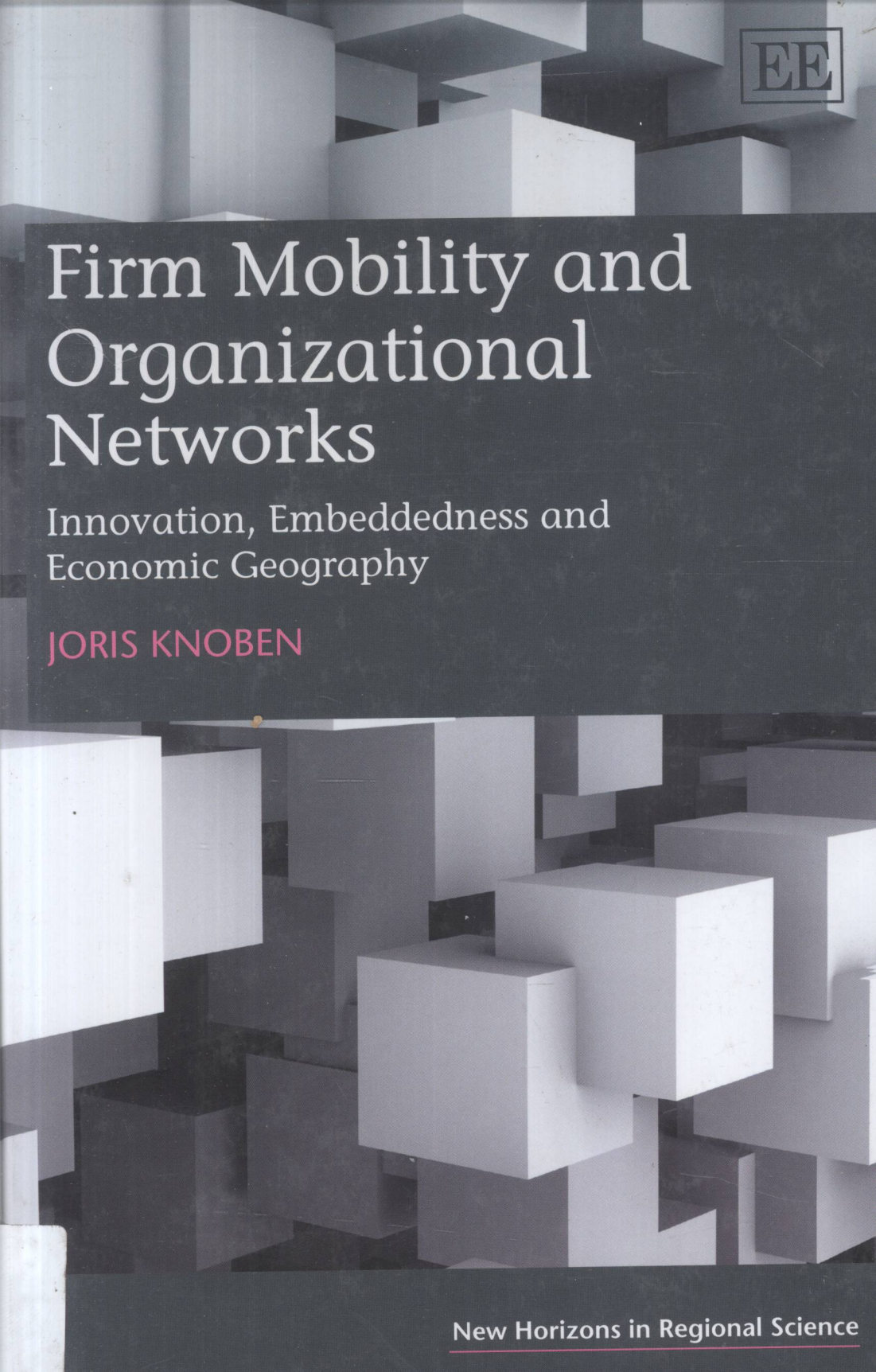
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Firm Mobility and Organizational Networks
Innovation, Embeddedness and Economic Geography
JORIS KNOBEN
New Horizons in Regional Science

