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Global knowledge sourcing in thick and diversified RIS. Case studies in Oslo, Malmö and Beijing.

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There is an increased need of understanding organizational and institutional underpinnings of firms' global knowledge search. This paper addresses thick and diversified RIS in two different territorial contexts and explores firms' use of physical and virtual space in their search of innovation relevant knowledge. Through interviews with ICT and new media SMEs from Scandinavia (Oslo, Malmö) and Beijing, findings show that low cost and virtual search space is very important for innovation, further, that regional, global and virtual space co-evolve and mutually reinforce each other. Global search strategies differ between the two contexts, emphasising the importance of a regional institutional-organisational framing supporting trust, collaboration and motivation for global search. In order to reap the benefits of the regional -global-virtual dynamics, being thick and diversified is not enough to have global reach and attractiveness.

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1. Introduction

Studies in economic geography and in the innovation literature in general have substantially increased our knowledge of localized learning and the importance of local knowledge exchange in innovation processes (Amin and Thrift, 1994; Asheim and Gertler, 2004), especially through the concept of Regional Innovation Systems (RIS) showing how regional economic, social and institutional factors affect the innovativeness of firms (Cooke, 1992). The territoriality of innovation systems has undergone dramatic transformation in the heightened globalization (Yang, 2016), as knowledge resources are increasingly distributed on a global scale (Bathelt, Malmberg, and Maskell 2004; Fai, Tomlinson, Branston 2014; Fitjar and Huber 2015). Access to external knowledge prevent actors to be trapped in a static and narrow way of understanding the 'external' world (Grabher, 1993; Boschma, 2005). Local organisations and institutions influence the motivation and capacity of firms' global knowledge linkages and networks for innovation. Accessing global knowledge can be costly due to great investment in crossing geographical distance and overcoming liability of foreignness (Johansson and Vahlne, 2009). Increased use of internet and the advances in ICT technology has significantly shortened the distance and reduced the cost of communication, creating a virtual space where global knowledge sourcing becomes easier and cheaper.

An increasing number of firms in the global economy are multi-product, multi-technology exploiting knowledge coming from multi-locations, institutional environments and sectors (Strambach and Klement, 2012). Firms in the ICT and the new media industry represents such as the actors can be seen as having a ‘combinatorial knowledge base’ applying and coordinating different knowledge bases (analytical, synthetic and symbolic)(Asheim et al., 2011; Aslesen and Freel, 2012).

This paper addresses organisationally thick and diversified RIS; characterised ~~by~~^{with} high levels of attractiveness and high capacities to identify and appropriate external knowledge. The research question is;

How does thick and diversified RIS in a developed and an emerging context shape firms’ propensities and patterns of global knowledge sourcing for innovation relevant knowledge?

~~Few studies have~~ ^{There is a gap in the literature with regards a} -systematic^{ally} analysis ~~of~~^{ed} the geographical and virtual patterns of global knowledge sourcing in tick and diversified RIS and how embeddedness in a developed and an emerging context shapes and conditions these patterns. The paper also adresses Martin and Rypestøls’ (2018) call for further research on the geography of innovation networks and combinatorial knowledge dynamics.

2. Conceptual framework

The following section will present the differentiated RIS concepts and how institutions and organisations co-evolve. Further, literature on the importance of being globally connected is linked to the RIS concept followed by firms' potential knowledge sourcing strategies.

2.1 Differentiated Regional Innovation Systems

RIS is defined as a system 'in which firms and other organizations are systematically engaged in interactive learning through an institutional milieu characterized by local embeddedness' (Cooke et al., 1997, p.1581). Isaksen and Trippel (2016) differentiate between 3 types of RIS; organisationally thick and diversified RIS (relatively large number of different industries and its multiple R&D institutions and support organisations), organisationally thick and specialized RIS (specialised industry structure accompanied by a narrow support structure), and thin RIS (less developed forms of both R&D and industry structure). Organizations are means and mechanisms via which institutions are enacted and further reinforced (Zukauskaitė et al, 2017). Institutions are structural preconditions for human interactions, not least for knowledge exchange and interactive learning in innovation process. Institutions refer to regulations and are codified in laws, standards and sanctions and regulate areas such as social welfare, labour, education, taxation and migration and informal rules that are morally governed and culturally recognized and supported (North, 1990; Scott, 2008). Informal rules refer to norms and beliefs that are enacted via traditions, values, attitudes, and behavioral modes embodied in individuals and organizations (Scott, 2008; Zukauskaitė, 2013) these are often place specific (Storper, 1997; Gertler, 2010). Informal institutions that are influential in regional development include acceptance of failure, supportive attitudes towards entrepreneurship and innovation, openness, democratic values, trust and shared vision for regional future (Amin and Thrift 1994; 1995; Saxenian 1994; Miörner et al., 2016).

