

Daniel Schiller

An Institutional Perspective on Production and Upgrading

The Electronics Industry in Hong Kong
and the Pearl River Delta

Geographie

Megacities and Global Change

Megastädte und globaler Wandel

Franz Steiner Verlag

Band 12



Daniel Schiller
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Production and Upgrading

MEGACITIES AND GLOBAL CHANGE
MEGASTÄDTE UND GLOBALER WANDEL

herausgegeben von

Frauke Kraas, Martin Coy, Peter Herrle und Volker Kreibich

Band 12

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CHAPTER A. INTRODUCTION

1. THE RELEVANCE OF THE INSTITUTIONAL PERSPECTIVE

This thesis deals with a number of emerging topics in economic geography from an institutional perspective, namely the formal-informal nexus of governance, the rise of mega-urban regions in the global economy and the impact of institutions on the spatial organisation of business functions and on upgrading processes in global value chains. Institutional approaches have appeared now and then in economic geography, but have not yet been unified within a consistent framework of an institutional economic geography proper. Institutions became a prominent feature in closely related disciplines such as economics, economic history and sociological organisation studies, which resulted in three related but partly distinctive new institutionalisms (Hall and Taylor 1995). In economics, several Nobel prizes were awarded to scholars who had dealt with the impact of institutions on the behaviour of economic agents. Their common theme is the imperfection of economic action due to transaction costs, asymmetric information, bounded rationality and opportunistic behaviour, which had been insufficiently covered by mainstream neoclassical economics. The Nobel prizewinners are (quotes taken from the official justifications of the Nobel Prize Committee on http://www.nobelprize.org/nobel_prizes/economics/laureates):

- Ronald H. Coase (1991) "for his discovery and clarification of the significance of transaction costs and property rights for the institutional structure and functioning of the economy"
- Douglass C. North (1993) "for having renewed research in economic history by applying economic theory and quantitative methods in order to explain economic and institutional change"
- George A. Akerlof and Joseph E. Stiglitz (2001) "for their analyses of markets with asymmetric information", and most recently
- Oliver E. Williamson and Elinor Ostrom (2009) "for their analysis of economic governance, especially the commons and the boundaries of the firm".

In sociology, institutions became a central level of analysis in the neo-institutionalist approaches of organisation studies by W. Richard Scott (1995), Walter W. Powell and Paul J. DiMaggio (1991). In Germany, Renate Mayntz and Fritz W. Scharpf (1995) introduced the actor-centred institutionalism that focused on the interactions of actors that were structured by the institutional framework.

The different institutional approaches in economics and sociology might be one reason why a unified institutional economic geography was never developed, even though the approaches were reviewed in Ron Martin's (2000) paper on new insti-

tutionalism in economic geography. Another reason for the shallow adoption to date of institutions in economic geography might be the fact that institutional approaches in economics and sociology appeared at a time (during the 1990s) when large sections of the discipline were busy with several "turns" and were experimenting with new concepts. This indeed did not allow for a proper incorporation of the conceptual foundations developed in other subjects. While it is far beyond the aim and scope of this thesis to provide such a unified concept of institutional economic geography, there are good reasons to develop further the institutional roots in economic geography in the future.

Scott (1988) introduced institutional aspects to industrial geography when he analysed the role of industrial districts for the reduction of transaction costs. Storper and Salais (1992) focused particularly on informal institutions that are neglected in some institutional economics approaches. In Germany, Schamp (2000, 2003) discussed the potential of an institutional perspective for economic geography. He regards institutions as a foundational concept of the discipline and expects that their application will result in a convergence of conceptual approaches, particularly those of *Raumwirtschaftslehre* (Schätzl 2003) and relational economic geography (Bathelt, Glückler 2003). Schamp (2003) also identified a need for further empirical studies from an institutional perspective that might help to clarify and differentiate some of the still inconsistent conceptualisations. Recently, Rafiqui (2009, p. 329) reminded us once again that "institutionalism ought not to be left behind in favour of an evolutionary economic geography despite the attention the 'evolutionary turn' has recently received".

Institutions are a concept with manifold spatial aspects. Formal institutions in particular are often created by the state in a top-down manner and are limited to the administrative space for which the state body is responsible. Other institutions are created by collective actors, such as firms, either top-down in hierarchies or bottom-up in network-like arrangements which are related to the functional space of economic interactions. Many informal institutions, for example norms and conventions, are rooted in culture and are thus bound to the cultural space. Finally, institutions created by the self-organisation of individual actors in a bottom-up manner are limited by the spatial embeddedness of individual actions. Institutions are also affected by the increasingly global organisation of economic activities and they are transferred between spatial contexts via global production networks. Therefore, there are good reasons to expect that a large part of the institutional framework is localised and that its impact on economic interactions results in spatially differentiated institutional arrangements among economic actors.

