

St. Petersburg University  
Graduate School of Management

Master in Management Program

**THE RELATIONSHIP BETWEEN INTELLECTUAL  
CAPITAL OF BOARD OF DIRECTORS AND IPO  
PERFORMANCE OF RUSSIAN COMPANIES:  
COMPARATIVE ANALYSIS OF MOEX AND LSE**

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## ЗАЯВЛЕНИЕ О САМОСТОЯТЕЛЬНОМ ХАРАКТЕРЕ ВЫПОЛНЕНИЯ ВЫПУСКНОЙ КВАЛИФИКАЦИОННОЙ РАБОТЫ

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Ключевые слова	Совет директоров, Интеллектуальный капитал, Человеческий капитал, Социальный капитал, IPO, Московская Биржа, Лондонская Фондовая Биржа.

## ABSTRACT

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Master Thesis Title	The Relationship Between Intellectual Capital of Board of Directors and IPO Performance of Russian Companies: Comparative Analysis of MOEX and LSE
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Description of the goal, tasks and main results	<p>The aim of this paper is to analyze the relationship between different elements of intellectual capital of board of directors and IPO performance, using evidence from Russian companies which went public on MOEX and LSE.</p> <p>To achieve this goal the following research objectives should be reached:</p> <ol style="list-style-type: none"> <li>1. Study the theoretical background on Intellectual Capital of Board of Directors;</li> <li>2. Analyze previous research on Board's Intellectual Capital impact on financial and IPO performance;</li> <li>3. Propose an empirical methodology for the analysis of Intellectual Capital's impact on IPO performance;</li> <li>4. Build and describe a sample for the analysis;</li> <li>5. Conduct an empirical study on the built sample;</li> <li>6. Interpret results and provide managerial implications based on the findings;</li> <li>7. Apply the findings to explain the difference in IPO success level on MOEX and LSE.</li> </ol> <p>For the empirical study the sample of 101 Russian companies which had IPOs from 2002 to 2016 on MOEX and LSE was taken. The data about board of directors was collected from IPO prospectus, annual reports and SPARK database.</p> <p>The research findings indicate that there is a significant relationship between elements of intellectual capital of board of directors and firm IPO performance, and this relationship is different for MOEX and LSE. In case of MOEX director's average industry experience and presence of ties to federal government are positively related to IPO performance, whereas for LSE the only positively related variable is board's average tenure, while board's average industry experience, share of foreign directors and ties to federal government have negative impact on IPO results.</p>
Keywords	Board of directors, Intellectual Capital, Human Capital, Social Capital, IPO, MOEX, LSE

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## INTRODUCTION

Within the context of current economic slowdown Russian business seeks to attract additional financing to ensure sustainable growth. However, as the sanctions imposed against the state also included the deprivation of loan financing on European and US markets, the options left are to look for credit financing on alternative markets or opt for equity funding. The latter in some cases implies conducting Initial Public Offering (IPO) to raise funds. Apart from fulfilling the main objective, IPO has additional benefits such as a positive impact on firm's reputation, increased transparency as well as higher liquidity.

In 2014 Russian IPO market was at the lowest point in its development with the retail chain Lenta being the only company conducting public offering. However, according to Baker, McKenzie, & Oxford Economics (2015) the market is predicted to grow in the following years. This once again bring up the question about the choice of the stock exchange for the IPO. From 2005 to 2014 London Stock Exchange was the most popular choice with 47% of the deals followed by MOEX with 42% of the deals (PWC, 2014). Nevertheless, the impact of the stock exchange on the IPO underpricing still has received limited coverage in research publications. Foreign and domestic investors may have different perception of various aspects of the company and its performance.

One of the crucial aspects which investors evaluate prior to IPO is the corporate governance. For example, at LSE companies are encouraged to develop strong governance procedures and are advised to achieve the key elements set out in UK Corporate Governance Code (LSE, 2012).

Board of directors, being a central corporate governance mechanism, is especially relevant for such matter as IPO, as it is considered to be the future major link between the company and its shareholders. There are different perspectives on the role of the board and the impact of its attributes on firm performance. One of them is an intellectual capital framework. Board members provide intellectual capital which according to multiple empirical studies has a positive relationship with different aspects of company performance. IPO results were also analyzed from this perspective (Banerjee and Rangamani, 2014; Darmadi *et al.*, 2013; Pan *et al.*, 2012; Thorsell and Isaakson, 2014).

However, there are few research papers studying intellectual capital of boards of directors of Russian companies especially in their relationship with IPO. Nonetheless, the surveys by PwC (2015), which are partially based on the interviews with directors of top Russian companies, indicate not only the growing influence of the boards on corporate strategy, but also a high value assigned for different elements of intellectual capital, such as, for example, experience in financial

sector and ties to government bodies (PwC, 2015). Despite these tendencies, there is no evidence of intellectual capital's influence on the investors' perception and, for example, IPO perspectives.

Thus, the aim of this paper is to analyze the relationship between different elements of intellectual capital of board of directors and IPO performance, using evidence from Russian companies which went public on MOEX and LSE.

The research goal can be broken down into the following research objectives:

1. Study the theoretical background on Intellectual Capital of Board of Directors;
2. Analyze previous research on Board's Intellectual Capital impact on financial and IPO performance;
3. Propose an empirical methodology for the analysis of Intellectual Capital's impact on IPO performance;
4. Build and describe a sample for the analysis;
5. Conduct an empirical study on the built sample;
6. Interpret results and provide managerial implications based on the findings;
7. Apply the findings to explain the difference in IPO success level on MOEX and LSE.

The paper has the following structure: introduction, chapter 1 containing theoretical background of intellectual capital of board of directors and a review of prior empirical studies, chapter 2 devoted to the empirical study and conclusion.

The first chapter starts with introducing board of directors as a central corporate governance mechanism. Four different perspectives are applied for defining the board's function and its attributes which influence company performance. Then, intellectual capital is introduced as alternative framework to answer these questions. After analyzing theoretical background of the concept, we proceed with analyzing previous empirical studies on the impact of different elements of intellectual capital on various aspects of firm performance and identify the research gap.

The second chapter is devoted to describing the methodology of the empirical study, the study itself and to discussion of the obtained results. The sections of the chapter cover hypotheses development, sample selection, data description, linear regression model and its variables. The obtained results are analyzed in order to derive research findings and managerial implications. In the final part of the chapter the limitations of the study and suggestions for further research are being discussed.



## **CHAPTER 1. INTELLECTUAL CAPITAL OF BOARD OF DIRECTORS AS A POTENTIAL DETERMINANT FOR IPO PERFORMANCE**

### **1.1. Board of directors as a central corporate governance mechanism**

According to OECD, corporate governance framework should promote transparent and fair markets together with efficient allocation of resources. It should be consistent with the rule of law and support effective supervision and enforcement (OECD, 2015). Board of directors is a central mechanism of this framework which should ensure:

- Strategic guidance of the company;
- Effective monitoring of management;
- Board's accountability to the company and the shareholders.

Board of directors is appointed or elected by shareholders to run the company on their behalf (ACCA, 2012). There is no general formula for the board's composition. The number of directors may differ for each individual company and the requirements for their qualification are established by the legislation of particular country. However, there are general classifications for the types of directors. These classifications are relevant for this study as the board's composition is one of the main attributes of the board which determines its performance.

The first classification distinguishes executive, non-executive and independent directors. Executive directors are involved in the day-to-day management or are full-time salaried employees of the company or its subsidiary (Deloitte, 2014). They are intended to provide expertise about the actual state of business and should defend the interests of the company, which may be different from the interests of the management team.

Non-executive directors are not involved in management of the company and act as providers of objective judgment. Non-executive directors should meet without the executive directors several times per year in order to evaluate performance and actions of the executive management team (ACCA, 2012). Independent director is a type of non-executive director who is not involved in management of the company, neither is a representative of a shareholder or has any kind of interest in the company. In other words, independent director is not involved in any kind of business relationship with the company (ACCA, 2012).

The second classification divides board's members in two groups: outside and inside directors. Basically, given classification replicates the first one as inside directors are both executive and non-executive ones, whereas independent directors are outside ones.

It is also important to mention that there are two types of boards of directors: unitary boards and two-tier boards. Unitary boards are typical for Anglo-Saxon law and imply that company's directors serve together in one board comprising both executive and non-executive directors

(ACCA, 2012). Two-tier boards can be found in European countries. Executive directors comprise the management board and deal with such issues as establishing company's objectives and implementing necessary measures. Meanwhile, non-executive directors in the supervisory board deal with monitoring these decisions on behalf of other parties.

Despite the existence of different definitions of board of directors' functions, there is no overarching framework for them, as there is an ongoing discussion about board's role and its impact on company performance among researchers in the corporate governance field. In their review of both theoretical and empirical research on the roles of the board Zahra and Pearce (1989) determined four different prominent perspectives on the issue under consideration. Each perspective defends its own view on the role of the board and its attributes effecting the performance of the company.

#### *Legalistic perspective*

This perspective is built on corporate law and states that board's responsibilities are limited by respective legislation. This way the functions of the board are:

- Selecting and replacing CEO;
- Representing shareholders' interests;
- Advising and controlling top management of the company.

Regarding the features of the board which influence the performance of the company, advocates for legalistic perspective distinguish four of them: board composition, its characteristics, structure and processes. Board's composition covers its size, distribution between outside and inside directors and presence of ethnic minorities and women. Characteristics of the board is quite a broad term which covers both individual characteristics of the directors (age, experience, education, stock ownership etc.) and collective ones (focus on external or internal issues, independence etc.). Structure of the board means its organization, number and types of committees and division of labor between them. Board's processes imply decision-making activities and the management style of the board.

These four attributes determine company's performance in two primary roles: service and control. Service involves giving counsel to the executive team, establishing useful relationships in the community and enhancing company's reputation within it (Carpenter, 1988). Control means evaluating both CEO's and company's performance from the shareholders' interests perspective (Chapin, 1986).

One can argue for the following limitations of this perspective:

- Legalistic approach tends to ignore possible contributions of the board into cooperation with different actors of the external community as well as into developing and implementing the strategy of the firm;
- Empirical research with such approach primarily focuses on board composition, this way underestimating the importance of the board's structure and processes;
- The link between board's attributes and its roles and performance is relatively indirect.

#### *Resource dependence theory*

Resource dependence perspective is based on sociology and organizational theory and perceives the board as a mechanism to supply executives with timely information and resources vital for company's success. This way firm's reputation in the community and efficiency of its management operations are supposed to be enhanced.

This perspective distinguishes only two main attributes of the board influencing its performance: composition and characteristics. However, they are linked to three roles of the board as service and control are combined with strategy. That shows that advocates for resource dependency perspective have a broader view than the one for legalistic perspective. Strategic role does not directly imply development and execution of the strategy, but rather counseling the CEO in this field.

Resource dependence perspective is subject to certain limitations too:

- The exact strategies for board's interaction with external environment are not covered by this concept;
- There are limited empirical findings on how firms fit board's composition to the environment and how it exactly influences company's performance.

#### *Class Hegemony theory*

Class hegemony perspective can be directly linked to the Marxist sociology (Mills, 2000). The board is perceived as the instrument of ruling capitalist elite for extracting wealth. One of the main arguments for this perspective is an exclusive nature of board membership with exclusion of most social groups.

The theory argues for three main attributes of the board: composition, characteristics and processes resulting in the same board's roles as in the legalistic approach: service and control.

The approach has serious limitations:

- There is not much empirical evidence on how exactly the boards extract wealth;

- The approach ignores the modern trends when intuitional investors such as pension funds hold corporate stocks. This way the boards are enriching the society rather than a group of capitalists.

#### *Agency theory*

Agency theory perspective can be called the dominant one among corporate governance studies on contribution of boards to firm performance. This theory is built around contradiction between agents (executives) and owners (shareholders). The board of directors in this case executes a critical function of control and monitoring management to align its actions with shareholders' interests.

Agency theory argues for all the four attributes of the board similarly to legalistic perspective, but puts more emphasis on the processes part, especially on decision making process. With regards to composition of the board, it is important to mention that in agency theory the predominant view is that an effective board is comprised of outside directors (Dalton and Daily, 1998). This point of view is backed by empirical research proving outsider's positive effect on shareholder wealth (Rosenstein and Wyatt, 1990).

Apart from control function, which is the core one, agency theory also stands for service and strategy functions. From this perspective, it can be called an overarching one. Agency theory argues for the importance of high proportion of non-executive directors as one of the prerequisites for the effective execution of control function (Fama, 1980). The rationale is that non-executive directors are not pursuing the same interests as company managers.

However, agency theory is also not immune for limitations:

- Agency theory perspective ignores the trend towards enhancing working conditions as a main measure to overcome opportunistic behavior of the executive team;
- There is limited empirical research proving the impact of monitoring function on the company's performance.

Having briefly analyzed the main points of the four perspectives, we can see that in the approach *attributes – functions – impact on performance*, these perspectives not only differ with regards to the functions of the board, but in determining the attributes as well. Apart from that, even if we take the broadest perspective on the attributes which gives us four them, it is apparent that these categories are too broad, and the framework does not embrace the whole spectrum of the board features. That is why, starting from the 1990s in the scientific society the researchers started to develop an alternative way to systemize board's features providing a possibility to measure them and their impact on the performance of the firm. This is an intellectual capital framework which would be analyzed further.