Institutional voids are several in emerging economies, linked to factors like government capacity to guard against opportunistic behavior (Sheng et al., 2011; Tan and Meyer, 2010) and laws and regulation enforcement are uncertain. This often necessitates the need to have political ties or personal network ties. Institutions prescribed to reduce uncertainty such as rule of law, property rights, and patent rights do not function in China as they do in the West (Murphree and Breznitz, forthcoming), suggesting that the dynamics in RIS will differ accordingly.

RIS are open systems sourcing knowledge from extra-regional production and innovation networks and are influenced by processes at national and global levels (Asheim et al., 2019; Zukauskaitė et al., 2017). Organizationally thick and diversified RIS, characterised as regions with capacities to identify and appropriate external knowledge. Few localized groups of firms can be self-sufficient in term of State-of-the-art knowledge creation, and “worldwide inter-agglomeration networks and circuits of interaction are an increasingly vital element of any individual agglomerations’s performance” (Power and Scott, 2011, p. 167). Global knowledge search is a costly and complex process, requiring specific skills and investment from the company side (Plechero and Chaminade, 2016; Bathelt et al. 2004). One could expect that firms initiate global search for knowledge when there are other organizations that contribute to shared pool of competences and other resources on how to search for knowledge outside the region (Herstad and Ebersberger, 2015). Those competences and resources might stem from other regional actors – support organizations or other regional firms – but also from organizations outside the region that promote and strengthen globalization processes in the regions such as various national agencies, industry organizations and others (Zukauskaitė et al., 2017). Competences from organizations experienced in global knowledge exchange will benefit the rest of the region only if there is

knowledge exchange taking place at a regional level. Thus, local and global knowledge exchange is not a dichotomy, but a continuation of the same process where also complementarities might be at play in terms of whether linkages at different levels form and further how they influence economic development in regions.

2.2 Global knowledge sourcing for innovation

Extra-regional linkages and pipelines can provide access to dissimilar pool of goods, services, markets and knowledge (Bathelt, 2008; Tripl et al., 2009) and are conditioned by opportunity search, and firms abilities to recognize the value of new, external information, assimilate it, and apply it [...]’ (Cohen & Levinthal, 1990, p. 128). ‘Global Innovation Networks’ (GIN) are formal and informal linkages and ties that are motivated for innovation (Cooke 2013; Ernst 2009; Malecki 2011; Herstad, Aslesen, and Ebersberger 2014; Chaminade et al. 2017). Multinationals can be seen as translators of innovation practices between subsidiaries across the globe (Hitt, Li and Xu, 2016), however, global linkages can be formed by SMEs and at the individual level as ‘individually motivated linkages’ (Cano-Kollmann, Hannigan, and Mudambi, 2017). Social connections based on personal-level ties (i.e., friendships, family relations and acquaintances) may ease SMEs’ internationalisation processes and their global expansion (Lorenzen and Mudambi, 2015) and in transferring innovation related knowledge on a global scale (Faggian, Rajbhandari and Dotzel, 2017). Global diasporas has become important for knowledge transfer and exchange and these individuals have been growing participants of GINs (Saxenian, 2006; Cano-Kollmann, Hannigan and Mudambi, 2017).

The value of *physical space* with geographical proximity for knowledge sourcing by and from different actors is recognized. Buzz is not an exclusive characteristic of permanent geographical locations, but it can result from *temporary physical spaces* (Bathelt and Turi, 2011) in the form of global conferences and international fairs, where individuals belonging to the same community of practice or epistemic community exchange and create knowledge. Regional and global knowledge intertwine in these temporary spaces, which can be seen as ‘field-reproducing events’ that can lead to a reinforcement of a respective field (Henn and Barthelt, 2015).

