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## Innovation in the periphery: compensation and exploitation strategies

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# **Innovation in the periphery: compensation and exploitation strategies**

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## **Abstract**

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Recent research has challenged the urban bias in economic geography and innovation studies, showing that novelty generation also takes place in peripheral regions. So far, however, analyses focus on how firms innovate despite their unfavourable location and little is said about innovation benefits of peripheral areas. Hence, this article identifies different compensation and exploitation strategies adopted by firms in order to overcome regional innovation constraints and to reap innovation benefits found in the periphery. Drawing on empirical evidence from Austria, our qualitative analysis reveals that innovation in peripheral regions is the outcome of a combination of compensation and exploitation practices.

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Keywords: innovation, periphery, compensation, exploitation

JEL classifications: D83, O31, R11

# 1 Introduction

Scholarly work on the geography of innovation has tended to focus on core regions, clusters and the virtues of agglomeration for many decades (Shearmur, 2012). Over the past few years, an emerging body of literature has begun to challenge this geographic bias by analysing innovation processes in peripheral regions on different scales (Isaksen and Karlsen, 2016; Shearmur, 2017; for a recent review see Eder, 2019a). There is a growing awareness that firms with a remote location also innovate, albeit that their innovation processes differ from those of their urban counterparts (Isaksen, 2015; Shearmur, 2015). As peripheries are said to offer only few assets that innovators can deploy, an efficient internal organisation (Grillitsch and Nilsson, 2015; Isaksen and Karlsen, 2016) and strategic efforts towards innovation by individual firms (North and Smallbone, 2000; McAdam et al., 2004; Copus et al., 2008) are found to be of vital importance. Furthermore, linkages to non-local actors (Copus and Skuras, 2006; Fitjar and Rodríguez-Pose, 2011b; Rodríguez-Pose and Fitjar, 2013) and a pro-active role of policy (Asheim et al., 2019) are considered to be crucial.

While this literature has helped to move beyond understanding innovation through the urban core lens, it also suffers from a number of shortcomings. Much attention has been devoted to explaining the ways in which firms overcome those innovation barriers typically found in the periphery and compensate for locational disadvantages (Virkkala, 2007; Dubois, 2015; Grillitsch and Nilsson, 2015). Nonetheless, systematic accounts of compensation strategies and their relative importance are still lacking. Furthermore, the overly-dominant focus on innovation constraints and compensation strategies hides the fact that peripheral locations may also provide benefits for innovation activities (Glückler, 2014; Mayer and Baumgartner, 2014; Shearmur, 2017; Grabher, 2018). Little work has thus far been done towards unravelling the nature of these benefits and examining the supposedly wide array of firm strategies for exploiting them.

This paper aims at gaining a deeper understanding of innovation processes in peripheral areas by casting light on *both* compensation and exploitation strategies employed by firms to overcome innovation constraints and reap innovation benefits found in their regional environment. Drawing on 20 in-depth interviews with innovative firms in the Austrian periphery, we address the following research questions: (i) what is the relative importance of different types of compensation and exploitation strategies, and (ii) in which ways do firms combine them during the innovation process? Our results suggest that innovation in the periphery is the outcome of both compensation and exploitation practices. Their frequency and combinations, however, vary, depending on specific regional characteristics and the type of firm under consideration.

The remainder of this paper is organised as follows: Section 2 reviews the extant literature, identifies a set of compensation and exploitation strategies and develops a framework explicating the ways in which firms in the periphery might combine both practices. This is followed by notes on the investigated regions and firms as well as on data and methods applied in Section 3. Section 4 presents and analyses our empirical findings. Section 5 concludes and outlines directions for further research.

## 2 Innovation in the periphery: compensation versus exploitation?

### 2.1 Innovation challenges in the periphery and compensation strategies

Over the past years, a vast body of literature has argued that peripheral regions offer poor conditions for innovative activities. These areas are said to suffer from the absence of clusters and externalities, weak organisational support structures and unfavourable institutional set-ups, that is, thin regional innovation systems (Tödtling and Trippl, 2005; Isaksen and Trippl, 2017). If innovation occurs in peripheral areas, scholars often attribute this to the successful compensation of locational disadvantages by firms (Virkkala, 2007). As geographical proximity and agglomeration advantages are still considered to be crucial for innovation in most theoretical and empirical work (Shearmur, 2012), the question of the ways in which firms can be innovative despite the absence of these benefits has become the main point of interest. There seems to exist widespread consensus that firms in the periphery might have to undertake more strategic efforts to generate innovations when compared with their counterparts in urban regions. An efficient internal organisation and strong in-house knowledge creation, that is, *building up high-level internal competence* have been identified as key strategies for developing innovations in peripheral locations (Doloreux and Shearmur, 2012; Flåten et al., 2015; Grillitsch and Nilsson, 2015; Isaksen and Karlsen, 2016).

