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Flowers of adversity: Institutional constraints and innovative SMEs in transition economies

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ABSTRACT

Prior research has shown that institutional constraints, present in many emerging and transition economies, decrease the performance of firms. However, how resource-restricted small- and medium-sized enterprises (SMEs) deal with these institutional constraints and potentially overcome them is currently not well understood. We combine an institutional perspective with a relational view and argue that innovative capabilities, along with networking activities enabling these firms to tap into crucial resources external to their organizations, are important means of dealing with institutional constraints. Our unique dataset of a total of 518 SMEs from Ukraine and Russia reveals that a firm's innovativeness coupled with local partnerships and resource sharing activities can help to mitigate the negative relationship between institutional constraints and firm performance. This study provides a more-nuanced understanding of how innovative SMEs in highly turbulent transition economies deal with institutional constraints and increase their performance.

1. Introduction

The flower that blooms in adversity is the most rare and beautiful of all.

– The Emperor, *Mulan*[1].

Firms in highly turbulent transition economies, such as those located in central and eastern Europe, often have to deal with institutional constraints – i.e., deficiencies or voids in institutions that hamper business activities (Khanna & Palepu, 1997; Luthans et al., 2000; Tracey & Phillips, 2011). Resource-restricted small- and medium-sized enterprises (SMEs) have a particularly hard time performing well in such environments (Ahlstrom & Bruton, 2010; Hashi & Krasniqi, 2011; Manolova et al., 2008; Puffer et al., 2010; Smallbone & Welter, 2001, 2008). Unlike larger firms, SMEs and entrepreneurial ventures have fewer resources and often lack the knowledge required to successfully engage in activities that "grease the wheels" of commerce (Zhou & Peng, 2012). In addition, rules and regulations in transition economies change frequently, raising uncertainty and information costs, which in turn has a disproportionately negative impact on SMEs, since their compliance costs are higher than those of larger firms (Krasniqi, 2010).

Prior research has generally suggested that innovative capabilities enable a firm to better deal with these institutional constraints (Akbar et al., 2017; Chadee & Roxas, 2013; Liu, 2011; Minh & Hjortsø, 2015). Furthermore, SMEs are often regarded as possessing unique characteristics that enable them to respond rapidly to changing contexts and to innovate due to their informal organizational culture, flexibility and organic structure (e.g., Bertello et al., 2022; Pullen et al., 2009). However, while it has often been assumed that innovation has a positive impact on the performance of SMEs, prior research also reveals that this relationship is context dependent (Rosenbusch et al., 2011). In particular, SMEs in transition economies, despite their innovation potential, still suffer from resource restrictions (i.e., they have less resources than larger firms) which limits their choices when they are confronted with bureaucratic hurdles or arbitrary taxes in such economies. This is especially the case when they try to obtain commercial licenses, intellectual property protection or trade permissions to acquire the inputs for, and sell the outputs of, their innovations (Hadjimanolis, 1999; Radas & Božić, 2009). Therefore, the question of "how exactly can SMEs deal with institutional constraints, and ultimately, increase firm performance in transition economies?" remains as an important but so far

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[1] Quote from *Mulan,* a Walt Disney Company movie from Bancroft and Cook (1998).

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underexplored question. Social networks have often been viewed as an important mechanism that help innovative SMEs to increase their performance in emerging and transition economies (e.g., Boso et al., 2013; Lau & Bruton, 2011). However, factors such as the proximity of the network partners (i.e., local vs non-local) selected for cooperation as well as the amount of shared resources have not been investigated in conjunction with innovation, despite the fact that networks are important for explaining positive performance effects of SMEs, especially in transition economies.

In this paper, we attempt to investigate in greater detail the link between perceived institutional constraints, innovation, local partnerships, resource sharing, and SME performance in two post-socialist economies located in eastern Europe – Ukraine and the Russian Federation, henceforth Russia. These countries offer a suitable research context given they are characterized by a high level of entrepreneurial potential despite major institutional constraints (see Jansson et al., 2007; Korzhov, 1999; Markina et al., 2018; Puffer et al., 2010). In particular, we theorize that networking activities based on mutual trust such as local partnerships and resource sharing are important factors that explain the performance variety of innovative SMEs in transitional economies. Resource-sharing is relevant because it offers firms a way to access relevant resources exterior to their organization. Equally essential, cooperating in partnerships with appropriate and trusted partners is critical for innovative SMEs operating under institutional constraints (Batjargal, 2003; Musteen et al., 2010). Since many post-soviet transition economies are characterized by hostility and lack of trust, which discourages most firms from cooperating and sharing resources (Humphrey & Schmitz, 1998; Lissowska, 2013; Raiser et al., 2007), investigating these activities may be especially insightful because firms that utilize these relationships act in contrast to the norms and values of the larger institutional context in which they are embedded in order to achieve superior performance.

The main contribution of this paper is twofold. Firstly, using unique data to test our hypotheses, this research explores whether innovativeness coupled with networking activities as advocated by the relational view (Dyer & Singh, 1998) also drives the performance of SMEs in contexts that are characterized by institutional constraints. We thus corroborate the viability of arguments rested in the relational view as possible explanations for how innovative SMEs deal with institutional hazards in their environment (Autio et al., 2013; Hayton et al., 2002; Lau & Bruton, 2011). By doing so, our study particularly extends the work of Lau and Bruton (2011) among others by providing a more nuanced understanding of how firms benefit from interfirm relationships. Further, by providing empirical evidence on the innovation-performance link of SMEs operating in transition-economies, our study also offers novel insights into a more recent research strand focusing on how innovation can thrive under adversity (Acar et al., 2019). Secondly, the importance of two specific networking activities, local partnership and resource sharing, is investigated in two transition economies, Russia and Ukraine. By doing so, we not only contribute explanations for why and how these specific activities are beneficial for innovative SMEs in these countries, but also offer explanations which may be useful for investigations in similar transition economy contexts. As such, our analyses also contribute to the limited research focussed on the role played by these networking activities in explaining performance of innovative SMEs in settings beyond the EU or North America. Considered together with the prior research addressing the differences between emerging and developed economies in that regard (e.g., Danis et al., 2011), our contribution becomes especially important.

2. Theoretical background

2.1. Institutional Constraints, Innovation, and SME performance

In its broadest sense, institutional theory acknowledges that institutions matter for organizations. They matter because they provide the rules of the game in a society (Scott, 1995). "The role of institutions in an economy is to reduce both transaction and information costs through reducing uncertainty and establishing a stable structure that facilitates interactions" (Hoskisson et al., 2000, pp. 252–253). Institutions serve many functions, but the most important one is to reduce uncertainty and provide meaning, which are crucial factors for small and young firms (e.g., Busenitz et al., 2000). In the context of a transitional economy, the formal institutional forces such as judicial systems, stable political structures, and transparence are lacking, which gives rise to institutional constraints making it harder for actors to foster business activities (Doh et al., 2017; Khanna & Palepu, 1997; Peng & Heath, 1996). Institutional constraints increase the transaction costs, and therefore "dampen incentives for innovation and the leveraging of unique knowledge, talent and skills" (Doh et al., 2017, p. 296). Peng and Heath (1996) argue that institutional constraints manifest themselves for example as weak legal frameworks, a lack of political stability and limits in strategic factor markets. SMEs are especially burdened with the implications of these institutional constraints (Hashi and Krasniqi, 2011).

In fact, transition economies often have to deal with constraints in their institutional environment which can hamper their economic development (Ahlstrom & Bruton, 2010; Manolova et al., 2008; Puffer et al., 2010; Smallbone & Welter, 2008). In such settings, an entrepreneurial and innovative culture is often underdeveloped. In addition, socialist ideology in particular has commonly linked private proprietorship with parasitism, exploitation, and profiteering, leaving a lasting negative imprint on people who build their own enterprise (Aidis et al., 2008). Research shows that the idea of controlled distribution and redistribution of state resources still dominates the culture in post-socialist economies even after the socialist regimes have been dissolved (Korzhov, 1999). This view is corroborated by the results of many government initiatives that have promised to increase innovation through the years, but have not been vigorously financed nor yielded results (Cheney et al., 2017). As a result, the idea of a novelty- and technology-driven economy formed by entrepreneurial and innovative activities remains opaque, with most post-socialist societies prejudiced against these activities resulting in low levels of legitimacy for entrepreneurial and innovative conduct (Cheney et al., 2017; Korzhov, 1999).

Research has further shown that in transition economies where institutional constraints are evident, government officials often have high levels of administrative decision-making discretion and can therefore use their positions for their own benefit at the expense of other actors in the economy (Zhou & Peng, 2012). Given this administrative discretion of civil servants, it is a well-documented phenomenon in such settings that the personal ties of large incumbent organizations are utilized to influence public decision makers to strengthen the incumbents' competitive position, especially when uncertainty is high and competition is low (Li et al., 2008). A variety of studies have produced ample evidence that such unfavorable institutional conditions may negatively affect SME performance (e.g., Hashi & Krasniqi, 2011; Smallbone & Welter, 2006), given that SMEs mostly lack the necessary relational and financial resources to effectively engage in public-policy activities (Manolova & Yan, 2002; Meznar & Nigh, 1995; Stinchcombe, 2000). As a result, SMEs facing such problems will not be able to prevail over them and, consequently, their performance will suffer (Hashi & Krasniqi, 2011; Smallbone & Welter, 2006).

Although at first this perspective is appealing because it seems intuitively applicable, such an approach does neglect the fact that managers and their firms are often agentic and able to deal with and react to the institutional environment – at least to a certain extent. As Doh et al. (2017) highlighted when introducing their special issue on international business responses to institutional constraints, in many cases firms are not passive recipients suffering from a lack of supporting institutions; in contrast, firms develop strategies to cope with or even take advantage of institutional weaknesses.