Informal, low-cost mechanisms can also arise in *virtual spaces* and can have both a private and a professional nature. ICT can facilitate geographically distant innovation networks (Leamer and Storper, 2001; Kaufmann, Lehner, and Tödtling 2003) and convey codified and tacit knowledge (Romano et al., 2001; Vaccaro et al., 2009). Firms acquire knowledge globally through online platforms and virtual communities such as social networking sites, blogs, list servers, and shared interest sites (Rallet and Torre, 1999; Miller et al., 2009; Grabher and Ibert, 2014). The governance mechanisms of these virtual communities is sharing as the communication channels are rich. Further, property rights and incentives are viewed as antithetical, and participation is often centered on hobbies, passions or public goods (Franke and Shah 2003; Belk 2010). Knowledge in the virtual space is not instantly available at no cost (Aslesen et al., 2018) and limited access based on invitation is possible and used, leading to personally embedded networks which are by definition not ubiquitous and depend on previous social interactions (Martin et al., 2018). In virtual communities firms can be both sources, receivers and co-creators of knowledge, however, physical proximity strengthens the social coherence within these online communities (Grabher and Ibert, 2018). These different knowledge sourcing mechanisms represents knowledge pieces that creates

communities of practice among companies, it is here they discuss experiences and solve problems and create shared conventions (Grabher and Ibert, 2014).

2.3 Summing up theoretical part

Organisationally thick and diversified RIS has a high capacity to identify and appropriate external- to the region knowledge. The local-global nexus are complementary and knowledge sources can be many. Organizations and institutions play important roles in global innovation networks in which knowledge sourcing is an essential activity for firms from both advanced and emerging countries. By questioning how thick and diversified RIS in a developed and an emerging context shape firms' propensities and patterns of global knowledge sourcing, the paper will add to the literature on RIS. Further, by including new empirical material the paper will give insight to what in the organizational and institutional setting that hinder or promote firms capacity to identify and appropriate external knowledge. This can be valuable input for innovation policy in a globalized world.

3. Methodology and short description of cases studies

3.1 Background of the country contexts: Scandinavian small open economy vs China's large economy

Scandinavian countries, such as Norway and Sweden, are small open market economies actively involved in international trade mainly within a certain geographical area, with relatively small product scope and scale. The economies are characterized by high market competition and low

government involvement. Government acts in the Scandinavian business system more as a supportive role with small scale activities and strong focus on coordinating networks (Moodysson and Zukauskaitė, 2014) with regional innovation systems as bottom-up market-led process, shaped by institutions, by culture and by light-handed government intervention. China is the world's second largest economy and the second largest trading country and has experienced rising innovation generated by both domestic and foreign firms, challenging the focus of developed countries as the core location for idea generation or product development (Corsi, Minin & Piccaluga, 2015). China is today considered a mid-range emerging economy (Xu and Meyer, 2013) with the government's goal to become among the elite of global scientific powers refocusing the economy from low-cost manufacturing based on export processing to one based on higher value-added activity (Grimes and Sun, 2014). RIS developments are state-led and designated by national, provincial and municipal levels (Yang, 2016). A side effect of the political drive behind technology development policy is the huge challenge involved in building the necessary institutions and culture of innovation; institutions and intermediaries are still 'emerging in emerging economies' (Khanna and Palepu, 2010; Yang, 2016). Regions in China are increasingly studied by using the RIS approach (Doloreux and Porto Gomez, 2017; Yang, 2016). State intervention in forms of different kinds of institutional regulations and financial incentives does not only shape the state-owned sector but also influence the business environment in which the private sector operates. There is a structural interdependence between economic and political power, which should be taken into account when understanding the Chinese economy.

3.2 The sectors and the regions – ICT and the new media industry in Oslo, Malmö and Beijing

The present research adopts a multiple case study design (Yin, 2009) to gain a thorough and in-depth understanding of the individual firms' actions and motivations behind their innovation processes, as well as to investigate broad contextual and relational data. Indeed, case studies provide richer information and help to understand the factors influencing relationships.

3.2.1 ICT and new media industry cases studies

The empirical analysis is based on document studies and in-depth interviews with firm representatives. In total, 53 firms were interviewed, 16 firms in southern Sweden and 18 firms in Oslo. 19 firms were interviewed in China. ICT and new media industry blend together across industries and the sample of firms varies between sectoral codes (parts of NACE 58-63 and 73-74). The interviews aimed at gathering contextual and relational data on firms' innovative behaviors. The focus was on knowledge-sourcing, knowledge-exchange and knowledge-creation activities, as well as the type and geography of knowledge linkages, especially in terms of the spaces from which they originated. The interviewees were explicitly asked to describe how and from where their companies acquired knowledge relevant for innovation, where innovation was defined according to definitions by Eurostat/CIS.

