
INDUSTRY CHOICE BY YOUNG ENTREPRENEURS IN DIFFERENT COUNTRY SETTINGS: THE ROLE OF HUMAN AND FINANCIAL CAPITAL¹

Dmitri KNATKO¹, Galina SHIROKOVA², Karina BOGATYREVA³

Graduate School of Management, St. Petersburg University,

3 Volkhovsky pereulok, St. Petersburg, 199004, Russia

E-mails: ¹d.knatko@spbu.ru; ²shirokova@gsom.pu.ru (corresponding author);

³k.bogatyreva@gsom.pu.ru

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Abstract. Entrepreneurial entry happens as a consequence of a general choice of an individual to become an entrepreneur. While most entrepreneurial entry studies rarely consider an industry choice to be an aspect of entrepreneurial decision making process, we address this issue taking into account individual, industrial, and country specific attributes. Using data from the Global University Entrepreneurial Spirit Students' Survey (2013–2014) on young nascent entrepreneurs and extending it with objective indicators derived from World Bank, Global Entrepreneurship Monitor, and International Property Rights Index datasets, we investigate how various factors impact the choice between knowledge-intensive and capital-intensive industries. Drawing on the RBV and contingency approach, we link an industry choice to the level of human capital development and access to financial capital testing for possible country-specific moderation effects. Our study contributes to entrepreneurial entry research stream extending the understanding of entrepreneurial entry decision making nuances related to individual access to resources and both industry- and country-level contingencies.

Keywords: entrepreneurial entry, industry choice, young entrepreneurship, innovation-driven economy, efficiency-driven economy, GUESSS.

JEL Classification: L26, M29.

Introduction

Entrepreneur's entry creates structural changes in industries and helps reallocate economy growth factors among different sectors (Noseleit 2015). In general, entrepreneurial entry research comprises a broad range of focus areas and usually explores various factors that drive individuals to participate in entrepreneurial process. Entrepreneurial entry is related to such environmental determinants as industry profit margins (Dunne *et al.* 1988), technology life cycle (Utterback 1994), economic growth stage (Reynolds

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et al. 1995), and cost of capital (Shane 1996). Additionally, entrepreneurs assess their own chances to pursue a market opportunity as a function of particular resources and skills they have at hand (Carroll, Mosakowski 1987; Acs, Audretsch 1989).

While the triggers of the general decision to become an entrepreneur are well documented in the literature (McCann, Folta 2012; Nocke 2006; Santarelli, Vivarelli 2007), the majority of studies treat entrepreneurial entry as an industry-independent action with only a few pieces taking into account series of industrial effects (Bates 1995; Bayus, Agarwal 2007; Lofstrom *et al.* 2014). However, specific industry conditions create a unique decision context, thus entrepreneurial entry studies that omit possible industry peculiarities may be biased by inter-industrial differences (Bates 1995). It may be inferred that the same applies to specific country conditions.

In this paper, we focus on the drivers determining young entrepreneurs' choice of an industry for their entrepreneurial entry. In particular, we explore the role of human and financial capital used by young resource constrained entrepreneurs while launching a venture in a particular industry. We further explore the contingencies which externally predetermine conditions of individual decision including the role of a country institutional development and industry characteristics, particularly whether the innovation- or efficiency-driven economies facilitate the link between different types of resources and the choice between knowledge- and capital-intensive industries among young entrepreneurs.

The paper proceeds as follows. We first examine the extant literature and develop the theoretical foundation for the study. Based on this foundation, a research model and a set of hypotheses are formulated. The research design used to test these hypotheses is then presented, followed by a discussion and future research directions. Finally, we proceed with the conclusion as well as with implications and limitations of our research.

1. Theory and research hypotheses

1.1. Resources and industry choice

According to the resource-based view (RBV) and empirical evidence from entrepreneurship studies, people's likelihood to become an entrepreneur is influenced by their access to valuable and unique resources (Alvarez, Buzenitz 2001; Barney 2001; Cetindamar *et al.* 2012). In order to start a venture an entrepreneur needs a bundle of various abilities and assets. However, the most important of them may be split into categories of human (Davidsson, Honig 2003) and financial (Schweinbacher 2007) capitals.

