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Agency and economic change in regions: identifying routes to new path development using qualitative comparative analysis

Markus Grillitsch^a , Markku Sotarauta^b , Björn Asheim^c , Rune Dahl Fitjar^d ,
Silje Haus-Reve^e , Jari Kolehmainen^f, Heli Kurikka^g , Karl-Johan Lundquist^h ,
Mikhail Martynovichⁱ , Skirmante Monteilhet^j, Hjalti Nielsen^k ,
Magnus Nilsson^l , Josephine Rekers^m , Sami Sopanenⁿ and Linda Stihl^o 


ABSTRACT

This paper investigates the role of human agency in 40 phases of regional economic development in 12 Nordic regions over 30 years. It contributes with a theoretical framework to study agency over time and a fuzzy-set qualitative comparative analysis based on a unique dataset combining over 200 interviews, with printed and online sources, and quantitative data. The paper identifies which combinations of agency types and context conditions make industrial upgrading or diversification possible, and investigates how such combinations come into being. The causal claims from this analysis are illustrated with empirical examples and discussed in relation to previous literature.

CONTACT

^a (Corresponding author)  markus.grillitsch@keg.lu.se

Department of Human Geography and CIRCLE – Centre for Innovation Research, Lund University, Lund, Sweden; and Inland Norway University of Applied Sciences, Innlandet, Norway.

^b  markku.sotarauta@tuni.fi


Urban and Regional Studies Group, Tampere University, Seinäjoki, Finland.

^c  bjorn.t.asheim@uis.no


UiS Business School/Centre for Innovation Research, University of Stavanger, Stavanger, Norway; and CIRCLE – Centre for Innovation Research, Lund University, Lund, Sweden.

^d  rune.d.fitjar@uis.no


Department of Innovation, Management and Marketing, UiS Business School, University of Stavanger, Stavanger, Norway.

^e  silje.haus-reve@uis.no


UiS Business School, University of Stavanger, Stavanger, Norway.

^f  jari.kolehmainen@tuni.fi

Urban and Regional Studies Group, Tampere University, Seinäjoki, Finland.

^g  heli.kurikka@tuni.fi


Urban and Regional Studies Group, Tampere University, Seinäjoki, Finland.

^h  karl-johan.lundquist@keg.lu.se

Department of Human Geography, Lund University, Lund, Sweden.

ⁱ  mikhail.martynovich@keg.lu.se


Department of Human Geography, Lund University, Lund, Sweden.

^j  skirmante.monteilhet@inn.no


UiS Business School, University of Stavanger, Stavanger, Norway.

^k  hjalti.nielsen@keg.lu.se


Department of Human Geography, Lund University, Lund, Sweden.

^l  magnus.nilsson@fek.lu.se


Department of Business Administration and CIRCLE – Centre for Innovation Research, Lund University, Lund, Sweden.

^m  josephine.rekers@keg.lu.se


Department of Human Geography, Lund University, Lund, Sweden.

ⁿ  sami.sopanen@tuni.fi

Urban and Regional Studies Group, Tampere University, Seinäjoki, Finland.

^o  linda.stihl@keg.lu.se

Department of Human Geography and CIRCLE – Centre for Innovation Research, Lund University, Lund, Sweden.

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regional development; industrial diversification; innovation; entrepreneurship; place-based leadership; institutions

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INTRODUCTION

This paper contributes to the literature on economic change in non-metropolitan regions and which role agency plays in this process. *Economic change* has recently received a lot of attention, not least in response to fundamental economic, social and environmental challenges of our times (Boschma et al., 2017; Mackinnon et al., 2019). Contributing to this broader debate, this paper studies how new forms of economic activities arise in regions, conceptualized as new path development (Hassink et al., 2019). Metropolitan regions account for most knowledge production, new firm formation, population and economic growth (Organisation for Economic Co-operation and Development (OECD), 2018). Yet, *non-metropolitan regions* must be taken seriously, if only because half of the people globally call them home (Joint Research Centre (JRC), 2020). Identifying ways to develop new economic activities in non-metropolitan regions is necessary to address large regional disparities, which, in addition to increasing urbanization and declining cohesion, have contributed to major social and political tensions in the past decade (McCann, 2020; Rodríguez-Pose, 2018). *Agency* captures ‘intentional, purposive and meaningful actions, and the intended and unintended consequences of such actions’ (Grillitsch & Sotarauta, 2020, p. 707). Agency is considered essential for developing new economic activities in regions (Bækkelund, 2021; Beer et al., 2021; Isaksen et al., 2019).

We propose a theoretical framework that explains new path development with (1) regional preconditions, (2) agency as the main causal power and (3) external events, which are largely outside the control of local actors. Regional preconditions capture the structural characteristics of a specific locality and include actor endowments and the networks and institutions relevant for innovation and entrepreneurship. In terms of agency, we build on the work of Grillitsch and Sotarauta (2020), asking which combinations of innovative entrepreneurship, institutional entrepreneurship and place-based leadership make new path development possible. As regards external events, we focus in particular on crises that lead to a substantial drop in demand or prices for local firms. Theoretically, this work is anchored in a critical realist tradition, implying that regional outcomes are most likely to result from one or several combinations of causal powers and context conditions (Archer et al., 1998; Bhaskar, 1997; Sayer, 1984). The task is to identify which combinations of regional preconditions, types of agency and crisis contexts make new path development in non-metropolitan regions possible. More precisely, the research questions are as follows:

- What are the necessary and sufficient combinations of conditions for new path development in non-metropolitan regions?
- How do they contribute to economic change in regions?

We provide answers with a substantive empirical study in Finland, Norway and Sweden, using longitudinal register data, an extensive document analysis and a total of 207 interviews. The comparative analysis comprises 40 cases (phases of regional industrial development) with variation in the outcome: in some cases we observed new path development, and in others not. The analysis is based on triangulating between in-depth theoretical and empirical knowledge as well as the results of a fuzzy-set qualitative comparative analysis (fsQCA). QCA is an analytical approach for searching answers to why and how questions (Ragin, 2008; Rutten, 2021). It is designed to identify multiple configurations of conditions explaining, in our case, new path development. Even though the usefulness of QCA for regional studies and economic geography has been demonstrated (Järvinen et al., 2012; Lagendijk et al., 2020; Rutten, 2019), its use in this field lags behind many other disciplines (Verweij & Trell, 2019).

