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Institutional environment, innovation capacity and firm performance in Russia

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Abstract

Purpose – Following the demise of the Soviet Union in 1992, Russia undertook major institutional and market-oriented reforms to enhance the competitive advantage of domestic enterprises. Although Russia has experienced rapid growth over the last two decades, the extent to which institutions in Russia impact on firm innovation and performance remains poorly understood due to a lack of research on the subject. This paper seeks to contribute to the literature on the competitiveness of Russian firms by focusing specifically on the extent to which the state of the regulatory quality, rule of law, and corruption affect the innovation capacity and performance of firms in Russia.

Design/methodology/approach – The study uses structural equation modelling and data from a large-scale firm level survey (n=787) of firms in Russia undertaken by the World Bank in 2009. It investigates the direct and indirect perceptions of respondents of the effects the current institutional environment has on the innovation capacity and performance of their respective organisations.

Findings – The results show that regulatory quality, rule of law and corruption have strong direct and negative impacts on both the innovation capacity and performance of firms, and that innovation capacity strongly mediates the effects of institutions on firm performance. The results suggest that the current state of the regulatory quality, rule of law and corruption in Russia inhibit firm innovation and their resulting performance.

Research limitations/implications – The findings should be interpreted with caution to the extent that the study is limited to only three elements of the formal institutional environment and does not take into consideration the role of informal institutions. These two limitations present avenues for future research.

Originality/value – The study is one of the first to provide empirical evidence based on a large-scale survey of the extent to which formal institutions inhibit innovation and firm performance in Russia, and provides valuable guidance to business policy-makers in Russia on possible avenues for enhancing the overall competitiveness of Russian firms.

Keyword(s): Rule of law; Regulatory quality; Corruption; Institutions; Russia; Innovation; Firm performance; Company performance.

Introduction

Institution building has become a key feature of reforms undertaken by governments in many developing and emerging economies to achieve superior economic growth, and international competitiveness. Brazil, Russia, India and China, commonly referred to as the BRIC economies, have been four of the stand-out economies in terms of their overall economic growth and dominance in the global economy. While each of the BRIC economies has followed its own economic development path based on its unique resource endowment, it is generally accepted that the governments of these economies have played a pivotal role in their economic successes (Aidis et al., 2008; Kahn, 2011; Wilson and Purushothaman, 2006; Michailova and Jormanainen,
The role of the government in providing an environment conducive for economic growth through institutional reform and institutional building has received much attention (Ahlstrom and Bruton, 2010; Fogel et al., 2006; Zhang and Thomas, 2009). There is an abundance of research which attributes the economic successes of many emerging economies to the strategic role of their governments in providing an environment which promotes business development and growth. Conversely, the lacklustre economic performance of many less-developed countries has also been linked to poor institutions which do not encourage entrepreneurship and business growth (Puffer and McCarthy, 2011; Puffer et al., 2009; Peng, 2010).

In general, research on the economic success of Russian firms remains under-developed despite the fact that Russia has become one of the world's economic powerhouses and is considered one of the most successful BRIC economies (Puffer and McCarthy, 2011; Puffer et al., 2009). Research linking the role of institutions to the conduct and behaviour of Russian firms is lacking, although it is widely believed that Russia's stellar economic success stems from important institutional reforms following the end of the Soviet Union in 1992, the demise of a command economy, and the beginning of the development of a more liberal and market-driven economy (Ahlstrom and Bruton, 2010). Russia, which has a population of 142 million people, has experienced superior growth in per capita gross domestic product (GDP) over most of the last decade compared to the other BRIC economies. For example, based on purchasing power parity for comparative purposes, Russia and Brazil had more or less the same per capita GDP in 2000 (approximately US$ 7,600), compared to China and India at around US$2,000 (see Figure 1). By 2011, the comparative GDPs were as follows: Russia: US$17,600; Brazil: US$12,300; China: US$9,200 and India: US$3,900. The information in Figure 1 shows clearly that among the BRIC economies, Russia not only has the highest per capita GDP but has also sustained rapid GDP growth over the years. The 2010-2011 Global Competitiveness Report also ranked Russia in 66th place among 139 countries in the world and noted its efficiency-driven development (IMD, 2011). There is evidence that economic efficiency and competitive advantage can be achieved through innovation (Porter, 1990) where research and development activities lead to new product and processes at overall lower cost. A commonly used indicator which captures innovation at the national level is the number of patents issued in different countries. It is interesting to note that in Russia the number of patents per million people far exceeded that of the other BRIC economies until 2010 when China overtook Russia (see Figure 2). The information in Figure 2 also suggests that Russia has a stronger and more established national system of innovation, which has been shown to be a critical ingredient for supporting business development and growth and the overall competitiveness of firms (Freeman, 1987; Metcalfe, 1995).

Although the indicators shown previously paint a picture of Russia as a prosperous country with a well-developed national system of innovation, doubts have been raised on whether the country has the necessary institutional environment to fuel innovation and sustain the economic growth and competitiveness of its firms (Puffer and McCarthy, 2011; Guriev and Zhuravskaya, 2010; Aidis et al., 2008; De Clercq et al., 2010; OPORA Russia, 2006). In particular, little is known about how well the institutional infrastructure in Russia can support successful entrepreneurship and private business ownership both of which play critical roles in the overall trajectory of economic development (Guriev and Zhuravskaya, 2010; Lau and Bruton, 2011). Guriev and Zhuravskaya (2010) argue that despite the reforms that have taken place since 1992, Russia's political and economic institutions remain weak and are crippled by the dominant role of a powerful elite who continue to cling to the institutional remnants of the former Soviet Union. To date, there is little empirical evidence on how the institutional environment in Russia affects business performance and economic growth. To the extent that national economic growth and competitiveness is reflected through the collective performance of firms, an interesting question arises regarding the effects of the institutional environment on firm innovativeness and performance in Russia, which is the subject of this paper.