3. Hypotheses development

3.1. Blooming under adversity

Prior research has conceptualized institutional voids as constraints on firm conduct (Doh et al., 2017) and has articulated the importance of developing responses to overcome the negative effects institutional constraints have on various business activities (Kim & Song, 2017; Puffer et al., 2010). Yet, prior research has also found evidence that some firms are able to successfully navigate their way in turbulent environments despite the problems institutional constraints may cause. For example, McMullen and Shepherd (2006) argue that the actual conditions of where an opportunity is situated bear less weight than the individual's perception of the opportunity, and therefore are less significant for the emergence of entrepreneurial action. Radas and Božić (2009) found that in Croatia, another transition economy, innovative SMEs perceive institutional problems and obstacles to be higher compared to their non-innovative peers, yet, they are better at dealing with institutional constraints than non-innovative SMEs. The authors argue that "firms that report obstacles are somehow able to deal with problems" (Radas & Božić, 2009, p. 447). This finding is also consistent with the results of a study from Hult et al. (2004) which showed that the innovation-driven business performance enhancement does not suffer from institutional challenges, and in fact is greater under high market turbulence than under low market turbulence. According to Tracey and Phillips (2011, p. 31) some entrepreneurs have the ability to "span institutional voids". These entrepreneurs develop new institutions, and they carry out business activities to exploit the underdeveloped institutional spaces, which they use to their advantage to generate valuable new opportunities. In this regard, the study of Lau and Bruton (2011) and the work of Maksimov et al. (2017) reveal that firms in transition economies build capabilities and develop strategies to deal with weaker institutional support which increases their innovativeness and performance. In addition, based on a sample of Russian SMEs, Shirokova et al. (2013) found a positive relationship of entrepreneurial culture and innovative resource investments with SME performance (i.e., growth of sales and perceived non-financial performance). Accordingly, we argue that innovating firms that face institutional problems will also possess the ability to overcome such problems and realize the performance-enhancing potential their innovations entail. Thus, we formulate the following baseline hypothesis:

H1: An SME's innovation performance weakens the negative impact of institutional constraints on firm performance.

3.2. Linking the relational view and innovation in transition Economies: The role of local partnerships

While prior research shows that innovative SMEs seem to be better equipped to deal with institutional constraints, answers to the question regarding what further activities should be coupled with the innovation to improve the ability of firms to overcome these constraints remain limited. Answering this question is of crucial importance given that it would offer guidance on what further activities innovative SMEs should engage in to achieve superior performance in such contexts. In other words, beyond answering the question of "should firms innovate in such a context?", an investigation of "how or with whom should firms innovate in such a context?" becomes more important.

The relational view (Dyer et al., 2018; Dyer & Singh, 1998) is an extension of the resource-based view (RBV) (Barney, 1991; Wernerfelt, 1984) and suggests that "a firm's critical resources may span firm boundaries and may be embedded in interfirm routines and processes" (Dyer & Singh, 1998, p. 661). The relational view highlights the value-creating nature of links between organizations, which allow a firm not only to exchange knowledge and information but also to acquire and utilize new information. These links are particularly important in the context of innovation because this process frequently requires access to knowledge from external partners (Pittaway et al., 2004; Powell et al., 1996). Accordingly, well-developed relations with other organizations enable knowledge acquisition and exchange, resulting in a higher readiness to adapt, increased agility, and enhanced SME innovation (Parida et al., 2017) and performance (Liao et al., 2003). Focusing on the relational view when analyzing SMEs in transition economies is particularly apt given that these firms are restricted not only by the limited resources they own and control, but also by the challenges of working under institutional constraints (Manolova et al., 2007).

According to the relational view, networking activities can be an important way to mitigate the negative impact of institutional constraints on SME performance. Such activities enable growth-limited SMEs in transitional economies to be more viable (e.g., Peng & Heath, 1996). In the context of transition economies, these networking activities often play a key role in helping SMEs and entrepreneurs deal with and overcome institutional constraints and enhance the likelihood of their survival and performance (Manolova & Yan, 2002). For example, in their 2011 study of SMEs in central and eastern Europe, Hashi and Krasniqi (2011) found that networking via business associations has a positive impact on SME growth. In addition, Lau and Bruton (2011) examined the relationships between strategic orientation, strategy, and firm performance in high-technology ventures in the transition economies of China and Russia and showed that social networks directly impact firm performance and weakly moderate the link between strategy and firm performance. Cooperative actions are deliberate strategic actions firms take in order to create mechanisms that can affect the institutional environment in which they are embedded by filling institutional voids and reducing market inefficiencies (Mair & Marti, 2009; Peng, 2001; Peng & Heath, 1996). By aligning their interests and combining their size and market power, SMEs may manage to build and maintain better relationships with key government officials. This can alleviate their transaction-cost problems (Peng, 2001), since government officials often have a high degree of decision-making discretion in such economies (Zhou & Peng, 2012).

We argue that it is particularly important that partnerships as a form of cooperative action are considered together with innovative capabilities because they enable firms to engage in environmental scanning as well as opportunity-seeking activities which can be beneficial to innovative outcomes (Jiang et al., 2018). In this sense, such interfirm relationships can enhance the discovery of new business opportunities and mobilize resources to pursue new opportunities, as well as benefitting new business creation. This is the case since recognizing new business opportunities often requires potentially complementary but disparate private knowledge that may be found external to the organizations. Such capabilities emerging from interorganizational relationships are especially important for innovative SMEs because these SMEs have a higher need to acquire resources from network partners compared to less innovative SMEs (Jiang et al., 2018).

Engaging in partnerships is shown to be influenced by mutual trust among the parties (Mukherjee et al., 2013), and is particularly important in uncertain contexts (Gaur et al., 2011) such as transition economies given that they help to mitigate the inherent lack of institutional based trust (Child, 2001). Recent research on institutional voids suggests that the lack of institutions results in high uncertainty and a lack of trust. Therefore, trust-based relationships can fill institutional voids, shaping performance in emerging markets (e.g., Miller et al., 2009). For example, the study of Danis et al. (2011) shows that networks can mitigate the unfavorable attitudes towards innovation and entrepreneurial activity in many emerging and transition economies and offset the deficiencies of such institutional constraints. In this regard, a firm's networking behavior and innovation is often linked since networks can be conceptualized as the "locus of innovation" (Pittaway et al., 2004; e.g., Powell et al., 1996; Tsai, 2009).

Recent alliance literature further highlights the importance of choosing the right partner to cooperate with in such contexts (Hitt et al., 2004), and underlines the different requirements smaller firms have to

consider when selecting partners (Lubik et al., 2013). In fact, the selection of an appropriate alliance partner is critical to explain the success of an alliance. According to Geringer (1991, p. 54) it determines the "overall mix of available skills and resources, the operating policies and procedures, and the short- and long-term viability" of the alliance. Therefore, choosing the "right" partner is essential to ensure a high resource complementarity, better knowledge management, and effective governance (Dyer & Singh, 1998). The tensions SMEs experience when it comes to choosing among potential partners to innovate with, also underlines the major importance of this choice especially for SMEs (Radziwon & Bogers, 2019).

We follow the prior research and distinguish in particular between the selection of local versus non-local network partner types (Aharonson et al., 2020; Al-Laham & Souitaris, 2008) and argue that cooperating with local partners has several benefits compared to non-local partnerships (Zahoor & Al-Tabbaa, 2021). First, a local partner ensures a high level of commitment which is crucial for uncertainty-bearing innovative activities since such partners are bound by the same institutional constraints as the focal SME. Belonging to such a group in the proximate environment can boost identity among members and brings with it allegiance, dependence, and conformity (Redding, 2005) which would in turn increase the efficiency of the innovation development process (Maurer, 2010). Research shows that strong local collaborations in regional business-ecosystems may help resource restricted SMEs to "co-evolve and co-develop through the joint learning process" (Radziwon & Bogers, 2019, p. 584). Further, partners who suffer from the same problems while innovating are expected to be more resilient in fighting and overcoming these problems, since they face these problems in their home institutional environment which they cannot leave or divest easily—which is not the case for a non-local partner. As stated in one of the oldest strategy books *Art of War* (Tzu, 1994, p. 125), "on desperate ground fight […] [since] if you fight with all your might, there is a chance of life, whereas death is certain if you cling to your corner." This is especially important when relatively high sunk R&D costs of SMEs associated with innovative activities are considered, strengthening the level of commitment of all partners to the innovative endeavor (Manez et al., 2015).

Research has also shown that the uncertainty resulting from institutional constraints and aggravated by innovation activity can be "compensated for by social proximity—and the associated presence of trust—which is likely to coincide to a considerable degree with geographical proximity" (Wal & Boschma, 2011, p. 926), suggesting the benefits of having a local partner. Moreover, the choice of local partners during the innovation process may also alleviate the problems of weak ties and poor knowledge networks by increasing the density of connectivity (Ahuja, 2000; Schilling & Phelps, 2007). The important role of trust in the alliance literature has been frequently noted (e.g., Child, 2001; Maurer, 2010). Geographic proximity and local partnerships are important antecedents of trust (e.g., Boschma, 2005). Trust reducing the temptation to behave opportunistically, in turn, impacts the acquisition of external knowledge which facilitates the generation of innovation (Maurer, 2010). Trust-based relationships are found to be particularly important in mitigating uncertainties stemming from these problems (Gaur et al., 2011; Mukherjee et al., 2013), especially under institutional constraints (Child, 2001). Therefore, we posit:

H2:. *For an SME facing institutional constraints, local partnerships strengthen the positive relationship between innovative capabilities and firm performance.*

3.3. Role of resource sharing

Research building on the resource-based view has revealed that resource sharing has a generally positive impact on firm performance (Chang & Hong, 2000; Gupta & Govindarajan, 1986). Prior research has also shown that it is not only cooperation activities as such that impact the success of innovation performance of firms, but also the quality of the cooperation which can be indicated by the intensity of interaction or the extent of resource sharing (Jiang et al., 2015; Kobarg et al., 2019). In fact, when innovating, resource sharing is particularly important because the knowledge needed to generate an innovation is likely to be more distant from the firm's existing knowledge stock (Nooteboom et al., 2007), especially for SMEs operating in a transition economy. Furthermore, shared resources from partners contribute to the focal firm's alliance performance by multiplying strategic opportunities and value synergies, such as achieving greater scale and increasing the potential for developing new knowledge and technologies which might not be available to an individual firm (Lavie, 2007). Other research also suggests that sharing resources such as knowledge may contribute to firm performance by enhancing intellectual capital and therefore effectiveness of innovative activities (Wang et al., 2016). Furthermore, sharing intangible resources such as knowledge and information about new technologies, customers, and competitors provides firms with additional observations regarding the external environment, allowing them to adapt their innovations accordingly, to increase their fit to the changing market leading to a higher performance (Edvardsson, 2006; van Wijk et al., 2008). In addition, sharing tangible resources, such as financial resources provided by alliance partners, can foster joint research and development or marketing activities, which may increase joint value creation in the innovation process and therefore improve the performance of innovative firms. This is especially important in transition economies where markets are *ipso facto* characterized by change and dynamism.

A key prerequisite for resource sharing is trust (Casimir et al., 2012), which increases partners' willingness to share resources and exchange information and knowledge (Ahuja, 2000). This increased willingness demonstrated by resource sharing may especially prove itself to be crucial when innovating in uncertain business environments—such as in transition economies, where the potential opportunism risk is relatively high compared to less-uncertain environments. In fact, SMEs in these economies face radical transformation dynamics and lack both the capabilities and resources to innovate and compete in global markets (Dixon et al., 2010). Therefore, sharing resources among firms seems to be a promising way to respond to such disadvantages and to catch up with global competitors by developing innovative responses. Therefore, we expect that sharing resources will increase the performance enhancing nature of innovation for SMEs facing institutional constraints in transition economies (see Fig. 1 for our conceptual framework).