Scholarly work has also shown that building a strong internal knowledge base is often combined with an extensive integration in non-local networks based on purpose-built searches (Fitjar and Rodríguez-Pose, 2017). In this regard, new theoretical and conceptual perspectives have gained prominence, challenging insights from traditional Territorial Innovation Models (TIMs) (Huber, 2012). In the past decade, work done in the context of the proximity debate has suggested that knowledge exchange and innovation benefit not only from geographical proximity but also are essentially facilitated by cognitive, organizational, social, and institutional forms of proximity (Boschma, 2005; Malmberg and Maskell, 2006; Torre, 2008; Balland et al., 2015), with the latter four being, in principle, also available to peripheral regions. In addition, Bathelt et al. (2004) argue in their seminal paper that with increasing globalisation, *global pipelines* (that is, deliberately established connections to distant sources of knowledge) that complement *local buzz* have become vitally important and are positively related to innovation (Fitjar and Huber, 2015). Accordingly, peripheral firms can compensate spatial proximity by focusing on other proximity dimensions and the *establishment of global pipelines*, often through formal collaboration (Grillitsch and Nilsson, 2015).

Furthermore, with the widespread diffusion of modern communication technology, *participating in virtual and global buzz* is argued to be sufficient for cooperation in certain innovation projects (Maskell et al., 2006; Rychen and Zimmermann, 2008; Grabher and Ibert, 2014). Trade fairs and conferences allow firms to link up to non-local knowledge pools, to get access to new ideas, and to identify potential partners (Bathelt and Henn, 2014; Maskell, 2014; Bathelt and Gibson, 2015; Bathelt, 2017). As such, these temporal events are especially promising for peripheral firms in terms of benefiting from what is called *global buzz* to compensate for the absence of *local buzz*.

The importance of non-local connections for peripheral firms has not only been outlined theoretically but has also been confirmed by empirical research. However, studies have found that this might not hold true for all firms, since size, industry, and culture play an important role (Beugelsdijk and Cornet, 2002; Lorentzen, 2007; Virkkala, 2007; Fitjar and Rodríguez-Pose, 2011a, 2011b). Furthermore, firms located in remote regions do not necessarily have

more international ties (Rodríguez-Pose and Fitjar, 2013). Still, there is evidence that remote firms focus on formal collaboration to compensate for the lack of spontaneous regional knowledge exchange and local spill-overs (Dubois, 2015; Grillitsch and Nilsson, 2015; Jakobsen and Lorentzen, 2015). Consequently, the significance of high-level internal competence and extra-regional knowledge networks as well as *global* and *virtual buzz* is evident and are considered to be crucial for innovative activities in remote regions.

## 2.2 Innovation benefits of the periphery and exploitation strategies

Arguably, innovators in the periphery face more challenges than their counterparts in urban regions. This perception as well as the urban bias in innovation studies (Shearmur, 2017) underpin the compensation perspective highlighted above. However, this view neglects that peripheral environments might also have to offer something to their innovators. These regions might provide opportunities for *harnessing the protective environment* these areas often provide. Such an environment allows for the undisturbed search for and experimentation with novel solutions (Doloreux, 2003; Petrov, 2011; Glückler, 2014; Cattani et al., 2017), which may later be adopted on a larger scale. A case study by Glückler (2014) on the global chemical corporation BASF provides interesting insights in this regard. A controversial new business model was developed in the organizational and geographical periphery by a small subsidiary, namely BASF Argentina. At first neglected by their headquarters in Germany, the new approach was later rolled out globally. Grabher (2018) also demonstrates how a new style in architecture was developed in the periphery by leveraging the remote location to shield itself from the capital region.

The protective role of the periphery was found to be vital for innovations that formed the basis for the emergence of the Danish wind power industry (Simmie, 2012). The first wind turbines were developed to provide electricity to the Danish periphery, which was not connected to the grid. Theoretically, these examples can also be seen through the lens of the multi-level perspective (MLP) (Markard et al., 2012; Smith and Raven, 2012), with the periphery providing a protective space for niche development. Examples exist of this combination of natural resources and niche strategies resulting in high specialisation and innovative behaviour, which would not have been possible in urban environments (Giuliani and Bell, 2005; Fløysand and Jakobsen, 2011; Isaksen, 2015; Hall, 2017). Further, a firm might be the only employer in a specific industry in a region, leaving few options to the workforce of leaving the company. Although a stable workforce and too much cognitive proximity (Broekel and Boschma, 2012) bear the dangers of lock-in, it also results in higher loyalty and allows firms to build strong internal expertise in niches (Isaksen, 2015; Isaksen and Karlsen, 2016). Arguably, the periphery may not only serve to protect firms from fierce competition over skilled labour but also from knowledge leaking out easily to competitors (Grillitsch and Nilsson, 2017).