The main aim of this research is to investigate the extent to which the state of the formal institutional environment, which is manifested by the regulatory quality, rule of law, and corruption, affects the innovation capacity and performance of firms in Russia. This research builds on institutional theory in its contemporary form (Ahn and York, 2009; North, 1992, 2005; Peng, 2010) and innovation system theory (Freeman, 1987; Nelson, 1993) to argue that well-developed and functioning formal institutions provide the necessary environment for innovation to take place which, in turn, contributes to firm competitiveness. The conceptual model in Figure 3 postulates that Russia's institutional environment has both direct and indirect effects, through innovation, on firm performance. The national innovation system (Freeman, 1987) provides the necessary environment for firms to gain competitiveness (Porter, 1990; Nelson, 1993), and the formal institutional environment provides the necessary support for the establishment and development of a country's innovation system (Metcalfe, 1995). Thus, it is argued that a well-developed national system of innovation (Freeman, 1987) supported by a well-functioning institutional environment (North, 2005) should lead to improved firm performance.
There is anecdotal evidence that the institutional landscape in Russia is marred by the weak rule of law, corruption and government inefficiencies (Aidis et al., 2008; Puffer et al., 2009; Guriev and Rachinsky, 2005) where entrepreneurs fear bureaucrats more than criminals and do not trust the country's judicial system (OPORA Russia, 2005). By focusing specifically on the three types of formal institutions in Russia which are commonly viewed as inhibiting business performance, this research addresses several gaps in the literature.

First, there is a paucity of published research on the behaviour and performance of Russian firms in general despite their growing regional and global importance (Lim et al., 2010; Ahlstrom and Bruton, 2010). Previous studies (e.g. Ojala and Isomaki, 2011) fall short in explaining how the institutional environment influences innovation in Russia and the consequent effects on firm performance. Second, there is little understanding of how firms perceive the institutional environment to impact on their performance, despite the profound institutional changes that have been taking place in Russia for the last two decades. Insights into how firms perceive the institutional environment to affect their performance are critical for the design and implementation of effective economic and industrial policies for economic growth. Third, there is little understanding of how specific elements of the overall formal institutional environment influence the performance of firms in the context of emerging economies such as Russia (McDonald et al., 2006; Naudé et al., 2008; Preuss, 2011; Vaillant and Lafuente, 2007; Ahlstrom and Bruton, 2010; Lim et al., 2010).

The rest of the paper is organised as follows. The next section reviews the literature on institutional theory, innovation and firm performance to develop the conceptual model of the study. The research methods and data are then presented followed by the data analysis and the discussion of the results. The conclusions, limitations and avenues for future research are contained in the last section.

Review of literature and conceptual model

For the purposes of this study and with specific reference to the Russian context, formal institutions refer to the role of the government in providing a sound regulatory framework for business, upholding the rule of law, and creating an environment which is free of corruption and crime (Aidis, 2005; Fogel et al., 2006; Nkya, 2003; Prasad, 2003). A well-developed formal institutional environment deters rent-seeking behaviour (Tambunan, 2007) by creating a level playing field where no economic player enjoys undue privileges nor suffers disadvantages (Meyer, 2001), and a strong platform for innovation (Manolova et al., 2008; Nkya, 2003; North, 2005; Metcalfe, 1995) and competitive advantage is provided (Porter, 1990). We consider regulatory quality, rule of law, and corruption as critical elements of the formal institutional environment in Russia, as they describe the salient characteristics of the dominant role of the government in shaping the local business environment (Marinova et al., 2012). These three elements of Russia's formal institutional environment have been shown to have significant impacts on the property rights that form the foundation of a free market economy (Puffer et al., 2009).

Regulatory quality refers to the bureaucratic rigidities that firms face, for example, in dealing with government agencies when applying for permits or licenses to conduct a specific business activity (Norton, 1998). Regulatory quality refers to the degree to which compliance with the existing laws, rules, and other government regulatory procedures impose unreasonable burdens on firms (Fogel and Zapalska, 2001; Geiger and Hoffman, 1998; Gnyawali and Fogel, 1994). Bureaucratic inefficiencies increase the unnecessary costs incurred by businesses in government-business exchanges. These costs include direct financial costs as well as the time and effort spent in the completion of these transactions (Ali et al., 2010; Fogel et al., 2006; Puffer et al., 2009). The tedious and long-winded bureaucratic processes can be time-consuming and distract firms from focusing on productive activities (Verheul et al., 2002).

