

St. Petersburg University
Graduate School of Management

Master in Management program

THE RELATIONSHIP BETWEEN BOARD OF DIRECTORS
CHARACTERISTICS, OWNERSHIP STRUCTURE AND EARNINGS
MANAGEMENT OF KAZAKHSTANI LISTED COMPANIES

Master's Thesis by the 2nd year student

Concentration — General Track

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**ЗАЯВЛЕНИЕ О САМОСТОЯТЕЛЬНОМ ХАРАКТЕРЕ ВЫПОЛНЕНИЯ
ВЫПУСКНОЙ КВАЛИФИКАЦИОННОЙ РАБОТЫ**

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23 мая 2018 года

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I, Umitey Korlabasyeva, second year master student, program 080200 - «Management», state that my master thesis on the topic «The relationship between board of directors characteristics, ownership structure and earnings management of Kazakhstani listed companies», which is presented to the Master Office to be submitted to the Official Defense Committee for the public defense, does not contain any elements of plagiarism.

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May 23, 2018

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	сформулированы рекомендации.
Ключевые слова	Манипулирование прибылью, корпоративное управление, совет директоров, структура собственности

ABSTRACT

Master Student's Name	Umitey Korallasbayeva
Master Thesis Title	The relationship between board of directors characteristics, ownership structure and earnings management of Kazakhstani listed companies
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Description of the goal, tasks and main results	<p>Research goal of the work: to establish the relationship between the board of directors characteristics and ownership structure with the earnings management of companies listed at Kazakhstan Stock Exchange.</p> <p>Research objectives: identify the relationship between corporate governance mechanisms and earnings management in a company; review the state of corporate governance in Kazakhstan; choose the model to measure earnings management; run multiple regression analysis to establish the relationship between board of directors characteristics and ownership structure with earnings management of Kazakhstani listed companies; interpret the results and formulate conclusions.</p> <p>Results: relationship between corporate governance mechanisms and earnings management was studied; state of corporate governance in Kazakhstan was analyzed; with the help of regression analysis the influence of specific corporate governance mechanisms on earnings management in the Kazakhstani context was established, and managerial applications were formulated.</p>
Keywords	Earnings management, corporate governance, board of directors, ownership structure

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Introduction

The international corporate collapse and accounting scandals surrounding some prominent world's large companies (e.g. Enron, Xerox, World.com etc.) raised concern regarding the effectiveness of various monitoring mechanisms that protect investors' interests. The majority of these failures resulted, in part, from accounting manipulations and disregard of efficient corporate governance mechanisms that control opportunistic behavior of management. Agency conflicts within a firm are considered to be among the most influential sources of earnings management activities (Richardson, 2000). Corporate governance mechanisms are designed to minimize divergences which arise from the separation of ownership and decision control. Corporate governance mechanisms furthermore guarantee that managers act in the interests of shareholders (Denis and McConnel, 2003).

Boards of directors is an essential mechanism of corporate governance, as it is important to the accountability of corporations and the way corporations comply with modern ethical and economic standards. Strong and effective boards are valuable corporate assets. Board of directors is one of the greatest organizational innovations in the field of corporate governance.

A number of studies have investigated the relationship between boards of directors and ownership structure with company's earnings management. And most of these studies show that this relationship is strong. However, the vast majority of the studies have been conducted on the companies from the developed, emerging economies and transition economies of Central and Eastern Europe. Yet, still little is known about the influence of different corporate governance mechanisms on earnings management in transition economies of Central Asia. The development of appropriate corporate governance mechanisms in transition economies needs to be distinguished from the economies of the West for instance, as in these economies there was initial complete absence of the necessary prerequisites of an appropriate legal infrastructure and financial institutions in an environment where incumbent management and employees have entrenched rights within enterprises (Wright, Buck and Filatotchev, 2005). Legislation had to be enacted which for the first time introduced Western-style property rights and financial reporting requirements (Wright, Buck and Filatotchev, 2005). The process of forming themselves as a truly autonomous state was the principal direction of the Central Asian countries. Central Asian region is strategically significant to the world economy due to its location and hydrocarbon resources. Central Asia is a hub between Asia and Europe; hence it is politically important to keep Central Asia autonomous to prevent any power gaining dominance in Eurasia (Denoon,

2016). Secondly, the region's crucial assets are its hydrocarbon resources (Denoon, 2016). As such, Kazakhstan is the largest and most oil rich country in Central Asia, bordering Russia and China with a territory larger than the whole of Western Europe but with roughly the same population as the Netherlands (Denoon, 2016).

Establishment of good corporate governance practices has become an important task for Central Asian countries and Kazakhstan particularly for several reasons. Firstly, Kazakhstan is transforming from state and centralized economy to a private sector centered economy. Secondly, privatization was taking a very rapid and important role in establishing private ownership. Thirdly, in January 2018 Kazakhstan has officially launched Astana International Financial Centre (AIFC) with an ambitious plan to become the financial hub for Central Asia, the Caucasus, Eurasian Economic Union, the Middle East, West China, Mongolia and Europe. The new financial center plans to attract USD 40 billion of investments by 2025 and ensure about 1% growth in the carbonless GDP of Kazakhstan. One of the key factors of AIFC is the presence of a separate legal and regulatory system based on the principles of the British Common Law, according to which the Financial Court and Arbitration Centre started their operations in 2018. These measures aim to ensure the justice of the operations and to improve the credibility of Kazakhstan in the eyes of the investors. Hence, Kazakhstani companies planning to receive financing through AIFC should pay highest attention to implementation of efficient corporate governance practices and improving the quality of earnings.

There are limited number of research papers which look at the existence of association between overall corporate governance and earnings management of Kazakhstan. Two surveys were conducted by international financial institutions: IFC and EBRD. Survey of IFC focused on the description of general corporate governance practices of Kazakhstani firms. While EBRD's survey focused on the descriptive assessment of the board structure alone with a small sample of 10 companies. Research by Baimukhamedova et al. (2015) was conducted to reveal the effect of overall corporate governance on earnings management in Kazakhstani companies operating in natural resource sector only. However, these studies and assessments do not provide the insight on how the specific mechanisms of corporate governance influence the earnings management. Existing researches do not provide the information about the structure of board of directors and ownership to learn how the optimal "team" should be formed in order to achieve the highest results in business and provide trustworthy information to the stakeholders.

The **research gap** that arises from the review of the literature is a lack of understanding of the influence of specific corporate governance mechanisms such as board of directors and ownership structure on the earnings management in Kazakhstani companies.

This research fills the gap by studying the nature of relationship of specific mechanisms of corporate governance such as board of directors and ownership structure on the earnings management of Kazakhstan's listed companies.

Research goal

The goal of the research is to establish the relationship between the board of directors characteristics and ownership structure with the earnings management of companies listed at Kazakhstan Stock Exchange.

Research objectives

The following objectives were set to achieve this goal:

- 1) to identify the relationship between corporate governance mechanisms and earnings management in a company;
- 2) to review the state of corporate governance in Kazakhstan;
- 3) to choose the model to measure earnings management;
- 4) to run multiple regression analysis to establish the relationship between board of directors characteristics and ownership structure with earnings management of Kazakhstani listed companies;
- 5) to interpret the results and formulate conclusions.

The object of the research are companies listed at Kazakhstan Stock Exchange for the period from 2010-2016. **The subject of the research** is the relationship between board of directors characteristics, ownership structure and earnings management of studied companies.

Research questions

- What is the structure of the board of directors of Kazakhstani listed companies?
- Does board structure (size, independence, gender diversity and age diversity) of Kazakhstani listed companies have a relationship with the earnings management?
- What is the ownership structure of Kazakhstani listed companies?

- Does ownership structure of Kazakhstani listed companies have a relationship with the earnings management?

Thesis structure

The first chapter presents theoretical foundations of relationship between board of directors, ownership structure and earnings management. Current state of corporate governance in Kazakhstan is also reviewed. The second chapter presents research methodology, data description and research findings. Finally, interpretation of the results is presented and managerial applications are formulated.

Value of the research

The research results will be useful for local and foreign investors, mainly for making investment decisions. The study will also improve understanding of how corporate governance mechanisms affect earnings management. The results of the study will also be useful for shareholders of different companies to assess the importance of implementing sound corporate governance practices in order to maximize shareholder wealth. The results of the study will also be useful in developing guidelines for promoting policies to support sound corporate governance. The study also serves to add a contribution to the theory. The research will help to understand the importance of the agency theory among other theories, the application of the theory and its connection with the research results. Researchers interested in the field of corporate governance can use the results of the study for further research

Chapter 1. Theoretical Underpinnings of Relationship between Board of Directors, Ownership Structure and Earnings Management

An important part of the firm's annual reports are earnings. Earnings reveal what value added has been made in a given year. Having an understanding that earnings are crucial managers are inclined to show good financial indicators to the various stakeholders. To do so, managers can manipulate accounting figures in the financial reports by applying flexibility given by Generally Accepted Accounting Principles. Such practices are known as earnings management. It is a practice used by managers to reach the target that was predetermined. According to Barth, Landsman and Lang (2008), poor accounting quality encourages the management to indulge into earnings management practices. As noted by Alves (2012), the interests of managers and shareholders are not aligned due to agency problem and information asymmetry. Hence, managers are inclined to maximize their utility by opportunistically managing the earnings.

According to Dechow (1996), accounting earnings are more trustworthy and informative when the opportunistic behavior of managers is controlled by different monitoring systems. As noted by Garcia-Meca and P. Sanchez-Ballesta (2009), after several recent financial scandals (Enron, Xerox, Worldcom), there has been a trend worldwide to develop and implement corporate governance mechanisms to tackle the opportunistic behavior which has weakened investors' reliability in financial information provided. Corporate governance mechanisms aid investors by aligning interests of managers with shareholders' interests and by improving the credibility of financial information.

1.1. Concept of Earnings Management

According to Mangala and Isha (2017), earnings management is a transformation of accounting numbers to fulfill the predetermined managerial motives by taking the advantage of existing rules and regulations. Earnings management takes place when the managers use the judgement in preparing financial statements and can structure transactions in way that modify financial statements, which misleads stakeholders about the company's true economic situation (Healy & Wahlen, 1999).

There are two techniques that can be used by executives to manage earnings: accrual earnings management and real earnings management. According to Healy and Wahlen (1999), in accrual based earnings management, manager can change the level of accruals to achieve the desired level of earnings through their own judgement in financial reporting. For instance, these could be provisions for doubtful accounts, provisions for obsolete inventories and variation in the useful economic life of depreciated long-term assets. In real earnings management, manager could alter the operating decisions so that to structure the transactions. According to Roychowdhury (2006), for example to reduce discretionary expenses as R&D expenditures, overproducing to report lower cost of goods, to offer price discounts to temporarily increase sale.

However, there needs to be an understanding of the difference between earnings management and an accounting fraud. So, earnings management implies earnings manipulation through applying the discretion allowed by accounting standards and/or structuring the transaction in such a way, so that the firm value is not negatively affected. According to Dechow and Skinner (2000), earnings management can be categorized into three parts: conservative accounting, neutral accounting and aggressive accounting.

While fraudulent accounting implies earnings manipulation through violation of accounting standards and/or structuring the transactions in such a way as to decrease expected value of the firm. According to Yaping (2005), if put in other words, when earnings manipulation is within limits of GAAP it is earnings management and when the limits are violated it is considered fraud.