## **1.2. Intellectual capital of board of directors**

### **1.2.1. Theoretical background of intellectual capital**

During the last decades, there is a clear trend showing that physical assets, such as plants, equipment and property, commonly recognized on the balance sheet, have decreased in their importance and impact on the market capitalization of the company, giving the ground to more intangible forms of capital known as intellectual capital (Isaac *et al.*, 2010; Marr, 2008; Wang, 2008). A vivid example of this trend is that Uber, a taxi aggregator having mostly intangible assets on its balance sheet, has higher market capitalization than BMW, the actual car manufacturer with 30 manufacturing facilities in 14 countries on 4 continents. More than that, intangible assets represent only one element of intellectual capital, whereas its major part is not reflected in the balance sheet at all.

The strategic impact of intellectual capital is never in question. In modern business environment, capturing, codification and circulation of information together with acquisition of new competencies via training and development results in re-engineering of business processes. This way, present and future success in competition is based on strategic knowledge management rather than on strategic allocation of physical and financial resources (Bontis, 1998).

In the field of corporate governance the concept of the intellectual capital gained importance and recognition in the beginning of the 21st century due to a vast number of empirical research starting from 1998. These studies confirmed the strategic impact of intellectual capital on the firm performance and its possible role of the key differentiator in the level of company's success (Clarke *et al.*, 2011; Khan, 2014; Maditinos *et al.*, 2011).

#### *Intellectual capital framework*

Before proceeding to the intellectual capital of board of directors, it is necessary to provide a general classification of intellectual capital and emphasize the key points about each of its subcomponents. Generally, intellectual capital is divided into 3 main subcomponents: human, social and structural capital (Figure 1). Social capital is the most discussable term as in different theoretical research one can find such alternatives as relational (Marr, 2008) and customer capital (Bontis, 1998).

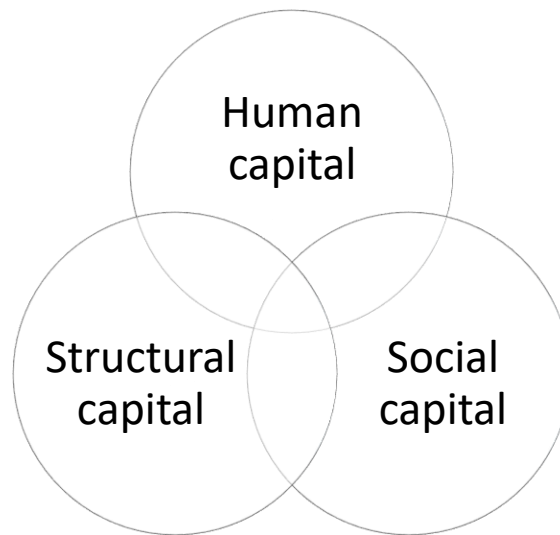


Figure 1. Structure of the intellectual capital

Human capital includes both a broader consideration of total human resources of the company and more specific characteristics of individual employees which constitute their professional competence, i.e. knowledge, skills, experience etc. (McGregor, Tweed, & Pech, 2004). The theory of human capital gained importance in the middle of the 20<sup>th</sup> century, as it was considered to be a separate factor of economic growth in the neoclassical economic growth model developed by Robert Solow, for which he was awarded a Noble Prize in 1987. From then on, a lot of studies on the influence of human capital on firm performance have been conducted.

The elements of human capital can be divided in two following groups. First, the concept of human capital covers all the relevant demographics of the company's employees, meaning age, education, gender, ethnicity etc. (Johnson *et al.*, 2012). Second, it concerns various aspects of their experience, such as industry experience, experience as CEO, previous employment in financial institutions and other relevant fields.

Structural capital deals with mechanisms and structures of the company which are supposed to support employees in their efforts for optimal intellectual performance and overall firm success (Bontis, 1999). It can be divided into 2 parts, which are process and innovative capital. Process capital includes organizational culture, procedures and rules. These elements allow for development of intellectual capital of the company, as without them the company can be perceived only as a cumulative human capital of its employees. A vivid example of the role of process capital is the Silicon Valley with its “embrace failure” culture. This supportive culture is an element of structural capital which promotes learning by trying and doing things and, this way, facilitates value creation from the human capital. As for innovative capital, it includes intangible assets of the company such as patents and know-how.

Social capital, as it was previously mentioned, is the most broad and discussable concept. Adler and Kwon (2002) collected 24 different definitions of social capital which can be systemized into two categories, focusing on external and internal ties respectively. Internal ties perspective puts the main emphasis on relations of the actors of the company with each other, their ability to act as a group, whereas external ties concept covers relationships with actors from outside the firm. One of the examples of external perspective is the definition by Bontis (1998): “Social capital comprises the knowledge embedded in all the relationships an organization develops, whether it is with customers, competitors, suppliers, trade associations or government bodies”. Fukuyama’s (1997) "the ability of people to work together for common purposes in groups and organizations" is an example of internally oriented definition. Adler and Kwon (2002) attempted to synthesize these two perspectives into one definition and proposed “Social capital is the goodwill available to individuals or groups. Its source lies in the structure and content of the actor's social relations. Its effects flow from the information, influence, and solidarity it makes available to the actor”.

### *3 dimensions of social capital*

Nahapiet and Ghosal (1998) argued for 3 dimensions of social capital: structural, relational and cognitive one. The distinction between structural and relational dimensions is built upon the discussion about structural and relational embeddedness (Granovetter, 1992). Structural embeddedness concerns the network between the actors, its presence or absence, configuration, density and hierarchy. Relational embeddedness, in its turn, covers personal relationship developed between the two actors. The idea is that people may have the same position in the network (structural dimension), but have special attitude for different networks which determines the nature of their relationship. The cognitive dimension refers to the resources facilitating shared interpretation among the parties concerned. This conceptualization recognizes that both the tie and the nature of that tie are important.

### *Benefits of social capital*

One main direct benefit of social capital is information. Social capital facilitates access to broader sources of information and improves information's quality, relevance, and timeliness (Adler and Kwon, 2002). The type of information may differ from updates about the latest research in the field to job opportunities and innovations. The important aspect of these benefits is that they can lead to the positive externalities not only for a person itself, but for the broader aggregate.

The second type of benefits is power benefit. It can be derived from the ties with powerful organizations such as government institutions or from the ties within the network of people having obligation for a person. These power benefits help the actors to protect their interests and get things done.

The third benefit of social capital is solidarity, namely, closure and trust. This benefit is primarily derived from internal ties. An atmosphere of trust within the company triggers higher commitment level and, consequently, lowers monitoring and controlling costs.

However, for every benefit there is its risk. First of all, maintaining a broad network of external contacts requires permanent costs. The cost efficiency of this activity is discussable and quite often does not pay off. Second, there is a trade-off between information and power benefit. In order to get maximum information benefits, one should maintain as broad number contacts as possible, whereas power benefits can be derived only from longstanding relationship requiring time investments. More than that, the dependency in case of power benefits is mutual, so the second party can be against some contacts in case of the conflict of interests. Third, solidarity is a great benefit, but sometimes it may lead to inertia within the firm which hinders the innovation activities.

*Intellectual capital of board of directors*

Overall, judging by a brief analysis of the three main elements of intellectual capital, we can see that as far as board of directors is concerned, the concepts of human and social capital are applicable, whereas structural capital is more relevant for the organizational level. This approach is reflected in the academic literature as most of the research papers, both theoretical and empirical ones, are mainly focused on human and social capital of board of directors (Figure 2).

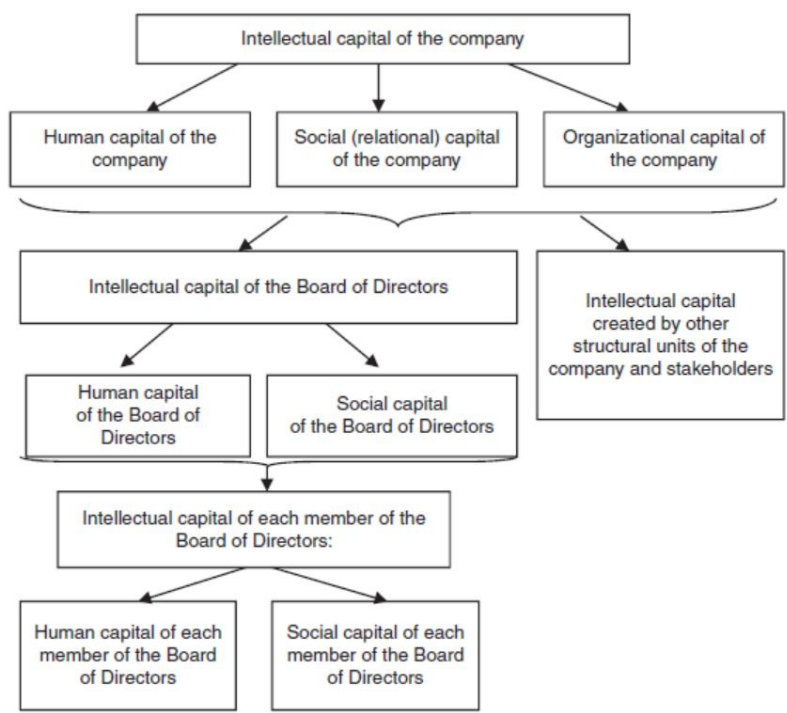


Figure 2. Framework to define the elements of intellectual capital of board of directors  
 Source: Berezinets *et al.* (2016), p. 637.



The main findings of the theoretical studies would be discussed in the next sections.

### **1.2.2. Human capital of board of directors**

The provision of human capital is the actual reason of appointing individuals to the board of directors (Volonte, 2016). This point of view is more related to resource dependency theory than to agency theory, as the latter does not demand different skills from the directors to execute their functions.

#### *Demographic characteristics*

The general classification of human capital elements can be applied to the level of board of directors as well. As far as demographic characteristics are concerned, they are traditionally analyzed from the standpoint of their relationship with the board's overall efficiency, decision-making strategies and firm financial performance (Forbes & Milliken, 1999). One of the most controversial variables is such fundamental one as an average age of the board's members. The key point is that it serves as a proxy for both experience and risk aversion (Johnson *et al.*, 2013). Consequently, it is claimed to have both positive and negative relationship with firm performance depending on the challenges from the external environment.

The same logic can be applied to such characteristic as directors' education level. The degrees held by the board's members per se do not guarantee positive impact on the firm well-being. While it is generally agreed on that the educational level has zero or positive impact on company's value and its financial results (Kim & Lim, 2010; Rose, 2007), several studies suggest that innovation level can be negatively influenced by presence of highly educated directors (Wincent *et al.*, 2010).

Such parameters as gender, race and ethnicity can be analyzed together, as they contribute to the overall level of diversity of the board. Similarly to age and education, there are mixed findings about its impact, claiming negative, zero or positive relationship between diversity and various aspects of firm performance (Carter *et al.*, 2010; Nielsen and Huse, 2010; Post *et al.* 2011).

Another important demographic characteristic is citizenship. For some countries the presence of foreigners adds additional value in terms firm's perception by the market (Choi *et al.*, 2012). However, it is worth remembering that the board should include the directors from the home country, which once again brings up the question about the required level of diversity.

Overall conclusion for the demographic part is that these parameters should be analyzed in close relationship with skills and experiences of the directors and can't serve as stand-alone proxies for hypotheses formulation.

### *Independence*

The level of independence is mostly a structural element of the board, but it can be also linked to the human capital concept. As independent directors bring outside expertise and are not subject to developing any biases about firm performance, they are said to have positive impact on the company's performance.

Since demographic characteristics are said to be analyzed together with skills and experience of the board's members, the latter ones also require certain systematization. Having analyzed the theoretical approaches to this issue, we propose a following classification.

### *Industry experience*

Industry specific experience may bring additional value to the board of directors. Within the context of the same industry, an experienced director in the field can bring additional insights on the ways to overcome them and contribute to the faster adoption for volatile external environment. The study by Drobetz *et al.* (2016) confirmed this assumption by identifying positive relationship of board's industry experience not only with firm's value, but also with the level of success of the investment decisions. This element can be of a particular value in combination with independent status of directors for young entrepreneurial firms, as they can compensate the lack of expertise of their executive directors by appointing outside industry experts to the board (Kor and Misangyi, 2008).

### *Other relevant experience*

Depending on the type of activity the company is carrying out as well as on its strategic plans, the company may seek to appoint the directors with expertise in the respective field. One of the most commonly adopted one in the theoretical research of board's intellectual capital is financial expertise. Various studies confirm the tendency to appoint directors from the fields of earnings management (An and Jin, 2004), venture capitalism (Kroll *et al.*, 2007). Other fields of interest are M&A and post-integration experience (Kroll *et al.*, 2008; McDonald *et al.*, 2008). However, it should be pointed out that, despite having a clear evidence for this tendency, it is hard to empirically prove the impact of these appointments, as their effect is needed to be separated from the one of other relevant factors.

### *Organizational tenure*

Organizational tenure implies previous experience in the analyzed board of directors. The underlying assumption is that this experience helps to build a company specific expertise as well as to establish fruitful collaboration with other directors, which is the focus of the social capital section. However, this variable is believed to have U-inverted relationship (Musteen *et al.*, 2010) with both strategic and reputational aspects of firm performance. This means that after a certain

threshold a group of directors would experience a decrease in efficiency of their performance due to co-created biases and degrading motivation.

#### *Human capital heterogeneity*

This is the variable which represents an attempt to measure the overall effect of all elements of human capital of board of directors. However, there is no commonly approved view on the level of heterogeneity. It seems clear that the company should aim at diversity of its board, but at the same time after a certain level this heterogeneity may result in conflicts and lead to low efficiency of the board (Haynes and Hillman, 2010). So, we can conclude that this variable would also has the U-inverted relationship with firm performance, which leads to the idea that human capital of board directors should be analyzed in interdependence with the social one.