While institutional approaches provide the overall perspective of this thesis, its more specific topics are informality, mega-urban and cross-border regions, and the issues of spatial organisation and upgrading in global value chains. These are important emerging issues which are suitable for an institutional approach for the following reasons. Firstly, informal aspects were neglected in earlier institutional approaches in economics that were based on rational choice and methodological individualism. However, their importance has been acknowledged by the economic history perspective of North (1990). The consideration of informality

within an institutional framework also allows the broader debate about informality in geographical development studies and development economics to be revived. Secondly, mega-urban and cross-border regions are particularly differentiated in terms of their institutional framework. While the close functional integration results in a set of joint institutions, size and affiliation with different administrative regions results in local institutional specificities. Furthermore, mega-urban regions are often governed by a combination of formal and top-down institutions on the one hand, and informal and bottom-up ones on the other, since traditional governance by the state frequently fails due to the complexity of the task. Thirdly, the spatial organisation of firms in global value chains depends on the institutional framework which provides incentives and limitations for specific institutional arrangements. Examples include the decisions of firms about the outsourcing or insourcing of business functions, or about the use of personal relations in economic transactions. Different logics of value chain governance transfer institutional settings across the physical space. The tension that occurs at the interface of territorially and sectorally enforced institutions provides particularly interesting research topics. Fourthly, the institutional framework also provides the incentives and limitations for upgrading and innovation processes in a dynamic perspective. The degree of uncertainty that results from fragmentary institutions or unpredictable institutional ruptures is expected to have an impact on the willingness of firms to invest in high-road strategies based on the long-term upgrading of technological and organisational capabilities.

The empirical study of this thesis focuses on the Greater Pearl River Delta (GPRD) region which comprises the special administrative regions (SAR) Hong Kong and Macau, along with nine cities of the Guangdong province on the Chinese mainland. The nine mainland cities are also referred to as the Pearl River Delta (PRD). The area is a mega-urban region and still a cross-border region in institutional terms despite the return of Hong Kong to China as a special administrative region. In short, Hong Kong is one of the freest economies with a well-established set of institutions of a market economy, while China experienced an institutional caesura with the beginning of the reform and opening policy in 1978 that has resulted in rapid institutional change, institutional uncertainty and a hybridisation of the institutional context – the so-called Chinese characteristics of a socialist market economy.

The thesis analyses the sectoral case study of the electronics industry, which is by far the most important manufacturing sector in the GPRD. The GPRD is also the most important production cluster of the industry on the global scale. The sectoral institutional setting of the electronics industry was heavily affected by another institutional caesura brought about by the second industrial divide. The industry is characterised by flexible production, such as mass customisation due to very short product life cycles and differentiated global value chains due to the complexity of the products. The typical value chain of the electronics industry is governed in a modular way, which means that a leading firm which has direct contact to final customers provides a limited number of contract manufacturers with specifications for production (Sturgeon 2002). These contract manufacturers

organise the production chain which results in complex webs of suppliers and assemblers for parts and components and a high number of interfaces. These interfaces are the central level for an institutional analysis. It is investigated, for example, as to why certain institutional arrangements are chosen and how they affect the efficiency of the value chain. The electronics industry is also a very diverse industry which comprises high-tech and low-tech niches as well as final products and parts and components, as exemplified in Table A.1. Products at different technological levels and different positions in the product life cycle will result in distinctive upgrading potentials and strategies that are aimed at the high road of innovation and capability building, but also in low-road strategies that are based on cost efficiency.

Table A.1: The diversity of the electronics industry

	high-tech	low-tech
final products	consumer electronics and ICT appliances, e.g. TV sets, desktop computers, notebooks, tablet PCs, mobile phones	household appliances, e.g. rice cookers, broilers, microwaves, refrigerators, air conditioners
parts and components	high-end ICs, organic LEDs, complex PCBs, modern Li-ion batteries	simple ICs and PCBs, standard batteries and lighting devices

Source: own draft

2. AIM, SCOPE AND CONTRIBUTION

The aim of this thesis is to describe the spatial organisation and the governance of production and upgrading in the electronics industry of Hong Kong and the Pearl River Delta and to explain the results by means of institutional analysis with a particular focus on informality. This general aim is broken down into more specific research questions that are dealt with in separate chapters.