The concept of human capital is rooted in the idea that people possess skills, experience and knowledge that have economic value (Cetindamar *et al.* 2012). Prior entrepreneurial and managerial experiences provide greater repertoire of skills needed to start a new business (Kim *et al.* 2006). Young nascent entrepreneurs typically lack both of these useful insights sources; therefore, they should find another ground to facilitate their human capital development. University context can provide a pool of resources for students thus helping them to develop a viable new venture (Bae *et al.* 2014; Liñán *et al.* 2011; Zhang *et al.* 2014). The provision of different courses aimed to increase students' knowledge and skills, access to business contacts, networking and coaching offerings are critical to the formation of the opportunity recognition capability, which allows to

partly use education as a substitute of experience (Shane 2000; Zhao *et al.* 2005). This is especially important for knowledge-intensive industries, since such conditions require young entrepreneurs to have knowledge and be capable to spot and develop sometimes previously non-existent market opportunities.

Level of education is usually taken as a proxy for human capital (Shane 2000; Shepherd, DeTienene 2005). Education provides an individual with skills, knowledge, motivation and abilities to solve problems (Davidsson, Honig 2003). High level of education may be an important trigger for entrepreneurial entry to unleash in knowledge-intensive industries as it may serve as a predictor of an entrepreneur's proclivity to explore opportunities that are promising in terms of innovations and knowledge dissemination (Soriano, Huang 2013). Thus, we may assume that:

H1: The level of human capital development is positively associated with the likelihood of knowledge-intensive industry choice by young entrepreneurs.

Yet another cornerstone of entrepreneurial entry decision making process is financial capital availability (Schweinbacher 2007). Previous research showed that financial capital is crucial for a long-term success of start-ups as it creates a buffer against random shocks and provides more opportunities for capital-intensive strategic options (Cooper *et al.* 1994). Kim *et al.* (2006) argued that financial capital is one of the key factors encouraging a new venture establishment. Inability to get access to required financing is a common reason for exiting an entrepreneurial career path (Meier, Pilgrim 1994).

This issue is especially crucial for young nascent entrepreneurs who usually lack personal savings and "credit history" to get a bank loan. To overcome these difficulties, they look for any other potential ways to obtain additional subsidization. One of the possible opportunities is to receive financial support from families. Family financial assistance is of a particular importance for young aspiring entrepreneurs who often have promising business ideas, but lack the financial capital necessary to make a transition from entrepreneurial intention to action (Lévesque, Minniti 2011). Moreover, provision of financial means by family usually presumes less rigid conditions compared to other possible financial capital sources, thus giving a young entrepreneur more freedom in her actions (Colombatto, Melnick 2008). Additionally, family financial support creates a platform that allows attracting alternative investment sources as the business grows (Chua *et al.* 2011). This is especially important in the capital-intensive industries as conducting business in such conditions requires large investments on each stage of its development. Ergo, we assume that:

H2: A better access to financial capital is positively associated with the likelihood of capital-intensive industry choice by young entrepreneurs.

1.2. External environment and industry choice

Institutional aspect of entrepreneurial entry has received a considerable attention from academics. Institutions determine entrepreneurs' strategic choices which are directly connected to the specifics of entrepreneurial behavior (Bruton *et al.* 2010; Peng *et al.* 2008). Thus, objective environment conditions related to country settings may shape entrepreneurial intentions to enter a specific industry. Prior research provides an evi-

dence of various institutional variables, economic characteristics, and cross-country differences explaining the proclivity to entrepreneurship (Acs, Audretsch 1993; Bergmann, Stephan 2012; Freytag, Thurik 2006). These effects may be due to essential differences that predetermine countries allocation to various groups formed based on certain similarities they share.

One of many possible approaches to countries classification is to consider the variety of factors that drive their development. Building on this criterion, one may distinguish efficiency-driven and innovation-driven economies (Porter 1990). In efficiency-driven countries, firms depend on higher technological efficiencies in production, large markets for operations and economies of scale (Acs *et al.* 2008). They mainly apply capital and labor intensive market strategies. On the contrary, in innovation-driven countries enterprises rely on knowledge-intensive technologies, and innovativeness as a source of competitive advantage (Acs *et al.* 2008). Peculiarities that direct a country fall into one of the two groups may also increase entrepreneurs' proclivity to engage into relevant industries and increase the importance of corresponding types of capital. Therefore in such conditions a type of country may serve as a moderator for the relationship between different types of capital and industry choice. Thus, we suggest that:

H3a: The positive relationship between human capital and the likelihood of knowledge-intensive industry choice by young entrepreneurs will be stronger in innovation-driven countries.

