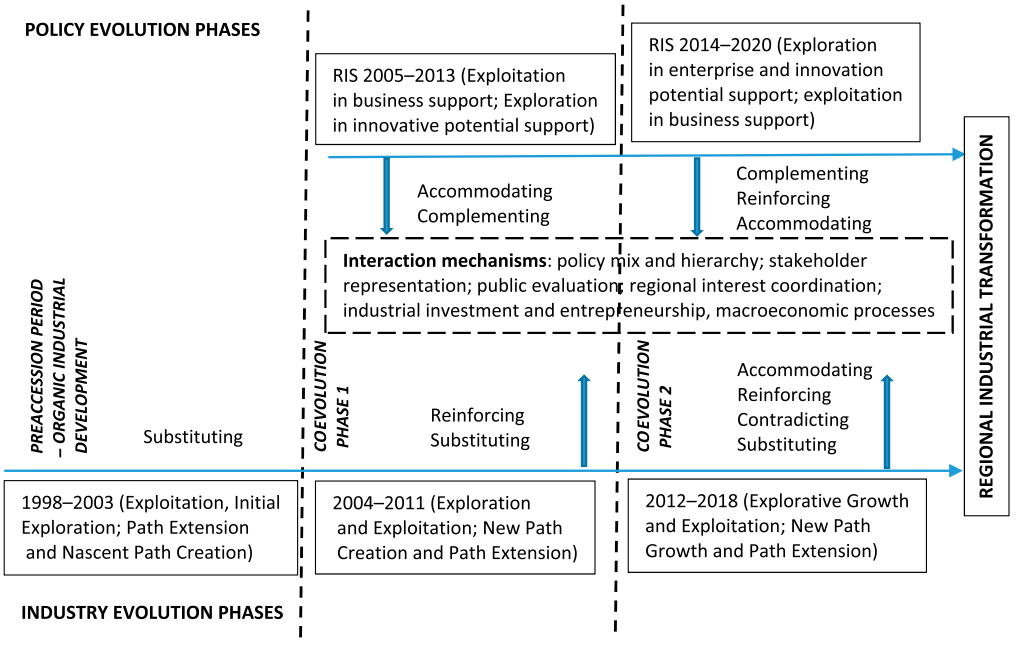

Figure 2. The coevolution of the Małopolska innovation policies and industry.
Source: Authors' research.

to a dominating position of large enterprises in mature industries toward exploitation and path extension. At the same time, regional factors of qualified human resources and R&D potential enabled the creation of local high-tech ventures and attracted the first knowledge-intensive FDI. The latter factors initiated exploration and nascent path creation toward knowledge-intensive industries.

The first phase of coevolution of policy and industry combines the years 2004–11 for industry development and the first RIS 2005–13 (Figure 2). The policy-industry IMs were predominantly externally driven and limited. Poland's accession to the EU launched the multiscalar framework of the EU national and regional support policies (CM 2000, 2003; MRD 2007). The relationship of regional innovation policy objectives, measures, and budgets with EU, national, and regional development policies formed an externally driven mechanism that we call a *policy mix and hierarchy mechanism*. Rather than interacting with each other, industry and innovation policy agents participated in national and regional cohesion policies (MELSP 2004a, 2004b).

> We have made cross-tabulations among objectives, performance measures, and expected outcomes of national operational programs, regional operational programs, and the regional innovation strategy. For the enterprise part, the RIS will be predominantly accomplished through the other programs' measures and budgets. (An academia agent engaged in *ex ante* policy evaluations, Polish Ministry for Science and Higher Education [PMSHE])

Regional innovation policy provided limited funding for enterprises and was largely subordinated to other policies directed at cohesion and strengthening extant capabilities (WYG 2006, 2007).

> Companies like the support for basic operational infrastructure to remove obsolete equipment. […] the fund distribution is risk-averse. The beneficiaries are profitable limited companies rather than risk-taking ventures. (A policy agent, PMSHE)
>
> […] we would do this [infrastructural] investment even without public support. (A beneficiary company, PMSHE)

Consequently, the policy mix and hierarchy mechanism explains the predominance of an exploitative direction in overall policy measures and industry development. An explorative approach could only be found in the first RIS measures to support science and R&D potential.

Another policy related but internally driven mechanism was *the mechanism of regional interest coordination*. The mechanism engaged local governments and business governments (business associations, such as chambers of commerce) in a joint commission affiliated with the regional government office (MRGO 2003). The commission focused on infrastructure investment and taxation policies to enhance regional cohesion. This mechanism was not only embodied in the work of the commission but also embraced formal and informal relationships enhancing the interests of incumbent firms and fostering an exploitative direction.