There are strong reasons for assuming that the relationship of a peripheral firm with its home region differs fundamentally from such relationships found in urban centres (Schoenberger, 1999). Innovative firms in the periphery often attract a great deal of attention and support from regional stakeholders. This might provide them with institutional leeway towards shaping their regional environment to fit their needs. An example for exploiting this advantage and *capitalising on institutional leeway* are firms cooperating with local universities of applied sciences and professional schools in training the future workforce

according to their requirements. In addition, if regional policy makers recognized the significance of the few innovative firms in their regions, this should increase the likelihood of tailor-made policies, addressing their specific needs. Such support of formal institutions has been found to positively influence entrepreneurship in peripheral regions (Müller, 2016).

Further, *deploying soft locational factors* such as regional traditions and a certain image of rural and remote areas during the innovation process can be beneficial for the marketing of products that are later sold in urban areas (Dinis, 2006; Mayer and Baumgartner, 2014). Another soft factor would be a high quality of life, often in a laid-back natural environment far from urban congestion. For some workers – especially for those originally coming from these regions – such an environment might be appealing. Hence, these factors can also be leveraged in the recruiting process of skilled labour (Copus and Skuras, 2006; Shearmur, 2017; Brydges and Hracs, 2018). This challenges the dominant focus in the literature on urban amenities for attracting talent (Florida, 2004) and there is even evidence that certain firms are relocating to rural areas due to natural amenities (Rupasingha and Marré, 2018).

Another potential advantage of peripheries are *financial and cost incentives*. One can distinguish between public subsidies and lower factor costs in this regard. On the one hand, conventional measures like public subsidies from regional and federal governments or supranational funding bodies like the EU structural funds still play a role (Müller, 2016). Since they aim to reduce regional disparities, subventions are usually higher in remote areas. On the other hand, lower wages and land prices are a common benefit of peripheral regions, which might gain relevance if a firm does not only conduct R&D at its remote location but also maintains manufacturing functions (Gripaos et al., 1989; Pavlínek, 2019).

Finally, for some industries, short geographical distance to specific natural resources might be an important asset. This is especially true for traditional sectors, which are located close to resources like timber, ore, or hydroelectric power (Lundmark and Pettersson, 2012). Innovation in fishery (Fløysand and Jakobsen, 2011), oil and gas (Fitjar and Rodríguez-Pose, 2011a), wine production (Giuliani and Bell, 2005), and mining (Hall, 2017) are all linked to the occurrence of natural resources or a specific climate, which are both not ubiquitous. Due to the predominant focus on high-tech sectors in innovation studies (Shearmur, 2015, 2017), the exploitation strategies of traditional branches geared towards *leveraging natural resources* available in the periphery are often overlooked.

### **2.3 Compensation and exploitation strategies: variations across firms and regions**

The literature review in the previous section has helped to identify various compensation and exploitation strategies. We contend that the exact composition, combination, and intensity of both practices differ, depending on the regional constraints and benefits and on the characteristics of the firm under consideration. Firm size is likely to have a strong influence, as resources for maintaining extra-regional networks or for capitalising on institutional leeway usually increase with the number of employees and turnover. Type of industry and business culture might also matter. Additionally, some scholars argue that innovation processes in the periphery deviate from the widespread paradigm of open innovation (Shearmur, 2015; Shearmur and Doloreux, 2016). Consequently, the protective environment could be of higher importance to peripheral innovators than for their urban counterparts. The age of firms might play a role, suggesting a difference in the needs of established innovators and start-ups.

Besides firm characteristics, the peripheral environment is expected to bear an influence on the adoption of compensation and exploitation strategies. Peripheries come in many shapes and vary in terms both of innovation challenges and benefits. Constraints to innovation may be manifold in some peripheral areas, whilst other peripheries may pose fewer challenges to innovative firms. Peripheral regions may offer no or few innovation benefits or they might be better endowed with assets that are valuable for innovative firms. Based on this distinction, one can identify four ideal-type constellations that should lead to different (mixes of) compensation and exploitation strategies (see Table 1).

Table 1: Regional constraints and benefits necessitating and enabling compensation and exploitation strategies

		<b>Innovation constraints</b>	
		<b>No / Few</b>	<b>Several</b>
<b>Innovation benefits</b>	<b>No / Few</b>	Selective use of compensation strategies	Use of a wide array of compensation strategies
	<b>Several</b>	Selective use of compensation strategies & wide array of exploitation strategies	Use of a wide array of compensation strategies & wide array of exploitation strategies

Source: own compilation

Hence, the exact portfolio of compensation and exploitation strategies will depend on the needs and potentials of the firm as well as on regional preconditions. One also has to acknowledge that the perception of a location by firms is subjective. Consequently, whether innovators in the periphery take up (combinations of) compensation and exploitation strategies ultimately is the individual decision of these firms and contingent upon a number of firm and regional characteristics. The remainder of this paper investigates both compensation and exploitation strategies employed by innovative firms in the Austrian periphery.