H3b: The positive relationship between the availability of financial resources and the likelihood of capital-intensive industry choice by young entrepreneurs will be stronger in efficiency-driven countries.

The overall theoretical model is presented in Figure 1.

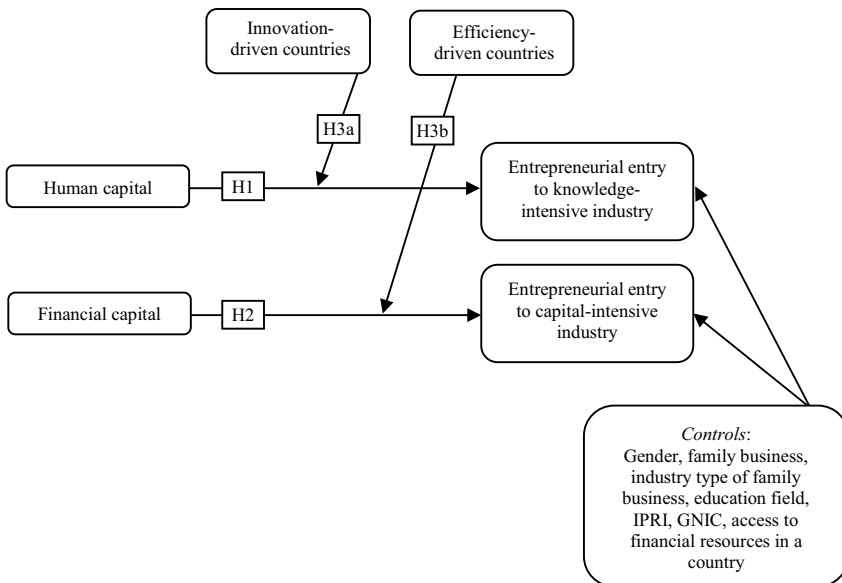


Fig. 1. Theoretical model

2. Method

2.1. Sample

Our research is based on the Global University Entrepreneurial Spirit Students' Survey (GUESSS) carried out in 2013–2014. GUESSS project is active since 2003 being initially created by the Swiss Research Institute of Small Business and Entrepreneurship from the University of St. Gallen. This survey is aimed at measuring university students' entrepreneurship attitudes, intentions and activities across different countries (Zellweger *et al.* 2011).

The 2013–2014 dataset included responses of 109,026 students from 34 countries and 759 universities. Questionnaire of the survey was developed by the core team of GUESSS project, and comprises well-tested scales that measure specific factors of context and respondents features (e.g. university context, family context, etc.). In each country, national representatives attract universities for participation in the project; they also are responsible for translating the questionnaire into national language. Each university, which partners with GUESSS survey distributes questionnaire to their students, and after forms are filled, data is collected centrally and then sent to the overall collection and preparation by the core team at the University of St. Gallen (Sieger *et al.* 2014). For the purposes of this study, we have narrowed the sample to the students who self-reported themselves as “active entrepreneurs” and to a subgroup of nascent entrepreneurs who have performed at least three crucial gestations on the way towards firm creation. We also dropped the responses from exchange students, post-docs, and faculty members to avoid possible biases in educational, cultural, and professional backgrounds. Moreover, in order to allow within-country variability, we excluded the cases with less than 10 respondents from a country. We also dropped countries that are not included in Global Entrepreneurship Monitor (GEM) 2014 study and International Property Rights Index survey. This resulted into a sample of 12,671 usable responses given by students coming from 28 countries. The students in our sample were on average 24.47 (SD = 5.01) years old, and 41.02% of them were female.

In order to address the missing data issue we used mean substitution approach (Afifi, Elashoff 1966) as the initial number of missing values accounted no more than for 3–5%. Posterior comparison tests revealed no imputation-related bias in the data.