> These people go hand in hand in advocating for [EU] funding in their locations [the business and local governments from less-developed counties]. Really great that this research clearly reveals the underdevelopment of enterprises in our territories. (An industry agent, PMSHE)

The process of establishing and implementing the RIS required the inclusion of stakeholders in the design and monitoring of the policy. This enforcement of participation

has established an externally driven *mechanism of stakeholder representation*, formalized as Innovation Council, affiliated with the office of the Małopolska government (MRGO 2006). The mechanism was legitimized by Polish regulations on regional support (PJL 2000) and the EU funds' governance, enhancing the interaction between policy and industry. However, business representation in Małopolska was dominated by large incumbent enterprises and lacked executive instruments, weighing direct support for enterprises toward exploitation (Imapp and IBS 2017). The strong representation of academia supported the investment in science and thus enabled exploration in building innovative potential (MRGO 2008, 31–34).

Indirect interactions emerged from an externally driven *mechanism of public evaluation* performed *ex ante* during the implementation of support programs (FundEko 2012). Evaluation research has been legally enforced in Poland since 2000 (PJL 2000) and was also required by the governance of the EU funds. The mechanism proved useful in understanding the views of entrepreneurs and industry performance, and its validity was supported by the active participation of university researchers (FundEko 2015). By revealing the low level of R&D commercialization and innovation outcomes, it stimulated the explorative ambitions of policy makers (Kopyciński and Mamica 2006). "The entrepreneurs report profound difficulties in project implementations. The infrastructures improved, however, it is pretty far from real innovations" (A policy agent, PMSHE).

The pace and direction of industrial development were driven by enterprises. The influence of incumbent firms on policy can be explained as reinforcing exploitation. However, industrial investment also substituted for policy in exploring new areas of activity through FDI and nascent high-tech entrepreneurship (OME 2012). These processes, internally driven by industry, can be labeled as *the mechanism of industrial investment and entrepreneurship*. Finally, the economic crisis as an externally driven *macroeconomic processes mechanism* affected primarily industry, preventing ambitious and exploration-oriented entrepreneurship but stimulating FDI in business services. This external shock was also addressed by directing support to sustain the incumbent businesses (SACADA 2018).

As a result of the above industry and policy interactions, the first coevolution phase combined exploration and exploitation efforts toward RIT integrating new path creation and path extension. The referred IMs explain the role of policies as accommodating and complementing industrial change, rather than proactively leading this change.

The second coevolution phase covers 2012–17 in industry development, and RIS 2014–20 in policy direction (Figure 2). The *policy mix and hierarchy mechanism* that ignited the work on the new RIS and policy-industry interactions in this area was again externally driven (Europe 2020, EU funds, RIS3 Guide). However, unlike the first programming period, EU policies established both the formal framework and detailed provisions for developing the strategy toward exploration.

> In this strategy, we cooperated closely, even very closely, with the European Commission, the RIS3 platform. We were at the RIS review in Seville […] we cooperated closely, because later, when RIS was adopted by the Regional Board, it was the European Commission that approved the document and accordingly launched the first financing axis. (Interview, a policy agent, EU Regional and Innovation Policies and Peripheral Regions [EURIPER])
>
> When it comes to the relationship between the region and the European Commission, I would say that here the autonomy is diminishing. The European Commission more and more strongly determines what should be in the documents. (A policy agent, EURIPER)

Moreover, country-level smart specializations were more impactful in the growth of emerging industries than regional innovation policies (PAG Uniconsult 2018; EOCIC 2019). The policy mix and hierarchy mechanism in this coevolution phase stimulated exploration, both in the enterprise support and in building innovative potential.

Within the *stakeholder representation mechanism*, the provisions of the EU fund governance and the RIS design required a comprehensive representation of innovation system stakeholders, as reflected in the Innovation Councils of 2015 and 2020 (MRGO 2015a, 2020).

> Previously, the stakeholder community did not recognize the importance of this document [i.e., the RIS]. Now the awareness and the willingness to participate and engage in the process are substantially different. […] reviewing or creating the next version of a document is associated with increasing and more intense participation. (A policy agent, EURIPER)

Although industry representation has embraced predominantly extant, at least medium-sized businesses, it has expanded to all regional specializations (MRGO 2015b, 2015c). Consequently, the referred mechanism stimulated policy to promote exploitation in business support, but it also targeted exploration in the support for enterprises and innovation potential.