Previous studies have identified a number of practices which undermine the regulatory system in Russia. They include the predatory behaviour of local tax authorities, the existence of multiple inspection agencies with arbitrary regulatory powers, and lack of an effective system for businesses to seek redress for grievances (Ahlstrom and Bruton, 2010; Aidis and Adachi, 2007). An ineffective and inefficient regulatory system has been found to impair the role of the government in Russia to nurture a business environment that is conducive to entrepreneurial growth and development (Aidis et al., 2008). Other studies have shown that a poor regulatory quality imposes significant transaction costs on businesses, and negatively impacts business start-ups, firm survival and overall business growth and development in Russia (Aidis and Adachi, 2007; Puffer et al., 2009; Aidis et al., 2008). Hence, we posit in this study that:

H1a. The regulatory quality in Russia has negative effects on firm performance.
Rule of law collectively refers to the laws, regulations, government policies and programs, and basic infrastructure and services that support the full functioning of a market-based economy (North, 1992). The rule of law determines the extent of protection and enforcement of legal rights of the local populace including corporate entities such as business firms (Ahn and York, 2009; Fogel et al., 2006). A place with a strong rule of law is defined as having sound political institutions, a strong court system, and provisions for orderly succession of power, as well as citizens who are willing to accept the established institutions and to make and implement laws and adjudicate disputes (Oxley and Yeung, 2001). Rule of law also contributes to creating a business environment conducive to growth by ensuring protection of property rights (Haggard et al., 2008) and transactional trust (Fogel et al., 2006), and ensures financial stability (Haussmann et al., 2005). In this study, rule of law comprises the quality of the court system, political instability, and crime, theft and disorder. An efficient and transparent court system has been shown to be critical in fostering an institutional environment that is conducive to: local entrepreneurial development (Aidis et al., 2008), innovation (Ahn and York, 2009; Chaudhry and Garner, 2007), business growth and development (Aidis, 2005), attraction of foreign direct investments (Ali et al., 2010; Meyer, 2001), and economic growth and development (North, 2005).

In Russia, the business sector is often described as suffering from a dysfunctional governance system that continues to undermine the rule of law (Guriiev and Rachinsky, 2005; OPORA Russia, 2006). The lack of consistent definition for, and reliable enforcement of property rights, transparency in political governance, a weak and inefficient judiciary, and arbitrary enactment, interpretation and enforcement of retrospective laws, characterise the formal institutional regime in Russia (Estrin and Prevezer, 2011; Marinova et al., 2012; Puffer et al., 2009). For instance, corporate raids and property seizures, falsification of legal documents to justify business takeovers by independent raiders, lack of protection of minority shareholders' and creditors' rights, and gaining access to personal information about entrepreneurs in ways that are considered unlawful in many countries, pose significant threats to the property rights of entrepreneurs and business owners in Russia (Puffer et al., 2009; Aidis and Adachi, 2007; Estrin and Prevezer, 2011). Hence:

**H1b.** The rule of law in Russia is negatively associated with the performance of Russian firms.

Corruption is defined as abuse of entrusted power for private gain (Transparency International, 2010; Calhoun, 2011), and refers to the self-enriching and self-gratifying modus operandi of government officials from the top of a hierarchy down to the lowest-level government employee to extract personal monetary and non-monetary gains from every government transaction whenever possible. Corrupt practices include the abuse of government authority and power to extract private gains through bribery, contract kickbacks and embezzlement of government property (Jensen et al., 2010). Corruption undermines the overall quality of governance within a country and has wide-ranging negative effects on investment decisions, firm productivity, and national economic growth (Jensen et al., 2010). Corruption leads to increased transaction costs from uncertainty and delays in government services such as obtaining business permits and licenses, and the unpredictability of corruption-laden government administrative machinery. Corruption increases the cost of doing business and has been found to inhibit firm development and growth in several emerging economies including Russia (Cheloukhine and King, 2007; Levin and Satarov, 2000). A report by OPORA Russia, a non-government organisation assisting and lobbying on behalf of the country’s small and medium enterprises (SME) sector, shows that corruption remains a major source of unnecessary transaction costs when doing business in Russia. Estrin and Prevezer (2011) suggest that businesses resort to corrupt practices such as bribery of government officials to ease the burden of going through the complex and corrupt governance system. Lack of transparency in government laws, systems and procedures and government agencies entrusted with arbitrary regulatory powers, coupled with weak judicial oversight, tend to nurture corruption in government-business relations (Aidis and Adachi, 2007; Puffer et al., 2009). Studies have shown that corruption increases transaction costs, undermines business development, inhibits business start-ups and negatively affects the overall productivity and competitiveness of firms in Russia (Aidis et al., 2008; Puffer et al., 2009; Ahlstrom and Bruton, 2010). Hence:

**H1c.** Corruption has negative effects on firm performance in Russia.

Innovation in this paper refers to the capacity of firms to engage in new idea generation, experimentation, and research and development activities which result in new products and processes at competitive costs (Hadjimanolis, 2000; Hult et al., 2004). The innovation capacity of firms depends largely on the so-called national innovation system (NIS), which is comprised of a network of interconnected institutions to create, store and transfer the knowledge, skills and artefacts which define new technologies (Metcalfe, 1995; Freeman, 1987). According to Metcalfe (1995), the NIS also provides the framework within which governments form and
implement policies to influence the innovation process. Thus, the government plays an important role in shaping the national innovation system because of its monopolistic power to influence the formal institutional environment through the enforcement of laws and regulations. The extent to which the institutional environment supports the national innovation system strongly influences the innovation capacity and, ultimately, the survival of firms (Shane and Kolvereid, 1995; Hadjimanolis, 2000; Hult et al., 2004).

