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**From Investment Attraction to Economic Resilience:
A Study of Regional Competitiveness**

(Od přilákání investic k ekonomické odolnosti:
Studie regionální konkurenceschopnosti)

Doctoral Thesis

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Prohlašuji, že jsem práci sepsal samostatně, všechny použité zdroje a literatura jsou v práci řádně citovány a práce, ani její část nebyla využita jako závěrečná práce k získání jiného nebo stejného akademického titulu. Při finalizaci teoreticko-metodologické části byla využita umělá inteligence pro zlepšení čitelnosti textu a pro jazykovou korekturu, konkrétně nástroje ChatGPT a DeepL.

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Abstract

The main objective of this doctoral thesis is to explore the concept of regional competitiveness from the perspective of recent theoretical frameworks, including Evolutionary Economic Geography, Global Production Networks and the Foundational Economy. The thesis identifies three core conditions for regional competitiveness: the ability to attract external scarce resources, the capacity to expand economic activities across regional borders and the creation of a resilient and deeply embedded economy. Methodologically, the thesis is based on quantitative methods with special emphasis on the analysis of mergers and acquisitions, particularly using data for the Czech market. The findings highlight the complexity of the concept of regional competitiveness and the need for nuanced, context-specific policy interventions to enhance it. Regional competitiveness is not a homogeneous concept but is place specific, while the categorization must be made in two dimensions: economic performance and the cross-border market involvement, which for the sake of the thesis, is illustrated by the acquisition market. For future research, the focus should be on the outcomes of the revealed competitiveness, particularly on the economic resilience in terms of economic complexity or foundational economy.

Abstrakt

Hlavním cílem této disertační práce je prověřit koncept regionální konkurenceschopnosti z pohledu současných teoretických přístupů, zejména Evoluční ekonomické geografie, Globálních produkčních sítí a Fundamentální ekonomiky. Práce identifikuje tři základní podmínky regionální konkurenceschopnosti: schopnost přilákat omezené vnější zdroje, schopnost rozšířit ekonomické aktivity přes hranice regionu a vytvoření odolné a hluboce zakořeněné ekonomiky. Metodologicky je práce založena na kvantitativních metodách se zvláštním důrazem na analýzu fúzí a akvizic, zejména s využitím dat za český trh. Zjištění poukazují na složitost konceptu regionální konkurenceschopnosti a na potřebu diferencovaných, kontextově specifických politických intervencí k jejímu posílení. Regionální konkurenceschopnost není homogenní koncept, ale je místně specifická, přičemž kategorizace musí být provedena ve dvou dimenzích: ekonomické výkonnosti a zapojení na širším trhu, které je pro účely práce ilustrováno akvizičním trhem. Budoucí výzkum by se měl zaměřit zejména na konečné efekty regionální konkurenceschopnosti, zejména na ekonomickou odolnost z pohledu ekonomické komplexity nebo fundamentální ekonomiky.

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1 Introduction

Many theories and policies revolve around the concept of regional competitiveness. Although regions do not compete with each other like companies do, there is a fundamental need to develop, support, attract and retain competitive firms in order to ensure a high standard of living for people in the region. Regional competitiveness in this sense is one of the key objectives of industrial, innovation and regional policy.

Drawing on a wide range of theoretical and methodological approaches, this thesis argues that a competitive region is one that succeeds in achieving three goals: 1. It attracts investment and other external resources, including human capital; 2. It expands its own economic activities to other regions; and 3. It creates a strong and deeply embedded economy.

Regions differ profoundly and so do their potentials. The view of regional competitiveness outlined above thus raises a number of fundamental questions: Which regions attract investment, what kind of investment, and what is the real economic and societal impact of that investment? What kind of activities spill over regional borders and bring prosperity back to the home region? What businesses bring more value in terms of economic prosperity, and what economic structure (both in and around the region) do they need?

The methodological core of this thesis to answer these questions lies in the study of the acquisition market in regional perspective. It quantitatively examines the behaviour of acquirers and the subsequent impact of an acquisition on the host region. The first regional goal, attracting investment, is considered primarily in terms of inward acquisitions, while the second goal, expanding to other regions, is seen in terms of outward acquisitions.

The thesis is based on three theoretical approaches that have proven to be the most relevant to the issues studied. The ability to attract investment requires an economically viable business environment that includes, for example, good conditions for start-ups or a strong R&D background. Conceptually, these issues are covered by evolutionary economic geography (EEG), based on path dependence, variety, and adaptivity and leading to various paths of regional industries stimulated by (un)related variety, or self-discovery of innovative potential, as well as by revived public policies such as smart specialisation and green transition. This is compared and combined with less geographical and more economic streams of thought, most notably the idea of economic complexity as part of economic growth theories. The concept of economic complexity has already been successfully incorporated into EEG-based research.

Cross-border expansion, the second goal for a competitive region, requires large, successful companies able to invest and expand their portfolios. It leads to theories covered by global value chains (GVC) and global production networks (GPN) literature, which constitutes the second theoretical pillar for this thesis. And third, the thesis has benefited from recent ideas formed around the UK's Foundational Economy initiative, which shifts the focus from economic prosperity to liveability, and from competitive business to (much larger) mundane activities and foundational economy. This third theoretical pillar allows the discussion of regional competitiveness to be extended to less developed, peripheral regions.

These theoretical foundations are reviewed in Chapter 2 of this thesis in terms of their contribution to the issue of regional competitiveness. Based on this literature review, the concept of regional competitiveness itself is summarized and elaborated and the research questions are formulated. Chapter 3 then describes the main methods used in the thesis. Chapter 4 summarizes the author's articles which constitute the main part of the thesis. Chapter 5 then concludes with the main outcomes and contributions on both theoretical and policy sides with the special attention to the relevance of the outlined theoretical approaches for the studied topic. Chapters 2-5 form a comprehensive theoretical-methodological part of the thesis. They are followed by a list of references of this part. Chapters 7-10 then represent the core of the thesis, offering all the included peer-reviewed articles.

2 Theoretical foundations

It has been three decades since Paul Krugman raised influential objections to the use of the term "competitiveness" to refer to nation-states: "Countries do not compete with each other the way corporations do." (Krugman, 1994) Similar arguments can be made not only for countries, but also for regions. Krugman notes that their success does not come at the expense of others, they do not face a bottom line like corporations in terms of market exit. At the same time, viewing problems such as unemployment or low wages as a lack of competitiveness can lead to misguided and dangerous policy recommendations. Instead of increasing productivity, it is easier to subsidize high value-added sectors or restrict imports. But these steps would not solve the problems, they would only distort international (or interregional) markets and lead to protectionism.

Krugman's view was challenged a few years later by many scholars (Boschma, 2004; Kitson et al., 2004), who noted that competition remains a matter of firms, but regional authorities can influence their competitive position vis-à-vis firms from other regions. In other words, regional competitiveness depends on the performance of local firms, which in turn is influenced by the performance of the region. Moreover, regions are increasingly considered to play an important role in shaping the competitive environment, as many theoretical frameworks on successful regional pathways have emerged in recent decades ranging from the role of clusters (Porter, 1990, 2008) (Asheim et al., 2017) and learning regions (Morgan, 1997) to regional innovation systems (Cooke, 1992; Asheim et al., 2016).

The importance of competitiveness from a macro perspective (i.e. regional and national, not only from the firm level) has also been reflected by the construction of the Global Competitiveness Index (GCI) by the World Economic Forum (Schwab, 2019), the EU Regional Competitiveness Index (RCI) by the European Commission (Dijkstra et al., 2023), and even the UK Competitiveness Index (UKCI) as a project of the Nottingham Business School (Huggins et al., 2023). However, these composite indices cover a wide range of indicators from labour market, technologies or infrastructure to health, education and quality of institutions. Thus, these measures capture the overall functioning of a country or region, but they tend to avoid the competitiveness concerns raised by Paul Krugman.

There have been two waves of increased interest in regional competitiveness. First, in 2004, a special issue of *Regional Studies* was published on the topic. Some influential authors, as noted above, disagreed with Krugman's decade-old assertion that the concept of competitiveness is misleading when talking about nations or regions. The second wave was represented by the publication of two handbooks after 2015, first *The Oxford Handbook of Local Competitiveness* (Audretsch et al., 2015) and the following *Handbook of Regions and Competitiveness* (Huggins & Thompson, 2017).

In the introductory chapter of the first one, Audretsch (2015) argues that all places and regions care about their economic performance in relation to others because there are firms and individuals who take advantage of local performance, or in his words, who have a stake in local performance. The chapter emphasizes that places, like businesses, need to develop and

implement strategic management practices to improve their economic prospects. This involves focusing on local assets, resources, and policies that can attract investment, talent, and innovation. In a frictionless world, actors would freely move to another location if they were dissatisfied with the level of economic performance, but in the real world, people and firms have their sunk costs (financial or emotional) in their location and thus also an incentive to support its overall performance rather than relocating (Audretsch, 2015). Boschma (2004) makes a similar point. First, we all know that some regions grow faster than others – at least in this respect, they are winners, even though there is no way to get out of the market. And second, to win in this competition, regions try to attract two factors: talented people and investment, in other words, human and financial capital. This is the crucial point that contradicts Krugman's statement: the success of one region (in attracting these scarce resources) comes often at the expense of the others due to unequal power relationships.

These arguments capture the first source of regional economic competitiveness: the ability to attract resources. Other sources will follow in the next subsections. It should be noted that these phenomena can be viewed as both a source (or condition) of competitiveness and a manifestation of it. However, considering these phenomena as conditions allows to extend the discussion from theoretical conceptualisation to practical policy implications.

2.1 Attracting resources – Evolutionary economic geography and Economic complexity

The first condition of a competitive region is its ability to attract scarce resources, whether investment or other types of external resources, including human capital. The most important factor in this attractiveness is the economic performance and structure of the region, which depends to a large extent on past development, the so-called path dependence, and the ability to find and create new paths.

Economic performance has been linked to institutions and institutional change by Douglass C. North, who transferred the concept of path dependence from a technological (David, 1985) to an institutional perspective (North, 1990). He notes that regional economic development depends on its inherited constraints, both formal and informal, the latter being shaped by culture. While formal constraints (such as laws, economic rules, and contracts) are relatively easy to change, informal constraints are often deeply rooted and can take decades to change. In other words, it is culture, norms, and habits that have the greatest impact in the long run. More recently, the importance of institutions for regional economic development has been emphasized by several authors (Platje, 2008; Gertler, 2010; Rodríguez-Pose, 2013). A specific form of institutions are agencies, which refer to the ability of actors – whether individuals, organizations or systems – to influence and shape regional industrial development. It is a multifaceted phenomenon that operates at different levels, notably at the organizational level, which involves internal innovation or restructuring within organizations (either firms, universities or public institutions), or at the systemic level, which reflects policymaking or cooperation among stakeholders (Blažek & Květoň, 2023).

From the perspective of the Evolutionary Economic Geography (EEG), a key negative consequence of path dependence is the possibility of regional lock-in to a particular industry or technology due to increasing returns to scale, network effects, and institutional inertia, making it difficult to transition to new economic activities. A vast literature in this field explores ways out of the lock-in situation, either through the concept of a learning region (Morgan, 1997; Hassink, 2005) or through specialisation policies based on regional innovation systems (RIS).

Patterns of innovation in successful RIS are often linked to intra-regional sources and linkages, such as the triple helix model of innovation (Etzkowitz & Leydesdorff, 1995). Internal "regional resources and collaborative networks often have decisive significance for firms' innovation activity" (Asheim & Isaksen, 2002) and these depend on knowledge bases that tend to be geographically immobile. Although Asheim & Isaksen (2002) demonstrated this using evidence from well-developed Norwegian regions, it also explains why RIS have a limited importance in the case of lagging regions (Grillitsch & Nilsson, 2015) which are characterised by a lack of local R&D activity, poor collaboration, and greater reliance on imported innovation from abroad (Ženka et al., 2014). Recently, however, more attention has been paid to extra-regional sources and linkages for successful RIS (Tripl et al., 2018; Květoň et al., 2020).

The issue of regional industrial change and new path development remains highly relevant and researched. Tripl et al. (2018) argues that while endogenous factors have traditionally been emphasized in studies of regional industrial development, exogenous sources of knowledge and actors also play a critical role. Grillitsch et al. (2018) broaden the focus from the role of related variety to the potential of unrelated variety, which involves combining knowledge from different sectors despite the dissimilar nature of knowledge bases. They stress the potential for radical innovation through the combination of unrelated knowledge. Blažek et al. (2020) draw attention to less studied negative trajectories of regional industrial path development, proposing a typology of decline pathways and illustrating them with empirical cases.

RIS theories and conceptualisations also have important policy implications for industrial, innovation, and regional policies. In European conditions, they are mainly formulated in smart specialisation policies (Morgan, 2017; Foray, 2016).

The concept of smart specialisation by Dominique Foray and his team has been adopted by the European Commission for cohesion policy (Foray et al., 2009; Foray, 2015). The concept is based on the idea of self-discovery of innovative potential by firms and institutions themselves and its horizontal diffusion throughout the region: the Entrepreneurial Discovery Process (EDP). The core characteristic of smart specialisation is therefore that it involves a broader structure of regional actors. A possible drawback of this idea can be in the substantial connection to the R&D&I sector, which inevitably sorts regions from leaders to laggards, the peripheral regions. To a certain extent, the proponents of this idea claim that the emphasis on entrepreneurial capacity makes development possible even in the less developed regions, but at the same time they admit that in the laggards, where the knowledge base and entrepreneurial capacity are deficient, smart specialisation is unlikely to take place (Blažek & Morgan, 2019).

Interestingly, a co-author of the smart specialisation concept is Paul A. David, the originator of the idea of path dependence, and the EDP as a key building block of the concept is inspired by

the idea of regional self-discovery pioneered by Hausmann & Rodrik (2003), who are more closely related to economic growth theories and to the more recent idea of economic complexity which will be described below (Foray et al., 2009).

In the reality of regional policymaking, the EDP is often formalistic, and the top-down policy approach is still dominant in selecting the field for specialisation (Foray et al., 2011). Moreover, the process cannot be top-down or bottom-up, but must be iterative, with policy focusing on coordinating and strengthening the innovative activities of regional actors themselves. This places higher demands on policymakers than any previous regional innovation policy. (Morgan, 2017)

An experience of building regional innovation strategies in Central and Eastern Europe (CEE) is captured by Blažek et al. (2013) or Tödtling et al. (2013), who emphasize the importance of the antecedent institutional conditions and the key role of leadership (where the leading agent can be either a research institution, a business association or cluster, or even the local government). The key to success is to employ a number of different companies that still have something in common. Therefore, the useful concept is the "related variety". (Blažek et al., 2013; Content & Frenken, 2016; Asheim et al., 2011)

In addition to the EEG stream of thought, there is a field of study on economic complexity that is mainly associated with Hidalgo & Hausmann (2009; 2011) who developed the Economic Complexity Index (ECI). Their research focuses on understanding how the complexity of a country's productive capabilities relates to its economic growth and development, and as such it has several conceptual overlaps with the EEG.

The economic complexity aligns with the focus on the role of diverse and interconnected industries (related variety) in driving economic development. Similarly, the accumulation of productive knowledge and capabilities important in assessing economic complexity is similar to how EEG examines the evolution of regional knowledge bases and the role of innovation in economic transformation. The analysis of how countries develop new industries based on their existing capabilities resonates with EEG's exploration of path dependence and the evolutionary processes that shape regional economic development. Both schools of thought advocate policies that foster innovation, diversify economic activities, and build on existing strengths, which are central to EEG's smart specialization strategies.

A synthesis of the approaches outlined, covering both EEG and economic complexity, was offered by formulating the principle of relatedness: "The probability that a region enters – or exits – an economic activity is a function of the number of related activities present in that location." (Hidalgo et al., 2018) Many open questions remain in the issue of the role of relatedness on industrial development and regional prosperity, either it is its dynamic nature (Juhász et al., 2021) or the effect on regional economic complexity (Hidalgo, 2021).

To summarize the literature review on the need to attract external resources: A competitive region's ability to attract investment and other scarce resources is critical, with its economic performance and structure being key determinants. This performance is influenced by past development (path dependence) and the region's capacity for innovation. Economic

performance is linked to institutions and institutional change. Formal constraints (laws, rules) are easier to modify, while informal constraints (culture, norms, but also economic structure) are deeply rooted and slow to change. These soft factors have a significant impact on long-term regional development and its ability to attract investment. Regions often become locked into specific industries or technologies. Overcoming this requires strategies such as smart specialisation, which can make a region more attractive to investors by fostering innovation in well-specified sectors. This approach involves regional self-discovery of innovative potential by firms and institutions. It requires a broader structure of regional actors and an iterative policy approach to coordinate and strengthen innovation. Policies that foster innovation, diversify economic activities, and build on existing strengths are central to creating a competitive region capable of attracting investment and external resources.

This thesis expands upon existing knowledge by investigating the behaviour of firms acquiring other firms (Bělohradský, 2019; Květoň et al., 2020), with a focus on various types of proximity between the firms and the influence of different phases of the economic cycle, emphasizing its dynamic nature. The acquisition market studies aim to answer how regions vary in the types of investments as a form of extra-regional flows they attract. Additionally, the thesis examines the actual regional impact of these acquisitions, including both positive and negative effects on path development (Bělohradský & Květoň, 2024).

2.2 Regional expansion – Global production networks

The ability to attract external resources can also be described as a strategic coupling capability (Yeung, 2021), which is the concept from another stream of thought: Global Production Networks (GPN). Strategic coupling is a process through which local economies become integrated into the global economy by aligning their capabilities and resources with the needs and strategies of global lead firms (Yeung, 2015; Yeung & Coe, 2015). The GPN perspective leads to another condition for a competitive region: it must be home to lead or higher-tier firms that are capable of expansion.

The focus of GPN theories on upgrading strategies (Blažek, 20165) and strategic coupling (Yeung, 2015) is driven by the regional development perspective of catching up and ensuring participation in the higher value-added parts of production networks, or in the words of GPN, ensuring higher value creation and value capture. This division points out that not all of the value created by a company's activity can be captured by the company; however, the goal is to capture as close as possible to the value created.

Every company wants to capture as much of the value added as possible. It can be increased through higher value creation or through value capture. When a company seeks to improve value creation, it leads to upgrading. Pavlínek & Ženka (2010) show in the Czech automotive industry that strategies for upgrading differ according to the firm's position in the value chain. Functional upgrading is mostly confined to the top-tier firms, while product and especially process upgrading is widespread. At the same time, functional upgrading (i.e., in terms of R&D activity) is the decisive type for the overall upgrading of the national economy. Not surprisingly, it is in the hands of the most productive, international companies. Blažek (20165) extends the typology of

functional upgrading and downgrading to types that also include lower-tier firms: in particular, they can upgrade by developing a new (intermediary) market or through mergers and acquisitions.

Analysing value added to production as an indicator of value creation in the Czech automotive industry, Pavlínek & Ženka (2016) found that it decreased between 1998 and 2010. However, as they point out, it was caused by the significant growth of the Czech automotive industry as such, which led to an increase in production rather than in value added. In absolute terms, the value created increased significantly, as shown on labour productivity. The authors also analysed value capture mechanisms. In this case, value capture means collecting profits from economic externalities, especially from the automotive production network. The results show that assemblers and higher-tier producers are the most successful in capturing value. At the same time, these firms generate the highest externalities to other domestic firms in the network, as they are more connected to other local firms than lower-tier producers. As the authors put it, “higher-tier foreign firms have the potential to generate greater regional economic effects than lower-tier foreign firms by sourcing more from the host economy”. Surprisingly, this was not confirmed for domestic higher-tier firms.

Regarding the issue of regional economic competitiveness, there are two possible lines of reasoning from the GPN theory. The first goes back to the ability to attract investment, which connects GPN with EEG. The two paradigms evolved rather separately. Recently, however, there has been some work pointing to the potential of linking them more closely (Blažek & Steen, 2022; Boschma, 2022; Květoň & Horák, 2024). Boschma (2022) summarizes the strands of possible mutual enrichment: from the dynamic perspective of EEG, which is valuable for GPN, to the path creation that goes beyond regional boundaries (to Global Innovation Systems), or to the geography of functions that emerges from GVCs and explores how regions can develop or participate in new value chains or upgrade existing ones by specialising in functions rather than products or industries. Blažek & Steen (2022) focus specifically on the intersections between GPN and RIS and conclude, that the concept of strategic coupling can benefit from the RIS focus on localised learning and the wider range of regional actors, such as universities or public administrations. On the other hand, RIS theory's emphasis on new path development can integrate GPN insights on the dynamic integration of regions into the global economy.

The second line of reasoning from the GPN to explain economic competitiveness is a rather implicit consequence that concerns the role of lead firms and higher-tier suppliers on the regional economy and the regional innovation system (Pavlínek & Ženka, 2016). The GPN implication is that the successful competitive region is one that is able to host large successful businesses and, in accordance with Blažek & Steen (2022), not only them, but also an appropriate institutional infrastructure that reinforces expansion into other regions, often through outward acquisitions and investments, increasing the regional value captured.

This thesis contributes to the focus on the role of higher tier firms on regional competitiveness by exploring the conditions for higher value creation and value capture: what is the role of the GPN position compared to other characteristics (Blažek et al., 2021). Moreover, the ability to

expand with outward acquisitions is one of the key conceptual contributions of the thesis (Bělohradský & Květoň, 2024).

2.3 Embedded economy – Foundational economy

In the context of regional competitiveness, the literature often refers to regional resilience as the second basic paradigm for regional development (Crespo et al., 2017; Martin & Sunley, 2017). This paradigm is driven by policy orientation and practical needs of the region, which arise with growing global challenges, from the impacts of climate change to geopolitical threats. In addition to strengthening economic competitiveness, the goal of innovation policy is thus increasingly seen as securing strategic autonomy. This thesis argues that these paradigms are two sides of the same coin, since the imperative of resilience is twofold: to ensure the production of strategic goods and technologies (such as pharmaceuticals or semiconductors) and to anchor the path to long-term prosperity. Long-term prosperity is more about economic and social embeddedness (Amin & Thrift, 1995) than short-term economic and innovative success which is more vulnerable to global competition, market fluctuations and unexpected crises such as global pandemics.

The idea of embedded long-term prosperity is theoretically underpinned by the other strand of literature labelled Foundational Economy (FE). It criticizes the kind of specialisation that, for the sake of competitive advantage, leads to the particularisation of the regional economy. In other words, massive specialisation in a particular industry weakens the intra-regional linkages, which in turn creates further negative feedback loops in the economy and society. FE emphasizes that in regional development, especially in lagging regions, attention should be paid to so-called "mundane production", such as food industry and basic services, which represent a much larger part of the economy than the knowledge-intensive sectors that are primarily addressed in standard regional development policies. What is needed is what they call a "gestalt flip", i.e. looking at the economy as a whole, not just through reductive views such as through GDP (Bentham et al., 2013).

Regarding the regional resilience, FE argues that locally rooted industries like healthcare and education are less likely to relocate, which helps insulate regions from the shocks of global economic downturns. By fostering a strong foundational economy, regions can ensure a stable economic base that provides resilience against external shocks, improving overall competitiveness in terms of economic stability and long-term growth (Hansen, 2022; Martynovich et al., 2023).

At the same time, the role of local mundane activities does not detract from the importance of traded industries for the regional competitiveness. Porter (2003) shows that traded industries are critical to the quality of local activities, which is consistent with the results of economic models based on international trade (Melitz & Redding, 2014).

The concept of the FE was developed primarily by scholars at the Manchester University as a reflection of the economic reality of the United Kingdom (Bentham et al., 2013; Calafati et al., 2023). However, it is attracting increasing attention in other European countries as they face similar shortcomings in public policies and public finances. Although the concept does not

stem from geographical studies, the whole idea is built around the importance of place-based policies and is therefore related to regional science. Recently, it has already been adopted by geographers, such as Kevin Morgan (Henderson et al., 2024).

The FE shifts the focus from priority sectors such as R&D and technology to essential services such as health, education, transportation, utilities, and social services that are fundamental to the well-being and functioning of society. By investing in these sectors, regions can build a more sustainable and resilient economic base that supports both social and economic objectives. Investments in foundational sectors create long-term value for regions, not only through economic returns but also through improved social outcomes. This creates a virtuous cycle where a well-functioning foundational economy leads to a higher quality of life, which in turn attracts talent, businesses, and further investment, enhancing regional competitiveness over time (Calafati et al., 2023). At the same time, for these investments to lead to the desired results, they cannot be made in isolation for one sector, but must include the foundational economy as a whole. Bělohradský & Glocker (2019) show this using the example of the distribution of health outcomes across Czech regions, which depends more on socioeconomic conditions than on access to health care per se.

FE's focus on basic day-to-day activities does not mean that innovation has no role to play. Henderson et al. (2024) suggest that peripheral regions can leverage their unique social, cultural, and environmental resources for innovation. They introduce the concept of “mundane innovation”, which involves innovations in essential services that are typically overlooked in traditional innovation studies. On the case study of Carmarthenshire, Wales, they show that peripheral regions, despite their challenges, have the potential to be leaders in innovation through the foundational economy. In a similar direction, Jeannerat & Crevoisier (2022) construct the concept of “territorial value” which is a sum of “locally interdependent production, consumption and living advantages in the long run” and which makes conditions for cultural, social and societal innovation needed for achieving sustainability goals. Květoň & Horák (2024), although not referring to FE, reveal the limitations of globally connected firms which often lack local collaborations (namely in R&D), which makes them more vulnerable to economic shocks than locally networked companies.

In other words, FE addresses the institutional conditions for attracting resources other than the investment as discussed above and, at the same time, emphasizes the regional economic and social resilience. This perspective is particularly useful when it comes to peripheral regions, as it allows to overcome the limitations mentioned above, namely that the path development according to the EEG as well as the strategic coupling according to the GPN are based on innovation activities that are strongly embedded in certain regions.

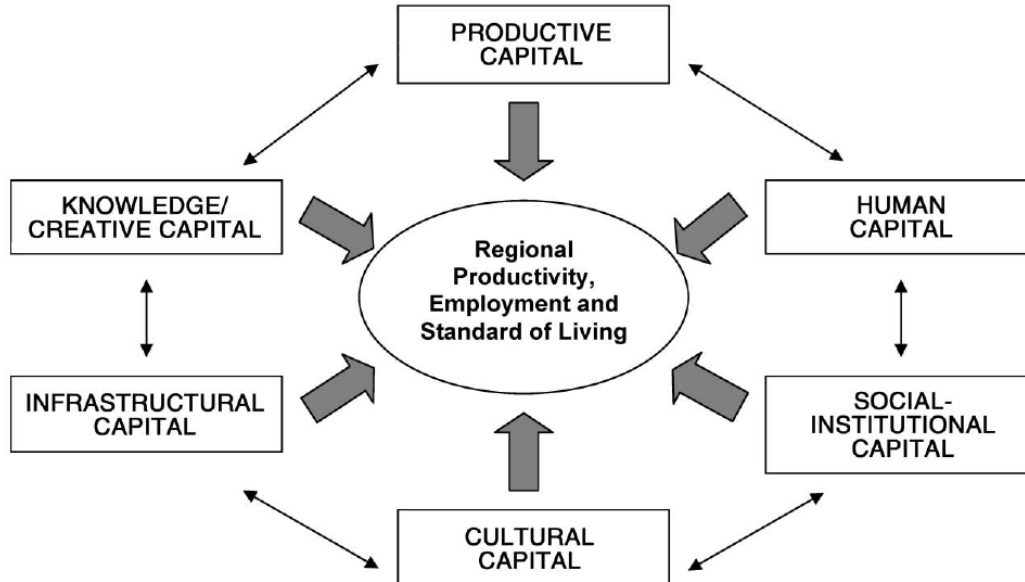
This thesis contributes to the existing research by connecting the FE and the economic competitiveness perspectives. In particular, it examines how the success in attracting investment (in terms of inward acquisitions) affects the structure of the economy showing differences between tradable and foundational sectors (Bělohradský & Květoň, 2024).

2.4 Toward a synthesis on the concept of regional competitiveness

This part conceptualizes the literature reviewed, distinguishing the four main strands: EEG (including RIS), GPN (although, as shown, it also benefits from EEG which can therefore be considered as a superior, primarily methodological, concept), foundational economy (FE), and economic approaches, especially economic complexity as outlined above.

According to Kitson et al. (2004), the definition of regional competitive advantage “needs to reach well beyond concern with ‘hard’ productivity, to consider several other – and softer – dimensions of the regional or urban socio-economy”. Besides the core “productive” capital (which consists of financial and physical capital), they distinguish several types of human capital and institutional capital. Human capital includes not only the quality and skills of the labour force (referred to as human capital itself), but also knowledge and creative capital. Institutional conditions are broader, as described above. In this sphere, Kitson et al. (2004) distinguished between social-institutional, cultural and infrastructural capital (Figure 1). There is no complete agreement on any division of capital into different factors of production. Usually, authors choose a division according to their own intentions and research context, so some emphasize human and creative capital (Florida & Mellander, 2015), while others link innovation potential to institutional capital (economic structure, research institutions...) and differentiate the appropriate paths to prosperity and resilience (Asheim et al., 2011; Blažek et al., 2020; Blažek & Kadlec, 2018).