THEORETICAL FRAMEWORK

The current paper examines the role of agency for economic change in regions, relating to the intricate debate on structure and agency in the social sciences (Archer, 1982; Giddens, 1984/2007). Being inspired by the morphogenetic approach of Archer (1995), the proposed theoretical framework constructs a logic of regional economic change over time (Figure 1).

The regional preconditions at a given point in time (T1) predate agency and can be conceived of as the result of the sum of all past actions and interactions. Agency is exercised in a certain period (T2–T3) in a context that is not of its own making and is influenced by regional preconditions, as well as external events. Agency affects both the direction and speed of economic change in regions, which is conceptualized as new path development. New path development sets in at some time between T2 and T3, with an observable result in T4. At T4, the regional preconditions have changed, opening for a new cycle of change (T5–T7).

New path development can occur in different forms (Boschma et al., 2017; Hassink et al., 2019; Martin & Sunley, 2006). We follow the typology of Grillitsch and Asheim (2018) distinguishing between regional industrial upgrading, diversification and emergence. Industrial upgrading is defined as a process that leads to higher value-added activities in an existing industry by

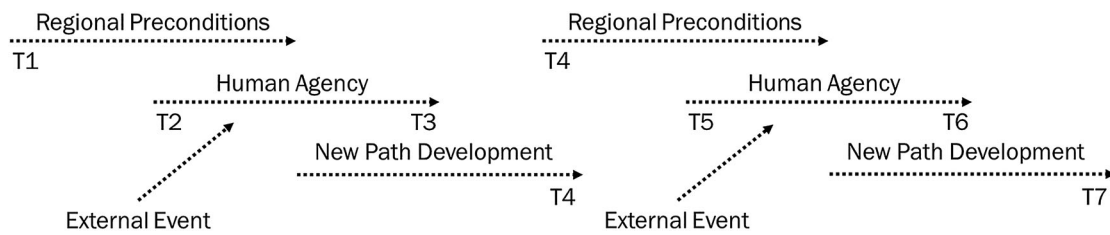


Figure 1. Theoretical framework.

Source: Authors' own elaboration inspired by Archer (1982).

technological renewal, climbing global value chains or positioning in market niches. Industrial diversification is defined as a process leading to a move from an existing industrial specialization towards new ones based on related or unrelated combinations of knowledge. Emergence refers to the rise of new industries in regions that are unrelated to existing ones, either through importation (the industry exists in other locations) or the emergence of entirely new industries.

The importance of regional preconditions for new path development can be traced to the early writings of Marshall (1920), the literature on various types of territorial innovation models (Doloreux & Parto, 2005), regional innovation systems (Asheim et al., 2019), and recent work on entrepreneurial ecosystems (Alvedalen & Boschma, 2017). Accordingly, actors do not operate in isolation but are embedded in wider systems, are linked through regional and extra-regional networks, and are embedded in a multi-scalar institutional architecture. In such open systems, the region plays a role because it facilitates knowledge exchange and learning not only through the ease of face-to-face interactions (Malmberg & Maskell, 1999), but also because of the social and institutional environment in which learning takes place (Gertler, 2003).

Non-metropolitan regions have particular challenges for new path development such as a thin endowment of actors or a heavy specialization in a particular industry (Carvalho & Vale, 2018; Isaksen & Trippel, 2016), which make extra-regional networks and knowledge sources particularly important (Trippel et al., 2018). As non-metropolitan regions can be geographically peripheral and as preconditions in the wider region may be geographically distant, we study in particular the *local* preconditions relevant to the specific regional industrial paths under investigation. We acknowledge different dimensions of peripherality and investigate regions in relation to their geographical location and position in networks (Kühn, 2015).

Recent studies emphasize the importance of agency for new path development (Bækkelund, 2021; Hassink et al., 2019). Agency can be directed at maintaining or changing regional structures (Jolly et al., 2020), and here, regional preconditions influence the prevalence of and dynamics between maintenance and change agency (cf. Archer, 1982). For instance, regions where a diverse set of actors meet, provide for a high local potential for change agency based on local knowledge exchange and innovation, promoting new path development. Because the outcome of

interest is new path development the theoretical framework foregrounds change agency as causal power, that is, actions directed at initiating, coordinating or implementing change. Acknowledging the complex and varied nature of new path development, agency is best understood as distributed between a set of intentional actors and a strategic driver for change (Dawley, 2014). The power of actors to affect new path development is rooted in the set of competences, networks, and resources they are able to mobilize in given spatial and temporal contexts (Grillitsch & Sotarauta, 2020). This also implies that local actors may receive their power through their positions in extra-regional networks providing access to extra-regional knowledge and resources. The aim is to go beyond one-dimensional models that simplistically highlight the roles of firms and organizations (Isaksen et al., 2019).

Based on an extensive literature review, Grillitsch and Sotarauta (2020) argue that the trinity of change agency (TCA) brings together three theoretically distinct but influential types of change agency for new path development: innovative entrepreneurship, institutional entrepreneurship and place-based leadership. Innovative entrepreneurship is the nexus of opportunities and proactive actors who perceive and grasp opportunities, thereby generating novelty in different forms, such as new products, processes or organizational forms. In this way, innovative entrepreneurship is a pivotal force for economic change (Block et al., 2017; Shane & Venkataraman, 2000). Innovative entrepreneurship is influenced by the institutional environment, including well-functioning capital markets, integrated juridical arrangements, high-quality labour and a variety of intangible assets, such as access to novel ideas and new knowledge, innovation networks, access to large markets and future-oriented leadership supporting their activities (Venkataraman, 2004).

Consequently, as the TCA theory proposes, institutional entrepreneurship and place-based leadership play an important role in creating an environment in which innovative entrepreneurship can flourish. The institutional landscape of a region is often adapted to its current industrial specializations, as it has both shaped industrial development and been shaped by it. Therefore, institutional change is in many cases necessary for new specializations to flourish. Institutional entrepreneurship is a type of change agency that directs attention to actors who work on changing informal and formal institutions in support of innovative entrepreneurship and new path

development (Battilana et al., 2009; Sotarauta & Pulkkinen, 2011). Institutional entrepreneurs spark institutional changes and participate in their implementation (Battilana et al., 2009). Place-based leadership is about the identification of common interests and the mobilization of crucial resources, competencies and powers (Collinge et al., 2011; Sotarauta & Beer, 2021), and thereby contributes to economic change in regions (Bailey et al., 2010). Different types of actors may, formally or informally, lead the processes of proactive work for new path development (e.g., Blažek et al., 2013; Hidle & Normann, 2013). Furthermore, the types of change agency are not constrained to specific actors but different types of actors can play different roles in different contexts and at different times (Flanagan & Uyarra, 2016; Grillitsch et al., 2022).