Firms in ICT sector and the new media industry meet and the cross sectoral nature between them means a certain overlap. The interaction is related to the generation of content by media firms, coding in the computing and ICT industry, and communication to the telecoms including internet (Cooke, 2002; Martin and Moodysson, 2011; Strambach 2012). The commonality among the case firms' business are that they all have high digital involvement based on digital technology, computer network technology, and mobile telecommunication technology. Further the firms' are

1) using internet, mobile phone, interactive TV, mobile TV, and other new type of new media as the main carrier; 2) taking computer, mobile phone, TV, and other digital device as terminals; 3) providing content to customers such as video, audio, voice data service, online game, remote education, etc. Exploring the spatial dynamics of the ICT and new Media industry is fundamental to the understanding of the modern digital economy as the sector has often been labelled as footloose and not tied to specific places, pointing to a geographically 'flattening' world economy (Friedman, 2005).

Industrial experts, government innovation agencies, and university helped us to identify and get in touch with the case firms. The sample of interviewed firms was constructed to represent a large variation with respect to different subsectors and firm sizes (from 5 to 250 employees). The interviews were conducted between January and July 2016 and lasted between 60 and 90 minutes. The interviews were transcribed and analysed with regards to the nature of global knowledge sourcing.

The Scandinavian context is in this paper based on interviews in Oslo and Malmö, both cities can be seen as institutionally and organizationally thick regions (Isaksen and Trippel, 2016). Both are centres for software development in their respective countries (Isaksen 2006; Martin and Trippel 2017) as well as centre of the media industry with major TV, radio and publishing companies having their headquarters in the region (especially Oslo). In the IT industry sector, Malmö has a strong concentration of internationally competitive companies and world-class innovation environments. The Sony-Ericsson's headquarters and R&D lab are located in the area (now split up due to the finalization of the collaboration). There is a rising number of firms specialized in the

development of software for mobile telecommunications (TAT, Scalado, and Tactel) as well as a growing new media cluster that overlaps with the mobile telecommunication cluster. Beijing is the capital city and also a technology hub of China with a dynamic economy and strong entrepreneurial atmosphere. It is the place where the well-known 'China's Silicon Valley' Zhonguancun is located. It is one of the most important locations for media industry clusters in China. Based on its strong competences in broadcasting and film, internet, and mobile telecommunication industry, as well as policy support from government. Beijing stands for 6 per cent of all R&D FDI going to Asia, where the largest share of investment is in Software and IT services and Communication (Amendolagine et al., 2019). Due to the active participation of China's most prestigious universities, such as Peking University and Tsinghua University, along with the national research institutes, such as Chinese Academy of Sciences, as well as their international collaborators, many analysts are optimistic about the future of Beijing's ICT and new media industry.

4. Mapping global knowledge sourcing in Scandinavia and Beijing

Based on a review of the literature and the interview material in the two territorial settings, the following key knowledge sourcing mechanisms are used to access global knowledge.

4.1 Global knowledge sourcing in Scandinavia

Most of the firms relate to a global scene for knowledge. Thoughts of being pioneers of the world if they speed up innovation and experimentation skills in their area are present, made possible through the economically stable context their living in. *'That the people who are the best at what we do, they work in an international world, in a way.* Being part of the 'Nordic' is viewed as a

'positive brand' and as an identity that is positively received abroad. The area is also viewed as *'..the backbone of the open internet. We're seen as leaders in education'*. The firms more oriented towards tech has a more *international customer base* with end products that can be used by everyone; *'It's more an international market, and an international competition. And, so that's also why, in tech, I mean, the US and San Francisco is pretty special with, like, it's a huge market, it's so easy to get funding and employees and customers'*. Another company says; *'We are actually planning to open up headquarters in New York, because that's the highest concentration of customers, on the east coast of US. But it's a very costly process, and we still want to scale the company, so we hope to do it late this year or early next year'*.