Figure 1: Bases of Regional Competitiveness

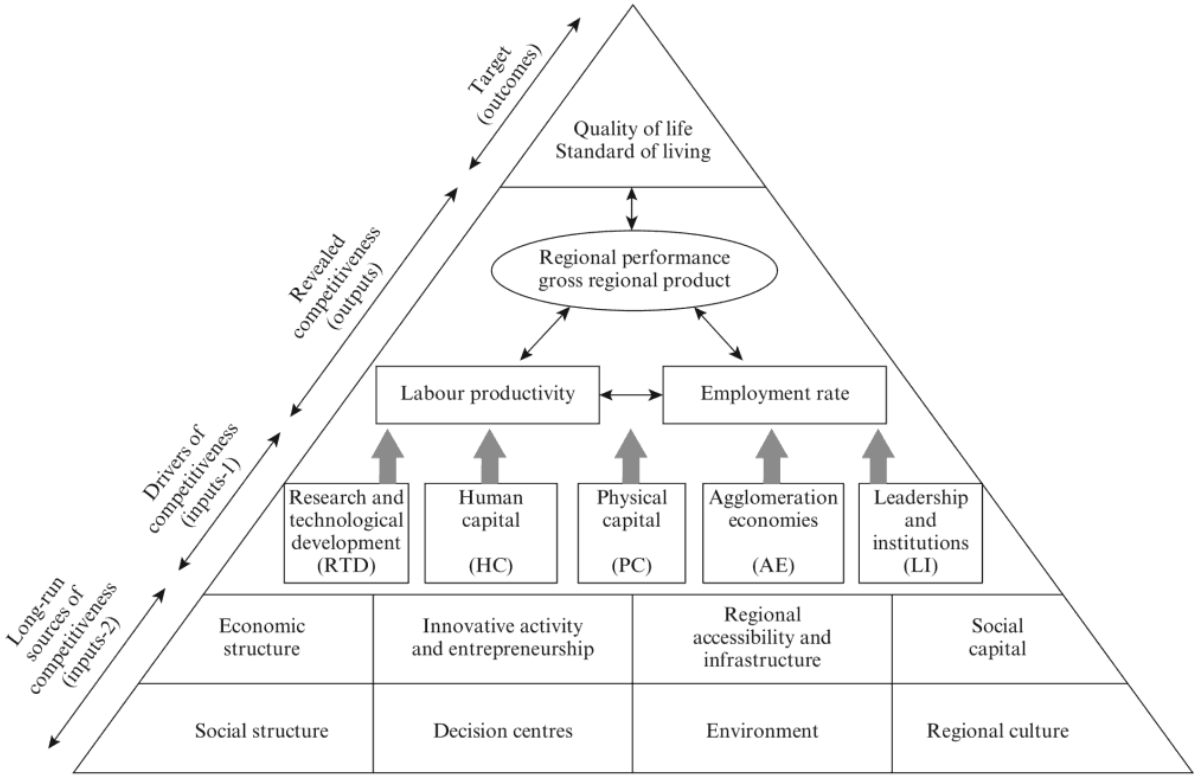


Source: Kitson et al. (2004)

According to Platje (2008), institutional capital includes both formal and informal institutions, ranging from physical infrastructure to social and cultural conditions. Based on this conceptualization, three sources of competition can be identified, three scarce resources that regions compete to attract: 1. investment (in physical capital), 2. skilled labour (human capital), and 3. innovation potential based on the institutional conditions (Kitson et al., 2004).

Perhaps the most influential model of regional competitiveness is the one introduced by Lengyel (2004, 2017), which is known as the “Pyramid model” of regional competitiveness (Figure 2). The ultimate goal (the top of the pyramid) is the quality of life in the region. In the middle stage, there is the “revealed competitiveness”, or in other words measures of the region's performance, such as gross regional product, driven by productivity and unemployment levels. The eight fundamental sources of competitiveness (in the base of the pyramid) are economic structure, innovation activity, regional accessibility (the role of localization), skills of workforce (social and human capital), environment, decision centres (such as local government and firms), social structure and culture. These fundamental long-run sources create the main drivers of competition, where besides physical capital, human capital and institutions, two more are specified: R&D and economies from agglomeration and specialisation.

Figure 2: The Pyramid model of Regional Competitiveness



Source: Lengyel (2017)

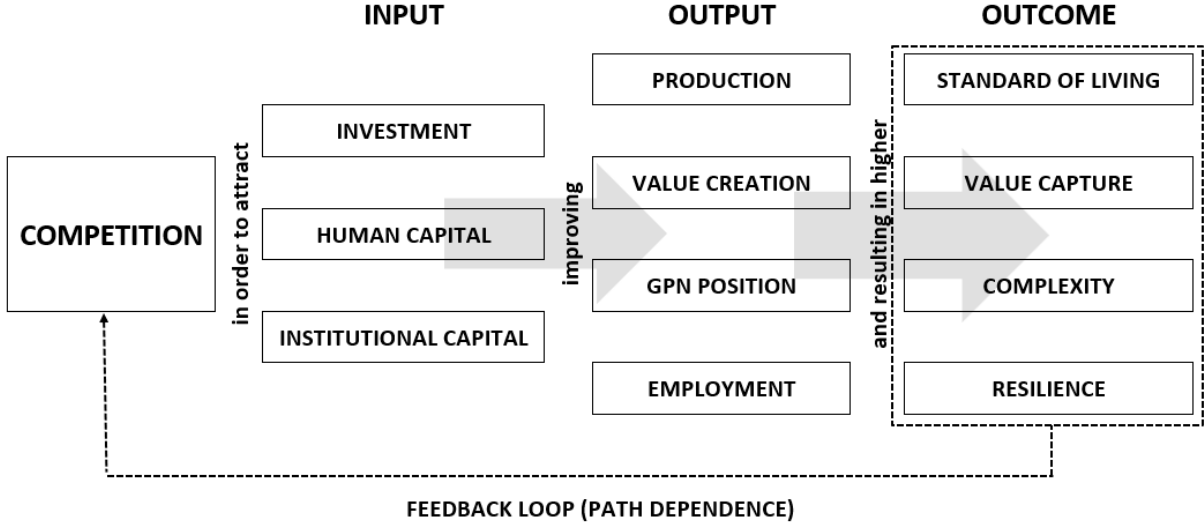
This scheme corresponds to the Three-Factor Model of regional competitiveness outlined by Huggins et al. (2023) which distinguishes input factors (economic activity rates), output factors (GVA per capita, productivity, employment rate) and outcome factors (gross weekly pay and unemployment rate as measures of standard of living).

Different authors conceptualize the space of regional competitiveness in different ways, for example, R&D can be considered both as an input (number of scientists, research infrastructure, R&D investment) and as an output (number of patent applications, research-based start-ups). These views are often overlapping and undifferentiated (Fagerberg & Srholec, 2017; Huggins et al., 2023).

More importantly, there is a crucial difference between the types of inputs for which regions compete. Capital (physical and financial) and labour are exclusive in the sense that there is a limited stock in the market, and as one region attracts a particular worker or source of finance, it excludes others from attracting it. But this is not the case with institutional capital. There is no constraint on others in the situation when one region improves its innovation potential, social cohesion or entrepreneurship culture. Just conversely, it can often “spill over”, allowing other regions to benefit from the improvement as well (Bottazzi & Peri, 2003; Huggins & Thompson, 2015; Ponds et al., 2009; Rodríguez-Pose & Crescenzi, 2008).

Similarly, on the output side, production itself tends to be exclusive – once a region succeeds in producing a certain good and saturates the market, it prevents others from producing the same good. But the same cannot be said for other measures, such as productivity or employment. And certainly not for outcomes such as living standards or attractiveness. While the idea of competitiveness linked to exclusive inputs and outputs can lead to dangerous policy implications, the latter, which leads to the creation of welfare through institutional and innovative improvements, brings benefits to the region itself and its surroundings without harming anyone (Aiginger, 2006).

Figure 3: Three-Factor Model of Regional Competitiveness



Source: own scheme based on the reviewed literature

Connecting the conceptual and theoretical insights, the three-factor model of regional competitiveness is constructed (Figure 3). An important conceptual contribution of the thesis is its emphasis on the feedback loop, which is crucial in the long run, and the interplay of different theoretical approaches. The four strands of the literature differ in what they focus on and how they work with feedback loops. Briefly: EEG puts the emphasis on human and institutional capital which improves production and productivity and increases regional attractiveness (for further investment and labour); economic approaches emphasize investment which shapes the economic structure, production and is reflected in the economic complexity of the region through its extra-regional linkages; GPN goes in a similar direction, focusing on the position of firms in global production networks and value chains, and on the value they create and capture;

and finally, FE focuses on living standards and resilience, seeking the feedback loop to institutional capital that emerges from strong and resilient roots.

In the EEG, the authors tend to favour institutional capital as a driver of competitiveness over physical or human capital. Institutions create an environment that facilitates knowledge creation, learning, and innovation, which are considered critical to regional prosperity. The institutional environment is described as deeply embedded, durable, and difficult to replicate elsewhere (Boschma, 2004). Similarly, Audretsch (2015) stresses that the strategic management of place is largely about how institutions foster innovation ecosystems, support economic clusters, and create favourable policies that encourage entrepreneurship and local development. In the RIS, the emphasis on institutional capital is fundamental due to the focus on the role of local and external organizations, networks, and institutions in fostering innovation and enhancing competitiveness (Asheim & Isaksen, 2002). In addition to the EEG's emphasis on institutional (path dependent) factors, there is also room for other types of resources, emphasizing that it requires the integration of multiple forms of capital, for example in the form of clusters (Ketels, 2013). Camagni & Capello (2013) come up with a term "territorial capital" which is expressed by two scales: from public to private goods (the rivalry dimension), and from tangible to intangible goods. Every quadrant of this space represents a traditional factor of competitiveness (or territorial capital): from natural resources and infrastructure (public-tangible) to human capital including creativity and know-how (private-intangible). Gardiner et al. (2004), representing a more economic approach within the EEG, focuses primarily on productivity, which is largely driven by the skills and capabilities of the workforce, as the core measure of revealed competitiveness. It discusses productivity differences between EU countries, highlighting the East-West divide. Using economic assumptions such as increasing returns to scale, it warns that this productivity gap is unlikely to narrow.

This thesis takes into account the institutional aspects, mainly through the described feedback loops, but returns the main emphasis on the investment and activity of firms.

2.5 Research questions

Based on the literature review and the conceptualisation of the regional competitiveness space, this thesis seeks to contribute to addressing the following research questions:

- 1. What are the spatial patterns and conditions for attracting scarce resources to the region, especially investment and human capital?**

In order to design appropriate regional innovation policies, the question aims at understanding the behaviour of firms: how they decide where to invest. The assumption of the thesis is that the active investment behaviour of firms has at the same time an impact on the attraction of the human capital. Thus, the thesis addresses both: the investment itself and the effects on labour measured by employment rates.

- 2. What institutional conditions on the level of firm and region affect the ability of the firm to create and capture value and to expand with its activities?**

According to the literature review on GVCs/GPNs, in order to be competitive, the region must dispose with specific (in contrast to generic) assets and a high level of autonomy of this companies leading to organic coupling with the global economy (Yeung & Coe, 2015) and host a sufficient number of medium and large firms that are able to utilize these sources to expand elsewhere. The thesis explores the conditions for higher value creation and capture and focuses on the drivers and impacts of outward investment.

3. What are the economic and social effects of the endogenous and extra-regional flows of corporate capital?

One of the crucial views offered by the thesis is oriented towards the actual effects of investment, either endogenous or extra-regional, taking into account mainly the economic structure, the regional path development and the evolution of labour participation. It is assumed that these effects differ according to the types and economic conditions of regions.

In addition to the above-outlined research questions, the thesis aims to assess the relevance of the discussed theoretical approaches to studies of regional competitiveness and to provide a methodological framework to investigate these issues.

3 Methodology

The thesis is based on quantitative methods while it uses mainly data on mergers & acquisitions (M&A) as a well-documented form of business activity between and within regions. In addition to M&A activity, the analyses are based on information on the economic performance of companies and host regions. The thesis takes advantage of combining several methods, in particular:

Logistic regression with rare events (Firth, 1993) – to assess the probability of acquisition in different conditions and spatial patterns (regarding research question 1), logistic regression is the appropriate method. However, the dataset is specific, as the number of cases in which the acquisition took place compared to the cases in which it did not is extremely rare. More details and discussion of different approaches to solve this problem can be found in Květoň et al. (2020).

Cluster analysis – to identify the economic and social impact of acquisitions on the region (research question 3), Czech regions are classified based on their involvement in the M&A market and their economic performance (Bělohradský & Květoň, 2024).

Canonical Correlation Analysis – a specific method of searching for relationships between two sets of interdependent variables was used to assess the relationships between economic results of companies (in terms of value creation and capture) on the one hand and categorical variables such as position in GPN, ownership and size as predictors (Blažek et al., 2021). This method was crucial for answering the research question 2.

In order to answer the research questions, the thesis not only combines these methods and data sources, but also offers two own conceptualisations: one for standardizing the measures of intensity and quality of the regional involvement in the M&A space, and the second for describing the space of economic impacts based on the M&A involvement. These two conceptualizations are described in the following parts. Although the methods used are not primarily geographical, they all involve spatial patterns, mainly by identifying and evaluating different types of proximity between firms from geographical to cognitive and organisational (Boschma, 2005).

3.1 Mergers & Acquisitions

When it comes to attracting investment, a vast literature, especially in the context of Central and Eastern Europe, has focused on foreign direct investment (FDI) as the traditional source of extra-regional knowledge and capital (Pavlínek, 2022; Trippl et al., 2018). However, the growing importance of M&As in general, not just cross-border ones, is increasingly being highlighted (Květoň et al., 2020; Martin & Sunley, 2006). The ability of regions to attract and retain companies through M&As can be a key measure of their competitiveness. Regions that can successfully navigate M&As – by retaining key firms, attracting new investments, and integrating new capabilities – are likely to be more resilient to economic shocks and better positioned for long-term development. Moreover, it can lead to knowledge transfer and innovation, most notably if the acquiring firm brings in new capabilities that were previously absent in the region. The

integration of different knowledge bases can lead to innovation, boosting regional competitiveness and development.

The focus through M&As allows to take into account the role of proximity and to investigate which types of proximity play a greater role in investment decisions: whether spatial proximity or, and in which situations cognitive proximity (by industry) or organisational proximity (by form and origin of ownership) are more important (Boschma, 2005; Ellwanger & Boschma, 2015). In addition, it was found that proximity is not perceived equally by both sides but is asymmetrical depending on the characteristics of region (Boschma et al., 2016).

Part of this thesis methodologically follows this direction of proximity analysis, while expanding the scope of aspects that influence the role of different types of proximity, e.g., stages of the economic cycle or origin of ownership (Květoň et al., 2020), and discussing more specific cultural, path-dependent assumptions, as illustrated by the very outlandish Czech approach to registering Societates Europaeae, the form of European companies (Bělohradský, 2019).

The other part of the thesis focuses on the regional economic and social impacts of M&As as described in the following subsection. This requires the classification of regions based on their M&A performance. However, M&A performance is not a single attribute, but must combine multiple views and dimensions. The intensity of M&As can be measured as the ratio between the number of deals and the number of economic subjects in the region. To conceptualize the multidimensional character of the M&A space, however, three other indices are constructed for the thesis based on the number of acquirers and targets located in the region, i.e. on the number of inward acquisitions (target in the region), outward acquisitions (acquirer in the region) and intra-regional acquisitions (both within the region).

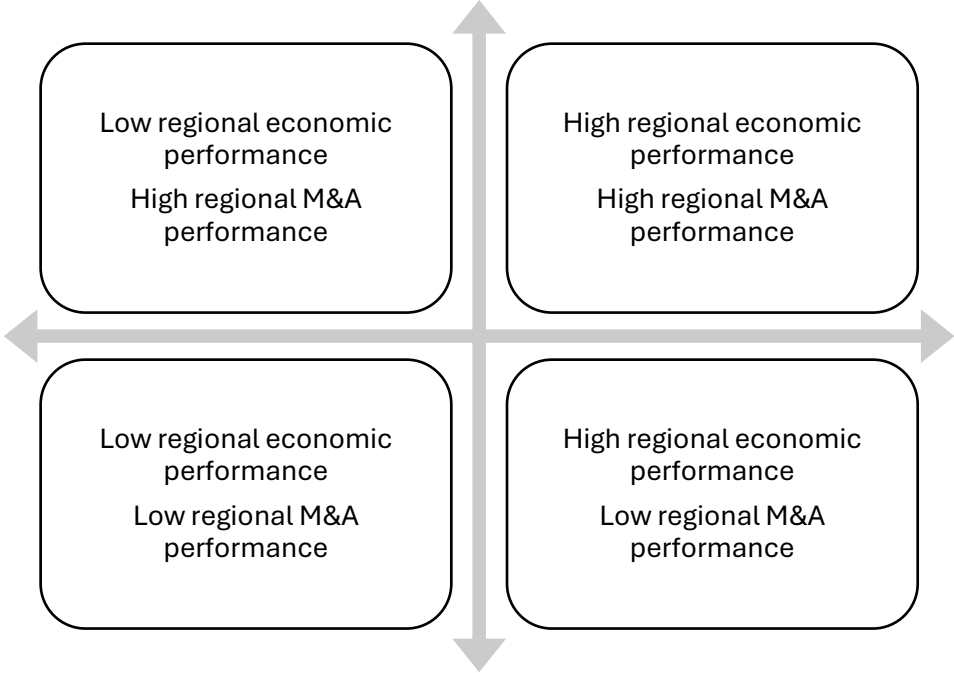
Relative position is the ratio between outward and inward acquisitions. **Local density** compares intra-regional to cross-border acquisitions (both inward and outward). **Foreign attractiveness** is the ratio of foreign to domestic inward acquisitions (Bělohradský & Květoň, 2024). All indices are based on the number of deals, although the analysis also tested the size of the investment: with similar results, but with big problems with outliers.

The source of data on M&As differs throughout the thesis: part is based on commercial database offered by the company “Bisnode” and part is compiled by the author using the own automated machine reading of the Commercial Register where all changes of ownership are recorded. When compared, these two sources show a very similar data structure.

3.2 Regional economic impacts

The important part of the thesis focuses on the real economic and social impacts of M&As, i.e. on the link between the attraction of scarce resources and the outputs (as depicted in Figure 3). It is also the subject of the research question 3. For this purpose, a special model has been developed differentiating the types of regions by their economic performance and M&A market position based on the indices described in the previous subsection.

Figure 4: Conceptualization of regional M&A performance distribution



Source: Bělohradský & Květoň (2024)

This conceptualization makes it possible to trace some regularities in economic impacts of M&As according to the situation of the region, since there are no general causal relationships, such as that attracted investment always brings prosperity. As economic impacts, the thesis covers firm exits, firm growth rate, industrial diversity change and employment rate.

4 Summary of published articles

Since this dissertation takes the form of a collection of published peer-reviewed articles, the following section provides a summary of the key points of the included articles. Their contributions to answering the research questions of the thesis are summarized in the final section with outcomes and conclusions. The complete articles are included in chapters 7-10.

4.1 The variegated role of proximities in acquisitions by domestic and international companies in different phases of economic cycles

To consider the acquisition market in terms of its impact on regional competitiveness, it is crucial to understand the spatial aspects of acquisitions: they are not spatially homogeneous, as Ellwanger & Boschma (2015) have shown. At the same time, space is perceived not only geographically, but also cognitively (by sectoral affinity) or organizationally (by ownership), regarding the types of proximity distinguished by Boschma (2005).

The article explores the influence of different forms of proximity – geographical, cognitive and organizational – on M&A activities in the Czech economy from 2001 to 2016. It seeks to understand how these proximities shape M&A processes in a Central European context in contrast to the Western economies, with its specifics in a heavily industrialized and export-oriented economy, which has undergone significant economic transformation since the fall of socialism and still retains certain cultural and behavioural norms.

Moreover, the article extends existing knowledge by focusing on how the importance of proximities varies across different phases of economic cycles, comparing the pre-crisis period (2001-2008), the crisis period (2008-2013), and the recovery period (2013-2016). The study also differentiates the role of proximities between domestic and international acquisitions.

One of the study's key findings is that geographical proximity plays a more significant role in M&A activities compared to cognitive proximity, particularly in domestic acquisitions. The likelihood of a deal increases as the physical distance between the acquiring and target firms decreases, with the highest probability at the local level. This pattern aligns with findings from other studies conducted in Western Europe, although cognitive proximity typically has a stronger influence in those contexts (Boschma et al., 2016; Ellwanger & Boschma, 2015).

The study also reveals that cognitive proximity, which refers to the similarity in industries or technologies between the acquiring and target firms, is more influential in foreign acquisitions than in domestic ones. However, the importance of cognitive proximity diminishes during economic crises, whereas geographical proximity maintains its significance. Organizational proximity, based on ownership structures (domestic versus foreign), indicates that acquisitions between internationally owned firms are more likely than those between purely domestic firms. Yet, the relevance of organizational proximity also decreases during economic downturns.

During economic crises, firms tend to diversify more, leading to weaker effects of proximity dimensions, particularly cognitive proximity. Conversely, geographical proximity's influence remains strong and may even become more pronounced during periods of economic recovery.

To analyse these trends, the logit regression model was employed. The dataset comprises 6,638 domestic and 4,909 international acquisitions covering the entire Czech economy, and it is controlled for factors such as firm size, sector, and regional characteristics.

In conclusion, the paper finds that geographical proximity is the most critical dimension in the Czech M&A landscape, particularly during economic downturns. Cognitive proximity is more relevant for international firms and large target companies. The findings emphasize the need to consider the dynamic interplay of different proximity dimensions across economic cycles.

The implications of these findings are significant for policymakers and business strategists seeking to understand the factors that drive successful acquisitions and boosting the regional economic competitiveness, as it suggests that strategies focusing on geographical proximity might be more resilient during economic crises, while cognitive proximity could offer competitive advantages in more stable times.

4.2 The boisterous behaviour of Societas Europaea in Czechia – A Proximity analysis of mergers and acquisitions

One of the key methodological steps in the previous study was the exclusion of all M&As involving Prague-based companies. The main reason for this was that Prague hosts a significant number of firms that are registered in virtual offices primarily for reasons unrelated to actual business activity in the region, such as image enhancement or avoiding financial controls. This article supports another assumption, namely that business with so-called ready-made companies is much more pronounced in Czechia than in other countries and that this creates a specific cultural environment for the M&A market which must be taken into account when analysing the role of cross-border investment.

The article investigates the unexpected surge in registrations of the legal form Societas Europaea (SE) in Czechia following its introduction in 2004. Originally intended to facilitate cross-border operations within the European Economic Area, SE has become notably popular in Czechia, which contrasts with its usage in other countries like Germany and France. The study seeks to explore the involvement of Czech SEs in mergers and acquisitions (M&A) and assess the impact of geographical and cognitive proximity on these transactions.

The study involves analysing 7,798 M&A deals from 2004 to 2017, where an SE acted as the acquirer. Logistic regression was used to determine the significance of proximity factors, similarly to the previous article.

The findings reveal that a significant portion of SE-related transactions in Czechia involves ready-made companies, where the acquisition date matches the company's formation date. This behaviour is more common among SEs than other legal forms and reflects a unique aspect of the Czech market, where trading in companies is frequent.

Filtering these artificial deals out, the study further focuses on the genuine transactions. Contrary to initial expectations, Czech SEs did not show a higher propensity for international

deals compared to other legal forms. Instead, their activities remained predominantly domestic, with SEs being less likely to engage in international acquisitions.

The analysis of proximity showed that geographical proximity plays a more critical role in SE acquisitions than cognitive proximity. When comparing SEs to traditional listed companies (a.s.), the study found that SEs demonstrate a similar pattern in the importance of spatial proximity but differ in their approach to cognitive proximity. SEs are more likely to acquire companies in closely related sectors but also show a higher probability when diversifying into broader yet related activities.

In conclusion, the article highlights the peculiar behaviour of Czech SEs, particularly their focus on ready-made companies and limited international engagement, which underscores the distinctive nature of the Czech market. The study challenges the original goals of SE legislation by showing that these companies are not primarily used for facilitating cross-border transactions but rather for domestic ones influenced by geographical proximity. The findings suggest that while SEs in Czechia align with some European trends, they also reflect local market dynamics. The article concludes that the structural differences between SEs and other legal forms in terms of proximity and M&A behaviour underline the unique path Czechia has taken in adopting the SE legal form, a trend that appears to be a continuation of the country's post-communist market evolution, where trading in companies remains a prominent feature of the business landscape.

4.3 The role of tier, ownership and size of companies in value creation and capture

This article explores the relationship between the basic characteristics of companies, such as tier, ownership, and size, within global and regional production networks, specifically focusing on the Czech aerospace industry. The primary objective is to assess the economic performance of companies and to challenge the commonly held belief that “climbing the ladder” within supply chains inherently leads to better economic outcomes. Additionally, it examines the extent to which a company's economic performance is influenced by its level of engagement in the production networks.

The study utilizes a comprehensive database covering 55 Czech aerospace companies over a span of 14 years and analyses various economic indicators, including total revenues, value added, return on assets (ROA), wages, and depreciation. The research methodology combines descriptive statistics with canonical correlation analysis (CCA) to explore the complex factors that impact the economic performance of these companies.

The findings reveal significant variation in economic performance across companies, which is influenced by their tier, size, and ownership. Contrary to common expectations, the study shows that higher-tier suppliers and lead firms often exhibit lower short-term profitability and value-added relative to their economic size. However, these companies are more successful in capturing value, particularly through higher wages and increased capital expenditure. This observation challenges the assumption that functional upgrading or moving to a higher tier in

the supply chain, is always economically beneficial. The results suggest that companies at higher tiers may deliberately trade off short-term profitability to achieve greater value capture, highlighting the importance of distinguishing between value creation and value capture when assessing economic performance (as also depicted in Figure 3).

Another significant finding is the impact of foreign ownership. Despite showing higher growth in total revenues, foreign-owned firms tend to have lower levels of both value creation and value capture compared to domestically owned companies. This could be attributed to the financial support that foreign firms often receive from their parent companies, which may mask their true long-term profitability.

The study also finds that companies with a dominant focus on the aerospace industry (low sectoral diversity) tend to create and capture less value. This outcome is likely due to their heightened exposure to the industry's inherent risks.

In conclusion, the study demonstrates that the relationship between tier, ownership, size, and economic performance is complex and cannot be generalized. It argues that the traditional emphasis on functional upgrading may not always result in improved economic outcomes. Instead, it advocates for a more nuanced approach that considers both value creation and value capture. Policymakers are encouraged to avoid blanket recommendations for functional upgrading and to focus instead on the specific capabilities and contexts of individual companies and industries.

4.4 Acquisitions, spatial heterogeneity and economic impacts in Central European non-metropolitan regions

The article explores the effects of M&As on regional economies, with a particular focus on non-metropolitan regions in Czechia. The study offers both conceptual and empirical insights into how the geographic and economic variations in the M&A market influence regional economic development.

Inward M&A activities are generally perceived as a way to attract financial, physical and human capital, outward M&As then can be understood as a strategy for firms to expand and to get new assets and knowledge. Both can be a powerful driver of regional economic growth. However, the M&A market is not geographically uniform; different regions experience varying levels of M&A activity and are impacted differently by these transactions. The study's goal is to uncover these spatial patterns and examine the economic effects of M&As.

The article argues that regions differ in their economic performance and their involvement in the M&A market, leading to diverse real impacts of M&As. As described in the methodological part of the thesis, for conceptualising the regional M&A space, three indices are constructed: local density, foreign attractiveness, and the region's relative position within the market.

The analysis is based on the unique dataset comprising detailed information about M&As involving Czech companies from 2013 to 2021. The cluster analysis was employed to categorize regions based on their M&A market characteristics and their economic performance. The results

reveal five distinct types of regions. These include successful regions with high incomes and strong international connections, dynamic regions with active outward-oriented capital, stable industrial regions with moderate M&A activity, peripheral industrial regions focused on traditional industries, and structurally disadvantaged regions with high unemployment and low-income levels.

The study finds that the economic impacts of M&As vary significantly across these different types of regions. In successful regions, frequent exits occur after the acquisition but do not substantially harm the overall economy. However, a noteworthy finding in these regions is the effect of M&As on mundane economic activities: in the more economically developed regions, the sectors most vulnerable to negative impacts from M&As are those providing mundane but occasionally purchased goods and services, such as retail and certain services. Finally, the regions may see a decline in the availability or quality of services, potentially reducing the overall comfort of living in the region, despite the general economic strength.

In contrast, in peripheral regions, inward M&As often result in job losses and negative economic outcomes, particularly in tradeable sectors. These regions are more likely to experience adverse effects due to the structural vulnerabilities in their economies.

The uneven distribution of M&As and their varied impacts across regions have significant implications for regional development strategies. The article advocates for policies tailored to the specific characteristics of each region. For instance, regions with high M&A activity but negative economic impacts might require policies to prevent hostile takeovers and support local businesses after acquisitions. In successful regions, there may be a need for policies that maintain service provision in the face of M&A activity, ensuring that the quality of life is preserved.

In conclusion, the paper asserts that while M&As are crucial for regional economic development, their effects are highly context-dependent. The study highlights the need to consider spatial heterogeneity in both academic research and policymaking related to M&As.

5 Outcomes and conclusions

The main objective of this thesis was to reflect on the state-of-the-art theoretical approaches in the field of economic geography in order to summarize and extend the existing knowledge on regional competitiveness. Four strands of literature were covered: 1) Evolutionary Economic Geography (EEG), which focuses mainly on processes at the edge of spatial and historical dependencies and development paths, with a special emphasis on the role of innovation structures, 2) Global Value Chains / Global Production Networks (GVC/GPN) frameworks, which share some assumptions and approaches with EEG, but are more oriented towards the role of horizontal and vertical industrial linkages, 3) economic approaches, especially economic complexity, which are characterized by an emphasis on quantitative generalized concepts, and 4) Foundational economy (FE), as a special case of economic approaches, which redirect the main attention from innovation-based theories and policies to economic and social foundations that are also suitable for less developed peripheral regions. From the literature review on these four strands of knowledge, three main conditions of economic competitiveness have been identified: attracting external scarce resources (for which EEG and economic approaches provide the most valuable insights), the ability to expand with one's own economic activities across regional borders (with the greatest contribution of GVC/GPN approaches), and ensuring a resilient, well-embedded economy (as a direct objective of FE).

These three imperatives have been confronted with the existing concepts, used to compile a new conceptualization (Section 2.4) and to derive three research questions. The following part addresses the research questions regarding the results of the included articles.

Research question 1: What are the spatial patterns and conditions for attracting scarce resources to the region, especially investment and human capital?

Květoň et al. (2020) address the question of spatial patterns and conditions for attracting scarce resources by examining the role of geographical, cognitive, and organizational proximities in shaping mergers and acquisitions (M&A) activities in the Czech economy. The study focuses on how these proximities influence the distribution and attraction of investment across different regions, particularly during various phases of economic cycles. Bělohradský & Květoň (2024) then extends this knowledge by assessing the impact of the investment on labour. In the conceptualisation (Figure 3), institutional capital is identified on the side of inputs along the investment and human capital. However, it is subject to the strongest path dependence and can be shaped relatively slowly – the illustration of the cultural conditions in case of M&A market is offered by Bělohradský (2019).

One of the key insights provided is that geographical proximity plays a crucial role in attracting investment to specific regions. In the context of Central and Eastern Europe (CEE), geographical proximity compared to cognitive proximity (based on industrial sectors) is even more pronounced than in Western Europe. The likelihood of an acquisition increases significantly as the physical distance between the acquiring and target firms decreases, with the highest probability at the local level. The emphasis on local proximity highlights the importance of spatial patterns in the distribution of resources, where regions that are geographically closer to

major economic centers or within the same locality have a competitive advantage in attracting investments.

Moreover, the thesis discusses how the conditions for attracting investment, such as the economic stability of a region, can shift during different economic cycles. During economic downturns, firms tend to diversify more, which may weaken the influence of cognitive proximity and strengthen the role of geographical proximity. This suggests that regions can enhance their attractiveness to scarce resources by focusing on building strong local connections and reducing barriers related to physical distance.