> We could enter the technology park incubator since we are innovative and they want us to grow. We were lucky to be promoted as a technology-based firm—both financially and through public procurement. (A beneficiary high-growth venture, National Science Centre Poland)
>
> We have been a beneficiary for 10 years already and use public grants for all investments. (A beneficiary low-tech firm, Polish Ministry for Investment and Development [PMID])

The support for the extant industrial base and exploitation was additionally enhanced by *the mechanism of regional interest coordination.* Local government interest groups and related business associations emphasized decentralization of the regional growth and EU funds distribution, as well as local (vs. regional) industrial specializations (MRDO 2015).

> Environmental and social consultations of the RIS project showed that there is a necessity to verify the smart specialization areas. During these consultations, data and arguments for the necessity to extend Małopolska's regional specialization with additional key areas were presented. (GAP 2014)
>
> A particular challenge was the preparation of smart specializations, the entire research process, establishing working groups that involved over 160 people, managing the process, discussions, negotiations, translating expectations, verifying the prepared materials–it has been a parallel process to the RIS, but also complex and extensive. (A policy agent, EURIPER)

The turn to support knowledge commercialization was additionally fueled by the *public evaluation mechanism*, that is, policy evaluation *ex ante*, ongoing, and *ex post*. The impact of this mechanism was much stronger than in the first coevolution phase, since more informative, *ex post* evaluations were possible (Imapp and IBS 2017; SACADA 2018).

> The monitoring system shows the areas for evaluation research […]. Evaluation studies have been conducted in various areas; they have indicated interesting issues […], e.g., the R&D sphere, university-business collaboration. […] we have been doing it periodically to see trends. (A policy agent, EURIPER)

The attempts by policy makers and academia to focus the Małopolska RIT on limited high-tech industries were challenged by the interests of the extant industry (MRGO 2012a–2015a; AGERON 2016). The ultimate result was the accommodation of policy and combining exploration with exploitation (support for entrepreneurial discovery and knowledge commercialization in new industries and support for the extant industrial base).

> I think that at this stage of our businesses' development, narrowing down would hurt everyone. It's too early, but ultimately yes. This is a model that we are striving for in small steps and one day it will happen that these specializations will be […] real specializations and not such a large, wide package. (A policy agent, EURIPER)

Moreover, the evaluation research revealed unique needs and expectations of the growing start-up community against incumbent enterprises (Evalu STOS 2017; Klimczak et al. 2019). The established SMEs that were long-term beneficiaries of public measures treated the public intervention as business contracts (Imapp and IBS 2017). High-technology start-ups emphasized the market failures in capital provision and uncertainty that required risk sharing.

> Public funds are not a support but an investment and we can ensure results and the [social] goal achievement. […] Micro firms are less efficient in this regard. (A medium-sized, low-tech enterprise, PMID)
>
> The micro-enterprise is much more determined to accomplish its goals and it is 'to be or not to be' for it. (A micro high-tech enterprise, PMID)

In the second phase of coevolution, the major driving forces of industry change stemmed from the *macroeconomic processes mechanism*, namely, favorable macroeconomic dynamics after the crisis. Resonating with these conditions, the *mechanism of industrial investment and entrepreneurship* stimulated the growth of BSS, business R&D performance, start-ups, and scale-ups. Overall, industrial development between 2012 and 2018 could be described as explorative growth combined with the exploitation of extant capabilities. This industrial direction resulted in RIT that has integrated new path growth and path extension. The role of policy throughout the second coevolution phase was predominantly complementary to industry development, with an attempt to reinforce the change (narrow focus on high-tech industries in RIS 2012), but, ultimately, accommodating industrial change (RIS 2015 update expanding industrial specialization).

> The first document [of the RIS] was an attempt at anything. A subsequent document presented the vision of the region's development as we see it—"it would be nice, if. … " The one from 2016 was and is such a particular document, i.e., for the first time we showed specific projects […] to happen in the region. (A policy agent, EURIPER)

Discussion and Conclusions

Theoretical Contribution

This research has explained the role of regional innovation policies in RIT, using a coevolutionary approach (Martin and Sunley 2015; Benner 2021; Gong and Hassink 2019). The role of innovation policies in the Małopolska RIT can be described as predominantly complementing and accommodating industrial change with a certain level

of proactive promotion of new industrial opportunities (Zukauskaite, Trippl, and Plechero 2017). The observed overly risk-averse approach was, to a large extent, driven by the underlying cohesion imperative. Policy evolution in Małopolska exhibits a common challenge among CEE regions—the convergence of cohesion and innovation policy into an integrated regional economic strategy (Loewen and Schulz 2019). The identified IMs inform the role of regional policy-making institutions in managing conflicting interests between ambitious and narrow RSS, dominant incumbent businesses protecting their position, local governments advocating for decentralized optics, and emerging industries struggling to establish legitimacy.