H3:. *For an SME facing institutional constraints, resource sharing strengthens the positive relationship between innovative capabilities and firm performance.*

4. Data and methods

4.1. Sample and data

Our analysis is based on a unique dataset of SMEs located in Ukraine and Russia. Both countries provide an appropriate setting for examining our research questions. Businesses in both countries have to deal with various institutional constraints combined with a relatively high level of skepticism regarding the establishing and managing of new businesses. For instance, in 1991 a new entrepreneurship law was introduced in Ukraine without any mechanisms for bringing it to life which gave rise to many newly emerged "businessmen" who extracted public wealth by expropriating government subsidies with the help of letter-box companies and planned bankruptcies (Korzhov, 1999). Similarly, the literature highlights the weak institutional environment of Russia with regard to entrepreneurship and small business management and a domination of the powerful elite who continue to cling to the institutional remnants of the former Soviet Union (Aidis et al., 2008). Moreover, the business environment for entrepreneurial pursuits in Russia

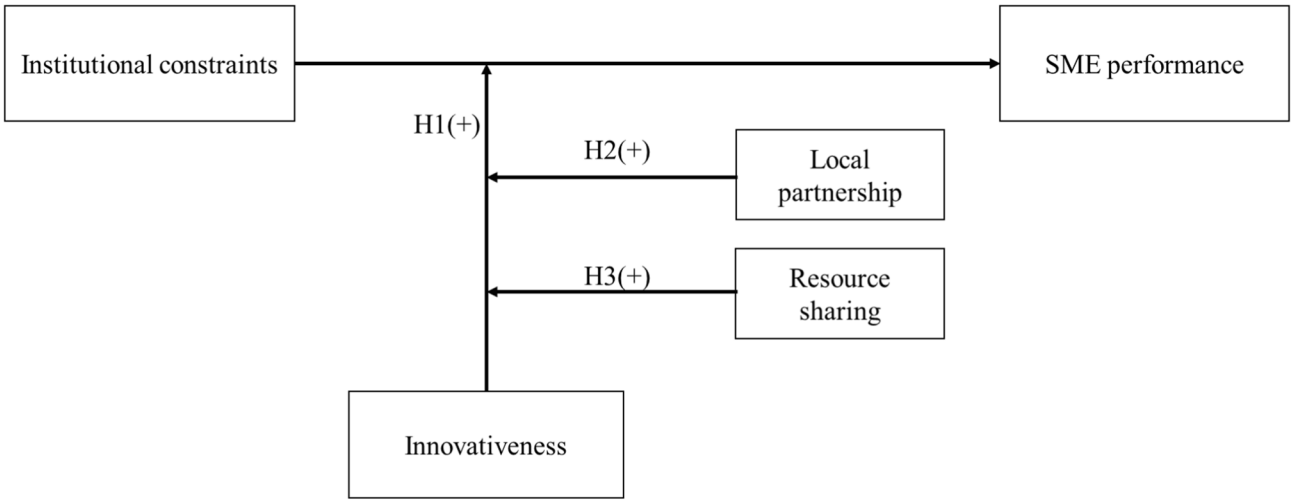

Fig. 1. Conceptual framework.

has been described as "chaotic" (Puffer et al., 2010) while many people in Ukraine perceive non-elites' entrepreneurial and innovative activities as hostile and as a threat to their status (Korzhov, 1999). In addition, Ukraine and Russia share a similar socialism rooted in the cultural and economic heritage of central planning before economic liberalization occurred in the 1990 s. Both countries have in common that business networks can be characterized by high levels of instability, a lack of trust and information shortcomings about potential partners, low information disclosure readiness, and the occurrence of opportunistic behavior (Jansson et al., 2007). Aidis et al. (2008, p. 658) further explain about Russia that "in the Soviet period, entrepreneurs were equated with 'speculators' and often deemed criminals for making a profit and the ideology allowed for a punishment-oriented 'inspection culture' to develop, where discretionary power of officials led to corruption". Korzhov (1999) similarly reports that entrepreneurs in Ukraine have never enjoyed a high social status, and a dualistic view ("us" [society] vs "them" [businessmen]) and hostility towards the entrepreneurial class have led to a situation in which a "majority [of] people appear to welcome private enterprise in principle but hold rather negative attitudes towards the actual performance of entrepreneurs" (Korzhov, 1999, p. 529).

Yet, both countries also differ in many regards. In 2020, Russia had a GDP of 1,481.9 billion US$ and a population of 144.3 million people (10,270 US$ per capita)[2] while Ukraine had a GDP of 137.3 billion US$ and a population of 44 million people (3,120 US$ per capita),[3] making it the poorest country in Europe (alongside Moldova) in terms of GDP per capita.[4] While Ukraine was formally integrated into the European Economic Area in 2016, Russia moved further away from the European Union. After the war in Donbass in 2014, the political relationship between both countries further deteriorated, leading to the Russian Invasion of Ukraine and a major escalation of the war between the two countries in early 2022.

To obtain the data for our analysis, we relied on primary survey as well as secondary data to develop a unique dataset of 450 firms located in Ukraine and 500 firms located in Russia. First, we used the Bureau van Dijk Orbis database, which offers financial and shareholder-related data for all active firms in Europe, to identify a sample of Russian and Ukrainian SMEs. We filtered firms by including only those from the six biggest cities in Ukraine with an available telephone number (excluding Donetsk due to military conflicts; State Statistics Service of Ukraine, 2020): Kyiv and the surrounding region, Kharkiv, Odessa, Dnipro, Zaporizhzhya, and L'viv. Similarly, we included the following regions from Russia: Moscow Region (including the city of Moscow), city of Saint Petersburg, Voronezh Region, Krasnodar Territory, Rostov Region, Volgograd Region, Penza Region, Perm Territory, Samara Region, as well as the entire Siberian Federal District. For both countries, we excluded firms operating in the two-digit SIC codes 01–09 (agriculture, forestry, and fishing) and 91–97 (public administration) because of state involvement in these industries, which is even more pronounced in post-Communist economies that are still undertaking necessary reforms (Deininger & Nizalov, 2016). We also excluded firms operating in codes 60–67 (finance, insurance, and real estate) not only because our study focuses on product innovations which are unlikely to be observed in these industries, but also due to the different regulatory demands these firms face. We also chose those firms that reported a value for number of employees, total assets, sales, and equity, since we wanted to include these values along with the performance measures emerging from these values into our controls. The resulting almost 73,000 firms from Ukraine and 105,000 from Russia formed the basis of our telephone survey, which we used to collect data on perceived institutional constraints, innovation activities, and network activities. Accordingly, we conducted 450 telephone surveys with Ukrainian firms and 500 with the Russian ones in a randomized setting.

Similar to past research focusing on SME innovation (e.g., Avlonitis & Salavou, 2007; Dibrell et al., 2008; Maes & Sels, 2014), we used the key-informant approach to conduct the survey. Such an approach is especially suitable in our setting since our sample consists of SMEs whose executives are closely involved in and familiar with the organizational processes and innovation activities, and thus were also appropriately positioned to give information about their firms' strategies. This approach is also consistent with past research examining the inter-organizational alliances of small firms (Batjargal et al., 2013). In addition, our pre-test clearly confirmed the suitability of our respondents and we thoroughly pre-tested the questionnaire with five respondents from industry and academia to ensure that we used adequate terminology and avoided ambiguity in our statements (Podsakoff et al., 2003).

For the purpose of this study, from these 950 firms we excluded 228 with more than 500 employees in the year 2017, a step taken to ensure that our sample is consistent with studies focusing on similar phenomena (Kreiser et al., 2013; Narula, 2004; Rosenbusch et al., 2011; Stam et al., 2014). In accordance with prior research in this context, we use

[2] https://www.worldbank.org/en/country/russia/overview (accessed July 13, 2021).
[3] https://www.worldbank.org/en/country/ukraine/overview (accessed July 13, 2021).
[4] https://data.worldbank.org/indicator/NY.GDP.MKTP.CD (accessed July 13, 2021).

500 employees as the upper limit (e.g., Shirokova et al., 2013) given such an approach is appropriate because when lower thresholds are used, many SMEs do not reach the sales volume used to characterize medium-sized businesses in Russia (Shirokova et al., 2013). 21 firms without data on the number of employees were also dropped at this stage. A further 183 firms had to be dropped because they do not provide the financial information on Orbis Database required to form our dependent variables as well as the financial control variables. These steps resulted in a final sample of 518 firms for our regression models. Given that the R&D expense ratio as obtained from our survey as a crucial control variable was only available for 352 firms, it had to be imputed in our regression models although we also provide our model estimations without the imputation.

Because we rely on secondary data for our dependent variable and self-reported data for our independent and moderator variables, common-method bias is not a concern in our study (Chang et al., 2010; Podsakoff et al., 2003). In order to reduce social-desirability bias, we assured respondents that we would keep collected data anonymous, guaranteed that it would not be possible to identify individual firms, and made clear that the results of our study would be limited to aggregate statistics.

4.2. Variables

4.2.1. Dependent variable

Firm performance can be measured in a number of ways (March & Sutton, 1997). In line with prior research on the SME performance in transition economies (Peng & Luo, 2000; Tan & Peng, 2003), we operationalized SME performance in terms of return on assets (ROA), which is calculated by dividing the company's yearly profit by its total assets obtained from Orbis Database. To make sure that this measurement is not susceptible to the endogeneity emerging from industry trends and effects of mean-reversion, we applied an industry- and performance-adjustment procedure using 166,000 comparable firms from Ukraine and Russia (Barber & Lyon, 1996). To carry out this adjustment, we first subtracted the two-digit SIC industry-median ROA of our adjustment sample from the ROA of each firm operating in the respective industry. We used ROAs from the year 2013 because this was the year preceding the period 2014 to 2016 for which our survey asked about new product-innovation activities. After that, we sorted industry-adjusted firm ROAs from our adjustment-sample firms in 2013 and created deciles to serve as performance peer-group references for our sample firms for the year 2017, the year following the innovation activities. After assigning firms in our sample to these deciles (peer groups), we calculated industry-adjusted ROA in 2017 for each firm in our sample and calculated peer group medians of 2017 industry-adjusted ROAs based on the peer groups established in 2013. Finally, by subtracting these peer group medians of 2017 industry-adjusted ROA from 2017 industry-adjusted ROA of each firm belonging to the respective peer groups—a step that corrected for the mean-reversion effect of prior performance—we obtained our dependent variable *industry- and performance-adjusted ROA 2017*, enabling us to conduct a difference-in-differences analysis of performance.