The thesis also touches upon the role of organizational proximity, particularly ownership structures, in influencing investment flows. Regions with firms that have international ownership are more likely to attract further international investment, pointing to a condition where existing foreign investments create a favourable environment for attracting additional resources.

In terms of human capital, the impact of investment is particularly limited. This is in line with a general perception of the CEE economies where the labour mobility is weak and more connected to soft reasons articulated by FE than to economic reasons and job opportunities.

Research question 2: What institutional conditions on the level of firm and region affect the ability of the firm to create and capture value and to expand with its activities?

The article by Blažek et al. (2021) explores how institutional conditions especially at the firm level influence a company's ability to create and capture value, which both have an impact on the firm's capacity to expand its activities. Value capture is directly connected to the ability to invest while value creation leads to either direct (if connected to value capture) or indirect effect (through other agents).

One of the key factors is the firm's position within the supply chain, or its "tier." The study finds that higher-tier firms, such as lead companies and first-tier suppliers, tend to focus more on value capture – particularly through higher wages and capital investments – often at the expense of short-term profitability and value-added. This suggests that firms higher up in the supply chain are able to leverage their position to secure better economic outcomes, although this may involve significant trade-offs, such as increased costs and risks associated with innovation and development.

Another important institutional condition at the firm level is ownership. The article reveals that foreign-owned companies, despite often experiencing higher growth in total revenues, generally have lower value creation and capture compared to domestically owned firms. This discrepancy is attributed to the financial structures and support mechanisms provided by foreign parent companies, which can distort the true economic performance of their subsidiaries. Thus, ownership structure plays a critical role in determining a firm's ability to generate and retain economic value.

At the regional level, the article highlights the significance of a company's integration into regional production networks and the broader economic landscape. Companies with a strong focus on the aerospace industry tend to create and capture less value, which can be attributed

to the industry's specific demands and risks. However, firms that are more diversified across multiple industries and regions are often better positioned to capture value, as they can mitigate risks and leverage regional assets, such as skilled labour, specialized knowledge, and supportive infrastructure.

The thesis suggests that regional institutional conditions, including the availability of skilled labour, the presence of supportive regional policies, and the overall economic environment, significantly impact a firm's ability to expand its activities. Firms embedded in regions with strong industrial clusters, access to advanced technologies, and a supportive policy framework are more likely to succeed in both creating and capturing value. These regional conditions enable firms to innovate, attract talent, and secure investments, which are crucial for sustaining growth and competitiveness in global production networks.

In summary, firms need to strategically navigate their position within supply chains, ownership structures, and regional contexts to optimize their economic performance and ensure long-term growth. The thesis emphasizes that a nuanced understanding of these institutional factors is essential for developing effective strategies and policies that support industrial development and value creation.

Research question 3: What are the economic and social effects of the endogenous and extra-regional flows of corporate capital?

Bělohradský & Květoň (2024) address the question of the economic and social effects of endogenous and extra-regional flows of corporate capital by examining how these flows, particularly through mergers and acquisitions (M&A), impact different types of regions within Czechia. The study delves into the spatial heterogeneity of these effects, recognizing that regions differ in their economic fundamentals, M&A market involvement and, consequently, in how they are affected by both endogenous and extra-regional capital flows.

In economically stronger regions with high levels of income and strong international connections, the inflow of extra-regional capital through M&As often leads to significant corporate exits after acquisition. However, these exits do not necessarily have negative overall economic effects due to the robust economic foundations and diversified industrial base of these regions. On the contrary, the regions may experience changes in their economic structure, particularly in sectors providing mundane but occasionally purchased goods and services, which can impact the quality of life without necessarily reducing overall economic performance.

In peripheral and less developed regions, where the local economy is more vulnerable, M&As tend to have more pronounced negative economic effects. These regions may experience job losses, reduced economic activity, and a decline in industrial diversity, especially in tradeable sectors. The thesis suggests that these regions are more susceptible to the adverse impacts of M&As due to their weaker economic structures and higher dependence on low-cost manufacturing and traditional industries.

The social effects of these capital flows are closely linked to the economic impacts. In successful regions, while the overall economic structure might remain strong, the reduction in the availability or quality of certain services due to corporate exits in mundane sectors can lead

to a decline in the comfort of living. This suggests a potential social cost associated with M&As, even in regions that are economically resilient.

In less developed regions, the social effects are more severe. The study highlights how job losses and reduced economic activity following M&As can lead to increased unemployment and social instability. These effects are particularly detrimental in regions where the local economy is already fragile, and where the loss of even a small number of jobs can have significant social repercussions.

The article also contrasts the effects of endogenous capital flows (capital generated and reinvested within the region) with those of extra-regional flows (capital coming from outside the region, often through foreign direct investment or M&As). Endogenous flows are generally associated with more stable economic development, as they are reinvested in ways that are more closely aligned with the region's existing economic structure and social needs. Extra-regional flows, while potentially bringing new knowledge and resources, are more likely to disrupt local economies, especially if the acquired companies are absorbed into larger, non-local entities that do not prioritize regional development.

5.1 Conclusions

Based on the literature on EEG, GPN and economic approaches, namely Economic Complexity and Foundational Economy, a comprehensive model of regional economic competitiveness has been constructed. The three-factor model of regional competitiveness (Figure 3) describes that competition in the regional sense involves three scarce resources for which regions compete: investment (in the sense of financial and physical capital) and human capital are exclusive in the sense that once attracted they are not available for other regions, institutional capital including culture, rules and processes is not exclusive. On the output side, the revealed competitiveness covers production, value creation, employment and position in production networks and value chains. Finally, these improved outputs should lead to higher standards of living, value capture, economic complexity and regional economic and societal resilience. The various theoretical approaches covered in the thesis differ in what they emphasize from this space and how they work with feedback loops that constitute path dependence.

According to EEG, the ability of the region to attract scarce resources has been studied, particularly on the involvement in the M&A market. The main contribution of the thesis is in expanding the discussion on the role of various types of proximity for corporate investments, especially in relation to the phase of the economic cycle. In good times, cognitive proximity plays a relatively larger role than in bad times. In addition, the thesis examines real regional impacts of these transactions differentiating various types of regions. The adverse effects are more present in less developed regions, but even the economically strongest regions cannot avoid the whole risks as they have relatively vulnerable the so-called mundane part of the economy, including basic services. This finding is based on classification of economic activities promoted by the Foundational Economy. Although the thesis makes a significant conceptual and methodological contribution to the discussion on economic and societal impacts of investment, the effects in outcomes remain at an indicative level and emerge as one of the main

directions for future research: namely in the area of foundational economy and economic complexity, both of which lead from different angles to the question of what kind of competitiveness ensures higher resilience.

The GVC/GPN approach focuses on the conditions for firms to “climb the ladder” in production networks and value chains, leading to higher value creation and value capture. This thesis examines this basic imperative and shows that higher tier does not always mean higher value neither for the firm nor for the region. In addition, it focuses on other aspects, namely the size of the company and the difference between local and foreign ownership.

Combining these theoretical approaches, the thesis shows the multifaceted character of the regional competitiveness and underscores the need for nuanced, region-specific policy approaches. The thesis offers a methodological approach to assess the position of the region in the M&A market differentiating the policy consequences. This approach can be generalized to other types of capital and other channels of competitiveness. This includes not only attracting and retaining investment and talent but also fostering institutional capital and resilience against economic shocks. By integrating these diverse perspectives into policy design, regions can better navigate the challenges of globalized markets, ensuring sustainable development and improved quality of life for their inhabitants – the main outcomes that regional competitiveness should serve.

6 References of the theoretical-methodological part

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7 The variegated role of proximities in acquisitions by domestic and international companies in different phases of economic cycles

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Abstract: This paper aims at an understanding of acquisition processes in a strongly industrialized and export-oriented economy in Central Europe. Drawing on a proximity framework and behaviour theory, the paper investigates that the geographical proximity dimension is more influential than the cognitive proximity dimension. At the same time, cognitive proximity matters more for foreign firms investing into the economy than for domestic acquisitions. While the role of cognitive proximity diminished during the economic crisis, geographical proximity keeps its importance throughout the economic cycle. Moreover, cognitive proximity has become more important for acquisitions of large companies and less for SMEs.

Keywords: acquisitions, cognitive proximity, corporate behaviour, economic cycles, geographical proximity

7.1 Introduction

Economic processes in general and inter-firm relationships in particular are driven by various forms of proximities (Boschma et al., 2016). The current state of knowledge in economic geography implies different effects of geographical, cognitive, institutional and organizational proximity in various areas from research collaboration (Usai et al., 2017; Ponds et al., 2007) and knowledge spillovers of economic agents (Broekel & Boschma, 2011; Paci et al., 2014) to formation of variegated interfirm networks (Balland et al., 2013). In particular, the importance of geographical and cognitive proximity for learning and cooperation has been discussed and empirically examined intensively in recent years. Less frequently, but not less importantly, other dimensions of proximity have been studied as well (Boschma et al., 2016).

The proximity framework is often applied to assess economic links between firms. One of the key processes transforming the economic fabric is the process of mergers and acquisitions (M&A), which are reshaping the role and importance of individual economic agents and indirectly inducing uneven development trajectory of regions (e.g. through the concentration of economic decision-making). A typical purpose of M&A is to enhance performance of involved firms and increase benefits for shareholders (Tuch & O'Sullivan, 2007), but empirical evidence is inconclusive in the literature. We should underline the importance of relatedness as a source of synergies (see e.g. Homberg et al., 2009). Furthermore, the intensity of M&A activity is changing over time as companies have different strategies and expectations in times of crisis and economic boom. Cerrato et al. (2016) distinguished risk-avoidance and risk-taking behaviour of

firms during the time of economic crisis and emphasized limited tendencies of companies to diversify the portfolio via new cross-border acquisitions. In other words, proximity plays role in changing economic conditions considering the behaviour of firms and intensity of acquisitions, but contributions revealing such relations are rare. The economic geography literature distinguishes especially geographical and cognitive proximity (or industrial relatedness) in understanding effects on M&A (e.g. Rodriguez-Pose & Zademach, 2006; Schildt & Laamanen, 2006; or Ellwanger & Boschma, 2015), but a more comprehensive proximity framework has been recently developed (Boschma, 2005; Boschma et al., 2016), which allows the measurement of more proximity dimensions. The economic literature points out business, cultural, technological, and size relatedness as key dimensions, which may lead to success or failure of acquisitions (Homburg et al., 2009).

So far, the proximity and relatedness framework has been developed and empirically verified on M&A partnering only in highly developed countries whose economic development has not been interrupted by a sudden massive restructuring (the Netherlands, Italy, Germany, the U.S. etc.). However, this framework has not been applied to the market economies in Central and Eastern Europe (CEE), which only relatively recently re-emerged after decades of command economy. This is surprising as these economies underwent not only a process of fundamental economic transformation, but also a vigorous process of M&A. In addition, existing research on decision making focuses either solely on domestic takeovers or, on the contrary, aims at cross-border acquisitions (e.g. Ascani 2018). A more comprehensive view on behaviour of companies with different ownership structures is still lacking.

Therefore, this paper will address the research gap by analysing and interconnecting the relevance of different dimensions of proximities in the former command economy – namely Czechia, which underwent turbulent economic changes during the transformation period over the last decades. In addition, due to its geographic position on the border of western and Central-East Europe, relative political stability, strong manufacturing heritage, as well as qualified (but still cheap) labour force, Czechia has been one of the most attractive countries in CEE to foreign investors (for more see Pavlínek, 2004; Cass, 2007) and, consequently, various forms of M&A have been common. In addition, we run the analysis for different phases of economic cycle and with regard to the difference between foreign and domestic ownership of firms.

The specific objective of this paper is twofold. First, the analysis investigates the role of three key forms of proximity (geographical, industrial and organizational) for M&A activities in the Czech economy over the 2001–2016 period. Second, the analysis investigates the changing role of various forms of proximities in different phases of economic cycle (massive slowdown due to financial and European sovereign debt crisis and subsequent recovery) and reveals differences between domestic and foreign companies in strategies pursued within the Czech economy. Thus, the novelty of the paper rests in linking different forms of proximities, in distinguishing different phases of economic cycle and targeting not only on domestic acquisitions but also international ones. Linking all three dimensions (in a dynamically changing and swiftly developing country) extend our understanding of one of the key processes transforming the economic fabric.

The paper is structured as follows. First, the proximity framework and main conceptual points of departure are introduced, including a specific focus on the role of different forms of proximities and effects on M&A activities. The next section introduces a detailed methodological approach and specifies key characteristics of the database on M&A deals and operationalization of variables. Finally, the analysis section is structured according to the specific aims as follows. First, the role of different forms of proximity for M&A activities in the Czech economy in the 2001–2016 period is considered. Subsequently, the changing role of various proximities in different phases of the economic cycle and also differences between international and domestic acquisitions are considered.

7.2 Conceptual debate on the role of proximities in mergers and acquisitions

Corporate take-overs and mergers belong among the major drivers that can significantly reshape the structure of regional and national economies. The spatial impact of M&A deals depends not only on different motivations and strategies of firms, but also on the level of development of the regional ecosystem, market structure and intensity and nature of competition within the region (Boschma et al., 2016). Particular forms of business motivations include financial enticements (Healy et al., 1992), creating a new or expanding an existing market and getting an access to technology, knowledge or skilled labour force (Dunning, 1988; Teece, 1982).

Discussion and empirical verification of the role of key determinants in M&A deals is common in economic geography as well as in economics (finance literature) and the proximity and relatedness framework is applied frequently (e.g. Böckerman & Lehto, 2006; Boschma et al., 2016; Ellwanger & Boschma, 2015; Homberg et al., 2009; Ragozzino, 2009; Uysal et al., 2008). However, a number of contradictory findings can be identified among these studies and there is no consensus on the role of different dimensions of proximity. Particular studies yield varied results due to differences in the range of available data (e.g. domestic vs. international M&A deals), in the width of analysis coverage (e.g. one sector vs. the whole economy) or in the level of the economic system development.

To start with, geographical proximity drives M&A deals because of better knowledge of local conditions and higher availability of reliable information, which are crucial for successful corporate takeovers (Böckerman & Lehto, 2006; Ellwanger & Boschma, 2015; Bick et al., 2017a). Also, geographical closeness plays a role in the case of physical supplies between the firms. Moreover, information advantages arising from geographical proximity increase acquirer's returns (Uysal et al., 2008). Similarly, Bick et al. (2017b) revealed that information asymmetry is changing with distance and may significantly affect M&A deals. In more detail, decreasing geographical distance between firms has an important impact particularly on smaller targets and its acquisitions. Further et al. (2011) examined that larger distance in M&A deals is related to lower returns for the acquirer. Chakrabarti & Mitchell (2013) examined that acquiring firms in chemical manufacturing prefer geographically proximate targets and revealed a persistent effect on target selection. On the other side, Cognitive proximity has been emphasized as a crucial source for synergy effects resulting from related technologies (Homberg et al., 2009; Ellwanger &

Boschma, 2015). As a part of cognitive proximity, industrial relatedness may be a key motivation factor for a certain kind of corporate strategy with the ambition of accessing similar products or related competencies, or increasing the size of the market. Recent scholarly works have agreed that it is not only geographical and cognitive proximity, but also other dimensions that determine M&A partnering. A more comprehensive framework has been developed by Boschma et al. (2016), who, apart from the above-mentioned dimensions of proximity, also assessed organizational and institutional proximity, social capital and the rule of law in the case of M&A deals in Italy. Empirical results show positive effects of all forms of proximity, but with different intensity at different geographic levels. Geographical proximity seems to be a key driver at a very close distance on a local level while institutional proximity plays an important role at the provincial level (Boschma et al., 2016).

The current understanding of various forms of proximity and their effects on M&A deals comes from empirical studies performed at different hierarchical levels. The majority of studies has been assessing domestic M&A performed at the national level (Rodriguez-Pose & Zademach, 2006; Böckerman & Lehto, 2006; Ellwanger & Boschma, 2015; Basu & Chevrier, 2011) or in a particular industry branch (Chakrabarti & Mitchell, 2013). Less attention has been paid to international M&A deals, evidently due to limited availability of data. However, from a socio-economic point of view, international acquisitions can significantly alter the economic structure of the regions and influence even their overall evolutionary trajectory (Isaksen & Trippel, 2017). In this type of investment, it is not possible to measure geographical proximity (except where the country of origin can be distinguished), but great potential is offered by measuring industrial relatedness and organizational as well as institutional proximity.

Further, we assume that the intensity of acquisitions will change in different phases of the economic cycle as companies have different strategies and expectations in times of crisis and economic boom. For many companies, an economic slowdown causing a drop in aggregate demand can constitute a threat, whereas other companies may see an opportunity for further growth in times of crisis. The effects of economic slowdown not only on company performance are a frequent subject of interest (Zona, 2012; Parnell et al., 2012). Reasons for different behaviour of companies are based on behavioural theory, which describes the so-called “problemistic search” (Bromiley 1991; Cerrato et al. 2016; Greve 2003). In a period of economic slowdown and lower corporate performance, managers are looking for opportunities to maintain performance and try to correct performance deficiencies (Chen 2008). Acquisitions may be such an opportunity, by which they can improve corporate performance and close the performance gap (Haleblian et al., 2006). Cerrato et al (2016) distinguished risk-avoidance and risk-taking behaviours in corporate strategy and revealed limited tendencies of companies to diversify the portfolio via new cross-border acquisitions. However, different behaviour of firms and intensity of acquisitions in particular phases of economic cycles are undoubtedly related to different types of proximity. Cyert & March (1963) have emphasized the importance of “neighbourhood” in the geographical and business sense. Cross-border acquisitions in cognitively remote businesses lead to diversification of activities. This type of acquisition can be assumed to be more frequent at a time of economic stability. Nevertheless, drawing on “problemistic search” and behavioural theory, we assume that during the economic crisis

(slowdown), acquisitions will prevail at the regional / local level and will also depend on cognitive proximity (Cerrato et al., 2016; Cyert & March, 1963).

Key economic and institutional specifics affecting M&A activity in Czechia

In Czechia, several distinctive features have developed over the last few decades that might affect the process of M&A even today. The structure of the Czech economy under state-socialism was highly specific in terms of industrial branches as well as in terms of its geography. Moreover, the predominant orientation of the Czech economy towards export to low-demand Eastern markets led (along with soft factors, such as the eradication of private initiative, deterioration of trust and of market competence, an oppressive legal system resulting in a mentality of passivity etc.) to a gradual loss of competitiveness. Consequently, after the collapse of state-socialism, this economy was suddenly exposed to intensive international competition initiated by liberalization of trade and exchange rate, many of these former state-owned companies faced severe challenges, which were further multiplied by a turbulent and precipitous privatization process.

Privatization of the former state-owned industrial companies proceeded according to three major pathways: voucher privatization (for more, see Boycko et al., 1994), privatization into the hands of then-managers and privatization to foreign owners, who were attracted either by the low-cost or market-penetration motive (Pavlínek & Smith, 1998; for a detailed investigation of transition strategies in the former command economies, see Švejnar, 2002). Swift's finding of a new mode of (re)integration into the global economy become a matter of life or death for these companies (Myant & Drahokoupil, 2012). Companies privatized either by voucher privatization or into the hands of Czech managers often secured their future by a shift of production from final goods to components for which the firm was quickly able to ensure demand (Novotný et al., 2016). Thus, after their privatization and trade liberalization, many former state-owned companies were integrated into global production networks as low-cost suppliers (Blažek, 2016).

Given the acute shortage of capital as well as of technology and market know-how, foreign capital was seen as an easy solution to existing problems in many CEE countries. However, in contrast to other countries, which tried to lure vast amounts of foreign capital to swiftly remould their economies (Gorzela, 1996; Bachtler et al., 2000; Sokol, 2001), Czech governments were, at the beginning of the transition, rather opposed to the inflow of foreign capital and reluctant to sell "family silver". Instead, the governments searched for "the Czech way" of privatization based on two waves of voucher privatization. This was based on distribution of vouchers among permanent residents of Czechoslovakia who bid for the shares of earmarked state companies. About 4 400 Czech firms were earmarked by the Czechoslovak government and privatized within several rounds of bidding. For detailed description of mechanisms and procedures behind voucher scheme see for example Švejnar & Singer (1994). The attitude of Czech politicians towards foreign direct investments changed in 1998, when the first set of incentives for foreign investors was adopted to fight the economic downturn. Consequently, inflow of foreign capital increased. Companies privatized to foreign owners were often downsized, their production portfolio narrowed to fit into the strategy of the new owners and their in-house R&D units often

closed as these companies were transformed into branch-plants specialising in low-cost production according to technical specification developed elsewhere (Pavlínek, 2008). Accordingly, greenfield investments made by foreign investors were also mostly represented by branch-plants focused on low-cost production. Yet again, local traditions and other local assets were frequently ignored by foreign investors when considering locational factors. Therefore, all these developments resulted not only in the emergence of a “dependent market-economy” (Nölke & Vliegenthart, 2009), but also in a specific economic structure, which exhibits significant discontinuity vis-à-vis previous industrial specialisations and traditions.

In addition, the old networks existing in the former command economies determine ownership structures (Benáček, 1997) and inter-firm linkages (Grabher and Stark, 1997) in post-socialism. While there is widespread acknowledgment of the role of trust in learning, technology transfer, agglomeration economies and, more broadly, in regional development (Murphy, 2006), post-socialist economies are often typified as being (still) short of trust (Humphrey & Schmitz, 1998). Czech business environment in particular was shaped by very fast privatization after 1989 connected to a wide range of shady practices (Mlčoch, 1998). Thus, persistence of some networks from the former command economy and a generally low level of trust and business ethics are other specific features of the Czech economy with potential impact upon the process of M&A.

Taken together, based on above mentioned arguments about contemporary comprehension of different roles of proximities, effects of the recent economic crisis on various corporate behaviour and strategies for takeovers and emphasizing key economic and institutional specifics affecting M&A activity in former command economies, we hypothesize the following:

H1: In line with results for western countries from the previous research, we expect the cognitive proximity will be more influential than geographical proximity, and closer distances will lead to higher probability of M&A.

H2: Given the acute shortage of capital as well as of technology and market know-how in the transforming economy, foreign capital was seen as an easy solution to existing problems, and therefore we hypothesize that cognitive proximity will matter more for foreign acquirers comparing with domestic firms.

H3: As the times of economic slowdown generally lead to prudent business decisions, we expect significant tendency to diversification, i.e. weaker effects of proximities in the period of economic crisis. This shift is likely to be more pronounced in international deals than the domestic ones.

7.3 Data description

This study is based on the analysis of all take-overs which have involved any Czech company as a target. We consider all deals where at least 50% of the company has been acquired. The resulting dataset of acquisitions, obtained from Bisnode company, is extraordinarily broad. It covers 126,169 deals concluded between the years 2001 and 2016. However, this number covers also deals which are dubious at a second glance.

Similarly to the previous studies, we checked the database to get rid of dubious or inapplicable observations. The sampling scheme employed is summarized in Table 1. In the first place, we deleted observations with missing NACE specifications. Another selecting criterion was the case when the date of acquisition was equal to the date of target legal formation. We do not consider these cases (surprisingly frequent) as real acquisitions. For domestic deals, we further exclude cases with the same address of target and acquirer headquarters. The main reason was to eliminate the opaque deals, which for instance consisted only in changes of legal forms of companies involved, but not in real changes in ownership. Nevertheless, by excluding these observations, we also dismissed all mergers and thus remained focused only on acquisitions. Via this procedure, we reduced the number to 21,501 acquisitions with domestic and 12,097 with international acquirers.

Table 1: Sampling scheme

Sampling criteria	Number of deals			
	Total	Before crisis (I/2001 - III/2008)	During crisis (IV/2008 - II/2013)	Recovery (III/2013 - IV/2016)
Total M&A	126 168			
Minus missing NACE	115 944			
Minus same date of formation as acquisition	44 353			
Domestic	32 256			
Minus same HQaddress	21 501	5 413	7 500	8 588
At least 1 employee	4 686	1 678	1 567	1 860
Excluding Prague	6 638	2 207	2 127	2 304
International	12 097	5 119	3 775	3 203
At least 1 employee	6 755	3 024	2 063	1 668
Excluding Prague	4 909	2 191	1 498	1 220

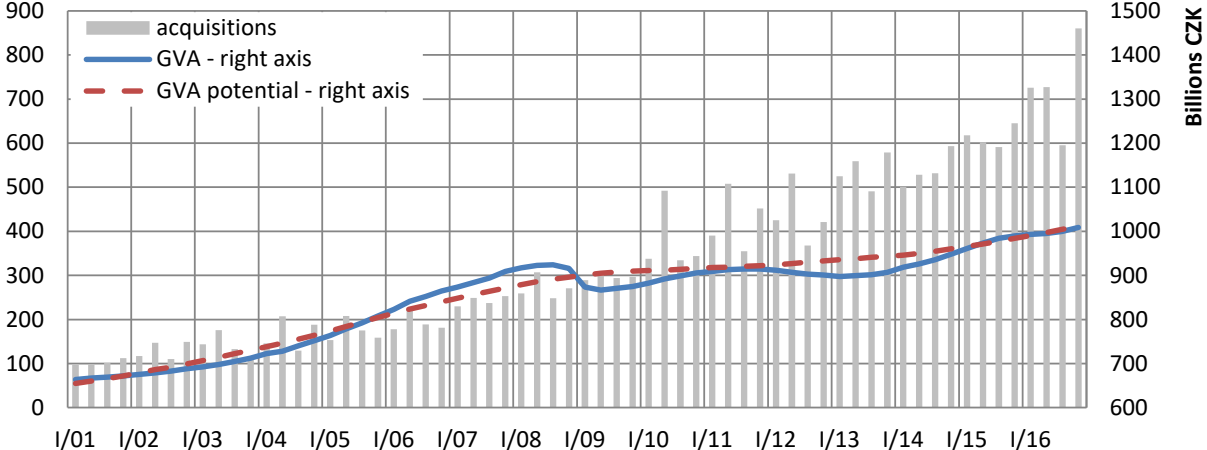
Source: *Bisnode, author's calculations*

It has to be underlined that thousands of firms have their official addresses registered in Prague in so called virtual offices (Smrčka et al., 2017). There are basically three reasons for this: 1. image and marketing purposes, as using a good address in the centre of Prague tends to make a serious impression on (potential) clients or business partners; 2. efforts to avoid financial controls, as there is a much smaller statistical probability of becoming an object of these in Prague than in other cities due to the extreme concentration of businesses into Prague; and 3. a way to become more anonymous in case of shady business intentions. At the same time, many firms registered in Prague do not actually perform any activity. These are ready made companies prepared for sale to anybody who wants to start a business quickly and easily. Therefore, due to the vast extent of these phenomena, which would distort effects of proximities in our study, we decided to omit from the main analysis all deals with either acquirer or target having their headquarters in Prague. Yet the results including firms in Prague can be found in the Appendix. For similar reasons, we tested limitation to only targets with at least one employee as it can be assumed that in dubious businesses of any kind, the number of employees will be either zero or missing. Unfortunately, the information on the number of employees is actually missing in the registry for the majority of our observations, thus, applying this filter may lead to losing some valuable information.

The number of acquisitions and the length of the period allow a robust analysis in three basic phases of economic cycle, as it covers the period of robust economic growth prior to the global

economic crisis, the deep economic downturn during the recent global crisis and the post-crisis recovery. Figure 5 shows substantial and continuous increase in the number of acquisitions over the whole period, disregarding the economic slowdown in the middle. It goes from 102 deals per quarter on average in 2001 to 727 in 2016, which is more than 7 times higher.

Figure 5: Number of domestic acquisitions in the Czech Republic between 2001 and 2016 by quarter (number of deals)



Note: For the comparison with the position of the economy, the output gap based on gross value added (GVA) is depicted by two curves: actual and potential GVA as calculated by the Ministry of Finance of the Czech Republic.

Source: own elaboration based on Bisnode database and Ministry of Finance of the Czech Republic, 2019

The number of acquisitions roughly corresponds to the similar studies for Italy (Boschma et al., 2016) and the Netherlands (Ellwanger & Boschma, 2015). This shows that the Czech market has been attractive for the investors despite its transforming nature. The high number of excluded dubious deals in comparison with the other studies may reflect the difference between well-established western European economies and turbulent changes in the newly emerged market economy in the CEE countries such as Czechia. Also, the pace in which the number of deals rises is faster than usual in the western European countries. It indicates that the country is still in a transition and thus any potential development in time does not necessarily need to be the result of the economic crisis, but it can reflect the path of transition. As the intensity of domestic M&A market is connected to foreign direct investments (Ayygari & Kosová, 2010; Kosová, 2010) and foreign direct investments in transitive CEE countries have been influenced by the economic crisis 2008–2009 (Kalotay, 2010), it is reasonable to assume an effect also on the M&A market. From the sectoral point of view (Table 2), the biggest part of targets belongs to the wholesale and retail trade (section G), followed by real estate activities (section L), professional, scientific and technical activities (section M) and manufacturing (section C). This pattern holds also for acquirers in domestic deals, however, it differs for foreign acquisitions. The most frequent international acquirers are holding companies and as such they are reported within financial and insurance activities (section K). Differences in the scope of single sectors and the depth of their breakdown (some end up with three digits NACE) can distort results of our analysis. Therefore, we apply a restriction on targets separately in manufacturing and in professional, scientific and technical activities as a robustness check.

Table 2: The structure of the original data: shares by NACE code

NACE Rev. 2	Domestic acquisitions		Foreign acquisitions	
	Acquirer	Target	Acquirer	Target
A - Agriculture, forestry and fishing	2.8%	3.4%	0.3%	1.3%
B - Mining and quarrying	0.1%	0.1%	0.2%	0.2%
C - Manufacturing	9.1%	10.9%	14.7%	14.7%
D - Electricity, gas, steam and air conditioning supply	0.5%	1.5%	0.6%	1.1%
E - Water supply, sewerage, waste management, etc.	1.0%	1.2%	0.4%	0.7%
F - Construction	7.0%	7.6%	2.9%	4.2%
G - Wholesale and retail trade, repair of motor vehicles	24.4%	26.1%	14.8%	27.4%
H - Transportation and storage	1.8%	2.4%	2.4%	2.6%
I - Accommodation and food service activities	2.6%	4.2%	0.7%	1.8%
J - Information and communication	3.0%	3.1%	3.8%	3.6%
K - Financial and insurance activities	2.6%	1.1%	33.6%	2.1%
L - Real estate activities	20.6%	18.2%	5.1%	23.0%
M - Professional, scientific and technical activities	15.7%	13.5%	6.5%	13.1%
N - Administrative and support service activities	2.8%	2.8%	12.7%	3.0%
O - Public administration, defense, comp. social security	0.8%	0.0%	0.1%	0.0%
P - Education	0.6%	0.8%	0.2%	0.2%
Q - Human health and social work activities	1.0%	1.5%	0.2%	0.4%
R - Arts, entertainment and recreation	1.5%	1.3%	0.4%	0.3%
S - Other service activities	2.6%	0.5%	0.4%	0.3%
T - Activities of households as employers	0.0%	0.0%	0.0%	0.0%
Total count	9097	16550	7190	8310

Source: own elaboration based on Bisnode database

The core question of our research is to what extent the various types of proximity influence whether the deal between two firms happens or not. In the next step, we compare the results obtained for domestic and international firms, and also for different phases of the economic cycle. These effects are assessed via logit regressions with a binary dependent variable and a set of binary regressors.

$$\text{logit}(P(Y_{ij} = 1|X_{ij}, W_i, W_j, t)) = X_{ij}\beta + W_i\gamma + W_j\delta + t\varphi \quad (1)$$

Using the logit model, we examine the probability (P) of an acquisition between acquirer i and target j . The matrix X_{ij} represents the proximity dimensions as the main explanatory variables. Further, we can distinguish certain characteristics of both acquirers W_i and targets W_j and time t , all used as control variables. Firm characteristics of acquirers (region and NACE section) and time are involved as fixed effects in all cases. In specific cases, we run models separately for various groups of targets divided by size category and NACE section (and for acquirers and targets including or excluding Prague). These models represent robustness checks. All variables are specified in more detail in the following description.