# Firm Mobility and Organizational Networks

## Innovation, Embeddedness and Economic Geography

Joris Knoben

*Tilburg University*
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NEW HORIZONS IN REGIONAL SCIENCE


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# Firm Mobility and Organizational Networks

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Innovation, Embeddedness and Economic Geography
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# Preface and Acknowledgements

The starting point of this book is the seemingly contradictory observations that large numbers of firms relocate every year, whereas simultaneously the relations between organizations are becoming more and more important for their performance. Because such relations are often argued to require stability and/or geographical proximity, it seems difficult to reconcile the two phenomena. For example, relocation might threaten the required stability and geographical proximity in inter-organizational relations, which would hamper the functioning of these relationships and, ultimately, the performance of the relocating firm. Therefore, a tradeoff between stability and (geographical) dynamics seems likely to occur. In this book the interplay between the phenomena described in the above is explored.

In order to do so, insights are drawn from economic geography as well as organization science. When reading relevant research from both fields of science, it becomes clear that there are many potential crossovers that have not been made or have not been fully explored yet. In order to realize some of these crossovers and further explore existing ones, a firm-level perspective on the causes and consequences of firm relocation that takes into account firm-level, geographical, and inter-organizational characteristics is developed and tested in this book. By doing so it is shown that, in order to explain the (spatial) behavior of firms as well as the outcomes of this behavior, it is necessary to take both their embeddedness and their spatial mobility into account. For example, being embedded allows firms to perform better, yet restricts their spatial mobility. However, being spatially mobile disrupts a firm's embeddedness in the short run, yet is beneficial in the longer run. The findings indicate that a tradeoff between (spatial) mobility and (inter-organizational) stability indeed exists.

There are several acknowledgements I want to make and numerous people that I would like to thank. First, this book is largely a rewrite of a collection of articles that I wrote for my PhD-thesis at Tilburg University, the Netherlands. Therefore, I would like to acknowledge the following publications as the basis of several of the chapters of this book.

Chapter 3 is an updated version of Knoben, J., Oerlemans, L.A.G., and Rutten, R.P.J.H. (2006), 'Radical Changes in Inter-organizational Network Structure: The Longitudinal Gap?' *Technological Forecasting and Social Change,* **73** (4), 390–404 (Copyright Elsevier, 2007).

Chapter 4 is an updated version of Knoben, J. and Oerlemans, L.A.G. (2006), 'Proximity and Inter-organizational Collaboration: A Literature Review', *International Journal of Management Reviews,* **8** (2), 71–89 (Copyright Blackwell Publishing, 2007).

Chapter 6 is an adapted version of Knoben, J. and Oerlemans, L.A.G. (2008), 'Ties That Spatially Bind? A Relational Account of the Causes of Spatial Firm Mobility', *Regional Studies,* **42** (3), 385–400 (Copyright Taylor and Francis, 2007).

Chapter 7 is an earlier version of Knoben, J., Oerlemans, L.A.G., and Rutten, R.P.J.H. (2008), 'The Effects of Spatial Mobility on the Performance of Firms', *Economic Geography*, **84** (2), 157–183 (Copyright Clark University).

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Moreover, I would like to thank the publishers, especially Ben Booth, Jo Betteridge, and Emma Dermott for their kind support and the smooth collaboration. My biggest thanks, however, go to Carin, Leon, Nelly, and Wout for enabling me (in very different ways) to do what I like to do on the one hand, but constraining the time I spend doing so on the other hand.