2.2. Measures

2.2.1. Dependent variable

The dependent variable reflects the *choice of an industry type* by a young entrepreneur. Using the OECD industry classifications (OECD 2001) we have defined 6 industries as a high-technology and knowledge-intensive group (KTI industries) and 4 industries as a capital-intensive group (CTI industries). The former includes IT, education & trainings, consulting, health, and financial services while the latter comprises trade (wholesale and retail), construction, manufacturing, and engineering. Since two separate choices are made, we construct two dummy variables for each scenario: one for a knowledge-intensive industry choice and the other for a capital-intensive industry choice.

2.2.2. Independent variables

To assess young entrepreneurs' *human capital*, we created 4 dummy variables that capture their involvement into an educational program of undergraduate, graduate, PhD, and MBA levels. Each variable is a dummy variable that equals 1 if a respondent is on the corresponding education level and 0 otherwise.

Financial capital is operationalized with a 7-point Likert scale on assessing the following item: "How much do your parents support you during foundation of your firm in terms of financial resources (loan, equity capital, and other assets)".

Innovation-driven and efficiency-driven countries. The classification of countries was derived from 2014 Global Entrepreneurship Monitor (GEM) report (Singer et al. 2014) and includes countries with efficiency-driven (EDC) (Hungary, Mexico, Estonia, Romania, Russia, Argentina, Brazil, Colombia, Poland and Malaysia) and innovation-driven economies (IDC) (Austria, Australia, Belgium, Canada, Denmark, England, Spain, Finland, France, Germany, Greece, Israel, Italy, Japan, Luxembourg, Netherlands, Portugal, Singapore, Slovenia, Switzerland, and the United States).

2.2.3. Control variables

We control for entrepreneur's *gender* as males and females have different motivations and unequal chances to enter a selected industry successfully (Bates 1995). This variable is operationalized as a dummy variable coded as 1 if a respondent is female and 0 if he is male.

We also control for the presence of *family business* as a dummy variable coded as 1 if at least one of the student's parents is an entrepreneur and 0 otherwise. The importance of family entrepreneurial background for the entrepreneurial process to unleash has been confirmed by several studies (Arenius, Minniti 2005; Bhandari 2012).

For students who have an entrepreneurial family background, we control for *the type of industry* chosen by his or her parents. Family can provide the entrepreneurial role models and become a possible source of relevant human capital (Bosma et al. 2012). The industries of students' family businesses are classified using the same approach as for the dependent variable industry groups.

In order to control for a possible impact of a specific field of study, we introduce a dummy variable comprising students' involvement into *business, economic or law education*. It is coded as 1 if a respondent follows an educational program in these fields and 0 if otherwise.

With a purpose to control for the level of country institutional development, we use 2014 *International Property Rights Index* (IPRI). We also include a natural logarithm of *the gross national income per capita* (in PPP) (GNIC) derived from the World Bank database 2014². This measure has been widely used as a relevant predictor for entrepreneurial entry (Wennekers et al. 2005).

² The World Bank. 2014. *GNI per capita, Atlas method*. World Development Indicators [Data file], [online], [cited 13 March 2015]. Available from Internet: <http://data.worldbank.org/indicator/NY.GNP.PCAP.CD>

A general access to financial resources on a country level is another aspect that can affect entrepreneurial entry. We control for this factor by introducing a weighted national experts' assessment of financial resources availability for SMEs from GEM 2014 report. Descriptive statistics are presented in Table 1.

Table 1. Descriptive statistics

Variable	Mean	Std. dev.	Min	Max
CTI industries	0.284	0.451	0	1
KTI industries	0.386	0.487	0	1
Undergraduate	0.737	0.441	0	1
Graduate	0.204	0.402	0	1
PhD	0.028	0.166	0	1
MBA	0.022	0.148	0	1
Family financial assistance	3.511	2.216	1	7
EDC	0.583	0.493	0	1
IDC	0.416	0.493	0	1
Gender	0.410	0.491	0	1
Family business	0.417	0.493	0	1
Knowledge intensive industry of family firm	0.092	0.290	0	1
Capital intensive industry of parent's firm	0.161	0.368	0	1
Business. economic and law education	0.394	0.488	0	1
IPRI	3.511	2.216	4.4	8.5
Log GNIC	10.237	0.466	9.38	11.24
Access to finance on a country level	2.712	0.372	2.03	3.56

3. Results

On the first stage of the empirical analysis we estimated a two-steps model of logistic regression. The estimation is carried out for each group of industries separately. The results of the logistic regression analysis can be found in Table 2.

