Institutional hindrances in cross-border regional innovation systems

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This paper takes an institutional approach to the development of cross-border regional innovation systems (CBRISs). It argues that the nation-state border is expressed through institutional hindrances that negatively influence cross-border cooperation processes. The concept of multilevel institutional architecture (MLIA) is introduced to improve understandings of the border as the nexus between institutions engaged in regional innovation systems. Through a case study analysis of the Venlo-Lower Rhine region, the paper investigates how a nation-state border impedes the build up of systemic cross-border relations that underpin the development of CBRISs.

Keywords: cross-border regional innovation systems; institutions; borders

Introduction

The aim of this paper is to gain an improved understanding of the role of the nation-state border in the development of cross-border regional innovation systems (CBRISs). Border regions can benefit from a higher degree of cross-border integration with the adjacent border region(s), stimulating economic growth and prosperity (Van Houtum, 1998). More specifically, fostering the capacity of adjacent border regions to move towards an integrated CBRIS could prove to be beneficial, as innovation is considered by some to be the main driver of economic growth and prosperity (Lundquist & Trippl, 2013).

Despite growing numbers of cross-border relations and economic strategies, the nation-state border still appears to hamper cross-border cooperation (Terlouw, 2008). The main objective of this paper is therefore to research the underlying mechanisms of the influence of the nation-state border on actors’ behaviour in cross-border cooperation. To do so, it takes an institutional approach. Institutions can be understood as variables that govern everyday social and economic life of individuals (Scott, 2008). Therefore institutions can help to explain why cooperation among actors in a cross-border setting can be problematic due to divergent laws, regulations, norms and values.

Through a case study analysis of the cross-border integration strategy of the horticultural industry in the Dutch region of Venlo and the German Lower Rhine region, the aim is to show how multiple institutions on both sides of the border impact on the behaviour of actors that are cooperating on innovation in a cross-border setting. For this, interviews were conducted with actors engaged in the collaboration, which consisted of Dutch and German representatives of intermediary organizations, municipalities and...
universities, meetings of the steering committee were observed and desk research was carried out, which involved analysing policy documents and previous research.

Multilevel institutional architectures: typology, influence and agency

The most commonly used typology of institutions distinguishes formal from informal institutions (North, 1990). Formal institutions are of regulatory and juridical nature, such as laws and regulations. Informal institutions are engrained in individuals through the (unconscious) expression of their values, norms and beliefs (Scott, 2008). Primarily informal institutions such as culture, norms and beliefs are hard to identify as an indicator for certain behaviour. Formal institutions are more visible and tangible. Institutions can provide both positive and negative incentives for cross-border cooperation, leading to opportunities and hindrances for organizations and individuals (Zukauskaite, 2013). Cooperation can be hindered when actors are embedded in divergent national institutional architectures. At the border, institutions pertaining to multiple levels (supra-national, national, regional) meet and interact.

According to the innovation systems literature, institutions facilitate interaction between the knowledge producing and knowledge exploiting subsystems (Asheim & Coenen, 2006). A micro-level perspective on institutions can show how institutions shape the interaction process among different actors (Perkmann, 2007; Smallbone, Labrianidis, Venesaar, Welter, & Zashev, 2007). At a micro-level, the border expresses itself through the behavioural pattern of individuals who cooperate across borders. The accumulation of all individual cross-border cooperation strategies results in a macro-effect, which reflects the systematicness of cross-border cooperation. Here, the macro-level is the development of a CBRIS. The literature on CBRIS mainly deals with these macro-level effects. We want to add a micro-level perspective to the current debate on CBRIS, as the behaviour of individuals in cross-border cooperation can enable us to improve our understanding of the underlying cross-border integration dynamics at a macro-level.

Institutions do not define and fully control for the behaviour of actors. Actors can change, create, reposition or remove institutions to solve problems (Strambach, 2010). However, in the regional and cross-border policy domain, the influence of national policy can dominate, leaving little room for formal institutional change (Amable, 2000). Aligning regional policy with the national level can be a prerequisite for effective cross-border cooperation (Terlouw, 2008). Regional innovation policy is often carried out in collaboration with actors at the national level (Martin, Moodysson, & Zukauskaite, 2011). In cross-border regions, this indicates that innovation strategies are dependent on the ‘higher’ levels of the institutional framework on both sides of the border. Actors at the regional or cross-border level are constrained by the other geographical levels, but they also try to influence other levels in the institutional framework by leveraging their room for agency. A CBRIS can, in our understanding, therefore, be conceptualized as a multilevel institutional architecture (MLIA) (Van Den Broek & Smulders, 2014).