### 3 Data and methods

The empirical analysis draws on 20 in-depth qualitative interviews with innovative firms located in different peripheral areas in Austria. These regions were selected on the basis of a delimitation by Statistics Austria (2016) and recent studies (Eder, 2019b). The peripheral regions included in our study share some common characteristics, particularly a below-average performance in terms of demographic and economic development as well as knowledge-intensity. However, they are far from being uniform (Eder, 2019b). Peripheries in the western part of Austria for example show a strong specialisation in winter tourism. Coupled with the mountainous landscape, this results in limited land reserves, driving land prices to levels comparable to those found in central regions. Firms operating in the north of Austria are located along the Czech border and therefore in areas that are still trying to recover from their isolated situation during the iron curtain era. However, they are in vicinity to cities like Vienna and Linz, therefore offering potential for collaboration with centrally located partners. Lastly, remote regions in the south are the most challenged ones, suffering from brain drain, poor economic performance, and comparatively low accessibility, since no larger urban areas or high-ranking airports are located close by.



Inclusion of peripheral regions with different characteristics allowed for a deeper analysis of firm practices and strategies that seek to overcome innovation constraints and reap innovation benefits found in remote places. In other words, the need for implementing both compensation and exploitation strategies tends to vary. This provides a sound basis for a qualitative and exploratory analysis in which the focus lies on complex connections (Schoenberger, 1991). In a similar vein, no restrictions were made concerning industries in order to test whether the portfolio of strategies varied between sectors. It was also a pragmatic choice, as the number of innovative firms in the periphery is limited by definition, especially in a small country like Austria. Consequently, in absence of peripheral clusters and individual register data, it seemed doubtful that a sufficient number of peripheral firms from specific industries – also willing to participate in the survey – could have been identified. The paper rather aims to provide the basis for further analyses with larger samples and includes firms from industries like food technology, optoelectronics, machinery, and IT. Industry-specific differences can thus only be analysed in a cursory way (see Table 2).

Nevertheless, our analysis does take other characteristics into account, namely firm size and type. This allows for the distinction between large enterprises and SMEs (firm size) as well as between headquarters, branch plants and start-ups (type). Concerning type, the first category ('headquarters') comprises firms that were founded at the location, stayed innovative over time and in some cases have a workforce of several hundred employees. The second category ('branch plant') captures innovative operations that are both well-established and those that are newcomers in peripheral areas, both of which are controlled by corporations from outside the region. Thirdly, the last category ('start-ups') consists of young firms that originated within the periphery or moved there shortly after foundation, all of which have reached maturity and entered the market successfully.

Table 2: Surveyed firms by industry, type, age, and employees

Firm	Industry	Type	At location	Employees
1	IT	Start-up	since 2008 or later	10-49
2	Optoelectronics	Headquarters	prior to 2008	10-49
3	Food technology	Branch plant	prior to 2008	250+
4	IT	Headquarters	prior to 2008	1-9
5	Medical technology	Start-up	since 2008 or later	1-9
6	Transport technology	Headquarters	prior to 2008	250+
7	Plant engineering	Headquarters	prior to 2008	10-49
8	Surveying technology	Headquarters	prior to 2008	10-49
9	Printing technology	Branch plant	prior to 2008	50-249
10	Building technology	Branch plant	since 2008 or later	50-249
11	Surface technology	Start-up	since 2008 or later	10-49
12	Automotive	Branch plant	prior to 2008	250+
13	Cooling systems	Branch plant	prior to 2008	250+
14	IT	Start-up	since 2008 or later	1-9
15	Aviation	Headquarters	prior to 2008	250+
16	IT	Start-up	since 2008 or later	50-249
17	Optoelectronics	Start-up	since 2008 or later	50-249
18	Machine construction	Branch plant	prior to 2008	250+
19	Plastics technology	Headquarters	prior to 2008	250+
20	Textiles	Headquarters	prior to 2008	250+

Hence, innovators from peripheral regions all over Austria were contacted based on the following criteria. First, receivers or nominees of innovation prizes from the federal states (*Bundesländer*) or the nation-state over the last years were approached, ensuring a high orientation of the firms towards innovation. In this initial phase, 15 interviews were

conducted. Second, leading firms at the regional level with own R&D departments and start-ups were invited to partake in the study in order to gather cases from those peripheries where no firms participated in the initial phase, which led to a sample of 20 interviews. In total, 43 firms have been invited for an interview in the course of the study, resulting in a success rate of 47%.