Popular earnings management methods used by the companies to manipulate earnings are: aggressive revenue recognition, aggressive capitalization, accounting choice method, misrepresenting cash flows, big bath accounting and cookie jars reserve etc. Accrual accounting plays a crucial role in earnings management. According to Gakhar (2013), accrual accounting, in comparison with cash system, offers many opportunities to executives to define company's earnings in accordance with their preference. Accounting earnings of a company consists of cash from operations and total accruals (Mangala D and Isha, 2017). Total accruals consist of discretionary accruals and non-discretionary accruals. Discretionary accruals in their nature are not obligatory and are based on the manager's discretion, while non-discretionary accruals are obligatory, as they result from normal operations of business or accounting transactions in the past. Subsequently, discretionary accruals are used as an earnings management mechanism and are used as a measure of earnings management.

1.2. Motives for Earnings Management

Empirical data suggests different explanations for earnings management, such as stock market motives, signaling/concealing private information, political cost, personal interest, internal motives, management compensation motives, lending contracts and regulatory motives. These motives can be divided into four main categories: capital market, management compensation contracts, external contracts, regulatory and political cost motives (Mangala and Isha, 2017).

Capital market motives

Managers used earnings management techniques to influence accounting information in reports to achieve the goal of improving short-term stock price performance. This is due to the fact that share prices are sensitive to the benchmarks of earnings that help investors assess the company's position in the market. According to Teoh, Welch and Wong (1998a), IPO firms are involved in income increasing earnings management activities than non-IPO firms, and then showed poor earnings and stock performance in subsequent years. Teoh, Welch & Wong (1998b), conclude further that companies increase their earnings around seasoned equity offerings to increase the value of share in the capital market and reduce earnings in subsequent years due to the reversal of discretionary accruals. According to Mangala D and Isha (2017), another motive for companies to apply earnings management is to meet the expectations of stock market analysts. The reason is that investors often make decisions based on the expectations of stock market analysts.

Management compensation contract motives

According to Holthausen, Larcker and Sloan (1995), managers engage in accrual manipulation to manage earnings up or down to maximize their compensation as their bonuses are tied to the company's earnings. Thus, when the level of earnings reaches the cap on bonus awards, managers apply income decreasing earnings management methods. They can also defer earnings in the current period to the next period, as after that no additional bonus is paid. Conversely, when earnings are below the minimum required to receive a bonus, managers apply income increasing earnings management techniques.

External contracts motives

Debt contracts, supplying contracts, covenants, dividend covenants, etc. are the types of external contracts. In order to regulate the company's activities, creditors may set certain

financial limits, for example, to maintain a certain level of reported accounting indicators and ratios, so that creditors can be confident about the repayment of the company's debt. Thus, companies with a high level of debt in the capital structure are motivated to change the accounting indicators through the application of earnings management practices. This is done with an aim to follow the covenants specified by the creditors (Mangala and Isha, 2017).

Regulatory and Political Costs Motives

This set of motives applies to industries such as banking, insurance, utilities. These industries are closely monitored on the basis of the regulations in terms of accounting indicators and ratios, which would confirm that companies are compliant with specific industry and antitrust regulations. Thus, banks that are close to the minimum capital requirements are motivated to apply income increasing earnings management practices to avoid the breach of regulations. In case of failure to comply with the requirements, restrictions on dividend and management dismissal regulatory interventions are imposed. With political cost motivations, companies adjust the financial figures with an aim of reducing political costs and taxation. According to Noronha, Zeng & Vinten (2008), private firms apply earnings management practices with the goal of saving tax expenditures.

The figure below summarizes the drivers and motives for managers to manipulate earnings in the light of the different conditions that lead to earnings management, creative accounting and fraudulent accounting practices.

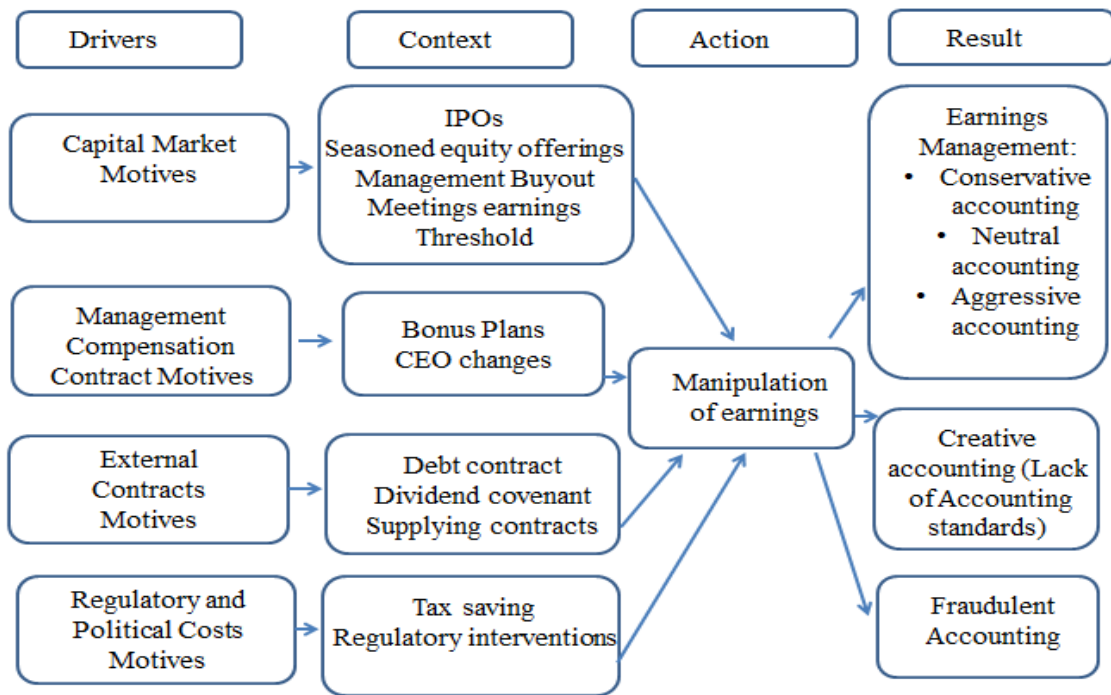


Fig. 1 Conceptual framework of earnings management¹

1.3. Board of Directors

The main purpose of corporate governance practices is to decrease agency issues, as opportunistic earnings management evolves around agency issues. Following are the main mechanisms of corporate governance: characteristics of a board, characteristics of audit committees and ownership structures.

This paper will focus on the influence of board of directors and ownership structure as part of corporate governance mechanisms on the earnings management practices. According to Dechow et al. (1996), whenever the corporate governance quality is low, the chances of engaging in opportunistic earnings management are high.

According to Jensen (Jensen, 1993), one of the main goals of the board of directors is associated with the replacement of the current leadership in the event of poor corporate performance, therefore, as a rule, the work of the board of directors is concerned with hiring, dismissing and compensating the Chief Executive Officer. Hart (1995) formulated a theoretical criterion that can be used to evaluate alternative governance mechanisms. Hart (1995) described two main conditions under which corporate governance mechanisms are crucial. First, an

¹ Mangala D. and Isha G. (2017). A brief mapping of earnings management's drivers and restraints. *Journal of Commerce and Accounting Research*, vol.6, issue 3, pp. 19-28.

agency problem (in other words, a conflict of interest) must exist between members of an organization (such as between owners, managers, consumers, or suppliers). Second, the cost of the transaction should be prohibitive such that the problem cannot be solved under the well-specified contract (implying that complete contracts which specify all current and future contingencies cannot be written) (Hart, 1995). Even though the link between executive compensation and company performance is weak, there are other mechanisms to ensure consistency between agents and principals. One such mechanism is the board of directors. As Jensen (1993) noted: “the board, at the apex of the internal control system, has the final responsibility for the functioning of the firm”. Therefore, there is an opinion that active monitoring of top management can improve decision making and, as such, corporate performance.

The literature highlights two main roles and functions of the board of directors in corporate affairs: the board of directors as a monitor and management advisor and the board of directors as an adversary of management. The first model covers a wide range of opportunities; on the one hand, the board will limit itself to assessing the effectiveness of management against established goals and discharging managers who have not achieved those goals. And on the other hand, the board will decide whether to accept the proposals made by the management in respect to important policies and objectives of the corporation. Between these two ends, there is a view that the boards will vary the comprehensiveness of their review and of their participation in decisions.

Board of directors diversity

One of the most important factors on corporate governance is supposed to be board of directors. According to Hambrick (1996), diversity is “the great number of different statuses among which a population is distributed”. Generally, there is a number of arguments in favor of diversity of board of members. In terms of the business case Carter (2003) identifies number of positive points for consideration. Carter (2003) also discusses the issue of managing diversity in the context of principal-agent problem. One of the points in favor of the diversity of the board of directors is that a more diverse board of directors can make decisions based on assessment of a wider range of choices compared to a more homogeneous board of directors. It is assumed that a diverse board of directors has a better understanding of the company’s market, and hypothetically diversity impacts growth in creativity and innovation. Diversity of the board can also improve the image of the company, which in turn can have positive effects on the customers. Additionally, when the candidates for the board of directors are chosen among the

best from the pool of both male and females, the quality will be much higher than if only men are potential candidates (Smith et al. 2005).

Nevertheless, there can also be arguments against diversity (Smith et al. 2005). If a more diverse board of directors produces more opinions and more critical questions, this might be more time consuming and thus not as effective as a more homogeneous board of directors. This is especially true if a company operates in a highly competitive environment where the ability to quickly react to market shocks is an important issue. Hambrick (1996) noted that a board which is culturally, ethically and gender diverse can face more struggles, and even though decisions may ultimately be better, this may not offset the undesirable consequences of a slower decision-making process if the market area of the company calls for swift reactions.

The board of directors can be used as a tool for dealing with problems of external interdependence and uncertainty, resulting from its exchange of resources with important external organizations. In organizations where the board of directors deviates from an optimal or preferred structure have a tendency to be less profitable, controlling for industry effects than those which do not deviate as much, this is an instruments with which to deal with the environment and if organizations fail to use this instrument accordingly, they would suffer from reduced profits

Numbers of studies have researched heterogeneity in groups and they showed that diversity could offer both a great opportunity for organizations as well as pose a big challenge. On one hand, some studies show that more varied groups are able to take into account wider range of viewpoints and generate higher quality results than less varied groups. From another perspective, the greater amount of diversity in a group or an organizational subunit, the less integrated the group is likely to be and hence the higher is the level of dissatisfaction and turnover. Therefore, diversity could increase the opportunity for creativity as well as the likelihood that group members will be dissatisfied and fail to identify with the group.

There are two major theoretical perspectives in the management and corporate governance literature which underlie the rationale for board diversity as shown in Table1. The first is agency theory, which can be briefly summarized as the board's monitoring role in protecting shareholder interests from the self-interests of management. The second perspective relating to arguments in favor of diversity is the resource dependence view, which regards the board as an essential link between the organization and the key resources necessary to maximize

its performance. These theoretical frameworks highlight the role of the board in carrying out its governance function.