Higher level of education, such as Graduate, PhD and MBA education, provides statistically significant positive estimations in Models 1a, 2a (choice of knowledge-intensive industries). Therefore, we support the Hypothesis 1. As for the lower educational level (“Undergraduate education”), it increases a probability of entrepreneurial entry into capital-intensive industries (Models 1b, 2b).

Estimations of coefficients related to financial capital availability also coincide with our assumptions, thus supporting the Hypothesis 2. The results reveal positive significant estimations on this coefficient for capital-intensive industries and negative significant estimations for knowledge-intensive industries.

Moderating effects estimation shows an insightful outcome providing positive estimates on the interaction between innovation-driven country and undergraduate education for choice of knowledge-intensive industry (Model 2a), and of an interaction between innovation-driven country and PhD level of education for choice of capital-intensive industry (Model 2b). As for financial capital, the results imply that in efficiency-driven countries it would lead to a choice of both knowledge- and capital-intensive industries.

Table 2. Estimation results

Variable	Model 1a – KTI industries	Model 1b – CTI industries	Model 2a – KTI industries	Model 2b – CTI industries
Human capital				
Undergraduate	0.201	0.575**	0.159	0.602**
Graduate	0.502**	0.445*	0.487**	0.461*
PhD	0.737***	0.249	0.710***	-0.236
MBA	0.662***	0.424	0.627***	0.398
Financial capital				
Family financial assistance	-0.037***	0.053***	-0.057***	0.081***
Moderation effects				
IDC x Undergraduate	–	–	0.224**	0.008
IDC x Graduate	–	–	0.173	0.037
IDC x PhD	–	–	0.197	0.878***
IDC x MBA	–	–	0.217	0.198
EDC x Family financial assistance	–	–	0.034**	0.046**
Control variables				
Gender	-0.284***	-0.218***	-0.283***	-0.211***
Family business	-0.406***	-0.117**	-0.407***	-0.122**
KTI industries of parent’s firm	0.778***	-0.168*	0.780***	-0.162*
CTI industries of parent’s firm	-0.053	0.916***	-0.053	0.921***
Business. Economic and law education	-0.058	0.174***	-0.055	0.186***
IPRI	0.115***	-0.354***	0.092**	-0.382***
Log GNIC	-0.084	-0.099	-0.149	-0.077
Access to finance on a country level (GEM)	-0.014	0.603***	0.038	0.723***
Constant	-0.233	2.094***	0.388	-0.47
Number of observations	12671	12671	12671	12671
Log likelihood	-8252.71	-7256.53	-8250.30	-7247.41
Prob > chi2	0.000	0.000	0.000	0.000
Pseudo R2	0.03	0.04	0.03	0.04

Notes: *** p < 0.010 ** p < 0.05 * p < 0.10.

4. Discussion

4.1. Summary

Our study implies that young entrepreneurs derive benefits from specific resources such as human and financial capital. The unique bundle of resources that an entrepreneur possesses together with environmental contingencies determine the reasoning when answering the questions “Whether to do business at all” and “Where to do business?”. In the search for answers, entrepreneurs analyze both the environment where they intent to do business and their possibilities, shaping in this way a unique entry solution. Thus, the primary purpose of this study was to analyze factors that influence an entrepreneur’s decision to enter a specific kind of industry (knowledge-intensive and capital-intensive) using a sample of young entrepreneurs. We find that even though there is a direct link between access to resources and industry choice, country profile may significantly alter this relationship.

First, our findings indicate that with higher level of human capital development expressed as a stage on the education ladder there is a better chance of an entry into a knowledge-intensive industry, whereas access to financial capital predicts an entry into a capital-intensive industry. This finding generally is in line with the RBV (Barney 1991) and contingency perspective (Lawrence, Lorsch 1967): the importance of different types of resources is to a large extent context dependent, i.e., is defined by situational peculiarities intrinsic to a particular industry type.