The interviews were predominantly conducted at the peripheral locations of the firms, usually with CEOs, their deputies or with heads of R&D departments within firms. Due to difficulties in arranging an appointment, one interview was conducted via Skype and another firm could only respond to the questionnaire in written form. With these responses, theoretical saturation was achieved, implying that the significance of new information decreased with the number of interviews and eventually became marginal. The semi-structured interviews lasted for 48 minutes on average, with a minimum of 26 and a maximum of 70 minutes. They were carried out in German during the second half of 2018. Thereafter, they were fully transcribed and coded according to the conceptual framework.

## **4 Results: compensation and exploitation strategies of innovative firms in peripheral regions in Austria**

All 20 firms were willing to reflect upon regional innovation constraints and benefits and to report on their compensation and exploitation strategies. As most of the firms in the sample are winners of innovation prizes, all respondents stated that innovation would be a key component of the firm's strategy. This ensures insights into the significance of both compensation and exploitation practices in the innovation process. This section examines the relative importance of both strategies. In a next step, we analyse their relationship, especially considering firm size and location.

### **4.1 Dealing with regional innovation constraints: compensation strategies**

As expected, firms apply a diverse set of compensation strategies to overcome some of the innovation challenges that result from their location in the periphery. Our results suggest that the selection of compensation strategies depends mainly on their size and, related to that, their resources, competences, and needs.

Most firms see the limited supply of skilled labour as major innovation constraint in the Austrian periphery. All respondents report that they build upon an efficient organisation and a strong internal knowledge base (Flåten et al., 2015). In this regard, the relevant knowledge consists both of the professional experience and the industry-specific knowledge that is acquired over time. Firms often undertake great efforts to provide an attractive work environment and to continuously upskill their staff, offering, for example, incentives for those who choose to study after their first years of professional experience and are willing to return to the firm afterwards. Many respondents claim that firms now once again more frequently engage in training their own apprentices in order to strengthen their relevant competences early in their careers. Strong reliance on the expertise of their employees is also the most relevant factor for the handful of younger firms that considered relocation to a more favourable environment, confirming that many peripheral innovators would probably not survive the shift to an urban environment (Isaksen, 2015). This indicates that after a certain

point, relocation of young firms to more central locations (Miörner and Trippel, 2017) is not an option any longer:

“Indeed, we have given relocation some thought. In the end, the problem was that we were uncertain if we would have managed the knowledge transfer (...). We knew that from the staff, 80% would not join us, or maybe even 98%. Hence, for relocation the firm is too small and too specialized that we could manage this.” [Firm 17]

With the exception of a few firms that rely more on secrecy and therefore on their internal capacities, most firms have established long-standing non-local formal connections to universities, customers, suppliers, and service providers to ensure the influx of external knowledge. These *global pipelines* are an important complement to internal capacities. It is furthermore seen as a fruitful compensation strategy in cases where the internal knowledge base lacks certain competences for further product development or where input from specialised KIBS located in urban centres are necessary. Collaboration with universities is often of an exploratory nature and is pursued to broaden the horizons of firms and to see where industries might be heading in the future. Many firms choose to work with suitable partners mainly in Austria and Germany, but also globally if specific knowledge is needed. Expertise (cognitive proximity) and social proximity seem to be the most relevant factors in this regard, with geographic proximity being convenient but not essential:

“Of course, scientific support is fundamental. (...) We are working with partners all over Austria.” [Firm 20]

In conjunction with formal connections, most of the surveyed firms leverage the potential of global and virtual buzz to obtain access to knowledge and to establish links to international partners and customers. Trade fairs and conferences serve as a welcome opportunity to form temporal clusters (Schuldt and Bathelt, 2011) and to get known in the global market place. Some firms employ modern communication technologies to benefit from *virtual buzz*. Intensity of their usage varies between the investigated firms but one can observe that video conferences, webinars, and virtual product trainings have become more and more frequent over the past few years. This is especially important for firms located in the south of Austria, where geographic distances to airports and urban agglomerations are reported to be a major constraint, since travel times are higher than in the western and northern peripheries of the country. Hence, these firms value ICT tools as a way to save travel costs and to deal with disadvantages emanating from their distant location:

“During the last six to twelve months, this has been rapidly increasing within our firm. We successively try (...) to save travel expenses, since we now have these great technologies. We also already do a lot of product training online.” [Firm 2]

Some firms report that *global pipelines* as well as *global* and *virtual buzz* do not suffice to get access to all external knowledge and qualifications required for their innovation endeavours. They complement these strategies by establishing branch offices in urban areas in Austria and abroad. While branches in other countries are often used for sales and marketing purposes, those in Vienna and other major cities serve to employ people with specific qualifications, which are hardly found in the periphery. This ensures that peripheral firms are not entirely cut off from the diverse and skilled labour markets of agglomerations. They furthermore constitute a means of binding highly qualified workers to the firm. Not all firms state that this would work for them, especially those who see the co-location of R&D and production as fundamental. In contrast, others claim that it is a vital strategy to broaden and strengthen the internal knowledge base, particularly when a new field of business is developed:

“We have a small development company there in the city (...) for a very, very specific segment. Historically, the expertise is there and we went there specifically to hire people, or also to lure them away.” [Firm 9]

Moreover, a high engagement in terms of employer branding is evident especially in larger enterprises, with firms claiming that their efforts have to be stronger compared to those of their urban counterparts. This is needed in order to attract talent to their location and to create the diversity necessary for innovation (Meili and Shearmur, 2019). In future, this will become even more important in those regions where the size of the regional workforce is projected to decrease. Some firms offer housing or flexible work schedules to new recruits. Others try to recreate elements of an urban lifestyle, for example by establishing own restaurants with a creative cuisine:

“We offer a lot: great career opportunities due to the international setting, our own top-restaurant, flexible work schedules, etc.” [Firm 16]

To summarise, apart from the frequently-mentioned in-house knowledge creation, formation of *global pipelines* and participation in *global* and *virtual buzz*, there is strong evidence for two compensation strategies that have thus far been overlooked in the literature, namely the establishment of central branch offices and employer branding. The composition of the entire portfolio of compensation strategies varies widely across the studied enterprises, with firm size being the most influential factor. Large firms often have more resources to maintain external connections or to engage in professional employer branding activities and they have learned how to deal with regional innovation constraints. Start-ups have more limited capacities in this regard and struggle to become known in the region, implying that the challenges which are encountered vary over the life cycle of a firm. The next sub-section explores whether this also holds true for exploitation strategies and their role in the innovation processes of firms.

## 4.2 Leveraging regional innovation benefits: exploitation strategies

As discussed in section 2, peripheries might provide benefits for innovators and the interviews largely confirm this assumption. Most of the investigated firms value the protective environment of peripheral regions, especially concerning labour poaching. Our results thus confirm findings from other recent studies (Grillitsch and Nilsson, 2017). Many respondents point to a high loyalty of the workforce (especially in R&D departments) and highlight its advantages: it limits undesirable knowledge spill-overs, protects tacit knowledge, and strengthens the internal knowledge base (Isaksen, 2015). It also allows for lower wages (particularly in those cases where the danger of headhunting is low), which can be a decisive factor in a high wage country like Austria. One start-up reported that this loyalty saved the firm during difficult times at the early stage of its development:

„They [co-workers] were only employed part-time, but were working full-time for a whole year, the loyalty is enormous. And I know it from my partner in Vienna, he says that in Vienna that would not work. There, everybody immediately has a new job.” [Firm 14]

A few firms state that their peripheral location would protect them from industry espionage and monitoring by competitors, though this increasingly occurs online and at customer locations, which is why this function is losing significance.

Evidence exists that some firms capitalise on institutional leeway. This particularly holds true for larger firms, while start-ups often struggle to get through with their needs. The larger the

workforce and the weaker the regional economy, the more support they get from policy makers on all levels. Investigated firms state that policy actors pay particular attention to branch companies in this regard in order to minimise the risk of relocation:

“If we want to enlarge our premises (...), this is much easier than in Vienna (...). We are the biggest employer here, this helps if we need something from the municipality.” [Firm 15]

Additionally, those firms with large production units also favour their location because sites for expansion are usually easily available, particularly in the Eastern and Southern peripheries. A few respondents state that they maintain close relationships to local education institutions by sponsoring classrooms and equipment or using their influence to adjust the curricula to their needs. Some firms actively set up tertiary educational institutions in the region, trying to specifically strengthen the regional knowledge base. Many respondents highlight that this would not be possible in an urban area, where the firm would have to compete with many other companies, which seek to adopt similar strategies:

“We have a close cooperation with the local polytechnic institute, based on a contract. We also know each other, so, if I have an open position, I contact the teaching staff and they provide me with a list of highly qualified candidates. They are also cooperative in terms of courses offered.” [Firm 18]

Soft location factors like image and quality of life are benefits that are valued by the investigated firms. Some respondents state that these factors help to recruit workers from elsewhere. In addition, many business partners seem to appreciate the change of scenery and combine a business trip with a short vacation. This contradicts research that has predominately focused on urban amenities, ignoring the appeal of rural places to some innovators (McGranahan et al., 2011; Brydges and Hracs, 2018). Further, the investigated firms stress that their existing workforce highly appreciates the fact that they have attractive jobs on the countryside, making a long commute obsolete and avoiding traffic jams. There are firms in the sample, which use the image of their location for marketing purposes, either because the product aligns with the regional attributes or in order to actively distinguish themselves from competitors in urban locations (Mayer and Baumgartner, 2014). As such, this function might be more significant for innovative firms operating in fields such as tourism or outdoor equipment, but can be leveraged in other sectors as well:

“Customers have to remember us (...), and they connect me with the high mountains. I do that very deliberately, I always say, we are the firm from the high mountains (...). That is one of our distinctive features.” [Firm 8]

Furthermore, financial incentives and low factor costs – a typical feature of peripheral regions – still play a role in the strategic decisions of some of the surveyed firms. Especially start-ups or recently established branch companies report that lower land prices and wage levels as well as public subsidies played a role in their location decisions. One firm for instance stated that the increased competition for engineers in urban areas has driven wages significantly, leading to a group-wide strategy of establishing R&D departments in peripheral locations, which until recently served merely as production sites. Especially in a high wage country like Austria, this can provide a comparative advantage, but one also needs to note that firms’ views on the role of these benefits are highly diverse. For example, firms from western peripheries report that plots are limited in mountainous regions and that those available are often reserved for tourism, which drives land prices to levels comparable to those in urban areas. Consequently, not all firms in our sample benefit from low cost advantages. Another issue is that public subsidies are often tied to firm size. Larger enterprises are usually not eligible for public funding, while SMEs more frequently report that federal or EU funds are an asset of their location:

“Here, I have to say, in terms of subsidies, the location is attractive, this is definitely positive. Usually, when we apply for federal subsidies, we receive co-financing from the federal state.” [Firm 2]

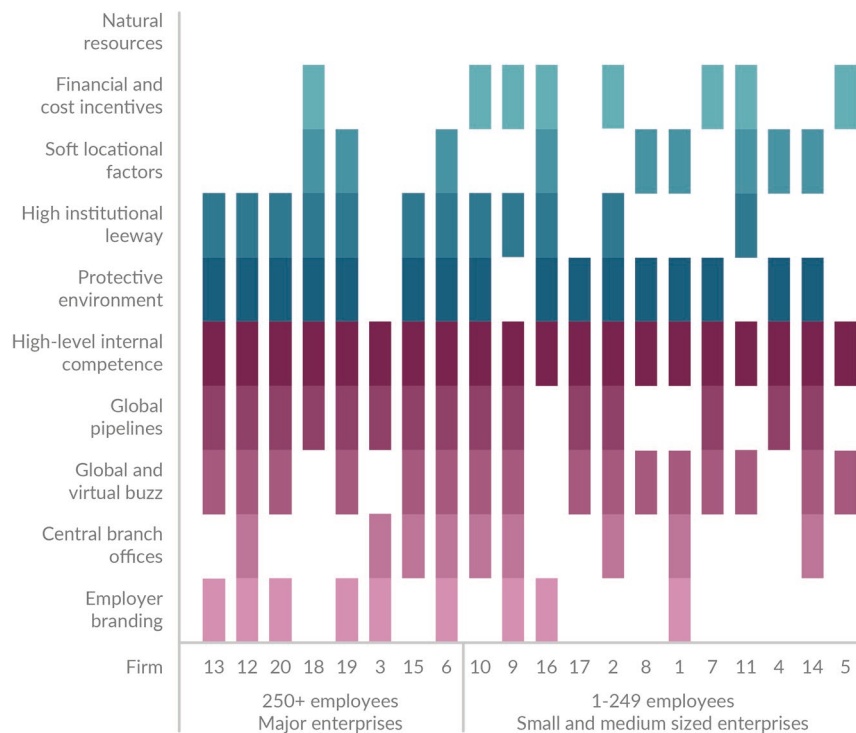
Finally, in the past, geographical proximity to natural resources played a role for attracting firms to peripheral regions in Austria. One example is the Plansee Group, a world market leader for powder metallurgical materials, whose founder relocated from Berlin to Breitenwang in Tyrol in 1921 due to the easy and cheap access to hydro-electrical power (Gebhardt, 1990, 157-158). However, with the extensive availability of electricity, better transport infrastructure, and few remaining mining operations, there is hardly any evidence that natural resources continue to matter for the locational choices of the investigated innovative firms in Austria. Hence, none of the respondents highlighted them during the interviews.

#### **4.3 Discussion: the relationship and significance of compensation and exploitation strategies**

As shown in the previous sections, most firms apply both compensation and exploitation strategies during the innovation process. Figure 1 provides insight into the relationship between these practices and their frequency. We distinguish between larger enterprises and SMEs, because firm size has proven to be the most important factor in this regard. On the one hand, employing compensation strategies often requires substantial resources and the availability of these resources increases with firm size. On the other hand, although the picture is not as clear-cut for exploitation strategies, firm size also has an influence, especially in relation to adopting institutional leeway strategies.