Although national institutions are dominant, the MLIA's on both sides of the border do not have to be identical to stimulate cooperation. Hindrances occur when institutions have contradicting effects, i.e. blocking cooperative behaviour on one or all sides of the border. An in-depth look into formal and informal institutional differences could help in identifying possible barriers, as well as investigating where individuals can influence the institutional framework.
In order to understand the motives for cross-border cooperation in innovation policy and the actual behaviour of actors in the cooperation process, we conceptualize cross-border cooperation as a process of interacting individuals each embedded in their own MLIA. When hindrances occur in the cooperation process, analysing the influence of institutions on multiple levels can provide answers to the origins of the cooperation problems. Because individuals are able to influence (some) institutions, strategies can be developed to overcome the institutional hindrances at the border, positively influencing the development of the CBRIS in the end.

It is the development of cross-border innovation strategies that is of central interest in this paper. Although there is ample literature available on both institutions and cross-border integration, there is still little known about the embeddedness of cross-border innovation strategies in the MLIAs. We hypothesize that cross-border innovation strategies are overly focused on the cross-border level and insufficiently rooted in the respective MLIAs of the respective nation-states.

To explore this issue we have conducted a case study in the Venlo-Lower Rhine region. This is a cross-border Dutch–German region (Figure 1) dominated by horticultural industry. Complementary industrial structures on both sides of the border are present (Schoelen & Goebel, 2012). The Venlo region specializes in the intensive greenhouse production of fruit and vegetables and fulfils an important logistic function in the Dutch export system of flowers and fresh food to other regions in Europe. The Lower Rhine Region has more open-field production methods for less energy-intensive food and flower products (Schoelen & Goebel, 2012; Van Den Broek & Smulders, 2014). Venlo and Lower Rhine face similar challenges, such as maintaining a sufficiently knowledgeable supply of labour in the production system, developing cost-efficient energy systems and stimulating innovation in the region. In order to investigate

Figure 1. The Venlo-Lower Rhine region.
the opportunities of cooperation, a study was set up by local municipalities and knowledge institutions on both sides of the border to analyse industrial complementarity in the cross-border region. The mutual goal was to use the study as the foundation of future cooperation strategies in the horticultural sector and to unlock funding.

**Methods**

The empirical analysis of this paper draws on a previous collaborative study carried out by the authors, in collaboration with other researchers (Vrolijk, Van den Broek, & Smulders, 2012). Regional municipalities in the Venlo-Lower Rhine Region and the Euroregion Rhine-Meuse-North commissioned the study. A qualitative and quantitative study was undertaken concerning industrial complementarity in horticulture in the Venlo-Lower Rhine region.

The qualitative analysis of the study consisted of 24 semi-structured interviews with firms, government officials, intermediaries and knowledge institutes on both sides of the border. An interview guide was constructed, and a semi-structured interview approach was taken. Questions concerned the attitude and willingness to cooperate across borders, and the perception of the functioning of institutions, such as industrial norms and values. Furthermore, questions concerned the practical problems of actors when engaged in cross-border cooperation specifically relating to horticulture. The gathered data, quantitative and qualitative, were discussed during meetings of a steering committee.

An MLIA conceptualization informed the analysis of primary and secondary material. The analysis examined institutions, and the geographical level at which they operate, with a focus on their supportive or hindering effects on cooperative behaviour. These can arise due to the contradictory effects of laws, regulations, funding opportunities, ways of organizing cooperation processes, norms and values. This MLIA analysis was compared with the above-mentioned interview results. Moreover, the authors were present at meetings of the steering committee as members of the research staff. The authors also attended meetings and workshops organized to discuss feedback given by both Dutch and German steering committee members on the results of the study on the economic complementarity in the horticultural industry. Whilst, the role of the authors was limited to observers precluded from decision-making processes, it generates some study limitations as they were not neutral observers at that time. The main risk stemming from this participation is then related to objectivity, which required reflexivity and data triangulation. Furthermore, because it is a single-region, single-industry approach, one should be careful with generalizing the evidence provided in this paper.