4.2.2. Independent variables

Our independent variable *innovativeness* is a binary variable, which takes the value of 1 if the surveyed firm introduced a product innovation that was new to the market between 2014 and 2016. In particular, respondents were asked the following well established Community Innovation Survey (CIS) question to study innovation: *"During the years 2014 to 2016, did your firm introduce new or significantly improved products / services?"* In line with prior research on transition economies (e.g., Radas & Božić, 2009), we used product innovations to measure the innovation performance of the firms in our sample. In addition, to ensure a common understanding of the term innovation, we first made clear to our interviewees what our definition of innovation was, since cultural perceptions of innovation may have impacted and potentially biased the responses.

Our first moderator variable, *institutional constraints*, is a latent variable derived from 11 Likert-scale questions asking respondents about the institutional constraints they face as they do business and engage in innovative activities. In line with the findings of prior exploratory qualitative studies (Gnyawali & Fogel, 1994; Manolova & Yan, 2002; Molz et al., 2009) and similar to quantitative research studying the effect of institutions on SMEs and entrepreneurship (Hadjimanolis, 1999; Zhu et al., 2012) and the relation between institutions and SME growth in transition economies (Hashi & Krasniqi, 2011), our 11 questions focused on the issues of corruption, quality of public officials and the judicial system, taxation burden, difficulty of getting licenses and permissions, trade restrictions, and impediments to free-market mechanisms (see Appendix A). To build this scale, we used a factor-analytic process. This process involved checking the eigenvalues of the factors emerging from the exploratory-factor analysis, during which we saw that the eigenvalues decreased significantly after the first factor, an outcome indicating unidimensionality (Tabachnick et al., 2007). We therefore extracted a one-factor scale using the principal-components factor method to predict the values of this latent variable for each observation. The results of this step—high factor loadings that far exceeded the 0.32 threshold suggested by Tabachnick et al. (2007), average inter-item correlations ranging between 0.15 and 0.50 (Clark & Watson, 1995), and a high Cronbach's alpha (0.86)—indicate a high reliability for our measure.

Our second moderator variable, *local partnership*, is a binary variable based on the response to a question asking whether the firm was involved in any local cooperation during the innovative activities. This partnership variable consists of binary sub-questions in three dimensions that asked about the following third-party partners: (1) peer firms (2) universities or other higher-education institutions; and (3) private research institutes/R&D service providers. These sub-questions take the value of 1 if the firm cooperated with a respective third party and the scale is set to 1 if at least one of the sub-questions take the value 1. We also operationalized this scale using factor analysis and as a summation variable taking the value of the sum of partners, and the results of our analyses hold (see "Robustness Checks" section below).

Our third moderating variable, *resource sharing*, is a mean of three Likert-scale variables asking about the collaborative use of capital goods, buildings or office spaces, and construction of prototypes. This measurement is similar to the tangible resource-sharing scale used by Jiang et al. (2015) and offers a similarly high Cronbach's alpha value (0.80) compared to the scale used in their study (0.82).

4.2.3. Control variables

We controlled for several factors in our models, in line with the similar studies conducted in this field (e.g., Batjargal, 2003). First, we controlled for the average *R&D expense ratio 2014–2016* (provided by the interviewees) since the relation of R&D expenses to all expenses during the time period in which a possible innovation is developed, since this factor could affect the emergence of an innovation as well as the subsequent financial performance of the firm (Wu & Park, 2019). Further, we also included the indicator *firm with no R&D investment* variable for the firms which report having no R&D expenses during this time frame given the idiosyncratic nature of these firms (Cuervo-Cazurra & Annique Un, 2010). Liquidity, prior investments, capital structure and growth are other factors closely related to a firm's ability and motivation to innovate and collaborate (Madrid-Guijarro et al., 2009; Malamud & Zucchi, 2019; Stuart, 2000). Therefore, we used data obtained from Orbis Database to control for the *investment ratio* (capital expenditures divided by total assets), *liquidity ratio* (cash, cash equivalents, short-term receivables, and inventory divided by current assets) and *equity ratio* (equity divided by total assets) for the years prior to the time frame in which the innovation activities are undertaken as well as after them given the possible effect of these variables on innovation activities and

the subsequent returns. Another indicator variable—*high sales growth*—takes the value of 1 if growth during the innovation period was higher than the average of the sample and was included to reflect the growth trajectories of a firm among its peer group which could affect its impetus and motivation to innovate (Eiriz et al., 2013). Apart from that, we controlled for the firm size by measuring *number of employees* in 2013 and 2017 (log transformed due to the skewness), since prior research has suggested that large firms, particularly in transition economies, have advantages over smaller firms because these larger firms possess greater assets, giving them more flexibility to adjust to changes in the institutional and regulatory environment (Batjargal, 2003; Cook & Fox, 2000). We also controlled for *corporate age*, measured as years since the date of founding, given that prior research has suggested that younger firms have less experience and suffer considerably from a liability of newness (Stinchcombe, 2000), particularly in transition economies (Batjargal, 2003; Batjargal et al., 2013). Further, we also included the indicator variable *founder generation* if the firm age is below 25 (Ahrens et al., 2019) to denote if the firm is likely to be run by its founders, a factor which is shown to be strongly related to the firm performance and innovation activities (Chen & Thompson, 2015; He, 2008; Lee et al., 2020). We also controlled for the international sales activity reported by the company by including the dummy *internationally active firm* given the effect of the degree of internationalization on innovation performance (Kafouros et al., 2008; Ren et al., 2015). Two other indicator variables were included to denote whether the firm operates in *manufacturing* or *services industries*, leaving the trade and other industries as the base case.[5] We also included the variable *country = Russia* if the respondent firm is from Russia and leave the Ukrainian firms as the base case. Finally, we also included three other variables indicating the firms which received any *public financial support* from regional or central authorities as well as from both of those during their innovative activities and left firms with no public support as the base case, given the effect of public support on innovation output in a transition economy context is evident (Czarnitzki & Licht, 2006). Table 1 includes descriptive statistics and a correlation table for the whole sample and variables.

In Table 2, we present the descriptive statistics for all our variables for each country along with a *t*-test testing the significance of mean differences between two countries. Ukrainian firms seem to perceive significantly more institutional constraints than Russian firms, and they also tend to share their resources less. As the significantly higher share of R&D expenses indicate, Ukrainian firms in our sample also tend to invest more in innovation input, whereas no significant difference between two countries regarding the innovation output is registered. Ukrainian firms in our sample seem to grow faster on average although they are larger and older. The significant *t*-test indicating a higher international activity for Ukrainian firms may explain this interesting bivariate analysis finding.

4.3. Empirical strategy

To test our hypotheses, we employed regression models with OLS and 2SLS estimators as well as a multiple-imputation method to impute the missing control variable *R&D expense ratio 2014–2016* (see Table 3). Multiple-imputation (MI) models with multivariate normal regression estimators are generated using the command *mi estimate* in STATA 16. Four auxiliary variables showing a high correlation (*r*) with our missing variable are used in the MI models "to allow models accounting for missing data to be informed by a larger set of variables than those included in the analysis" (Johnson & Young, 2011, p. 932). These variables are R&D-to-sales ratio (r = 0.70), percentage of technological material replaced in the last 5 years (r = 0.41), importance of licensing university-owned patents and know-how (r = 0.30) as well as share of the sales from newly introduced products and services (r = 0.50). The 163 observations with missing data correspond to 31 % of the whole sample of 518 observations, which is well below the 50 % threshold suggested for implementing this method (Allison, 2001). The FMI (fraction of missing information) values in our models are also well below the 50 % threshold which is associated with a high loss of efficiency and power (Graham et al., 2007). We conducted a 40-times imputation of the data with the help of the *mi impute* command and ran our imputed models using the *mi estimate* command with robust standard errors. Models 1 through 7 with these estimates can be seen in Table 3.

Using 2SLS as an estimation method is also appropriate for this study given the endogenous nature of the relationship between innovation output and productivity, a phenomenon that has been addressed in several other studies (e.g., Karlsson & Tavassoli, 2016; Lööf & Heshmati, 2006). Both simultaneity and omitted factors, such as managerial anticipation regarding the performance outcomes of the strategic actions, are expected to affect the decisions leading to innovation outputs as well as the performance of a firm. When applied appropriately, instrumental variable methods such as 2SLS enable researchers to partially cancel out the bias these factors may cast on the coefficient estimates and enable them to make more accurate causal inferences for the effects hypothesized. We utilized 3 instrumental variables underlining the degree of continuity of the innovation activities that took place in the firm (Karlsson & Tavassoli, 2016) to instrument the product innovation outcome of the firm in our models: number of patents the firm holds, degree of importance of corporate venturing activities, and degree of knowledge exploitation activities. According to Wooldridge (2015b), the variables chosen should fulfill two criteria: instrument exogeneity and instrument relevance. Apart from reporting empirical tests below offering support for fulfillment of these criteria, we also offer detailed explanations "appealing to economic behavior or introspection" (Wooldridge, 2015b, p. 514) in Appendix B.

Since our model allows for our endogenous variable to interact with other regressors, it also creates multiple first-stage models for these interactions, and the interaction of exogenous instrumental variables is used in the respective first-stage models as well (Ebbes et al., 2022; Wooldridge, 2015a). We provide empirical support for our arguments on the exogeneity of our instruments from the non-rejection of Hansen's J statistic and Difference-in-Sargan (C) statistic (Bascle, 2008). In all models, Kleibergen-Paap rk LM statistics of under-identification yields a high F-value, rejecting the null hypothesis in all models and therefore ruling out under-identification issues (Baum et al., 2007). Finally, first-stage F-statistics exceed the 10 % relative-bias threshold provided by Stock and Yogo (2002) for all of our variables of interest in our estimations conducted with LIML method (Staiger & Stock, 1997). These statistics along with our model estimations can be seen in Table 3, columns 11 through 13.

5. Results

Our regression models with OLS, MI, and 2SLS estimators and heteroskedasticity-robust standard errors are reported in Table 3. Models 1–3 are models without any controls (MI estimation) and Model 4 serves as a base model where only the control variables are presented (MI estimation). Models 5–13 replicate the first three models with controls and with different estimation methods (MI, OLS and 2SLS respectively).

Significantly positive coefficients of the interaction variable *innovativeness & institutional constraints* in all four models (1, 5, 8, 11) show support for our H1, which predicts a positive effect of innovativeness on SME performance when firms face institutional constraints. In a collateral analysis, we further found tentative results indicating that this effect is stronger for firms in Russia.

Our H2 states that the performance-enhancing moderation of innovativeness when companies face institutional constraints (as proposed in

[5] An indicator for the trade industry was not utilized since it caused multicollinearity problems (as suggested by a VIF of 12).

Table 1
Descriptive statistics and correlations.