The overall pattern suggests that high importance is attached to compensation strategies. Almost all firms build upon high-level internal competences, *global pipelines* as well as *global* and *virtual buzz*. However, there is also some evidence for the adoption of other compensation practices, namely the establishment of branch offices in major cities and employer branding activities. On the other hand, reaping the benefits of the protective environment is the most frequent exploitation strategy. This particularly holds true for the limited danger of labour poaching. Other strategies are more scattered, especially in comparison to compensation strategies. Usually, firms rather use compensation than exploitation strategies. Two firms deviate from this pattern and pursue the opposite approach, indicating a particularly favourable match between their needs and the endowment of the peripheral region.

Figure 1: Compensation and Exploitation Strategies by Firm Size



Overall, compensation strategies thus seem to be essential for innovation in peripheral areas, with exploitation strategies often being described by respondents as being complementary. As the picture is highly diverse, a more detailed analysis needs to be done with caution. In terms of compensation strategies, the influence of firm size on employer branding and global pipelines is evident. Larger enterprises seem to have more resources for undertaking these efforts. Surprisingly, central branch offices are also relatively frequent amongst SMEs, highlighting the importance of this approach. They can be observed especially amongst firms in the Northern periphery. This area constitutes the hinterland of Vienna, Austria's only metropolitan region, providing assets firms do not want to forego. High-level internal competences and global and virtual buzz are equally distributed by firm size.

For exploitation strategies, it is confirmed that institutional leeway is highly dependent on firm size and increases with the number of employees. Most firms emphasizing this function are located in the southern peripheries, which are the most challenged regions in Austria. This explains why political support is particularly strong in these areas. Financial incentives are more relevant for SMEs, while for soft location factors and advantages related to the protective environment, no conclusions can be drawn regarding the effect of firm size. However, soft location factors for product marketing or the recruitment of highly qualified labour are more frequent in the western periphery of Austria. On the one hand, the landscape is more impressive. On the other hand, regional brands like *Tyrol* or *Salzburger Land* are internationally known, making it easier to leverage them.

Again, the picture is highly diverse, underlining the significance of other factors such as industry and business culture. A firm might want to focus on openness or secrecy, resulting in more external networks or protectionist behaviour. A few firms furthermore did not perceive their location as being too peripheral or as disadvantageous to their industry, implying that

they did not recognise much need for compensation or potential for exploitation. An example here is firm 3, which only relies on compensation strategies. This confirms the assumptions made in Table 1, which indicate that the exact portfolio of both compensation and exploitation strategies of an innovative firm will not only depend on regional characteristics, but also on the individual perception of innovation constraints and the actual capacity and willingness to reap potential benefits. In this regard, investigations with larger samples and quantitative analyses might help to generalize the findings.

## 5 Conclusions

This paper seeks to move beyond the urban bias in innovation studies and contribute to a better understanding of the way in which innovation takes place in peripheral regions. Scholarly work on innovation in the periphery has thus far mainly centred on regional innovation constraints and on the ways in which firms overcome these challenges by adopting a variety of compensation strategies. We complement this perspective by shedding light on potential innovation advantages of peripheral regions and investigating the exploitation strategies, which firms put in place to reap these benefits.

Drawing on 20 in-depth personal interviews with innovative firms in different peripheral regions in Austria, we show that compensation strategies go beyond building internal competence and securing external knowledge through formal collaborations, global pipelines as well as global and virtual buzz. Establishing branch offices in central locations and distinct employer branding strategies are found to be of importance too. On the other hand, there also is evidence that innovators in the Austrian periphery leverage benefits of their region, especially in terms of protection from labour poaching and utilising institutional leeway. Moreover, the majority of firms are found to employ both practices, indicating that innovation in the periphery is the outcome of a combination of compensation and exploitation practices. However, our results also suggest that this pattern is variegated, depending on regional characteristics and firm-level factors.

Our research does exhibit a number of shortcomings that should be addressed in future research. While a qualitative approach seemed appropriate for our exploratory analysis, it also impedes generalisations (Schoenberger, 1991), which can be seen as the major caveat of this article. Hence, quantitative analyses in countries with different preconditions, better micro data or larger samples might provide further important insights on the ways compensation and exploitation strategies are related to firm size, industry and life cycle of a firm as well as regional characteristics.

Another key question for further inquiry could be the investigation of the ways in which innovative firms influence the development of their peripheral locations over longer periods. Our results suggest that many firms, particularly larger ones, extensively use institutional leeway strategies to shape their regional environment. Taking a dynamic perspective and examining the wider and long-term regional effects of such strategies should rank high on future research agendas. Under which conditions do such strategies lead to outcomes that benefit other firms as well? And what would the dark side of such strategies be (for example, that the regional environment might become increasingly fine-tuned to the needs of one or only a few firms)?



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