The theoretical framework furthermore considers external events as confounding conditions for new path development. External events are largely outside the sphere of control of local actors, including changes in global demand, the macro-institutional environment or technologies. In the current study, external events are considered that constitute a market crisis manifested in a drop in prices or demand and contraction of workplaces in the studied location. A market crisis calls for change to safeguard jobs and income opportunities while freeing up resources from previously profitable economic activities (Holm et al., 2017). Crises can therefore be considered critical junctures in which a change to regional structures is more likely than in other times (Capoccia & Kelemen, 2007; Collier & Collier, 2002; Pierson, 2004).

The theoretical framework emphasizes a temporal logic suggesting that the interplay between structure and agency needs to be investigated over time. Yet, the temporal logic does not imply a linear relation between cause and effect. To the contrary, it embraces complexity where causal powers combine in various, sometimes contradictory ways to bring about an outcome, and where a number of different combinations of causal powers may produce the same outcome (equifinality) (Furnari et al., 2021; Gerrits & Pagliarin, 2021; Ragin, 2008). More concretely, in the current study this means that different combinations of conditions (regional preconditions, types of change agency, and external events) can lead to the same outcome (presence or absence of new path development). For instance, regions with favourable preconditions for new path development may require a different set of change agency than regions lacking such preconditions. Or, while a market crisis may trigger change agency and release resources, a crisis also challenges existing industrial paths in their existence, possibly requiring a more complex combination of change agency than in relatively stable times. Identifying the different configurations of conditions that causally explain new path development is therefore the objective of the empirical study.

RESEARCH DESIGN

Scholars often need to make tough choices: Should we follow an intensive research strategy (ideographic) to unravel

the secrets behind the complexity of economic and social phenomena in cities and regions? Or should we follow an extensive research strategy (nomothetic) to identify more general patterns of development across a large number of cases? Both approaches are used in regional studies, providing both depth and breadth. Yet as Ragin (1998, pp. 106f.) observes, '[w]ith variable-oriented techniques, for example, it is very difficult to address questions about actors' motives and subjectivities or to observe event sequences and causal processes', and relatedly, 'with case-oriented techniques, however, it is difficult to gain confidence that inferences are well grounded or that findings are general in any way'. In other words, the strength of intensive case-oriented studies is the weakness of extensive variable-oriented studies and vice versa. QCA is designed to combine the strengths of each approach by allowing for comparison across a large number of cases (Ragin, 1998; Rihoux & Ragin, 2009). We use QCA to identify multiple causal configurations for new path development in regions (cf. Rutten, 2019).

However, similar configurations of conditions may lead to different outcomes (multi-finality). From a critical realist perspective, this is not per se problematic because causal powers such as the three types of change agency do not produce an outcome in a deterministic nor probabilistic manner but that exercising such powers by local actors makes an outcome possible (Bhaskar, 1997; Rutten, 2021). Whether it produces an outcome depends on the interplay between one or more causal powers and confounding conditions. As society is complex, we can never capture all possible causal powers or confounding conditions and thus it may well be that despite the activation of certain causal powers (e.g., the three types of change agency) an outcome (new path development) is not present. The main way to deal with this is case selection and the definition of scope conditions or the context in which configurations of causal powers bring about a change (Pagliarin & Gerrits, 2020; Rutten, 2021).

Context and case selection

The context for this study are three countries in the Nordics, namely Finland, Norway and Sweden. The three countries are characterized by similarities in the general macroeconomic and institutional frameworks. They are coordinated market economies with highly developed social welfare systems, high levels of trust in societal institutions, and high scores in good governance (Charron et al., 2014). The countries are characterized by large territories and low population densities, and by the presence of relatively active policies to support non-metropolitan regions. Nonetheless, in each country the largest cities have grown faster than other regions over the past few decades.

Within this context (scope conditions), we selected 12 regions in which we studied economic change over the last three decades, using theoretical sampling (Eisenhardt & Graebner, 2007). First, we identified when and where regional preconditions and national growth trends poorly predicted regional employment growth using standard

growth models (Grillitsch et al., 2021a).¹ We thus identified periods in which specific regions grew substantially more or less than could be expected based on their structural preconditions. It is important to note that this is not to indicate new path development because the comparative analysis requires cases with variation in outcome. However, studying change processes in regions where the standard variables capturing regional preconditions (structures) and national growth trends poorly explain employment growth holds promise to generate insights about other causes for economic development (potentially agency and external events).

Second, from the list of regions exhibiting periods with high unexplained growth deviations, we selected four regions in each country with varying patterns regarding their respective growth deviations (positive and negative) and regional preconditions, including medium-sized regional centres, specialized regions with an industrial tradition, small-peripheral regions and resource-based regions (Figure 2).

Third, in each region, we conducted an in-depth study following an identical methodology with shared interview guides and interview protocols (Grillitsch et al., 2021b). The investigation started with an extensive desktop study of scientific publications, policy reports, planning documents, newspaper archives, and websites of relevant organizations. Using these data, a timeline was created of important events related to the observed outlier periods. Desktop research was also used to identify the actors that could be associated with these events. In explorative interviews, the events timeline was validated and corrected if necessary, and the list of key actors was complemented.



Figure 2. Location of regions.

Source: www.gadm.org, 2019; map layout by Linda Stihl.

Then, we conducted in-depth semi-structured interviews with a total of 207 interviewees, covering firms, local and regional government, support organizations, and higher education institutes (HEIs), including universities (see Appendix A in the supplemental data online). In the interviews, we aimed to identify and validate the events and we traced which actions led to or resulted from them.

Fourth, we identified the main industries and development phases in each region. Although there is theoretically no limit to the number of development phases, we found that the empirical reality of 20–30 years of regional development can be represented with two to three phases per region. This aligns with the findings of, for instance, Fritsch and Mueller (2004) that it takes approximately eight years to observe changes in regional systems following the entry of new businesses. Consequently, the units (cases) entering the comparative analysis are 40 regional industrial development phases (see Appendix B in the supplemental data online).²

Calibration

For each regional industrial development phase (case), we investigated the regional preconditions for new path development at the beginning of each phase, the causal powers (three types of change agency) and confounding condition (crisis) during each phase, and the change outcome (new path development) at the end of each phase. We evaluated whether any of the conditions or outcomes were present or absent by defining the so-called membership scores. A membership score of 1 means the full presence of a condition or outcome, whereas 0 stands for full absence. To account for different degrees to which a certain condition or outcome is present, we applied fuzzy sets; this means that in addition to the scores of 1 and 0, we awarded a score of 0.67 if a condition/outcome is not fully present but it is more present than absent, and a score of 0.33 if a condition/outcome is not fully absent but it is more absent than present. It is important to note that fsQCA works with a threshold logic. This means that a value of 0.5 would express the maximum ambiguity whether a condition/outcome is present or absent. The scores therefore do not represent real numbers on which, for example, statistical methods are normally applied.