Virtual communities and online platforms - global

The non-physical virtual space do seem to be an important source for knowledge sharing, and sometimes viewed as a main governance mechanism (Romano et al., 2001). Both social networks such as Facebook and Twitter are actively used by companies in both regions, together with more industry specific forums and open-source websites and blogs where solutions to technological problems are discussed. Active use of open software development platforms are common, giving valuable input to ongoing innovation processes. Firms report that online forums represent complex and high-tech knowledge, and some report that most of their innovation relevant knowledge are found online. The companies report that virtual space is also a way of distributing own knowledge and as means of promoting own ideas and to create attention from both local and global markets. Since the virtual networks used also represent more personal/social ones (such as Facebook) shows that differentiating between work and personal online activity is not that relevant in this sector.

Temporary professional gatherings - global, partly local

Firms attend fairs and conferences both locally and globally to get insights, meet people and build networks, and to get new ideas and to be inspired. Trade fairs and conferences seems to be a common source to meet global partners such as suppliers and customers and to acquire knowledge. Through presentations of own products, new knowledge and input are gathered that can be used for further development. It is also important to be visible and to enforce the reputation of your company. As the industry is transforming quickly, the need to be 'out there' in order to see what is going is reported as necessary by most firms. There are several yearly events that many of the firms cover, both in US and in Europe (such as CrossMedia in London, South by Southwest in Texas). Many of these companies are small, so sending representatives on global events is also a question of cost. Local fairs and events are also important to meet up with other local players and support organisations, and even global actors. The informal ties found in global temporal spaces such as fairs and exhibitions and the virtual spaces seems both to supplement and sometimes replace each other, either way, they seem to play a very important role for innovation relevant knowledge among the interviewed firms, confirming research by Sotarauta et al. (2011).

Personally embedded networks- local, partly global

The smallness of both regions (and the countries) seems also to foster a positive attitude to one another as you do risk meeting the same people either as competitors, collaborators, or your boss. The informal networks between individuals working in these regions are often personally embedded and people often interact beyond office hours. These informal networks also overlap with the more formal ones (Huber, 2013). As one interviewee said; *'Because we both have formal*

relations with them, as partners, and we also go to the same parties. So it's very, both formal and informal'.

Mobility of skilled labor - local, few global

Recruitment is important for upgrading of skills and knowledge base and to widen networks through the 'know-who' of new employees. The general high level of education is mentioned as positive for innovation, so is a characteristic of people being curious, they adapt quickly, want to be first movers, they are tech savvy and quality focused. For the case of Oslo, there are scarcity of certain skills, especially engineering, design and programming skills. Some firms (especially within IT) report that shares of their employees come from abroad. When skills are hard to attract to Norway, some companies have established daughter companies abroad, and some also mentioned the possibility of having a virtual company where people from all over the world could work together on projects, without being geographical proximate. The Malmö based companies' report of mostly hiring from the region or from other places in Sweden. Firms also report of high inter-firm mobility rates within the two regions. The regional knowledge flow can be explained by a kind of transparency and local buzz within the sector, representing people with the same 'skilled trade', emphasising the importance of physical and cognitive proximity as well.

R&D collaboration and FDI

Global R&D collaborations is not reported, however, some companies have had collaboration with local universities, more linked to coding and aspects of ICT. Many of the SMEs, especially in the Oslo region have the last years been bought up by MNEs through Foreign Direct Investments (FDI) and as such become part of large global entities, investments that lays the ground for intra-firm

networks or *hierarchies* that can function as mechanisms for global knowledge flows (Lui and Liefner, 2016; Aslesen et al., 2017). Intra-firm network in MNCs functioned as mechanisms for global knowledge collaboration and knowledge flow (both more formal innovation projects and more informal such as meetings to share ideas, formats and views on trends) eased by organizational proximity (Boschma, 2005; Aguilera et al., 2012). Some of the companies said that becoming part of an MNC was an explicit strategy to access international ideas.