#### **1.2.3. Social capital of board of directors**

From the theoretical introduction on social capital based on the literature review by Adler and Kwon (2002) we know that this concept embraces two perspectives, internal and external one. Social capital of board of directors can be treated as implicit and intangible set of resources available by virtue of individual relationships of members of board of directors (Nicholson *et al.*, 2004). Similarly to the general concept, these relationships (ties) can be divided into two types, external and internal one. External ties of board of directors refer to linkages that involve others outside the organization, while internal ties involve interpersonal relationships between directors on the board (Barroso-Castro *et al.*, 2016). Board's ability to process information acquired externally through its directors' social connections depends on the degree of connectedness inside the board, as it favors trust and collaboration between board members, enhancing teamwork and cohesiveness inside the board (Kim and Cannella, 2008).

#### *External social capital*

Board's external social capital incorporates the level of outside connections of the board's members and the resources potentially derived from these connections (Kim, 2005). These resources are considered to serve as a source of competitive advantage. Thus, the primary function of external social capital is that of "bridging" the firm to the external environment. Its examples include outside directors' ties to the firms in which they are/were employed, seats on the board of other firms or social capital in the form of the director' personal relationships, affiliations, and social standing (Johnson *et al.*, 2013; Kim, 2005, 2007).

High intensity of external ties results in obtaining critical resources, namely information, power and solidarity benefits, which, in their turn, have a positive influence on firm performance (Carpenter and Westphal, 2001; Kor and Sundaramurthy, 2009).

If we apply the general classification of social capital benefits to the board of directors, we would receive a following classification. First, external ties provide channels for communication with the external environment (Carpenter and Westphal, 2001; Hillman *et al.*, 2000). Second, directors with a broad network can obtain support from influential agents or external stakeholders that may be critical to the organization's performance (Hillman *et al.*, 2000; Kiel and Nicholson, 2006). Third, the perception of legitimacy of decisions taken by the company's management team will be improved by the presence of board members who are highly connected to organizations with established business reputations (Kiel and Nicholson, 2006). This is the possible reason for having a CEO of a successful company on your board. Presence in multiple boards is also valued in the literature, as these directors form connections with other firms (Hillman and Dalziel, 2003; Kor and Sundaramurthy, 2009; Tian *et al.*, 2011).

However, despite the abovementioned benefits, there can be associated costs. Serving on many boards takes director's limited time and attention (Harris and Shimizu, 2004), which will adversely affect the quality of their contributions (Finkelstein and Mooney, 2003; Kor and Sundaramurthy, 2009).

High level of external social capital in a board could, therefore, lead to lower involvement from its board members. Once a certain level has been reached, an increase in number of external ties might create more disadvantages than advantages with a negative influence on the board's performance as a group.

#### *Internal social capital*

The importance of internal social capital of board of directors should not be underestimated, as individual directors may not possess a complete skillset and knowledge to meet firm's needs. However, acting as a group they can pool their knowledge to execute their governance functions effectively (Kor and Sundaramurthy, 2009).

Board internal social capital determines the ability of the board to function effectively. Its source lies in the relationships between the directors (Barroso-Castro *et al.*, 2016). Internal ties enhance trust within the board and facilitate an exchange of information and knowledge (Kim, 2005; Kim and Cannella, 2008; Stevenson and Radin, 2009). Trust is the condition that determines the willingness of directors to share their external social capital benefits within the board (Kim and Cannella, 2008). However, internal ties can also degrade board's performance after reaching a certain level. Several studies (Gargiulo and Benassi, 1999; Kim, 2005; Reagans and Zuckerman, 2001) have demonstrated that excessive internal social capital may have negative effects such as creation of groupthink, cliques and other dysfunctions, that are the result of homogeneity of the views of the directors.

Barroso-Castro *et al.* (2016) proposed a multiplicative effect of both types of social capital, in which high levels of internal social capital intensify the positive effects of external ties on firm performance and cushion its negative effects, when the level of director's overload reaches very high levels.

With regards to reinforcing positive effects, it is necessary to remember that having social capital does not necessarily imply applying it to decision making process (Adler and Kwon, 2002). Barroso-Castro *et al.* (2016) believe that a higher internal social capital could further drive the deployment and mobilization of external social capital. Conversely, low levels of internal social capital may imply that directors with external ties are not able to fully deploy their potential resources to the board's decision-making processes.

#### *Government officials*

Political network ties are believed to have positive relationship with organizational performance. Both the resource dependence theory (Pfeffer and Salancik, 2003) and the political resources literature (Hillman *et al.*, 2004) show that ties to government structures facilitate legitimacy, status, and access to valuable resources and information.

For companies operating in emerging markets and transition economies, the development of political networks is even more crucial, as the governments still hold control of major financial and regulatory resources. The benefits of this kind of external social capital translate into higher profitability and market valuation through various forms such as favorable access to bank loans, tax breaks, and preferential regulatory policies.

However, there should be highlighted the potential risks political ties may generate over time. A competitive advantage obtained through political network may be lost due to sudden changes in the political (Leuz & Oberholzer-Gee, 2006) and business environment (Sun *et al.*, 2010).

Hillman (2005) claims that four general benefits derived from the social capital also apply to the political ties. Government officials can provide advice and counsel regarding the public policy issues, establish channels of communication with different kinds of political decision makers, lobby favorable political decisions through their and facilitate legitimacy (Hillman and Hitt, 1999).

Lester *et al.* (2008) believe that any former government official's value as a member of board of director depends on the combination of their human and social capital. This statement is built upon the view of Nahapiet and Ghoshal (1998) who argued that these two kinds of intellectual capital are conceptually and empirically difficult to separate. Their impact on the company's

performance should be measured as cumulative. This approach would be applied in the empirical part of this study.

### **1.3. Empirical evidence of the impact of board of directors' intellectual capital**

#### **1.3.1. Intellectual capital of board of directors and firm's financial results**

Before proceeding to the empirical part of this study, it is vital to make an overview of the key findings about the impact of the intellectual capital on different aspects of company's performance as well as on the actual approaches to measure it. We would concentrate on both social and human elements of intellectual capital following the proposition by Nahapiet and Ghoshal (1998) about social capital' interconnectedness with human capital. This approach is also justified by our findings about limitations of independent measurement of human capital impact.

##### *Human capital*

Volonte (2016) targeted the firms comprising Swiss Performance Index (SPI) and collected information about 4021 members of boards of directors. Firm performance measured by Tobin's Q (total assets plus market value of equity minus book value of total equity divided by total assets) was studied in its relationship with director's human capital, i.e. international experience, CEO experience, industrial and financial know-how. The results indicated that the firm diversification and internationalization affect this relationship. International experience proved to be especially important for globally exposed companies. As the grade of diversification increases, industrial know how tends to have negative impact on the firm performance, whereas financial know how turns out to be a beneficial one. In contrast, CEO experience hampers the growth, if the level of internationalization is increasing. Overall, the study shows inapplicability of "one size fits all" approach, because the benefits of human capital strongly depend on the company's strategy.

Another argumentation against "one size fits all" is provided by the study by Bohren *et al.* (2010). The authors empirically proved that there is no convincing economic reason for requiring by law or code a minimum number of the firm directors to be employees, be independent, be of a certain gender, or only hold a few directorships. The evidence shows that the company creates more value for the shareholders, when the board has no executive directors, when its directors have strong internal ties, and when gender diversity is low. No relationship between firm performance and board independence is found. Performance of the company is measured with Tobin Q, Return on Assets (ROA) and Return on Sales (ROS).

Some elements of human capital were also put under scrutiny. Industrial know-how (experience) was empirically proved to have a potential to enhance the decision-making processes of the companies. That once again proves that the board's functions go beyond the control and monitoring central for the agency theory. Kor and Sundaramurthy (2009) argue that industry

specific know-how has positive relationship with the sales growth, whereas Kor and Misangyi (2008) suggest that a shortage of industrial experience of the management team of young firms can to some extent be compensated by industrial experience of their corporate directors.

Financial expertise is also an important criterion when the company is considering candidates for corporate boards as, for example, in the USA, it is legally demanded to have financially literate directors on audit committees. In addition, some countries, especially Germany and Japan, historically have had a significant banking-influence in their corporate governance (Kroszner and Strahan, 2001).

A series of studies focus on the role of outsiders and foreigners in the board composition. Oxelheim and Randoy (2003) used OLS regression to analyze the impact of foreign directors on the market value of 225 Swedish and Norwegian firms. The results show that Anglo-American board members have positive impact on public companies. The effect appears to be stronger in case of firms that are larger in terms of market capitalization and older in terms of history (more than 30 years old), and in industries such as manufacturing, IT and telecom, and media and publishing. The article has a narrow focus on the board composition, namely presence of foreigners on the board. Neither human capital of the Anglo-American director, nor their external social capital was analyzed. From this perspective, this research just indicates a direction for further study, but does not allow for any generalization of its results.

Choi *et al.* (2012) took a further step and analyzed the impact of foreign outside directors in Korean public companies in connection with their human capital and external connections. They also got the results which confirm positive relationship between presence of experienced foreigners and firm financial performance.

Appointing a CEO to the board is discussable issue, as there are contradicting empirical studies about its impact and value. Fich (2005) provides evidence that stock markets positively react to the appointment of CEOs on boards. In contrast, the study of Fahlenbrach *et al.* (2010) rejects the claim that stock prices react positively, if CEOs are appointed as directors. More than that, Jackling and Johl (2009) claim that in the long-term perspective CEO duality appeared to have a negative effect on performance. Finally, Stevenson and Radin (2009) as well as Shukeri *et al.* (2012) find no significant relationship between leadership duality and firm performance.

Duchin *et al.* (2009) question the necessity to have outside directors on the board. Their main finding is that the effectiveness of outside directors depends on the cost of acquiring information about the firm: when the cost of acquiring information is low, performance increases when outsiders are added to the board, and, on the contrary, when the cost of information is high, performance gets worse when outsiders are added to the board.

The study by Shukeri *et al.* (2012) aimed at answering the question, do such board characteristics as board size, board independence, gender and ethnic diversity have an impact on firm performance. Return on Equity (ROE) is used as a measurement for financial results of the company. 300 Malaysian public listed companies were randomly selected from each sector. The results showed that board size and ethnic diversity have positive relationship with ROE while board independence has negative relationship. There is no significant relationship between gender diversity on firm performance. The limitation of this study is that it lacks a definitive framework to analyze intellectual capital of the board. The characteristics are chosen without taken into consideration different aspect of the board's intellectual capital which hampers managerial application of this study.

The paper by Jackling and Johl (2009) has a similar approach and investigates the impact of board composition, board size and multiple board membership on the performance of Indian companies measured by ROA and Tobin Q. The study shows that a larger board size and a greater proportion of outside directors has a positive impact on firm performance. On the opposite, multiple board membership and appeared to have a negative effect on performance.

Despite that the two studies both found that board size has a positive relationship with firm performance, there is an alternative view on this issue. Yermack (1996) presented empirical evidence that small board of directors are more effective. He studied 452 large US corporations and measured their market valuation using Tobin's Q. The analysis showed strong relationship between small board size and firm market value.

### *Social capital*

Barroso-Castro *et al.* (2016) focused on both external and internal ties of the board. Their research covered the sample of 103 boards of directors companies listed on the Madrid Stock Exchange with their external ties. Internal ties were measured with the variable of co-working experience. Return on Sales (ROS) was chosen to be an indicator of the firm performance. The results of the research add to the proposition by Kim and Cannella (2008) about the role of the internal capital as a mediator in the external capital's effect on firm performance. Co-working experience boosts the positive effect of external ties and attenuates the negative ones. The general conclusion is that companies should look for the candidates who have network contacts beyond those of current board members, but not so far outside that new director will be unable to function as part of an effective team. The study provides a solid ground for future research about the impact of social capital on firm performance and emphasizes the importance of studying both dimensions of directors' ties.



Kor and Sundaramurthy (2009) developed and tested a theoretical model of the effects of outside directors' human and social capital on firm performance measured as sales growth rate. Using a longitudinal sample of high technology firms, they found that outside directors' membership on multiple boards, industry-specific managerial experience, and firm-specific founding experience make a significant contribution to the sales growth. They also find negative interaction effects, indicating the costs of acquiring and combining certain types of outside director human and social capital within the board. The core value of the article is an attempt to witness a collective impact of social and human capital. As it was covered before, both of these subcomponents act as differentiators in the selection process for new directors for the corporate board.

Lee *et al.* (2012) analyzed the impact of social capital of outside directors on firm performance measured by ROA. They used a sample of 480 outside directors from 125 large Korean corporations. Both external and internal ties of these directors were taken into account. Simple OLS regressions showed that outside directors with broad network of external ties have negative impact on the performance of the company. The explanation by the authors is in line with the proposition about the adversely effects of excessive external ties by Kor and Sundaramurthy (2009).

Ferris *et al.* (2003) concentrated on the assumption that multiple directorship may degrade firm performance. However, studying the firms on Compustat with at least \$100 million in total assets, they failed to witness negative relationship between multiple directorship and company's financial results predicted by the theoretical research and summarized by them as a Busyness Hypothesis (Ferris *et al.*, 2003).

Similarly, Devos *et al.* (2009), who also focused on directors' interlocks, suggest that being a member of multiple board of directors does not have any direct impact on firm performance measured by ROA and Tobin Q. However, at the same time there is a certain correlation between these two attributes, which was interpreted by an assumption that poorly performing firms are more likely to appoint interlocked directors. This proves the importance of differentiating between correlation and causation in the empirical studies.