Joris Knoben
Tilburg, the Netherlands
April 2008

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# 1. Introduction

## SETTING THE STAGE

After the relocation of his/her firm, a manager stated the following about an important innovative partner:[1]

> The frequency of face-to-face interactions with X changed. The tie became weaker after the relocation. When you have to explain something by telephone it could take half an hour, while with face-to-face contact it just takes five minutes. When it is a difficult topic it is better to meet. For innovation, face-to-face contact is very important. Since the relocation there are more misunderstandings. The collaboration persists because at a certain point you cooperate in so many areas that searching for a new partner for both parties would take more time and energy than driving 100 kilometers. Searching for a new partner is very intensive and expensive.

A manager of a firm that relocated towards one partner but away from another stated that:

> With X, everything is much easier now because you are there in a minute, but with Y everything has to be done by telephone or e-mail. Till now Y always came to us, but now that takes about 3 or 4 hours. More in general, after the relocation it took 6 or 7 months to make sure that the relocation, the change of the business name, and all resulting changes were in everybody's mind. The relocation had a long aftermath; there was no time or money for innovation anymore.

Another illustration of how a firm's partners can shape its decision to relocate is given by the spokesman of TNO-automotives, a large research institute, in a newspaper: 'They are going to their friends regarding the content of their activities. Sometimes these are other TNO-departments, sometimes these are knowledge-partners such as universities. We strive to intensify the collaboration with the technical university, so it makes sense to be located proximate to the university' (Tudelta, 2005).

That firm relocation is not a rare event is illustrated by the large number of large and well-known organizations that relocate (part of) their company. The specific examples given in the above extracts illustrate, at a very low level of

abstraction, that the relations between a firm and other organizations can affect both the decision of a firm to relocate and the consequences of this relocation for its (innovative) performance, which are the two main issues that will be addressed in this book. In the next sections of this introduction, the issues touched upon in the above will be taken to a more abstract level, resulting in an overarching research question. Subsequently, the contributions of researching the causes and consequences of firm relocation from a relational (i.e. embeddedness) perspective will be discussed, followed by a short description of the adopted research approach and data collection procedure. Finally, the structure of this book is clarified by discussing which topics are addressed in which chapter.

## RESEARCH PROBLEM

This book has been inspired by two, seemingly contradictory, (empirical) observations that both become apparent in the examples presented in the above. First, inter-organizational relations (IORs) and networks are in vogue. Interest in these types of collaboration has been steadily increasing across a wide variety of fields (e.g. economics, organization science, and regional science) for several years (Borgatti and Foster, 2003). Of particular interest for this study is the increasing tendency of firms to engage in IORs (Gulati, 1995; Gulati and Gargiulo, 1999) as well as the increasing importance of these IORs for the performance and innovativeness of firms (Hagedoorn and Schakenraad, 1994; Stuart, 2000).

The tendency of firms to engage in IORs, as well as their increased importance for a firm's performance and innovativeness, is often related to the forces of globalization and technological change, which have forced firms to specialize (i.e. focus on core activities) (Pettigrew and Massini, 2003). As a result of the same forces, important parts of the economy have shifted from processing materials to processing information and knowledge. In such a knowledge economy, creating and utilizing new knowledge (i.e. innovating) to gain economic rents is described as the only way to sustain superior performance (Child, 2005: 28). As a result, competitive performance has become an innovation contest, for which combinations of tangible (materials) and intangible (knowledge) resources are crucial. The need to create and utilize new knowledge, combined with high levels of specialization of firms, has resulted in firms not being able to generate all knowledge and resources necessary for innovation internally (Piore and Sabel, 1984; Storper and Harrison, 1991). In order to ensure access to diverse sources of new

knowledge, many firms have engaged in IORs (Hagedoorn and Duysters, 2002).

For successful innovation, access to tacit knowledge is of special importance (Howells, 2002), as this type of knowledge is characterized by high levels of newness. As the transfer of tacit knowledge is often argued to be facilitated by geographical proximity, the proliferation of IORs is often linked to the increasing importance of a firm's geographical position and geographical environment. This notion is based on the idea that the exchange of tacit knowledge requires face-to-face interactions, which are facilitated by short distances between firms (Gertler, 1995, 2003). Therefore, collaborative learning and knowledge exchange take place more easily between co-located firms, stimulating their innovativeness.