Second, in innovation-driven countries, an undergraduate education level increases the probability to enter a knowledge-intensive industry, while a doctoral education level predicts an entry into a capital-intensive one. A possible explanation to that may be grounded on the following premises: younger individuals (those, who are usually involved into lower level educational programs) are more perceptive to knowledge spillovers and innovative spirit that characterize innovation-driven economies, while older individuals may still be more prone to enter less risky traditional capital-intensive industries.

Third, in efficiency-driven countries, a better access to financial capital increases the probability of entering both capital- and knowledge-intensive industries, the latter being rather unexpected. This may be due to a less constraint framework for innovative projects development as with larger financial capital young entrepreneurs have more freedom to transform their creativity into knowledge-intensive initiatives.

With these findings, we confirmed that those few prior academics who combined in their research entrepreneurial entry with specific industry context have indeed found a great research niche (Bates 1995; Lofstrom 2014). Even with using a somewhat simplified approach to industrial context, we have shown that different entry logic may be inferred. When we compare capital-intensive and knowledge-intensive industries – we see that having specific resource at hand is critically important to explain probability of entry. At the same time, we extend this discussion by showing that an even more complicated mechanism may exist in terms of interaction of overall economic dynamics (country

economy type, and its influence on industrial dynamics) with industrial factors. When we compare efficiency-driven countries with innovation-driven countries – we see that resources may have different value in different contingencies, therefore altering the logic behind the entry decision. A further modelling of industrial discourse and its influence on industry entry, including inter- and intra-industrial aspects, may show a further explanatory potential.

4.2. Theoretical contributions

Our study contributes to the entrepreneurial entry literature in the several ways.

First, we reveal a complex mechanism for making an entrepreneurial entry decision based on specific attributes of both individual and industrial levels explaining tacit nuances of entrepreneurial entry process. While the existing studies in the field mostly focus on triggers of a general decision to become self-employed (McCann, Folta 2012; Nocke 2006; Santarelli, Vivarelli 2007), we reveal the determinants of a particular industry choice showing that the industry choice process is by nature no less intricate than the entrepreneurial process itself.

Second, while the RBV is usually being employed to investigate the triggers of a general decision to pursue an entrepreneurial career (e.g., see Alvarez, Buzenitz 2001; Cetindamar *et al.* 2012; Kim *et al.* 2006), we extend its application to a specific industry selection process. In particular, we show that access to different resources may determine not only the general desire to become an entrepreneur but also the industry type preferences.

Finally, drawing on the interplay between entrepreneurship theory and contingency approach, we demonstrate the importance of country characteristics in the relationship between individual's resources and a particular industry choice. While the role of country settings has well been documented in the literature on general proclivity towards entrepreneurship (Acs, Audretsch 1993; Bergmann, Stephan 2012; Freytag, Thurik 2006), we expose the role that country developmental patterns (innovation-driven versus efficiency-driven) play in the formation of the relationship between resources and industry choice.

4.3. Practical implications

Our study has certain practical implications for young entrepreneurs, entrepreneurship educators, and developers of entrepreneurship support policy. We demonstrate that an entrepreneurial process is related to a complex set of contingencies that includes both entrepreneur's resources and perception of environmental opportunities, as well as peculiarities of economic context. This should be taken into account at various stages of venture development both by aspiring entrepreneurs who plan to entry a particular industry type and have to accordingly seek for the crucial resources and by entrepreneurship educators who assist them in their human capital advancement.

At the same time, policy makers may draw on these insights while developing entrepreneurship promoting programs and initiatives. In particular, the results of this study might

help design specific programs aimed at the entrepreneurship development in particular sectors in that they will be able to take into account resources- and country-related triggers encouraging entrepreneurs to enter the focal areas.

4.4. Limitations and future research avenues

This study should not be considered without taking into account a set of limitations. First, we apply a somewhat simplistic view of industrial effects based on a niche-kind industries classification (knowledge-intensive and capital-intensive industries). This creates a multiplicity of possible drawbacks in explaining issues like inter-industry differences and intra-industry complications (Sharp *et al.* 2013). Therefore, future studies may address other approaches to assessment of entrepreneurial industrial entry, including mono-industry models and multiple industry entry models.