Institutional factors such as the nature of the rule of law, transparent regulatory quality and the state of corruption, crime and theft can influence transaction costs and, ultimately, the competitiveness of firms (North, 1991; Peng, 2010; Radas and Bozic, 2009; Hadjimanolis, 2000; Porter, 1990). Zhu et al. (2011) found that the institutional environment in emerging economies significantly affects the innovativeness of firms in three major ways. First, institutions have an impact on the costs associated with innovation. These costs include monetary and non-monetary costs arising from the enforcement of contracts, security and safety, tax burden, financing, and compliance with bureaucratic rigidities in the government. Institutional voids lead to the escalation of transaction costs and uncertainty that can stifle the ability of firms to access the resources required to support or stimulate their innovativeness (Peng, 2010; Zhu et al., 2011). Second, institutions can either expand or restrict the windows of opportunity for engaging in innovation. Government support, proactive economic and industrial policies and other government programs for businesses can enable firms to pursue more risky yet promising innovative ventures. Third, the institutional environment can exacerbate or alleviate the risks that firms have to face in pursuing innovation. These risks include the regulatory burden, government interventions, protection of property rights and enforcement of contracts.

Previous research has identified several formal institutional obstacles which undermine innovation capacity in Russia (Ojala and Isomaki, 2011; OPORA Russia, 2006). The institutional obstacles include a lack of government assistance for business development, stringent regulatory requirements, unstable peace and order, infringement of property rights, and unreliable legal or judicial systems to enforce legal contracts and settle disputes (Ahlstrom and Bruton, 2010; Aidis et al., 2008; OPORA Russia, 2006). These institutional voids can lead to the escalation of transaction costs and uncertainty that can stifle the ability of firms to access resources in order to support or stimulate activities which support innovation. By contrast, well-developed formal institutions such as the rule of law, regulatory quality, and economic policies support the full-functioning of a market economy in which no economic player enjoys undue privileges nor experiences disadvantages (Meyer, 2001). Studies have shown that innovation thrives in such an institutional environment (Manolova et al., 2008; Nkya, 2003; North, 2005). The overall discussion on innovation leads to the following hypotheses:

H2a. The regulatory quality in Russia has negative effects on the innovation capacity of firms.
H2b. The rule of law in Russia has negative effects on the innovation capacity of firms.
H2c. Corruption has negative effects on the innovation capacity of firms in Russia.

Mediation effects of innovation

Mediation exists when “the effects of stimuli on behavior are mediated by various transformation processes internal to the organism” (Baron and Kenny, 1986, p. 1176). We posit the effects of the institutional environment on firm performance are mediated by the innovation capacity of firms. This follows the arguments from the theory of opportunity exploitation (Shane, 2003) which suggests that well-developed and functioning formal institutions reduce information asymmetries and encourage free exchange of information, which facilitates innovation. In other words, an institutional environment which is conducive to firm growth is likely to encourage greater innovation which, in turn, leads to better firm performance. In the context of an emerging economy such as Russia, where formal institutions are under-developed or where firms operate in institutional voids, firm performance can be hampered by the lack of innovation. OPORA Russia’s, 2006 report, for example, underscores the protection and enforcement of intellectual property rights as a major challenge for Russian firms which are engaged in R&D and other forms of innovative undertakings. A well-developed body of literature exists which suggests that, separately, both institutional factors (North, 1992; Peng, 2010) and innovation (Calantone et al., 2002; Bharadwaj, 2000; Hitt et al., 1997) have positive impacts on firm performance. However, to date, there has been no explicit attempt to investigate the effects of the interplay between institutional factors and innovation on firm performance. Innovation takes place in an institutional environment which is supportive of firm development and growth. Thus, it is logical to argue that greater innovation which arises as a result of a sound institutional environment will enhance firm performance. A mediation effect helps explain “why” a relationship between a predictor (institutional environment) and criterion (firm performance)
variables exists. In the present case, it is argued that innovation is the mechanism through which the institutional environment influences the criterion, firm performance. Thus, the following hypothesis is posited:

H3. Innovation capacity of firms in Russia is positively related to firm performance.

Methods and data

We test hypotheses H1, H2 and H3 using data from a large-scale survey of Russian firms conducted by the Enterprise Surveys Unit (ESU) of the World Bank (World Bank, 2010). The ESU conducts regular firm-level surveys in developing and emerging economies with the main aim of developing reliable and comparable data sets on various aspects of firm behaviour and performance in those countries. The ESU survey covers a broad range of business environment topics including corruption, infrastructure, crime, innovation, competition, and performance (World Bank, 2010). The ESU surveys are usually administered via face-to-face interviews of a randomly-selected sample of managers of firms using semi-structured questionnaires in local languages. This data source is considered reliable and has been widely used by other researchers (e.g. Amin, 2009; Kaplan, 2009; Hope et al., 2011).

Data for the present study were extracted from the ESU database for Russia. The most recent Russian survey was undertaken in 2009 and comprises 1,004 firms. Of these, information for 787 firms was retained following data cleaning for missing values and invalid responses. The information in Table I which summarises the profile of the sample firms shows that approximately 80 per cent of the sample consisted of small (five to 19 employees) and medium-sized (20-99 employees) enterprises distributed across a broad range of industries in both the manufacturing and service sectors. Firms engaged in food processing, manufacturing of machinery and equipment, garments, chemicals and fabricated metal products comprise the majority of the manufacturing firms in the sample. Firms engaged in trading, such as retail and wholesale, transport and construction, comprise the majority of firms in the service sector. In terms of business experience, 85 per cent of firms in the sample are deemed to be well-established with up to 20 years of business experience. The majority of firms in the sample (85 per cent) are also purely domestic and do not engage in any type of international business.