Chapter B expands the conceptualisation of “informality” by using recent approaches of institutional economics and governance theory. The concept is adapted for the application in mega-urban regions in emerging economies under the influence of global change. The main research questions are:

- How does a new understanding of informality differ from an earlier informality paradigm and in what way is this new concept useful for economic geography?
- What impact of informality and flexibility is expected from a conceptual perspective on sustained competitive advantages, and how does agility differ from traditional price and differentiation strategies?

- What is the interdependence of agility and long-term upgrading efforts at the firm and regional level and how does agility influence regional resilience?

Chapter C introduces the quantitative data from two firm surveys in Hong Kong and the Pearl River Delta as well as the qualitative evidence from personal interviews with large electronics firms and experts. It is explained how the importance of personal networks and other facets of informality are measured, and the strengths and potential weaknesses of the datasets and indicators are discussed.

Chapter D describes and explains the recent spatial and organisational transition that has been a result of the high growth of the region during the past 30 years. Changes within the electronics industry, increased capabilities of local firms and institutional change are identified as major explanatory factors. The main research questions are:

- Which positions in the global value chain of the electronics industry are held by firms from HK and the PRD?
- How is the electronics industry organised spatially within the GPRD and how did these patterns evolve over time?
- What kind of governance modes do electronics firms from HK apply to their cross-border production activities in the PRD?
- How did the role of personal relationships for doing business in the PRD evolve during the institutional transition within the region?

Chapter E aims to compare the importance of doing business via personal relations in Hong Kong and the Pearl River Delta, to identify determinants for the observed personalisation patterns, and to assess whether personal relations are used as an institutional necessity or a strategic opportunity. It contributes to the debate on whether the personalisation of business relations in China is simply a context-specific way of doing business in China or whether it constitutes an efficient adaptation to a certain institutional and competitive environment. The three main research questions that are to be answered empirically in this paper are:

- Are personal relations more important for doing business in Hong Kong or in the Pearl River Delta?
- Are personal relations used as an institutional necessity or as a strategic opportunity?
- Which determinants explain the personalisation patterns observed in Hong Kong and the Pearl River Delta?

Chapter F refers to the literature on technological change and regional development in latecomer countries that has argued that foreign and domestic firms differ markedly with regard to their innovation and upgrading efforts. Foreign firms tend to possess greater initial technological capabilities and better access to advanced technologies, but often retain advanced production and innovation activities at their home bases. Some domestic firms, on the other hand, enter the market with

fewer resources and lower technological capabilities, but make great efforts to learn. It thus remains a matter of debate as to whether foreign or domestic firms are contributing to the formation and upgrading of regional innovation systems in latecomer countries. The main research questions of this paper are:

- Are innovation activities of non-domestic electronics firms in the PRD more intensive than those of domestic firms?
- Do domestic firms in the PRD cooperate more often with other partners when carrying out innovation activities than non-domestic firms due to limited in-house capabilities and cultural proximity to other domestic players in the innovation system?
- Are domestic firms consciously implementing long-term strategies for innovation and upgrading in order to overcome their weak initial resource endowments and to catch up with foreign incumbents?
- How do regional innovation systems within the PRD differ in terms of innovation and cooperation behaviour, namely in the major industrial cities of Guangzhou and Dongguan?

Chapter G aims to measure the impact of governance and strategy on the intensity of corporate innovation activities and firm performance. It is argued that qualitative aspects of managerial and organisational capabilities internal to the firm are an important complement to the external environment of nascent innovation systems and other structural characteristics of firms that have been predominantly analysed in the existing literature to date on technological upgrading in emerging economies. Therefore, inputs from the management literature with regard to organisational capabilities and strategies are incorporated due to substantial conceptual and initial empirical evidence for their relevance for innovation activities and learning. Empirically, this chapter is based on a comprehensive set of detailed research questions:

- Do domestic and foreign firms differ in terms of formalisation and sophistication of corporate governance and strategic orientation?
- What is the impact of corporate governance and strategic orientation on the intensity of innovation activities?
- Is the impact of corporate governance and strategic orientation greater for firms with a more complex knowledge base, i.e. foreign firms, than for firms with a simpler knowledge base, i.e. domestic firms?
- How does relational governance via family networks influence innovation activities? Is arm's length governance via impersonal contacts more beneficial for innovation?
- What is the impact of informal governance of external relations such as open-ended contracts or cooperative networks on innovation activities?