In the dataset, we included only deals which have actually been concluded. In order to construct the logit regressions, one also needs combinations of firms between which the acquisition did not take place. Thus, these are all other possible combinations of existing firms in Czechia. For statistical reasons, however, it is enough to generate a limited number of these

combinations, or in other words to drop a certain fraction of zeros from the full sample (King & Zeng, 2001). We consider the situation from the acquirer's perspective as we suggest that they have the decisive role in choosing from potential targets. For every deal, we picked 10 random companies¹ as potential targets from those which have been acquired by any firm in a two-year span around the date of the given acquisition. This approach has been chosen also by Boschma et al. (2016) intentionally limiting the potential targets only to the firms which are actually part of the M&A market, or in other words, which have revealed their potentiality to be acquired.

Although we are dealing with rare events data, which can cause the small-sample bias of maximum likelihood estimation (King & Zeng, 2001), the sample is so big that it avoids the risk. For the sake of robustness, we have run both Rare-events-Logit (King & Zeng, 2001) and Firth-Logit model using penalized likelihood estimation (Firth, 1993). However, none of them brought significantly different results from the conventional logistic regression. Yet, when applicable, we present results from Firth-Logit as they are considered superior in most cases (Leitgöb, 2013).

Independent variables

On the right hand side, we use variables for several types of proximity (X_{ij} in the Equation 1). For geographical and industrial relatedness we follow the previous studies (Boschma et al., 2016), however, we differ in operationalization of the concept of organizational proximity, which in our case is based on the origin of ownership. At this place, we should point out the difference between *foreign acquirers* as classified in Table 1 and *foreign owned domestic acquirers*. The latter are firms legally based in the Czech Republic (therefore domestic acquirers), however with majority of foreign capital, whereas “foreign acquirers” are legally based abroad. We expect that it matters for relational arrangements between the organizations whether they are both domestically owned or one (or both) of them is financed internationally. In literature, organizational proximity is often considered as an affiliation with the same business group (Capaldo et al., 2014) or a resemblance between ownership structures (Aguilera & Crespi-Cladera, 2016). There is a widespread recognition that the multinational firms and their foreign subsidiaries are superior over domestically based firms in wide range of indicators from productivity and wages to research and development activity (Dachs et al., 2008; Dachs & Peters, 2013). This difference, however, is not caused by the nationality of the ownership itself, but it is a matter of the multinational foundation (Bellak, 2004). This leads us to the assumption that this specific dimension of ownership structure (i.e. foreign or domestic ownership) might influence the M&A market as well.

¹ We have also checked the consistency of results using 20 and 50 random targets instead of 10. This extension did not cause a statistically significant difference. The results are also robust for choosing 10 different zero dyads. In the cited similar articles, Boschma et al. (2016) use only 5 random potential pairs to each actual one, arguing that adding one more does not bring any reduction of standard errors, and Ellwanger and Boschma (2015) end up with 5.3 potential pairs on average.

Table 3: The structure of the original data: shares by type of proximity

	Domestic deals			Domestic deals excl. Prague			Foreign deals
	all	tgt with empl.	excl. Prague	before crisis	during crisis	recovery	excl. Prague
Geographical proximity							
Same region	5.4%	6.7%	17.6%	17.1%	17.2%	18.5%	0.0%
Same district	36.7%	31.7%	23.1%	23.4%	22.9%	23.1%	0.0%
Same municipality	17.4%	17.5%	28.9%	30.3%	27.8%	28.6%	0.0%
Cognitive proximity							
Same NACE (1 digit)	6.7%	7.1%	8.0%	8.4%	8.2%	7.6%	8.9%
Same NACE (2 digit)	6.1%	6.2%	7.0%	6.6%	7.7%	6.6%	6.3%
Same NACE (3 digit)	4.8%	4.3%	3.7%	3.6%	3.2%	4.3%	3.5%
Same NACE (4 digit)	7.8%	8.1%	8.3%	9.4%	7.6%	7.8%	6.7%
Organizational proximity							
Both foreign owned	3.2%	3.6%	2.8%	3.4%	2.1%	2.9%	60.2%
Foreign owned acquirer	11.3%	11.4%	8.9%	8.3%	7.1%	11.1%	39.8%
Foreign owned target	9.2%	9.2%	7.4%	6.6%	5.7%	9.6%	0.0%
Number of obs.	21 501	9 151	6 638	2 207	2 127	2 304	4 909

Source: own elaboration based on Bisnode database

The information on ownership has been excerpted from the Register of Economic Subjects operated by the Czech Statistical Office. We used three dummy variables: first, both are foreign in terms of ownership, second, the target is foreign owned but acquirer domestic, and third the other way round. All other dyads represent deals between domestically owned firms. This type constitutes more than 75% of all reported domestic M&A (Table 3). Regarding foreign acquirers (the international deals), we can distinguish only two categories of dyads as a foreign acquirer is always owned by foreign capital: the case that both are foreign owned, which makes 60.2% of international cases excluding targets in Prague (Table 3), and the other one with domestically owned targets.

Geographical proximity is tested only for domestic deals. Foreign acquirers which have decided to acquire a firm in the Czech Republic have already proved that the geographical distance is not the decisive factor for them. For measuring geographical proximity, we use time distance in minutes of travel by car rather than simple spatial distance. As another measure, we construct dummies for dyads of firms located in the same geographical unit. We distinguish three levels: municipalities (or city districts in case of large cities), districts and regions, and we consider them as mutually exclusive. Thus, each M&A has been recorded at the lowest geographical level, where the deal occurred (Table 3). Considering geographical proximity, excluding Prague has the biggest impact on the structure of the dataset. With Prague, there are 36.7% of deals within the district (which includes M&A performed within Prague as Prague is administratively considered also as a district). Excluding Prague, the biggest share of acquisitions is performed within municipalities.

Industrial proximity is measured in a similar discrete way, while this measure is based on NACE codes: from 1-digit, which is the most general level (Agriculture, forestry and fishing; Mining and quarrying; etc.), to 4-digit, representing a detailed specialisation. The problem with this measure is that it covers only the main specialisation and omits all supplementary codes reported by a given company. In order to evaluate the relative importance of different industrial proximity

levels, it is necessary to include randomly picked potential targets (the zero dyads) from all specialisations, although it could look pointless to call these distant firms as actually “potential” targets. The evaluation of their potentiality to become a target, however, must be the outcome of the analysis.

A set of control variables is also included to the analysis. Firstly, certain Czech regions bear the burden of inappropriate industrialization from the socialist command economy, same as an inheritance of deteriorated business ethics (see Section 7.2). Therefore, we include regional fixed effects (tested on various levels of detail) on the acquirer side (W_i in Equation 1). As it is already 30 years since the transformation started, it is reasonable to expect diminishing impact of this institutional memory (t in Equation 1). Thus, time fixed effects are included on yearly basis. Finally, we control for possible sectoral differences and different legal forms (in matrices W_i and W_j in Equation 1).

Besides the fixed effects, we test the models separately for three groups of targets based on their size, although it limits the sample significantly as the information on the number of employees in the Register of Economic Subjects is missing for the majority of companies. Where available, we distinguish small firms (up to 24 employees), medium sized firms, and large firms (at least 250 employees).

7.4 Empirical results

This section is structured according to partial aims of our research. The first stream of our analysis in principle follows the traditional way of measuring various forms of proximity on a set of domestic acquisitions concluded in the period 2001–2016. Subsequently, relationship between phases of economic cycle and intensity of M&A activity are investigated (see methodology), also with respect to different proximity dimensions. Next, special attention is paid to foreign acquisitions. In particular, industrial relatedness is assessed, including the identification of changes in the behaviour of foreign firms in times of economic recession and recovery. Several extensions and robustness checks are applied using size of targets, separate sectors of activity, inclusion or exclusion of Prague.

As shown in the model calculated for all domestic deals (see Table 4), a clear and strong relationship between geographical proximity and probability of an acquisition has been found. In addition, it was proved that with decreasing geographical level, the potential for a take-over clearly increases. Thus, the most intensive M&A process occurs at the local level. Obviously, this result can be influenced by deals performed within large regional cities (e.g. Brno or Ostrava), which are also considered as municipalities. However, inclusion of Prague into the dataset would lower both the explanatory power of the model and coefficients of all types of proximity including the spatial dimension (see the Appendix). This leads us to the conclusion that it is correct to exclude Prague from the main analysis (see the reasoning in Section 7.3) and, at the same time, that there is no clear evidence that big cities cause an overestimation of the effect of geographical proximity. This assessment of the importance of geographical proximity for this type of corporate investment is in line with conclusions of numerous previous studies (e.g. Böckerman & Lehto, 2006; Ellwanger & Boschma, 2015; or Boschma et al., 2016). Geographical

closeness between the acquirer and the target may enhance knowledge of the local environment and the availability of various forms of information (Böckerman & Lehto, 2006), which ultimately affect the final deal.

A less straightforward relationship in acquisition partnerships has been found in the case of industrial relatedness. Although the results are positive and statistically significant for all levels of industrial relatedness used (i.e. 1 to 4 digit classification), the overall importance of cognitive proximity approximated by industrial classification is lower than that of geographic proximity. When looking closely at the different levels of industrial relatedness, it follows that the largest effect on the probability of a take-over is being associated with the same NACE classes. In all models in Table 4 (using time distance as a geographical proximity measure, including organizational proximity), the coefficients obtained are similarly strong and significant. At the same time, studies for western European countries found stronger effect of industrial then geographical proximity, which is in contrary to our results (cf. Homberg et al., 2009; Chakrabarti & Mitchell, 2013; Ellwanger & Boschma, 2015 etc.) However, when taken separately by sector of the target, it comes out that for manufacturing, the importance of industrial proximity is comparable to geographical distance or even slightly higher (see Table 11 in the Appendix).

The results yielded in the first stream of our analysis also show that the ownership of the company matters. Namely, much higher likelihood of a take-over between firms has been found when both are internationally owned. However, when the acquirer is foreign owned and the target is a full-featured Czech firm, or vice-versa, the probability for acquisition is slightly lower in comparison with completely domestic deals.

Table 4: Effects of proximities on domestic acquisitions

	2001-2016	2001-2016	2001-2016	2001-2016
Geographical proximity				
Time distance (log inverse)			1.247(0.013) ***	
Same region (NUTS3)	2.138(0.042) ***	2.135(0.042) ***		2.135(0.042) ***
Same district	3.216(0.044) ***	3.185(0.045) ***		3.186(0.045) ***
Same city	4.358(0.049) ***	4.346(0.050) ***		4.345(0.050) ***
Cognitive proximity				
Same section (NACE1)		0.356(0.060) ***	0.333(0.060) ***	0.360(0.060) ***
Same division (NACE2)		0.742(0.066) ***	0.751(0.067) ***	0.737(0.067) ***
Same group (NACE3)		1.204(0.093) ***	1.157(0.093) ***	1.200(0.093) ***
Same class (NACE4)		1.829(0.072) ***	1.803(0.071) ***	1.821(0.072) ***
Organizational proximity				
Both internationally owned			0.885(0.106) ***	0.856(0.105) ***
Acq. internationally owned			-0.123(0.054) **	-0.142(0.054) ***
Target internationally owned			-0.168(0.058) ***	-0.185(0.058) ***
Pseudo R Sq.	0.28	0.30	0.31	0.31
Obs.	72 218	72 163	71 391	72 163

Source: author's calculation

Note: The significance levels are *** $p < 0.01$, ** $p < 0.05$ and * $p < 0.1$. Data used in this model exclude Prague. Results including firms in Prague are provided in the Appendix. For further specification of the data see Table 1.

The proximity literature has not yet sufficiently addressed changes in the effects of individual dimensions over different phases of economic cycles. In particular, the relatively long time series of data used in this article allows the uncovering of the variegated effects during the period of strong economic growth prior to 2008, during the economic crisis and during the economic recovery in the post-crisis period. This allows us to compare the changes in the role of proximities between stages of the economic cycle (horizontal perspective) and to compare the significance of the proximities within the selected macroeconomic situation (vertical perspective). Therefore, this approach can extend the findings from the first part of the analysis when the effects of proximity were investigated across the whole dataset.

The most remarkable result of this investigation (Table 5) is that the importance of industrial and organizational proximity diminished during the economic crisis and has not fully recovered in good times, whereas the effect of geographical proximity remains unaffected. Thus, geographical proximity becomes relatively more salient among all proximity dimensions. The performance of firms in times of economic slowdown varies widely. Companies that have not been significantly affected tend to invest in other companies, while the investment behaviour is to a considerable extent driven by a diversification motive. This can be shown by the increasing relative importance of the common sectoral section (1-digit NACE) comparing to other levels of the industrial proximity.

Table 5: Effects of proximities on domestic acquisitions before, during and after the financial crisis

	2001-2008	2008-2013	2013-2016
Geographical proximity			
Same region (NUTS3)	2.163(0.075) ***	2.429(0.072) ***	2.593(0.069) ***
Same district	3.513(0.081) ***	3.510(0.074) ***	3.526(0.072) ***
Same city	4.613(0.091) ***	4.622(0.080) ***	4.457(0.074) ***
Cognitive proximity			
Same section (NACE1)	0.219(0.103) **	0.461(0.101) ***	0.376(0.099) ***
Same division (NACE2)	0.889(0.126) ***	0.822(0.107) ***	0.625(0.107) ***
Same group (NACE3)	1.637(0.176) ***	1.191(0.158) ***	1.093(0.136) ***
Same class (NACE4)	2.408(0.131) ***	1.500(0.114) ***	1.599(0.113) ***
Organizational proximity			
Both internationally owned	1.021(0.181) ***	0.571(0.212) **	0.534(0.148) ***
Acq. internationally owned	-0.278(0.101) ***	-0.153(0.100)	-0.250(0.077) ***
Target internationally owned	-0.302(0.110) ***	-0.192(0.108) *	-0.027(0.083)
Pseudo R Sq.	0.35	0.30	0.30
Obs.	23 879	45 803	50 376

Source: author's calculation

Note: The significance levels are *** $p < 0.01$, ** $p < 0.05$ and * $p < 0.1$.

According to the concept of related variety (Frenken et al., 2007), there is a significant potential for mutual knowledge spillovers and learning between firms due to their technological relatedness. Our results support the role of related variety in economic crisis. It may represent a strategic expansion of the company's portfolio in terms of knowledge, products or technologies.

Overall, the results clearly show that during and after the crisis the excessive industrial (and cognitive) distance reduces the likelihood of acquisitions because of too much industrial similarity. It should be added that the evolution can also stem from the dynamics of a transitive economy (as discussed in Section 7.3). In other words, the potential for more related acquisitions could have been exhausted (or significantly reduced) during the earlier stage of economic transformation. Therefore, the importance of industrial proximity may be declining over time and particularly during the crisis. This assumption can be verified in future research. Furthermore, the results revealed that the importance of organizational proximity (measured by the origin of ownership) diminished during the economic slowdown as well.

Particular attention has been paid to the analysis of acquisition activity of international firms looking for an opportunity to invest in less developed regions in a transforming economy. M&A have become one of the important forms of flow of foreign capital into Czechia (the difference between foreign acquirers and foreign owned domestic acquirers is explained in the Section 7.4). Inflow of foreign capital has been encouraged particularly since 1998 and was largely represented by establishing branch-plants focused on low-cost production of relatively simple components (Pavlínek, 2008). Nevertheless, it may be assumed that the motivation of foreign capital has been changing over time. Thus, when analysing acquisitions by foreign companies, it is necessary to capture both time period and industrial relatedness in the regression. The results for foreign companies (Table 6) enable us to reach three different conclusions. First, the decreasing number of observations between second and third phase (when recalculated to an annual average in a given phase) indicates a decreasing intensity of foreign M&A after the crisis. It can be realistically assumed that acquisitions are driven not only by the low-cost motive (especially in the current phase of the economic cycle, i.e. economic recovery), but also by the changing role of industrial relatedness over time. Secondly, the results clearly show that the importance of less related acquisitions is either increasing or relatively stable, while it is decreasing for higher levels of industrial relatedness. By less related acquisitions we mean corporate investments where the acquirer and target belong to the same section (1-digit level NACE), but differ at the 2-digit level. However, it holds for the whole period that investment is most common between companies in the same NACE group or class. Thirdly, when comparing the significance of the industrial relatedness of domestic and international deals (disregarding other types of proximity), it follows that it matters more for international firms coming into the Czech economy. In addition, for foreign companies entering Czech firms in the form of M&A, there are no significant changes in behaviour in times of economic recession (compared to domestic M&A deals). Last but not least, the importance of organizational proximity is consistently insignificant. Internationally owned companies located abroad are not prone to deal more with foreign owned firms in Czechia.

Concerning the size of targets, we revealed interesting and significant differentiation among firms. Geographical distance plays approximately constant role disregarding the size of targets. Cognitive proximity, however, gains in importance with bigger targets. In the case of acquiring large companies (with more than 249 employees), cognitive proximity turns out to be more important than geographical closeness (Table 7). In other words, acquirers diversify mainly through small firms, while investments into big firms are considerably more tied to the identical

sector. The influence of spatial distance does not vary. Organizational proximity has a limited effect. Only the case of both companies owned by foreign capital shows a consistent statistically significant positive effect. Similar pattern is visible also for foreign acquirers (Table 8).

Table 6: Effects of proximities on foreign acquisitions

	2001-2016	2001-2008	2008-2013	2013-2016
Cognitive proximity				
Same section (NACE1)	0.542(0.062) ***	0.451(0.091) ***	0.590(0.112) ***	0.742(0.126) ***
Same division (NACE2)	1.227(0.071) ***	1.398(0.105) ***	0.999(0.133) ***	1.126(0.140) ***
Same group (NACE3)	2.589(0.109) ***	2.751(0.162) ***	2.592(0.197) ***	2.278(0.235) ***
Same class (NACE4)	2.860(0.086) ***	3.081(0.124) ***	2.762(0.154) ***	2.359(0.203) ***
Organizational proximity				
Both internationally owned	-0.037(0.034)	-0.027(0.059)	-0.041(0.058)	-0.026(0.064)
Pseudo R Sq.	0.05	0.06	0.05	0.03
Obs.	53 183	23 780	16 288	13 177

Source: author's calculation

Note: The significance levels are *** $p < 0.01$, ** $p < 0.05$ and * $p < 0.1$.

As a robustness check, we have run also the analysis for acquirers (and for targets) only from manufacturing or professional, scientific and technological activities respectively, as these sectors are relatively internally heterogeneous. Within manufacturing, the cognitive proximity is more influential than in the whole sample. The role of geographical proximity, however, is robust for all settings (see the Appendix).

Table 7: Effects of proximities on domestic acquisitions differentiated by the size of targets, 2001–2016

	small	medium	big
Geographical proximity			
Same region (NUTS3)	2.159(0.066) ***	1.677(0.152) ***	2.236(0.337) ***
Same district	3.309(0.068) ***	3.078(0.176) ***	3.438(0.431) ***
Same city	4.546(0.082) ***	4.907(0.264) ***	4.341(0.422) ***
Cognitive proximity			
Same section (NACE1)	0.386(0.094) ***	0.555(0.217) ***	0.500(0.524)
Same division (NACE2)	1.060(0.105) ***	1.804(0.253) ***	1.972(0.746) ***
Same group (NACE3)	1.631(0.150) ***	3.088(0.353) ***	3.672(1.151) ***
Same class (NACE4)	2.382(0.111) ***	3.657(0.288) ***	5.122(0.740) ***
Organizational proximity			
Both internationally owned	1.007(0.177) ***	0.637(0.267) **	1.082(0.512) **
Acq. internationally owned	-0.039(0.085)	-0.370(0.184) **	0.040(0.362)
Target internationally owned	-0.223(0.094) **	-0.362(0.192) *	-0.208(0.450)
Pseudo R Sq.	0.33	0.31	0.35
Obs.	30 774	5 268	987

Note: The significance levels are *** $p < 0.01$, ** $p < 0.05$ and * $p < 0.1$. Small companies are classified as having 0 to 49 employees, medium companies between 50 and 249 and big companies more than 250 employees.

Source: author's calculation

Table 8: Effects of proximities on foreign acquisitions differentiated by the size of targets, 2001–2016

	small	medium	big
Cognitive proximity			
Same section (NACE1)	0.480(0.103) ***	0.682(0.160) ***	0.874(0.244) ***
Same division (NACE2)	0.958(0.118) ***	1.982(0.185) ***	2.572(0.295) ***
Same group (NACE3)	2.648(0.163) ***	3.079(0.247) ***	3.332(0.417) ***
Same class (NACE4)	2.816(0.151) ***	4.918(0.281) ***	4.001(0.292) ***
Organizational proximity			
Both internationally owned	-0.037(0.057)	0.006(0.092)	0.015(0.123)
Pseudo R Sq.	0.05	0.11	0.08
Obs.	18 991	9 207	5 900

*Note: The significance levels are *** $p < 0.01$, ** $p < 0.05$ and * $p < 0.1$. Small companies are classified as having 0 to 49 employees, medium companies between 50 and 249 and big companies more than 250 employees.*

Source: author's calculation

7.5 Conclusions

This paper aims at an understanding of mergers and acquisition processes as a specific form of inter-firm relationships in a strongly industrialized and export-oriented economy in Central Europe, which underwent not only a process of fundamental economic transformation, but also a vigorous process of M&A. More specifically, we investigated different dimensions of proximities and their effects on the probability that two firms will engage in an acquisition. This paper provides contributions with investigation of these forms of proximities in different phases of economic cycles (comparing their role during economic slowdown and conjuncture) and in covering not only domestic acquisitions but also international ones.

First, the most substantial result of our study is that in the case of post-communist CEE market, geographical proximity appears to be the most important proximity dimension. Moreover, the likelihood of a deal increases with decreasing physical distance: the most prominent role of geographical proximity has been documented at the local level. This pattern for geographical proximity is in line with the conclusions of Böckerman and Lehto (2006) or Ellwanger and Boschma (2015), however, there is a certain difference, as these studies, based on western European countries, estimate relatively bigger importance of industrial than the geographical proximity – conversely to our results for CEE countries. Therefore, the hypothesis (H1) was not fully confirmed, as we expected that the cognitive proximity would be more influential than geographical proximity, which was in line with contemporary literature for Western Europe. Interestingly, this assumption holds when considering separately acquisitions of large targets. It follows that the diversification motive is stronger in acquisitions of smaller firms, while investments into bigger firms more often aim at cognitively proximate targets. Also, the role of cognitive proximity is comparable to the effect of geographical closeness, when the analysis is restricted only on targets in manufacturing.

Second, the acquisition activity of international firms, searching for an opportunity to invest in less developed regions, depends on the industrial relatedness and evolves over time. In particular, our results clearly show that the chance to become a target of an international acquisition is gradually increasing over time between less related industrial sectors (especially in relative terms). When comparing the significance of industrial relatedness between domestic and international deals, cognitive proximity matters more for foreign firms investing into the Czech economy. Therefore, the hypothesis H2 has been confirmed.

Third, regarding the hypothesis H3, we expected a significant tendency to diversification (i.e. weaker effects of proximities) in the period of economic crisis. Our results revealed that the importance of industrial proximity diminished during the economic crisis and has not fully recovered in good times, whereas the effect of geographical proximity remains unaffected. Companies that have not been significantly affected during the crisis tend to invest in other companies, while the investment behaviour is to a considerable extent driven by a diversification motive. Our results support the role of related variety in economic crisis and revealed that the excessive industrial (and cognitive) distance reduces the likelihood of acquisitions because of too much industrial similarity. The largest effect on the probability of take-overs is associated with having the same 4-digit NACE specialization. However, this conclusion differs for various phases of the economic cycle. Bad times drove firms more to cross-sectoral take-overs, whereas deals between the closest firms have slightly diminished. Therefore the hypothesis H3 has been confirmed.

Generally, empirical evidence on the role of proximities is inconclusive in the literature. This research shed the light on M&A partnering in strongly industrialized and export-oriented economy in Central Europe. However, not all these findings and results can be easily generalizable as the entrepreneurial environment of each country has its own and unique features, challenges and potentials for M&A deals. However, concerning many common features of economic ecosystems in the CEE post-socialist countries (see e.g. Květoň and Blažek, 2018) and given the fact that the majority of these countries have been attractive to foreign investors, we can assume similar patterns in M&A deals and effects of proximities across the area particularly for international firms. It is reasonable to assume that corporate behaviour and strategies for takeovers during the economic transformation are similar throughout the CEE countries because of their relative political stability, the unique opportunity to acquire market access and know-how of former state-owned companies, as well as because of similarly qualified (but still cheap) labour force. However, the role of geographical distance between domestic firms may vary by different land area (e.g. Czechia vs. Poland).

Based on the empirical evidence provided by this paper, future research should be focused on at least two directions. First, the asymmetric effect should be examined between metropolitan and non-metropolitan regions (or cores and peripheries). It is generally accepted that economic relations between core and peripheral regions are largely unbalanced (Balland et al., 2013), and M&A deals can be one of the major mechanisms further exacerbating the asymmetry of relations between regions. But more empirical testing of proximities and asymmetric relations in different socio-economic contexts is needed. In case of CEE, we may expect that asymmetric relationships prevail among metropolitan and non-metropolitan areas. Moreover, it would make

sense to reveal real effects (on employment, business performance, etc.) of acquisitions in peripherals compared to core areas. Secondly, it is appropriate to monitor the M&A process within individual global production networks (GPNs) on different stages of development, in different fields and with different ownership. This would contribute to the gradual interconnection of the two key but still disparate knowledge domains in economic geography, i.e. evolutionary economic geography and GPNs. The M&A process should be studied from both perspectives.

7.6 References

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7.7 Appendix

Table 9: Effects of proximities on domestic acquisitions including Prague

	2001-2016	2001-2016	2001-2016
Geographical proximity			
Same region (NUTS3)	1.612(0.037) ***	1.613(0.037) ***	1.612(0.037) ***
Same district	1.230(0.021) ***	1.189(0.021) ***	1.187(0.021) ***
Same city	2.472(0.025) ***	2.424(0.025) ***	2.422(0.025) ***
Industrial proximity			
Same section (NACE1)		0.317(0.031) ***	0.318(0.031) ***
Same division (NACE2)		0.583(0.033) ***	0.582(0.033) ***
Same group (NACE3)		0.845(0.038) ***	0.844(0.038) ***
Same class (NACE4)		1.124(0.032) ***	1.121(0.032) ***
Organizational proximity			
Both internationally owned			0.434(0.045) ***
Acq. internationally owned			-0.146(0.024) ***
Target internationally owned			-0.155(0.026) ***
Pseudo R Sq.	0.08	0.09	0.09
Obs.	234 882	234 742	234 742

Source: author's calculation

Note: The significance levels are *** $p < 0.01$, ** $p < 0.05$ and * $p < 0.1$.

Table 10: Effects of proximities on domestic acquisitions with acquirers only from Prague

	2001-2016	2001-2016	2001-2016
Geographical proximity			
Same district	0.520(0.021) ***	0.480(0.021) ***	0.477(0.021) ***
Same city	1.452(0.031) ***	1.393(0.032) ***	1.390(0.032) ***
Industrial proximity			
Same section (NACE1)		0.247(0.042) ***	0.248(0.042) ***
Same division (NACE2)		0.547(0.043) ***	0.545(0.043) ***
Same group (NACE3)		0.796(0.046) ***	0.795(0.046) ***
Same class (NACE4)		1.041(0.041) ***	1.037(0.041) ***
Organizational proximity			
Both internationally owned			0.439(0.055) ***
Acq. internationally owned			-0.034(0.030)
Target internationally owned			-0.139(0.032) ***
Pseudo R Sq.	0.02	0.04	0.04
Obs.	133 459	133 448	133 448

Source: author's calculation

Note: The significance levels are *** $p < 0.01$, ** $p < 0.05$ and * $p < 0.1$.

Table 11: Effects of proximities on domestic market restricted to manufacturing and professional, scientific and technical activities

	acquirer C	target C	acquirer M	target M
Geographical proximity				
Same region (NUTS3)	2.089(0.101) ***	1.982(0.101) ***	2.021(0.119) ***	2.110(0.141) ***
Same district	3.494(0.113) ***	3.170(0.113) ***	3.025(0.124) ***	3.282(0.144) ***
Same city	4.667(0.143) ***	4.452(0.143) ***	4.055(0.125) ***	4.415(0.150) ***
Cognitive proximity				
Same section (NACE1)	0.392(0.201)	0.255(0.201)	0.098(0.141)	0.704(0.326) **
Same division (NACE2)	1.881(0.289) ***	1.724(0.289) ***	0.343(0.520)	0.982(0.618)
Same group (NACE3)	3.950(0.411) ***	3.663(0.411) ***	1.627(0.254) ***	2.325(0.391) ***
Same class (NACE4)	4.986(0.385) ***	4.817(0.385) ***	1.933(0.281) ***	2.587(0.412) ***
Organizational proximity				
Both internationally owned	1.139(0.224) ***	1.028(0.224) ***	0.366(0.328)	0.541(0.380)
Acq. internationally owned	0.059(0.124)	-0.298(0.124) **	-0.123(0.148)	-0.158(0.183)
Target internationally owned	-0.409(0.134) **	0.060(0.134)	-0.244(0.156)	-0.350(0.193)
Pseudo R Sq.	0.36	0.32	0.29	0.34
Obs.	9 662	12 206	9 508	7 317

*Note: The significance levels are *** $p < 0.01$, ** $p < 0.05$ and * $p < 0.1$. The column “acquirer C” takes into account only deals with the acquirer from manufacturing (section C), column “target M” analogously represents deals involving all targets of this type of economic activity.*

8 The boisterous behaviour of Societas Europaea in Czechia – A Proximity analysis of mergers and acquisitions

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Journal: XXII. mezinárodní kolokvium o regionálních vědách – Sborník příspěvků (listed by Web of Science)

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Abstract: Czechia is known for a relatively high number of European Companies (SE) registrations. In order to clarify the enormous popularity, the aim of this study is to describe the behaviour of SE in mergers and acquisitions (M&A) activity and to detect differences from other listed companies. In particular, the emphasis is put on the role of geographical and cognitive proximities between SE and their targets. The empirical assessment using logistic regression benefits from a large dataset comprising of 7,798 deals from years between 2004 and 2017 with an SE as an acquirer. The results show that the majority of deals involving SE are connected to the practice of ready-made companies for sale, while the internationalization is weak and statistically insignificant. The pattern of cognitive proximity effect on M&A provides a strong empirical evidence for the theory of related variety.