Table 1 Two perspectives on Boards of Directors²

Dimension	Agency Theory perspective	Resource Dependence perspective
Board role	The primary roles of boards is to monitor actions of agents (executives) to ensure their efficiency and to protect principals' (owners') interests	Boards are a cooperative mechanism to extract resources vital to company performance Boards serve a boundary spanning roles Boards enhance organizational legitimacy
Operational definition of boards' role	Maximizing shareholders' wealth Reducing agency cost Selecting & rewarding CEO Evaluating CEO and company performance Strategic decision making and control	Scanning the environment Representing the firm in the community Securing valuable resources
Company performance criteria	-survival -low operating costs -profitability	-growth in resources -goal achievement -relative market position

Agency theory relates to two key issues: the influence of board composition on organizational performance and the impact of corporate leadership structure on organizational performance. Considerable emphasis has been given to the issue of board composition from an agency perspective, which suggests that with a greater proportion of outside directors boards will be better able to monitor self-interested actions by managers and will thereby minimize agency costs. The issue of duality in the role of chief executive and chairman of the board has also received much attention. According to Ingley and van der Walt (2001), from an agency perspective this role, commonly combined in US companies, is best separated or at least

² Source: made by author

counterbalanced by a lead outside director to reduce the opportunity for a powerful chief executive to dominate the board.

According to Ingley and van der Walt (2001), from the resource dependence view, the board is seen as a potentially important strategic resource for the organization, especially in linking the firm to external resources, such as providing a linkage to a nation's business elite, access to capital, connections to competitors, or market and industry intelligence. Diversity in this context argues for a broader range of backgrounds among external directors in providing this resource.

Additional key roles of the board are: providing advice and counsel to the chief executive and management, and contributing to, or approving strategy. Neither agency theory nor the resource dependence view adequately takes into account these key aspects of governance, which are also central to the rationale for diversity in the boardroom, depending on the organization's life-cycle stage and its operating environment (Ingley and van der Walt, 2001).

According to Milliken and Martins (1996), there are two categories of diversity – observable diversity such as the readily detectable attributes of directors, and less visible diversity, such as the background of directors. Observable diversity includes race/ethnic background, nationality, gender and age, while less visible diversity comprises educational, functional and occupational backgrounds, industry experience, and organizational membership.

Some of the advantages of board diversity include promotion of a better understanding of the market place, increased creativity and innovation, and effective problem solving. Further, board diversity can promote more effective global relationships and increase board independence because people with different gender, ethnicity or cultural background might ask questions that would not come from directors with more traditional backgrounds.

1.4. Impact of Board Structure on Earnings Management

The composition and structure of boards of directors can influence many organizational results. This concept seems to be consistent in academic literature. The researchers began to investigate the effect of board diversity, which may be defined as a variety in board composition. This diversity can be measured in a number of ways: gender, age, ethnicity, nationality, education, work experience and organizational membership.

The composition of the board of directors is an essential mechanism of corporate governance that can control the opportunistic behavior of managers and thus reduce earnings management (Man et al., 2013). Composition of the board includes deciding on the mix of non-executive and executive directors, entitling audit and compensations committees, deciding on the

mix of required qualifications as well as deciding on the proportion of the females on the board. Internal management mechanisms could also be considered. According to Bertrand and Mullainathan (2000), these include the proportion of independent directors of the board of directors, as well as the number of board meetings. Al-Thuneibat et al. (2016), in the study of Saudi Arabian companies found no statistically significant impact of internal audit, audit committee and boards of directors on earnings management.

Independent directors

Concept of independent directors is one of the most crucial factors for the practices of good corporate governance that the companies should have an independent board of directors to improve the effectiveness of the board. According to Anderson et al. (2004), independent directors can make a positive contribution to the monitoring responsibilities of the board. Also, Dunn (2004) found some evidence that presence of the independent directors on the boards is correlated with less cases of fraudulent financial reporting.

Substantial amount of literature has shown apprehension on the relationship between reduced levels of earnings management and independence of board members (Hwang & Kim, 2009). Studies by Dechow and Dichev (2002), Peasnell and Young (2000), showed how independence of board can decrease earnings management. The reason is that independent directors don't chase their personal interests such as executive compensation or the pressure to meet the expectations regarding the performance of a firm. Board independence is necessary to control the actions of the managers in order to safeguard the investors' interests. Independence of a board can also aid in preventing abuse of power by managers. According to Xie et al., (2003), companies, whose boards have more independent outside directors, have fewer occurrences of earnings management practices. In the research by Davidson et al., (2005), which was based on the cross-sectional sample of 434 companies in Australia, a majority of non-executive directors on the board is associated with a minor chance of earnings management. Another study by Peasnell et al., (2004), focused on the relationship between board monitoring and likelihood of earnings management. The results showed that the chance of managers making income-increasing accruals has a negative relation with the percentage of outsiders on the board. According to Dechow et al. (1996), companies with widespread earnings management have a higher likelihood to be controlled by insiders than by outsiders. Likewise, research by Beasley (1996) showed that the larger number of outside board directors can decrease the chance of fraudulent financial information. Research by Peasnell et al. (2005), demonstrated that a greater fraction of outside directors in the UK is more effective in constraining income-increasing discretionary accruals. Numbers of researches demonstrate negative relationship between

independence of board and the degree of earnings management (Xie et al., 2003; Peasnell et al., 2000; Davidson, 2005). Talbi et al. (2015), in their study of 7481 US firms found that independence of boards of directors can mitigate the level of real earnings management. Study by Klein (2002), found a negative relationship between the independence of board and earnings management in the USA. Alves (2014), also found that independent board members improve earnings quality by reducing earnings management for a sample of Portuguese listed firms. Zgarni et al. (2014), in an analysis of Tunisian companies found that a board comprising majority of independent directors reduces the extent of real earnings management. Majority of these researches study earnings management according to discretionary accruals method. However, Ianniello (2015), in a research conducted on a sample of Italian listed firms found that board independence has no influence on a proxy of earnings management.

H01: Companies with a larger number of independent directors on board will have lower level of earnings management.

Size of the board

The optimal size of the board members is guaranteed by the sufficient number of board members to execute monitoring and control functions successfully. Research by Rahman and Ali (2006) showed that board size is positively related with earnings management. Alternatively, research by Xie et al. (2003) showed that the boards smaller in size are better suited to make suitable decisions in comparison with larger boards. Bushman et al. (2004), concludes that smaller boards have decreased costs of coordination, but at the same time have less advisors and monitors of management. According to Carter et al. (2004), the larger the board becomes, the less powerful it can become as the communication between directors in practice would become more difficult. Carter et al. (2004), further suggest that the maximum number of director on the boards to comprise 10 directors. Yet, the same research also indicated that the larger boards are more effective in restraining earnings management than the boards smaller in size. Xie et al. (2003) also indicated that boards large in size which have different experts have a higher likelihood to have a higher degree of independence in comparison with small boards. Likewise, research by Peasnell et al. (2004) showed that in comparison with smaller boards, larger boards are better in decreasing earnings management practices.

H02: Companies with a larger size of the board will have lower level of earnings management.

Gender diversity

Previous studies have looked at the relationship between the number of female directors in the board with the degree of earnings management as well as earnings quality. According to Adams and Ferreira (2009), female board directors have a higher likelihood to have board

thoroughness and hence make more energy directed at monitoring and controlling managers' performance. Also as noted by Carter et al. (2003), female board members think more autonomously and are able to monitor the executives' behavior and actions more efficiently comparing to male board members. This is one of the most critical controls for earnings management – firms with larger number of female board members can have better quality of earnings and also less earnings management, as autonomous thinking is crucial for spotting opportunistic behavior and demanding high quality financial reports. Additionally according to Krishnan and Parsons (2008), female board directors have more tendencies to be intolerant of opportunistic behavior comparing with male directors. Female executives and leaders put more effort in building a culture of trust in a company through applying transformational strategies for empowering team members (Klenke, 2002). Such style of leadership which takes advantages of strengths of female leaders as shown in figure 2, predisposes to share information with female directors. Further Sunden and Surette (1998), demonstrate that female executives are less risk taking in decision making than male executives. Likewise, female directors are risk-averse as well (Hinz et al., 1997). By this logic, female board directors are more likely not to allow executives to manage the earnings, which would make the company face the risk and thus influencing company's status.

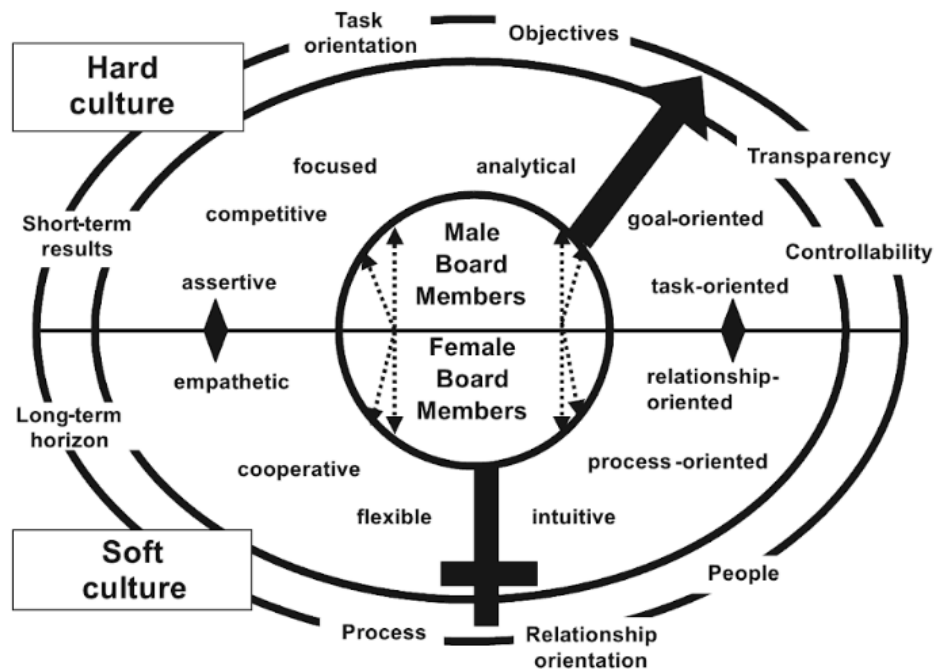


Fig. 2 Comparative strengths of board members of different sex and national culture³

³ Hilb. M. (2005). New Corporate Governance. Successful Board Management Tools.

Interestingly, Ducharme et al. (2004), demonstrate that during IPOs companies are faced with more litigation if there is earnings management. Hence, as female directors are more risk averse to the chance of facing litigations and the loss of company status, female directors would monitor and control internal and external auditors more thoroughly. According to Srinidhi et al. (2011), female board directors can advance governance of the board in relationship to monitoring and controlling CEOs, improving communication and attendance of the board. Consequently, female presence on the board can aid in reducing earnings management. Arun et al. (2015) studied the influence of female directors on earnings management practices of U.K firms. The research found that firms with a higher number of female and independent female directors restrained earnings management practices in the UK firms. However, Shamsul Nahar et al. (2016), in the study of Malaysian companies have found that presence of women on board of directors or audit committee is not associated with a tendency for earnings management.

H03: Companies with larger gender diversity on board will have lower level of earnings management.

Age diversity

According to Timmerman (2000), when people have different ages they have different skills and information, so this diversity might be important as it can contribute to the quality of the performance. Figure 3 below provides summary of comparative strengths of older and younger board members and top management. Age diversity might bring experience and perspectives which are important for the workplace. Those people who reflect a diversity of experience through their age will be able to offer different bases of expertise, hence can add valuable contribution to the decisions of the board (Westpal and Milton, 2000). The older group can provide experience and wisdom, the middle group takes responsibility in corporations and in society, and the younger group uses the energy and drive to succeed and plan.