Our theoretical contribution is the conceptualization and empirical corroboration of IMs, that is, the processes underlying policy-industry mutual influences. In substantive terms, these processes drive the coevolution of the considered entities. In theoretical terms, they help to explain coevolutionary structural changes through microcausalities (Hedström and Ylikoski 2010; Yeung 2019). This explanation not only adds to the evolutionary approach to public policies (Uyarra 2010; Gong and Hassink 2019) but also contributes to retheorizing coevolution in economic geography (Gong and Hassink 2020). IMs highlight *what* roles were assumed by the populations studied and *why* these roles were performed. Moreover, they enhance the understanding of *how* the coevolution outcomes are accomplished (Yeung 2019), namely, the major development directions (exploitation or exploration) and paths.

The above theory development is valuable since it is evidence-based and corroborated by empirical findings, which represents the advancement of the recent conceptual frameworks (Gong and Hassink 2019; Benner 2021). This study contributes a research method that translates coevolutionary concepts (e.g., coevolution phases and interaction processes) into observable phenomena. We synthesize industry-policy coevolution phases as higher-order constructs, and we evidence this synthesis as a result of acknowledging the populations' individual paths and their interlocks. This fine-grained and gradual approach avoids a possible subjectivity bias from an *a priori* or arbitrary delimitation of coevolution paths. The focus on IMs as particular, outcome-oriented processes, rather than the overall coevolution process, is also promising from a methodological viewpoint. It helps to reconcile the complexity of actors and factors in evolutionary research with scientific parsimony, necessary to derive analytical generalization and avoid an overly descriptive approach (Yeung 2019; Benner 2021).

Based on the temporal bracketing of coevolution phases, *we identified policy-industry IMs as outcome-oriented recurrent and context-specific processes that cut across the coevolution phases* (Langley et al. 2013; Gong and Hassink 2020). These were two internally driven IMs (investment and entrepreneurship, regional interest coordination), and four externally driven IMs (policy mix and hierarchy, stakeholder participation, public evaluation, and macroeconomic processes). The mechanisms underlie policy-industry mutual influences, such as the mechanism of industrial investment and entrepreneurship stimulating the reactions of policy makers (Brown and Mawson 2019; Grillitsch 2019; Varga et al. 2018), as well as the mechanism of regional interest coordination raising interactions among local governments that affect local enterprises and industries (Estensoro and Larrea 2016; Aranguren et al. 2019). The internally and externally driven mechanisms are interdependent; for example, the external mechanism of macroeconomic processes relates with the internal investment and entrepreneurship

mechanism (Fothergill, Gore, and Wells 2019). Even though IMs stem from analytical, rather than statistical, generalization, they demonstrate the value of universality in the context of other transforming regions, in particular, CEE regions. This research confirms the nature of IMs as processes of multiscalar origins in the regional policy-industry coevolution (Yin 2018). The article also contributes with a generalization of IMs in the industrial transformation of Poland and, more broadly, of the CEE countries (Yin 2018). These contextual specifics included, among others, strong external influences (notably the European Commission's recommendations) on the governance and practice of policy design and implementation, as well as the overlapping or even competing objectives of innovation versus cohesion policies.

Moreover, this research contributes to the literature on RIT (Oinas, Trippl, and Höyssä 2018; Asheim 2019; Hassink, Isaksen, and Trippl 2019) by addressing the research gap of how RIT is accomplished through the coevolution of policy and industry. The findings reveal how policy-industry interactions enable balancing the exploitation of the extant industrial base and exploration of knowledge-based activities toward RIT. These conclusions were possible by looking at the coevolutionary processes, rather than only innovation policy inputs and outputs.

Contribution to Practice

The identified mechanisms of interaction can be useful for policy makers in understanding the conditions for the design, implementation, and evaluation of RIS. Awareness of these processes can enhance scenario thinking about the possible roles of policy in industrial development. Moreover, IMs *improve the understanding of the policy role antecedents, which rest on multiscalar, internally and externally driven processes*. This research also reveals the value of influences between industry and policy to better understand industry needs and policy priorities, and thus to improve policy implementation (Brown and Mawson 2019). The findings point to barriers in industry and policy mutual understanding such as information asymmetries, uneven power of stakeholders, and underrepresentation or overrepresentation of industrial partners' interests.