In order to ensure systematic scoring based on substantial theoretical and empirical knowledge, a calibration model was developed (Table 1). The initial calibration model was based on the theoretical framework presented in the second section. Then, each case was individually scored by the researchers who had conducted the respective empirical study. Subsequently, the calibration model was discussed, leading to a more stringent formulation of the outcomes and conditions, which sharpened the correspondence between empirical observations and specific membership scores. For instance, initially we had difficulties in scoring new path development. Consequently, we specified that upgrading entails a strengthening of an existing regional specialization in relation to national or global markets, for instance through the realization of enhanced value added or increased market shares, and

Table 1. Calibration of conditions and outcomes.

Outcomes, conditions	Descriptions	Codes			
		1	0.67	0.33	0
Diversification ^a	Regional economy moves into new markets/ technologies	Consensus in interviews that a regional economy has diversified AND concrete events supporting this; change in existing patterns of specialization evident	Interviews suggest that regional economy diversifies AND concrete events supporting this; change in the existing patterns of specialization becomes visible	Some diversification observed, which, however, is insufficient to alter the existing pattern of specialization	No diversification observed
Upgrading ^a	Existing specializations are strengthened	Consensus in interviews that the existing specialization is upgraded AND concrete events supporting this; strengthening of region's position in national/global markets becomes evident	Interviews suggest that regional economy upgrades AND concrete events supporting this; strengthening of region's position in national/global markets becomes visible	Some upgrading observed, which, however, is insufficient to strengthen the region's position in national/global markets	No upgrading observed
Regional preconditions	Presence of actor, network and institutional configurations that promote innovation and entrepreneurship in locality	Combination of strong and variety of firms and support structures, strong local networks, and collaborative culture	Many elements of innovation systems present but with some weaknesses	Some elements of innovation systems present but fragmented and weak	Few actors, weak networks, no supportive institutions
Innovative entrepreneurship	Strong presence of innovative entrepreneurship	General consensus in the interviews that innovative entrepreneurship played an essential role for regional development and concrete events supporting this (including innovations new to the world/ region)	Interviews suggest that innovative entrepreneurship played an important role for regional development and concrete events supporting this (regular innovative activities of medium novelty)	Interviews point to some actions of innovative entrepreneurship that were deemed to have played some role for regional development	Interviews did not point to actions of innovative entrepreneurship, which were considered relevant for regional development

(Continued)

Table 1. Continued.

Outcomes, conditions	Descriptions	Codes			
		1	0.67	0.33	0
Institutional entrepreneurship	Strong presence of institutional entrepreneurship	General consensus in the interviews that actions aimed at changing institutions (cognitive, normative, regulative) were highly influential for regional development AND events supporting this	Interviews suggest that actions aimed at changing institutions (cognitive, normative, regulative) played an important role for regional development AND events supporting this	Interviews point to some actions targeted at institutional change, which were deemed to have played some role for regional development	Interviews did not point to actions target at institutional change, which were considered relevant for regional development
Place-based leadership	Strong presence of place-based leadership	General consensus in the interviews that actions aimed at coordinating/pooling/mobilizing interests/resources were essential for regional development AND events supporting this	Interviews suggest that actions aimed at coordinating/pooling/mobilizing interests/resources were important for regional development AND events supporting this	Interviews point to some actions aimed at coordinating/pooling/mobilizing interests/resources that were deemed to have played some role for regional development	Interviews did not point to actions aimed at coordinating/pooling/mobilizing interests/resources that were considered relevant for regional development
Crisis	Period characterized by a market crisis	Consensus in interviews that period had a crisis coupled with strong decline	Perception of a slow market coupled with below average market growth	Tendency of negative market outlook	Average or higher market growth

Note: ^aIn the 40 cases included in our analysis, we observed diversification and upgrading, but no cases of emergence. Hence, we developed the calibration for these forms of new path development.

that diversification requires a change of existing patterns of regional specializations. We also had to specify that a score above 0.5 requires a validation of such a change through multiple sources, including interviews and documentary sources (triangulation). In contrast, a score below 0.5 means that even if we might have observed some instances of upgrading or diversification (e.g., single firms upgrading or diversifying), we could not corroborate through multiple sources that this strengthened the region's position in national or global markets (upgrading) or that this altered the existing patterns of regional specialization (diversification). New path development as outcome is defined as the presence of diversification or upgrading, which is the maximum score of the two. New path development is explained by combinations of five conditions, namely the presence or absence of:

- regional preconditions for innovation and entrepreneurship;
- innovative entrepreneurship;
- institutional entrepreneurship;
- place-based leadership; and
- crisis.

We found the criteria of establishing empirical evidence through triangulation very useful, in particular to ensure that the most important threshold in fsQCA, namely distinguishing between scores above and below 0.5 was consistently applied. Moreover, it was a distinct advantage that most researchers had limited knowledge about the workings of fsQCA, meaning that the development of the calibration model was conducted without awareness of how it might influence the results. Appendix B in the supplemental data online reports the scores and short justifications.

Analysis

A QCA identifies which combination of conditions is necessary or sufficient for an outcome to materialize. X is a necessary condition when outcome Y does not exist without X , that is, Y is a subset of X . X is a sufficient condition when X does not exist without outcome Y , that is, X is a subset of Y . This logic of identifying the necessary or sufficient conditions is generalized by the following formula, which makes it applicable to fuzzy sets:

Necessary condition: $Y \leq X$ (Y is a subset of X)

Sufficient condition: $Y \geq X$ (X is a subset of Y)

A QCA starts with all possible combinations of conditions. For instance, two conditions A and B result in four possible combinations: AB , Ab , aB , ab – where a capital letter indicates the presence and a small letter the absence of the respective condition. The complexity increases exponentially with each condition. We use five conditions in the analysis, implying 32 possible combinations, out of which 19 combinations were observed, as shown in the truth table (see Appendix D in the supplemental data online).