Keywords: mergers and acquisitions, European companies, proximity, logistic regression

8.1 Introduction

The introduction of the European-wide legal form called European Companies or Societates Europaeae (hereafter SE) in 2004 was intended to reduce the administrative burden for companies operating across the European Economic Area. It is a form of public limited liability company, which can be registered in any Member State and then act across borders without creating national subsidiaries in every country. This intention has been partly met in Germany and France, where the biggest SE are registered. However, the registrations have been soon overwhelmed by Czech firms (Figure 6) – mostly small “shelf” companies (Cremers, Carlson, 2013).

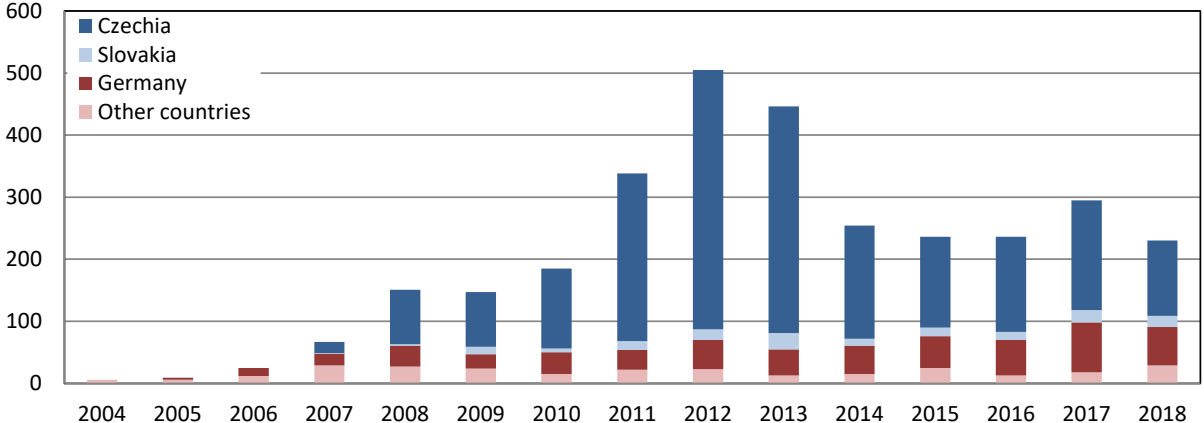
The aim of this article is to unravel the behaviour of Czech based SE by analysing their involvement in mergers and acquisitions (hereafter M&A), especially considering differences to other legal forms. In particular, the emphasis is put on the role of different proximity dimensions between SE and their targets: specifically the geographical and cognitive proximity. The idea is to shed more light into the practices and motivations shaping the Czech SE market, which are strikingly different from other European economies.

The proximity framework allows to describe inter-firm linkages and spillovers (Paci, et al., 2016), while the basic hypothesis is that closer firms tend to be more connected either by direct supplier-customer ties, or by externalities. However, there are various types of proximity, from

geographical to cognitive, organizational, institutional or social (Boschma, 2005). The relative importance of these dimensions can explain the structure of local economy and lead to better understanding of the main drivers. One of the processes, which reveal the importance of various types of proximity, is the process of mergers and acquisitions. Studies from Western Europe show the superiority of cognitive (sectoral) proximity over the spatial closeness (Ellwanger, Boschma, 2015; Boschma et al., 2016), while the Czech market is characterized by the opposite (Květoň et al., 2019). As the SE are intended to operate across national borders, we expect their behaviour to be closer to their western counterparts.

At the same time, the boisterous boom of Czech SE registrations from 2008 onwards has caused a “puzzle” for both regional scientists and policy makers (Eidenmüller, Lasák, 2012). The majority of newly established SE in Czechia are not mergers of international companies (as has been expected), but ready-made companies prepared for sale. They are put “on the shelf” and offered to businessmen. As Czechia belongs to countries with high administrative burden when starting a business (WB, 2019), it can save a lot of time to buy a ready-made company and to change its name and board members only. Moreover, the firms offering these ready-made companies often provide virtual offices (Smrčka et al., 2017). However, this last argument does not explain the excessive popularity of this legal form in comparison with other countries, for instance Germany, where the score for “starting a business” is almost the same as for Czechia (WB, 2019). Through interviews with founders of SE in Czechia, the popularity has been explained by lower legal requirements (board size, for instance) and the positive image of European brand (Eidenmüller, Lasák, 2012).

Figure 6: Registrations of Societates Europaeae by country of origin



Source: ETUI (2014), European Company (SE) Database, <http://ecdb.worker-participation.eu>

Another explanation can be based on continuation of turbulent market behaviour from nineties during the post-communist transformation. For an illustration, we can describe activity around a few people who founded companies named demonstratively Golden River, Platinum River and Crystal River. According to the public registry, these three companies, based in Prague, have had 1,862 ownership ties (current or past) to other companies. Of these, 200 ties lead to the identical address (Koněvova 2660/141, Prague). Recently, all three companies have been owned by the Europea Capital SE (held by the same people). Moreover, this SE has had a share in 133 other SE, of which 17 are based at the same address. These four companies accounted for 1.5% of domestic deals in our dataset.

The unique dataset of mergers and acquisitions realized by Czech SE from the beginning of their existence until 2017 allows an in-depth analysis of the outlined topics. Our specific hypotheses are as follows:

H1: The majority of deals undertaken by SE are connected to the practice of ready-made companies for sale.

H2: As the SE are intended to be a European-wide legal platform, a significant number of deals leads to foreign partners.

H3: For the same reason, geographical closeness plays smaller role than cognitive proximity for acquisition decisions of SE.

H4: Closer firms (in spatial same as cognitive meaning) have higher probability to connect in M&A deal.

8.2 Data and methodology

The empirical assessment in this study is based on a unique dataset provided by the Bisnode company covering all take-overs with at least 50% of the target acquired. Also, the target must be legally based in Czechia, while the acquirer can be international. We have an evidence of 7,798 deals, where the acquirer is SE, and 2,008 deals with SE as a target (1,803 lie in the intersection). This covers all deals since the introduction of SE into the Czech legal system from 2004 to 2017.

These numbers, however, also include all establishments of new companies. If we filter out all “deals”, for which the date of acquisition is the same as the date of foundation of the target (which is freely available from the Registry of Economic Subjects, hereafter RES), we limit the numbers to 1339 deals with SE acquirers and only 202 with SE targets. Similarly, we put aside deals with identical headquarter (HQ) addresses, assuming that it may indicate the use of virtual addresses or an inner branch management (not a real change in ownership). Further, we can consider several other conditions, namely domestic firms only, at least 1 employee according to RES, or deals excluding Prague, assuming that all virtual addresses and other types of artificial businesses tend to concentrate in the capital city (Table 12).

Table 12: Sampling criteria for deals with SE on the acquirer side

Sampling criteria	Number of deals	
	Single condition	Cumulative
Total M&A (acquirer = SE)	7 798	
Excluding identical HQ address	5 999	5 999
Different date of acq. from the foundation	1 339	860
Domestic deals	7 740	817
At least 1 employee in the target	2 186	270
Excluding acquirers from Prague	2 071	104

Source: author's calculations.

As the information on number of employees is missing for a considerable number of firms in RES and exclusion of Prague might lead to a great loss of valuable information, we decided to

continue with 817 domestic deals. On the target side, the numbers are much smaller (Table 13). SE are apparently rather active acquirers than popular targets. The number of 68 domestic deals is too small for a further econometric analysis.

Table 13: Sampling criteria for deals with SE on the target side

Sampling criteria	Number of deals	
	Single condition	Cumulative
Total M&A (target = SE)	2 008	
Excluding identical HQ address	1 590	1 590
Different date of acq. from the foundation	202	122
Domestic deals	1 939	68
At least 1 employee in the target	441	34
Excluding acquirers from Prague	592	10

Source: author's calculations.

So far, we have collected data for the cases, in which a deal has actually occurred. In order to assess the importance of proximity for the probability of the acquisition, we need also dyads of firms without the mutual link (the zero observations). Therefore, we pick 20 random potential targets for each actual acquisition. These targets are chosen from all firms which have been taken over (by not only SE) in a two year span around the deal. By this step, we limit the extraordinarily broad set of all potential dyads to a reasonable number, which allows the statistical analysis and, at the same time, does not cause any statistical bias (King, Zeng, 2001; Boschma et al., 2016).

In the analysis, we use the Firth-Logit model to avoid a small-sample bias caused by rare events data (Firth, 1993). On the right hand side, we distinguish three types of proximity. Geographical (or spatial) proximity is classified on four levels: both firms are either located in the same city, same district (okres), same region (kraj), or none of these. For the first three levels we construct binary variables, which are mutually exclusive (i. e. if the dyad is in the same city, it has value 1 for this, but 0 for district and region). An alternative way of measuring spatial proximity is the time distance (by car), used in log inverse.

Cognitive (industrial) proximity is measured analogically. We use four levels of detail, whether the firms' main specialisation classified by NACE (Eurostat, 2008) corresponds or not (NACE3 means the correspondence in 3 digits of the firms' main activities NACE codes). Finally, for organizational proximity we include only one binary variable for the cases, while both acquirer and target are SE.

8.3 Empirical analysis

Regarding the first two hypotheses, we compare the means of sample for ES with the same defined sample for the alternative legal form, which is listed company (in Czechia called akciová společnost, a.s.). One of the selecting criteria was the case when the date of acquisition was equal to the date of the target formation. If the hypothesis H1 is correct, the mean for this binary variable must be significantly higher in the case of ES than for a.s. (we cannot disentangle the

motive to establish ready-made company from other motives, however, we have no reason to assume differences in other motives), which is indeed confirmed by the t-test (Table 14).

Table 14: Two sample t-tests for equal means between SE and listed company (a.s.)

Tested binary variable	mean		t-test
	ES	a.s.	Pr(T=t)
Date of acq. equal to foundation (acquirer = ES/a.s.)	0.828	0.495	0.000
International M&A (acquirer = ES/a.s.)	0.050	0.141	0.000
International M&A (target = ES/a.s.)	0.443	0.472	0.484

Note: Welch's approximation for unequal variances used

Source: author's calculations.

By the same reasoning, the hypothesis H2, telling that ES is prone to internationalization, can be rejected. There is no statistical difference when considering ES or a.s. as targets; and in the case of acquirers, the difference is statistically significant, but reversed: it is by far more likely that foreign listed company (non-SE) would enter the Czech market as an acquirer than it would be the case for foreign SE. The most frequent acquirers among listed companies are from Slovakia (361), Luxembourg (253) and Switzerland (178). The majority of foreign SE acquirers are from Slovakia (34).

Table 15: Logit results for mergers and acquisitions with SE as an acquirer

	2004-2017		2004-2017		2004-2017		2004-2017	
Spatial proximity								
Time distance (log inverse)							0.647(0.040)	***
Same region (NUTS3)	1.681(0.230)	***		1.726(0.231)	***			
Same district	1.035(0.100)	***		0.999(0.101)	***			
Same city	2.048(0.116)	***		1.991(0.117)	***			
Industrial proximity								
Same section (NACE1)		0.641(0.152)	***	0.613(0.155)	***	0.587(0.155)	***	
Same division (NACE2)		0.353(0.164)	**	0.326(0.166)	**	0.341(0.166)	**	
Same group (NACE3)		-1.424(1.007)		-1.450(1.012)		-1.398(1.009)		
Same class (NACE4)		0.854(0.106)	***	0.753(0.108)	***	0.745(0.107)	***	
Organizational proximity								
Both SE				1.332(0.270)	***	1.435(0.267)	***	
Sector dummy	yes	yes		yes		yes		
Year dummy	yes	yes		yes		yes		
Region (NUTS3) dummy	yes	yes		yes		yes		
Pseudo R Sq.	0.05	0.01		0.06		0.06		
Obs.	16 871	16 853		16 853		16 813		

Source: author's calculations.

The main proximity analysis is provided in two steps. Firstly, we employ only SE as described in methodology. In the next step, we run the same for the alternative listed companies again, as a benchmark. All models cover M&As since 2004 to 2017. In Table 15, the results are presented separately for spatial and industrial proximity and for the full model, which is further differentiated for two alternative ways of measuring spatial proximity. All models include fixed effects for different industrial sectors (sections in NACE classification, i. e. 1-digit codes), for years (assuming possible shifts in behaviour in time), and also for regions. Especially controlling for Prague (which is classified as a "region") is statistically significant and influencing the other

coefficients. At the same time, the explanatory power of the models is very weak (according to the pseudo R-squared), however, the purpose of the model is not to explain the decision making about M&A, but to assess the relative importance of different proximity dimensions. It is not surprising that the key factors for decisions about M&A are not exhausted only by the firm closeness.

The results for both spatial and industrial (cognitive) proximity are robust for adding other dimensions. Surprisingly, it does not hold that with decreasing distance between firms the probability of take-over gradually increases, as it is the case in other studies (Boschma et al., 2016; Ellwanger, Boschma, 2015). It is still true that the probability is highest within the same city and decreases, when the distance is higher. However, the same region demonstrates much higher tendency for the deal than the same district. A similar pattern is in the case of industrial proximity. The highest probability is revealed for the tightest similarity in specialisation (4-digits NACE), but it is negative and insignificant for 3-digits NACE. Comparing various dimensions of proximity, the relative importance is highest for geographical dimension.

Table 16: Logit results – comparison with listed companies (a.s.)

	SE		a.s.	
Spatial proximity				
Same region (NUTS3)	1.726(0.231)	***	1.666(0.055)	***
Same district	0.999(0.101)	***	0.982(0.033)	***
Same city	1.991(0.117)	***	2.333(0.038)	***
Industrial proximity				
Same section (NACE1)	0.613(0.155)	***	0.218(0.052)	***
Same division (NACE2)	0.326(0.166)	**	0.69(0.05)	***
Same group (NACE3)	-1.45(1.012)		1.243(0.078)	***
Same class (NACE4)	0.753(0.108)	***	0.958(0.043)	***
Organizational proximity				
Same legal form	1.332(0.27)	***	0.543(0.029)	***
Sector dummy	yes		yes	
Year dummy	yes		yes	
Region (NUTS3) dummy	yes		yes	
Pseudo R Sq.	0.06		0.08	
Obs.	16 853		172 883	

Source: author's calculations.

In a comparison with listed companies, the role of spatial proximity is comparable, but the industrial proximity differs (Table 16). In the case of listed (non-SE) companies, it behaves much more according to the expectations (increasing probability with decreasing distance), although there is a little incongruence between 3- and 4-digits NACE. On the other hand, organizational proximity plays much bigger role for ES acquirers.

8.4 Conclusions

The strikingly protuberant behaviour of Czech Societas Europaea in terms of number of registrations calls for a deeper examination. In this article, we have provided a proximity analysis of mergers and acquisitions involving SE especially as an acquirer. There have been

approximately four times more cases with SE as an acquirer than as a target. Moreover, the latter are acquired with vast majority by SE again.

It has been described in previous studies that the extensive number of SE registrations in Czechia is driven by the practices of ready-made companies for sale (Cremers, Carlson, 2013). This finding has been supported by our evidence. 83% of deals recorded in the unique database of M&As from 2004 to 2017 involving SE as an acquirer have the same date as the date of the target formation. For other listed companies, this share is 50%, which is significantly lower. It shows that the Czech market is still relatively turbulent in the sense that it is common to trade with companies (it was not the aim of this article to unravel motivations for this behaviour). This situation is much more pronounced in the case of SE than in the rest of the economy.

The main intention for introducing this legal form into the European legal system was the support of international companies operating across the European Economic Area. It would be reasonable to assume that in the M&A market, SE are prone to enter the international deals more than the other legal forms. However, we have rejected this hypothesis. Both SE and other listed companies (a.s.), which have become a target of any acquisition in the past 15 years, have been from nearly 50% acquired by foreign company. Therefore, there is no statistical difference between the legal forms. Regarding the side of acquirers, 15% of listed companies acquiring a firm in Czechia have been international, whereas the same holds only for 5% of SE.

Similarly, the assumption that the geographical proximity should be less important for SE acquirers was not confirmed. For both, SE and other listed companies, the cognitive proximity is less influential in deciding about M&As than the spatial closeness. This is in line with findings for the whole Czech economy (Květoň et al., 2019), while it opposes the situation in western markets (Boschma et al., 2016). Therefore, we can conclude that there is no structural difference between SE and the rest of the economy in terms of the geographical proximity relevance. However, there is a difference for the cognitive proximity, as it deviates from the usual pattern. It assumes that decreasing distance should lead to increasing probability of an acquisition. SE, unlike other listed companies, demonstrate high probability of a deal for the closest companies (the same class) and then for still related, but already diverse (the same section). The two levels in between exhibit by far lower probabilities. This finding is well in line with the recent theory of related variety (Frenken et al., 2007). This theory tells exactly that it is beneficial for regions to diversify rather than specialise into too narrow field, but that the diversification must still orientate to the mutually related activities. The fact that SE demonstrate this principle more than traditional listed companies can be explained by their relative progressivity, as they have been established mostly within the last 10 years.

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9 The role of tier, ownership and size of companies in value creation and capture

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Abstract: This article aims to address two research questions. First, what is the relationship between the basic characteristics of companies engaged in global and regional production networks (such as their tier, ownership, size) and their economic performance. In doing so, we scrutinize the empirical basis for frequent calls to ‘climb the ladder’. Second, we investigate the extent to which the economic performance of companies is related to their differing intensity of engagement into production networks, something largely disregarded in existing studies. The study uses economic indicators derived from a database covering the evolution of 55 Czech aerospace companies over a 14-year period. The methodology is based on descriptive statistics as well as on canonical correlation that helps to investigate multidimensional conditioning of economic performance of companies. The results show not only large variations in the economic performance of companies, but also several counter-intuitive trends. Our analysis consistently yielded the statistically significant finding that lead firms and first-tier suppliers are able to sacrifice short-term profitability and level of value added in order to reach a higher level of value capture. Therefore, the difference between value creation and value capture require careful consideration by researchers as well as by policymakers when comprehending the costs and benefits of functional upgrading.

Keywords: Global production networks; value creation; value capture; functional upgrading; tier; aircraft industry

9.1 Introduction

Despite a recent slowdown in the key metrics of globalization, manufacturing and services are currently strongly globalized (Coe and Yeung, 2019). Transnational corporations, which often perform the role of lead firms or of higher-tier suppliers in global production networks (GPN), play a crucial role in the contemporary economy. Typically, lead firms of GPNs do not manufacture the whole product but contract out either a part or even the total production to a network of suppliers at various tiers (Coe and Yeung, 2015). This organizational model of the global economy represents an important research arena focused on the investigation of the modes of governance of these economic superstructures and the resulting nature of inter-firm relationships among engaged companies, which in turn impact on their economic performance (see Tokatli, 2013). This model was initially conceptualized within the global commodity and value chain (GCC/GVC) literature and subsequently within the global production networks (GPN) stream. These closely interrelated and overlapping theories contend that the liberalization of world trade, decreasing transport costs and the information and technology revolution have enabled the vertical fragmentation of the production into numerous components and

subsystems, produced in many countries and often on different continents (Henderson et al., 2002).

One of the most vibrant research arenas within the GVC/GPN stream has been the investigation of various upgrading and downgrading strategies (Humphrey and Schmitz, 2002; Plank and Staritz, 2015; Smith et al., 2014; Blažek, 2016; Coe and Yeung, 2019). Upgrading is generally considered as a process of enhancement of the value added in production via improvement of technology, knowledge and skills (Barrientos et al., 2011). It was subsequently argued that a sole emphasis on functional upgrading – often narrowly conceived as ‘moving up the chain’, as a seemingly universal solution to the problem of socioeconomic development in emerging and less-developed economies – might be misleading (Tokatli, 2013; Szalavetz, 2017). Moreover, the evidence base for economic benefits stemming from functional upgrading remains rather thin (Tokatli, 2013). Even though detailed empirical analyses of the economic performance of companies exist for various industries (e.g. Pavlínek & Ženka (2016) for automotive), to the best of our knowledge these studies provide only aggregated data instead of data on individual companies. Thus, significant variation in the economic performance of individual companies is often disregarded. Consequently, we would like to address this gap and contribute to the extant literature via investigation and provision of data on the economic performance of individual companies in a single (aircraft) industry according to their tier and several other criteria.

This paper aims to introduce new insights from four perspectives. First, it scrutinizes the economic performance of 55 aerospace companies in Czechia according to their tier, ownership (domestic, foreign) and size over a period of 14 years. Instead of presenting only average or median values that can conceal considerable variation among companies in the same category, we provide key data on the economic performance of individual companies. Second, we differentiate companies according to their level of engagement in the analysed industry, as nowadays even small companies frequently perform business activities that span several industrial branches. This is especially relevant for small batch industrial branches, such as those found in the aerospace industry. Third, the paper combines sectoral and regional perspectives. While detailed analyses of the economic performance of individual companies along the single chain exist (Dedrick et al., 2009), our approach compares the economic performance of companies across tiers and other dimensions located within a relatively small country (Czechia) with broadly similar socioeconomic and institutional framework. Finally, conceptually, we argue that general calls for functional upgrading (in terms of repositioning lower-tier suppliers among higher-tier suppliers) might not be justified, not only theoretically (Tokatli, 2013) but also empirically. We argue that, instead of a general ‘linear’ imperative to ‘climb the ladder’, a multiplicity of possible trajectories reflecting a specific mix of economic activities vis-à-vis the available spectrum of assets (both of a given company and of region(s) concerned) should be considered before any policy recommendations are derived, however challenging this might be.

This paper opens with the conceptual framework for our study, followed by an explanation of our methodological approach. The subsequent sections present and discuss the results of our empirical study. Finally, a concluding section summarizes the main results of our study and outlines their conceptual and empirical implications.

9.2 Variegated articulation of companies into global production networks: specific features of suppliers in the aerospace industry

Global value chains/global production networks (GVCs/GPNs) represent a backbone of the current economy, which largely operates according to a paradigm of vertical disintegration of production.

Over the past 30 years, considerable research effort has been focused on the investigation of GVCs/GPNs in various industries and services, including the aerospace industry (e.g. Suwala & Micek, 2018). Originally, aircraft production was highly vertically integrated due to the very specialized materials and processes required (Smith & Tranfield, 2005). Deregulation of the air transport sector since the late 1970s diminished the role of a few incumbent airlines and enabled the rise of new low-cost competitors. These new airlines started to serve short-distance flights that required smaller and cheaper planes, which challenged the position of manufacturers of large aeroplanes and opened the market for new entrants (assemblers as well as suppliers) commanding new technologies. Moreover, in the 1990s, outsourcing gained further momentum and resulted in an extensive modularization of production (thus resembling the automotive industry) (Tang & Zimmerman, 2009; Bamber & Gereffi, 2013). While the production of large aeroplanes is currently concentrated in a limited number of leading GVCs/GPNs, suppliers of large aircraft manufacturers as well as producers of smaller planes and their suppliers are located in many countries on several continents (Elahi et al., 2014).

The aerospace industry is characterized by a quasi-hierarchical mode of governance imposed by leading firms (Bowen, 2007; Heerkens et al., 2010), although a variation of governance modes within a single chain was documented. These quasi-hierarchical production networks are characterized by high technology and capital intensity, a high ability among lead firms to codify specifications of complex products, and a high-level of competence among key suppliers to produce highly sophisticated and complex modules (Gereffi et al., 2005). Lower-tier suppliers are to a significant extent dependent upon both the orders received from, and a significant part of the expertise of, these lead firms or first-tier suppliers (Koblen and Nižníková, 2013).

One of the key insights of the GVC/GPN research framework relates to the role of a given supplier within a production network for its performance in terms of value creation and value capture (Shin et al., 2012). Namely, the profit margin of a given supplier is seen as a function of positionality within the network and as an outcome of the power negotiations with other actors (Lee et al., 2018). This observation is closely inter-linked with the concept of functional upgrading, one of the key notions within the GVC/GPN framework. Here, we will refrain from a discussion of the controversy on functional upgrading, i.e. to what extent and under which conditions functional upgrading is discouraged or encouraged by buyers, or hindered by resource requirements (see Humphrey & Schmitz, 2004; Gersch, 2019).

Instead, we focus on the definition of functional upgrading per se. Functional upgrading has been defined as acquiring new functions in the chain (or abandoning existing low value-added functions) to increase the overall skill content of activities (Humphrey & Schmitz 2002). Havice and Campling (2013) define functional upgrading as moving 'up' in the chain to more rewarding

functional positions or to making products with higher value added and emphasize that upgrading relates not only to technical issues, but is primarily constituted by changing power structures. However, according to Humphrey & Schmitz (2004), the notion of functional upgrading is frequently conceived more narrowly as the transition from assembly through original equipment manufacture (OEM) and own-design manufacture (ODM), to original brand manufacture (OBM). Similarly, other authors conceptualize functional upgrading as ‘climbing the ladder’, i.e. a more or less linear transition from lower-tier suppliers to higher-tier suppliers or even to lead firm positions (Pananond, 2016).

The economic benefits for suppliers from acquiring more functions with high value added, even though they are not guaranteed and are inevitably accompanied by new types of risks, seem to be apparent (see Yeung & Coe, 2015). For example, Pavlínek & Ženka (2016) concluded that lead firms and first-tier suppliers account for considerably higher corporate tax revenues than lower-tier suppliers, and that they have a higher average wage per worker, while lower-tier suppliers have larger employment and wage effects per unit of production. Similarly, Bamber & Gereffi (2013) estimated that the profit margins of Airbus A380 suppliers decrease neatly according to their tier from about 20 percent in the case of prime contractors to 11 percent in the case of fourth-tier suppliers.

However, the more specific claims suggesting that lower-tier suppliers should ‘climb the ladder’ are loaded with considerable uncertainty about the capture of additional value. As recently emphasized by Gereffi (2019), firms undertaking new value-adding activities during the transition between particular stages (such as OEM, ODM, and OBM), do not necessarily improve their earnings. Moreover, Gereffi warns of the ‘false homogeneity and false heterogeneity’ (2019, p. 242) of upgrading stages, as notions such as OEM or ODM vary substantially by industry and over time. Humphrey & Schmitz (2004) had already acknowledged that functional upgrading is not the only route to improved income, and recommended functional specialization and differentiation from competitors as a superior option.

Recently it has been argued and empirically confirmed that in reality many different value capture trajectories can be pursued with a multiplicity of possible outcomes – both positive and negative (Coe & Yeung, 2019). Value capture can be defined as value retained in firms, or their units, located in a given region. Thus, the value should be redeployed in a particular region and not transferred to other regions via various intra- or extra-firm networks (Coe & Yeung, 2015). In contrast to earlier largely linear conceptions of upgrading, strongly variegated value creation and capture strategies are often observed among suppliers along the chain (Dedrick et al., 2009; Smith et al., 2014; Plank & Staritz, 2015). Therefore, in our view, it should be explicitly acknowledged that suppliers of the same tier, even in the same industry, can employ strongly variegated value creation and value capture strategies, reflecting company-related and regional assets (Asheim et al., 2011).

Thus, in this article we investigate the differences in economic performance among aerospace companies located in Czechia engaged in global production networks (or regional production networks in the case of small planes) according to their tier, ownership (domestic, foreign) and size. Thus, our first research question examines the relationship between the basic

characteristics of companies engaged in global and regional production networks (such as their tier, ownership, size) and their economic performance. In line with a voluminous literature on upgrading (for a recent review, see Gereffi, 2019), we expect that the economic performance of higher-tier suppliers² should surpass the performance of lower-tier suppliers³ (Bamber & Gereffi, 2013).

Second, we aim to extend existing empirical analyses of economic performance of companies according to the level of their engagement in the aerospace industry. Although the business activities of companies frequently span several industries, this is rarely accounted for in existing case studies (for an exception, see Pavlínek & Janák, 2007). Moreover, while large modern planes are made-up of several million components, the production of aircraft is largely of a small-batch nature and, consequently, the demand for key technologies (engines, flight instruments in cockpits, break systems, etc.) is limited in volume (Heerkens et al., 2010). Therefore, companies engaged in the aerospace industry tend not only to operate in several aerospace value chains at the same time, but also in other sectors (Heerkens et al., 2010), which makes this issue particularly pressing. Thus, our second research question investigates the relationship between the economic performance of companies to the differing intensity of their engagement in production networks.

9.3 Brief outline of the evolution of the Czech aerospace industry

The origin of the Czech aerospace industry dates back to before the birth of Czechoslovakia in 1918. The Czech Aviator Club was established in 1913 as a platform to bring together aviation designers. Czechoslovakia's independence provided a great momentum for the development of the aviation industry even though largely oriented to military production. In the early 1920s, production consisted of an impressive range of planes, including military planes, passenger planes (especially for Czechoslovak Airlines, established in 1923), aerobatic, as well as sport monoplanes (Černohorský, 2008). During World War II, employment in the aerospace industry soared from 4000 to about 120,000 as Nazi Germany made use of the industry's accumulated knowledge and capabilities. After WWII, the companies of this excessively large industry had to search for alternative opportunities beyond the aviation industry.

In 1945, the largest companies were nationalized and production was reoriented to the needs of the Soviet Bloc (overall 3700 MIG fighters were produced in Czechia). After a partial ease of the Cold War after Stalin's death in 1953, the aviation industry was partly reoriented to civilian production. According to a decision of the Council for Mutual Economic Assistance (COMECON), the Czech production programme focused on two key market segments: jet trainers and small passenger aeroplanes, including agroplanes, sport-planes and gliders. Up to 90 percent of production was exported, especially to the Soviet Union (Häufler, 1984). Altogether, Aero produced more than 6000 L-29 and L-39 jet trainers (Černohorský, 2008).