Moreover, the case study contributes to the knowledge of the implementation of innovation policies in Poland and more broadly in CEE countries. It illustrates typical challenges in the design and implementation of regional industrial specialization (Gorzelak et al. 2007; Wojnicka-Sycz 2020). The shortages, such as a lack of focus or excessive focus in the domains of public investment, have been addressed through mutual influences (Klincewicz, Marczewska, and Tucci 2021). In the context of transforming CEE, the study highlights the interlocks between cohesion and innovation policies at the national and regional levels. These interlocks define the role of innovation strategies as primarily enhancing the economic catch-up and as accomplishing its objectives through cohesion policies. Consequently, policy evaluations, should not only acknowledge input–output measures but also the policy multiscalar governance and processes.

This research also highlights the importance of joint exploitation and exploration activities to implement progressive RIT. In particular, it points to barriers in accomplishing exploration that stem from weak R&D commercialization and low entrepreneurship, rather than from insufficient investment in R&D and innovation potential.

Limitations and Implications

Our explorative case study in one regional context allows for analytical generalization only. However, the research framework (Figure 1) can be replicated in different contexts through multiple case designs (Yin 2018; Gong and Hassink 2020). Moreover, our investigations focused on the identification of coevolution phases and several underlying mechanisms. Future research might explore individual mechanisms in their complexity, considering detailed causalities in time.

The challenge of the coevolutionary approach is to directly investigate complex phenomena over the long run. Due to the exploratory and nascent stage of this approach in regional policies, we used secondary research evidence (Wright et al. 2018). Although carefully selected, policy documents could potentially be biased by funding and the interests of public stakeholders. Hence, future studies could design coevolutionary research methods for drawing on primary data.

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Appendix

Code Book

Family	1st Order	2nd Order	3rd Order
Policy compliance 5–13	EU level	Policy document	Strategic objectives
	Country level	Policy document	Strategy under construction
		EU funds	Strategic objectives
			Sectoral Operational Programs
	Regional level	Policy document—RDS	Regional development scenarios
		Policy document—RIS	Strategic objectives
		EU funds	Regional Operational Programs
			Tasks
			Financial sources
			Priority lines
			Targeted industries
			Business targeted actions
			Institution targeted actions
Policy compliance 14–20	EU level	Policy document	Strategic objectives
			Support lines
			RIS guidelines
	Country level	Policy document	Strategy under construction
		EU funds	Strategic objectives
			Sectoral Operational Programs
	Regional level	Policy document—RDS	Regional development scenarios
		Policy document—RIS	Strategic objectives
		EU funds	Regional Operational Programs
			Tasks
			Financial sources
			Priority lines
			Targeted industries
			Business targeted actions
			Institution targeted actions
			Monitoring
Definition of RSS 14–20	Focus	Policy document—RIS	Activity lines
		Foresight & evaluation	RSS prioritization
			Recommendations
	Extension	Policy document—RIS	Activity lines
		Foresight & evaluation	Recommendations

(*Continued*)

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Family	1st Order	2nd Order	3rd Order
Evaluation 5–13	Conclusions	Evaluation document Policy document—RIS	Strategic objectives Tasks Financial sources Priority lines Targeted industries Business targeted actions Institution targeted actions
	Recommendations	Evaluation document Policy document—RIS	Strategic objectives Tasks Financial sources Priority lines Targeted industries Business targeted actions Institution targeted actions
Evaluation 14–20	Conclusions	Evaluation document Policy document—RIS	Strategic objectives Tasks Financial sources Priority lines Targeted industries Business targeted actions Institution targeted actions
	Recommendations	Evaluation document Policy document—RIS	Strategic objectives Tasks Financial sources Priority lines Targeted industries Business targeted actions Institution targeted actions
Budget 5–13	EU-level programs	EU Funds & programs	Objectives Tasks Business targeted actions Institution targeted actions
	National-level programs	Sectoral Operational Programs	Objectives Tasks Business targeted actions Institution targeted actions
	Regional-level programs	Regional Operational Programs Regional financial sources	Objectives Tasks Business targeted actions Institution targeted actions
Budget 14–20	EU-level programs	EU Funds & programs	Objectives Tasks Business targeted actions Institution targeted actions
	National-level programs	Sectoral Operational Programs	Objectives Tasks Business targeted actions Institution targeted actions
	Regional-level programs	Regional Operational Programs Regional financial sources	Objectives Tasks Business targeted actions Institution targeted actions