Measures

Regulatory quality (REG). Four items were used to develop a composite measure of regulatory quality based on the works of Fogel et al. (2006), Zhang and Thomas (2009) and Aidis (2005). The items asked respondents to indicate on a five-point scale (1=not an obstacle, to 5=very severe obstacle) the extent to which tax rates, tax administration, business licensing and permits, and business inspections by the government posed as obstacles to their business.

Rule of law (ROL). Three items were used to develop a composite measure of the rule of law. These items asked respondents to indicate on a five-point scale (1=not an obstacle, to 5=very severe obstacle) the extent to which crime, theft and disorder, political instability and the courts posed as obstacles to their business operation. The selection of items to comprise the composite measure was informed by previous studies (e.g. Roe and Siegel, 2011; Mbonyane and Ladzani, 2011; Fogel et al., 2006).

Corruption (COR). Five items were used to develop a composite measure of corruption, following Ali et al. (2010), Fogel et al. (2006) and Manolova et al. (2008). One item asked respondents to indicate on a five-point scale (1=not an obstacle, to 5=very severe obstacle) the extent to which corruption is perceived as an obstacle to their business. Four items asked respondents to indicate on a five-point scale (1=never, to 5=always) how often they have to give gifts or make additional unofficial payments to get things done by government officials, in dealing with customs/imports, in dealing with courts, and in matters of taxes and tax collection. Previous studies (e.g. Jensen et al., 2010; Fogel et al., 2006; Hausmann et al., 2005) guided the selection of items to develop the composite measure of corruption.

Innovation capacity (INV). Four items were used to capture the innovative capacity of firms in the sample. These items asked respondents to indicate (yes or no) whether they have introduced new products or services in the last three years, spent money on research and development in the previous fiscal year, discontinued at least one product line or service in the last three years, or upgraded an existing product line or service in the last three years. The selection of items is consistent with previous research on firm innovation (Ahn and York, 2009; Damanpour, 1991; Hadjimanolis, 2000; Hult et al., 2004). The item “discontinuation of products or
services in the last three years” (when used alongside the three other items) captures the capacity of firms to engage in innovative renewal in response to changes in consumer preferences, and represents the ability of the firm to be flexible in responding to changes in consumer and product markets.

Firm performance. Two measures of the dependent variable, firm performance, were used—sales growth (SAL) and capacity utilisation (CAP). Sales growth was measured as the percentage change in sales revenues between 2007 and 2008. Capacity utilisation rates measure the percentage of utilisation of the firm’s production capacity and, as such, capture the efficiency of the firm. Both sales growth and capacity utilisation rates are used to measure the performance of manufacturing firms, whereas the performance of service firms is measured by sales growth only. Sales growth measures the financial performance of firms (Brush et al., 2000), while capacity utilisation measures the strategic economic performance of firms (Klein et al., 1973).

Control variables. Firm size and firm age were used as control variables in the model to account for variations in the innovative capacity of the sample firms as they grow over time.

Model estimation

Structural equation modelling (SEM) using the partial least squares (PLS) approach was used to test hypotheses H1, H2 and H3 aided by the software called WarpPLS v. 2 (Kock, 2011). The PLS approach to SEM is a variance-based path analysis which has the capability to deal with complex models which violate the assumptions of multivariate analysis, such as multi-collinearity and non-normal data distribution (Kock, 2011). WarpPLS has the capability to perform PLS path analysis for formative and reflective latent variables, detect both linear and non-linear relationships, transform variables with dichotomous response scales and deal with single-item variables (Kock, 2011).

Following Anderson and Gerbing’s (1988) two-step approach to measurement model and structural model development and testing, confirmatory factor analysis (CFA) was performed in order to measure the goodness-of-fit of the measurement model to the empirical data. The manufacturing (M) and service (S) firms were analysed separately due to the different endogenous (dependent) variables in the structural models describing each industry sector.

CFA aims to purify the items comprising the constructs, regulatory quality (REG), rule of law (ROL), corruption (COR), and innovation capacity (INV) by examining the homogeneity and consistency of the items comprising each construct and construct validity. Capacity utilisation (CAP) and sales growth (SAL) are single-item variables and were, therefore, excluded from the CFA. Details of the CFA summarised in Table II show that all of the items measuring each of the four constructs loaded highly on the pre-determined factors.

The loadings of items in their corresponding constructs were significant at p<0.05 which indicates the convergent validity of the constructs. The cross-loadings of items in other constructs are much lower than the pre-determined loadings. The values of the Cronbach’s α and composite reliability coefficients were all above the minimum threshold of 0.70 (Bagozzi et al., 1991; Fornell and Larcker, 1981; Kock, 2011). The CFA results for manufacturing and service sectors are relatively similar in terms of factor loadings, Cronbach’s α, CRC and AVE values.

Table III shows the means, standard deviation and correlations of the eight constructs used in the succeeding analysis of the structural model-data fit. Overall, the results of the test of the measurement model-data fit suggested that the constructs used in this study have satisfactory levels of construct validity, internal consistency (i.e. reliability), and convergent as well as discriminant validity.

The results from testing of fit between the structural model and data are shown in Figure 4. The model-data fitting procedure was applied in two groups of samples, that is, manufacturing (n=542) and service firms (n=245). Firm size and firm age were included as control variables. The overall goodness-of-fit statistics indicate that the data fit the model well, as evidenced by the significant p-values (i.e. < 0.05) of the average path coefficient (APC), the average r-squared (ARS) and the average variance inflation factor (AVIF) of 1.85, which is lower than the recommended value of 5 (Kock, 2011).