² *Producing fuselage, wings, engines, landing gears, hydraulics, avionics devices, electrical power supply and interior systems, and so on.*

³ *Typically manufacturing electronic, mechanical, aluminium and composite components, or focused on wiring, machining, tooling, finishing and so on.*

After 1990, the entire industry faced tremendous challenges as companies had to secure financing through highly competitive global markets instead of state budget. Moreover, in contrast to advanced countries where the aerospace industry was consolidated via mergers and acquisitions (M&A), in Czechia the privatization led to fragmentation and disruption of existing supply chains as well as of cash-flows while the efforts to attract new strategic foreign partners largely failed. The major exception was investment by the US giant Honeywell, which established its largest European R&D centre in Brno and a large production facility in Olomouc. Thus, despite this and several other successes,⁴ the industry struggled in the period after 1990.

Currently, the Czech aerospace industry consists of several assemblers of small planes (such as Aero, Evektor, Aircraft Industries, Zlin Aircraft, SKYLEADER), and more than a hundred companies manufacturing a broad spectrum of systems and components for the aerospace industry as well as for other industries. For example, PBS Company (located in Moravia near Brno) develops and produces the jet engine PBS TJ150, and Walter Aircraft Engines (in Prague) produced the first GE engines designed and manufactured outside of the US. Other companies manufacture hydraulic systems and landing gears, high-speed gearboxes, communication systems, electronic devices and on-board instruments such as artificial horizons, altimeters, speed indicators, and warning and emergency equipment. Some companies are supplying also large assemblers. For example, Aero is responsible for the design, manufacture and certification of fixed leading edges for Airbus and Embraer, while Latecoere Czech Republic produces door systems for A320, A380 and Embraer 170. Up until 2017, more than 32,000 aircraft and 37,000 engines were manufactured in Czechia.⁵ Despite all the political and economic turbulence, Czech aerospace companies retained the capability to produce complete planes, from the smallest components to fuselage and engines.

From this short historical overview follow two key observations. First, over the course of the history, companies of the Czech aerospace industry profoundly altered their production portfolio several times (e.g. from civilian to military production and back, or from production of complete planes to mere components, i.e. zig-zag movements in terms of functional upgrading and downgrading). Second, the industry has been exposed to sharply differing periods in terms of volume and nature of demand, and companies were able to moderate slumps in demand by penetrating other industries and markets (automotive, mechanical engineering, energetics, etc.). Thus, the overall involvement of Czech aerospace companies in other industries can be considered as significant and long-lasting. Since 2010 the aerospace industry has grown and it currently employs more than 20,000 people, with an exceptionally strong position in ultralights (25 percent of the world market) (Ministry of Trade and Industry, 2020).

⁴ For example, in the early 1990s, Aero sold about 200 jet trainers to new markets such as Tunisia and Thailand. Moreover, with the help of shareholder Boeing, it gained a new assembly line for Sikorsky helicopters.

⁵ See www.czechinvest.org/en/key-sectors/aerospace.

9.4 Data and methodology

First, database of the Czech companies involved in the aviation industry was compiled from several resources, esp. from the Business Register of the Czech Statistical Office and from three distinctive associations of companies and other stakeholders that are active in the aerospace industry.⁶ Consequently, after a case-by-case examination of web pages and annual reports of particular companies, 129 firms were identified as producers engaged in the aerospace industry (from suppliers of Boeing and Airbus to producers of small planes and their suppliers). For 55 of these companies, the data on their economic performance were available in a BISNODE database within the 2004–2017 period. Our database contains basic information about companies such as their identification number, name, address, year of establishment and main products, characteristics according to the criteria captured in Table 17, and economic performance indicators as described below.

Table 17: Typology of aerospace companies operating in Czechia

Variable	Category	Number	Relative (in percent)
Ownership	domestic	40	72.7
	foreign	15	27.3
Company size	small	21	38.1
	medium	20	36.4
	large	14	25.5
Share of supplies to aerospace industry	dominant	19	34.5
	significant	9	16.4
	partial	27	49.1
Position in GPN	lead firm	9	16.4
	1. tier	6	10.9
	2. tier	18	32.7
	3. tier	22	40.0

Source: Own analysis

According to their ownership, companies were divided into domestic and foreign companies. In a few cases representing joint ventures, companies were categorized as domestic or foreign according to prevailing ownership. The companies were also assigned into size bands according to the EC Regulation No. 800/2008, which defines small companies (up to 50 employees), medium-sized companies (up to 250 employees) and large companies (over 250 employees). The domestic companies in the dataset were mainly small or medium-sized, while the foreign-owned companies were predominantly large.

As in many other industries, companies supplying the aerospace industry are simultaneously engaged in various other industries (cfr. Dedrick et al., 2009). Therefore, using all available sources, especially web pages and annual reports, where companies usually specify their main specialization and/or products, all the suppliers were arranged into three broad categories, according to their focus on the aerospace industry: (i) dominant, (ii) significant or (iii) partial.

⁶ Association of the Czech AeroSpace Industry (ALV): <http://www.alv-cr.cz>; Confederation of the Czech Aviation Industry (CCAI): <http://www.sclp.cz/en/>; Moravian Aerospace Cluster: <http://www.aero-cluster.cz/>.

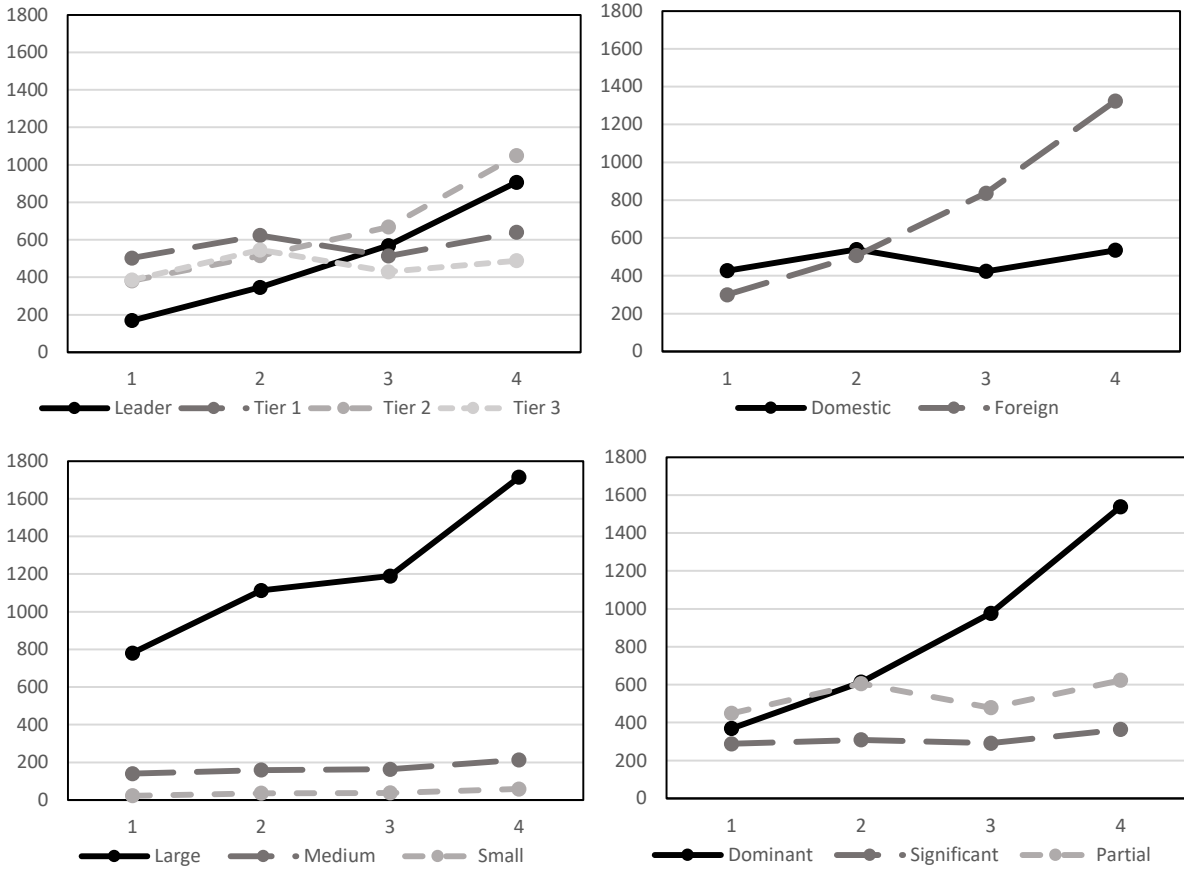
Companies specialized only in the aerospace industry were marked as dominant, those producing mainly for this industry with minor activities in other industries as significant, and companies with wider portfolio of target industries beyond aerospace (typically automotive, construction, energy or engineering) were marked as partially engaged.⁷

Next, using the same set of available data sources, significant effort was required to identify the tiers at which particular suppliers are integrated into global production networks (GPNs). The methodology of Pavlínek & Janák (2007), developed to assign suppliers to different tiers in the automotive industry, was followed as the automotive industry represents a relatively similar type of industry (i.e. quasi-hierarchical mode of governance, similar structuring into tiers, etc.). Thus, we use the same definition of tiers as coined by these authors. The firm assembling the whole aircraft is classified as the lead company. The first-tier suppliers fabricate the most sophisticated and complex modules, e.g. motors, wings or dashboards. Second-tier suppliers produce less sophisticated and less complex components than first-tier suppliers (e.g. seats or parts of galleys), but they are usually responsible for the development of these subsystems. Finally, third-tier suppliers produce (relatively) the simplest and the least sophisticated components, often from a single material (various kinds of metal or plastic components). These relatively simple components represent parts of modules made by second- or first-tier suppliers. Importantly, following Pavlínek & Janák (2007), this classification is based on the most sophisticated product(s) that the firm is supplying to the aerospace industry, even though the same company can also produce less sophisticated components too. Using these criteria, all the companies were classified into these tiers or lead firms, even though we acknowledge that such a division can be considered only as proximate.

In addition to various categorical variables (tier, ownership etc.), every firm was also characterised by key indicators of its economic performance. As the aerospace industry is highly sensitive to the global economic situation (currently, the profound impact of the current COVID-19 pandemic), the economic performance of companies was scrutinized over a relatively long period (14 years), covering different phases of global economic development. In particular, based on the work of Blažek et al. (2018), the 2004-2017 period was divided into four sub-periods: (i) 2004-2006 (pre-crisis), (ii) 2007-2009 (acute crisis), (iii) 2010-2012 (emerging recovery), and (iv) 2013-2017 (post-crisis). Figure 7 depicts differences between these periods. For these charts, mean values were computed over time for each period and each firm, and subsequently over firms for every sub-group. Note that Figure 7 does not cover all companies in the sample, but only those that had at least one observation (and thus a mean value) in every period. This prevents distortion in the evolutionary dynamics by the entry of new firms.

⁷ As this division is inevitably arbitrary, several variants with different breakpoints were employed as robustness checks. The results, however, remained unaltered to any significant degree.

Figure 7: Evolution of average total revenues of companies by various characteristics (in million CZK per year)

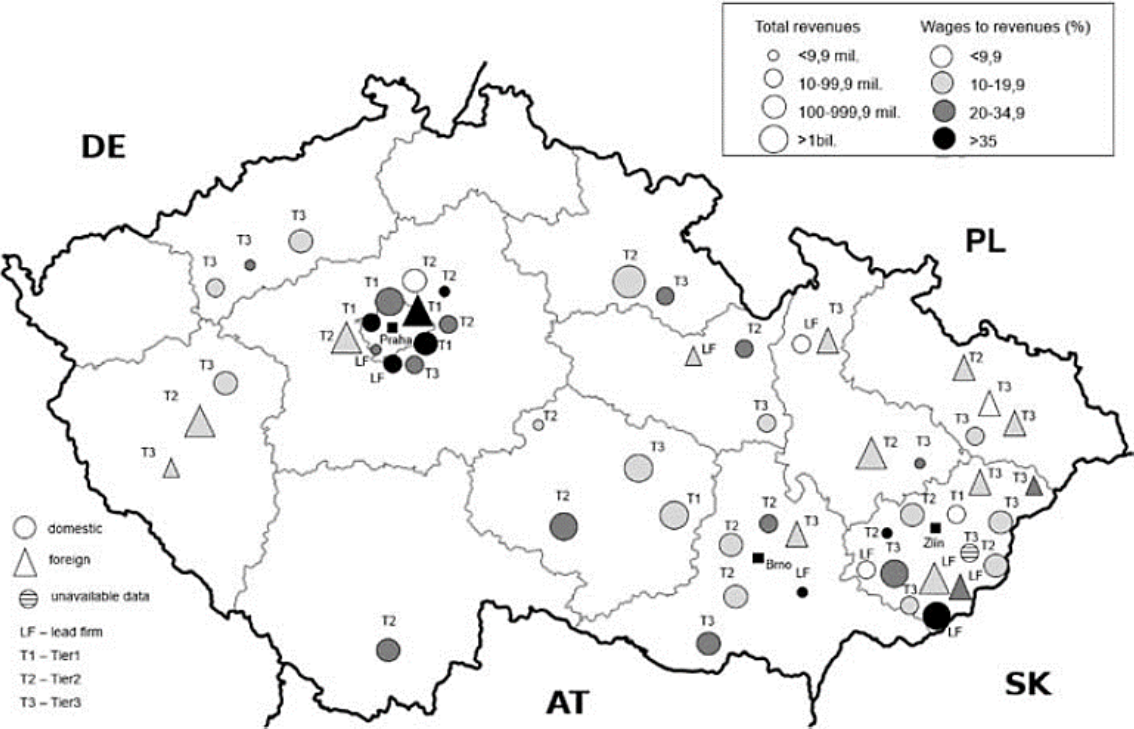


Source: own analysis

Figure 7 suggests that foreign ownership is the most apparent characteristic of firms with higher growth of total revenues, even though higher growth also appears to be connected to higher position in the global production network, larger firm size and dominant specialization on aerospace industry. Of course, there is no inference on causes and consequences at this stage. Figure 8 reveals the geography of aerospace companies in Czechia, showing their distinctive concentration in and around Prague and in eastern Moravia.

An overview of indicators of the economic performance of companies is provided in Table 18. We have to acknowledge that the division of indicators between those encompassing value creation and value capture is not straightforward and can be ambiguous, as several indicators encompass certain aspects of both value creation and capture at the same time (cfr. Shin et al., 2012; Pavlínek & Ženka, 2016). Nevertheless, we believe that this ambiguity reflects the very multi-dimensional nature of various value capture strategies (Coe & Yeung, 2015).

Figure 8: Average total revenues and wages to revenues of aircraft companies according to their ownership and position in GPN/RPN, 2004–2017



Source: own analysis

Table 18: Overview of indicators of economic performance used in the analysis as dependent variables

Economic indicator	Rationale	Value creation / value capture
Annual growth rate of total revenues	Evolution of total revenues captures the overall dynamism of the company	Value created
Value added (related to total revenues)	Indicator of knowledge-intensity of production	Value created
Return on assets (ROA)	Indicator of profitability	Value created
Wages (related to total revenues)	Indicator of labour-intensity of production	Value captured
Depreciations (related to total revenues)	Indicator of capital-intensity of production	Value captured

Source: Adapted from Pavlínek & Ženka (2016)

Despite the fact that these economic indicators were available for just 55 of the 129 companies engaged in the aerospace industry in Czechia, we still consider the number of companies covered by our database as highly relevant, as economic data were predominately not available for the smallest companies.

Given the nature of the data, especially the multiplicity of dependent variables, canonical correlation analysis (CCA) using all single observations has been employed. The economic indicators described in Table 18 were considered as dependent variables. On the explanatory side, the aforementioned categorical characteristics were used, most importantly the position in the global production network, ownership, company size and the intensity of engagement in the aerospace industry (all ordinal). The size categorized by the number of employees was found to be statistically significantly correlated with the logarithm of total revenues (Pearson coefficient

0.8, p-level 0.000). Therefore, logarithm of total revenues was used as a continuous proxy for company size, while logarithmic transformation mitigated a long tail in the data, which would exaggerate size differences between large companies. The correlation matrix for all variables is provided in Table 19.

Table 19: Correlation matrix for all variables and full sample

	A	B	C	D	E	F	G	H	I
A Tier Intensity of engagement	1.00	0.59	0.02	0.00	0.14	-0.18	-0.11	0.19	0.06
B in aerospace industry		1.00	0.12	0.02	0.09	-0.16	-0.10	0.00	0.06
C Foreign ownership			1.00	0.23	0.06	-0.09	0.02	-0.18	0.05
D Size Growth of total revenues				1.00	-0.12	0.16	0.25	-0.26	-0.18
E Value added to revenues					1.00	-0.17	-0.01	-0.02	0.13
F revenues						1.00	0.51	-0.23	-0.09
G Return on assets (ROA)							1.00	-0.51	-0.19
H Wages to revenues Depreciation to revenues								1.00	0.15
I revenues									1.00

Note: All coefficients above 0.10 in absolute value are statistically significant at a 5 percent level of significance

Source: Own analysis

The CCA reveals the relationships between two sets of variables, traditionally viewed as a predictor (independent) set and a criterion (dependent) set (Sharma, 1996; Sherry and Henson, 2005). This method identifies implicit factors in both dependent and independent sets of variables, called canonical variates, such that they are not only uncorrelated within the set (as in factor analysis), but at the same time, the correlations between the two variates across the sets are maximized. Thus, canonical variates are always determined in pairs. Finally, the canonical correlation is the correlation between each pair of canonical variates. The interpretation involves two steps. Firstly, the canonical variates are identified and described, and secondly, the correlations between them are interpreted.⁸ The main advantage compared to the more widely used multivariate regression approaches is that CCA takes into account the correlations between dependent variables, whereas in regression, the effects on single dependent variables are examined regardless of the other relations. However, the CCA method also has its shortcomings. By their construction, the canonical variates are dependent not only on the set of original variables they are based on, but also on the other set, which can make it highly sensitive to every change made on any side. This can be, however, accounted for by a set of robustness checks. At the same time, this dual optimisation problem can weaken the identification of latent factors compared to factor or principal component analysis. Also, the interpretation can be difficult as it must be interpreted in pairs and the results show correlations, not causal relationships.

⁸ For further details, see for instance Sharma (1996).

9.5 Results of the empirical analysis

In order to get a preliminary idea of the relation between value creation, value capture and other characteristics of firms, standardized values of economic indicators were simply summed up according to their distribution between value capture and creation (as defined in Table 18). The correlations of these standardized sums with key characteristics of the companies are given in Table 20.

Table 20: Correlation matrix using standardized sums of economic characteristics

	Value creation	Value capture
Tier	-0.18 *	0.16 *
Intensity of engagement in aerospace industry	-0.14 *	0.03
Foreign ownership	0.01	-0.12 *
Size	0.07	-0.29 *

*Note: Statistical significance notation: * $p < 0.05$. Value creation is a sum of z-scores for total revenues growth, value added and ROA per total revenue; value capture is a sum of z-scores for wages and depreciations per total revenue.*

Source: Own analysis

Table 20 gives a notion of the difference between firms successful in value creation and those successful in value capture (the correlation of these two phenomena is not statistically significant). Most notably, value capture exhibits a positive and statistically significant correlation with the position in the GPN (while the order of tiers naturally leads from third to first with lead firms on top), whereas value creation has the opposite relation. It should be stressed that this must be read in relative terms as all the economic indicators were relativized (Table 18). It follows that higher-tier firms create less value relative to their economic size, but that they are more successful in capturing this value. Size itself and even foreign ownership, however, are correlated with a lower ability to capture value. Accordingly, a narrow specialisation of companies on the aerospace industry tends to be connected to lower value creation. These preliminary results have limitations at least in two respects. First, the correlations between the descriptive characteristics (e.g. size and tier) are omitted, and second, the construction of variables capturing value creation and value capture are arbitrary, based solely on the author’s assessment. These two drawbacks can be addressed by the CCA.

The baseline specification of the CCA covers all observations for all indicators, while two robustness checks verify the results. The first check uses observations only from the post-crisis period, as it should avoid possible distortions resulting from the exceptionally unfavourable economic conditions. The second robustness check excludes the annual growth of total revenues on the dependent side which notably reduces the number of observations (it is impossible to calculate the annual difference for the first years in series). Hence, the CCA is run in three set-ups:

1. Full 2004-2017 period using all indicators – baseline specification (Model 1)
2. Reduced sample for the post crisis period (2010-2017) using all indicators (Model 2)
3. Full sample excluding the annual difference of total revenues (Model 3)

The resulting canonical correlations and their significances are summarized in Table 21. Two pairs of canonical variates can be used in all specifications (according to Wilk's lambda).

Table 21: Canonical correlations

	Model 1	Model 2	Model 3
Number of observations	323	196	437
Canonical correlation between 1st canonical variates	0.57 ***	0.59 ***	0.38 ***
Canonical correlation between 2nd canonical variates	0.34 ***	0.34 *	0.30 ***
Canonical correlation between 3rd canonical variates	0.15	0.17	0.12
Canonical correlation between 4th canonical variates	0.09	0.03	0.02

*Note: Statistical significance based on Wilks' lambda, notation: * $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$.*

Source: Own analysis

Correlation coefficient 0.57 (or 0.59 in the case of reduced sample) for the first two canonical variates indicates a relatively strong correlation. The second pair of canonical variates demonstrates weak to moderate correlation (0.34). When omitting the annual growth of total revenues on the dependent side, the correlation coefficients drop (Model 3 in Table 21). These results indicate that reducing the time range to the post-crisis period leads to largely similar results as for the full sample, whereas exclusion of annual growth of total revenues reduces the overall variation explained of companies' economic performance.

The important part of the CCA is the identification of the latent variables represented by the canonical variates (CV). While standardized coefficients are used for assessing the statistical significance of the variables for the canonical variate, the interpretation of how much each canonical variate is saturated by every single variable is better when based on the structure coefficients (which are closer to loadings in factor analysis).

Table 22: Standardized and structure coefficients of dependent variable set (Model 1)

	Standardized coefficients			Structure coefficients		
	CV 1	CV 2	CV 3	CV 1	CV 2	CV 3
Growth of total revenues	0.23 **	-0.36 *	-0.07	0.22	-0.40	-0.08
Value added to revenues	-0.16	0.81 ***	0.35	-0.14	0.58	0.72
Return on assets (ROA)	-0.03	-0.01	0.27	-0.44	0.31	0.23
Wages to revenues	0.96 ***	0.42 *	-0.04	0.95	0.20	0.15
Depreciation to revenues	0.00	-0.80 ***	0.81 .	0.27	-0.38	0.85

*Note: Statistical significance notation: . $p < 0.1$; * $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$*

Source: Own analysis

Structure coefficients (also known as canonical loadings) provided in Table 22 show that the first canonical variate (CV 1) is mostly saturated by variables connected with value capture (especially wages) and negatively by ROA. The second canonical variate (CV 2) is saturated mainly by value added and slightly less by growth of total revenues (both assigned to value creation). It should be stressed that growth of total revenues has a negative effect for this canonical variate, which is counter-intuitive for value creation. The third canonical variate (CV 3) has high loadings for both depreciation and value added and thus goes across the division between value captured and value created. Regarding the significance of single effects (of standardized coefficients), it follows that what is close to value creation (second canonical

variate) is also significantly accompanied by negative depreciations (i.e. low capital investments). Growth seems to be connected to value capture rather than value creation when growth of total revenues is used to measure overall economic dynamics.

These three dimensions can be interpreted as three distinct business strategies oriented around 1) value capture, 2) value creation, and 3) value capture based on capital intensity. However, the third pair of canonical variates yields only a weak correlation and is thus less informative.

Described canonical variates are directly tied to linear combinations of explanatory variables (maximizing the correlations between them). The effect of original independent variables on their canonical variates is also measured by standardized coefficients (Table 23). The correlation coefficients between the independent variables and canonical variates based on the set of dependent variables are presented in the second part of Table 23.

Table 23: Standardized coefficients of independent variables and correlations with canonical variates based on dependent variables (Model 1)

	Standardized coefficients			Correlation with canonical variates from the set of dependent variables		
	CV 1	CV 2	CV 3	CV 1	CV 2	CV 3
Tier	0.81 ***	0.04	-0.72	0.38	0.07	-0.10
Intensity of aerospace industry	-0.20 *	-0.46 *	0.07	0.10	0.18	-0.06
Foreign ownership	-0.20 *	-0.86 ***	-0.01	-0.23	0.27	-0.03
Size	-0.62 ***	0.45 **	-0.71 .	-0.37	-0.05	-0.11

Note: Statistical significance notation: . $p < 0.1$; * $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$

Source: Own analysis

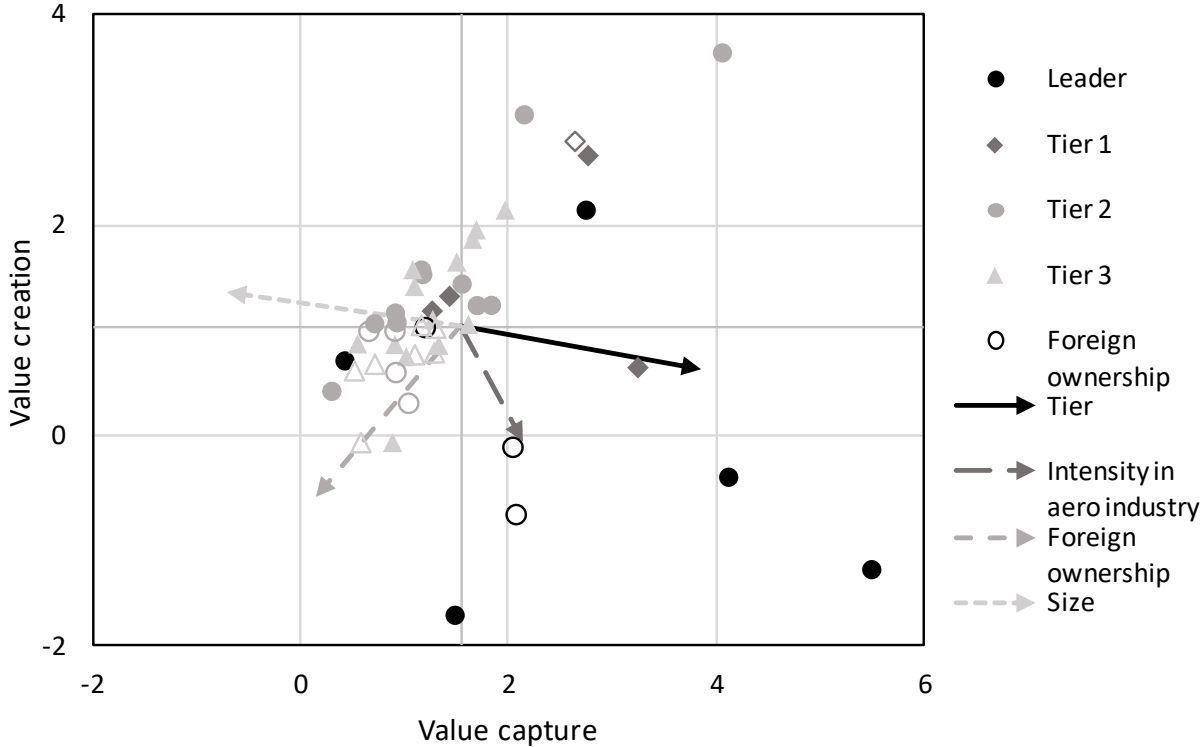
The first canonical variate based on the explanatory firms' characteristics is driven mostly by tier and negatively by size, partly also by domestic ownership and low intensity of involvement in aerospace industry. Thus, the first canonical variate (CV 1), suggests that value capture strategy tends to be mostly connected to small higher-tier (domestic) firms. Although correlation between tier and size is not statistically significant (Table 19), it should be noted that lead firms in Czechia are predominantly small domestic companies, producing light or sport planes. Similarly, results of CCA suggest that value creation (CV 2) is a typical feature of larger domestic firms with diversified production.

In contrast with the apparent vigorous growth in total revenues (Figure 7), foreign ownership tends to lower both value created and value captured (Table 23). This may be explained by the fact that such companies can be substantially financially supported by their parent companies, especially during the early phases of their operation in Czechia (two-thirds of foreign companies entered Czechia only after the year 2000). Thus, despite their vigorous growth in terms of total revenues, their ability to create and capture value is weaker.

All these relationships can be localized in a three-dimensional space. Figure 9 depicts the first two canonical variates and the mean location of all firms in this value capture/value creation space (i.e. canonical variates scores). At the same time, correlations between independent

variables and the chosen two canonical variates (second part of Table 23) are depicted by arrows, showing the tendencies based on the individual firms' characteristics.

Figure 9: Mean location of firms in the value capture / value creation space (Model 1)



Note: Arrows depict (scaled) correlations between independent variables and canonical variates based on dependent variable set
Source: Own analysis

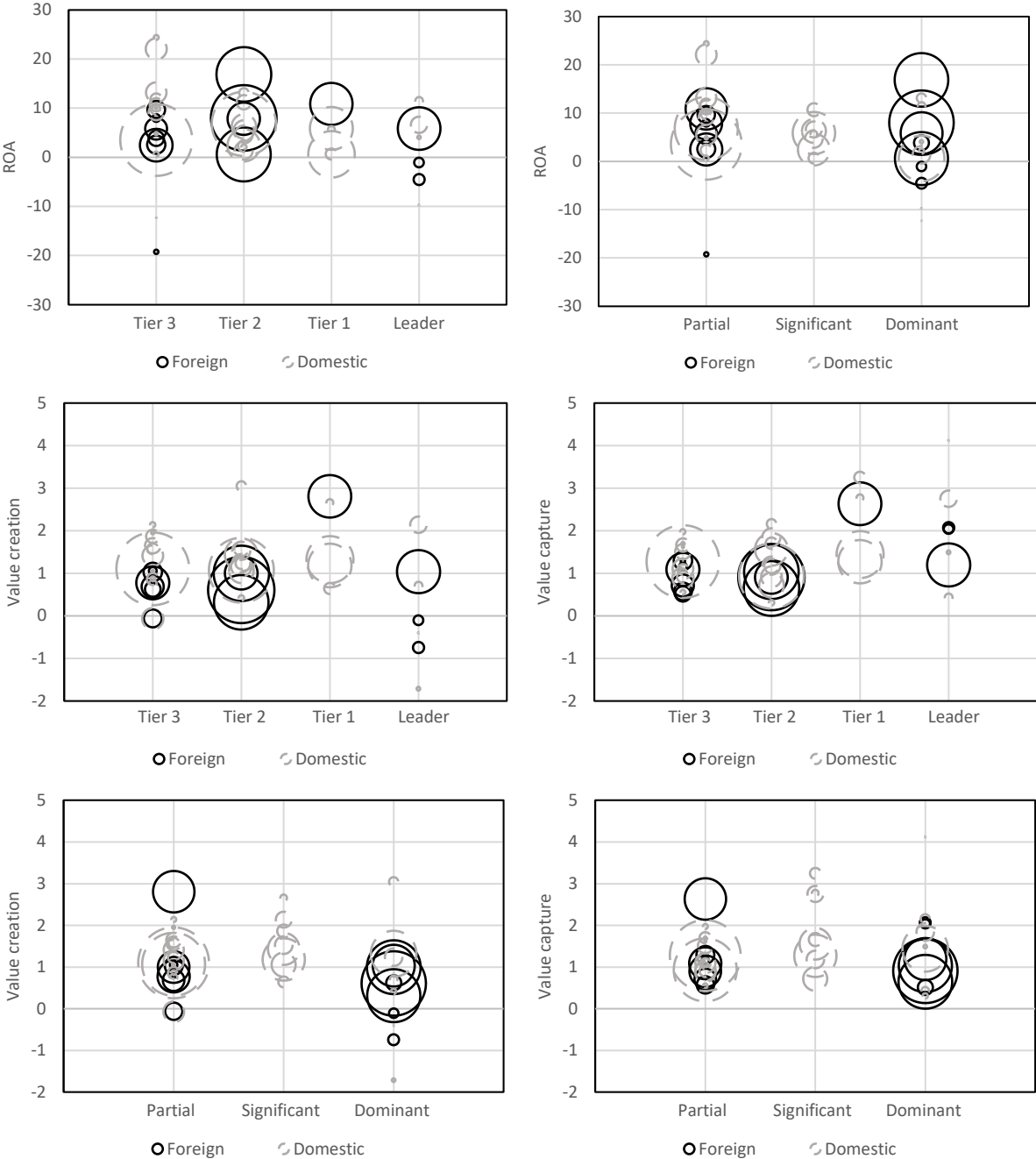
As follows from Figure 9, lower-tier suppliers do not vary much but exhibit a positive relation between the ability to create value and ability to capture it. Lead firms, and to a lesser extent first-tier suppliers, choose notably different strategies: they are much more oriented towards value capture (through a focus on labour) at the cost of lower short-term profitability and value-added.