Hillman (2005) found mixed support for the theoretical assumption that politicians on the board of directors are associated with better performance. The number of politicians on the board of directors was proved to be significantly and positively related to market-based measures of performance, but not to accounting-based measures of performance. This goes along with the resource dependence theory and shows that the benefits of external social capital have their limitations.

Goldman *et al.* (2009) investigated S&P 500 companies to sort out the ones connected to the Republican or Democratic Party of the USA. The authors were interested in the relationship between the announcement of nominating new politically connected board member and the stock price of the company. The results of the study show that there is on average a positive stock-price response to this news. This effect is more significant for the larger companies in the sample, but is valid both for Republican and Democratic directors. It is independent of the exact political position held by new board member.

These studies partly prove the importance of politically connected directors on the board. However, being focused on the US companies, the studies do not provide an overview of the local corporate governance system and the role of government in the business environment.

Another empirical papers arguing for the positive impact of presence of ex- or current government officials in corporate boards (Kim, 2005; Peng and Luo, 2000) were analyzing the emerging markets, namely China and South Korea. This gives the ground for assumption that external ties with government organizations have positive relationship with firm financial results no matter which institutional context we are dealing with.

### **1.3.2. Intellectual capital of board of directors and IPO performance**

Most of the authors point out as one of the limitations of their empirical study the lack of possibility to isolate the impact of intellectual capital on firm performance from other factors. The influence on financial performance appears to have long term nature for them. Year to year analysis also questions the implication of the research findings. This provides the argumentation to shift the focus to more timely limited aspect of firm performance being Initial Public Offering (IPO). Here, the relevance of intellectual capital cannot be questioned, as the market evaluates both tangible and intangible assets of the company. The analysis of empirical research revealed a number of studies in this field.

An exploratory study by Burton (2004) examined the companies with recent IPO experience. Both the interviews and questionnaire survey demonstrated that at the time of an IPO these firms often appointed independent non-executive directors for the first time.

#### *Human capital*

Banerjee and Rangamani (2014) analyzed how directors' experience and age relate to the grade assigned to a IPO bound company on the Indian stock market. The results of their study indicate that directors' experience does not have any impact on the IPO grade obtained by the companies, whereas directors of higher age prove to have a positive impact on it.

### *Social capital*

Board's external social capital also proved to be a discussable issue among the researchers in the field. In line with the resource dependency theory, IPO grade was found to be positively influenced by board's broad network of external contacts by Banerjee and Rangamani (2014), Mnif (2010) and Pan *et al.* (2012). Finkle (1998) emphasized a particular importance of ties with venture capital and underwriting firms. However, such core element of external ties as multiple directorship is suggested to have negative relationship with IPO success by Filatochev and Bishop (2002) and Thorsell and Isaakson (2014).

### *Board composition*

Banerjee and Rangamani (2014), Certo *et al.* (2001) and Darmadi *et al.* (2013) found that companies with larger board size obtained better IPO grades. Similarly, Mnif (2010) diagnosed a positive relationship of board size with IPO performance of French companies. However, Finkle (1998) argued for board size irrelevance for IPO underpricing.

Banerjee and Rangamani (2014) argued for irrelevance of proportion of independent directors, whereas for the sample of Indonesian companies Darmadi *et al.* (2013) even identified a negative relationship between board's independence and IPO success. However, the majority authors' empirical findings showed positive impact of this feature of board of composition (Filatochev and Bishop, 2002; Mnif, 2010; Certo *et al.*, 2001; Bertoni *et al.*, 2014).

The study by Dolvin and Kirby (2016) does not distinguish between different types of outside directors and claims that proportion of outside directors is positive related to IPO performance (negatively related to IPO underpricing).

## **1.4. Major limitations and research gap**

Overall, the review of empirical evidence on the impact of intellectual capital of board of directors on firm financial results and its IPO performance revealed a number of limitations which allow for identifying a research gap.

First of all, there is a significant shift towards studying the impact of intellectual capital on the overall firm performance. This means that the focus is put on the internal perspective and the actual value of human and social capital for the firm. At the same time, as far as IPO concerned, the attention is rather paid to the perceived value of intellectual capital by the external actors (current or potential shareholders), which may possibly result in having more profound managerial implications of the empirical research findings.

Second, a limited number of studies about the influence on IPO performance apply the intellectual capital framework. They are more concerned with structural elements of the board, namely its size and proportion of outside/independent directors. As these studies have

contradictory results, we can assume that structural components by themselves are not enough to explain the IPO performance of the company. Apart from that, even when there were attempts to link intellectual capital of the board to IPO performance, they were mostly focusing on one particular element. All this leaves the room for further research which would study the cumulative effect of the board's intellectual capital.

Third, there have not been identified the studies applying the framework to the Russian stock market. However, based on the literature review, we can assume that various elements of intellectual capital such as, for example, ties to government, presence of foreigners on the board and different types of directors' experience would be especially relevant for the national stock market.

Finally, as there is close to zero empirical evidence on the explanation of the difference in IPO underpricing of Russian firms on local (MOEX) and foreign stock exchanges (LSE), intellectual capital of the board of directors can be tested for being a potential proxy for explaining this difference.

### **1.5. Specifics of board of directors and IPO process in Russia**

As the empirical part of this study deals with board of directors of Russian companies, it is necessary to highlight some distinctive features of the boards in the country.

#### *Board's functions*

Russia is currently undergoing a period of economic downturn. In such complex environment, it is critical not to lose focus on strategic business development while focusing on the immediate concerns. The survey by PricewaterhouseCoopers (2015) showed that most directors (51%) believe that short-term priorities today prevail over the mid- and long-term goals of their companies. At the same time, more than one fourth (27%) of board members are sure that their management is pursuing tactical measures to the disadvantage of the strategic interests of their businesses.

The results of the survey also indicate that Russian boards now play a greater role in strategic planning and are more involved in dealing with key suppliers, customers and business partners. This proves the relevance of resource dependency theory in its link to the intellectual capital concept.

#### *Human capital*

Working experience in the relevant fields was proved to be the most valuable element of human capital from the internal perspective, which was analyzed by PwC (2014) while conducting a survey for 73 board members of Russian public companies. The most relevant spheres identified in the analysis were risk management, experience in international companies and financial

expertise which goes along with theoretical and empirical findings of our literature review. These findings go along with the similar studies conducted by McKinsey&Company (2006).

### *Social capital*

As for the social capital, the results of the 2015 study conducted by PricewaterhouseCoopers confirms high level of attention paid to the social capital aspect of the board of directors. Taking into consideration the specifics of the national economy, the main focus is put into external social capital of board of directors in the form of ties to government. 68% of respondents of the survey indicated that during the economic slowdown they were expecting alterations in board's composition, namely appointment of high-ranking government officials as such directors would provide these companies with additional competitive advantage, which would, consequently, enable the firms to leverage the crisis situation (PwC, 2015).

### *Board composition*

As far as board composition is concerned, the boards of directors of Russian public companies have on average 10 members, including four independent directors (Appendix 2) (PwC, 2012). Boards of directors are elected for terms of one year or less, in conjunction with Russian legal requirements. As for diversity, it should be noted that across all board member roles of the top 50 Russian public companies, only 7% are held by females; 43% of the companies reported that their boards had no females at all (PwC, 2012).

Most Russian boards primarily target retired and active top executives when searching for independent directors. 94% of companies set formal requirements or recommendations related to board candidates' experience, skills and knowledge (PwC, 2014). Thus, we can say that a concept of directors' human capital is recognized within Russian business society. Additionally, it can be mentioned that 10% of the top 50 Russian public companies have a senior (lead) independent director (PwC, 2012).

CEOs are not present on Russian boards, as it is stated by the law that a CEO cannot be a board chairperson in the same company. Therefore, such element of human capital section as CEO duality is irrelevant for the Russian market.

## **1.6. Summary of Chapter 1**

In this chapter we start by reviewing the concept of board of directors being a central mechanism of corporate governance framework according to OECD and provide an overview of classifications for boards of directors and the types of directors. As the board's main functions remain being a controversial issue for the researchers in the field, we apply four most commonly accepted perspectives to define the role of the board as well as board's attributes effecting firm performance. As all these perspectives are subject to certain limitations, we opt for the most recent

approach to systemizing board's features and measuring their impact, which is an intellectual capital framework.

There are three main elements of intellectual capital: human, structural and social capital. However, as it is defined in our literature review, on the level of board of directors only human and social capital can be distinguished (Berezinets *et al.*, 2016). The provision of intellectual capital is the reason for appointing directors to the boards. On the one hand, human capital covers various aspects of directors' demographic characteristics, their experience, organizational tenure and status, meaning being non-executive or independent directors. On the other hand, together with the human capital each individual possesses social capital which can be divided into two parts. Internal social capital implies the relationship between the directors that determines the ability of the board to function effectively, whereas external social capital incorporates the level of outside connections of the board's members and the resources potentially derived from these connections (Kim, 2005). For example, ties to government can be very beneficial in the countries with high involvement of the state in the economy such as, for example, Russia. High intensity of these ties leads to obtaining critical resources, namely information, power and solidarity benefits, which have a potential positive influence on firm performance (Carpenter and Westphal, 2001; Kor and Sundaramurthy, 2009).

Analysis of the empirical studies shows that researchers found significant relationship between various elements of board's intellectual capital and different aspects of company's performance. However, as we discovered throughout the review of these studies, there are few studies measuring impact of board's intellectual capital on IPO as the majority of them only covers the structural features of the board. This identified research gap can be narrowed by applying the concept for the Russian public companies. More than that, board's intellectual capital is a potential determinant for explaining the difference in success levels of IPOs on MOEX and LSE.

## **CHAPTER 2. COMPARITIVE ANALYSIS OF THE IMPACT OF INTELLECTUAL CAPITAL OF BOARD OF DIRECTORS ON IPO PERFORMANCE OF RUSSIAN COMPANIES ON MOEX AND LSE**

### **2.1. Methodology and hypotheses formulation**

The proposed empirical study is aimed at covering the identified research gap. The first step is to formulate the hypotheses, testing which would enable us to prove that relationship between different elements of board's human and social capital and IPO performance of Russian companies exist. What is more, it is expected to identify the difference of this relationship on Moscow Exchange (MOEX) and London Stock Exchange (LSE). The assumptions for our hypotheses should be built upon theoretical findings of prior research discussed in the literature review part, namely the impact of human and social capital on the firm financial performance and its IPO success. Both intellectual capital elements were proved to have the positive impact, that is why, two factors of human capital and two factors of social capital, internal and external one were chosen to formulate the hypotheses.

#### *Human capital of board of directors and IPO performance*

The first element of human capital under consideration is closely related to the concept of perception of the company by investors. Russian companies representing a country with a relatively young market economy tend to seek expertise from abroad. This also applies to the board of directors of public companies. According to the survey by Deloitte (2015) (Appendix 1), 61% of Russian companies have at least one foreign board member and the average share of foreigners is 22%. As, for example, in Western Europe with its cross-border movement of professionals this number is 24%, we can conclude that Russian companies value appointing foreigners to the board. What is more, for LSE this number is even 30% (Deloitte, 2015), so it would be interesting to see what impact does it have on company's IPO perspectives.

Several studies confirm the positive impact of presence of foreigners in the board on the financial performance of the firm (Choi *et al.*, 2012; Oxelheim and Randøy, 2003). However, these studies do not allow for distinguishing of this effect for developed and emerging markets, that is why, it would bring additional value to check if there is a relationship between the share of foreign directors and IPO success of Russian companies, especially taking into consideration the proposed comparison of MOEX and LSE.

What should be pointed out with regards to the foreigners appointed to the boards of directors of Russian companies is that from our literature review, we can assume that a foreign director by default has other elements of intellectual capital such as independence status, expertise in relevant spheres and external social capital. So, by testing the formulated hypothesis, we will not only check whether there is an impact of presence of these directors, but also the quality of

their intellectual capital as negative relationship would mean that the reason for their appointments were others than provision of intellectual capital (Volonte, 2016).

All this leads to the following hypotheses:

*H1a There is a positive relationship between the share of foreign directors in the board of directors and IPO performance of Russian companies on MOEX*

*H1b There is a positive relationship between the share of foreign directors in the board of directors and IPO performance of Russian companies on LSE*

Second element of the human capital is broadening the concept of directors' expertise to all the board members. The focus is put on the industry experience of company's directors. This issue gained a lot of attention from the researchers in the field of intellectual capital worldwide (Drobotz *et al.*, 2016; Kor and Misangyi, 2008) and in Russia as well (Dulyak, 2015).

This parameter was confirmed to be positively related to almost all the aspects of firm activity meaning overall efficiency, financial results and, what is relevant for this study, IPO performance. The basic explanation for this is that within the context of the same industry, firms are basically facing the same problems no matter which field they concern being legislation, technology, financing etc. (Kor and Misangyi, 2008). This way, an experienced director in the field can bring additional insights on the ways to overcome them and contribute to the faster adoption for volatile external environment.

The study by Dulyak (2015) covering the board of directors of Russian public companies does not apply intellectual capital framework, but includes such variable as directors' industry experience. The research findings suggest that it is one of the core determinants for positive impact of the board on firm overall efficiency. That is why, it would be fruitful to extend this analysis to the case of IPOs of these companies.