According to Kang et al. (2007), there is an argument that as different types of stakeholders each company must represent on boards, diversity in age of directors can help the process by adding different perspectives.

According to Kang et al. (2007), the age of directors reflects their knowledge in business and serves as a proof of their maturity in managing the company. Studies by Hambrick and Mason (1984) make a note that older board members demonstrate judgment that is more conventional and moral. Because of this conventional judgment, it is more likely that board with older members will have better quality of earnings. Nonetheless, this trend is altering, and there

is vigorous promotion of the diversity of age, that would ensure various perspectives on the issues (Kang et al. 2007).

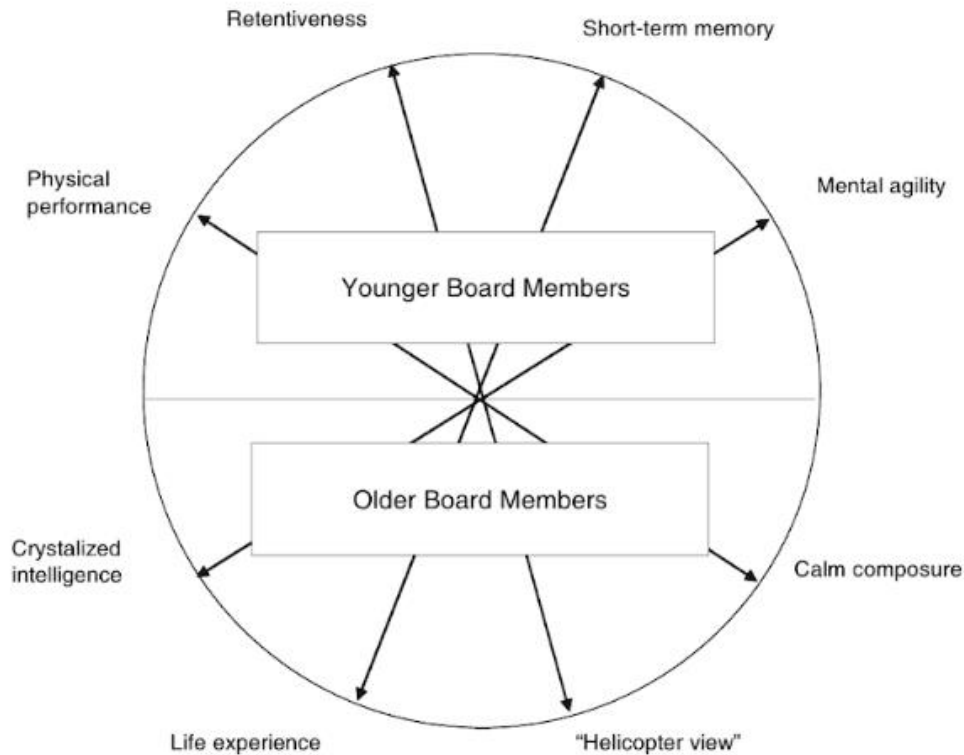


Fig. 3 Comparative strengths of older and younger members of board and top management⁴

H04: Companies with larger age diversity on board will have lower level of earnings management.

1.5. Impact of Ownership Structure on Earnings Management

Institutional ownership

According to Lang and McNichols (1997), institutional investors are organizations such as insurance companies, investment funds, pension funds, investment companies, financial institutions and other companies which can be associated with such organizations. According to Mitra (2002), institutional investors have strong enticement to collect information about the corporations in which they have invested or plan to make investment. The larger the amount of investment, the larger is motivation to watch closely any earnings manipulation. According to

⁴ Hilb. M. (2005). New Corporate Governance. Successful Board Management Tools.

Monks and Minow (1995), institutional investors possess resources and ability to control, restrain and impact manager's decision in the company. According to Richard, Michael and Jeong-Bon Kim (2002), institutions with large shareholding participate actively in watching over and controlling managerial opportunism in managing the reported earnings. The reason being that institutions which invest in the long term period are more worried about the fundamental profitability of the company and thus are cautious about the use of discretionary accruals to manage the earnings. Mitra et al. (2005), in their study which examined the relationship between institutional stock ownership and management's accounting discretion to manage accruals, found that there exists an inverse relationship between institutional ownership and the discretion of managers to manipulate earnings. According to Ajay et al. (2015), in the study of Indian companies, companies with higher institutional ownership were found to have higher earnings quality, hence restricting managers from using discretionary powers to report earnings. The study has also found that institutional ownership has a negative relationship with earnings management for larger and matured companies. While growing companies were found to have higher earnings management. Ajay et al. (2015), state that institutional investors monitor companies and therefore reduce aggressive earnings management practices within the company. Mehrani et al. (2017), in their study of Iranian companies found that institutional ownership has a positive effect on earnings quality. However, Chandra (2018), in the study of manufacturing companies listed at Indonesian Stock Exchange, has found that institutional ownership has no significant effect on earnings management.

H05: Companies with larger proportion of institutional ownership will have lower level of earnings management.

State ownership

The study by Bauwhede et al. (2003) where the data about Belgian firms were used showed that public ownership serves as a motivation to manage earnings in upward direction thus impacting positively discretionary accruals. In the study by Xu et al. (2012), the impact of ownership structure on the quality of reported earnings of the companies listed on the Chinese Stock Exchange was studied. The results indicate that firms with private, foreign and society ownership perform better in terms of earnings quality than the state controlled companies. Lai et al. (2017), in the study of Chinese listed firms found that higher state ownership is related to higher likelihood of earnings management practice. However, other studies show that ownership structure is important for restraining opportunistic earnings management. According to Li

(2010), and Shen and Chen (2009), that state shareholding served as a crucial mechanism of corporate governance. However, according to Cheng et al. (2015), by using a sample of 437 Chinese IPO firms, they have found that state-owned companies manage earnings to a lesser degree than non-state-owned companies around IPO. According to Gaio et al. (2018), their research of public and private European companies during 2003-2010 has showed that state-owned companies display less conservatism than non-state-owned companies, which is in line with the notion that there is less demand for accounting conservatism due to government protection. Their findings also suggest that state-owned companies have higher abnormal accruals and worse accruals quality than non-state-owned companies. According to Ding et al. (2007), their analysis of 273 private and public companies showed that private companies seek to maximize their accounting revenues more. According to Wang et al. (2011), their research of Chinese companies has found lower levels of earnings management among state owned enterprises than privately owned companies. Wang et al. (2001) also arrive to the conclusion that the protection of state enterprises by the government might have played crucial role in moderating the pressure on managers to manipulate company-specific information.

H06: Companies with larger proportion of state ownership will have lower level of earnings management.

1.6. Corporate Governance in Kazakhstan

According to the report of IFC Central Asia corporate governance project (2010), the result of IFC's survey demonstrate that the issues of corporate governance development are becoming more urgent for Kazakhstan companies. They attribute such results to the factors such as intention of companies to go public, attract domestic and foreign investment and enhance operational efficiency and a company's image. The majority of respondents confirms that adherence to corporate governance standards increases possibility of better access to capital markets and significantly enhances their investment attractiveness. Companies also become more sustainable from a financial point of view. This is because they attend more carefully to the rights and interests of shareholders and stakeholders. Similarly Alimbetov et al. (2016), conclude that the issue of corporate governance is gaining attention in Kazakhstan due to a number of of following factors:

- An active search for opportunities to attract foreign investment for the future development;
- Increasing interest in mergers and acquisitions between Kazakhstani companies;

- Increasing interest of Kazakh companies to participate in world’s leading foreign stock exchanges with high standards of the corporate governance – London Stock Exchange, New York Stock Exchange;
- Understanding that improved corporate standards affect the ratings and are crucial for strengthening investor’s trust;

According to Akhmetova (2017), the following are the peculiarities of corporate governance in Kazakhstan:

1. Ownership concentration
2. Insufficient separation of ownership and control
3. Cumbersome holding structures
4. Continuous reorganization
5. Inexperienced and malfunctioning boards of directors

Report prepared by Cigna G.P., Kobel Ya. & Sigheartau A. (2017) presents an assessment of board structure of the ten largest listed companies Kazakhstan. The assessment aimed at measuring the state of status, gaps between local laws & regulations and international standards, effectiveness of implementation in the area of corporate governance. Overall, the assessment identifies that neither the law nor the Corporate Governance Code requires listed companies’ committees to be made up of a majority of independent directors nor such a practice is common among companies. Also boards are small and legal entities cannot be board members. Although there is a lack of legal requirement regarding board members’ qualification (except for the banks), boards appear to have a diversified mix of skills. And finally, gender diversity on boards is very limited. Table 2 below presents in detail the results of the assessment of board structure in Kazakhstan.

Table 2 Assessment of board structure in Kazakhstan⁵

BOARD COMPOSITION ASSESSMENT - FAIR	
STRENGTHS	Boards are small, with an average of 5,8 members Legal entities cannot serves as board members CEO cannot be the chair of the board and of its committees The law requires all companies to set up committees to deal with the strategy planning, personnel and remuneration, internal audit and social issues.

⁵ Cigna G.P., Kobel Ya. & Sigheartau A. (2017)

	<p>Most of the companies disclose the qualification of the board members</p> <p>Board members of banks are required to hold a university degree and the chair to have banking industry expertise. The Corporate Governance Code recommends the board to be comprised of highly skilled professionals. The law is silent in this respect though. Boards appear to have a diversified mix of skills.</p>
WEAKNESSES	<p>CEO is the only executive director allowed to be a member of the board.</p> <p>The law requires the chair of the strategic planning, resource and remuneration, internal audit and social issues committees to be an independent director, but it seems that this requirement is not well implemented</p> <p>Neither the law nor the Corporate Governance Code requires listed companies committees to be made up of a majority of independent directors.</p>
GENDER DIVERSITY AT THE BOARD – VERY WEAK	
WEAKNESSES	<p>The law and the Corporate Governance Code are silent on gender diversity at the board.</p> <p>All then largest listed companies disclose the board composition. Five out of the ten largest companies have between one and two women in their boards.</p>
INDEPENDENT DIRECTORS - WEAK	
STRENGTHS	<p>All JSCs are required to have at least 30% of independent board members. Eight of the ten largest listed companies state they comply with this requirement.</p>
WEAKNESSES	<p>The definition of independence is not comprehensive as it does not demand that independent members present an independent state of mind, judgement. It should be pointed out that the concepts of “non-affiliation” and “independence” are different. While non-affiliation can be established by negative criteria,</p>

	<p>independence necessarily needs objectivity of mind and character, which is a positive character that should be demonstrated, disclosed and explained in practice. Only one company discloses the criteria adopted to consider its members as independent.</p>
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As for the link between earnings management and corporate governance only one study was conducted by Baimukhamedova et al. (2015). Their research concentrated on studying the effect of corporate governance on companies' earnings management by empirically studying Kazakhstani companies in natural resources sector. This study was limited by the sample of 24 companies and time span of 5 years. The study demonstrated that board size, board independence, firm size, cash flows have insignificant relationship with the earnings management. Firm performance and extent of leverage showed to have significant relationships with the earnings management. The study was based on accounting accruals approach to measure earnings management.