Thus, tier is mostly connected to the ability of value capture, while firm size exhibits an opposite tendency. Foreign ownership is related, as already indicated, with both lower value creation and capture. Intensity of engagement in the aerospace industry is relatively less correlated with the value creation or capture ability, but the results suggest that firms with more diversified production are able to capture slightly higher value. As this issue is related to our second research question, it will be scrutinized in larger detail in the following paragraphs that investigate the diversity of economic indicators of companies even within the same category (i.e. tier, size, ownership, level of engagement in aerospace industry).

ROA is arguably an important indicator of value creation, as it captures how efficient a company is at using its assets to generate earnings (Hargrave, 2019). However, in the CCA, ROA yielded only insignificant correlations. Figure 10 disaggregates this profitability indicator by various dimensions and allows comparison with value creation and value capture as two key

dimensions resulting from the CCA. Counterintuitively, the most profitable companies tend to be third-tier domestic suppliers. In two cases, ROA even exceeded 20 percent. Most companies (both domestic and foreign and with varying positions according to their tier and intensity of engagement in aerospace industry) reported ROA between 3 percent and 10 percent, suggesting relatively high profitability of aerospace companies. At the same time, no clear pattern in ROA based on specialisation in the aerospace industry is noticeable.

Figure 10: Average return on assets (ROA) and canonical variates scores of companies according to tier and intensity of engagement in aero industry, 2004-2017



Note: The size of each circle represents company size in terms of total revenue. Value creation depicts scores of the second canonical variate (based on the set of economic indicators), value capture is the same for the first canonical variate.

Source: Own analysis

Value creation and value capture, as resulting from the CCA, exhibit more distinctive patterns. Firstly, firms dominantly focused on the aerospace industry are generally able to create and capture less value. This, however, can also be assigned to their predominant foreign ownership, which is in line with results depicted in Figure 9. At the same time, these companies achieved higher scores for value capture than for value creation, whereas firms with more diversified portfolios achieved similar levels of both value creation and capture.

Leaders and first-tier firms demonstrate notably higher scores for value capture than lower-tier suppliers. It should be recalled that value capture was predominantly saturated in the CCA by wages. Generally, a higher position in a supplier hierarchy should indicate more sophisticated production requiring a labour force with better qualifications, which should translate into higher wages. Interestingly, lower-tier suppliers exhibited only limited variation according to this indicator, while profound differences were revealed within the category of lead firms as well as among first-tier suppliers.

Overall, the profitability of companies seems to be inversely related to their tier. This counter-intuitive finding might be related to the vast costs associated with the development of new planes, which are predominantly borne by lead companies and their first-tier suppliers (Bamber & Gereffi, 2013). Consequently, the profitability of these companies in the intensive development phase of a new aircraft tends to be low or even negative. Nevertheless, such substantial development costs are typical for the aerospace industry and might be less frequent in other industries, thus this result may be industry-specific.

9.6 Conclusions

In this article we tried to scrutinize the empirical basis for frequent calls to ‘climb the ladder’ – which represents one specific type of functional upgrading. Thus, our first research question examined the relationship between the basic characteristics of companies engaged in production net-works (such as their tier, ownership, size) and their economic performance. Our analysis revealed significant variation in the economic performance of companies in terms of both value creation and value capture across tiers and even within the same tier. Already descriptive statistics indicated that higher-tier and especially lead firms create less value relative to their economic size, but are more successful in capturing this value. This result was confirmed by canonical correlation analysis, which showed that lead firms and first-tier suppliers are much more oriented towards value capture (especially through relatively high wages to total revenues ratio) at the cost of lower short-term profitability and value-added. In contrast, lower-tier suppliers, which tend to be larger companies in Czechia, have a notably lower ability to capture value. Counter-intuitively, our analysis suggests that foreign firms are typical by their lower value capture as well as lower value creation. Our results, however, indicate that this tendency can be outweighed by foreign firms’ long-term capital-intensive orientation. Our second research question investigated the relationship between the economic performance of companies and the intensity of their engagement in the aerospace industry. Correlation analysis suggests that the level of engagement in the aerospace industry correlates significantly with tier (positive correlation) and negatively with foreign ownership. CCA indicates that firms dominantly focused on the aerospace industry are able to create and capture less

value. However, this can also be assigned to their predominant foreign ownership. Limited variation in the level of value capture among companies dominantly specialised in the aerospace industry compared to other categories underlines the relevance of this finding. Though the relatively limited number of companies investigated means that these conclusions should not be overstretched, in our view they have both conceptual and empirical implications.

Conceptually, our results show how important it is to combine the notion of functional upgrading with the notion of value creation and capture (Coe & Yeung, 2015). Our analysis suggests that if the economic performance of companies is conceived narrowly and limited only to profit generation and value added, then however intuitive they may seem, calls for the repositioning of lower-tier suppliers among higher-tier suppliers (i.e. for one specific type of functional upgrading, see Blažek, 2016), might not be based upon robust empirical evidence. In some cases (such as ours), they might even lead to uncertain economic benefits or could be counterproductive.

Nevertheless, if the economic performance of companies is captured by a broader spectrum of economic indicators that are able, at least approximately, to distinguish between value creation and value capture then our analysis consistently yielded the statistically significant finding that lead firms and first-tier suppliers are able to sacrifice short-term profitability and an amount of value added in order to reach a higher level of value capture (especially through relatively high wages and high capital expenditure to total revenues ratio). This is an important finding, as a significant body of literature tends to consider profit-maximization as the most important imperative driving the strategies of companies. Our results suggest that some companies might rather focus on performing more-personally rewarding types of production or business activities to satisfy the ambition of owners, managers and key employees as observed by Blažek (2016). Therefore, careful consideration to the difference between value creation and value capture should be given when contemplating the costs and benefits of functional upgrading.

Consequently, and perhaps counter-intuitively, our results suggest that while 'climbing the ladder' is not necessarily a pathway to higher profit margins for companies, from a regional perspective 'moving up the chain' makes good sense as such a move tends to be accompanied by a higher level of value capture (especially higher wages and higher capital-intensity of production). Therefore, if these results are confirmed by other studies investigating other industries and regions or countries, they might have important policy implications. In particular, these results might encourage various national and regional intermediary bodies to consider carefully the difference between narrowly conceived functional upgrading on the one hand and the diversity of value capture strategies on the other; and thus avoid misconceived policies.

Therefore, instead of general encouragement for a narrowly conceived functional upgrading, specific capabilities and features of individual companies, particular features of individual industries, as well as various assets of a host region should be accounted for. The ultimate aim is to 'micro-position' individual companies, not only within the value chain(s) but also within the economy at large, to reflect a wide range of company-related assets as well as regional assets (Asheim et al, 2011; Morgan, 2017). Consequently, granularity going far beyond the mere tier of suppliers is needed if sound policy recommendations are to be derived.

Empirically, given the obvious limitation of our study of a single industry in a single country, detailed investigation of data on the economic performance of individual companies in other industries and regions (countries) according to their tier, size, ownership and level of engagement in a given industry is needed. The role of these factors has to be comprehended carefully as they could be critically important in periods such as the current COVID-19 crisis, which affects particular industries and regions in a highly uneven manner with the aerospace industry being among the biggest losers.

The turbulent history of the Czech aerospace industry allows us to believe that the industry will survive the unprecedented impacts of the current pandemic. Namely, it can be argued that the forthcoming reconstruction of the Czech aerospace industry can be facilitated by the substantial know-how accumulated over its more than a century-long history; by a large diversity of production that often spans beyond the aerospace industry; and by its orientation towards small planes and jet trainers (as these segments are less likely to be affected than the producers of larger air-crafts). More, generally, it seems rational to expect that many companies will be forced to reconsider the spectrum of activities they perform and number of industries they serve in order to cushion at least the most severe consequences of the current (and future) crises to safeguard profitability or even to survive in adverse circumstances.

9.7 References

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10 Acquisitions' spatial heterogeneity and economic impacts in Central European non-metropolitan regions

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Abstract: This paper aims to make a conceptual and empirical contribution to our understanding of the effects of extra-regional assets and knowledge inflow, through mergers and acquisitions (M&A), in different types of regions. We revealed that the M&A market is not geographically homogeneous, and regions differ in all aspects of the M&A market: relative position, local density and foreign attractiveness, the same as in the M&A intensity. This heterogeneity is not random but follows a spatial pattern and differences in economic fundamentals of regions, but at the same time, there is no linear relationship between economic performance and M&A performance. The regional M&A market characteristics can explain differences in the impacts of M&A transactions on the economy, especially in the exit rate of companies after acquisition and in the change of employment. The impacts of M&A on the regional economy generally do not differ by sector of the acquired company. However, some patterns show that the negative effects are more present after acquisitions of firms in tradeable sectors in the less developed regions, whereas in the stronger regions, the most vulnerable sectors belong to the part of the economy which offers mundane, but occasionally purchased (and thus substitutable) goods.

Keywords: Acquisitions; corporate takeovers; impacts; Czechia

10.1 Introduction

The relationship between corporate merger and acquisition (M&A) activity and its positive or negative effects as well as different aspects of M&A has been widely studied from various perspectives, especially by economists. In recent decades, various economic disciplines have focused on driving factors of M&A (Calipha et al., 2010; Mitchell & Mulherin, 1996), economic returns to acquiring firms (Fuller, Netter, and Stegemoller 2002) or post-acquisition performance (King et al., 2004). Knowledge flows, knowledge exchanges and linkages associated with M&As are also widely studied (Ahammad et al., 2016; Liu & Meyer, 2020; Sarala et al., 2016). In economic geography, this process is significantly less studied, even though it is a significant and spatially unevenly concentrated process, it has obvious implications in different types of regions. Regarding economic geography literature, Rodríguez-Pose & Zademach (2003) dealt with different types of proximities and other authors revealed asymmetric relationships of M&A activities (Boschma et al., 2016; Ellwanger & Boschma, 2015). Furthermore, Květoň et al. (2020) expanded knowledge and revealed that geographical proximity keeps its importance throughout the economic cycle, but the role of cognitive proximity diminished during the global financial

crisis between 2008 and 2010. They also found that cognitive proximity (technologically related industries can spur knowledge-sharing and innovation) matters more for foreign firms cf. domestic acquisitions.

Although the M&A process is studied from different perspectives, only the geographical work solves the spatial dimension (this means the spatial unevenness of acquisitions in different types of regions). However, geographical work has so far focused mainly on the relevance of different types of proximity or the concentration of M&A itself and little attention has been paid to the spatial economic impacts of M&A. This is surprising as economic studies show us that M&As may have many negative effects on the economy such as plant closures after acquisitions (Cunningham et al., 2021). However, it is obvious that each region has different conditions, a different evolutionary trajectory, and its industry a different path, and, therefore, the manifestations of M&As will be different. However, this spatial view of the different impacts of M&As is still lacking in the literature.

For many companies in today's globalized world, finding exclusive know-how, knowledge and talent and acquiring them is a much more widespread strategy than expanding their own production through direct investment. The volume of M&A processes, therefore, in many countries exceeds the volume and importance of foreign direct investments that have been dominant in recent decades (Květoň et al., 2020). In this context, the former command economies in Central Europe occupy a specific position for several reasons: (1) due to the exposed geographical location at the border of highly developed and newly acceded countries to the EU, the attractiveness for FDI through M&A was extremely high (compared to more peripheral countries in Eastern Europe), (2) These countries have undergone unrepeatably privatizations and economic base transformations, offering a unique opportunity for foreign capital to enter, (3) these countries have been strongly industrialized but are gradually moving to more knowledge-intensive industries to remain competitive and the number of dynamically developing companies that are attractive to foreign investors is constantly increasing. An example of such a country is Czechia, which has been one of the most attractive countries in CEE to foreign investors (Pavlínek, 2004), but FDI is no longer the most significant extra-regional capital flow as the volume of domestic acquisitions exceeds, especially during the last 7 years (Květoň et al., 2020). Therefore, it makes sense to shed light on the spatiality of regional acquisition dynamics and its economic impacts in different types of regions in different geographical positions.

Following the identified research gap, the aim of this article is to reveal regional dynamics and patterns of M&As in the Czech Republic. More specifically, this paper aims to investigate the spatiality and regional impacts in post-acquisition procedures by analyzing the labour market changes and influence on the economic fabric in peripheral and non-metropolitan regions in Czechia. It is in less developed regions that M&A may have a different nature compared to metropolitan regions and may have significant implications for further regional development.

Therefore, the paper will answer the following research questions:

1. What are the spatial patterns of corporate takeovers in different types of regions?

2. What are the positive and negative effects of extra-regional assets and knowledge inflow (via M&A) on regional economic performance and regional industrial path development in different types of regions?

Uncovering the uneven patterns and impacts in non-metropolitan regions has undeniable implications in the decisive as well as academic spheres.

The paper is structured as follows. The first part of the paper introduces conceptual departures and the current state of knowledge about M&A tendencies at national and regional levels, and this part brings a conceptual contribution concerning spatially different impacts in regions with different performances. The next section presents a methodological approach and data used for empirical analysis. An analytical section follows a structure of research questions and demonstrates regional dynamics of M&A processes and impacts on the labour market in non-metropolitan regions in Czechia.

10.2 Extra-regional flows of capital as driver of economic changes

Contemporary research in evolutionary economic geography (EEG) has enhanced our understanding of how firms, industries and regions evolve (e.g. Boschma & Frenken, 2011; Martin & Sunley, 2006). Nevertheless, most of the scholarly work in EEG focused on endogenous regional processes and explained how historical circumstances in the region affect its current growth (Martin, 2010). Therefore, conventional EEG studies have been recently criticized for underestimating the role of extra-regional (non-regional) resources in regional industrial growth (Dawley et al., 2015; Hassink et al., 2019; Tripl et al., 2018). The exceptions are Boschma (2017) and Neffke et al. (2018), who incorporate extra-regional factors into their recent studies.

Regional industrial path development refers to the emergence and development of new economic activities in a region (Hassink et al., 2019) or the downfall and extinction of economic activities and associated changes in the economic structure. Recent scholarly works characterized it as the process of mobilizing and anchoring knowledge and financial resources (Binz et al., 2016; Tripl et al., 2018). There is a vast literature on extra-regional knowledge linkages and their importance for innovation (Bathelt et al., 2004; Fløysand & Jakobsen, 2011). However, the role of these extra-regional sources for regional industrial change (or continuity), transformation and long-term path industrial development is unclear and underplayed (Tripl et al., 2018).

Various extra-regional sources and channels triggering regional path development may be distinguished. Among the most important, there is the arrival of new institutions, firms and other organizational actors bringing new knowledge, financial resources, technology etc. into the region. The inflow of such extra-regional sources may be implemented through various mechanisms e.g. resettlement and relocation of actors/ organizations, arrival of foreign direct investments, M&A procedures or attraction of highly skilled professionals. Martin & Sunley (2006) indicate endogenous as well as exogenous mechanisms underpinning the path of industrial development trajectories, but most recent conventional EEG studies have focused on endogenous mechanisms and processes. Both these authors emphasized that *“new knowledge brought into a region by the inward transplantation of firms from elsewhere (through FDI or*

takeover or merger) may be critical in initiating in new technological or industrial path locally, though this will depend on the absorptive capabilities....of the existing industrial base.” (Martin & Sunley 2006, 423)

In addition, it must be emphasized that extra-regional sources take different forms and will manifest differently in different types of regions. Therefore, they can also variously contribute to regional industrial trajectories. And just such a more sensitive assessment of the role of various forms of extra-regional sources has not yet been empirically captured.

After the fall of socialism, the Czech economy offered exceptionally many opportunities for the entry of foreign capital (just like other countries in Central Europe). Privatization of the former state-owned industrial companies to foreign owners was one of three possible pathways that were applied. Foreign investors differed according to strategy and motivation and low-cost as well as market-penetration motives can be distinguished (for a detailed investigation of transition strategies in the former command economies, see Švejnar, 2002). In CEE regions, one of the key processes transforming the economic fabric is the process of M&A (at present time) and greenfield investment of international firms (during earlier years of transformation). Both these processes are reshaping the role and importance of individual economic agents and thus impinging upon the development trajectory of regions (e.g. through the concentration of economic decision-making or modification of the regional asset base). More details and key economic/institutional specifics affecting M&A activity in Czechia as well as the context in former command economies in Central Europe described by Květoň et al. (2020).

Despite the existence of several insightful studies focused on the role of FDI in regional development, spillover effects of FDI (e.g. Pavlínek, 2004; 2017), a more systematic view of extra-regional stimuli and sources for regional industrial evolution is underplayed (not only in Czechia but empirical evidence is missing also in other CEE regions). Moreover, the economic impacts of M&A have never been studied at the regional level.

10.3 Engagement of firms in M&A transactions and variegated effects

M&As can be driven by several different intentions. The variety of motivations is a subject of a wide economic literature (a review is offered, for instance, by Calipha et al., 2010). The most common reasons although variously classified and named, comprise primarily of seeking synergies which can be manifested by economies of scale or higher value creation (Rabier, 2017), diversification, both geographical and sectoral, including gaining new technology (Hervas-Oliver et al., 2023), vertical integration (Frésard et al., 2020) and also elimination of competition (Cunningham et al., 2021). The latter is recently getting more attention, thanks to the influential theoretical contribution by Cunningham et al. (2021) who argue, based on data from the pharmaceutical industry that some acquisitions are directly aimed at discontinuation of the target’s innovation projects and preventing the future competition.

The motive has also a close relation to (1) decisions about the target/type of acquisition, (2) its success from the acquirer’s perspective and as this article argues (3) the impact on the region.

First, the motive goes hand in hand with the type of acquisition: whether it is in the same field, same supply chain or it is unrelated. Acquisition of an industrially unrelated company is usually connected to the diversification motive. This is also linked to the prior performance of the acquirer's industry. As Park (2002) shows investment into an unrelated company is more often sought by acquirers from the less profitable industries whereas companies from the most profitable industries strive to maintain and expand their market share.

The acquisition which goes across levels in a value chain is typically motivated by the need for vertical integration. Acquisitions within the same industrial sector can have three very different reasons: seeking synergies, geographical diversification or the elimination of competition. Hervas-Oliver et al. (2023) examine the geographical aspect from the perspective of industrial district evolution and conclude that local acquisitions usually seek synergies through investments in related fields, while foreign firms seek access to tacit knowledge through diversification. Importantly, they also warn that foreign investments can bring not only positive effects but also negative ones, namely mistrust and deformation of local institutional and cultural conditions, which are crucial for maintaining successful industrial districts.

Second, both motive and the type of acquisition influence what success looks like from the perspective of the acquiring company. Rabier (2017) shows on the US data that reasons related to synergies such as economies of scale or higher added value more likely lead to high gains, while diversification motives usually bring only modest financial outcomes. However, the synergy motives are also riskier as they more often end with big losses. These risks are moderated in the case of the acquirer's prior acquisition experience or its geographic proximity.

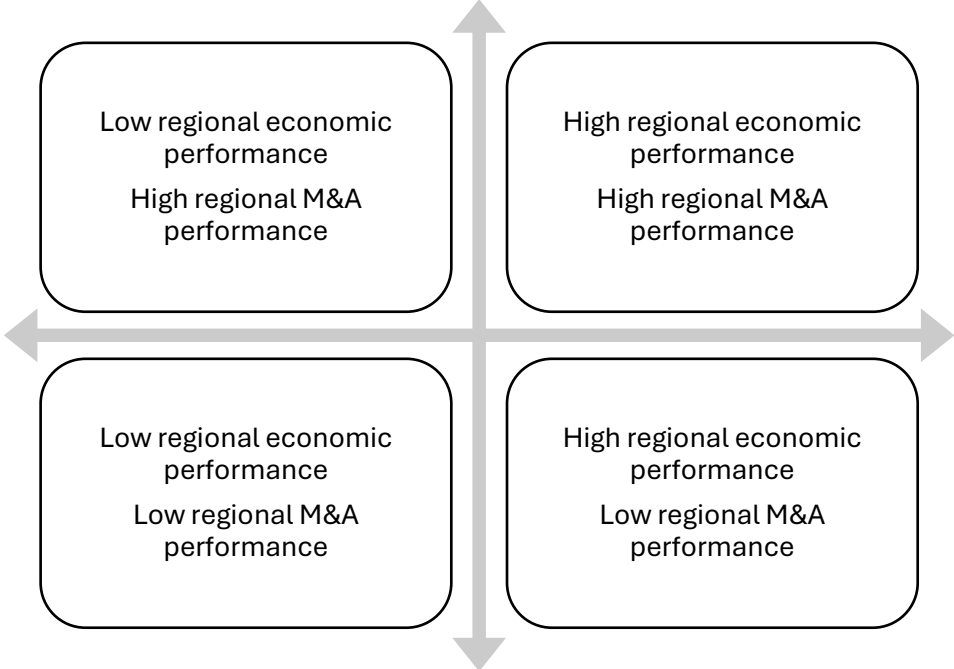
McCarthy & Aalbers (2016) elaborate on the effect of geographic proximity on the ex-post performance in terms of the number of patents. They show that the physical distance plays a role: every 1000 km between the acquirer and target means 19 lost patents. Additionally, there is just weak evidence for the effect of foreignness, but especially for high-tech companies, foreign acquisition per se seems to bring rather positive effects in the number of patents.

Third and most importantly for this article, the impact for the region differs by describing multiple characteristics of an acquisition including differences in motives, types of the acquisitions, same as in economic and organizational effects for the target. The regional impacts, however, are not, to our best knowledge, captured by any relevant literature.

In this article, we conceptualize the relationship between regional economic performance and M&A performance. We then empirically test this relationship in the next part of the article. Conceptually, the regions are considered from two main dimensions where a relation can be sought: (1) the economic performance of the region, and (2) the position in the M&A market which we call an 'M&A performance'. The position in the M&A market itself is a multidimensional characteristic which includes the intensity and type of acquisitions in which the region's firms, both acquirers and targets, are involved. This has – as described above – necessary implications for the firms' performance (Rabier, 2017) and thus also for the regional outcomes. The relationship between these two dimensions has not been yet studied.

To shed more light on these relations, we conceptually hypothesize that two steps must be done: (1) considering more ‘M&A performance’ characteristics as it is not a single-dimensional feature, and (2) investigating possible differences in regional impacts connected to different regions depicted by quadrants in Figure 11. It can be assumed that intensive regional M&A performance can have different effects on regional economic development in different regions. In some regions, an intensive process of acquisitions can be associated with intensive growth of companies, their market or portfolio expansion. However, the situation can also be the opposite. The geographical and transport location of the region, the industrial structure of companies and also the overall maturity of the regional ecosystem (including inter-company cooperation and trust between actors) can play a conditioning role. We tried to empirically verify these characteristics and features of acquisitions, as well as the manifestations of this acquisition process in different types of regions.

Figure 11: Conceptualization of regional M&A performance distribution



Source: authors

Based on the current state of knowledge about acquisitions and following the defined research questions, the following hypotheses were derived.

Hypothesis 1: Although the territorial differentiation of acquisitions is not described in detail in the literature, Boschma et al. (2016) pointed out the asymmetric relations and intensity of acquisition relations between metropolitan and peripheral areas in Italy. In this article, we go into greater detail and check that there are differences between regions in the intensity but also the structure of corporate acquisitions, and the spatial pattern does not have a random distribution.

Hypothesis 2: The acquisition of companies is conditioned by different motivations to buy/sell (Calipha et al., 2010) and can have different effects including the closing of plants after the acquisition and the loss of jobs (Fothergill & Guy, 1990 or Smith & Taylor, 1983). The hypothesis is that a higher risk of subsequent plant closure and job losses as a post-acquisition effect

prevails in peripheral and economically less developed regions, where manufacturing predominates and the labour market is more vulnerable.

10.4 Data and methods

Within this paper, a unique dataset, comprising detailed information about all takeovers which have involved any Czech company as a target between 2013 and April 2021 is used. The dataset of acquisitions covers 77,803 deals in the rawest form. This number is, however, reduced by three steps (see Table 24). First, only acquisitions of a certain value are selected for the analysis. The lower bound is set at 25% of a target company value or 50,000 CZK, whichever is smaller. Second, cases with missing information about the acquirer (for instance, on its industry sector) are excluded from the analysis. The biggest reduction is then caused by the exclusion of all deals where any of the company is based in Prague. This step is taken to get rid of a vast number of artificial property operations including shelf companies and virtual offices, which are predominantly based in Prague and would distort the results. A deeper justification of this step for M&A analysis is provided by Květoň et al. (2020), who also append results with Prague to show how its inclusion deforms and weakens the results: it lowers the explanatory power of the model and underestimates coefficients of all types of proximity. The other reason is that the position of Prague in the Czech economy is so dominant that its links may outweigh more general aspects of the acquisition market which are more of the concern in this analysis. Elimination of such a dominant power in the economy should enable the subsequent generalization as the results are based on more comparable regions. The role of large cities is still covered by other cities, where the phenomena of artificial deals are much less present. With the remaining 25 542 observations, the final dataset is still big enough for statistical purposes. Given the nature of the resource, the companies covered by this dataset are highly representative of the whole of the Czech economy and enable a fuller understanding of the intensity and structure of takeovers in different types of regions, as well as impacts and influences on regional economic and industrial development. All observations include information on the geographical locations of bidders and acquirers, industry/branch specifics and other information from the public register.

Table 24: Number of observations and selection criteria

All acquisitions 2013-2021	77 803
- excluding cases with smaller acquisition value than 50 000 CZK (or 25% of a company)	72 257
- excluding cases with missing information about acquirer	69 688
- excluding cases with either target or acquirer based in Prague	25 542

Source: Own dataset based on public company register

The most frequent targets from the sectoral point of view (regarding primary specialisation) are in Wholesale and Retail Trade (23.7% of target companies), Manufacturing (17.9%) and Real Estate Activities (15.4%) (see Table 25). Companies from Wholesale and Retail Trade are also the most frequent acquirers (20.5%) followed by Real Estate Activities (19.6%), Professional, Scientific and Technical Activities (12.2%) and Manufacturing (10.5%). The analysis covers the whole economy on purpose as it allows us to study the differences in M&A impacts by sectors and regions.

Table 25: Distribution of primary specializations based on the Statistical Classification of Economic Activities in the EU (NACE) in the final dataset

		acquirers	%	targets	%
A	Agriculture, Forestry and Fishing	1 015	5.2	1 374	5.4
B	Mining and Quarrying	55	0.3	64	0.3
C	Manufacturing	2 052	10.5	4 560	17.9
D	Electricity, Gas, Steam and Air Conditioning Supply	114	0.6	348	1.4
E	Water Supply; Sewerage, Waste Management and Remediation Activities	168	0.9	426	1.7
F	Construction	1 348	6.9	1 692	6.6
G	Wholesale and Retail Trade; Repair of Motor Vehicles and Motorcycles	4 017	20.5	6 047	23.7
H	Transportation and Storage	374	1.9	762	3.0
I	Accommodation and Food Service Activities	524	2.7	989	3.9
J	Information and Communication	478	2.4	831	3.3
K	Financial and Insurance Activities	924	4.7	256	1.0
L	Real Estate Activities	3 853	19.6	3 937	15.4
M	Professional, Scientific and Technical Activities	2 387	12.2	2 356	9.2
N	Administrative and Support Service Activities	643	3.3	776	3.0
O	Public Administration and Defence; Compulsory Social Security	608	3.1	3	0.0
P	Education	114	0.6	188	0.7
Q	Human Health and Social Work Activities	305	1.6	449	1.8
R	Arts, Entertainment and Recreation	291	1.5	315	1.2
S	Other Service Activities	350	1.8	169	0.7

Source: Own dataset based on public company register

The first research question aims at the spatial patterns of acquisitions in different types of regions. To identify different types of regions and describe their position in the acquisition market, **cluster analysis** is used. For this purpose, we use former districts (76 units except Prague) as they represent the smallest units which can be described as coherent regions.

From the perspective of a single district, every observation fits into one out of four categories: **(1) intra-regional acquisition** when both target and acquirer belong to the same district, **(2) inward** or **(3) outward domestic acquisitions** depending on whether the target or the acquirer is based in the district while the other is from a different Czech region and **(4) inward foreign acquisition** while a foreign acquirer enters the district. There is no information about outward foreign acquisitions as the dataset is constructed from the Czech register entries.

Numbers of acquisitions in these categories are used for computing **indices** describing regional involvement in the acquisition market. The sum of the valuation of acquisitions in a region could be also used for these computations; however, it would lead to distinctive outliers which arise from individual cases and could not be explained by general tendencies. Numbers of acquisitions provide a much clearer picture in this sense.

The reason for constructing such indices is to capture the regional patterns of involvement in the acquisition market. All indices thus vary between districts i .