4.2 Global knowledge sourcing in Beijing

Among the Chinese case firms, most of the companies only serve the domestic market. One of the reasons is the remarkable size of the domestic market. When talking about the domestic market focus, one owner explained: *'We have no ambition to sell to the foreign customers. The Chinese market is big enough for us to survive. We know the customer here. We know what they want and what they need. This is our advantage as a local company.'*

Virtual communities and online platforms are mainly domestic but do not exclude global ones

All companies are engaged in virtual communities and online platforms, such as online technological forum, online business social network, personal social network, etc.. Noticeably, there are two virtual communities, namely Chinese social medias such as Wechat and QQ, and international social medias, such as Facebook, Twitter and LinkedIn. These two types of virtual communities play different roles for knowledge and information sharing. The Chinese social media WeChat which is a Chinese version and combination of Facebook, Twitter, Instagram, Messenger, Paypal etc. It is widely used by the case companies for instant exchange of technological information, sharing documents, organizing events, live broadcasting events, etc. It is an essential

tool for maintaining “guanxi”, a term that refers to the relationship mixing business and private life. Companies use WeChat for domestic communication. For global networking, Facebook, Twitter and LinkedIn are the mostly used platforms. The internet censorship in China were expected to have strong negative effect on the case firms’ access to foreign information sources. However, companies who are determined to reach global knowledge can always use VPN to overcome the obstacle. *‘If you find the right VPN, you will have no problem. It is not as difficult as you thought’*. The Chinese case firms’ global knowledge sourcing via virtual communities and online platforms are mainly for technology scanning and monitoring. Direct use of global knowledge in innovation is rare. With VPN the global knowledge sourcing becomes feasible, the speed and scale is still to some extent expected to be negatively influenced.

Temporary professional gatherings - Global

The Chinese firms’ temporary professional gatherings mainly happen in Beijing or other 1tier cities in China. *‘We don’t have to go abroad to meet the foreign companies. They are here in Beijing. The global top players come to Beijing. It is very convenient and cheap to attend international conferences and industrial fairs here’*. The strong presence of international conferences and industrial fairs in Beijing are important sources of global knowledge in the region. The ‘pull’ forces of tick and diversified RIS differ, and pure size matters. The aggregation of customers, investors and other entrepreneurs as well as higher education institutions in Beijing is considered to be one of the most important source of innovation related knowledge and the reason of the recent boom of start-ups. *‘80% of the venture capitalists and business angels sit in Beijing. Beijing also hosts many top higher education institutions, such as Beijing University, Qinghua University, Beihang University, etc..’*

Mobility of skilled labour – high rates and mostly local and some global

High mobility of skilled labor is a common phenomenon in China, particularly in the industry that offer high salary or high entrepreneurial opportunities. Mobility of human capital also generates spill-over effect for knowledge exchange regionally and many of the founders of the case companies previously worked for big domestic companies such as Tencent, iQIYI, or multinational companies, such as Microsoft, IBM and as such knowledge spillover are likely to happen. Programmers, network engineers, and administrative workers also have high propensity of changing their jobs thanks to the high birth rate of new companies in the industry. *'People are anxious of making money. If anywhere offers higher salary, the employee will go over there. It has been a big problem for me to maintain talents. But on the other hand, it is also easy for me to hunt somebody if I offer high salary. People are not afraid of moving around. There are plenty of opportunities.'*

Personally embedded networks mainly local but some global

The case firms in Beijing are involved in informal global networks for innovation, that can grow out from different earlier connections, for example, the alumni network from education abroad or social networks from working experience abroad, network with previous colleagues in global firms in China, or other social relations linked to friends and family that are international in character. These networks can now be activated in different ways either physical meets up or virtually in relation to specific thematic issues. Especially important in a Chinese context is the global mobility through migrants and returnees (Lin and Plechero, 2019). This former established social networks

from abroad offered the case companies a way to tap into established international knowledge linkages for the acquisition of technology, skill and technical know-how (Lin and Plechero, 2019).

R&D collaborations and FDI– non global

The case firms interviewed has limited global reach in the form of formal innovation linkages or other strong global sourcing mechanisms. Most of the Chinese case firms only target regional and domestic market with their innovative products and services, suggesting that global exploitation of products and services is still not an activity as only 10% of the case firms have small portion of business abroad, namely in Southeast Asia, the US and Canada. All companies mainly do R&D within the company or in collaboration with customers and/or suppliers, suggesting that the formal exploration activity is also local or domestic, probably helped well by strong national incentives to help growth of national high-tech industries such as ICT and new media (Lin and Plechero, 2019). Noticeably, although no FDI is directly found in the Chinese case firms, the indirect spillover effect can still be seen in the cases. In some of the case firms the founders, or employees had worked in the multinational firms in Beijing, such as IBM and Microsoft. Working in a multinational company gives connections and knowledge linkages of a global scale that can be activated after changing a job or a path.