Chapter H assesses upgrading strategies of firms from emerging economies based on the perspectives of global value chains and regional innovation systems. The

empirical section mainly refers to three qualitative case studies of large electronics firms from Hong Kong. The major empirical question that this chapter attempts to answer is how the limited tradition in technological innovation and the weaknesses of the regional innovation system in Hong Kong affect the success of different types of upgrading strategies.

- Are strategies focused on organisational upgrading more successful than those focused on technological upgrading due to a lack of technological orientation of Hong Kong’s innovation system?
- What is the impact of the orientation of firms in Hong Kong towards global markets and their inclusion in global value chains on upgrading activities?
- In what way are firms in Hong Kong capitalising on their unique network advantages? Do they benefit from institutional advantages that stem from the role of HK firms as institutional intermediaries between global and local markets?

–

Chapter 1 concludes with a summary of the major findings from the preceding chapters, a discussion of the findings in the light of the conceptual overview in chapter B, and implications for policy and further research.

The structuring of this thesis differs from the traditional form of a book in that the research questions are broken down into self-contained chapters. The following chapter, chapter B, provides a general conceptual and programmatic overview of the informal dynamics of economic processes, while chapter C contains the discussion of data and methods in a consolidated form. Each of the chapters D to H consists of a topic-specific literature review, related empirical results and a discussion of them. The major advantage of this structure is the close interconnection of specific concepts, hypotheses and empirical results in the individual chapters, which is often less apprehensible for the reader of traditional books that deal with complex concepts and a large number of empirical results. The risk of redundancy in conceptual and empirical terms, which is often associated with compilations of self-contained chapters, is avoided as much as possible by the separation of general conceptual (chapter B) and methodological issues (chapter C) from the empirically oriented chapters, and through a careful definition of specific objectives for each chapter. The inclusion of a conceptual chapter also helps to increase the conceptual coherence and lays out the conceptual contribution of the thesis more explicitly.

3. POSITIONING THE THESIS WITHIN A LARGER RESEARCH PROJECT

This thesis has benefited from a close integration in an inspiring research environment. The research was carried out within the Priority Programme (SPP) 1233 “Megacities-Megachallenge – Informal Dynamics of Global Change” funded by the German Research Foundation (DFG), more specifically within the sub-project

that focused on “agile firms”. The SPP has been funded by the DFG since 2006 and is now in its third phase. It is the aim of the SPP to develop theoretical approaches and models which are suitable for a general explanation of informal processes and structures in megacities. This thesis contributes to the overall aims of the SPP by (re)conceptualising “informality” and providing a better understanding of informal institutions and processes. The focus on the organisation of firms and value chains in the electronics industry is primarily linked to the research area on “the dominance and differentiation of urban economies” of the SPP, and combines it with the research area on “the loss of planning control and governability and the influence of new forms of governance” by looking at institutional arrangements that are used to govern economic activities.

The consortium of the “agile firms” sub-project consists of economic geographers from the Leibniz University Hanover and the Justus-Liebig-University Gießen, urban geographers from the University of Cologne and economists from the Kiel Institute for the World Economy. Funding was received during all three phases for new proposals with distinct research topics that evolved around three major topics:

1st phase (2006-2008) – Informal Dynamics of Agile Firm Organisation in the Greater Pearl River Delta: The initial project was used to develop an analytical framework of informal firm organisation, to take stock of how firms in the electronics industry of the GPRD organise their economic transaction, to find out what role informality plays for different business functions (customer-supplier relations, financing, production, innovation, human resources, etc.), to clarify how agility is integrated within business strategies, and to explain how agile firm organisation affects employees (social dynamics of agile firm organisation). Previous studies in the region had examined the division of labour within the region (front shop, back factory), but did not provide in-depth information on how this spatial division of labour is organised and what role the institutional environment played for the selection of particular institutional arrangements. The interests of the Hanover team were the conceptualisation and operationalisation of the informality concept and the stock taking of institutional drivers for the governance of different business functions.

2nd phase (2008-2011) – Regional agility and upgrading in the Greater Pearl River Delta: Based on the understanding gained in the first phase of how economic activities in the electronics industry are organised in the region at the micro-level of firms, the second phase focused on the meso-level, regional agility, in a more comprehensive sense with a particular focus on its interdependence with upgrading processes. The central research questions of the second phase were: which processes contribute to the perceived “upgrading” in the PRD? What is the role of policy as one main driver behind upgrading? How does change in the general institutional surrounding support upgrading? How do these upgrading processes affect regional economic restructuring? How do regional economic structures vary within the GPRD? The interests of the Hanover team were the upgrading strategies of electronics firms in global value chains, their learning efforts and

strategies, and the evolution of different regional innovation systems within the PRD.