Second, we use the cross-sectional data, which results in a short-term decision making perspective. We assume that future research will benefit from longitudinal data usage (e.g., Panel Study of Entrepreneurial Dynamics), as it will allow to observe multiple stages of entrepreneurial decision making process developing over time.

Third, we consider a limited number of moderation effects using only country types; however, more complex impact of the interplay between cultural and institutional contingencies may be the case for further investigation. For instance, institutional and cultural aspects, such as in-group collectivism, uncertainty avoidance, educational systems, and political stability have a complex influence on innovation levels thus driving entrepreneurs to develop knowledge-intensive projects (Nam *et al.* 2014). Therefore, further studies might take into account a broader range of possible factors that trigger a particular industry choice.

Conclusions

Entrepreneurial entry decision is inseparable from entrepreneur's choice of specific industry where she plans to launch a venture. Yet, the entrepreneurship research mostly focuses on entrepreneurs' entry decisions without paying attention to a particular industry and country context. Addressing the declared research gap, this study contributes to an emerging literature branch that reveals crucial differences in multi-industry decision settings driving young entrepreneurs to a certain industry choice. In particular, we expose the role of human and financial capital in the process of choosing between different industry types demonstrating the ability of the former to strengthen the probability of entering knowledge-intensive industries and the importance of the latter in enhancing the proclivity to enter capital-intensive industries. Going beyond that, we also reveal the moderating effects of innovation- versus efficiency-driven country settings providing new insights on how the role of different types of resources in the industry choice process can change.

This study contributes to the entrepreneurial entry literature revealing the specific parameters that shape the trajectory of industrial entry process. Additionally, we extend the application of the RBV and contingency approach towards the phenomenon of en-

trepreneurial entry scrutinizing the country specific contingencies able to modify the role of particular resources in the industry choice process.

The results of this study may help design entrepreneurship support programs especially those focusing on encouraging entries into particular industry types. They also may be of value for entrepreneurship educators who are in charge of university based entrepreneurial resources provision. Finally, they may provide insights for potential entrepreneurs who are planning an entry into either knowledge- or capital-intensive industry.

The results of the study should be considered with allowances made for limitations. Namely, we apply a niche-kind industry classification, base our analysis on cross-sectional data, and focus only on country types moderating effects. Therefore, further research may benefit from consideration of mono- and multi-industry models, usage of longitudinal data, and analysis of a broader set of moderating variables.

Disclosure statement

D. Knatko, G. Shirokova, and K. Bogatyreva report no financial interests or potential conflicts of interest.

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Dmitri KNATKO is an assistant professor of Strategic and International Management Department at St.Petersburg University Graduate School of Management, Russia and an active entrepreneur. Dmitri has participated in several research projects studying influence of institutional aspects of emerging market conditions on small and medium sized business and management transition. His research interests are entrepreneurship, institutional theory, corruption, business development, management transition. He is an author of six articles in academic journals including *Journal of Business Economics and Management*, *International Journal of Entrepreneurial Behaviour & Research*, *Journal of Ethics & Entrepreneurship*.

Galina SHIROKOVA (Corresponding author) is a Professor of Strategic and International Management Department at St.Petersburg University Graduate School of Management, Russia. Her research interests include entrepreneurship in emerging markets, entrepreneurial orientation, and student entrepreneurship. Galina Shirokova is Director of the Centre for Entrepreneurship in St. Petersburg University and one of the founders of the Russian Association for Entrepreneurship Education. She is an author of more than 90 publications, including 60 articles in academic journals and 18 cases about Russian entrepreneurial firms. Her publications have appeared in such journals as *Entrepreneurship Theory & Practice*, *Journal of Small Business Management*, *Journal of Business Economics and Management*, *European Journal of International Management*, *Journal of Entrepreneurial Behaviour & Research*, *Journal for East European Management Studies*, *International Journal of Entrepreneurship and Innovation* among others.

Karina BOGATYREVA is a junior researcher at St.Petersburg University Graduate School of Management, Russia. She holds a bachelor degree in international management and a master degree in economics. She has recently graduated from the GSOM SPbU doctoral program having defended her dissertation to acquire the candidate of sciences degree. Her research interests are entrepreneurial orientation, student entrepreneurship, effectuation theory, and intention-behaviour translation in entrepreneurship.