Nr.	Variable	Mean	SD	Min	Max	1	2	3	4	5	6	7	8	9	10	11
1	Ind.and perf. adj. ROA 2017	−0.014	0.255	−1.972	1.010	1.000										
2	Innovativeness	0.164	0.371	0.000	1.000	0.050	1.000									
3	Institutional constraints	0.033	1.017	−2.060	2.018	−0.047	0.047	1.000								
4	Local partnership	0.091	0.288	0.000	1.000	0.008	0.060	0.022	1.000							
5	Resource sharing	2.751	1.592	1.000	7.000	0.026	0.166***	0.243***	0.055	1.000						
6	R&D expense ratio 2014–2016 (average)	0.151	0.207	0.000	1.000	0.049	0.136**	0.263***	−0.013	0.058	1.000					
7	Firm with no R&D investment	0.273	0.446	0.000	1.000	0.007	−0.147***	−0.315***	−0.110**	−0.017	−0.448***	1.000				
8	Investment quote 2013	0.004	0.167	−2.616	0.811	−0.054	0.020	0.051	−0.016	0.056	0.022	0.009	1.000			
9	Investment quote 2017	−0.004	0.135	−0.825	0.710	0.119***	−0.016	−0.007	−0.042	0.028	0.005	0.002	0.074*	1.000		
10	Equity ratio 2013	0.358	0.441	−3.079	1.022	−0.045	−0.043	−0.073*	0.075*	−0.058	0.032	−0.023	−0.015	−0.044	1.000	
11	Equity ratio 2017	0.321	0.671	−4.760	0.998	0.212***	−0.058	−0.083*	0.073*	−0.026	0.058	−0.001	0.032	0.048	0.623***	1.000
12	Above average sales growth 2013–2017	0.956	0.206	0.000	1.000	0.131***	−0.031	−0.043	0.003	−0.044	0.082	−0.125**	0.013	−0.035	0.119***	0.100**
13	Liquidity ratio 2013	0.628	4.341	0.000	84.500	−0.020	−0.023	−0.050	−0.023	0.009	−0.031	0.109**	−0.023	−0.029	0.149***	0.101**
14	Liquidity ratio 2017	0.704	3.801	0.000	75.000	−0.023	−0.015	−0.014	0.004	−0.010	−0.051	0.088	−0.005	0.008	0.132***	0.140***
15	Manufacturing industry	0.349	0.477	0.000	1.000	0.025	0.069	0.163***	0.022	0.095**	0.079	−0.184***	0.003	−0.023	0.094**	0.050
16	Services industry	0.187	0.390	0.000	1.000	−0.081*	−0.092**	−0.026	−0.048	−0.051	0.016	0.113**	0.062	−0.033	−0.035	−0.022
17	Internationally active firm	0.253	0.435	0.000	1.000	−0.010	0.198***	0.084*	0.033	0.103**	0.130**	−0.201***	0.004	−0.005	−0.078*	−0.119***
18	Number of employees 2013 (log)	3.660	1.232	0.000	6.760	0.015	0.005	0.029	0.079*	−0.096**	0.141***	−0.255***	−0.025	0.026	0.033	−0.067
19	Number of employees 2017 (log)	3.463	1.355	0.000	6.184	0.058	0.027	0.086*	0.037	−0.103**	0.234***	−0.445***	0.002	0.051	0.067	−0.024
20	Corporate age	14.525	6.374	4.000	46.000	−0.039	−0.046	0.111**	0.040	−0.016	0.069	−0.229***	−0.086*	−0.008	0.212***	0.126***
21	Founder generation	0.944	0.230	0.000	1.000	0.034	0.085*	−0.099**	0.018	−0.036	0.009	0.020	−0.004	−0.006	−0.061	−0.067
22	Country = Russia	0.347	0.477	0.000	1.000	−0.015	0.016	−0.262***	0.009	0.136***	−0.397***	0.694***	0.065	−0.025	−0.106**	0.042
23	Received central support	0.019	0.138	0.000	1.000	0.045	−0.024	0.014	0.102**	0.034	0.073	−0.105**	−0.064	0.038	−0.017	0.011
24	Received regional support	0.019	0.138	0.000	1.000	−0.115***	0.014	0.071	0.200***	0.078*	−0.006	−0.051	0.002	−0.032	0.068	0.048
25	Received central and regional support	0.035	0.183	0.000	1.000	−0.048	0.001	0.058	0.197***	0.067	0.046	−0.103*	−0.047	−0.004	0.034	0.039

Nr.	Variable	12	13	14	15	16	17	18	19	20	21	22	23	24	25
12	Above average sales growth 2013–2017	1.000													
13	Liquidity ratio 2013	0.020	1.000												
14	Liquidity ratio 2017	−0.022	0.207***	1.000											
15	Manufacturing industry	0.001	−0.058	−0.039	1.000										
16	Services industry	−0.065	−0.002	0.031	−0.352***	1.000									
17	Internationally active firm	−0.026	−0.005	−0.011	0.198***	0.005	1.000								
18	Number of employees 2013 (log)	0.074*	−0.035	−0.078*	0.097**	−0.073*	0.163***	1.000							
19	Number of employees 2017 (log)	0.261***	−0.044	−0.130***	0.211***	0.015	0.211***	0.663***	1.000						
20	Corporate age	0.056	−0.037	−0.001	0.086**	0.054	0.027	0.379***	0.348***	1.000					
21	Founder generation	−0.052	0.004	−0.027	−0.015	−0.120***	0.026	−0.133***	−0.126***	−0.449***	1.000				
22	Country = Russia	−0.099**	0.043	0.083*	−0.229***	0.013	−0.163***	−0.365***	−0.569***	−0.322***	0.054	1.000			
23	Received central support	0.030	−0.015	−0.020	−0.044	0.077*	0.015	0.048	−0.021	0.028	−0.027	0.015	1.000		
24	Received regional support	0.030	−0.018	−0.016	−0.073*	0.220***	−0.049	0.069	0.078*	0.114***	−0.088**	−0.043	0.184***	1.000	
25	Received central and regional support	0.041	−0.022	−0.025	−0.073*	0.179***	−0.038	0.078*	0.031	0.075*	−0.091**	−0.028	0.739***	0.739***	1.000

Notes: Significance levels: *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Table 2
Descriptive statistics by country along with t-tests for mean differences.

Nr.	Variable	Russia Mean	SD	Min	Max	Ukraine Mean	SD	Min	Max	Mean Diff.	SE (Mean Diff.)
1	Ind.and perf. adj. ROA 2017	−0.019	0.254	−1.321	0.909	−0.011	0.255	−1.972	1.010	−0.008	0.024
2	Innovativeness	0.172	0.379	0.000	1.000	0.160	0.367	0.000	1.000	0.012	0.034
3	Institutional constraints	−0.332	0.899	−2.060	1.814	0.228	1.024	−2.060	2.018	−0.560***	0.091
4	Local partnership	0.094	0.293	0.000	1.000	0.089	0.285	0.000	1.000	0.006	0.027
5	Resource sharing	3.048	1.593	1.000	7.000	2.593	1.571	1.000	7.000	0.455***	0.146
6	R&D expense ratio 2014–2016 (average)	0.058	0.123	0.000	0.500	0.224	0.229	0.010	1.000	−0.166***	0.020
7	Firm with no R&D investment	0.623	0.486	0.000	1.000	0.000	0.000	0.000	0.000	0.623***	0.035
8	Investment ratio 2013	0.019	0.126	−0.360	0.687	−0.004	0.185	−2.616	0.811	0.023	0.015
9	Investment ratio 2017	−0.009	0.112	−0.613	0.564	−0.002	0.146	−0.825	0.710	−0.007	0.012
10	Equity ratio 2013	0.294	0.376	−1.448	1.022	0.392	0.470	−3.079	0.997	−0.098***	0.041
11	Equity ratio 2017	0.360	0.476	−3.094	0.998	0.301	0.754	−4.760	0.996	0.060	0.062
12	Above average sales growth 2013–2017	0.928	0.260	0.000	1.000	0.970	0.170	0.000	1.000	−0.043***	0.019
13	Liquidity ratio 2013	0.882	6.398	0.000	84.500	0.494	2.668	0.000	43.649	0.388	0.401
14	Liquidity ratio 2017	1.136	6.106	0.000	75.000	0.474	1.485	0.000	14.852	0.662*	0.350
15	Manufacturing industry	0.200	0.401	0.000	1.000	0.429	0.496	0.000	1.000	−0.229***	0.043
16	Services industry	0.194	0.397	0.000	1.000	0.183	0.388	0.000	1.000	0.011	0.036
17	Internationally active firm	0.156	0.363	0.000	1.000	0.305	0.461	0.000	1.000	−0.149***	0.040
18	Number of employees 2013 (log)	3.044	1.364	0.000	5.979	3.988	1.014	0.693	6.760	−0.944***	0.106
19	Number of employees 2017 (log)	2.408	1.452	0.000	6.028	4.026	0.886	0.000	6.184	−1.618***	0.103
20	Corporate age	11.717	5.752	5.000	27.000	16.021	6.189	4.000	46.000	−4.304***	0.557
21	Founder generation	0.961	0.194	0.000	1.000	0.935	0.247	0.000	1.000	0.026	0.021
22	Received central support	0.022	0.148	0.000	1.000	0.018	0.132	0.000	1.000	0.004	0.013
23	Received regional support	0.011	0.105	0.000	1.000	0.024	0.152	0.000	1.000	−0.013	0.013
24	Received central and regional support	0.028	0.165	0.000	1.000	0.038	0.193	0.000	1.000	−0.011	0.017

Notes: Significance levels: *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

H1) is contingent on the local partnership of the SME, such that innovativeness under conditions of institutional constraints would enhance the firm's performance if the firm engaged in local partnerships during the development of the innovation. To test this hypothesis, we utilized a three-term interaction (i.e., *innovativeness & institutional constraints & local partnership*) in models 2, 6, 9, and 12. The positively significant coefficient of this variable in all three models supports our H2, since this coefficient indicates that the positive effect argued for in H1 is stronger if the firm also engaged in local partnerships. In a collateral analysis, we also document that partnership activities with international peers as well as private and public research institutes do not enhance this relationship hypothesized in H1. Accordingly, this finding further emphasizes the importance of local partnerships.

Finally, to test our H3, which posited a similarly strengthening effect of resource sharing when innovating firms face institutional constraints, we created the three-term interaction variable (i.e., *innovativeness & institutional constraints & resource sharing)* and included it in our models 3, 7, 10, and 13. Significantly positive coefficient of this interaction variable shows support for our H3.

In line with Dawson and Richter (2006), we conducted a slope-difference test for our three-way interaction effects in order to analyze whether differences between respective pairs of slopes are significant. As expected, we identified slope differences supporting our conjectures. The caption of Fig. 2 elaborates on the interaction plots by documenting the test results. Finally, we ensured that in all of our models the variance influence factors (VIF) are well below the suggested threshold of 10 for our variables of interest (Neter et al., 1996).