Scores for combinations of conditions in fsQCA are derived by the following principle:

$$AB = \min(A, B); Ab = \min(A, 1 - B);$$

$$aB = \min(1 - A, B); ab = \min(1 - A, 1 - B)$$

The truth table analysis yields the combinations of conditions that are sufficient for new path development. Before starting the truth table analysis, a choice has to be made about which combinations of conditions are associated with new path development based on the raw consistency and the proportional reduction in inconsistency (PRI) consistency calculated from the membership scores. The raw consistency indicates whether a combination of conditions is a subset of the outcome. The raw consistency equals 1 if the score of the outcome is always equal to or higher than the score for the respective combination of conditions. However, raw consistency can be high for a specific combination of conditions, even if the outcome is not present. For instance, the raw consistency criterion is not violated if the outcome membership score is 0.33 and the score for the respective combination of conditions is equal to or lower than 0.33 (cf. Rutten, 2021). This is why the PRI consistency needs to be considered as well, which punishes irrelevant cases where the outcome membership score is below 0.5. By default, the value of the PRI consistency is 0 if the outcome score never exceeds 0.5. The recommendation in the literature is to choose a cut-off value of 0.8 for both types of consistency (Ragin, 2009). As shown in Appendix D in the supplemental data online, the raw consistency values are high for all combinations (minimum of 0.81). Yet the PRI consistency is only high until row 13 (value of 0.83). In rows 14–19, the PRI consistency value is low (equal or lower than 0.5). This provides for a clear distinction where the combinations of conditions presented in rows 1–13 are associated with new path development while rows 14–19 cannot be linked to new path development.

The truth table analysis implements a process of logical simplification. The simplification based on existing observations works as follows: If outcome Y is observed in cases representing the combination AB and Ab , then A would be a sufficient condition. B is a logically redundant condition. Yet because not all possible combinations are observed, the QCA approach foresees a simplification process that considers theory-derived assumptions. This works as follows: If outcome Y is observed in cases representing the combination Ab , but if observations for AB are lacking, A would still be a sufficient condition if they back the assumption that only the presence of B affects outcome Y . For instance, let Y be new path development, A innovative entrepreneurship and B place-based leadership. If we then observed new path development in cases characterized by innovative entrepreneurship but not place-based leadership, we could assume that new path development also occurs in cases where both types of change agency are present. Using this type of logical simplification based on theory-derived assumptions leads to the so-called intermediate solution. The QCA approach

also yields a complex solution with no theory-derived assumptions and a parsimonious solution, which treats all conditions as if the assumption was made that only the presence of conditions is linked to new path development (all solutions are reported in Appendix E in the supplemental data online). In our case, to arrive at the intermediate solution reported in the findings, the *unobserved* combinations of conditions are treated with the theory-derived assumption that only the presence (not the absence) of change agency contributes to new path development.

Theory-building

Theory-building rests on substantive interpretation bringing empirical, contextual and theoretical knowledge in a dialogue (Rutten, 2021) where a distinction is made between formation and causation (Rutzou & Elder-Vass, 2019). Formation captures how certain configurations of conditions come into being, or how – in the current paper – certain combinations of change agency emerge in a time–place-specific context. Each case provides a highly idiosyncratic formation story capturing the particular actor constellations and their embedding in regional as well as extra-regional networks, and institutional settings. In this paper, the formation stories typically have antecedents in history and unveil processes of change. This paper can obviously not describe 40 formation stories, but we select some cases to illustrate the emergence of the identified sufficient combinations of conditions.

Each sufficient combination of conditions, in contrast to formation stories, makes a causal claim. A sufficient combination explains why an outcome (new path development) comes into being. The causal claims are thus of general nature, which are valid within the defined scope conditions. Critical realists also call such causal claims mechanisms (Gorski, 2018; Groff, 2017). The causal claims resulting from substantive interpretation may then corroborate or contradict existing theories about economic change in region.

FINDINGS

The analysis of necessary conditions did not identify any necessary conditions for new path development (see Appendix C in the supplemental data online). The analysis of sufficient conditions identified five combinations of conditions, which are sufficient for new path development to occur (Table 2) (see Appendix E online for the details). For simplicity, we use the term ‘routes’ for these combinations of conditions. The solutions have high coverage (0.89) and consistency (0.93). Each identified route also has a high consistency (above 0.9). Routes 4 and 5 even have a consistency of one, meaning that in all cases, the score for new path development was higher than the score for the respective combination of conditions.

The analysis distinguishes between routes that are only available in non-crisis times (routes 1–3) and such that lead to new path development irrespective of the presence of a crisis (routes 4 and 5). The latter are characterized by a

higher degree of complexity; that is, more conditions need to be present for new path development to happen. As elaborated below, this suggests that crises require more radical change made possible through the combination of causal powers.

Route 1: Innovation-driven new path development in non-crisis times

Route 1 stands for cases where the combination of *innovative entrepreneurship* and the *absence of a crisis* led to new path development. This combination of conditions was observed in 19 cases, out of which six times as a unique combination.³

Formation

We find that innovative entrepreneurship may be driven by single lead firms as well as a set of small and medium-sized enterprises (SMEs). Salo, a fairly small subregion in the eastern part of Southwest Finland, illustrates the former scenario. Since the 1920s, electronic device manufacturing has been the key industry. Salo is an essential part of the history of the Finnish electronic industry and Nokia’s mobile phone saga. Nokia established a unit in Salo in the late 1970s, at first in the form of a collaboration and later as a joint venture. By the end of the 1990s, Nokia had become the world’s largest mobile phone manufacturer, and for a long time Salo was its key site. Nokia grew rapidly and expanded its operations elsewhere in Finland and abroad. Still, the Salo site remained a crucial nexus in terms of both research and development (R&D) and manufacturing. The first observation period in Salo can be labelled the golden era of the global mobile phone business (1990–2008). This meant climbing the global production chain and industrial renewal based on new technologies. The golden era ended in Nokia losing its position in global mobile phone markets and the closure of all its activities in the region (more precisely Microsoft, to which Nokia sold its mobile phone business).

Conversely, a set of SMEs has driven innovative entrepreneurship in Jakobstad, a rural region located in the Swedish-speaking area at the west coast of Finland. Jakobstad has an exceptionally vivid and export-oriented SME sector. The industry is versatile, including food, boat, forest and machine industries, and agriculture. Continuous innovative entrepreneurship inspired by local and nonlocal networks has led to a gradual diversification of the industry during both observed development phases, despite individual innovation often being of a rather incremental nature. Especially here, the forest and food clusters diversified and restructured into smaller firms. Jakobstad is also characterized by collective and business-led place-based leadership, resulting, for instance, in the establishment of a firm-led industrial park.