5. The role of local organisation and institutions

5.1 The role of local organisations and institutions in Oslo and Malmö

Firms report that being located in Scandinavia is looked upon as positive with regard to innovation as this is a context where new ideas more easily will be tried out due to a “development culture”. The interviewees can report of “explosions” of companies in segments of the new media industry.

They can ...'talk very loosely about ideas, and production, but we will never share anything that gives somebody an advantage'. Even though it is dependent on circumstances, there is a positive attitude towards sharing in the region, some mean this is representative of the times we are living in; 'We live in each other's houses, we lend each other's cars. We have to cooperate, maybe we do it with some worry, sometimes, but the future demands that we are in a cooperation or collaboration mode. And I think that the companies that do so well are the ones that are going to succeed'. One respondent said that this type of culture had led to a positive spiral the last years that regenerates innovativeness and results in a high quality on innovation, attracting global firms (as can be seen from the share of FDI inflow). When discussing the acceptance of failure many different views came through, dependent on current role and situation. Among the younger entrepreneurs, starting lean, say they are supposed to fail; 'If you haven't failed, you haven't tried. You are supposed to make mistakes. The main thing is that you learn from those mistakes, iterate on them, and try again'

Funding companies, like venture capitalists, seems to be lacking in the region and are pushing many firms to the global scene. The lack of funding has led to firms setting up affiliates in California. There are several public and semi-public organisations in both regions that promote knowledge sharing, entrepreneurship, innovation events. Especially many of the co-working spaces and start-up labs are trying to find their role in the region and their role with regard to internationalization of new ventures. ~~Through interviews we found that individuals do engage their personal networks to aid these organisations to link up to relevant milieus globally, having of~~

Branch organisations are also important actors connecting both similar local firms as well as

'buzzing' about important global events such as conferences and festivals. These organizations also act as an entry point for global firms entering Scandinavia by creating meeting places where to link up to Scandinavian firms.

5.2 The role of local organisations and institutions in Beijing

Beijing have many incubators, including both public and private ones that are specialised in different sectors which are set as strategic priorities supported by the national policy of mass innovation and entrepreneurship. *'From the Prime Minister to local officials, every level of government is pushing the idea of Internet Plus and mass innovation and entrepreneurship'*. The incubators are considered to have positive impact on entrepreneurship by most of the interviewees. *'One cannot separate the boom of start-ups from support of government and incubators. Most of the entrepreneurs are like me. We have only ideas or a small project but no money, no personnel, no established market. We are weak. An incubator can help you with all of these'*.

In China, failure is considered not only as lack of success but also losing face. It has double effect on people's attitude towards the entrepreneurs. Nevertheless, the society becomes more and more tolerate to failure as starting up business becomes more and more common. *'On the one hand, I feel that now the society has much higher tolerance toward failure than before. On the other hand, Beijing is the most failure-tolerate city in China'*.

Some of our interviewees received venture capital to start up their companies. The venture capitalists actually prefer entrepreneurs who have previous experience of startups including failed ones. We also observed that entrepreneurs from companies with government background are more

confident in their tone when talking about the acceptance of failure in the society. However, small private company founders are less confident in their tone. *'I still think that the society can be more tolerate even though it has been much better now than before. To be honest, most of the venture capitalists and angel investors are short sighted. Once you fail, they may withdraw money immediately.'* Most of the case companies are satisfied with the innovation and entrepreneurship culture in Beijing. One case company moved its headquarters from Shanghai to Beijing for its favorable policy, positive social atmosphere toward innovation and accessibility to venture capital.

There are government agencies that particularly support internationalisation of enterprises, encouraging companies to apply for international patents, by offering financial support and network support. Nevertheless, not all the SMEs can enjoy such policy support. Companies with government background or company owners have personal relationship with government officials have better chance to get such support.

6. Discussion and Conclusions

In this article we have chosen thick and diversified RIS regarded as attractive places with high absorptive capacity in distinct territorial contexts - two in a developed country context and one in an emerging economy - to analyse the pattern of search for global knowledge for innovation. Institutions are enacted through organisations in RIS and embeddedness in different contexts impacts the search for global innovation relevant knowledge.

The overall finding is that ICT and new media firms in Oslo, Malmö and Beijing are dependent on many and a varied set of knowledge sources, where knowledge spaces found are physical interactions in regional, national and global space – as well as virtual space.