1.7. Summary

In conclusion, the notion that structure of boards of directors and ownership can influence a variety of organizational outcomes is consistent across academic literature. Literature identifies three areas in which board composition is posited to affect firm performance: service, resource acquisition, and control. As for the case of Kazakhstan, the literature review shows that a limited number of studies were conducted about the association between earnings management and relevant level of corporate governance systems development. Preceding studies conducted locally focused on the relationship between corporate governance and earnings management.

There is a gap in understanding the relationship between board of directors characteristics and ownership structure with earnings management for companies listed at KASE. Therefore, the research will be of use for companies listed at KASE and other companies in Kazakhstan as it will contribute to their understanding of the importance of efficient board structures as a vital monitoring and control mechanism, which ensures that companies provide high quality and trustworthy financial information.

Research goal

The goal of the research is to establish the relationship between the board of directors characteristics and ownership structure with the earnings management of companies listed at Kazakhstan Stock Exchange.

Research questions

- What is the structure of the board of directors of Kazakhstani listed companies?
- Does board structure (size, independence, gender diversity and age diversity) of Kazakhstani listed companies have a relationship with the earnings management?
- What is the ownership structure of Kazakhstani listed companies?
- Does ownership structure of Kazakhstani listed companies have a relationship with the earnings management?

Hypotheses

The following hypotheses were formulated as a result of literature review to establish the relationship of the structure of board of directors and ownership with earnings management of Kazakhstan's listed companies:

H01: Companies with a larger number of independent directors on board will have lower level of earnings management.

H02: Companies with a larger size of the board will have lower level of earnings management.

H03: Companies with larger gender diversity on board will have lower level of earnings management.

H04: Companies with larger age diversity on board will have lower level of earnings management.

H05: Companies with larger proportion of institutional ownership will have lower level of earnings management.

H06: Companies with larger proportion of state ownership will have lower level of earnings management.

Chapter 2. Empirical Study of the Relationship between Board of Directors Characteristics, Ownership Structure and Earnings Management of Kazakhstani Listed Companies

2.1. Research Methodology

This paper represents an explanatory type of research, as it is best fit to identify the extent and nature of cause-and-effect relationships. In the following sections of this chapter I elaborate further on the methodology and analysis. The data sources and collection will be presented as well as the variables which will be used in the research. Finally, the data analysis will be presented.

2.1.1. Data collection

This research serves as an attempt to obtain a realistic picture of the Kazakhstani market through an empirical analysis of the subject. Data is collected through the companies' archives. All the required and necessary information regarding the board and ownership structure is presented in the annual reports which are available on the corporate websites as well as on the KASE's website. The Thomson Reuters and Eikon Datastreams were used to collect data necessary for calculation Earnings Management proxy – Discretionary Accruals.

The initial sample consists of 77 companies listed at Kazakhstan Stock Exchange. The period of analysis is for the 7 years, through 2010-2016, as doing so ensures the maximum amount of data available. Following previous researches, 18 firms from the financial services industry such as banks and insurance companies were excluded, as the characteristics of this industry are different, which are difficult to compare and derive earnings management proxy. Further, 24 companies with the insufficient data for assessing earnings management and governance information were removed from the initial list. After merging the available data, it leaves us with a final sample of 245 firm-year observations from 35 unique companies.

2.1.2. Empirical Model

The data collected is analyzed through the multiple regressions in order to understand whether we can predict a general trend for the relationship between the board and ownership structure and the earnings management.

The following empirical model is used to conduct the multiple regression analysis:

$$EM = \beta_0 + \beta_1 \text{SIZE} + \beta_2 \text{IND} + \beta_3 \text{GEN} + \beta_4 \text{AGE} + \beta_5 \text{INST} + \beta_6 \text{STATE} + \beta_7 \text{LNSIZE} + \varepsilon$$

EM is a proxy for accrual based earnings management. SIZE, IND, GEN, AGE, INST and STATE stand for the degree of board size, board independence, gender diversity, age diversity, institutional ownership, state ownership and managerial ownership respectively. LNSIZE is a control variable.

β_0 stands for regression constant.

The coefficients of β_1 , β_2 , β_3 , β_4 , β_5 , β_6 and β_7 are required to test the effect of corresponding variables on earnings management.

ε stands for error term.

To confirm the hypotheses of the research F-test is used to determine the extent to which board and ownership structure contributes to the use of earnings management. The model of coefficients of the independent variables and their P-values were used as well. The tests were performed at 95% confidence level and at 5% significance level.

2.1.3. Variables

Dependent variable

The dependent variable in this research is earnings management. This research will be based on accounting accruals approach to measure earnings management. According to Healy (2001), accruals include a wide range of possible implications to practice earnings management techniques (mainly, accounting policy choices and various estimates). Discretionary accruals are widely used all over the world by managers to move the earnings from one period to the other.

There are number of various models to calculate discretionary accruals. In the study by Dechow et al. (1995), various models were discussed and compared and the conclusion reached at the paper was that the Modified Jones model is the best model fit for detecting earnings management. Following the previous researches, the Modified Jones model is used in this research.

Discretionary accruals are calculated by measuring non-discretionary accruals as part of the total accrual in the Modified Jones model.

The total accruals are calculated as follows:

$$TACC_t = NI_t - CFO_t$$

Where,

$TACC_t$ = Total accruals in year t

NI_t = Net Income in year t

CFO_t = Cash flow from operating activities in year t

With the total accruals calculated at the next step the Modified Jones Model is estimated, as defined below:

$$\frac{TACC_t}{A_{t-1}} = \alpha_1 \frac{1}{A_{t-1}} + \alpha_2 \frac{(\Delta REV_t - \Delta REC_t)}{A_{t-1}} + \alpha_3 \frac{PPE_t}{A_{t-1}} + \varepsilon_t$$

$TACC_t$ = Total accruals in year t divided by total assets in year t – 1,

ΔREV_t = Revenues in year t less revenues in year t – 1,

ΔREC_t = Delta revenues in year t less delta net receivables in year t – 1,

PPE_t = Gross property plant and equipment in year t,

A_{t-1} = Total assets in year t – 1,

$\alpha_1, \alpha_2,$ and α_3 = Parameters to be estimated, namely alphas,

ε_t = Residuals in year t.

Alphas, coefficients or parameters are estimated by means of an ordinary least squares regression (OLS). These alphas are required in the following step to measure non-discretionary part of accruals with the following formula:

$$\frac{NDACC_t}{A_{t-1}} = \hat{\alpha}_1 \frac{1}{A_{t-1}} + \hat{\alpha}_2 \frac{(\Delta REV_t - \Delta REC_t)}{A_{t-1}} + \hat{\alpha}_3 \frac{PPE_t}{A_{t-1}}$$

$NDACC_t$ = Non-discretionary accruals divided by total assets in year t – 1,

ΔREV_t = Revenues in year t less revenues in year t – 1,

ΔREC_t = Net receivables in year t less net receivables in year t – 1,

PPE_t = Gross property plant and equipment in year t,

A_{t-1} = Total assets in year t – 1,

$\hat{\alpha}_1, \hat{\alpha}_2,$ and $\hat{\alpha}_3$ = Estimated parameters, namely alphas from previous regression

Finally, discretionary accruals are estimated by subtracting the non-discretionary portion of the accruals from the total accrual.

$$DACC_t = TACC_t - NDACC_t$$

Independent variables

In this research there are seven explanatory variables which are used to measure the impact of board and ownership structure on earnings management.

1. SIZE – board size is the total number of executive and non-executive directors in the board. It is measured as the total number of directors in the board.
2. IND – board independence, which is a percentage of independent outside directors in the board. It is measured as ratio of non-executive directors to the total number of directors.
3. GEN – gender diversity which refers to the female representation in the board. It is measured as a ratio of female directors to the total number of directors.
4. AGE – age diversity, which is measured by the standard deviation of the age of the board members of a corresponding firm.
5. INST – institutional ownership, which is measured by the ratio of shares owned by institutional shareholders to total number of outstanding shares.
6. STATE – state ownership, which is measured by the ratio of shares owned by state entities to total number of outstanding shares.

Control variable

The control variable used to control for other factors which otherwise bias the regression coefficients is LNSIZE to control for the impact of company size. According to Francis & Wang (2008), prior studies showed that larger firms have a tendency to have lower levels of accruals than smaller firms. Firm size is measured through natural logarithm of total assets.

The table below summarizes the variables and their definitions.

Table 3 Summary of variable definitions

<i>Variables</i>	<i>Description</i>
Dependent	
EM	Accrual-based earnings management, measured by Modified Jones Model
Independent	
SIZE	Board size, measured as the total number of directors in the board
IND	Board independence, measured as ratio of non-executive directors to the total number of directors
GEN	Gender diversity, measured as a ratio of female directors to the total number of directors
AGE	Age diversity, measured by the standard deviation of the age of the board members of a corresponding firm
INST	Institutional ownership, which is measured by the ratio of shares owned by institutional shareholders to total number of outstanding shares
STATE	State ownership, which is measured by the ratio of shares owned by state entities to total number of outstanding shares
Control	
LNSIZE	Firm size is measured through natural logarithm of total assets

2.2. Empirical Results and Discussion

2.2.1. Descriptive Statistics

Table 4 Descriptive statistics

	Mean	Std. Deviation	N
EM	-,548	,496	245
SIZE	5,48	2,126	245
LNSIZE	17,296	1,943	245
IND	,393	,100	245
GEN	,075	,150	245
AGE	9,328	3,418	245
INST	,077	,190	245
STATE	,144	,318	245

Table 4 above shows the descriptive statistics of the dependent and independent variables that were used in the regression model and states the mean and standard deviation of the latter. Thus, with respect to Board characteristics, we can observe that in Kazakhstani listed companies the Board on average is composed of 5-6 people, of whom approximately 39% are independent external directors. This fact clearly indicates that composition of this executive organ is mainly made up from internal members, which potentially can serve as a signal of increased potential for earnings manipulation. However, current requirements in Kazakhstan require that at 30% of the Board to be represented by independent directors. Thus, the average percentage of 39% is regarded as evidence that companies show a tendency to comply with worldwide corporate governance practices.

The mean for gender diversity comprises 7,5%, meaning that around 8% of the board members are females. This number is lagging behind the global averages. Globally, the number of women on boards has been increasing for the last three years, According to ISS Quality Score data, overall female representation has increased on the boards from 14,5% in 2014, to 15,3% in 2015, and 16,9% in 2016. While the global numbers are still small, the average number for Kazakhstani companies is significantly smaller. This can be explained by the fact that there are no strong regulations which would require the minimum level of diversity and the social norms in Kazakhstan do not require some change in regulatory framework.

The mean for age diversity is 9,3, which was measured by the standard deviation of the age of the board members. According to the Research by Barret (2017) of S&P 500 companies, the average standard deviation of ages of directors was 7,2. The higher this number, the higher is a chance that more decades are represented on the boardroom.

With respect to ownership structure, we can observe that on average 7,8 % are institutional shareholders and 14,4% are government owned. The higher number for state ownership corresponds to the reality and can be explained by the fact that Kazakhstan has been going through transformation from state economy to a private sector centered economy, with government holding the majority stake in a number of largest companies through Sovereign Wealth Fund “Samruk-Kazyna”.