The structural model shows that REG, ROL and COR, along with the control variables, explain 22 and 20 per cent of the variations in the levels of innovation capacity of manufacturing and service firms, respectively. On
the other hand, the three elements of the institutional environment and innovation capacity explain 21 per cent of the variations in the utilisation capacity of the manufacturing firms. Likewise, the three elements of the institutional environment and innovation capacity explain 16 and 18 per cent of the variations in the sales growth of manufacturing and service firms, respectively. Although the correlations between the formal institutions and firm performance are low, the significant path coefficients suggest that the former have considerable effects on the latter.

In the manufacturing sector, REG appears to have the greatest impact on INV, followed by COR and ROL. In the service sector, ROL appears to have the greatest impact on INV, followed by REG and COR. Capacity utilisation, on the other hand, is strongly affected by REG, followed by ROL and COR. ROL, REG and COR tend to have similar effects on the sales growth of both service and manufacturing firms. The findings provide support to H1a, H1b and H1c and H2a, H2b and H2c. The results further show that INV has significant and positive effects on both the capacity utilisation and sales growth of manufacturing and service firms, thereby supporting H3. Finally, both firm size and age are positively associated with higher levels of innovation capacity.

Discussion and conclusion

This study sets out to investigate the effects of selected formal institutional factors on the performance of firms in Russia. The particular focus on the role of institutions in Russia is timely because the country has experienced nearly two decades of institutional reforms since the demise of the Soviet Union in 1992. Russia is now a member of the so called BRIC countries, a club of four large emerging countries (Brazil, Russia, India and China) which have reshaped the global economic landscape by establishing themselves as powerful global economic players. The economic slowdown in the BRIC economies in recent years have attracted renewed attention on the growth impediments in these countries. In Russia's case, the institutional environment is one of the most commonly cited factors preventing businesses from achieving their full competitive potentials. According to recent data from the World Economic Forum (2012), Russia ranks in the 67th place (out of 144 countries) in terms of its overall international competitiveness, well behind the other BRIC countries (see Table IV). Interestingly, Russia performs most poorly in terms of institutional environment (133rd) while and innovation capacity (85th). It is also interesting to note from the information in Table IV that Russia has the weakest institutional environment (3.09) and innovation capacity (3.01) among the BRIC countries.

The main findings of this research offer further empirical insights into why and how institutions matter for firm performance in Russia. The study's novel attempt at operationalising formal institutions and linking them to innovation at the firm level contributes to the literature on the importance of innovation and institutions in emerging economies in general, and in Russia in particular. The findings in this paper reinforce previous research findings (e.g. Porter, 1990) that the formal institutional environment is critical for firms to develop their innovation capacity in order to gain competitive advantage. The results provide empirical evidence that the institutional environment in Russia does not support innovation which, in turn, inhibits firm performance.

Poor regulatory environment, weak rule of law, and corruption were shown to negatively affect the innovation capacity and performance of service and manufacturing firms alike. This particular finding amplifies the view enshrined in institutional theory that the institutional environment shapes the nature and extent of transaction costs, which increase the costs of innovation and, ultimately, impede the ability of firms to be innovative and competitive (Peng, 2010; Zhu et al., 2011). The three elements of the institutional environment also define the extent of the turbulence and hostility in the external business environment which Russian firms face. Such turbulence distracts firms from focussing on more productive activities, such as innovation rather than “fire-fighting” schemes to combat institutional voids and rigidities (Shane and Kolvereid, 1995).

Together with the rule of law, regulatory quality is a manifestation of the “regulatory dimension” of institutions (Scott, 1995) that defines acceptable behaviours and penalises those that are unacceptable. These two institutional forces have the capability to reduce rent-seeking behaviour, promote transactional trust and penalise unfair and opportunistic behaviour. The findings confirm that a well-functioning legal and judicial system, effective enforcement of contracts, public safety and security, and protection of property rights have statistically-significant influences on innovation and performance. An efficient regulatory framework reduces transaction costs associated with business registration, licensing, and permit applications. Fewer bureaucratic rigidities mean lower transaction costs associated with regulatory compliance. Consequently, firms are able to focus on the core activities of their business and on innovation.
Corruption is also perceived by the sample firms to have a significant effect on their innovation capacity and performance. Corruption in Russia is considered to be one of the most challenging institutional impairments that cripple the government's role in providing basic services for its constituents, including the business sector (Puffer et al., 2009; Aidis et al., 2008; Ahlstrom and Bruton, 2010). The results confirm that corruption in Russia has a negative impact on the innovation and financial performance of firms.

An important implication of the results of this study is that, despite the significant government reforms that have taken place in Russia since 1992, the country's formal institutional environment is yet to reach a stage of maturity that is capable of supporting an open, liberal and market-based economy free of corruption and crime. Marred by unpredictability and instability which eventually weaken its legitimacy, the country's formal institutional environment falls short in its enabling role for business growth and development. Rather than acting as an enabling support system to the private sector, Russia's institutional environment (i.e. rule of law, regulatory capacity and corruption) appears to inhibit innovation and performance of firms, a view that echoes the observations of leading scholars in the field (e.g. Puffer and McCarthy, 2011; Lim et al., 2010; Ahlstrom and Bruton, 2010). Firms continue to grapple with the unnecessary pressures of the institutional environment in addition to dealing with market- and industry-related forces in an increasingly competitive and global market environment.