It should be noted, however, that the need for geographical proximity for successful (tacit) knowledge exchange in IORs is not undisputed in the literature. In 1995, for example, Cairncross proclaimed the 'death of distance' in *The Economist* (1995). The 'death of distance' argument basically states that new communication technologies (e.g. e-mail) nullify the need for geographical proximity in order to communicate (Audretsch, 2003). Furthermore, several authors argue that so-called 'communities of practice' could negate the need for geographical proximity for successful knowledge transfer as members of the same community of practice share the same system of representation (Brown and Duguid, 1991; Cohendet et al., 2001) and therefore are able to exchange knowledge without face-to-face interactions. Notwithstanding these arguments, the empirical evidence indicates that geographical distances still play an important role in the exchange of (tacit) knowledge (Audretsch, 2003), primarily because the interpretation of (even codified) knowledge requires additional tacit knowledge which is most easily transferred through face-to-face interactions (Howells, 2002).

In short, the first observation is that both the IORs and networks in which a firm participates, as well as its geographical position, are becoming more important for its access to resources in general and tacit knowledge in particular and, therefore, for its subsequent performance and innovativeness.

Second, firms are becoming more and more spatially mobile. The number of firm relocations[2] has grown steadily and considerably over the last few decades. Nowadays, approximately 8% of all firms (in the Netherlands) relocate in any given year (Pellenbarg, 2005). Firm relocation is commonly defined as:

> A move which involves both the closure of previously occupied premises and the opening of a new establishment. Although, of course, all or part of the activities of

> an existing plant may be relocated to the new plant to make space for the expansion of new or existing products in the existing building. (Townroe, 1976: 3)

These high levels of spatial firm mobility are, scientifically speaking, a relatively young phenomenon. The frequency and the social relevance of firm relocations have become important only during the last couple of decades. As late as 1962, Luttrell stated that:

> For most firms, the question of looking for new locations . . . seldom arises. As long as there is no great change in the internal or external circumstances of the firm, it is rare for the question to be posed of whether or not it would have been better located elsewhere, and rarer still for it to move for this reason alone. (Luttrell, 1962: 39)

As a result, firm relocation has been studied relatively little until well into the 20th century (Pen, 2002). However, the amount of research dealing with firm relocation that has been performed over the last decades is very extensive. To name but a few, Aydalot (1983), Bade (1983), Ortana and Santagata (1983), Kemper and Pellenbarg (1991, 1993, 1997), Kemper and Peltzman (1995), Mariotti and Pen (2002), van Dijk and Pellenbarg (2000a), and Pellenbarg and van Steen (2003).[3] Some authors even state that contemporary firms need to make location decisions 'continuously' (Schreuder, 1997). Even though such statements might be a little bit over the top, they do indicate the increase in the relevance of firm relocations.

The rise in the number of firm relocations is often seen as a natural consequence of economic developments. The spatial conditions for firms to operate in many regions, and especially in large cities, have become more and more oppressive, especially in a small and densely populated country such as the Netherlands (Mariotti, 2005). Firms find it increasingly difficult to secure sites for their growth and development and witness growing hindrances in the flow of goods and personnel along the highways and other transportation channels. Relocation to a different, less congested area seems a plausible strategy in this respect (Pen and Pellenbarg, 1999: 153).

The fact that both phenomena described in the above are in vogue during the same time frame raises an interesting tension. The tension lies in the fact that whereas successful knowledge transfer is assumed to require stable, trust-based relations that require time to develop (Ebers and Grandori, 1997) and is also argued to be dependent on small geographical distances (i.e. geographical proximity) (Saviotti, 1998), firms also relocate in large and growing numbers. It seems difficult to reconcile the notion of large numbers of relocating firms with that of firms in effective, stable, (localized) IORs and

networks. For example, relocation might threaten the required stability and geographical proximity in IORs, which hampers the functioning of these relationships and, ultimately, the performance of the relocating firm. Therefore, a tradeoff between stability and (geographical) dynamics seems likely to occur.