Following the abovementioned reasoning, we elaborate the following hypotheses about the positive impact of average industry experience of the board members:

*H2a There is a positive relationship between average experience in the industry of the board's members and IPO performance of Russian companies on MOEX*

*H2b There is a positive relationship between average experience in the industry of the board's members and IPO performance of Russian companies on LSE*

*Social capital of board of directors and IPO performance*

The proposed research design incorporates both internal and external perspectives of social capital of board of directors. Internal perspective addresses co-working experience of the board's members. However, it is hard to measure the intensity of these internal connections as board members tend to be changed quite frequently. The proposed solution from previous empirical



studies (Finkelstein and Mooney, 2003) is to use such variable as average tenure of the board members. Director's tenure partially covers the experience of working with other members, as a high average tenure of the board's members implies that at least the majority of them have co-working experience. At the same time, it also includes a certain human capital aspect, as from a relatively long tenure it can be assumed that this director is aware of the main internal processes of the firm and has taken part in decision making before.

This factor was empirically proved to have a positive impact on the firm financial results as it increases the efficiency of the board of directors (Carpenter, 2002; Fisher and Pollock, 2004). However, it is necessary to remember that some researchers claim that after a certain point, long history of co-working experience may result in the decrease of the efficiency. This concern should be covered in the descriptive statistics section of the chosen data sample.

Building on this, we can elaborate the following hypotheses:

*H3a There is a positive relationship between the average tenure of the board's members and IPO performance of Russian companies on MOEX*

*H3b There is a positive relationship between the average tenure of the board's members and IPO performance of Russian companies on LSE*

Turning to the external perspective of the board's social capital, we have identified two potential proxies for measuring it: ties to other boards of directors and ties to the government. The choice was made in favor of adoption of the second one due to well-known fact of the influence of Russian government on the national economy together with the results of preliminary research, which showed that multiple directorship normally used for measuring the ties to other boards in Russia often increases 20 boards. Most of these boards are the ones of the subsidiaries of the firm or other related parties, which questions the importance of multiple directorship on the national market.

The previous studies (Hillman, 2005; Kim, 2005; Peng and Luo, 2000) argued for positive relationship between presence of government officials on the company's board of directors and its financial performance. We assume that the same logic can be applied for such issue as an IPO, because this impact is mostly connected to the favorable perception of the company by investors.

However, for the purposes of this study we would cover not only the current government officials, but directors' previous in different state institutions. The reason behind is that between 2008 and 2014 Russian national legislation prohibited direct government officials from being appointed on companies' boards. Apart from that in the variable description section the ties to government are divided classified into 3 categories: ties to federal government, ties to regional

government and other types of connection (heads of state universities, members of chambers of commerce etc.).

The hypotheses concerning relations with the national authorities is formulated as:

*H4a There is a positive relationship between board’s members’ experience in the government organizations and IPO performance of Russian companies on MOEX*

*H4b There is a positive relationship between board’s members’ experience in the government organizations and IPO performance of Russian companies on LSE*

Overall, the formulated hypotheses can be summarized in the following figure (Figure 3). It shows that we incorporate both inside and outside perspectives on human and social capital. The elements of the intellectual capital are predicted to have a positive impact on the firm IPO performance.

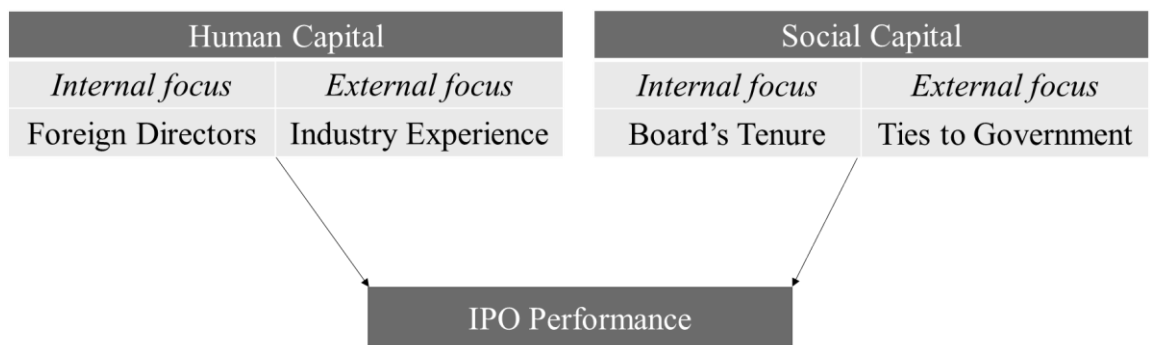


Figure 3. A model of the impact of intellectual capital on the IPO performance of the company.

It is vital to stress that by accepting/rejecting these hypotheses, we expect to find the answer for the research sub-question about the difference of the explored relationships on LSE.

#### *Methodology*

The framework of the empirical study (Figure 4) shows the key stages of the empirical research, which would provide us with statistically significant results, which would serve as a basis for further discussion of managerial application of the research findings.

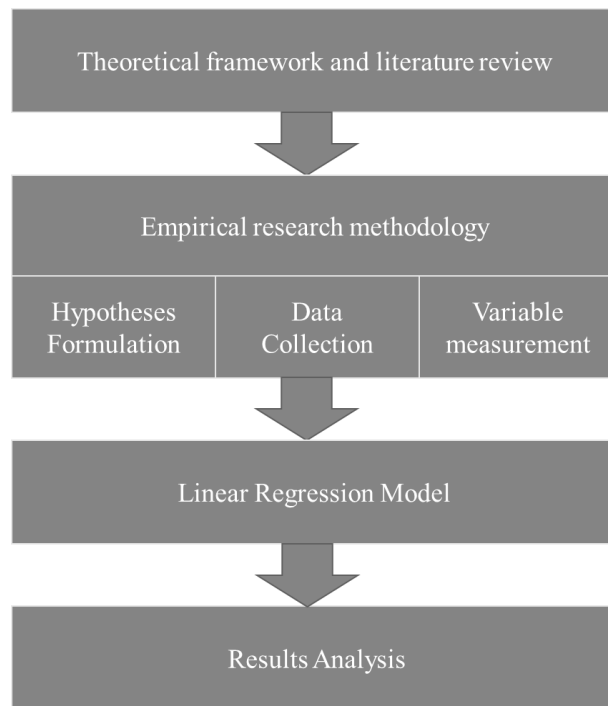


Figure 4. The framework of empirical study

Quantitative method was chosen as the base for the empirical study due to the nature of the research question and was proved to be the right one through the analysis of methods applied in prior empirical studies. Regression model which would be used to identify the relationship between the factors and the outcome, requires representative sample.

## 2.2. Sample selection

### 2.2.1. Data collection

The chosen period for IPO of Russian companies is from 2002 to 2016. The initial sample was formed based on the IPO database PREQVECA (PREQVECA, 2017) together with the reports of PricewaterhouseCoopers (PwC, 2014) and included more than 120 companies. The key criterion for considering the company to be a Russian one was adopted from PwC and constituted main country of operations, not the jurisdiction, as there is a relatively high number of companies registered in Cyprus and other offshore countries. Other criteria included a legal status of Joint Stock Company and the appointment of board of directors by the moment of issuing of the IPO prospectus. As one of the goals of the empirical study is understanding the difference between IPO success level on MOEX and LSE, companies who went public on other stock exchanges, such as NYSE, NASDAQ, HKEX etc. were excluded from the list, what left us with 118 companies.

The next step was to collect the data about IPO performance, IPO prospectus, companies' financial statements in the year prior to public offering and all the relevant information about board composition and its individual members. For these respective purposes Thompson Reuters EIKON, SPARK and companies' websites were used. The companies not disclosing information

needed for the empirical study were excluded from the list. The final number of the companies in the data sample was 101, including 51 (Appendix 3) with IPOs on MOEX (ex MICEX and RTS) and 50 (Appendix 4) with IPOs on LSE. It is necessary to point out that in order to make these two sub-samples comparable, all the 20 companies which went public on both of the stock exchanges were considered to have its IPO on LSE.

### 2.2.2. Sample description

Opposing to the dominant trend of excluding financial institutions from the sample due to the specificity of their core activity, they were kept in the data sample due to the following reasons:

- Financial institutions represent significant share of companies chosen for MOEX subsample (15%), being the most significant ones in terms of size of the IPO;
- They are characterized by high percentage of directors with ties to government.

These two reasons show that by excluding these companies from the sample we would bias the MOEX subsample and hamper the acceptance/rejection of the *Hypothesis 4a* about the positive relationship between ties to government and IPO performance.

Furthermore, to elaborate on the comparability of the two sub-samples, it is vital to analyze the distribution of the companies among industries on MOEX and LSE respectively.

As it can be seen from the Figure 5, the predominant industries for LSE are Metals & Mining (20%) and Oil & Gas (18%), which, basically, are the most important industries of the Russian economy accounting for more than 15% of the GDP (Rosstat, 2015). This once again proves the relevance of the research aim to clarify the potential reasons for less successful IPO performance of Russian companies on LSE, as such parameters as size, age and financial standing can be assumed to be more solid for these industries. Such category as Consumer Goods & Services also has a significant share of 16%, but this is rather a mix of smaller industries than the one itself.

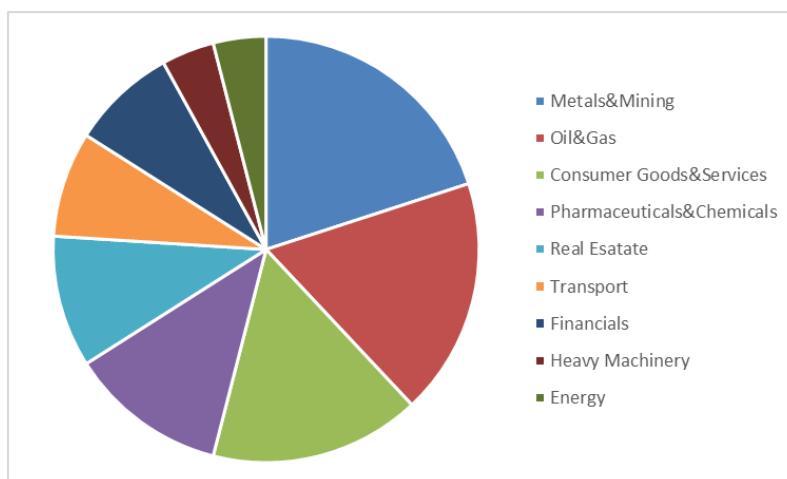


Figure 5. Companies' distribution among industries on LSE

On the opposite, the main categories for MOEX are Consumer Goods & Services (33%), Financial sector (15%) and Energy (18%), while Metal & Mining and Oil & Gas combined account only for 12%.

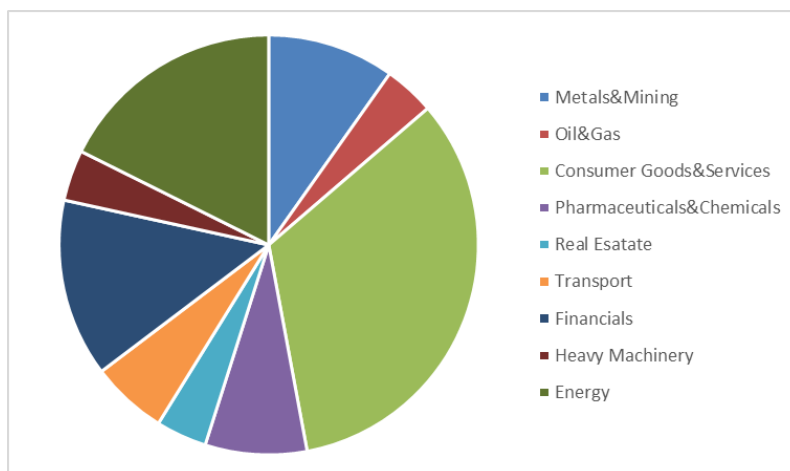


Figure 6. Companies' distribution among industries on MOEX

Overall, despite the existent differences, the subsamples are comparable according to the following justification. If we combine Metal & Mining, Oil & Gas, Energy and Heavy Machinery to represent the industries closely related to the exploration of natural resources, we would get relatively close numbers: 42% for LSE and 35% for MOEX. This assumption would be further checked in the descriptive statistics section.

### 2.3. Model and variables

Taking into account the formulated hypotheses and the review of the previous empirical research, we develop an econometric model measuring the actual relationship between board's human and social capital and company's IPO performance. The metric for measuring IPO performance is a percentage difference between the offer price and the price at the end of the first day of trading. This approach was used in the research papers by Darmadi *et al.* (2013) and Loughran *et al.* (2016). Normally, this metric is called IPO underpricing, however, for the purposes of this study we would not use this term as it implies negative IPO performance. From this perspective, the dependent variables describing different elements of intellectual capital should be negatively related to IPO underpricing, which can possibly hamper the understanding of managerial applications of this study for the prospective reader. Therefore, we would apply the general term – IPO performance.

However, despite our assumption of the positive influence of the board's intellectual capital on IPO proceeds, we should not ignore the fact that first day positive return primarily depends on fundamental financial and structural characteristics of the company. Therefore, it is needed to

adopt a vector of control variables. The expected impact of the respective variables should be explained.

First of all, we need to introduce such variable as size of the board measured as a number of directors in it. The rationale behind this is that as we use such variables as shares of directors of particular kind as well as their average characteristics, we should take into account the actual size of the board. In the previous empirical research was found to have both positive and negative impact on the IPO performance of the firm (Banerjee and Rangamani, 2014; Certo *et al.*, 2001; Darmadi *et al.*, 2013; Mnif, 2010).