3rd phase (2011-2013) – Regional agility in the wake of crisis: Towards a new growth model in the Greater Pearl River Delta: In the third phase, the team is investigating the long-term structural effects of the crisis on the drivers of growth in the PRD which have been derived and consolidated from the results of the first and the second phases. Obviously, agility on the firm and regional level is a permanent characteristic of the PRD, irrespective of mid-term upgrading processes. However, these characteristics of the PRD may be challenged by the recent experience of the world economic crisis that has disrupted the continuous growth of exports to the industrialised countries. The interests of the Hanover team in this final phase are the response of companies in the PRD to the crisis, the implications of the response for the growth model of the PRD, and the spatial differences of responses that might result in the emergence of two or more distinct growth models within the PRD.

This thesis uses data from the surveys of the first phase and explicitly covers topics of the first two phases. The central issues discussed in the individual chapters were introduced in the previous section. This thesis contains only single-authored materials and thus shows only a part of the output that has been produced by the author and the “agile firm” consortium. The reader is invited to consult the following theses and papers for the remaining issues:

PhD Theses

- Susanne Meyer (2011), Hanover, discussed the spatial organisation and integration of electronics firms from the GPRD into global value chains, the governance modes applied for customer and producer relations, and the role of informality for achieving a high level of flexibility.
- Wenying Fu (2011), Hanover, focused her PhD thesis on the channels of external knowledge spillovers, the role of informality in reducing transaction costs during learning processes, and the spatial differences in innovation patterns among different regional innovation systems in the PRD.
- Stefan Ohm (2011), Giessen, covered the role of the Chinese state for upgrading processes in the PRD.
- Pamela Hartmann, Cologne, is about to finish a PhD thesis about the impact of informality and flexibility on blue-collar workers.
- Wan-Hsin Liu, Kiel, is working on innovation issues such as sources of knowledge transfer, university-industry linkages and academic entrepreneurship.
- Malte Lech, Hanover, has recently begun his PhD thesis on the evolution of the growth model of the PRD after the economic crisis.
- Marie Pahl, Cologne, and Arman Peighambari, Giessen, also entered the research consortium during the third phase of the SPP.

Publications (selection of co-authored papers)

- Fu, W.; Revilla Diez, J. and **Schiller, D.** (2012): Regional innovation systems within a transitional context: evolutionary comparison of the electronics industry in Shenzhen and Dongguan since the opening of China. *Journal of Economic Surveys*. Accepted for publication.
- Fu, W.; Revilla Diez, J. and **Schiller, D.** (2012): Strategies of using social proximity and organizational proximity in product innovation. Empirical insights from the Pearl River Delta, China. *Zeitschrift für Wirtschaftsgeographie* 56 (1/2). In print.
- Hartmann Kilian, P.; **Schiller, D.**; Kraas, F. (2012): Workplace Quality and Labour Turnover in the Electronics Industry of the Pearl River Delta/China: Contrasting Employer and Employee Perspectives. *Zeitschrift für Wirtschaftsgeographie* 56 (1/2). In print.
- Meyer, S.; **Schiller, D.** And Revilla Diez, J. (2012): The localization of electronics manufacturing in the Greater Pearl River Delta, China: do global implants put down local roots? *Applied Geography* 32(1): 119-129.
- Kroll, H. And **Schiller, D.** (2010): Establishing an interface between public sector applied research and the Chinese enterprise sector: Preparing for 2020. *Technovation* 30(2): 117-129.
- **Schiller, D.** And Kroll, H. (2010): The global economic crisis as leverage for emerging regional growth paths in China? A comparison of tentative evidence from the three major economic regions. Annual Conference of the Chinese Economic Association (Europe/UK) at the University of Oxford. 12-13 July 2010. Oxford University.
- Meyer, S.; **Schiller, D.** And Revilla Diez, J. (2009): The Janus-faced Economy: Hong Kong Firms as Intermediaries between global Customers and local Producers in the Electronics Industry. In: *Tijdschrift voor Economische en Sociale Geografie (TESG)* 100(2): 224-235.

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PART I: CONCEPT AND MEASUREMENT OF INFORMALITY