Causation

The importance of innovation-driven new path development in non-metropolitan region is at odds with extensive literature in economic geography emphasizing agglomeration economies as driver for innovation (Shearmur, 2012).

Table 2. Routes to new path development.

Conditions	Route 1	Route 2	Route 3	Route 4	Route 5
Regional preconditions			●		●
Innovative entrepreneurship	●			●	●
Place-based leadership				●	●
Institutional entrepreneurship		●		●	
Crisis	∅	∅	∅		
Consistency	0.91	0.97	0.97	1.00	1.00
Raw coverage	0.69	0.52	0.49	0.52	0.53
Unique coverage	0.13	0.05	0.01	0.03	0.03
Solution coverage	0.89				
Solution consistency	0.93				

This proposition has been increasingly questioned. Fritsch and Wyrwich (2021), for instance, find that patenting is geographically dispersed with a large share occurring outside metropolitan regions, and conclude that the role of agglomeration economies is exaggerated. Existing literature on innovation in the periphery finds that firms do not necessarily need to have knowledge close by but can compensate through external linkages and in-house competences (Grillitsch & Nilsson, 2015). To be sure, the context of the study are the Nordic countries where building in-house competences and external linkages may be easier than in a low-income and resource-scarce context. Also firms' knowledge links result hardly from serendipity and chance encounters but are most often strategically built with extra-regional networks contributing more to the innovativeness of firms than regional links (Fitjar & Rodríguez-Pose, 2013).

Yet, innovative entrepreneurship does not suffice for new path development in crisis times (substantial drop in prices or demand). Crises challenge firms in their existence with substantial consequences to employees, regional policy makers, and citizens more generally. While innovative entrepreneurship might help a single firm to survive, the results suggest that in crisis times new path development, which is a regional outcome, needs a reorientation and mobilization of many actors for new goals, this is to say the more complex configurations identified in routes 4 or 5. In non-crisis times, such reorientation and mobilization is not necessarily required and thus innovative entrepreneurship in its own right makes new path development possible.

Route 2: Institutional change-driven new path development in non-crisis times

Route 2 captures cases where *institutional entrepreneurship* combined with the *absence of a crisis* led to new path development. This combination of conditions was observed in 12 cases, out of which three were unique combinations.

Formation

The development of tourism in Kirkenes in the remote and sparsely populated north-eastern part of Norway is an illustrative case. Kirkenes shares a border with Russia and Finland and has an ice-free coastline. The mining of

iron ore had been the core industry but its importance varied and the mine closed in 2015. Since the mid-1980s, local actors have sought to capitalize on localized assets such as its wilderness and location in the arctic and at the Russian border. However, the local preconditions were relatively weak and tourism as an industry not valued. The tourism industry was fragmented, poorly developed, and dominated by uncompetitive small firms. In the second observation period (2006–15), tourism was promoted and increasingly perceived as an important industrial path. Local entrepreneurs initiated more concerted efforts to upgrade the service provision and simultaneously to change attitudes to become more supportive for tourism development. An example is the recognition of the tourism industry in the regional strategy 2012, which was later revised, and contributed to the establishment of the tourism marketing organization in 2017. This led to an upgrading of the tourism industry in Kirkenes, even though seasonality and dependence on tour/cruise operators from Finland and Norway remain a challenge.

Arendal in Agder, South Norway, is another example where institutional change drove new path development in phase 1 (2000–08). Arendal is known for its oil and gas service suppliers and the electronics industry, which had historically been characterized by large nationally and internationally owned firms. The institutionally driven path development by the local and regional government, HEIs and firms refers to actions aimed at strengthening a collaborative culture and aimed at changing the reputation of Arendal locally and nationally. This led to an upgrading of the existing path, in particular enhanced innovation activity based on increased firm–university linkages. The institutional change in phase one also played a role in the development during phase two, in particular the opening of a new campus of the University of Agder in 2010, the development of cluster organizations and innovation labs, as well as the organization of 'Arendalsuka', a week of events and discussions where top politicians, organizations, HEIs and industries meet.

Causation

Route 2 supports the arguments highlighting the importance of institutions for regional development (Gertler,

2010; Rodríguez-Pose, 2013). Institutions have emerged as central objects of study in regional development and economic geography (Martin, 2000). It has been argued that institutions – both formal and informal – matter more for economic development than the traditional targets of attention, such as physical resource endowments, education, or technology transfer (Acemoglu et al., 2005). Our findings corroborate previous literature suggesting that institutional entrepreneurship is important to legitimize emerging development paths (Heiberg et al., 2020) and to changing norms, conventions or culture leading to new networks or organizational forms supporting new path development (Strambach & Pflictsch, 2020). It is important to note, however, that institutional entrepreneurship only makes new path development possible in non-crisis times. In combination with the other types of change agency it is more powerful (route 4), making new path development possible also in crisis times.

Route 3: System-based new path development in non-crisis times

This combination identifies cases where favourable *regional preconditions* with the *absence of a crisis* led to new path development. This combination was observed in 11 cases, out of which it was a unique combination once.

Formation

The unique case of this route was observed in the second phase of tourism development in Kiruna, north Sweden (2005–15). The background to this case is that in phase one (1990–2005), an innovative entrepreneur kicked off high-end winter tourism by introducing the ice hotel. The idea that the tourism season could be extended from summer activities such as hiking, kayaking and white-water rafting to make more active use of snow, ice and darkness was a major (and initially resisted) change in mindset, requiring institutional entrepreneurship. By 2005, high-end winter tourism was an established segment. In the second phase, this type of tourism grew and upgraded as more firms (old and new) targeted the same market segment. At the beginning of phase two, publicly and privately funded support networks connected local firms. Funds were attracted to further promote and develop the market niche through, for example, destination marketing and the development of a quality certificate. The innovative and institutional entrepreneurship that was required to kick off the winter tourism path in phase one became less pronounced in the second phase, when further development mainly relied on networks of local actors. In other words, institutional and innovative entrepreneurship shaped regional preconditions for the following phase.

Causation

Route 3 suggests that new path development can be rooted more in the system, that is, the traded and untraded interdependencies between actors (Storper, 1995) and the institutional environment (Asheim & Gertler, 2005; Cooke, 1992), than in pronounced acts of change agency. This

is also supported by the literature on regional innovation systems, suggesting that actor endowments, networks and institutional configurations support innovation-based regional development, which implies upgrading or possibly also diversification of regional paths (Asheim et al., 2019; Doloreux & Parto, 2005; Radosevic, 2002).