As it was revealed in the literature review, several empirical studies analyzed the impact of structural characteristics of the board. The conclusion, which most of them shared, was that the share of independent directors in the board is positively perceived by the market. Thus, this variable would be applied as control one in our model, and it is expected to have a positive relationship with IPO performance.

Other control variables cover main financial characteristics of the company. As IPO success is tend to be positively related to the size of the company, we would apply company's revenue as a potential proxy for measuring it. We would use the natural logarithm of the respective figures in order to decrease the potential impact of the outliers.

An additional financial characteristic of the firm to be incorporated in the model is debt financing. It is expected to be positively related to IPO performance as it implies that there is less uncertainty about the company (Drucker and Puri, 2005).

The chosen model is linear regression which can be specified as follows:

$$ipo_i = \alpha_i + \beta_1 HC_i + \beta_2 SC_i + \beta_3 Control_i + \varepsilon_i,$$

where

$i$  - subscript denoting respective company;

$ipo_i$  – dependent variable representing IPO performance of company  $i$ ;

$\alpha_i$  – constant term covering unobserved factors impacting IPO performance of company  $i$ ;

$Control_i$  – vector of control variables of company  $i$ ;

$HC_i$  – vector of variables covering elements of human capital of board members;

$SC_i$  – vector of variables covering elements of social capital of board of members;

$\beta_1, \beta_2, \beta_3$  – vectors of unknowing coefficients in a linear regression equation;

$\varepsilon$  – error term

Table 1

## Description of the variables used in the research

<b>Variable</b>	<b>Definition</b>	<b>Measurement approach</b>
<b>Dependent variable</b>		
<b>ipo1</b>	IPO performance	Percentage difference between the offer price and the price at the end of the first day of trading.
<b>Independent variables (Human capital vector)</b>		
<b>foreign</b>	Share of foreign members of the board of directors	Number of directors with citizenship of countries other than Russian Federation divided by total amount of board members
<b>ind_exp</b>	Average length of directors' industry experience	Average number of years during which board's members have been working in the industry where the analyzed company is operating
<b>Independent variables (Social capital vector)</b>		
<b>tenure</b>	Average tenure of the board membership	Average number of years, during which directors have been holding seats in a company's board
<b>gov_share</b>	Share of directors with ties to government	Percentage of board's members with working experience in government organizations
<b>gov_bin</b>	Presence of directors with ties to government	Binary variable, 1 - one or more board's members with current or prior experience in any level of government, 0 – none.
<b>fed</b>	Presence of directors with ties to government on federal level	Binary variable, 1 - one or more board's members with current or prior experience in federal level government, 0 – none.
<b>reg</b>	Presence of directors with ties to government on regional level	Binary variable, 1 - one or more board's members with current or prior experience in regional level government, 0 – none.

<b>other</b>	Presence of directors with other types of ties to government	Binary variable, 1 - one or more board's members with current other type of ties to government, 0 – none.
<b>Control variables</b>		
<b>Size</b>	Size of the board of directors	Number of board members
<b>indep</b>	Share of independent directors	Percentage of independent directors in the board of directors
<b>ln_rev</b>	Proxy for size of the company	Logarithm of the company's total revenue in the year prior to IPO
<b>df</b>	Debt financing	Total debt divided by total assets

It should be highlighted that in the given table there are 5 different dependent variables for the board members' experience in the government organizations. The first one is the overall share of directors with different types of ties to government in the board. Even though it is most frequently used in the empirical studies, in the regression analysis for this particular research it may turn out to be insignificant due to the fact that there are several state-owned companies for which this variable would equal to 50% and more. That is why, four binary variables were incorporated in the model. They cover the existence of ties to government at all, as well as the presence of particular type of connection to the state. Binary variables are focused on the presence, not on intensity of the factor, what is, consequently, supposed to provide more accurate results. This assumption would be checked in the results section.

## 2.4. Data description

### 2.4.1. Descriptive statistics

Descriptive statistics of the variables under consideration for each of the respective subsamples are presented in the following tables (Table 2 and Table 3). Binary variables for measuring the external ties to government are excluded from the tables due to their nature.

Table 2

Descriptive statistics for the MOEX subsample

<b>Variable</b>	<b>Definition</b>	<b>Mean</b>	<b>Standard deviation</b>	<b>Min</b>	<b>Max</b>
<b>ipo1</b>	IPO performance	.0593629	.1398773	-.2958333	.4285714
<b>foreign</b>	Share of foreign members of the board of directors	.0941671	.1800961	0	.7142857



<b>ind_exp</b>	Average length of directors' industry experience	8.427471	4.877346	2.714286	21.77778
<b>tenure</b>	Average tenure of the board membership	2.308353	2.156415	0	8.153846
<b>gov_share</b>	Share of directors with ties to government	.1602132	.2074211	0	.9411765
<b>size</b>	Size of the board of directors	8.45098	3.294321	3	19
<b>indep</b>	Share of independent directors	.3312794	.2104942	0	.8181818
<b>ln_rev</b>	Proxy for size of the company	5.114241	2.352218	0	9.397984
<b>df</b>	Debt financing	.525666	.2637861	0.1485566	.96

Table 3

Descriptive statistics for the LSE subsample

<b>Variable</b>	<b>Definition</b>	<b>Mean</b>	<b>Standard deviation</b>	<b>Min</b>	<b>Max</b>
<b>ipo1</b>	IPO performance	.0296948	.0934732	-.2340426	.2727273
<b>foreign</b>	Share of foreign members of the board of directors	.3805938	.2969415	0	1
<b>ind_exp</b>	Average length of directors' industry experience	8.322056	4.990384	1.5	27.33333
<b>tenure</b>	Average tenure of the board membership	1.891317	1.611547	0	7
<b>gov_share</b>	Share of directors with ties to government	.1275169	.2073512	0	1
<b>size</b>	Size of the board of directors	8.44	2.66169	4	18

<b>indep</b>	Share of independent directors	.3099229	.1693302	0	.7142857
<b>ln_rev</b>	Proxy for size of the company	5.936149	2.201704	.9162907	10.08377
<b>df</b>	Debt financing	.5449991	.2671684	0	.98

The given statistics prove some of the basic assumptions of the empirical research and have other important implications. First of all, we can see that the average IPO performance for MOEX (5,94%) is higher than the one for LSE (2, 97%), while the average size of the company expressed by the logarithm of firm's revenue is indeed higher for LSE, as we assumed from the industry distribution in the data sample section. This leads to the comparison of the means of other independent variables. Industry experience and share of ex- or current government officials have the same figures for both stock exchanges. Average tenure of the board members being slightly higher for MOEX and higher proportion of foreigners in the boards for LSE, which is supposed to have positive influence of the IPO performance, do not provide any relevant insights for the research question as well. As for control variables, they do not allow for explaining the difference of the IPO performance too, as the four respective variables have very close values.

To further elaborate on the difference in IPO performance, it would be logical to look at the industry averages for both stock exchanges (Figure 5). We can see that for the majority of industries it is probably more beneficial to go public in home country. Almost the only exception here is financial sector, which, as we remember from the industry distribution for MOEX, is one of the most present on the stock exchange. Even more surprising is the fact that LSE, so popular to go public at among Russian companies in Metals & Mining sector, turns out to be unfavorable for this purpose providing the average return of -1,3% on the first day of the trade. The respective figure for MOEX is 9,6%. The reason for this significant discrepancy is expected to be explained by the results of the proposed regression model.

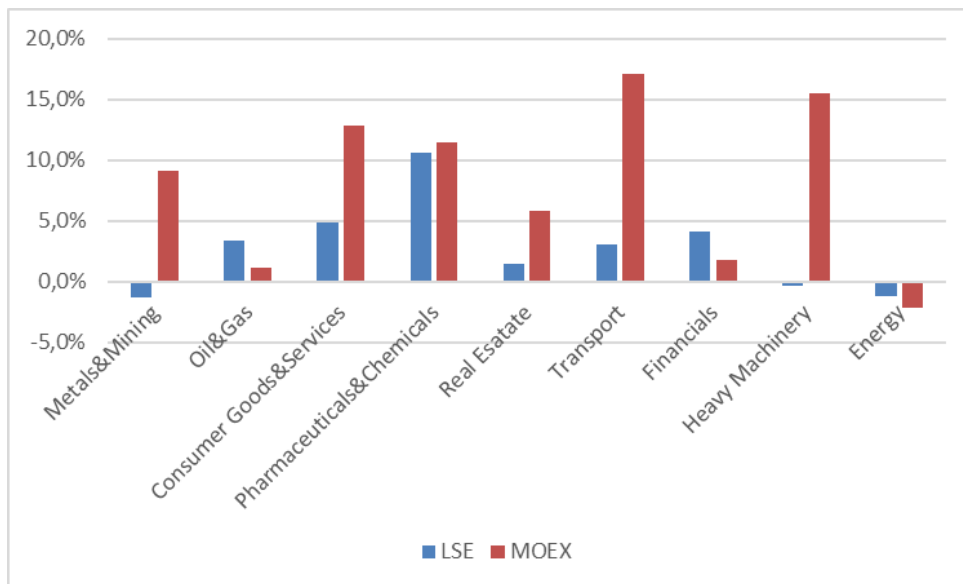


Figure 7. Distribution of average IPO performance between industries on LSE and MOEX.

#### 2.4.2. Correlation analysis

The final step before building the regression model is to analyze the chosen variables for correlation, as it could possibly provide valuable insights.

In case of MOEX (Appendix 5) the assumptions derived from the literature are proved by the positive correlation of all of the four independent variables with IPO performance. However, the actual significance of these relationship needs to be analyzed by more sophisticated methods in the next section.

With regards to the foreign outside directors, we can see that they do possess valuable industry experience as these two variables are in significant positive correlation of 19%. The same can be applied for the directors with ties to government, which means that the reason for their appointment is a combination of human and social capital, which is indeed one of the assumptions of our research.

On the opposite, judging by the correlation matrix for LSE (Appendix 6), we can already conclude that two out of four independent variables, share of foreign directors and industry experience, actually have negative relationship with IPO performance. In other words, these elements of the board's intellectual capital of board of directors seems to have negative perception by the local investors. The rationale for this would be discussed in the results section.

As for the ties with government, the correlation provides interesting overview of their impact as the variables measuring them have both positive and negative correlation coefficients. These means that the both intensity and type of this connection actually matter in case of LSE.

## 2.5. Regression analysis results

The regression model to be used for the analysis was suggested in section 2.3:

$$ipo = \alpha_i + \beta_1 HC_i + \beta_2 SC_i + \beta_3 Control_i + \varepsilon_i$$

The analysis was performed with STATA 13 package using linear regression model. The first model included all the variables measuring the external ties with the government. Then the ones, which turned to be insignificant, were excluded from the model parameters. Each independent variable of the final model was checked for significance in accordance with formulated hypotheses. The results of both models are presented in the tables below.

Table 4

Relationship between elements of board's intellectual capital and IPO performance of Russian companies on MOEX.

	Model 1 – (Including all the variables for measuring ties to government)	Model 2 – (Including significant variables measuring ties to government)
<b>foreign</b>	0.0560	0.0225
<b>ind_exp</b>	0.0115**	0.118**
<b>tenure</b>	0.0084	0.0127
<b>gov-share</b>	0.0778	
<b>gov_bin</b>	-0.0686	
<b>fed</b>	0.0984*	0.0750*
<b>reg</b>	0.0265	
<b>other</b>	0.0705	
<b>size</b>	-0.0105	-0.0072
<b>indep</b>	0.2135**	0.2035**
<b>ln_rev</b>	-0.0191**	-0.221**
<b>df</b>	-0.0930	-0.0773
<b>cons</b>	0.0736	0.0534
<b>R<sup>2</sup></b>	0.4432	0.4033
<b>p value</b>	0.0150	0.0032

Notes:

\*\*\* Denotes significance at 1% level

\*\* Denotes significance at 5% level

\* Denotes significance at 10% level

As we can see from the table for MOEX (Table 4), both models were significant (*p value* < 0.05). *R*<sup>2</sup> of the second one is equal to 0.4033, which means that the chosen variables, both independent and control ones, explain 40,33% of the variance in IPO returns on the first day, which is a relatively high percentage.

As far as ties to government are concerned, we can see that share of ex- and current government officials as well as the presence of connections with regional authorities and other

types of connections are not significantly related to IPO performance, but at least their beta coefficients have positive value. At the same time, such variable as share of government officials has even a negative value of beta coefficient, which goes along with our rationale for introducing binary variables. All in all, binary variable for presence of ties to federal government is significant at 10% level ( $p\ value = 0.075$ ), which means that we can accept *H4a* with specification for presence of ex- or current federal officials.

Board's average tenure and share of foreign directors are not significantly related with IPO performance according to their p values, but they have positive beta coefficients, which leads us to the conclusion that we can neither accept, nor reject *H2a* and *H3a*.

On the opposite, average industry experience of the board members has a p value of 0.014 which shows significance at 5% level. That means that we can accept *H1a* that states that this parameter is positively related to IPO performance of the Russian companies on MOEX.

Finally, it is important to pay attention to the beta coefficients and respective p values of introduced control variables. On the one hand, size of the board and level of debt financing are not significant parameters of the model and have negative beta coefficients, which, consequently, shows that having too many members and high debt burden have negative perception by the Russian investors. On the other hand, two other variables, share of independent directors and size of the company measured as its revenue are significant at 5% level. However, while the share of independent directors has positive impact on the IPO performance in accordance with our assumption, firm's revenue has a negative beta coefficient, which means that after a certain threshold the size of the company is starting to decrease the level of attractiveness of investment in its shares.