2.2.2. Regression results

Table 5 Model Summary: Regression results

Model Summary^b						
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	R Square Change	Durbin-Watson
1	,502 ^a	0,301	0,274	,379	0,301	1,361
a. Predictors: (Constant), state ownership, gender diversity, institutional ownership ,age diversity, Independence, board Size, firm size						
b. Dependent Variable: EM						

R-square of the current research is .301 and adjusted R-square equals to .274 meaning that approximately 27,4 % of the Earnings Management variability is explained by the independent variables selected.

Table 6 discussing Model Summary also shows the result of Durbin-Watson statistical test. This test statistics is used to detect the presence of autocorrelation in the residuals from the regression results. Small values of Durbin-Watson statistics indicate the presence of autocorrelations. The value generally falls somewhere within the range of 0 and 4, for the current research the value comprises 1.361, which is close to the mid-point 2 and thus proves the assumption that there is no autocorrelation between the residual errors.

Table 6 ANOVA: Regression results

ANOVA^a						
	Model	Sum of Squares	df	Mean Square	F	Sig.
1	Regression	5,496	7	0,785	3,402	,002 ^b
	Residual	54,697	237	0,231		
	Total	60,193	244			
a. Dependent Variable: EM						
b. Predictors: (Constant), state ownership, gender diversity, institutional ownership , age diversity, independence, board size, firm size						

Analysis of Variance (ANOVA) implies the statistical test of whether or not the means of several groups are equal and analyzes the differences between the latter. The analysis of variance can be used as an exploratory tool to explain observations and make decisions using statistical data. The result of the test is called statistically significant if it is considered unlikely to have happened by accident, assuming the null hypothesis is true. A result is statistically significant,

when the probability (p-value) is less than the threshold (significance level), explains the rejection of the null hypothesis.

If the significance level is less than .05 (i.e. 5%) then there is a statistically significant difference in the mean earnings management between the various independent variables assumed to have an effect on the latter. The F-ratio presented in ANOVA table gives us the idea of whether the overall regression model is a good fit for the selected and tested data. Table 7 shows that independent variables significantly predict the nature of Earnings Management: $F(7, 237) = 3,402, p=.005$. This means that the regression model is a perfect fit of the analyzed data). The level of significance is $Sig=.002$ which falls within the 5% range.

Regression equation

$$EM = -1,511 - 0,059SIZE + 0,600IND + 0,548GEN - 0,025AGE + 0,054LNSIZE + 0,064INST - 0,120STATE$$

In order to get an understanding of relationships between Earnings Management and independent variables, namely board of directors' size, board independence, gender diversity, age diversity, firm size, institutional ownership and state ownership it is useful to determine the regression equation, which summarizes the overall research outcome. The coefficients for each variable indicate the level/amount of change one could expect in Earnings Management given a one-unit increase/decrease in the value of any particular variable assuming that all other variables tested in the model are held constant.

Table 7 Analysis of regression coefficients

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	-1,511	0,576		-4,742	0
	SIZE	-0,059	0,027	-0,122	-2,757	0,006
	IND	0,600	0,358	0,121	1,679	0,095
	GEN	0,548	0,214	0,168	2,563	0,011
	AGE	-0,025	0,009	-0,171	-2,658	0,008
	LNSIZE	0,054	0,022	0,210	2,433	0,016
	INST	0,064	0,176	0,025	0,363	0,717
	STATE	-0,120	0,135	-0,077	-,884	0,377

Therefore, one unit increase in Board Size would result in 0,059 decrease in Earnings Management (EM) and one unit increase in Board Independence would mean 0,600 increase in EM. If gender diversity increases for one level, then EM for that particular case would also increase by 0,548. Unit increase in age diversity would result in 0,025 decrease in EM. One unit increase in firm size would increase EM by 0,054. Further, one unit increase in institutional ownership would result in 0,064 increase in EM. Finally, increase in state ownership by one unit would lead to decrease in EM by 0,120.

At the next step we identify whether a multiple regression coefficient is statistically significant. It is noted that when a large number of explanatory variables are used within a small sample, observed multiple correlations are quite large and at the same time they vary widely from their population values. This issue is resolved by the help of multiple regression procedure which assigns greatest weight to those variables having the strongest relationship with the criterion variables in the sample data. Lack of statistical significant might serve as a signal point meaning that an observed multiple correlations might turn occurred by chance.

As such according to the Table 8 discussing each regression coefficient in details, the following conclusions are made in regards to the predictive power and significance level each of the selected independent variable have on Earnings Management:

- Board independence (IND) has no significant relationship with decrease of the Earnings Management, level of significance sig = 0,095. Thus, hypothesis #1 is rejected.
- Board size (SIZE) has a significant positive relationship with decrease of the Earnings Management, level of significance = 0,006. Thus, hypothesis #2 is accepted.
- Gender diversity (GEN) is significantly related to the Earnings Management, level of significance = 0, 011. However, it has significant positive relationship with an increase of EM. Therefore, hypothesis #3 is not confirmed.
- Age diversity (AGE) has a significant positive relationship with decrease of the Earnings Management, level of significance =, 008. Thus, hypothesis #4 is accepted.
- Institutional ownership (INST) has no significant relationship with decrease of the Earnings Management, level of significance = 0,717. Thus, hypothesis #5 is rejected.
- State ownership (STATE) has no significant relationship with decrease of the Earnings Management, level of significance = 0,377. Thus, hypothesis #6 is rejected

Table 8 Research results

Hypothesis	Research results	Rejected/Accepted
H1	Board independence (IND) has no significant relationship with decrease of EM, sig = 0,095	Rejected
H2	Board size (SIZE) has a significant positive relationship with decrease of EM, sig=0,006	Accepted
H3	Gender diversity (GEN) is significantly related to the EM, sig = 0, 011. However, it has significant positive relationship with an increase of EM.	Rejected
H4	Age diversity (AGE) has a significant positive relationship with decrease of EM, sig = ,008	Accepted
H5	Institutional ownership (INST) has no significant relationship with decrease of EM, level of sig = 0,717	Rejected
H6	State ownership (STATE) has no significant relationship with decrease of EM, sig = 0,377	Rejected

2.2.3. Summary of results

The study has found out that the size of the board on average comprise 5-6 persons, around 39% of which are independent external directors. This finding indicates that companies in Kazakhstan try to adhere to the international and national governance practices.

We also found that the on average around 8% of the board members are female representatives, which is significantly lagging behind the world average. This is explained by the absence of regulatory norms requiring the minimum for gender diversity.

On average the board's age diversity measured by the standard deviation of ages of board members is 9,3 which is higher than the global average of 7,2.

With respect to ownership structure, we observe that 7,8 % are institutional shareholders and 14,4% are government owned. The higher number for state ownership reflects the past economic system of the country.

Finding of the study reveal that several hypothesized characteristics, namely size of the board, age and gender diversity influence the level of earnings management. Further conclusions were that a unit increase in board size will cause a decrease in the level of earnings management; a unit increase in age diversity will lead to a decrease in the level of earnings management. It was also revealed that gender diversity has a positive relationship with the increase of earnings management in Kazakhstani listed companies.

Thus the study concludes that the companies, boards of which have larger size and larger age diversity of board members will have lower level of earnings management.

2.2.4. Discussion of the findings

Board size and earnings management

The regression results showed that board size has a significant positive relationship with decrease of earnings management in Kazakhstan's listed companies as was hypothesized in the research. The boards of Kazakhstan's listed companies appear to be small with an average 5-6 people. The results of the study are consistent with previous studies. A study by Xie et al. (2003) indicated that boards larger in size are more effective in controlling earnings management in comparison with boards smaller in size. Xie et al. (2003) also indicated that boards large in size which have different experts have a higher likelihood to have a higher degree of independence in comparison with small boards. Likewise, research by Peasnell et al. (2004) showed that in comparison with smaller boards, larger boards are better in decreasing earnings management practices. Therefore, the results of this research make a case for the increase of the board size, as companies with larger board size tend to have lower level of earnings management.

Board independence and earnings management

The regression results showed that board independence has no significant relationship with earnings management. Such result can be explained by the number of factors. First of all, the requirement to have independent directors in each joint-stock company appeared in the Law of the Republic of Kazakhstan "On Joint-Stock Companies" only in 2005. Currently, the legislation of many foreign countries requires the company to have independent directors not less than 1/3 of the total number of members of the board of directors. According to an executive director of Kazakhstan National Directors Association Yerlan Beisembinov, in most joint-stock companies independent directors are only de jure independent, and de facto under the control of a large shareholder, and in case of controversial situations, instead of acting as independent arbitrators, they take his side, or on current issues vote for always correct and informed decisions, but which are beneficial to the shareholder. At the same time, they "forget" about the responsibility they bear as company officials. Some of the JSCs perceive independent directors as a kind of means to raise the image of the company or. The better the rating of their independent director, the better is the image of this JSC. Both shareholders and managers forget the invaluable benefits that an independent director can bring to the company. Another problem is the search and election of independent directors. In practice, it is often not a shareholder, but the executive body who proposes candidates for "its" independent directors. This choice violates the principle of impartiality and independence. After all, such independent directors will not

inform the shareholders of the problems that exist in the company. Hence, this approach doesn't allow for the further development and transparency of the company. There is also a problem of lack of information about the actual state of affairs in the company. This is due to insufficient feedback between the board of directors and management, between the board of directors and shareholders (especially in quasi-public companies), and perhaps this disadvantage is beneficial to the management itself, so that the board of directors makes decisions only in line with the information provided. Lastly, there is a problem of a level of compensation of the independent director in Kazakhstan. In companies related to the exploration and extraction of natural resources (especially with foreign participation), the level of remuneration is good, however in companies of the quasi-public sector there is no remuneration at all or it does not correspond to the level of personal responsibility of independent directors as officials. These factors contribute to the erosion of the effectiveness of the board independence, which in turn explain the non-significance of the relationship between board independence and earnings management in Kazakhstan's listed companies obtained in this study.

Gender diversity and earnings management

The regression results showed that gender diversity has a significant positive relationship with increase in earnings management. Such a result is attributed to several factors. The regulatory background regarding board diversity in Kazakhstan doesn't require any minimum gender diversity in the board of directors. On a country scale Kazakhstan joined the United Nation's Sustainable Development Goals in 2015, which set out targets for equal rights and opportunities for both women and men. The new strategic approach will tie in the country's existing programs and international sustainable development trends. The approach, signed by President Nursultan Nazarbayev late last year, commits the government by to improve the legislation in the field of family and gender policy. Removing obstacles for female employment and career growth is one of the goals of the new action plan. According to World Economic Forum's "The Global Gender Gap report", Kazakhstan ranked 52 out of 144 countries in global gender gap score in 2017. According to Kyaw et al. (2015), for the introduction of females on boards to be beneficial, it is necessary that gender equality in the country is already high. According to Einer and Soderqvist (2016), females as a result of the lack of legislation concerning their positions on the board of directors need to adapt their behavior to their male counterparts in order to be appointed and re-appointed as directors on the board. Hence, their characteristics which were hypothesized to make a difference in terms of improved governance would diminish as female behavior converges with male behavior. These factors explain the

positive relationship of gender diversity and earnings management of Kazakhstan's listed companies.

Age diversity

The regression results showed that age diversity has a significant positive relationship with decrease in earnings management which was in line with a hypothesis statement. On average the board's age diversity measured by the standard deviation of ages of board members is 9,3 which is higher than the global average of 7,2. The results of the study are consistent with the previous studies. According to Kang et al. (2007), there is an argument that as different types of stakeholders each company must represent on boards, diversity in age of directors can help the process by adding different perspectives. In the case of Kazakhstan, these added different perspectives translated into restraining earnings management practices in Kazakhstan's listed firms, thus making a case for further increased age diversity.