5.1. Robustness Checks

We ensured the robustness of our results by conducting several tests. First, we ran all the models with two sets of sample firms: those with more than 250 employees, a more conservative step in line with the definition offered by the EU commission (European Comission, 2018) and those with 100 employees or less, given that firms defined as SMEs may vary in an underdeveloped and less-stable economy such as Ukraine. Our results majorly hold. In line with the EU definition of micro-enterprises (European Comission, 2018), we also ran the models with firms of<50 employees. Except for a highly tentative result ($p <$ 0.20) for H3, our results remain robust although this operationalization results in a far smaller sample and therefore weaker estimators.

We also checked the different alternative operationalizations for our variables of interest. First, we used industry and performance adjusted profit margin as an alternative dependent variable instead of the return on assets (Batjargal, 2003). After winsorizing this variable at 2.5 % at both ends due to evidence of strong outliers (Ahrens et al., 2019), we find strong support for our results using this variable as well. We also found out at this stage that our results also hold with a winsorized return on the assets variable. Because of the ordinal nature of our institutional problems scale, we employed a polychoric factor analysis and calculated a polychoric (ordinal) alpha for it (Holgado–Tello et al., 2010), since polychoric-factor-analyses "estimate(s) reliability more accurately than Cronbach's alpha for binary and ordinal response scales" (Gadermann et al., 2012, p. 2). An increase in the significance and fit of our models, along with an increase in the scale reliability (ordinal alpha value of 0.90), indicates that our analysis is robust and, in fact, that our method choice for scale construction in this study leans towards the conservative side. Furthermore, we operationalized this variable as the mean of the items instead of predicting a factor from a factor-analytic process. Similarly, the local-partnership variable is operationalized as a summation of the collaborative activities in any of the stated dimensions instead of as a binary variable. Our results are robust to changes in both these operationalizations.

6. Discussion and conclusion

Innovation is a key driver of competitive advantage and performance for young and small firms (Wiklund, 1999), but its development is a challenging task, in particular in institutional environments that are characterized by institutional constraints. Although scholars have recently been studying how entrepreneurs and SMEs deal with constraints in their institutional environments and how their responses impact their performance (Batjargal, 2003; Bruton et al., 2010; Marquis & Raynard, 2015; Oliver, 1991), adequate attention has not been paid to how these constraints heterogeneously affect the link between innovation and performance through different mechanisms. Furthermore, the transition economy context has gained more and more research interest in the investigation of innovation and entrepreneurship (e.g., Choi et al.,

Table 3
Regression models with OLS, Multiple Imputation and 2SLS estimates. Dependent variable: *Ind. and perf. adj. ROA 2017*.

	Models without controls (MI estimation)			Models with controls (MI estimation)				Models with controls (OLS estimation)			Models with controls (2SLS estimation)		
Variable	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
Innovativeness	0.031	0.037	0.082*		0.043*	0.050**	0.052	0.041	0.051*	0.093	−0.085	0.023	0.007
	(0.023)	(0.025)	(0.046)		(0.023)	(0.024)	(0.046)	(0.028)	(0.029)	(0.062)	(0.102)	(0.108)	(0.134)
Institutional constraints	−0.018	−0.018	−0.006		−0.014	−0.014	0.001	−0.028*	−0.028*	−0.018	−0.037*	−0.026	−0.002
	(0.012)	(0.012)	(0.020)		(0.011)	(0.012)	(0.020)	(0.014)	(0.015)	(0.027)	(0.020)	(0.019)	(0.045)
Innovativeness & institutional constraints	0.041*	0.030	−0.002		0.046**	0.033	−0.018	0.071**	0.056*	−0.009	0.127*	0.041	−0.083
	(0.024)	(0.025)	(0.041)		(0.023)	(0.025)	(0.042)	(0.030)	(0.031)	(0.060)	(0.075)	(0.076)	(0.168)
Local partnership		0.011				0.027			0.063*			0.082*	
		(0.024)				(0.031)			(0.035)			(0.044)	
Institutional constraints & local partnership		−0.018				−0.001			0.009			0.027	
		(0.031)				(0.036)			(0.037)			(0.045)	
Innovativeness & local partnership		−0.100*				−0.125*			−0.230***			−0.325**	
		(0.055)				(0.068)			(0.084)			(0.156)	
Innovativeness & institutional constraints		0.131**				0.151**			0.217**			0.259**	
& local partnership		(0.065)				(0.069)			(0.091)			(0.122)	
Resource sharing			0.009				0.010			0.015			0.018
			(0.008)				(0.008)			(0.010)			(0.014)
Institutional constraints & resource sharing			−0.006				−0.007			−0.005			−0.013
			(0.006)				(0.006)			(0.008)			(0.013)
Innovativeness & resource sharing			−0.020				−0.007			−0.023			−0.040
			(0.015)				(0.014)			(0.019)			(0.051)
Innovativeness & institutional constraints			0.017*				0.023**			0.029*			0.072*
& resource sharing			(0.011)				(0.011)			(0.016)			(0.043)
R&D expense ratio 2014–2016 (average)				0.040	0.035	0.035	0.035	0.021	0.027	0.020	0.044	0.036	0.043
				(0.057)	(0.058)	(0.058)	(0.058)	(0.057)	(0.058)	(0.058)	(0.065)	(0.062)	(0.061)
Firm with no R&D investment				0.026	0.029	0.030	0.032	0.057	0.061*	0.061*	0.043	0.057	0.052
				(0.032)	(0.032)	(0.032)	(0.032)	(0.036)	(0.036)	(0.036)	(0.034)	(0.036)	(0.036)
Investment ratio 2013				−0.114**	−0.110*	−0.112**	−0.116**	−0.093	−0.098	−0.091	−0.083	−0.099	−0.084
				(0.058)	(0.057)	(0.057)	(0.057)	(0.115)	(0.115)	(0.115)	(0.110)	(0.111)	(0.112)
Investment ratio 2017				0.158	0.155	0.158	0.147	0.160	0.170	0.150	0.157	0.176	0.142
				(0.116)	(0.115)	(0.116)	(0.115)	(0.114)	(0.114)	(0.115)	(0.112)	(0.110)	(0.114)
Equity ratio 2013				−0.166***	−0.167***	−0.166***	−0.166***	−0.189***	−0.192***	−0.189***	−0.180***	−0.193***	−0.181***
				(0.036)	(0.035)	(0.036)	(0.036)	(0.056)	(0.056)	(0.056)	(0.055)	(0.055)	(0.055)
Equity ratio 2017				0.151***	0.152***	0.152***	0.152***	0.182***	0.180***	0.184***	0.176***	0.179***	0.178***
				(0.032)	(0.031)	(0.031)	(0.031)	(0.049)	(0.050)	(0.050)	(0.050)	(0.049)	(0.050)
Above average sales growth 2013–2017				0.140**	0.145**	0.150**	0.151**	0.152*	0.164*	0.157*	0.143*	0.163**	0.160*
				(0.070)	(0.070)	(0.071)	(0.071)	(0.083)	(0.084)	(0.084)	(0.080)	(0.081)	(0.084)
Liquidity ratio 2013				−0.001	−0.001	−0.001	−0.001	0.002	0.002	0.002	0.001	0.002*	0.002
				(0.003)	(0.003)	(0.003)	(0.003)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Liquidity ratio 2017				−0.002	−0.002	−0.002	−0.002	−0.004**	−0.004**	−0.003**	−0.004**	−0.004**	−0.003**
				(0.001)	(0.001)	(0.001)	(0.001)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.001)
Manufacturing industry				−0.001	−0.000	−0.001	−0.007	−0.001	0.002	−0.011	−0.001	0.006	−0.018
				(0.021)	(0.021)	(0.021)	(0.021)	(0.026)	(0.026)	(0.026)	(0.025)	(0.025)	(0.027)
Services industry				−0.030	−0.027	−0.028	−0.026	−0.020	−0.021	−0.019	−0.026	−0.024	−0.027
				(0.037)	(0.037)	(0.037)	(0.037)	(0.048)	(0.049)	(0.048)	(0.047)	(0.048)	(0.047)

(*continued on next page*)

Table 3 (*continued*)

Variable	Models without controls (MI estimation) (1)	(2)	(3)	Models with controls (MI estimation) (4)	(5)	(6)	(7)	Models with controls (OLS estimation) (8)	(9)	(10)	Models with controls (2SLS estimation) (11)	(12)	(13)
Internationally active firm				−0.004	−0.011	−0.009	−0.013	−0.019	−0.013	−0.023	0.003	−0.005	−0.002
				(0.025)	(0.026)	(0.026)	(0.025)	(0.031)	(0.032)	(0.031)	(0.039)	(0.040)	(0.035)
Number of employees 2013 (log)				0.002	0.003	0.003	0.005	0.024	0.023	0.026*	0.024	0.022	0.028*
				(0.012)	(0.012)	(0.013)	(0.012)	(0.015)	(0.015)	(0.015)	(0.015)	(0.015)	(0.015)
Number of employees 2017 (log)				0.011	0.009	0.008	0.009	−0.002	−0.004	−0.001	−0.001	−0.004	−0.001
				(0.011)	(0.012)	(0.012)	(0.011)	(0.012)	(0.012)	(0.012)	(0.012)	(0.012)	(0.012)
Corporate age				−0.002	−0.002	−0.002	−0.002	−0.003	−0.003	−0.003	−0.003	−0.004	−0.003
				(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)
Founder generation				0.023	0.014	0.009	0.014	0.012	0.003	0.012	0.029	0.006	0.023
				(0.066)	(0.066)	(0.064)	(0.066)	(0.080)	(0.076)	(0.081)	(0.079)	(0.072)	(0.079)
Country = Russia				−0.021	−0.032	−0.035	−0.040	−0.059*	−0.066*	−0.067*	−0.047	−0.062**	−0.057
				(0.027)	(0.027)	(0.027)	(0.028)	(0.035)	(0.035)	(0.035)	(0.035)	(0.032)	(0.035)
Public financial support (central)				0.196	0.224	0.230	0.224	0.288	0.287	0.295	0.240	0.256	0.259
				(0.247)	(0.251)	(0.259)	(0.253)	(0.332)	(0.343)	(0.336)	(0.321)	(0.329)	(0.318)
Public financial support (regional)				−0.113	−0.099	−0.107	−0.110	−0.077	−0.092	−0.094	−0.094	−0.103	−0.115
				(0.095)	(0.097)	(0.091)	(0.091)	(0.113)	(0.097)	(0.103)	(0.098)	(0.088)	(0.090)
Public financial support (central and regional)				−0.116	−0.144	−0.150	−0.151	−0.219	−0.218	−0.230	−0.180	−0.187	−0.210
				(0.245)	(0.248)	(0.262)	(0.248)	(0.324)	(0.343)	(0.325)	(0.313)	(0.326)	(0.309)
Constant	−0.019	−0.020	−0.042*	−0.170	−0.168	−0.162	−0.198*	−0.187	−0.175	−0.236	−0.189	−0.171	−0.252*
	(0.013)	(0.014)	(0.024)	(0.115)	(0.117)	(0.115)	(0.115)	(0.146)	(0.141)	(0.144)	(0.143)	(0.141)	(0.144)
Observations	518	518	518	518	518	518	518	352	352	352	352	352	352
R-squared	0.008	0.012	0.013	0.155	0.165	0.170	0.170	0.193	0.204	0.203	0.161	0.200	0.165
Kleibergen-Paap F											6.252	2.583	1.961
Kleinbergen-Paap p-value											0.000	0.005	0.072
Hansen J											1.958	23.43	12.97
Hansen J. p-value											0.924	0.495	0.605
Diff. in Sargan (C) St.											1.389	7.169	6.424
p-value of C St.											0.846	0.411	0.377
First Stage F St.													
Innovativeness											6.203	12.422	33.658
Innovativeness & institutional constraints											6.512	13.730	22.580
Inno. & inst. const. & local partnership												15.460	20.963
Inno. & inst. const. & resource sharing												21.192	14.177