Relative position in the acquisition market is computed as a ratio between the number of outward and inward domestic acquisitions. It represents the relative success of business in the district, its purchasing power and its ability to spread over the borders of the district.

$$relative\ position_i = \frac{outward\ domestic\ acquisitions_i}{inward\ domestic\ acquisitions_i}$$

Local density is based on the number of acquisitions that took place within the district in relation to cross-border domestic deals. This indicator can be interpreted as interrelatedness of companies within a district as they are prone to stay within regional borders and not to expand across.

$$local\ density_i = \frac{intraregional\ acquisitions_i}{inward\ domestic\ acquisitions_i + outward\ domestic\ acquisitions_i}$$

Foreign attractivity is a ratio between foreign and domestic inward acquisitions.

$$foreign\ attractivity_i = \frac{inward\ foreign\ acquisitions_i}{inward\ domestic\ acquisitions_i}$$

Besides the indices describing the pattern of involvement in the acquisition market, further economic characteristics are used to describe the districts. Namely, **unemployment rate** and **nominal net income** per inhabitant demonstrate the economic level of the district (the best alternative for regional GDP), and **localisation quotient for manufacturing** illustrates relative specialisation of a region in manufacturing. In the Czech Republic, manufacturing plays a decisive role in many regions.

Spatial patterns are then analyzed through cluster analysis which allows us to identify the similarities and dissimilarities between regions regarding their involvement in the acquisition market while controlling for main economic characteristics.

The output of this analysis, i.e. the cluster association, is then used as an explanatory variable for the subsequent analysis, which aims at the second and the third research questions. They focus on the real effects of acquisitions on regional performance. There are two real effects considered: the exit rate of companies, i.e. the share of company closures on the total number of companies in the district and the evolution of economic structure. For this purpose, 205 administrative units are used instead of districts as these better allow us to identify diverse effects, even while they differ within a region. The economic structure is represented by simple indicators such as firm growth rate and employment growth rate and then by a composite industrial diversity index, namely the Hirschman-Herfindahl Index (HHI).

The Hirschman-Herfindahl Index (HHI) is based on shares of employment in each industrial sector over total employment in the administrative unit j and time t .

$$HHI_{jt} = 1 - \sum_{s=1}^S \left(\frac{\text{employment}_{jst}}{\text{employment}_{jt}} \right)^2$$

A higher share means higher specialization in the sector, while its weight is amplified by the square value. The sum of these squared shares represents general regional specialization, or, conversely, diversification if it is subtracted from one. In the analysis of real effects, the evolution of this index is considered, i.e. its first difference.

Besides the analysis on the level of administrative unit, the probability that a company exits in a certain period after the acquisition is further tested on individual data. For this purpose, logistic regression is used. The logit model is employed to assess the probability of the target's exit after acquisition and whether it differs by cluster membership.

$$\text{logit}(P(\text{EXIT}_i = 1 | \mathbf{C}_i, \mathbf{D}_i)) = \mathbf{C}_i \boldsymbol{\beta} + \mathbf{D}_i \boldsymbol{\gamma}$$

where \mathbf{C}_i is a set of binary variables for cluster association of the target (including intercept) and \mathbf{D}_i denotes a set of binary variables for two types of proximities used as control variables: geographical and cognitive distance between acquirer and target (Boschma et al., 2016; Květoň et al., 2020). Geographical proximity captures whether the firms are from the same region based on the European Nomenclature of territorial units for statistics (NUTS 3), same district, administrative unit or even from the same municipality. Cognitive proximity considers the relatedness between the industrial specialization based on their main NACE category.

Both, the cluster analysis and the logistic regression methodologically follow Sharma (1995).

10.5 Empirical results

The Cluster Analysis

In the first step, the cluster analysis has been run in order to classify regions based on their M&A overall performance (vertical axis in the Figure 11). As the main reason was to get internally homogeneous clusters, the Ward's minimum variance method of hierarchical clustering has been used. Number of clusters was not a priori set but was a subject of the results assessment: final number of 5 clusters has been chosen as this number offers the most coherent interpretation, however the variants of 4 and 6 clusters were also considered.

Final clusters represent regions with significantly different involvements in the acquisition market (see t-tests of average values in Table 26). They also exhibit clear spatial patterns (see Figure 12). The order of the clusters is set in correspondence to their average nominal income index from the highest (in cluster 1) to the lowest (in cluster 5) – i.e. approximately regarding their position on the horizontal axis in the Figure 11 from right to left.

Cluster 1 represents **successful regions with strong international connection**. The acquisition market is internally intensive and at the same time strongly connected to the foreign capital. These regions are characterized by high incomes and low unemployment and are located mostly around Prague and on the main transport route to Germany.

Cluster 2 covers **dynamic regions with active, expanding capital** which stems from the very significant outward orientation and relatively weak local density. Also, these regions have relatively little manufacturing – they are often involved more in digital technologies and connected services. These regions often surround larger cities.

Cluster 3 depicts "**average**" **regions** with average levels of nominal income and unemployment and a weak acquisition market, where inward transactions are heavily dominated, but only to a very limited extent from abroad. These are stable, industrial regions, but at the same time with a relatively diversified sectoral portfolio.

Cluster 4 covers **regions with high local density** and predominant inward focus, but, at the same time, high attractiveness for foreign transactions. The main reason for foreign attractiveness is due to low labour costs, at the same time, the value of this index is pushed up by extreme numbers of Karlovy vary region. It is the most western region, thus close to Germany, but in the examined period also strongly connected to Russian capital (a sixth cluster from the possible continuation of hierarchical clustering would consist only of the two regions surrounding Karlovy vary). The regions at this cluster focus strongly on manufacturing as they largely cover traditionally industrialized borderlands.

Cluster 5 finally represents **the most peripheral, structurally disadvantaged regions** with high unemployment, low income levels and low manufacturing intensity. Weak manufacturing is not balanced by more progressive sectors, like in cluster 2, but mainly by mining (coal, gas, metals). The patterns in the acquisition market are statistically inconclusive, but they show relatively low local density and low foreign attractiveness.

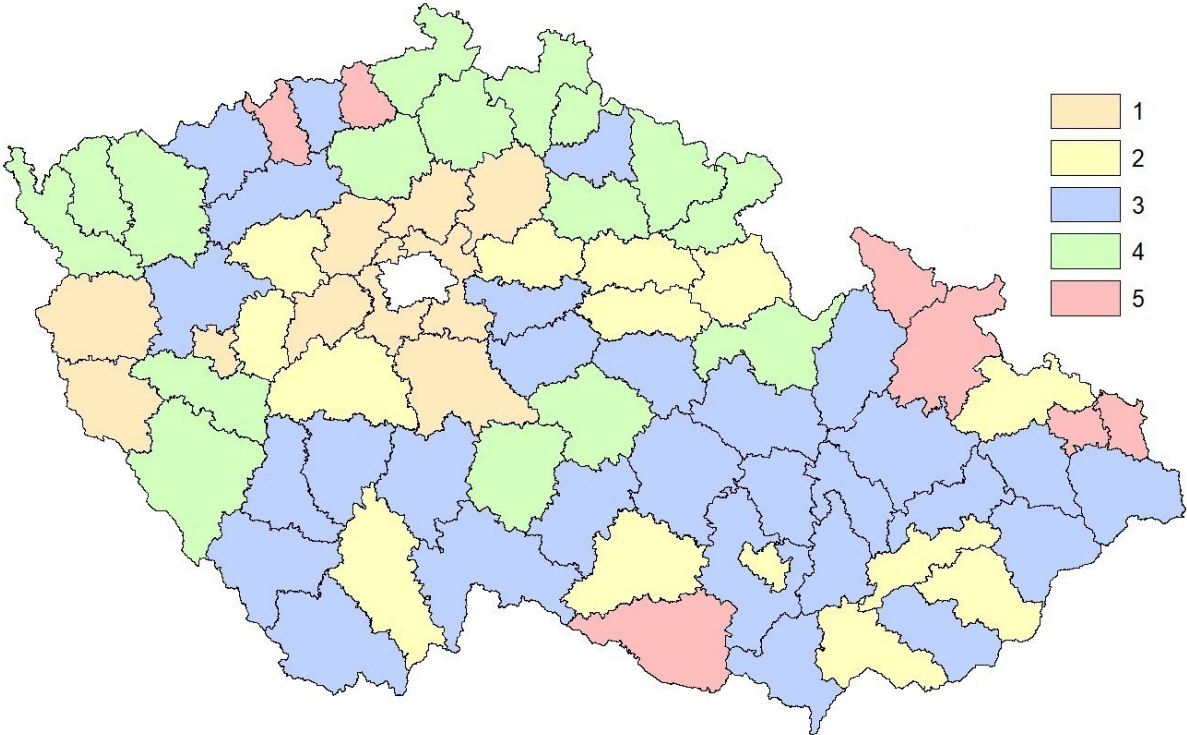
Table 26: Average values by cluster and their statistically significant difference from the mean

	ALL	CLUSTER 1	CLUSTER 2	CLUSTER 3	CLUSTER 4	CLUSTER 5
Number of districts	76	10	14	29	16	7
Acquisition market characteristics						
- Relative position	0.92	0.99	1.38 ***	0.71 ***	0.82	1.05
- Local density	1.80	2.22 **	1.45 **	1.37 ***	2.72 ***	1.57
- Foreign attractivity	1.34	2.58 ***	1.11 *	0.91 ***	1.68 *	1.02
Economic and industrial characteristics						
- Manufacturing intensity	1.13	1.02	0.94 **	1.25 ***	1.29 *	0.77 ***
- Unemployment	5.17	3.87 ***	4.94	5.12	4.77	8.59 ***
- Nominal income index	0.96	1.06 ***	0.98	0.95	0.93 *	0.88 ***
Explanatory variables (not used for clustering)						
- Industrial diversity	0.93	0.91	0.93	0.94 ***	0.93	0.93
- Company exit rate	0.10	0.11 *	0.10	0.09 **	0.10	0.11

Source: own analysis

Note: The significance levels are *** $p < 0.01$, ** $p < 0.05$ and * $p < 0.1$. The statistical significance represents results of one-sample t-tests using whole sample means (the column ALL) as test values.

Figure 12: Five clusters of districts based on economic and acquisition characteristics



Note: The order of the clusters corresponds to their average nominal income index.

Source: own analysis

The hierarchical clustering method also shows which clusters are closer to each other by their characteristics (involved to the analysis). In this sense, the most related clusters are clusters 2 and 5 which both are characterized by more acquirers than targets (positive relative position), low local density and relatively low foreign attractiveness. The second closest pair consists of clusters 1 and 4, both characteristic by high local density and high attractiveness for foreign capital, although from different reasons: in cluster 1, foreign investors would seek more for value based on knowledge, in cluster 4, the reason is predominantly cheap sources, especially labour. This leads to an important conclusion. The intuitive perception of the M&A market usually draws a simple correlation between economic level of a region and the intensity and structure of mergers and acquisitions (Boschma et al., 2016). This analysis shows that no such easy association can be made. High intensity of acquisitions can be caused by different reasons, and similarly, it can lead to various implications. The typology of regions must be made in a much more complex way. The designed typology based on Czech districts shows a notable similarity in behaviour of M&A between relatively distant regions. First, it turns out that geographical proximity to the German economy still associates a higher intensity of foreign investment and acquisitions, however similar behaviour is also typical for other peripheral regions (outer and inner peripheries). These peripheries in Czechia (especially in Bohemia – cluster 4) often have a highly dependent local economy on foreign multinational capital, which invests here and uses still relatively cheap labour (see e.g., Blažek & Květoň, 2023). Therefore, it turns out that not only geographical proximity to foreign markets in the EU core, but also economic immaturity plays a role. Foreign investment of the "low-road" type (low-cost strategy) is typical for this type of region. On the other hand, strong international connections and foreign investments are also

evident in Cluster 1. However, in this case, it is more about regions in the wider hinterland of the metropolitan region, where there is a high concentration of qualified and more expensive labour force. It can therefore be concluded that this is not a typical low-cost strategy of companies (as in the previous case of cluster 4), but rather an effort to penetrate and operate in the Czech market for a long time (not only in the field of industry, but also more in the sector of knowledge-intensive services, etc.)

The intensity of the acquisition market has not been a part of the analysis so far. It can be captured by an easy ratio comparing number of acquisitions to the number of economic subjects. This ratio shows a similar picture: clusters 2 and 5 have the ratio higher than the average which means relatively intense acquisition market (Table 27), although they very much differ in economic background.

The Impact Analysis

In the next step, clusters obtained from the cluster analysis of acquisition patterns are investigated separately in an analysis of economic impacts of acquisitions in order to test the hypothesis that these effects vary by different types of regions. Two economic effects are considered: the exit rate of companies and the change of economic structure via change of industrial diversity, employment and firm growth rate. This impact analysis is run on more detailed regional division (205 administrative units).

1) Exit rate of companies

The first considered effect aims at the adverse behaviour, such as hostile takeovers, and its relative occurrence. The nation-wide cumulative exit rate for the period 2013 – 2021 is 10.2 %, while there are differences between clusters with the lowest rate in cluster 3 and the highest in cluster 5 (Table 27). This corresponds to their economic background. Cluster 3 consists of economically stable regions while cluster 5 covers the most structurally hit peripheries.

However, the exit rate after acquisition exhibits a completely different pattern. It is generally higher; the national average is 16.4 % in the same period, but the one above average is not cluster 5, but again the pair of cluster 1 (18.5 %) and cluster 4 (22.4 %). Cluster 4 has the highest share of exiting targets while the general exit rate is below the average. It should be also stressed that these clusters have highest exit rates after acquisition even though they have relatively low ratio of acquisitions to the number of economic subjects (Table 27).

The data allow to decompose all results by industrial sectors (by NACE codes). From the sectorial view, the highest share of exits after acquisition is in retail trade (29.4 %), followed by accommodation and food services (20.2 %). Retail trade is, however, also the sector with the highest general exit rate (20.6 %). Highest difference compared to general exit rates is in real estates (17.3 % to 6.4 %) and accommodation and food services (20.2 % to 10.8 %). These are the sectors with highest occurrence of adverse investment behaviour. On the contrary, manufacturing has almost the same exit rate after acquisition (12.8 %) as in general (12.4 %).

Table 27: Exit frequencies by clusters

	ALL	CLUSTER 1	CLUSTER 2	CLUSTER 3	CLUSTER 4	CLUSTER 5
number of economic subjects						
existing between 2013 and 2021	595 584	84 533	167 237	177 949	96 272	69 593
- of which newly established	174 043	25 503	52 544	50 059	23 780	22 157
in %	29.2	30.2	31.4	28.1	24.7	31.8
- of which exited	60 868	8 876	17 946	16 554	9 312	8 180
in %	10.2	10.5	10.7	9.3	9.7	11.8
number of acquisitions						
between 2013 and 2021	25 542	3 320	8 436	6 623	3 695	3 468
- after which the target exited	4 190	615	1 216	979	828	552
in %	16.4	18.5	14.4	14.8	22.4	15.9
Ratio of acquisitions to number of economic subjects (in %)	4.3	3.9	5.0	3.7	3.8	5.0

Source: own analysis

Note: Exit rates in this table (based on individual data) slightly differ from exit rates from Table 26 (based on regional data), particularly for clusters 2 and 5. In these clusters, lower values for regional averages mean higher regional variability – there are few regions with very high exit rates.

In this sense, there are no big differences between clusters. There is the corresponding level shift, but the structure remains very similar. In the case of cluster 4, which exhibits the highest exit rate after acquisition, the biggest differences are in manufacturing and wholesale trade. In these sectors, targets in cluster 4 exit far more often relative to general exit rate than in the whole sample. It does not, however, outweigh the role of the economy-wide level shift (i.e. in all sectors targets in cluster 4 exit more often than in the whole sample).

Although the results indicate no big sectoral differences of M&A impacts, there is a pattern which corresponds to the stream of literature based on the idea of foundational economy (Bentham et al., 2013) which divides economic activities to three zones of economy: tradeable (competitive, non-necessary for living, such as cars, electronics or private housing), overlooked (occasional purchases of mundane services or goods, such as restaurants, hairdressers or basic furniture) and foundational (daily essentials, such as groceries or health care). Based on the NACE classification for these three zones used by Martynovich et al. (2023), the economically less developed regions (clusters 3, 4 and 5) have the highest probabilities of exit after acquisition in the tradeable sectors, whereas for economically strong regions (clusters 1 and 2) the most vulnerable in this sense are firms from the overlooked sector (such as accommodation and food services). Firms in foundational economy are generally less prone to exit after acquisition (the only cluster where the exit rate is above regional average is cluster 2).

An explanation for the fact that in the less developed regions, exits after acquisitions are more pronounced in the tradeable sectors is given, for example, by Blažek & Květoň (2023), who analysed in detail the long-term changes in the economic structure and the conditioning factors in the coal regions in Czechia (which includes a number of districts in cluster 4). They emphasize that “there are many companies which are textbook examples of foreign-owned branch plants lacking any decision-making powers or higher level mandates ...thus, although FDIs played an

important role in most CEE economies including Czechia, the mostly unfavourable structure and character of FDIs in the Ústecký Region are one of the key factors in the less successful regional transformation". Therefore, the higher intensity of the exit rate can be influenced precisely by the limited decision-making power of these companies into which foreign capital has entered.

2) Economic structure

The idea behind the second considered effect is that acquisitions, especially the large ones, can change economic structure of a region. The hypothesis tested in this analysis is whether this effect systematically differs between types of regions represented here by clusters capturing different acquisition patterns. Unlike the effect on exit rates, this must be analysed spatially as the indices reflect economic and sectoral structure, not an information on individual firms. 205 administrative districts are used in order to capture higher diversity.

Table 28: Indicators of industrial diversity change on the administrative unit level

	ALL	CLUSTER 1	CLUSTER 2	CLUSTER 3	CLUSTER 4	CLUSTER 5
Number of administrative units	205	20	38	83	49	15
Industrial diversity change (HHI)	0.009	0.010	0.008	0.007	0.011	0.008
Firms growth rate	2.19	2.22	2.18	2.16	2.19	2.31 *
Employment growth rate	1.19	1.25	1.29 *	1.17	1.16	1.11 *

Source: own analysis

Differences in the overall index of industrial diversity are not significant. It means that there are no differences in structural development between clusters based on the acquisition behaviour. There are, however, differences in economic development between the two clusters, which are characteristic by intensive acquisition market (clusters 2 and 5). Cluster 2, which covers the more economically developed regions, exhibits high employment growth rate, whereas cluster 5 shows the opposite tendency (although there is the highest unemployment) and the development is only in the firms growth rate.

Logistic regression analysis of exit rate after acquisition

In order to support the results based on regional data, an additional analysis can be run on individual level. The logistic regression allows to study the probability of exit after acquisition and whether it differs by cluster membership.

As described in the "Data and methods" section, the logistic regression involves two types of proximity between acquiring company and target as control variables assuming these similarities can cover variability of exits which is dependent on different motivations for the acquisition (leaving differences of target's regions as the main factors to be explained).

Cluster 3, which covers the most stable regions with the lowest exit rate, is taken as a reference in the assessment of the effect of cluster membership. The results (Table 29) confirm clearly the conclusions made from the analysis on the regional level. Cluster 4 has the highest probability of exit after an acquisition, followed by cluster 1. These clusters are characteristic by high local density of the acquisition market (i.e. more intraregional acquisitions).

Table 29: Logistic regression results for probability of company exit after acquisition

	logit 1	logit 2	logit 3	logit 4
Regional classification				
cluster 1	0.27 ***	0.26 ***	0.29 ***	0.27 ***
cluster 2	-0.03	0.00	-0.02	0.02
cluster 4	0.51 ***	0.37 ***	0.50 ***	0.38 ***
cluster 5	0.09	0.05	0.10	0.07
Cognitive proximity				
same NACE (1 digit)		0.27 ***		0.28 ***
same NACE (2 digit)		0.20 **		0.21 **
same NACE (3 digit)		1.24 ***		1.25 ***
Geographical proximity				
same region			0.35 ***	0.17 **
same district			-0.04	-0.28 *
same administrative unit			-0.08	-0.26 ***
same municipality			0.37 ***	-0.02
constant	-1.75 ***	-2.06 ***	-1.97 ***	-2.06 ***
pseudo R sq.	0.01	0.05	0.01	0.05
number of obs.	25542	25542	25542	25542

Source: own analysis

Moreover, this analysis shows that intraregional acquisitions are more often connected to exits on the level of a region (NUTS 3), but not on the smaller geographical unit division. Higher cognitive proximity (same NACE) is most significantly related to higher probability of target company's exit. This can have twofold explanation. First, that it captures the tendency to eliminate competition, or the second that in the same or similar sector the acquisition more often leads to an organizational fusion of the two companies which technically leads to the deletion from the register of one of them.

High cognitive proximity dominates over the effect of geographical proximity. Most exits after acquisitions in the same municipality are connected to the closest cognitive proximity – the reason might be again that they are organizationally incorporated. On the regional level, however, the probability of exit is still significantly higher. Taking into account cognitive proximity, the geographical closeness itself on the level of district and administrative unit leads to lower probability of exit after acquisition. It should be noted that the local density used for the cluster analysis and which are characteristic mostly for clusters 1 and 4 was based on the level of districts.

The regions in cluster 1 belong to the Central Bohemian ecosystem, which systematically develops an economy based on knowledge, innovation and advanced technologies. The reason for higher foreign investments is modern industrial production, which is attractive to a number of large foreign investors who invest mainly in the automotive sector (SIC 2022). The structure of key actors with R&D capacities contributes to the fact that these districts have a high potential for the development of Key enabling technologies (KETs), especially biotechnology, space technology, nuclear technology, or technologies in the field of optics and photonics. The entire hinterland of the Prague metropolis, including these regions, has been developing successfully

for a long time (Czech statistical office 2023), and the post-acquisition effects do not support the negative tendencies of regional evolution. The loss of jobs after the acquisitions is not noticeable, and rather it is an organizational incorporation of two companies in these districts.

Districts within cluster 4 belong to NUTS III regions with very below-average R&D spending by companies. The economic structure of these districts is therefore more focused on traditional manufacturing industries with lower added value (economic performance of Czech microregions studied e.g., Ženka et al 2015). Most exits after acquisitions in these districts can therefore be followed by negative effects. Acquisitions can lead to job losses, especially in the acquired company, as the acquiring company may seek to eliminate redundancies and streamline operations (Mason and Harrison 2006) and sometimes it can be an effort to reduce competition. However, for this statement it will be necessary to do a qualitative investigation in the districts of cluster 4.

Regarding the conceptualization in the Figure 11, the picture could vary in relation to the measure of “M&A performance” chosen. However, the empirical results suggest that the most coherent measure is the relative position and openness of the M&A market. These characteristics have more influence on the regional economic impact in terms of probability of exits and employment growth than the regional economic performance itself.

The logic and findings of this article can be summarized in 4 steps: 1) M&A market is not geographically homogeneous and it differs in more aspects than just by the intensity and direction of transactions (Boschma et al., 2016), regions differ in all aspects of M&A market: relative position, local density and foreign attractiveness, same as in the M&A intensity. 2) This heterogeneity is not random but follows a spatial pattern and differences in economic fundamentals of regions (which is apparent from the results of the cluster analysis), but at the same time, there is no linear relationship between economic performance and M&A performance, as the regions can be distributed in the whole space defined by economic performance and M&A performance (depicted by Figure 11). 3) The regional M&A market characteristics can explain differences in impacts of M&A transactions on economy, especially in the exit rate of companies after acquisition and in the change of employment. For instance, local density of M&A market and attractiveness for foreign acquirers are both associated with higher occurrence of exits after acquisitions. 4) The impacts of M&A on regional economy generally do not differ by sector of the acquired company, there are, however, patterns showing that the negative effects are more present after acquisitions of firms in tradeable sectors in the less developed regions, whereas in the stronger regions, the most vulnerable sectors belong to the part of economy which offers mundane, but occasionally purchased (and thus substitutable) goods.

These findings have important implications for informing policy making for instance in shaping its innovation policy. The extra-regional flows have heterogeneous impacts while the heterogeneity stems more from the type of region – both in economic terms and its position in the M&A market which are not the same things – than from the sectoral specialisation. The innovation policies based on RIS3 approach focus on sectoral domains of specialisation and vastly disregard the position of the region in the inter-regional asset market such as M&A.

Besides the theoretical and conceptual conclusions, some policy relevant recommendations can be derived from the results especially for the regions with asymmetrically high inward flows (i.e. more targets than acquirers) which is often connected to relatively high attractiveness for foreign investors and more importantly to relatively high exit rate after acquisitions. Two types of such regions can be distinguished: for the most economically developed regions (cluster 1), the exit rates are most frequent in the sectors producing mundane but occasionally purchased goods and services, which constitutes the “overlooked economy” (Martynovich et al., 2023). This does not entail high vulnerability but can cause a gradual decline in comfort of living. Second, in regions which are attractive for foreign capital mainly because of cheap labour (cluster 4), the adverse effects are significantly connected to the tradable economy, i.e. the one which should establish a comparative advantage of the region. This can cause a significant threat for the economic competitiveness of the region.

10.6 Conclusions

This paper aims to make a conceptual and empirical contribution to our understanding of the effects of extra-regional assets and knowledge inflow, through mergers and acquisitions (M&A), in different types of regions. By drawing on the economic and geographical interplay, we employed a spatially sensitive approach to reveal the spatial patterns of corporate takeovers in different regions and to identify their positive and negative effects in the regional economy. The different aspects of M&A have been extensively studied from various perspectives, especially by economists, but a geographically-focused perspective on this spatially diverse process has been lacking, with the exception of proximity studies that are crucial for M&A realization. This paper seeks to address this research gap and reveal different economic manifestations of M&As in various types of regions.

The main conceptual contribution of this paper is the examination of the different behaviours of M&As in regions with varying economic conditions and geographical locations. We argue that the abilities and capacities of regional firms play a significant role in the resulting impacts of M&As. The development and nature of the regional ecosystem therefore not only affects the intensity of inward investments and their impacts, but also the intensity of outward investments, which is a key characteristic of advanced regions. Furthermore, we assume that the economic effects of acquisitions may not be only positive, but in some vulnerable regions, it may result in the closure of newly merged companies, and a resulting rise in unemployment. We argue that these effects are not solely driven by managerial decisions, but that there exists a systematic relationship with the level of regional development. Therefore, the theoretical contributions of this paper concern the association between the varying M&A performance in different regions and the resulting manifestation and effects of these investments.

Applying a cluster and regression analysis on unique long-term dataset about M&As, our analysis revealed the spatially uneven intensity of inward and outward M&As, create a categorization of regions and explored positive and negative effects of M&As. In more detail, we may further break down the intensity and structure (inward/outward direction) of M&As into three main categories. First (A), regions with a high concentration of acquisitions and attractive to foreign investors, but with relatively weak connections to the national economy. Second (B),

regions with an active acquisition market that crosses regional borders and is more outward-looking, but not highly international. In addition, there is a third category (C), of regions with a weak acquisition market and a particularly low number of growing firms, both within and between regions. It turned out that the spatial pattern is not random, and the M&A market is not geographically homogeneous. Regions differ in all aspects of M&A market: relative position, local density and foreign attractiveness, same as in the M&A intensity and distribution of regions is not random. In this sense, hypothesis 1 can be confirmed.

Our empirical results indicate that the economic impacts of M&As in the regions reflect this structure. For category (A) acquisitions are associated with frequent exits but do not have significant effects (they may slightly alter the economic structure, such as causing a higher HHI change). For category (B) acquisitions do not result in negative effects in terms of company exits, but there may be more noticeable employment effects. There are differences between the two clusters within this category. The economically strong regions in this category (cluster 2) experience growth in employment, while the weaker, peripheral regions (cluster 5) lose employment. However, the analysis does not suggest a causal relationship. In general, it has been found that the likelihood of a company's exit after a takeover varies greatly. The higher cognitive proximity between the acquiring and target firms is strongly associated with a higher probability of the target company's exit. This can have two possible explanations. The first is that it may reflect a tendency to eliminate competition or second, acquisitions in the same or similar sector may often result in the merging of operations of the two companies.

The higher probability of plant closure after an acquisition is not new and has been historically documented by a number of studies (Fothergill & Guy 1990, Smith & Taylor 1983). However, a higher risk of subsequent plant closure and job losses as a post-acquisition effect is not the same in all regions, and the circumstances and situation of the local and regional economy matter. Not all takeovers are therefore necessarily harmful to the regional economy. This is also evident in Czech regions, where the higher probability of closing companies after an acquisition is only in selected regions. It turns out that these are regions with a disadvantageous structure of the economy, below-average socio-economic performance and lower innovation activity of companies. Hypothesis 2 is therefore confirmed.

An essential but often overlooked component of regional economic development is the post-acquisition effect. Important new insights into the dynamics of regional economic development may be obtained from this research agenda. This analysis can be considered pioneering in terms of more sensitive regional impacts of such a widespread and significant process in today's globalized world as mergers and acquisitions. Future research could therefore focus on the detailed mechanisms of positive and negative changes in different types of regions (including spillover effects). There is also a conceptual and empirical opportunity to link the current direction in evolutionary economic geography focusing on organizational and system-level agency and the significance of corporate takeovers in regions.

Policy-relevant conclusions can be derived especially for the formulation of regional investment aftercare programmes. Based on the insights from the provided analysis, we know that the M&A

market and effects are not uniform across regions and tailored-made, spatially sensitive development policies can be created.

Regarding the successful international regions (cluster 1), the exits after acquisitions are most frequent in the sectors producing mundane but occasionally purchased goods and services. The aftercare programmes should therefore focus on maintaining service provision in the region and keeping the comfort of living. Furthermore, an effort should be focused on fostering and strengthening international connections. Given that these regions have strong international ties, policies should encourage collaboration, trade and investment with foreign partners.

Policies for dynamic and outward-oriented regions (cluster 2) should encourage these regions to continue expanding their capital and engaging with global markets. The development of a supportive ecosystem for startups and tech companies and strengthening links between research institutions and industry is an appropriate approach.

Policies for average, stable industrial regions (cluster 3) should address the weak acquisition market by promoting investment and business growth. Regional stakeholders should encourage industries to explore new sectors and diversify their economic activities (to provide incentives for companies to invest in R&D). In these regions, activities to address unemployment and focus on job creation and skill development are needed (support vocational training programmes).

For cluster 4, the policies should orientate on the prevention of hostile takeovers and the aftercare programmes should incentivize retention and development of the business in the region. Furthermore, the policies should create an attractive environment for foreign investors with higher added value production and mitigate risks of overreliance on foreign capital.

Within cluster 5, any investment incentives are appropriate and particularly policies and aftercare programmes focused on employment growth are needed. These regions require tailored policies to address their specific challenges (within national and regional EU policies). Enhancing vocational training and education to equip the workforce with relevant skills and encouraging local entrepreneurship and small business development is very important for these regions.

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