In this respect, interesting research has already been conducted at the level of the individual. Pribesh and Downey (1999), for example, have shown that children that relocate experience a decrease in their school performance. The more friends the child had, the more clubs (e.g. sports) it participated in, and the more social contacts it had at its old location (i.e. the individual equivalents of IORs), the more negative the effect of relocation on its school performance.

If the effects found at the individual level also hold for firms, relocation seems, from a spatial point of view, to be one of the most radical strategic decisions a firm can make, especially because managers categorize a relocation as an event that disrupts the operations of their firm (Isabella, 1990: 11), which they find difficult to manage because they have little or no experience of such an event (Carter, 1999: 24). In essence, the studies presented in this book set out to analyze how inter-organizational collaborations and the spatial behavior of firms influence each other, and how the two, seemingly contradictory, developments described in the above can be reconciled.

## RESEARCH QUESTION

The inter-organizational relations of a firm provide valuable inputs (in the broadest sense of the word) for the firm. However, they are also bound to a certain geographical position. In this context, the empirical observations described in the above raise questions about why firms move, what kind of firms move, what the consequences of these moves are, and what the role of IORs, networks, and geographical space are in this context. Hence, the following overarching research question has been formulated:

*What are the causes and consequences of spatial firm mobility and what is the role of a firm's geographical position and inter-organizational relations and network in this context?*

In a nutshell, this book focuses on the role of IORs, networks, and a firm's geographical position in both the decision of firms to relocate and the subsequent consequences of relocation for firm performance.

Because the phenomenon of firm relocation has a clear spatial and organizational dimension, insights and theories from both economic geography (spatial economics) and organization science are combined to construct and test multidisciplinary firm-level models in order to answer this research question.

## RESEARCH CONTRIBUTIONS

Besides the specific contributions of each individual chapter, researching the general topic described in the above adds to the existing scientific literature in several distinct ways. First, the existing industrial (re)location theory can be extended by adding insights from studies in the field of inter-organizational networks. So far, the role of the inter-organizational network perspective in (re)location theory has been very small, with Romo and Schwartz (1995) and Stam (2003; 2007) as noteworthy exceptions. Studies in the fields of spatial economics and economic geography focus primarily on the organizational and locational (site) characteristics that influence firm relocation (van Dijk and Pellenbarg, 2000a), neglecting relational characteristics of the firm, and thereby also neglecting the fact that organizations can be organizationally and territorially embedded (see Chapter 2). Embeddedness performs various functions (e.g. resource acquisition, stability, legitimatization) (Oliver, 1990), which are likely to come under pressure when an organization relocates. By combining insights from the inter-organizational network perspective and regional science, a more comprehensive theoretical framework can be developed aiming at the empirical exploration of the causes and consequences of firm relocation.

Second, the problem of change is understudied in the network literature. Although there are some notable exceptions (see Chapter 3 for an overview), most studies approach networks as static entities (Brass et al., 2004). Firm relocation is a form of (discontinuous) change, which is likely to impact on the functioning and stability of networks in general, and the performance of embedded firms in particular. By studying the effects of firm relocation on the performance of firms embedded in IORs and networks, a contribution to filling a gap in the existing (empirical) inter-organizational literature will be made.

Third, studying the theoretical gap between (re)location theory and inter-organizational network theory might add to some other shortcomings of inter-organizational network studies as distinguished by reviews of Oliver and Ebers (1998) and Brass et al. (2004). They conclude that research has centered on the driving forces behind networking, rather than on the possible

outcomes and consequences of networks. In this study, the effects of IORs and networks on both the spatial behavior of firms and their subsequent performance has central stage.