The novel insight is that during crisis times, a relatively strong innovation system in the context of non-metropolitan regions does not suffice to generate new path development, possibly because the smaller size of non-metropolitan regions does not allow for sufficient diversity in the innovation system to promote radical innovation, or to spread risks between different industrial paths (Frenken et al., 2007; Trippel & Otto, 2009). In order to address new path development in crisis times, innovative entrepreneurship and place-based leadership need to be added (route 5).

Route 4: Trinity of change agency (TCA)

Route 4 stands for cases where *innovative entrepreneurship*, *institutional entrepreneurship*, and *place-based leadership* together led to new economic activities. This combination was observed in seven cases, and once uniquely.

Formation

The illustrative case covers the development of the information technology (IT) industry in Karlshamn (Sweden) during the first phase (1990–2005). Karlshamn lacked favourable preconditions for the IT industry. The dominant food industry, facing global restructuring and rationalization, gradually cut jobs in the 1980s and 1990s, culminating in the closure of the last production lines at Carlshamn Mejeri (dairy) in 2002. In the 1990s, a number of actors from the municipality, higher education and business sector developed a new vision and strategy aimed at shifting industrial paths from blue-collar jobs to the knowledge economy. This change in mindset (institutional entrepreneurship) in the 1990s, combined with the (re)formation of networks across industry, municipality and academic leaders, resulted in an application to the European Regional Fund to launch Netport at the end of 1999 (place-based leadership). This triple helix organization hosts a university campus where small firms develop new products in IT and new media (innovative entrepreneurship).

Thus, institutional entrepreneurship initiated the TCA in Karlshamn, triggering place-based leadership and, consequently, innovative entrepreneurship. A similar dynamic could be observed in Olofström (Sweden) and Mo i Rana (Norway), where – in response to a crisis – institutional entrepreneurship played a role in changing the mindset, which was a precondition for the subsequent collective mobilization of resources and increased innovative entrepreneurship. However, the empirical material also provides different patterns, such as in Ulsteinvik (Norway), where innovative entrepreneurs initiated and engaged in the other two types of change agency in order to promote new path development. This included strengthening the competence base and anchoring scientific knowledge in the engineering-based maritime sector.

Causation

The theoretical underpinning for route 4 is provided by Grillitsch and Sotarauta (2020) who claim that the three types of change agency, call for and necessitate each other in regional development processes. This goes back to the literature showing, for instance, how entrepreneurs engage in shaping regional clusters (Feldman et al., 2005) or how institutional change creates the preconditions for innovative entrepreneurship to happen (Saxenian & Sabel, 2008). Recent work explicitly using the TCA provides evidence for the interplay between the three types of agency (Jolly et al., 2020; Mackinnon et al., 2019). The results of the analysis underpin the relevance of the TCA as it is the only combination of conditions sufficient for new path development, regardless of a crisis or non-crisis situation, and regardless of the regional preconditions. This means – at least in the context of the Nordic countries – TCA makes new path development possible even in regions without strong precondition and facing a crisis.

Route 5: Innovative entrepreneurship and place-based leadership embedded in strong regions

Route 5 represents cases where favourable *regional preconditions* were combined with two types of change agency: *innovative entrepreneurship* and *place-based leadership*. This combination of conditions was observed nine times, and in two cases, it constituted a unique combination of conditions.

Formation

The first unique case constitutes the maritime industry in Ulsteinvik, Norway, which developed into a global hub for offshore service vessels until 2014. Then, it was characterized by strong networks at the local, national, and international scales. Furthermore, leading firms were embedded in regional support structures, such as the global centre of expertise cluster ‘Blue Maritime’ and the university campus of the Norwegian University of Science and Technology (NTNU) in Ålesund. Following an almost total drop in demand because of the collapse of oil prices in 2014, firms needed to cut employment and radically reorganize. Ulsteinvik is known as one of the most entrepreneurial regions in Norway. Firms invested heavily in new products and markets (R&D expenditures doubled in this period). At the same time, firms, municipalities, and support structures bundled at Ålesund Knowledge Park simultaneously and in unison mobilized support to finance and to provide the required competences for the reorientation from the national government. The combination of innovative entrepreneurship and place-based leadership led to a diversification of the regional economy in the third observation period from 2014 to 2019.

The other unique case is Gislaved/Gnosjö, which is the densest Swedish region in manufacturing, with a strong production structure characterized by tight networks between small and large firms. The region is associated with ‘Gnosjöandan’ (the Gnosjö spirit), a culture of

entrepreneurship and support to the local community by businesses. Firms show a high level of innovativeness and invest collectively in public infrastructure, as well as technical education. Despite suffering during the financial crisis, the region upgraded within industrial manufacturing during the second development phase from 2000 to 2019.

Causation

Theoretically, it is not surprising that favourable preconditions combined with innovative entrepreneurship and place leadership provide a route to new path development. The rich literature on regional innovation systems foregrounds the role of local institutional configurations as key for facilitating innovation and entrepreneurship (Asheim & Gertler, 2005; Cooke, 1992). Regions endowed with an entrepreneurial culture and informal institutions supporting knowledge transfer and learning between local actors (Molina-Morales et al., 2002) do not necessarily require institutional change because existing formal and informal institutions support path development well. In such regions, mobilizing actors and coordinating their activities (place-based leadership) and innovative entrepreneurship suffices for new path development in crisis and non-crisis times (Bailey et al., 2010).

CONCLUSIONS

This paper investigates agency and economic change in non-metropolitan regions in Finland, Norway and Sweden. It develops a theoretical framework, which emphasizes a temporal logic to study the interplay between structure and agency. Accordingly, economic change in regions should be investigated over time, with a starting point when regional preconditions are assessed, a subsequent period where change agency may unfold considering external events, and an end point when a change to the regional economy (conceptualized as new path development) can be assessed.

The paper contributes with an innovative research design to compare in-depth studies of 40 regional industrial development phases over 30 years in 12 regions of three countries. The analysis allowed to distinguish the largely idiosyncratic formation stories from more general and abstract causal claims (Rutzou & Elder-Vass, 2019). The formation stories tell how specific configurations of change agency in given regional contexts and under consideration of external events came about. The formation stories capture specific actor constellations, their embedding in regional and extra-regional networks, and particular institutional configurations. The formation stories also provide a deep understanding of the change process in a particular place, the sequence of events and actions. The formation stories rely on the strengths of in-depth, intensive studies.