Institutional ownership & State ownership

The regression results showed that institutional ownership and state ownership have no significant relationship with earnings management. The fact that both of these types of ownership produce same results is consistent with Kazakhstan's reality. Most of the institutional shareholding is distributed through pension funds and banks, the end majority shareholder of which is a state. Additionally, largest enterprises which have critical strategic influences on the market are characterized by high proportion of state ownership. According to Heath and Norman (2004), firms with higher state ownership have often performed less effectively than privately owned ones. The reason being that state owned enterprises are less accountable to whole stakeholders and enjoy bailout from the state in case of default, managers in these firms tend to pay smaller attention to earnings management in case of budget deficit or loss. This can explain the loss of the hypothesized effectiveness of the state and institutional ownership, which in turn explain the non-significance of the relationship between state and institutional and earnings management in Kazakhstan's listed companies obtained in this study.

2.2.5. Managerial applications

The results of the study have applications for various managers: policymakers, industry and financial managers.

The results of this study can serve as a reference point for policymakers in their decision making and/or their further research. As previous researches and theories show corporate

governance can decrease or even eliminate the extent of earnings management. Generally, an institutional environment that provides better legal protection can control managers' self-interest to a certain extent. Our research aids policymakers with providing information about the significant relationship between the size of the board and age diversity with earnings management. These findings are useful to take into consideration when designing improved policies of corporate governance.

Industry (company) managers can use the findings of the research when designing the strategy of choosing board members as a new approach to maximize company's good corporate governance practices. Thus, aiming at forming boards of directors with larger size of board members and larger age diversity can influence positively the decrease in the level of earnings management, which ultimately improves the credibility of financial reports in the eyes of shareholders and investors.

Managers of financial institutions can take into account the results of the study in relation with the investment decisions into companies. Particularly when assessing company's stance and ratings. Corporate governance practice serves as a company's reputation; hence it is one of the important factors when evaluating the company. Investment institutions are also interested in receiving the trustful financial reports; therefore the fact of existence of significant positive relationship between size of the board and age diversity with decrease in the level of earnings management can serve as an indicator of credible reports.

2.2.6. Limitations of the study

This study was limited to determine the relationship between the board of directors characteristics and ownership structure with earnings management of companies listed at Kazakhstan Stock Exchange. The study was limited to 35 companies listed at KASE. The study limited to secondary data, which was collected from KASE and company financial reports. This data was used as obtained and the researcher had no means of independently verifying the validity of the data which was assumed to be accurate for the purpose of the study. The study findings are, therefore, partly subject to the validity of the secondary data used. The study was able to collect data from 35 companies listed in the KASE that were in operation for the last five years. The study was limited to a seven year period starting from 2010 to 2016.

Conclusion

The goal of this research was to establish the relationship between board of directors characteristics and ownership structure with earnings management of Kazakhstan's listed companies. The research has found that the size of the board on average comprise 5-6 persons, around 39% of which are independent external directors. This finding indicates that companies in Kazakhstan try to adhere to the international and national governance practices. We also found that the on averages about 8% of the board members are female representatives, which is significantly lagging behind the world average. This is explained by the absence of regulatory norms requiring the minimum for gender diversity. On average the board's age diversity measured by the standard deviation of ages of board members is 9,3 which is higher than the global average of 7,2. With respect to ownership structure, we observe that 7,8 % are institutional shareholders and 14,4% are government owned. The higher number for state ownership reflects the past economic system of the country.

Findings of the study reveal that three of hypothesized characteristics of the board of directors affect earnings management. Further conclusions were that a unit increase in board size will cause a decrease in in earnings management; a unit increase in age diversity will lead to a decrease in earnings management. It was also revealed that larger gender diversity leads to higher level of earnings management in Kazakhstani listed companies.

Hence the study concludes that companies with larger board size and larger age diversity in board will have lower level of earnings management.

This study contributes to the literature on the relationships between board of directors and ownership structure with earnings management at least two ways. Firstly, it focuses on Kazakh firms while very limited research has been conducted on Central Asia' firms. Secondly, this study validates number of findings of previous authors by testing the relationships between board characteristics with earnings management on the sample of listed firms in Kazakhstan. Therefore, this research adds substance to the existing theory developed by previous researchers. The study also has application for managers across different sectors. For policymaker these finding are useful to take into consideration when designing improved policies of corporate governance. Industry managers can refer to the findings of the research when designing the strategy of choosing board members. Finally, financial managers of financial institutions can use the results of the study in relation with the investment decisions into companies.

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Appendix 1. List of Companies Used

№	Company
1	EKOTON+ JSC (EKTN)
2	Mangistau Distribution Electricity Network Company JSC (MREK)
3	Kazakhstan Electricity Grid Operating Company (KEGOC) JSC (KEGC)
4	Kazakhtelecom JSC (KZTK)
5	Bayan Sulu JSC (BSUL)
6	Rakhat JSC (RAHT)
7	Atameken-Agro JSC (KATR)
8	Ust-Kamenogorsk Titanium Magnesium Plant JSC (UTMK)
9	Mangistaumunaigaz JSC (MMGZ)
10	KMK Munai JSC (LNPT)
11	Zhairem Mining and Concentrating Complex JSC (JGOK)
12	BAST JSC (BAST)
13	AK Altynalmas JSC (ALMS)
14	KazTransCom JSC (KZTC)
15	National company "KazMunayGaz" JSC (KMGZ)
16	SAT & Company JSC (SATC)
17	KazTransOil JSC (KZTO)
18	Maten Petroleum JSC (MATN)
19	Ansagan Petroleum JSC (ANSA)
20	Caspi нефт JSC (KSNF)
21	Asia Avto JSC (ASAV)
22	Astel JSC (ASTL)
23	Kazakh Republican Trading House ZANGAR JSC (ZNGR)
24	Kaz Minerals PLC (GB_KZMS)
25	Pavlodarenegro JSC (PDEN)
26	International airport of Almaty JSC (ARAL)
27	RG Brands JSC (RGBR)
28	NC Kazakhstan temir zholy JSC (TMJL)
29	Shymkent munai onimderi JSC
30	Altyntau Kokshetau JSC (ATKT)
31	KM Gold JSC (KMGD)
32	Aktobe Oil Equipment Plant JSC (AZNO)
33	Kazakhmys Copper JSC (KMCP)
34	Kcell JSC (KCEL)
35	Chimpharm JSC

Appendix 2. Data

№	Company Number	Year	Board Size	Independence	Gender Diversity	Age Diversity	Insitutional Ownership	State Ownership	Firm Size	EM
1	1	2010	5	0,20	0,20	5,20	0,00	0,00	15,84071	-0,26366
2	1	2011	5	0,20	0,20	5,20	0,00	0,00	15,76023	-0,43902
3	1	2012	5	0,20	0,20	5,20	0,00	0,00	15,75992	-0,60861
4	1	2013	5	0,20	0,20	5,20	0,55	0,00	15,8933	-0,55783
5	1	2014	6	0,33	0,33	3,24	0,55	0,00	15,79708	-0,49441
6	1	2015	3	0,33	0,00	10,69	0,10	0,00	15,90988	-0,52891
7	1	2016	3	0,33	0,00	10,69	0,10	0,00	16,07552	-0,4055
8	2	2010	5	0,40	0,00	10,66	0,20	0,00	16,5871	-0,59435
9	2	2011	5	0,40	0,00	10,66	0,20	0,00	16,56431	-0,66352
10	2	2012	5	0,40	0,00	10,66	0,20	0,75	16,89782	-0,92763
11	2	2013	5	0,40	0,20	10,66	0,20	0,75	17,04913	-0,73197
12	2	2014	5	0,40	0,20	10,66	0,07	0,92	17,11687	-0,66117
13	2	2015	5	0,40	0,00	10,66	0,07	0,92	17,25168	-0,77414
14	2	2016	7	0,29	0,00	10,66	0,00	0,92	17,47737	-0,80082
15	3	2010	6	0,50	0,00	13,65	0,00	0,00	19,01051	-0,5062
16	3	2011	6	0,50	0,00	13,65	0,00	0,00	19,19802	-0,57187
17	3	2012	6	0,50	0,00	13,65	0,00	1,00	19,26399	-0,51816
18	3	2013	6	0,50	0,00	13,65	0,00	1,00	19,72175	-0,96017
19	3	2014	6	0,50	0,00	13,65	0,00	0,90	20,1253	-0,84846
20	3	2015	6	0,50	0,00	12,65	0,00	0,90	20,20463	-0,65476
21	3	2016	8	0,50	0,13	11,36	0,00	0,90	20,26449	-0,60155
22	4	2010	9	0,44	0,22	6,32	0,14	0,51	19,73053	-0,42729
23	4	2011	9	0,44	0,22	6,32	0,14	0,51	19,8598	-0,47976

24	4	2012	9	0,44	0,22	6,32	0,14	0,51	19,854	0,07221
25	4	2013	9	0,44	0,22	6,32	0,09	0,51	19,84567	-0,54887
26	4	2014	9	0,44	0,22	6,32	0,08	0,51	19,84623	-0,59033
27	4	2015	9	0,44	0,11	5,31	0,08	0,51	19,89382	-0,53612
28	4	2016	9	0,44	0,11	5,31	0,08	0,51	19,96603	-0,41356
29	5	2010	5	0,40	0,00	9,55	0,08	0,00	16,5991	-0,32564
30	5	2011	5	0,40	0,00	9,55	0,08	0,00	16,6476	-0,38332
31	5	2012	5	0,40	0,00	9,55	0,08	0,00	16,60685	-0,34714
32	5	2013	5	0,40	0,00	9,55	0,00	0,00	16,69666	-0,43632
33	5	2014	5	0,40	0,00	9,55	0,00	0,00	16,77851	-0,42745
34	5	2015	5	0,40	0,00	9,55	0,00	0,00	17,05079	-0,44149
35	5	2016	5	0,40	0,00	9,55	0,00	0,00	17,23806	-0,43237
36	6	2010	3	0,33	0,00	8,50	0,00	0,00	16,50764	-0,39726
37	6	2011	3	0,33	0,00	8,50	0,00	0,00	16,60179	-0,30875
38	6	2012	3	0,33	0,00	8,50	0,00	0,00	17,05033	-0,30292
39	6	2013	3	0,33	0,00	8,50	0,00	0,00	16,80247	-0,26887
40	6	2014	5	0,40	0,00	7,56	0,00	0,00	16,89122	-0,30246
41	6	2015	5	0,40	0,00	7,56	0,00	0,00	17,11735	-0,37128
42	6	2016	5	0,40	0,00	7,56	0,00	0,00	17,31062	-0,20702
43	7	2010	6	0,50	0,00	10,50	0,23	0,00	17,32018	-0,17731
44	7	2011	6	0,50	0,00	10,50	0,23	0,00	17,29303	-0,28586
45	7	2012	6	0,50	0,00	10,50	0,23	0,00	17,35759	-0,17984
46	7	2013	6	0,50	0,00	10,50	0,00	0,22	17,06169	0,129076
47	7	2014	6	0,50	0,00	10,50	0,20	0,22	16,75747	-0,00277
48	7	2015	5	0,40	0,00	10,50	0,20	0,22	17,48861	-1,28207
49	7	2016	6	0,67	0,00	10,20	0,22	0,14	17,91834	-0,67644
50	8	2010	5	0,40	0,00	3,27	0,27	0,00	17,06908	-0,53623
51	8	2011	5	0,40	0,00	3,27	0,27	0,00	17,2782	-0,60627