Another important finding of this study is that innovation capacity mediates the effects of the institutional environment on firm performance. The strong and positive effects of innovation on firm performance suggest that innovation serves as an important mechanism through which the institutional environment can contribute to lifting a firm's performance. The significant mediating effects of innovation on the institution-performance relationship in this study indicate that an examination of the direct and indirect effects of elements of formal institutions on firm level variables such as innovation and, ultimately, firm performance would be an interesting area for further research.

Managerial and public policy implications

The findings in this research raise several challenges for public policy-makers generally, and in Russia in particular. First, there is strong empirical evidence that managers in Russian firms do not perceive the institutional environment in Russia to be conducive to innovation, despite the fact that the Russian government has engaged in institutional reforms for nearly two decades. Our findings show that overall managerial perception is that the institutional environment inhibits innovation and the performance of firms. The findings of this study indicate that policy-makers in Russia should focus on institutional reforms which are directly related to improving the rule of law, the regulatory quality and the state of corruption in the country. Of the three institutional variables considered in this study, the rule of law has the most severe effect on manufacturing firms, while regulatory quality has the greatest impact on service-oriented firms. Thus, reforms which focus on improving the rule of law and the regulatory quality in Russia are the most likely to improve innovation and, consequently, lift business performance. Second, the strong mediation effects of innovation on the institution-performance relationship of firms in Russia suggest that policy-makers in Russia should focus on institutional reforms leading to an environment which supports and promotes innovation. It is well established in the literature that firms which are internationally competitive are linked to a well-developed national innovation system (Metcalfe, 1995; Freeman, 1987). In this respect, policy-makers in Russia could focus on development and strengthening of the innovation environment for businesses as a strategy for improving the competitive advantage of Russian firms. Third, urgent reforms which focus specifically on improving the formal institutional environment and innovation capacity of Russian firms are needed in order for Russia to continue to enjoy rapid economic growth and maintain its status as a member of the BRIC economies. Failure to improve the institutional environment is likely to result in further deteriorations in Russia's overall international competitiveness and its standing as a global economic power.

As with any research, the current study has a number of limitations which indicate potential avenues for future research. First, the study only focuses on three elements of the formal institutional environment because the comprehensive data are sourced only from the World Bank survey on broader measures of institutional factors. For the same reason, innovation capacity is somewhat narrowly based on four items that were available from the World Bank survey. Second, the study does not take into account the possibility of a two-way interaction between institutions and firm performance. It has been established in the literature that firms themselves can influence the institutional environment (North, 1991). Third, the study does not take into account the role of informal institutions. Where firms operate in institutional voids (Peng, 2010; North, 1991), informal institutions
such as social norms and conventions may act as substitutes for a dysfunctional formal institutional framework (Puffer and McCarthy, 2011).

Fourth, the study did not measure the variations of effects of formal institutions on international versus purely domestic firms (e.g. exporters and non-exporters). The limited number of exporting firms in the dataset prevented the development and testing of structural models that accounted for export activity without violating sample requirements in the PLS-based SEM analysis (Marcoulides and Saunders, 2006; Westland, 2010). It is very likely that export firms face more formal institutional impediments because they deal with more government agencies related specifically to their export activities (e.g. customs, government export certification and regulatory bodies) which purely domestic firms do not have to deal with. However, the prospects of higher productivity gains and profits from international business may offset the increased transaction costs associated with additional institutional voids.

Last, the study does not address the lag effects that innovation has on performance. The data used for hypothesis testing provide a snapshot of business leaders’ perceptions of how the institutional environment and innovation affect their performance at a specific time. To the extent that it takes time for firms to innovate and for innovation to result in positive outcomes, an avenue for future research involves implicitly accounting for the time lags in the conceptualisation of the effects of innovation on firm performance. Such a conceptualisation would also provide further insights into the dynamic effects of innovation on firm performance compared to the static approach taken in this paper.

Overall, the study underlines the importance of the role of governments in influencing the competitiveness of a country’s firms. Governments have monopolistic power to influence the institutional environment which shapes their national innovation system. A well-developed NIS supported by a well-functioning rule of law, an efficient regulatory system and the absence of crime and corruption, all contribute significantly to the overall competitiveness of firms. Thus, institution building should be considered a priority by governments in emerging economies for the development of their national innovation systems in their quest for improved competitive advantage.

![Economic growth in Brazil, Russia, India and China (2000-2011)](image)

**Source:** OECD (2012)

Figure 1 Economic growth in Brazil, Russia, India and China (2000-2011)

Figure 2 Innovation in BRIC countries: patents per million people (2000-2010)

Figure 3 Institutional environment, innovation capacity and firm performance

Figure 4 Parameter estimates of the structural model

Goodness of Fit Indicators:
- Average Path Coefficients (APC), $p$ values
  - Manufacturing Firms: $n = 542$, $p = 0.004$
  - Service Firms: $n = 245$, $p = 0.004$
- Average R-squared (ARS) = 0.20
- Average Variance Inflation Factor (AVIF), good if $<5$
  - Manufacturing Firms: 1.85
  - Service Firms: 1.85