The general abstract causal claims are based on a comparative analysis using the method of fsQCA and substantive interpretation, which aims at the most plausible explanation for an outcome (new path development in

non-metropolitan regions) when considering theory, results of the comparative analysis, and deep context knowledge (Gorski, 2018; Groff, 2017; Rutten, 2021). The causal claims refer to the five configurations of conditions (routes) identified in the current study, which – if in place – make new path development possible. In this regard, the advance of knowledge lies in the identification of the sufficient combinations of conditions for an outcome, that is, in combinatorial arguments. Moreover, the study shows that different reasons (combinations of conditions) can lead to the same outcome (new path development), allowing thus for theoretical pluralism.

One generic causal claim is that simple combinations of conditions (routes 1–3) allow for new path development in non-crisis times. More complex configurations (routes 4 and 5) make new path development possible even if there is a crisis. The way in which the presence (or absence) of a crisis is related to new path development is somewhat surprising because our reading of the literature was that crises at the national or global level may trigger major changes in regions (Bristow & Healy, 2014; Martin & Sunley, 2014). Hence, we expected to find the ‘presence’ of a crisis to be part of sufficient combinations of conditions. In contrast to our expectations, it was the absence of a crisis that turned up in three of the identified routes.

In the absence of a crisis, new path development was made possible by exercising a single causal power, namely innovative entrepreneurship (route 1), institutional entrepreneurship (route 2), or the interactions in regional innovation systems (route 3). In contrast, the exercising of more complex combinations of causal powers (routes 4 and 5) makes new path development possible regardless of whether or not the region was suffering from a crisis. For routes 4 and 5, crisis is a redundant condition, which suggests that both opportunity- and necessity-driven change can occur under the same configurations of conditions, pointing to the importance of agency. Our interpretation is that in crises a more radical change is required, which is made possible by the complex combinations of causal powers. Radical changes call not only for new products, processes or business models (innovative entrepreneurship) but also a rethinking and consequently change of common practices, conventions, and beliefs (institutional entrepreneurship) and a mobilizing of joint efforts for new objectives (place-based leadership), representing the TCA (Grillitsch & Sotarauta, 2020). Yet, when exercised the TCA makes new path development possible regardless the presence or absence of a crisis; thus, the presence of a crisis is not part of the complex combinations.

The analysis also provides a more fine-grained result by differentiating between two complex combinations of conditions, both being causes for new path development in crisis and non-crisis times. The first one is the TCA. The second includes innovative entrepreneurship, place-based leadership but not necessarily institutional entrepreneurship in regions with strong preconditions for new path development. Such cases were found in regions, which are commonly known for their high

entrepreneurial activities and entrepreneurial culture. Our interpretation thus is that if local conventions are supportive for picking up new opportunities, taking risks, and change (Fitjar & Rodríguez-Pose, 2011; Fritsch et al., 2019; Storper, 1995), then institutional entrepreneurship is not a necessary ingredient in the complex configuration of conditions.

Furthermore, by comparing the formation stories for the complex combinations, the empirical material provides evidence for at least two process chains that are important in regional development. First, we found cases where institutional entrepreneurship (a change in cognitive–cultural institutions) provided the grounds for mobilizing across actor groups and pooling resources (place-based leadership), which led to improved regional preconditions for stimulating innovative entrepreneurship (cf. Saxenian & Sabel, 2008). Second, we found cases where innovative entrepreneurs succeeded in a market niche and engaged in developing the resources required in the region for further growth (place-based leadership). This often called for a change in cognitive–cultural institutions (institutional entrepreneurship) in order to legitimize a new industrial path in the region (cf. Feldman & Francis, 2006).

One limitation is that this study focussed on the combinations of conditions that made new path development possible. Yet, we did not interrogate the magnitude or relative importance of the paths in a regional economy. For instance, we are confident that the development of the winter tourism industry in Kiruna constitutes new path development, yet this did not challenge the existing mining industry, which is of national and European importance. Thus, future research may interrogate the magnitude and relative importance of new paths. A second limitation is the context (scope conditions) of the current study defined by the Nordic countries; this means that we claim that the routes to new path development identified in this paper hold in non-metropolitan regions that are well endowed with basic foundations for economic development, such as good governance, infrastructure and decent education levels. What combinations of conditions makes industrial diversification or upgrading possible in more resource-scarce environments in low-income countries or peripheral regions in Southern and Eastern Europe would require further research in these contexts. Another limitation is that the present study defined the outcome in terms of new path development capturing economic change in regions. Thus, another research avenue would be to investigate which configurations of causal powers and context conditions make other types of change possible (e.g., addressing climate change and social inequalities).

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NOTES

1. The explanatory variables captured related variety, specialization, diversity, competition, oil dependency of the region (in Norway), manufacturing share, high-tech manufacturing share, knowledge-intensive services share, public employment share, median wage, human capital, population density and regional employment. The analysis was conducted on labour market regions in Norway and Sweden and on economic subregions in Finland. Because of data availability, the period 1990–2016 was analysed in Sweden and Finland and the period 2000–16 in Norway.
2. In the context of QCA, a ‘case’ is also termed an ‘event’ and constitutes ‘an “assemblage” of causal powers, human agents exercising them and the outcome they (fail to) achieve’ (Rutten, 2021, p. 12).
3. A unique combination identifies a case characterized by only one specific combination of conditions. In contrast, a case that fits more than one route is not unique. For instance, a case characterized by innovative entrepreneurship, institutional entrepreneurship and non-crisis fits routes 1 and 2, and thus is not unique.

ORCID

Markus Grillitsch  <http://orcid.org/0000-0002-8406-4727>

Markku Sotarauta  <http://orcid.org/0000-0001-6603-6370>

Björn Asheim  <http://orcid.org/0000-0001-8681-0132>

Rune Dahl Fitjar  <http://orcid.org/0000-0001-5333-2701>

Silje Haus-Reve  <http://orcid.org/0000-0002-1801-4596>


Heli Kurikka  <http://orcid.org/0000-0001-5952-2952>

Karl-Johan Lundquist  <http://orcid.org/0000-0001-7754-8785>

Mikhail Martynovich  <http://orcid.org/0000-0002-0776-480X>

Hjalti Nielsen  <http://orcid.org/0000-0002-2201-381X>

Magnus Nilsson  <http://orcid.org/0000-0002-8769-8266>

Josephine Rekers  <http://orcid.org/0000-0002-2711-1080>

Linda Stibl  <http://orcid.org/0000-0001-7121-5912>

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