Notes: Robust standard errors are shown in parentheses. Significance levels: *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

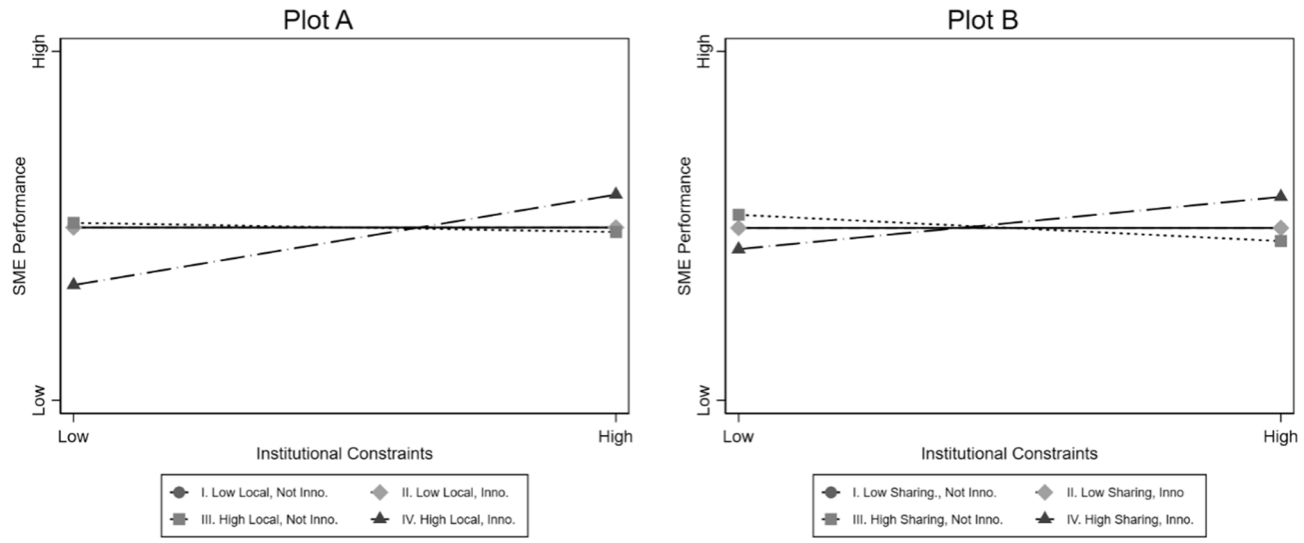

Fig. 2. Interaction plots along with slope-difference test results. Notes: High and low levels of the moderator variables *local partnership* and *resource sharing* reflect the two standard deviations above and below the mean values of the respective variables. Slope-difference tests yield a significant difference between the following pairs of slopes: In Plot A: I-IV, II–IV, III-IV In Plot B: I-III, I-IV, II-III, II-IV, III-IV.

2011). Nevertheless, the studying of emerging and transitional economies remains outside the typical focus of SME and entrepreneurship scholars who still focus more on developed economies (Bruton et al., 2013). Yet, prior research shows that firms in transition economies, and in particular post-soviet transition economies, have unique characteristics and seem to react differently compared to developed economies (Danis et al., 2011) and scholars need to better understand the differences and similarities.

Our study provides important implications at the intersection of the above-mentioned topics. The results show that SMEs suffering from institutional constraints in transition economies are able to achieve an above average performance thanks to their innovative capabilities. In line with a relational view, this relationship becomes stronger for SMEs which engage in local partnerships as well as resource sharing activities. By partnering with local firms, resource constrained SMEs not only gain access to important resources, but also have the possibility to work with partners who possess higher allegiance, commitment, and trust. SMEs which emphasize resource sharing also seem to ensure synergies emerging from access to complementary resources, improve the quality of their networking activities, and establish relationships characterized by higher trust; a crucial resource to possess in transition economies where formal institutions and rule of law usually fall short in enforcing formal agreements.

6.1. *Theoretical contributions*

Accordingly, our study poses two main theoretical contributions. As the first of those, we advance recent research that links institutions and SME innovation in transition economies (e.g., Batjargal, 2003; Lau & Bruton, 2011) by incorporating the role of networking activities, local partnership and resource sharing in particular. These findings in line with a relational view applied in a transition economic context, offer interesting extensions to prior work. For example, Lau and Bruton (2011) find that the interaction between social network ties and strategy is positively related to sales performance of high technology entrepreneurial ventures in China and Russia. Yet, Lau and Bruton (2011) do not investigate which specific types of networking activities are needed to leverage this positive relation between social networks and performance. In fact, Lau and Bruton (2011, p. 377) point out that "future research should expand the understanding of networking further so that this rich concept can be better understood". The results from our research further develop and add credence to these previous findings by showing how the activities leveraging social networks such as local collaborations and resource sharing impact the performance of innovative SMEs facing institutional constraints.

As its second main contribution, our study also explicates how and why some networking activities may better alleviate the effects of institutional constraints on performance. Specifically, our study reveals that local collaborations and resource sharing are important mechanisms for alleviating the perceived institutional constraints when developing an innovation. To select local partners for collaboration is a decision that is particularly important in emerging and transition economies that have generally been viewed as "low-trust" societies (Humphrey & Schmitz, 1998), characterized by a low regard for formal institutions, the rule of law, or contracts and as having a lack of cooperative trust which is critical in the context of alliance formation (Dyer & Singh, 1998; Hitt et al., 2004). Considering that networks and collaborations are important drivers of innovation performance in developed countries (e.g., Powell et al., 1996; Tsai, 2009), these insights are especially important for firms in transition economies because they tend to cooperate and share less as a result of uncertainty and lack of trust (Humphrey & Schmitz, 1998; Lissowska, 2013; Raiser et al., 2007). Accordingly, our results are valuable considered together with the stream of research disputing the plausibility and effectiveness of such cooperative activities in transition economic contexts. For instance, Puffer and McCarthy (2001) found that "commitment and trust among network members in Eastern European business networks are typically low, the ties extremely weak, the network knowledge [is] poor" (p. 32). Bridgewater's (1999) study found similar results: "Ukraine has poorly developed networks, as previous structures have broken down" (p. 116). In addition, in the many post-Soviet countries that have experienced several decades of harsh Communism, the culture is influenced by fear and a lack of trust in sharing resources and knowledge with other members of the society (Vajjhala, 2013), transforming non-cooperative behavior into a cultural imprint over time (Kriauciunas & Kale, 2006). Thus, in contrast to many developed economies, sharing resources for innovative and entrepreneurial activities is in fact not a culturally supported and common activity. Our research however proves that there are indeed firms acting against their cultural norms and these are the ones that perform better.

Our study also generates additional insights regarding the nature of innovative SMEs and entrepreneurs that are able to overcome institutional constraints. A central assumption we rely on in this study concerns how entrepreneurs as well as SME managers may vary in their

perception of these constraints. Depending on this perception, they find ways to deal with institutional constraints and can push their innovations if they believe that these innovations are worth it (Alvarez & Barney, 2007; McMullen & Shepherd, 2006). As Alvarez and Barney (2007, p. 11) argue "some people are more insightful or clever in recognizing and exploiting opportunities than others, exploiting these opportunities can be a source of economic profits and, in some cases, fame and fortune". In fact, our results also show that innovation may indeed bloom under institutional constraints (e.g., Acar et al., 2019), and therefore add to entrepreneurship and SME research by showing a more-nuanced understanding of how managers deal with the institutional constraints present in many transitional economies (Tracey & Phillips, 2011). Our results suggest that the relationship between perceived institutional constraints and performance may depend on agile and somewhat unorthodox methods such as sharing resources with peer firms in proximity, which may also easily qualify as competitors. In fact, recent research shows how such collaborative efforts may nurture an ecosystem in which actors act as co-opetitors resulting in co-development and co-evolution through knowledge sharing and joint learning (Radziwon & Bogers, 2019). In this sense, we extend these findings by showing that local partnerships and resource sharing are particularly important in environments characterized by institutional constraints and these local opportunities may bear the potential for SMEs to achieve joint development and growth.

These insights are also in line with arguing that the more agile and flexible a firm is, the better it can deal with institutional constraints and adjust to changes in its environment (Liao et al., 2003; Tracey & Phillips, 2011). Su et al. (2017) concluded in their review that researchers tend to assume a direct relationship between institutions and entrepreneurial performance, while Tracey and Phillips (2011) developed a theoretical proposition of how institutional constraints, and in particular institutional voids, can create opportunities for entrepreneurs. Our study also extends this research stream and offers a more fine-grained perspective acknowledging that this link can also be indirect (e.g., Stephan & Uhlaner, 2010; Torkkeli et al., 2019; Zhang et al., 2017).

In sum, our study enriches institutional studies in transition economies by studying two under researched post-socialist countries – Russia and Ukraine (Kafouros & Aliyev, 2016). Although both countries possesses a huge potential for transforming themselves into an innovation-driven market economy given their demographic and geopolitical factors, they still struggle with major institutional shortcomings (Cheney et al., 2017). These shortcomings may lead to a relatively low level of entrepreneurial development and this development seems to be even "lower in former Soviet-type economies than in other economies, including emerging markets at comparable levels of development" (Aidis et al., 2008, p. 660). Yet, other research acknowledges that emerging economies are more entrepreneurial and more innovation-driven in their efforts to catch up with the competition from developed economies (Madhok & Keyhani, 2012). Therefore, it is important to study this unique institutional setting, the constraints associated with it, and how firms facing these constraints manage to tackle them.