As for the companies which went public on LSE (Table 5), the two models proved to be significant as well, having p values of 0.0341 and 0.0092. The R squared is almost the same as in the case of MOEX with two models explaining 43,84% and 42,23% of variance respectively. However, despite these similarities the model got the results which do not coincide with the one for MOEX to a great extent.

Table 5

Relationship between elements of board's intellectual capital and IPO performance of Russian companies on LSE.

	Model 1 – (Including all the variables for measuring ties to government)	Model 2 – (Including significant variables measuring ties to government)
<b>foreign</b>	-0.0957	-0.1047*
<b>ind_exp</b>	-0.0048	-0.0048*
<b>tenure</b>	0.0212**	0.0210**

<b>gov_share</b>	-0.0068	
<b>gov_bin</b>	0.0748	
<b>fed</b>	-0.1218*	-0.0750*
<b>reg</b>	0.0150	
<b>other</b>	0.0426	
<b>size</b>	-0.0049	-0.0053
<b>indep</b>	-0.0038	-0.0216
<b>ln_rev</b>	-0.0300***	-0.0306***
<b>df</b>	-0.0664	-0.0624
<b>cons</b>	0.1800	0.1976
<b>R<sup>2</sup></b>	0.4384	0.4223
<b>p value</b>	0.0341	0.0092

Notes:

\*\*\* Denotes significance at 1% level

\*\* Denotes significance at 5% level

\* Denotes significance at 10% level

The situation with the variables measuring external ties of board of directors with government organizations is even more complicated than in the previous case. The overall presence of ex- and current government officials together with presence of connections on regional and other levels have positive beta coefficients, which determine their positive impact. However, as these are not significant according to their respective p values, we should switch our attention to the one with the prescribed negative impact. First, similarly to the MOEX case, we have the share of government officials, which is not a significant variable according to the test statistics. Then, on the contrary to our assumptions and MOEX's results, the presence of ex- or current federal officials has a negative impact on IPO performance and is significant at 10% level. The possible reasons for it would be highlighted in the discussion section. All in all, we have enough evidence to reject the hypothesis *H4b*.

Average industry experience and the share of foreign directors have negative beta coefficients and are significant at 10% level in the second model. This leads to the rejection of both hypotheses *H1b* and *H2b*. Therefore, we can say that not only the human capital of foreign directors is not perceived to be of value to the investors at LSE, but the overall human capital of the board of directors as well. This discussion would be continued in the next section.

What is valued by the investors in London, though, is the average board tenure. We can assume that the focus is put on the internal social capital of the board and its efficiency as a corporate governance mechanism. The tenure variable is significant at 5% level which means that we can accept the hypothesis *H3b*.

With regards to the control variables, it should be mentioned that the results are similar with the ones for MOEX as debt financing and board's size have negative beta coefficients and

are not significant, whereas the logarithm of the company's revenue is significant at 1% level and has negative connotation, which once again points attention to the fact that there should be a certain threshold for this parameter and it may have U-inverted relationship with the IPO performance. However, there is also the difference with the sample of MOEX as the share independent directors has a negative beta coefficient too. However, this goes along with already suggested explanation about the primary importance of the board's internal ties.

Overall, summarizing all the above findings, we can say that it was found that both human and social capital of the board of directors have positive impact on the IPO performance of the Russian companies on MOEX with the predominant factors being average industry experience of the board members and the existence of ties to federal government (Table 6). On the contrary, in the case of LSE most of the elements of intellectual capital were found to have even a negative relationship with IPO success. The only exception is the internal social capital of the board measured as average tenure of board members.

Table 6

Summary of the results of linear regression model

<b>Hypothesis</b>	<b>MOEX (a)</b>	<b>LSE (b)</b>
<i>Positive relationship between "foreign" and "ipo1"</i>	-	Rejected
<i>Positive relationship between "ind_exp" and "ipo1"</i>	Accepted	Rejected
<i>Positive relationship between "tenure" and "ipo1"</i>	-	Accepted
<i>Positive relationship between "fed" and "ipo1"</i>	Accepted	Rejected

With these findings we can proceed to the discussion section of the empirical research, where we would try to analyze these results in more details and provide the insights about possible rationale behind them.

## **2.6. Discussion**

### **2.6.1. Research findings**

In this section we will discuss the summarized model results and attempt to link them to the prior studies in the fields of intellectual capital and corporate governance.

As in the case of MOEX we did not encounter any contradiction to our initial assumptions, meaning that none of the hypotheses were rejected, it would be logical to start with discussing the

results for this subsample, and then compare them with the ones from LSE for each pair of hypotheses respectively.

First, it is necessary to elaborate on the accepted hypothesis about human capital of board of directors for MOEX. Industry experience, which lies at its core, was found to have a positive impact on IPO performance. This goes along with the findings of previous empirical research (Drobotz *et al.*, 2016; Dulyak, 2015; Kor and Misangyi, 2008), which identified positive relationship between average industry experience of the board members and firm financial performance. The study by Dulyak (2015) is particularly relevant as it covers the sample of Russian companies. However, turning to the results for LSE we can see the same hypothesis was rejected, as average industry experience was found to have negative relationship with IPO results. There could be several possible explanations for this phenomenon. First, high value of average industry experience may be interpreted to have negative correlation with the executive and top-management experience, as it implies having a career path in the same field from top to bottom. Second, for the most popular industries among the LSE sub-sample being Metals & Mining, Oil & Gas the high value for industry can be linked to non-economic/management background, which, consequently, depreciates the overall value of the company's human capital for some investors. Third, they could be a higher value assigned for cross-industry experience by investors at LSE. Overall, we can suggest that further research of this issue should aim at testing the relationship between total experience of board's members at senior and executive positions and IPO performance. This could potentially clarify the findings of the given research.

The second element of human capital under consideration was the share of foreign directors in the board. The hypothesis of its positive relationship with IPO success was not accepted for MOEX, but we witnessed overall positive impact from the beta coefficient. This means that in general Russian investors assign certain value for the assumed expertise brought by foreign directors, which supports the findings of similar research conducted for the developing market (Choi *et al.*, 2012) and justifies the overall high share of foreigners in Russian boards, but this is still not a decisive factor for IPO underpricing. Nevertheless, in case of LSE the hypothesis was rejected. This finding can be linked to the idea of Volonte (2016) about the provision of intellectual capital by the directors. In other words, in case of LSE the presence of foreigners per se does not have positive connotation. It is taken to the next level, as different elements of their intellectual capital are put under consideration. As far as this point is concerned, we can stress that through the analysis of the board characteristics of Russian companies, we can conclude that not all foreign directors possess the desired level of expertise. It is especially relevant for the companies registered in offshore zones, as quite frequently the people responsible for the registration of their office there become the members of the board while having zero awareness of the company's day-to-day



business activities. This argument can be supported by the value from correlation matrix covering the interdependence between share of foreign directors and average industry experience, which is 19% for MOEX and only 6,5% on LSE. This does not contradict to the findings with regards to hypothesis *H2b* as foreign directors normally possess the management experience in the industry, which we still assume to be positively related with firm performance.

Proceeding to the social capital, it would be more logical for us to start with the internal perspective as none of the hypotheses about average board's tenure was rejected. In both cases this variable was found to have positive relationship with IPO performance, and in the case of LSE this relationship was proved to be significant. These findings coincide with the ones from prior research (Carpenter, 2002; Fisher and Pollock, 2004). However, we should keep in mind that this relationship might be U-inverted as the means of average board's tenure for our subsamples equal to 2,31 and 1,89 do not allow for rejecting this assumption. It should be highlighted that though the mean is lower for LSE ( $1,89 < 2,31$ ), the impact is significant for this sub-sample. This means that local investors prescribe primary value for board's internal ties and do believe in their positive impact on the board's efficiency and, hence, firm performance.

Finally, we reached the variable which provided the most controversial findings in our empirical research - the one measuring external ties to government. Already at the stage of creating the research design, we introduced five different variables for its measurement. This proved to be the right approach, as we got contradictory results for them. In case of MOEX the binary variable for presence of any kind of relationship with government turned out to have negative beta coefficient. This together with the positive coefficients for all the other binary variables representing three different levels of connections, leads us to the conclusion that having these ties on multiple level may have negative perception by Russian investors and can be considered as overdependence on the state. Nevertheless, binary variable for external ties to the federal government proved to be significant. Therefore, we accepted the hypothesis *H4a* which goes along with the findings of other empirical studies (Hillman, 2005; Kim, 2005; Peng and Luo 2000). However, we should emphasize the peculiarities of the MOEX case. First, as it is a binary variable and the one defining the share is not significant, there is a certain threshold for a number of ex- or current government officials after which the extensity of the ties begin to have less positive perception by the investors. Second, the most value is prescribed to the connections at the federal level.

In case of LSE we witnessed positive beta coefficients for binary variables for regional and other ties to government as well as overall presence of the ties, whereas the share of government officials and link to federal government proved to have negative relationship, the latter one with significance at 10% level. There is a possible explanation for this. First, the federal government is

associated with corruption within the context of Russian national economy. Second, the external ties to federal government are perceived as a sign of deep involvement of the state in the company's operations, which, consequently, triggers the bias about low efficiency of such companies. The share of government officials in this case is directly related to the federal level officials as this type of connection is normally the most intensive one.

### **2.6.2. Managerial implications**

Having discussed the results of our hypothesis testing, we can highlight their possible interpretation from the business perspective. We can already conclude that we were able to derive valuable insights for possible managerial implications, which should be explained in more details in this section.

First and most definitive implication of this study is that there is a clear relationship between intellectual capital of the directors appointed to the board of the company prior to IPO and its results. What is more, this relationship is not homogeneous on different stock exchanges, namely on MOEX and LSE, and can be both positive and negative.

Using these insights, we can, for example, explain the surprising difference in the average level of IPO underpricing (9,6% and -1,3%) of the companies from Metals & Mining industry on the two stock exchanges, which we discovered in the sample description section. On MOEX these companies, being related to the government and having foreign directors on board as well as average industry experience of the board members of more than 10 years, were perceived as a great investment opportunity. At the same time, on LSE these advantages turned out to have negative connotation such as low efficiency due to state control and having directors with low executive experience and other kinds of expertise.

Overall, these insights can be linked to the decreasing number of Russian companies opting for LSE as the stock exchange for their IPO, especially the one affiliated to the state. However, as private companies may still choose this option, they should take the measures in advance as appointing the board exactly in the year prior to going public would decrease the chances for successful IPO. Another point to consider is the quality of the intellectual capital brought by these directors.

### **2.6.3. Limitations and suggestions for further research**

The empirical research was aimed at understanding the relationship between different elements of human and social capital of board of directors and IPO performance of Russian companies on MOEX and LSE. The obtained results help to explain the different levels of IPO success on these two stock exchanges. Although, the research objective was reached and the

findings have clear managerial implications, this study is subject to some limitations which show the directions for future research.

First of all, despite using the framework which covers both human and social capital with their internal and external perspectives, the four chosen variables still cannot be considered to be covering all the dimensions of the board's intellectual capital. As we already found throughout the research, one variable was not able to cover all the relevant information about directors' previous experience. The future research should aim at deepening the knowledge about the impact of different kind of expertise of the board's members. With regards to the internal social capital, the possible direction for more in-depth analysis is to study board's internal dynamics and procedures, as its tenure already proved to have positive impact on IPO performance. However, this research will require collecting primary data rather than collecting the secondary one due to limited amount of disclosed information about this issue. The final point with regards to variables limitations is that as we got in the results section most of the introduced, the control variables were not significantly related to the dependent variable, which hampers the managerial application of the model findings. The further research should attempt to identify more significant control variables.

The second limitation of this study concerns the selected sample. The number of companies in the subsamples is 50 and 51 respectively, which can be perceived to be the limitation for their representativeness. However, these study covers all the IPOs in the given period with available data about the board of directors. One possible way to extend this study, as it basically rather covers the patterns on particular stock exchanges than on the national market, is to extend the subsamples to the companies from other countries with similar economic characteristics present on LSE and MOEX, such as for example Ukraine, Belarus and other ex-Soviet countries. Apart from that, the limited amount of observations did not allow for a proper industry breakdown and exclusion of financial sector common for this kind of studies. Nevertheless, we believe that these issues are less relevant for IPO underpricing. Possible solution, which can be implemented in further research, is to extend the research to other countries as in the previous case.

The final limitation is related to data collection. We used primarily second data from such sources as IPO prospectus, annual reports and different databases. The applicability of secondary data for measuring such variables as share of foreigners and average board's tenure is not questioned, whereas in case of average industry experience and ties to the government the coverage should not be perceived to be the complete one. Although, we conducted an in-depth analysis of the directors' biographies, in some cases the information was still limited. Therefore, future research should attempt to collect primary data about elements of intellectual capital under consideration, especially about the external ties to the government, as there can be indirect ones, which could possibly be used as a separate variable.

## 2.7. Summary of Chapter 2

In this chapter we conducted an empirical study which determined the relationship between intellectual capital of board of directors and IPO performance of Russian companies. This relationship was proved to be different on MOEX and LSE.

Based on the conducted literature review we formulated four hypotheses, two of them covering elements of human capital and the other two covering the social one. These pairs of hypotheses correspond to the internal and external perspectives respectively. Thus, director's average industry experience covers internal perspective of human capital, whereas the share of foreign directors stands for external one. As for social capital, internal ties are measured by board's average tenure and among the external ties the choice was made in favor of ties to government due to the peculiarities of Russian economy.