Especially virtual communities and online platforms are emphasized as important sources, adding one more dimension to the importance of the institutional setting in the RIS literature as finding the ‘right’ virtual platform for knowledge exchange are often shared in physical space both latent and the more temporary ones. Another important source of global knowledge are temporary professional gatherings.

The RIS dynamics differ between the 2 territorial contexts. In Scandinavia, informal, low-cost mechanisms to source global knowledge give raise to competitive advantage due to placed-specific institutional framings where openness and collaboration strategies have been important. Geographical and virtual spaces are intertwined and mutually dependent on each other coming out from functioning regional innovation systems with the ability to both find, connect up to and attract global knowledge through linkages and mechanisms established through time, building up a regional collective pool of knowledge and capabilities. Strong local knowledge facilitates the sourcing of global knowledge, which in turn strengthens the local knowledge base (Martin et al., 2018). The important virtual spaces for innovation relevant knowledge often comes out of the relevant physical gathering as the physical proximity strengthens the social coherence within virtual communities (Grabher and Ibert, 2017). The respondents report of a positive culture for collaboration and sharing, and of the region being viewed as a place where innovation takes place. The organization in the region not necessarily promote globalization, however, they have a strong

focus on activating the regional milieu and knowledge sharing among start-ups and more mature firms enabling the ‘buzzing’ of important global sources and events. Some companies also report of daughter affiliates located in important sites for knowledge and innovation. Local organizations also act as entry points for global actors creating meeting places.

The ICT and new media industry in Beijing also have global sourcing mechanisms (physical and virtual) that are intertwined, however, the Chinese companies have to a larger degree a domestic focus both physically and virtually even though the interest for the global scene and trends are seen as important and relevant. Traditionally global knowledge has come to Beijing through FDI and the most important channels then being through the MNE. As virtual communities are local and as digital platforms are segregated by firewalls it would be reasonable to expect that the global knowledge flow is to a certain extent limited. Digital divide is differing technological platforms (recently referred to as “Splinternet”¹) between China and the rest of the world making it hard to access and to take active part in communities across platforms, and as other more global sourcing mechanisms also differ, the mutually enforcing dynamics between the virtual and physical, local and global is not that strong. Access to innovation relevant knowledge in virtual communities and temporary professional gatherings are often dependent on previous social interactions, and often ~~also~~ by invitation only (Martin et al., 2018).

Some interviewees say the entrepreneurial atmosphere is positive and there are organisations that support internationalization of companies. However, a common sharing and trust based community is not reported and it is very much the regional and national market that is in focus,

¹ BBC news; <https://www.bbc.com/news/technology-53686390>

which for many reduces the need to global connections in spite of government efforts to connect up to innovation relevant knowledge outside of China. Even though massive and focused efforts have been put on creating ~~well-functioning~~well-functioning RIS through top down organizational build-up and directed policy; RIS are in the making and informal institutions needs more time to build up to create an atmosphere of collaboration and sharing. ~~This then also has as a consequence that the norm to support each other in global knowledge sourcing process is not developed.~~

The type of global sourcing channels are more proactively created through top-down policy and the pull factors of the dynamic and innovative milieus in Beijing, the ‘building blocks’ of a ‘globalized’ economic system are there but they may still not work together efficiently” (Narula, 2014) suggesting ‘thin informal institutions’. This has influence on the pattern of global knowledge sourcing, emphasizing how institutions form organizations’ global connections. The interaction between regional and global actors is particularly important for emerging markets with large domestic markets in order to prevent lock-in and path dependency. *Successful* thick and diversified RIS are the ones able to build and maintain a variety of channels for low-cost exchange of knowledge with relevant physical and virtual hot-spots around the globe. It is not enough to be thick and diversified ~~– in the long run – – even frontier regions need to be globally connected. In current times with forces of anti-globalization it is especially important to strengthen global knowledge ties in order to address major global challenges. you need to be thick and diversified and physically and virtually connected to the global scene in order to be relevant and stay competitive in a global world.~~

There are obvious limitations to this study; the number of respondents are limited, especially given the context of Beijing being a mega city. The study is only looking into two territorial contexts as well as a specific sector which might have very certain characteristics making it hard to draw conclusion for a broader set of industry sectors. Still, these are limitations that merely translate into implications for future research to use data from other sectors and territorial contexts to challenge, confirm or nuance the overall conclusion the analysis presented here.

7. References

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