6.2. Practical contributions

Our study also offers practical insights for policy makers, managers, and entrepreneurs. Our results show that it is important to create framework conditions that encourage innovation and networking activities among SMEs. In fact, countries such as Slovakia or Hungary, which were able to achieve a positive distinction compared to their post-socialist peers are found to be characterized by such frameworks, which enable them to extrapolate local level development to larger dimensions (Szakálné Kanó et al., 2022). Accordingly, such frameworks may be crucial not only for regional development but also for national development in transition economies. Therefore, policy makers at any level in transition economies should not neglect the importance of such frameworks and commit resources to their development. Our results also advise SME managers operating in similar transition economies as to why they should invest in networking activities and collaboration, although especially in such a context, trust-building is hard. These managers should be aware that there may always be firms with similar innovative motives, searching for trustable partners to complement their resources; and the chances are high that these are located in close proximity. Therefore, SME managers should develop dedicated routines and practices that will support their engagement with local actors to form networks and arrangements which would result in fruitful partnerships. Finally, this study encourages and guides entrepreneurs with innovative ideas who are willing to create economic value in adverse institutional environments. Like flowers which are able to bloom in the most adverse conditions, their ideas and ventures have chances to prosper despite the worst of institutional constraints.

6.3. Limitations, directions for future Research, and conclusion

Although this study reveals how SMEs deal with the constraints in their institutional environment, some limitations remain. First, although our analysis of the Russian and Ukrainian contexts yields actionable premises that lay the ground for our conjectures regarding the antecedents and emergence of institutional problems for SMEs, we believe that these contextual mechanics should also be empirically demonstrated in the future for a more unequivocal causal analysis. However, given the social-desirability issues associated with the research of such phenomena, asking key actors such as oligarchs, state employees, business owners with major stakes in the current market environment, or even society at large about those issues would very likely be in vain. Namely, no oligarch would explain how they increase their influence by raising barriers to maintain their beneficiary status, nor would state employees share how they engage in self-enriching activities when small innovative firms with no ability to grease the wheels come to their office to ask for permissions or licenses. Therefore, future researchers may benefit from finding ways of going beyond surveys to specifically identify such behaviors.

Secondly in this paper we focus on local partnerships and resource sharing to study the networking activities firms utilize to access and integrate knowledge from external organizations into their organization. However, local partnerships and resource-sharing activities may not necessarily be the only potential ways of accessing to resources beyond an organization's possession and control. Furthermore, some other internal capabilities may also play a role in devising, managing, and overseeing these activities which may improve SMEs chances of success in overcoming institutional constraints. Our study does not directly measure such relational capabilities unlike some other studies (e.g., de Silva & Rossi, 2018), but instead focuses only on the manifestation of networking activities. Given that these capabilities may be a considerable moderator of the relationships we demonstrated, we highly encourage scholars to investigate the role of these capabilities as part of their research endeavors in the future. We also acknowledge recent developments in network research that highlight the importance of further exploring more recent network concepts such as network capability (Parida et al., 2017) and its role within the RBV (Burt & Soda, 2021). Due to data limitations, we were not able to fully explore the entirety of network relations, as suggested by a network capability approach, in order to study a more diverse and relationally inclusive network view of our investigated firms and how exactly they integrated the externally gained strategic and operational knowledge in their organization via leveraging their positions in their network. However, we see this as an important starting point for further research especially in the context of emerging and transitional economies since the network capability concept is a conceptually different network construct, which calls for unique research attention to understand its role and effects on innovation and performance in greater depth (Parida et al., 2017).

Third, although we are convinced of the robustness of our results, the reliability of our measurement, and the uniqueness of our sample, we

cannot claim to present a representation for all post-communist countries, even the whole population of Ukrainian and Russian SMEs given their sizable number and heterogeneity. Therefore, the generalizability of our study's results should be considered very carefully and without omitting the potential of extending such a study to other transition economies and regions in the respective countries. Future research may focus on the relationship between innovation, institutions, and networks in developed and developing countries and/or compare different institutional settings.

Finally, in using objective financial data from a different source as a measure for performance (i.e., Orbis Database), we were able to control for several methodological issues, such as common-method bias. Since our industry and performance adjusted dependent performance variable was measured at the end of 2017 (reported in 2018) and our survey was conducted in early 2017 capturing the period 2014 to 2016, we also ensured robustness and prevented temporal-ordering related issues, which would have created problems for causal inferencing. Nevertheless, our study is cross-sectional in nature and bears all the related limitations. Therefore, we see merit in examining the phenomenon in a longitudinal setting, in which elimination of time-invariant unobserved heterogeneity is possible. Yet, despite the limitations, we are assured that our study contributes to the literature on innovation and performance of SMEs facing institutional constraints.

CRediT authorship contribution statement

Baris Istipliler: Writing – original draft, Visualization, Validation, Supervision, Software, Methodology, Investigation, Formal analysis, Conceptualization. **Suleika Bort:** Writing – original draft, Supervision, Investigation, Data curation, Conceptualization. **Michael Woywode:** Validation, Supervision, Data curation.

Declaration of Competing Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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Appendix A. Institutional constraints scale

Variable	Loading	Uniqueness	SMC	KMO
Difficulty of getting licences and permissions	0.64	0.59	0.66	0.72
Loss of time due to getting licences and permissions	0.68	0.53	0.69	0.74
Taxation burden	0.64	0.58	0.31	0.95
Export restrictions	0.50	0.75	0.46	0.72
Import restrictions	0.52	0.72	0.47	0.73
Competition with government/public protected monopolies	0.47	0.78	0.18	0.93
High tariffs of natural monopolies (gas, electricity, etc.)	0.61	0.63	0.28	0.95
Corruption (bribery, abuse of power, etc.)	0.74	0.45	0.48	0.92
'Closed' decision making processes of government authorities	0.79	0.38	0.58	0.88
Low qualification of government officials	0.75	0.44	0.53	0.89
Poor quality of courts and police work	0.71	0.49	0.47	0.91

Notes: Cronbach's alpha of 0.86 and emerging scale explains 42 % of the total variance.

Appendix B. Detailed arguments guiding the 2SLS estimation and choice of instruments

Our endogeneity concern is mainly underlined by simultaneity as well as possible omitted variables (Bascle, 2008), and can be summarized as the following: Firms anticipating a good performance in the following periods may become more prone to commit the potential slack resources to the introduction of an innovation and its marketing (Sharfman et al., 1988) and tolerate the risks associated with the choice of introducing an innovation to the market (Nohria & Gulati, 1996; Yanadori & Cui, 2013), resulting in a reversely causal relationship between innovation and abnormal firm performance. Accordingly, this anticipation can also be framed as an omitted variable which would be correlated with our dependent variable (*ind. and perf. adj. ROA 2017*) as well as the independent variable of interest (*innovativeness*), biasing our ordinary least square estimations. In other words, one may validly question whether the innovation output between 2014 and 2016 *solely drives* the abnormal performance in 2017; or the innovation output between 2014 and 2016 *is also driven by* the anticipation of an abnormal performance in 2017. In fact, the endogenous nature of innovation and output relationship has already been addressed by other researchers (e.g., Karlsson & Tavassoli, 2016; Lööf & Heshmati, 2006).

Such concerns can be addressed by an instrumental variable (or 2SLS) estimation approach. A valid instrumental variable must fulfill two criteria: *instrument relevance* and *instrument exogeneity* (Wooldridge, 2015b). The first criterion implies that to instrument an endogenous variable (*innovativeness* in our case), instrumental variable(s) must not be weak, i.e., strongly correlated with the endogenous variable, which is possible to empirically validate. The 2SLS diagnostics we report (see Table 3) rule out the concerns regarding the weakness of our instruments. Furthermore, it is theoretically straight-forward to deduce that all three of our instrumental variables (*number of patents the firm holds, degree of importance of corporate venturing activities, degree of knowledge exploitation activities*) would be expected to correlate with the innovation output of a firm since they signal established structures and a culture to innovate.

The second criterion implies that the instruments chosen must not suffer from the problems of the endogenous variable (i.e., *innovativeness*). In other words, there should not be any credible theoretical argument about the existence of a possible reverse causality problem between our instruments and the abnormal performance due to anticipation, leading to the bias mentioned in the first paragraph. This criterion is harder to empirically validate, especially when there is only a single instrument available (Wooldridge, 2015b). This is not the case in our study; thus, we also report the supporting empirical tests for instrumental exogeneity (see Table 3). Regardless of the empirical support however, it is important to elaborate on the theoretical reasons driving the choice of the instruments given that the success of the exogeneity tests also depends on *at least one* of

the instruments being exogenous (Bascle, 2008; Wooldridge, 2015b). Accordingly, we provide arguments regarding the instrument exogeneity of each variable in the following paragraphs.

Our first instrument, *number of patents a firm holds,* is characterized by the path dependent processes of obtaining patents involving lengthy processes of R&D and legal activities over many years. Thus, it is not feasible to think that the managers of the firms may be able to influence this variable in anticipation of the next period's performance. Lack of a theoretical motivation for managers to do so (unlike as it is with the *innovativeness* as explained at the beginning) also strengthens our reasoning regarding the exogeneity of this first instrument.

Our second instrument, *degree of importance of corporate venturing (CV) activities,* reflects the overall perception of firms' managers towards corporate venturing activities to achieve growth or efficiency (Covin & Miles, 2007). First, this variable reflects a perception instead of a measure of CV activity or ability. Thus, it is not feasible to expect that anticipation of a better performance would change a manager's discrete opinion (shared in our anonymous survey) on the importance of CV. Even if this was the case, research shows that "there is considerable debate concerning whether slack is a positive or a negative for CV" (Chiu et al., 2012, p. 43). Accordingly, the arguments concerning the anticipation of performance increase and emerging slack resources would not harm the exogenous relationship this variable has with our abnormal performance measure.

Our third instrumental variable concerns the *degree of knowledge exploitation activities* in the firm. Although this variable would relate to the innovativeness through creation of incremental innovations (Lennerts et al., 2020), its relation to abnormal performance and performance anticipation would be of different nature. This is the case given that exploitation and exploration is also characterized by path dependent structures in an organization which are only possible to evolve over time, unlike the choice concerning introduction of an innovation and its timing. As Lavie et al. (2010) describe: "The first time an organization experiments with a new technology, it enacts exploration, but as the organization repeats these experiments or the application of newly acquired knowledge, […] exploration evolves into exploitation" (p. 114). Accordingly, it would not be easy for a manager to shift the organizational focus between exploitation and exploration simply because he anticipates good performance in the next period. Therefore, we believe our choice of this variable as an exogenous instrument is also appropriate for our analyses.

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