**Cross-border collaboration on innovation in the Venlo-Lower Rhine Region**

Currently, Venlo has the advantage that the horticultural sector is represented in innovation policy at all geographical levels. Horticulture is one of the nine so-called ‘top sectors’ in Dutch national innovation policy. This national level policy has a strong influence on the regions and is an important source of funding. Moreover, Venlo is part of the Southern Netherland’s regional smart specialization strategy (involving the provinces of Sealand, North-Brabant and Limburg) and at the regional level municipalities are working together in what is called Greenport Venlo, a cooperative structure directed at the horticulture and logistics industries. Innovation policy is thus aligned at all levels in the MLIA. This is not the case in Lower Rhine, where municipal representatives have difficulty influencing innovation policy debates at other levels. Innovation policy in
Germany is a shared domain of the federal and state levels, with funding being mainly available at the state level. The innovation policy of the federal state of North-Rhine Westphalia is directed at the high-tech sectors. As a result of this, limited funding is available for innovation in the horticultural industry.

The results of the study on economic complementarity showed that the cross-border region could reap benefits of a higher degree of integration on the cross-border labour market, energy innovations, cross-border logistics and joint marketing. But in the process the national embeddedness of actors became visible. When the main results were presented and discussed in the steering committee, some particular problems arose. There was disagreement among the Dutch and German partners regarding the outcomes, and more specifically the use of the outcomes. Whereas the Dutch partners were satisfied because the study seemed to confirm their ideas about developing cross-border cooperation projects, the response of the German partners was less positive as their focus appeared to be on securing acknowledgement of the role of their own state’s position in the horticultural sector. This was discussed by the partners at the project’s outset, but only briefly and without discussing the consequences for the study. Cross-border cooperation required vertical integration of innovation policy in Germany, which can be illustrated by the drafting of additional position papers to enable municipal representatives on the German side of the border to lobby at state level. Subsequently, the German partners utilized the study findings on economic complementarity to produce their own lobbying paper. Without national attention, cross-border cooperation would be unsuccessful in the eyes of the German partners.

Successful projects do not guarantee cross-border integration

Actors from both sides of the border have shown a positive attitude towards cross-border cooperation. Both German and Dutch partners welcomed new cross-border projects. From the perspective of horizontal integration the study can be interpreted as a successful cross-border project (Terlouw, 2008). Yet, rather than fostering the integration of systems on both sides of the border, the study on economic complementarity transformed into a barrier to integration causing distrust and suspicion among the partners. During meetings, project partners indicated that there was irritation regarding the way the process was organized and interpreted by the actors on the other side of the border. Interview results suggest that Dutch government officials improvise more during cooperation processes, whereas German government officials only start a new phase of cooperation after the previous phase is concluded and formal approval granted. This proved to be a hindrance in the cooperation process. Such problems are hard to prevent because it requires experience and sensitivity to detect and overcome cultural differences. Unlike regulative aspects, which can be changed by government officials, informal institutional hindrances are harder to overcome and take more time.

As the Dutch partners engaged in the process from a horizontal integration stance, there was less attention and empathy for the vertical integration motives on the other side of the border. The remote position, in terms of policy attention and funding from the state level for horticulture, of the Lower Rhine in the domestic system can be seen as a hindrance that can be related to the embeddedness of Lower Rhine actors in their MLIA.
Conclusions

We used the concept of MLIA to understand the development of CBRISs and the behaviour of actors in innovation systems such as firms, knowledge institutions and governments. Two debates are of particular interest.

Firstly, theory development on CBRISs is mainly oriented towards the integration of regional innovation systems that belong to two or more nation-states. A systems perspective can lose sight of the actors within. Our micro-level approach, which analyses institutions and their influence on cross-border cooperation of individuals, provides a more nuanced view of the underlying aspects of macro-level CBRIS dynamics. The embeddedness of actors in their respective institutional architectures can help to explain how cooperation problems occur, and how this impedes integration of CBRISs, as occurred in the Venlo-Lower Rhine case.

Secondly, it is important to acknowledge the difference between horizontal and vertical dynamics in CBRISs. This means that horizontal collaboration, in this case the development of a study, can be regarded as successful. This, however, does not mean that this horizontal collaboration leads to a higher degree of institutional integration at all levels of the system on both sides of the border, i.e. the vertical dynamics. Open and direct communication between partners regarding the real incentives for cooperation can increase the odds for a successful collaboration in the long run.

The MLIA concept raises some new unanswered questions concerning CBRISs. Firstly, MLIAs differ in respective regional innovation systems. A comparative case study could shed light upon the positive and negative influences of MLIAs in different cross-border regions. Secondly, we have analysed the influence of existing institutions, but cooperation can also be hampered by absent or weakly developed institutions in CBRIS. This remains underdeveloped in CBRIS literature. More empirical and comparative research concerning CBRISs and institutional embeddedness of actors could support the development of more effective cross-border innovation strategies.

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