Furthermore, Oliver and Ebers (1998) and Brass et al. (2004) argue there is a need for more research that spells out regional and industry dimensions that could make a difference for networking and its outcomes. Or, as Sydow states: 'despite the general insight that all (inter-)organizational action occurs in time and place, both dimensions, and the spatial dimension in particular, have not received the conceptual attention that they deserve' (Sydow, 2002: 6). Interestingly, a similar call for more research can be found in the field of economic geography. Even though in this field of literature, the role of geographical space has been studied extensively, many findings suffer from poor micro-foundations due to a focus on the regional level as the main level of analysis (Appold, 1995). In this context, Sohn stated that: 'firm-based econometric models seem to be a possible solution for such a problem provided the appropriate data can be collected' (2004: 51). By building multidisciplinary models that include insights from both economic geography and organization studies (see Chapters 2, 6, and 7), a call for research that can be found in both fields of literature is (partly) satisfied.

Finally, Oliver and Ebers (1998) and Brass et al. (2004) argue that more research with regard to the constraining effects of networks is necessary. Even though the theoretical literature on IORs and networks emphasizes that they both enable and constrain the behavior of actors (Maurer and Ebers, 2006; Uzzi, 1996), the vast majority of the empirical literature focuses on the enabling effects of IORs and networks. In this study, explicit attention will be paid to possible negative effects of IORs and networks in terms of limitations on the spatial mobility of firms and possible negative performance effects when relocating.

## RESEARCH APPROACH AND DATA COLLECTION

Firm relocation, as well as the causes and consequences thereof, can be studied at different levels of analysis At the macro level, aggregated data can be used to analyze (the developments of) firm relocation in terms of flows of firms between regions and/or countries (e.g. the firm demography approach (van Dijk and Pellenbarg, 2000b; van Wissen, 2002)). At the meso level, factors that explain why certain economic activities (often measured at the sectoral level) relocate from one region to the other can be studied (e.g. the literature on the decline of specific industrial districts (Alberti, 2006; Biggiero, 2006)). Finally, at the micro level, the causes and consequences of

the relocation of individual firms can be studied on the basis of questionnaires or interviews with managers (e.g. Pen, 2002; Stam, 2007). Even though the first two approaches provide valuable insights, which will be utilized when relevant and possible, the research presented in this book focuses on the level of the establishment, and thereby takes a micro-level perspective. A large scale questionnaire was adopted as the data collection procedure.

One of the biggest challenges of studying (the causes and consequences of) firm relocation in general, and at the micro level in particular, is the availability of reliable data (Mariotti, 2005). In this case, a reliable database of relocated and non-relocated firms was required in order to sample firms to which a survey could be sent. The 'Trade Register' of the Dutch Chambers of Commerce (CoC) was utilized to obtain a database of all firms in a single branch of industry. In order to check whether this database contained sufficient numbers of relocated firms, the CoC performed a calculation of the annual percentage of firms in this database that relocated during the past five years.[4] Subsequently, a questionnaire was sent to firms in this branch of industry by mail. Unfortunately, due to the limitations of the database of the CoC, no reliable names of contact persons were available. Therefore, the questionnaires were sent to the managing directors of all firms. The questionnaire contained questions regarding firm characteristics (e.g. age, size, sales), characteristics of the building and location of the firm (e.g. accessibility), the IORs of the firm and their characteristics, the spatial behavior of the firm (past behavior and expectations for the future), and the innovative activities of the firm.

A more elaborate description of the data collection procedure can be found in Chapter 5. In the next section, the structure of the book and the role of each individual chapter will be discussed.

## STRUCTURE OF THE BOOK

In order to answer the general research question formulated in this chapter, this question is broken down into several sub-questions. Each sub-question is addressed in a different chapter. Because this book is based on a collection of articles, each chapter has its own individual goals and contributions. As a result, the relevance and implications of each chapter for the overarching research question might become somewhat obscured. To prevent this, the relevance and implications of each chapter for the overarching research question will be a priori addressed in this section as well.