Note: *significant at $p < 0.05$
<table>
<thead>
<tr>
<th>Constructs</th>
<th>Manufacturing firms</th>
<th>Service firms</th>
</tr>
</thead>
<tbody>
<tr>
<td><em>Regulatory quality (REG)</em></td>
<td>$\alpha = 0.82$ CRC = 0.80</td>
<td>$\alpha = 0.92$ CRC = 0.92</td>
</tr>
<tr>
<td><em>Business inspections</em></td>
<td>0.85</td>
<td>0.86</td>
</tr>
<tr>
<td><em>Business licensing and permits</em></td>
<td>0.86</td>
<td>0.86</td>
</tr>
<tr>
<td><em>Tax rates</em></td>
<td>0.88</td>
<td>0.85</td>
</tr>
<tr>
<td><em>Tax administration</em></td>
<td>0.89</td>
<td>0.85</td>
</tr>
<tr>
<td><em>Rule of law (ROL)</em></td>
<td>$\alpha = 0.79$ CRC = 0.75, Ave = 0.70</td>
<td>$\alpha = 0.89$ CRC = 0.90, Ave = 0.76</td>
</tr>
<tr>
<td><em>Crime, theft and disorder</em></td>
<td>0.80</td>
<td>0.89</td>
</tr>
<tr>
<td><em>Political instability</em></td>
<td>0.82</td>
<td>0.85</td>
</tr>
<tr>
<td><em>Courts</em></td>
<td>0.89</td>
<td>0.87</td>
</tr>
<tr>
<td><em>Corruption (COR)</em></td>
<td>$\alpha = 0.90$ CRC = 0.92, Ave = 0.70</td>
<td>$\alpha = 0.90$ CRC = 0.91, Ave = 0.71</td>
</tr>
<tr>
<td><em>Corruption as obstacle to business</em></td>
<td>0.89</td>
<td>0.88</td>
</tr>
<tr>
<td><em>Unofficial payments or gifts to get things done with government</em></td>
<td>0.85</td>
<td>0.86</td>
</tr>
<tr>
<td><em>Unofficial payments/gifts when dealing with customs</em></td>
<td>0.75</td>
<td>0.79</td>
</tr>
<tr>
<td><em>Unofficial payments/gifts when dealing with courts</em></td>
<td>0.80</td>
<td>0.85</td>
</tr>
<tr>
<td><em>Unofficial payments/gifts when dealing with taxes and tax collection</em></td>
<td>0.88</td>
<td>0.82</td>
</tr>
<tr>
<td><em>Innovation capacity (INV)</em></td>
<td>$\alpha = 0.91$ CRC = 0.90, Ave = 0.70</td>
<td>$\alpha = 0.92$ CRC = 0.91, Ave = 0.71</td>
</tr>
<tr>
<td><em>Introduction of new products or services</em></td>
<td>0.79</td>
<td>0.85</td>
</tr>
<tr>
<td><em>Engagement in research and development</em></td>
<td>0.75</td>
<td>0.70</td>
</tr>
<tr>
<td><em>Discontinued product/service line</em></td>
<td>0.89</td>
<td>0.85</td>
</tr>
<tr>
<td><em>Upgraded existing product/service line</em></td>
<td>0.92</td>
<td>0.95</td>
</tr>
</tbody>
</table>

Table II The measurement model

Notes: *Composite reliability coefficient; AVE = average variance extracted
Table III Means, standard deviation and correlation coefficients (n=787)

<table>
<thead>
<tr>
<th>Variables</th>
<th>Mean</th>
<th>SD</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Regulatory quality</td>
<td>2.97</td>
<td>0.69</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. Rule of law</td>
<td>2.89</td>
<td>1.02</td>
<td></td>
<td></td>
<td>* 1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. Corruption</td>
<td>2.79</td>
<td>0.83</td>
<td>0.16</td>
<td></td>
<td></td>
<td>0.10</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. Innovation capacity</td>
<td>1.05</td>
<td>0.74</td>
<td>0.13</td>
<td>0.08</td>
<td>0.08</td>
<td>0.10</td>
<td>0.10</td>
<td>0.10</td>
<td>0.10</td>
<td>0.11</td>
</tr>
<tr>
<td>5. Capacity utilisation</td>
<td>74.83</td>
<td>15.89</td>
<td></td>
<td>0.09</td>
<td>0.08</td>
<td>0.09</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6. Sales growth</td>
<td>259.68</td>
<td>95.25</td>
<td>0.09</td>
<td>0.08</td>
<td>0.08</td>
<td>0.11</td>
<td>0.09</td>
<td>0.14</td>
<td>0.14</td>
<td>0.14</td>
</tr>
<tr>
<td>7. Firm size</td>
<td>98.52</td>
<td>21.79</td>
<td>0.08</td>
<td>0.06</td>
<td></td>
<td>0.07</td>
<td>0.15</td>
<td>0.11</td>
<td>0.10</td>
<td></td>
</tr>
<tr>
<td>8. Firm age</td>
<td>17.25</td>
<td>21.72</td>
<td>0.09</td>
<td>0.05</td>
<td></td>
<td>0.07</td>
<td>0.13</td>
<td>0.09</td>
<td>0.10</td>
<td>0.11</td>
</tr>
</tbody>
</table>

Note: * Significant at p < 0.05

Table IV International competitiveness of BRIC: 2012-2013

<table>
<thead>
<tr>
<th>Competitiveness indicators</th>
<th>Brazil</th>
<th>Russia</th>
<th>India</th>
<th>China</th>
</tr>
</thead>
<tbody>
<tr>
<td>Institutions</td>
<td>73</td>
<td>133</td>
<td>309</td>
<td>41</td>
</tr>
<tr>
<td>Innovation Capacity</td>
<td>49</td>
<td>85</td>
<td>301</td>
<td>35.6</td>
</tr>
</tbody>
</table>

Note: Ranks out of 144 countries and scores measured on a 1-7 scale where 1 = very weak and 7 = very strong

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Further Reading


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