The final data sample consists of 101 Russian companies, which had their IPOs from 2002 to 2016. 50 of them comprise the LSE subsample and 51 the MOEX one (ex MICEX and RTS). All the 20 companies, which went public on both stock exchanges simultaneously, were considered to have the IPO on LSE for the sake of comparability of the subsamples.

The chosen model is linear regression. The independent variable is IPO performance measured as percentage difference between the offer price and the price at the end of the first day of trading (IPO Underpricing). The dependent variables comprise 3 vectors: vector of independent variables describing human capital, vector of independent variables describing social capital and vector describing control variables.

Regression analysis provided the results which allowed for accepting and rejecting several hypotheses. In case of MOEX, director's average industry experience and the existence of the ties to federal government proved to have positive relationship with IPO performance. Among the control variables the share of independent directors has significant positive relationship with IPO results, whereas the size of the company measured as a logarithm of its revenue has a significant negative beta coefficient.

As for LSE subsample, we can conclude that the results are more controversial. Only the hypothesis about positive relationship between average board's tenure with IPO performance turned out to be accepted, whereas the other 3 elements of intellectual capital have a significant negative relationship with IPO results. With regards to control variables, the same results as for MOEX were received for the size of the company.

Overall, it can be concluded that the hypotheses derived from the literature review are mostly applicable for the domestic stock market. For LSE the only factor to be positively perceived by investors is the collaborative experience of the directors. Such characteristics as relationship with the state, share of foreigners and average industry experience of the board members have

negative connotation. The possible explanation is inefficiency being associated with state-owned companies, low perceived quality of the intellectual capital provided by foreigners to the Russian boards and a higher value assigned for executive experience rather than industry one. All in all, for a Russian company the first aspect to be taken into consideration while choosing the stock exchange for an IPO is the intensity of the ties of its board to the state. Apart from that, it is vital to form a board of directors prior to IPO in order to enhance its internal social capital by the moment of IPO.

## CONCLUSION

Anticipating the recovery of Russian IPO market within the context of restricted access to financing, it is necessary to evaluate the options available for stock exchange choice. Previously, Russian companies tended to opt for LSE or MOEX. However, the key success factors on one or another stock exchange remain an open question. Among the parameters, which draw the investors' attention except for the main financial indicators, corporate governance is one of the most important ones. Board of directors is a central mechanism of corporate governance, and in this paper we aim at defining its impact on IPO results applying the intellectual capital framework. The choice of the framework is justified by the fact that the provision of intellectual capital can be considered to be the reason for directors' appointments to the boards together with an overall shift towards structural elements of the board in the previous empirical studies.

The goal of this study was to analyze the relationship between different elements of intellectual capital of board of directors and IPO performance, using evidence from Russian companies which went public on MOEX and LSE. We adopted the elements which were proved to have significant positive relationship with different aspects of firm performance in the previous empirical studies in the literature review section.

Four pairs of hypotheses have been tested:

*H1a (H1b) There is a positive relationship between the share of foreign directors in the board of directors and IPO performance of Russian companies on MOEX (LSE)*

*H2a (H2b) There is a positive relationship between average experience in the industry of the board's members and IPO performance of Russian companies on MOEX (LSE)*

*H3a (H3b) There is a positive relationship between the average tenure of the board's members and IPO performance of Russian companies on MOEX (LSE)*

*H4a (H4b) There is a positive relationship between board's members' experience in the government organizations and IPO performance of Russian companies on MOEX (LSE)*

We performed the linear regression analysis on the hand-collected data sample of Russian companies with IPOs on MOEX and LSE.

The results of the analysis allowed for both accepting and rejecting of some of these hypotheses and emphasized the clear difference in relationship between intellectual capital of board of directors and IPO performance on MOEX and LSE. For MOEX all the dependent variables had positive beta coefficients and director's average industry experience and board's members experience in federal government turned out to have significant positive relationship with IPO results. On the contrary, in case of LSE three out four elements of intellectual capital have significant negative relationship with IPO performance, namely share of foreign directors,

board members' average industry experience and ties to federal government. Board's average tenure has significant positive impact on IPO perspectives.

Based on these findings we can conclude that the key element which determines the difference in success level of Russian companies on MOEX and LSE identified in this research is the intensity of its relationship with the state. What is perceived to be an advantage on the domestic market, turns out to have negative connotation by foreign investors. Therefore, the companies with high intensity of ties to the state should abstain from going public on LSE. Nonetheless, if a private company opts for LSE, it should make sure to establish the board of directors in advance to IPO in order to develop its internal social capital. Apart from that, it is necessary to pay special attention to the quality of human capital brought by foreign directors as well as to the expertise of its board's members in different fields rather than in one particular industry.

Given the context of the research and the scope of the topic, this study is subject to certain limitations, which show the directions for future research. First, the list of dependent variables is limited by two elements from human and social capital, which leaves the room for further investigation of the impact of board's intellectual capital on IPO results. Second, regarding the sample selection, we can say that in order to elaborate more on the difference between domestic and foreign stock markets, it is necessary to conduct the research for the countries with similar economic context. Finally, the data collection process can be improved by enriching the secondary data with the primary one.

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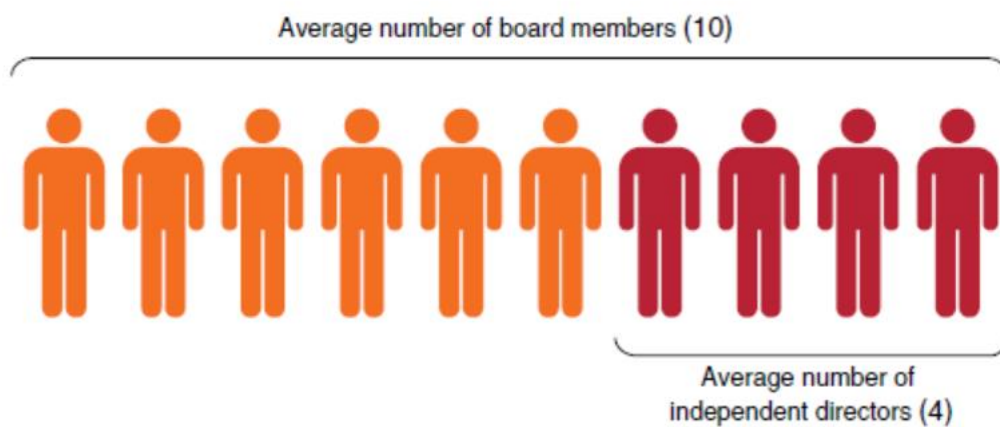
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Appendix 1. Share of foreigners in Russian boards (Deloitte, 2015).

Figure 12: Foreign board members

	All (120)	LSE (50)	NYSE/NASDAQ (7)	Moscow Exchange (99)
Percentage of companies with foreigners on the board	61%	76%	100%	54%
Government-controlled	30%	38%	-	30%
Privately owned	72%	89%	100%	65%
Average percentage of foreign directors	22%	30%	45%	17%

Appendix 2. Average board composition of Russian companies (PwC, 2012).





Appendix 3. Companies in MOEX subsample.

<b>№</b>	<b>Company</b>	<b>Year</b>	<b>№</b>	<b>Company</b>	<b>Year</b>
1	Russneft'	2016	27	Bank Sankt-Peterburg	2007
2	FG Budushcheye	2016	28	M.Video	2007
3	NKHP	2015	29	DBMP	2007
4	Evroplan	2015	30	Armada	2007
5	MKB	2015	31	Rosinter Restaurants	2007
6	OVK	2015	32	TGK-5	2007
7	TPG Aessel'	2013	33	Dixy Group	2007
8	AK Alrosa	2013	34	Bank Vozrozhdenie	2007
9	Zhivoy Ofis	2012	35	Sberbank	2007
10	Moskovskaya Birzha	2012	36	OGK-3	2007
11	Multisistema	2012	37	TGK-1	2007
12	Utinnet.ru	2011	38	UK Arsagera	2007
13	Pharmsynthez	2010	39	WTC Moscow	2006
14	Mostotrest	2010	40	OGK-5 (Enel)	2006
15	RNT	2010	41	Raspadskaya	2006
16	DIOD	2010	42	OGK-2	2006
17	Kuzbasskaya Toplivlaya Kompaniya	2010	43	Magnit	2006
18	Protek	2010	44	Razgulay Group	2006
19	Russkoe More	2010	45	Belon Group	2006
20	Institut Stvolovykh Kletok Cheloveka	2010	46	Sollers	2005
21	Mechel	2009	47	PAVA	2005
22	Bank of Moscow	2009	48	Lebedyanskiy	2005
23	TGK-6	2008	49	Kalina	2004
24	TGK-7	2008	50	Irkut	2004
25	TGK-13	2008	51	RBC IS	2002
26	Sinergiya	2007			

Appendix 4. Companies in LSE subsample.

<b>№</b>	<b>Company</b>	<b>Year</b>	<b>№</b>	<b>Company</b>	<b>Year</b>
1	Lenta	2014	26	MMK	2007
2	TCS	2013	27	NCSP	2007
3	Megafon	2012	28	Polymetal	2007
4	RusPetro	2012	29	Sitroniks	2007
5	MD Medical Group	2012	30	Uralkaliy	2007
6	Global Port Invetsments	2011	31	Pharmstandart	2007
7	Polymetal International	2011	32	Amur Minearals	2006
8	HMS	2011	33	GALS-Development	2006
9	Etalon	2011	34	Petroneft Resources	2006
10	Nomos Bank	2011	35	Comstar	2006
11	Rusagro	2011	36	Rosneft'	2006
12	PhosAgro	2011	37	Severstal	2006
13	FSK YeES	2011	38	TMK	2006
14	Mail.ru	2010	39	Cherkizovo Group	2006
15	O'key	2010	40	Chelyabinsk Zink Plant	2006
16	TransContainer	2010	41	Amtel Vredestein	2005
17	RusHydro	2009	42	Evrax	2005
18	Eurasia Drilling	2008	43	IMSG	2005
19	Globaltrans	2008	44	Urals Energy	2005
20	Akron	2008	45	X5 Retail Group	2005
21	AFI Development	2007	46	Zirax	2005
22	Integra	2007	47	Sistema	2005
23	Bank VTB	2007	48	NLMK	2005
24	PIK	2007	49	Novatek	2005
25	Gruppa LSR	2007	50	TransSibir'	2003

### Appendix 5. Correlation matrix for MOEX

	<b>ipo1</b>	<b>foreign</b>	<b>indexp</b>	<b>tenure</b>	<b>govsh</b>	<b>gov_b</b>	<b>fed</b>	<b>reg</b>	<b>other</b>	<b>size</b>	<b>indep</b>	<b>ln_rev</b>	<b>df</b>
<b>ipo1</b>	1.000												
<b>foreign</b>	0.167	1.000											
<b>indexp</b>	0.367	0.190	1.000										
<b>tenure</b>	0.309	-0.003	0.583	1.000									
<b>govsh</b>	0.147	-0.189	0.201	0.342	1.000								
<b>gov_b</b>	0.149	-0.070	0.148	0.178	0.701	1.000							
<b>fed</b>	0.184	-0.126	0.095	0.263	0.521	0.585	1.000						
<b>reg</b>	0.037	-0.060	0.070	0.153	0.504	0.613	0.120	1.000					
<b>othr</b>	0.281	-0.081	0.185	0.251	0.459	0.503	0.149	0.322	1.000				
<b>size</b>	-0.037	0.014	0.088	0.299	0.496	0.367	0.425	0.269	0.221	1.000			
<b>indep</b>	0.243	0.266	-0.079	0.019	0.127	0.072	0.189	-0.155	-0.012	0.266	1.000		
<b>ln_rev</b>	-0.155	-0.076	0.316	0.335	0.322	0.171	0.364	0.029	-0.059	0.421	0.064	1.000	
<b>df</b>	-0.017	0.108	0.213	0.151	0.187	-0.039	0.012	-0.086	0.013	-0.045	0.132	0.106	1.000

### Appendix 6. Correlation matrix for LSE

	<b>ipo1</b>	<b>foreign</b>	<b>indexp</b>	<b>tenure</b>	<b>govsh</b>	<b>gov_b</b>	<b>fed</b>	<b>reg</b>	<b>other</b>	<b>size</b>	<b>indep</b>	<b>ln_rev</b>	<b>df</b>
<b>ipo1</b>	1.000												
<b>foreign</b>	-0.111	1.000											
<b>indexp</b>	-0.119	0.065	1.000										
<b>tenure</b>	0.279	-0.316	0.135	1.000									
<b>govsh</b>	-0.007	-0.451	0.019	0.234	1.000								
<b>gov_b</b>	0.055	-0.501	0.104	0.392	0.647	1.000							
<b>fed</b>	-0.017	-0.607	0.112	0.506	0.678	0.815	1.000						
<b>reg</b>	0.004	-0.459	0.216	0.231	0.571	0.553	0.579	1.000					
<b>othr</b>	-0.044	0.044	0.053	-0.028	0.123	0.420	0.040	0.640	1.000				
<b>size</b>	-0.101	-0.325	-0.090	0.231	0.265	0.462	0.447	0.351	0.151	1.000			
<b>indep</b>	-0.088	0.239	0.057	-0.221	0.042	0.041	-0.026	0.230	0.230	-0.35	1.000		
<b>ln_rev</b>	-0.148	-0.511	-0.286	0.214	0.383	0.312	0.370	0.070	0.067	0.337	-0.184	1.000	
<b>df</b>	-0.290	0.054	-0.087	0.190	0.017	0.001	-0.155	0.137	0.137	0.133	0.087	0.229	1.000