52	8	2012	5	0,40	0,00	3,27	0,27	0,00	17,42601	-0,55833
53	8	2013	5	0,40	0,00	3,27	0,27	0,00	17,58082	-0,3026
54	8	2014	5	0,40	0,00	3,27	0,27	0,00	17,78189	-0,38416
55	8	2015	5	0,40	0,00	3,27	0,27	0,00	18,36	-0,13798
56	8	2016	5	0,40	0,00	3,27	0,27	0,00	18,24423	-0,46996
57	9	2010	6	0,33	0,00	10,68	0,99	0,00	19,52027	-0,50383
58	9	2011	6	0,33	0,00	10,68	0,99	0,00	19,58082	-0,49162
59	9	2012	6	0,33	0,00	10,68	0,99	0,00	19,51435	-0,52333
60	9	2013	6	0,33	0,00	10,68	0,99	0,00	19,60125	-0,73123
61	9	2014	6	0,33	0,00	10,68	0,99	0,00	19,74355	-0,6606
62	9	2015	6	0,33	0,00	10,68	0,99	0,00	19,75247	-0,36564
63	9	2016	6	0,50	0,00	10,68	0,99	0,00	19,79205	-0,69387
64	10	2010	9	0,33	0,11	7,84	0,00	0,00	16,80748	-0,28318
65	10	2011	9	0,33	0,11	7,84	0,00	0,00	16,95554	-0,65279
66	10	2012	9	0,33	0,11	7,84	0,00	0,00	17,258	-0,78715
67	10	2013	9	0,33	0,11	7,84	0,00	0,00	17,65605	-0,72435
68	10	2014	9	0,33	0,11	7,84	0,00	0,00	17,89917	-0,7477
69	10	2015	9	0,33	0,11	7,84	0,00	0,00	17,99444	-0,92649
70	10	2016	9	0,33	0,11	7,84	0,00	0,00	17,98851	-0,59455
71	11	2010	5	0,40	0,00	13,37	0,00	0,00	16,84241	-0,40209
72	11	2011	5	0,40	0,00	13,37	0,00	0,00	16,85214	-0,43589
73	11	2012	5	0,40	0,00	13,37	0,00	0,00	16,39277	-0,79273
74	11	2013	5	0,40	0,00	13,37	0,00	0,00	16,22945	-0,88771
75	11	2014	5	0,40	0,00	13,37	0,00	0,00	16,92509	-0,12966
76	11	2015	5	0,40	0,00	13,37	0,00	0,00	17,14243	-0,28184
77	11	2016	5	0,40	0,00	13,37	0,00	0,00	17,2346	-0,55997
78	12	2010	3	0,33	0,00	13,00	0,00	0,00	12,24634	-2,81454
79	12	2011	3	0,33	0,00	13,00	0,00	0,00	13,25234	-2,81454

80	12	2012	3	0,33	0,00	13,00	0,00	0,00	12,24634	-2,81454
81	12	2013	3	0,33	0,00	15,31	0,00	0,00	13,25234	-2,95088
82	12	2014	3	0,33	0,00	15,31	0,00	0,00	13,50299	-1,44322
83	12	2015	5	0,40	0,00	10,03	0,00	0,00	14,01795	-1,86402
84	12	2016	5	0,40	0,00	10,03	0,10	0,00	14,53764	-0,97832
85	13	2010	3	0,33	0,33	4,93	0,00	0,00	16,96184	-0,17352
86	13	2011	3	0,33	0,33	4,93	0,00	0,00	16,94011	-0,41211
87	13	2012	3	0,33	0,33	4,93	0,00	0,00	17,21042	-0,75686
88	13	2013	3	0,33	0,33	4,93	0,00	0,00	17,45773	-0,69526
89	13	2014	3	0,33	0,00	4,93	0,00	0,00	17,74624	-0,87718
90	13	2015	3	0,33	0,00	4,93	0,00	0,00	17,79915	-1,26562
91	13	2016	3	0,33	0,00	4,93	0,00	0,00	17,89339	-0,70101
92	14	2010	5	0,40	0,20	6,50	0,00	0,00	16,32154	-0,46813
93	14	2011	5	0,40	0,20	6,50	0,00	0,00	16,42822	-0,46214
94	14	2012	5	0,40	0,20	6,50	0,00	0,00	16,40352	-0,5011
95	14	2013	5	0,40	0,20	6,50	0,00	0,00	16,47002	-0,48621
96	14	2014	6	0,33	0,17	6,50	0,00	0,00	16,57615	-0,97573
97	14	2015	6	0,33	0,17	6,50	0,00	0,00	16,82951	-0,36291
98	14	2016	6	0,33	0,17	6,50	0,00	0,00	16,87836	-0,5174
99	15	2010	5	0,40	0,00	7,29	0,00	1,00	21,0742	-0,12991
100	15	2011	5	0,40	0,00	7,29	0,00	1,00	21,14957	-0,17226
101	15	2012	5	0,40	0,00	7,29	0,00	1,00	21,14993	-0,2143
102	15	2013	5	0,40	0,00	7,29	0,00	1,00	21,16869	-0,15612
103	15	2014	6	0,50	0,00	7,29	0,00	1,00	21,05958	-0,23992
104	15	2015	7	0,43	0,00	9,36	0,10	0,90	21,38536	0,143975
105	15	2016	8	0,50	0,13	10,44	0,10	0,90	21,44549	-0,15908
106	16	2010	4	0,50	0,00	8,39	0,41	0,00	18,27823	-0,00355
107	16	2011	4	0,50	0,00	8,39	0,41	0,00	18,33818	-0,00321

108	16	2012	4	0,50	0,00	8,39	0,41	0,00	18,27823	-0,01087
109	16	2013	4	0,50	0,00	8,39	0,44	0,00	18,33818	0,004828
110	16	2014	4	0,50	0,00	8,39	0,17	0,00	18,11646	-0,28522
111	16	2015	4	0,50	0,00	8,39	0,29	0,00	17,97541	-0,11268
112	16	2016	4	0,50	0,00	8,39	0,67	0,00	17,9782	-0,04818
113	17	2010	6	0,33	0,00	12,08	0,00	0,90	20,02299	-0,47867
114	17	2011	6	0,33	0,00	12,08	0,00	0,90	20,19653	-0,49705
115	17	2012	6	0,33	0,00	12,08	0,00	0,90	20,02299	-0,62671
116	17	2013	6	0,33	0,00	11,24	0,00	0,90	20,19653	-0,58933
117	17	2014	6	0,50	0,00	14,85	0,00	0,90	20,18782	-0,52684
118	17	2015	6	0,50	0,00	14,85	0,00	0,90	20,24404	-0,64943
119	17	2016	7	0,43	0,00	13,17	0,00	0,90	20,42886	-0,68711
120	18	2010	3	0,33	0,00	2,52	0,00	0,00	17,61715	-0,57219
121	18	2011	3	0,33	0,00	2,52	0,00	0,00	17,78878	-0,70586
122	18	2012	3	0,33	0,00	2,52	0,00	0,00	17,78771	-0,46282
123	18	2013	3	0,33	0,00	2,52	0,00	0,00	17,68795	-0,80882
124	18	2014	3	0,33	0,00	11,79	0,00	0,00	17,96316	-0,52884
125	18	2015	6	0,33	0,00	14,23	0,00	0,00	18,78499	-2,31876
126	18	2016	6	0,33	0,00	14,23	0,00	0,00	18,8667	-0,65172
127	19	2010	3	0,33	0,00	10,58	0,00	0,00	10,84638	-0,48526
128	19	2011	3	0,33	0,00	10,58	0,00	0,00	16,20334	-0,65979
129	19	2012	3	0,33	0,00	10,58	0,00	0,00	10,84638	0,064761
130	19	2013	3	0,33	0,00	10,58	0,00	0,00	16,20334	2,02125
131	19	2014	3	0,33	0,00	10,58	0,00	0,00	17,24174	-1,48649
132	19	2015	3	0,33	0,00	10,58	0,00	0,00	17,18551	-1,33871
133	19	2016	3	0,33	0,00	10,58	0,00	0,00	17,12845	-0,66399
134	20	2010	6	0,67	0,00	7,81	0,00	0,00	16,31728	0,24434
135	20	2011	6	0,67	0,00	7,81	0,00	0,00	16,73402	-0,90714

136	20	2012	6	0,67	0,00	7,81	0,00	0,00	16,97517	-0,86622
137	20	2013	6	0,67	0,00	7,81	0,00	0,00	17,38157	-0,7479
138	20	2014	6	0,67	0,00	7,81	0,00	0,00	17,53364	-0,52094
139	20	2015	6	0,67	0,00	7,81	0,00	0,00	17,33466	-0,39035
140	20	2016	6	0,67	0,00	7,81	0,00	0,00	17,5151	-0,78223
141	21	2010	3	0,33	0,00	11,27	0,00	0,00	15,94193	-0,43045
142	21	2011	3	0,33	0,00	11,27	0,00	0,00	16,24479	-0,43369
143	21	2012	3	0,33	0,00	11,27	0,00	0,00	16,87841	-0,42831
144	21	2013	3	0,33	0,00	11,27	0,00	0,00	17,57431	-0,20279
145	21	2014	3	0,33	0,00	11,27	0,00	0,00	17,90529	0,016183
146	21	2015	3	0,33	0,00	11,27	0,00	0,00	17,74212	-0,25635
147	21	2016	3	0,33	0,00	11,27	0,00	0,00	17,73128	-0,10243
148	22	2010	3	0,33	0,00	11,27	0,00	0,00	15,49772	-0,64193
149	22	2011	3	0,33	0,00	11,27	0,00	0,00	15,56527	-0,50982
150	22	2012	3	0,33	0,00	11,27	0,00	0,00	15,47327	-0,52717
151	22	2013	3	0,33	0,00	11,27	0,00	0,00	15,53974	-0,51596
152	22	2014	3	0,33	0,00	11,27	0,00	0,00	16,05381	-1,15382
153	22	2015	3	0,33	0,00	11,27	0,00	0,00	15,80235	-0,01804
154	22	2016	3	0,33	0,00	11,27	0,00	0,00	15,89944	-0,46707
155	23	2010	4	0,25	0,75	13,23	0,00	0,00	15,91368	-0,1553
156	23	2011	4	0,25	0,75	13,23	0,00	0,00	15,93698	-0,16498
157	23	2012	4	0,25	0,75	13,23	0,00	0,00	15,91368	-0,93737
158	23	2013	4	0,25	0,75	13,23	0,00	0,00	15,93698	-0,02898
159	23	2014	4	0,25	0,75	13,23	0,00	0,00	15,96879	-0,16248
160	23	2015	4	0,25	0,75	13,23	0,00	0,00	16,05718	-0,06627
161	23	2016	4	0,25	0,75	13,23	0,00	0,00	16,14242	-0,04947
162	24	2010	10	0,60	0,00	7,15	0,00	0,26	15,76741	-0,22673
163	24	2011	10	0,60	0,00	7,15	0,00	0,26	15,83248	-0,26386

164	24	2012	10	0,60	0,00	7,15	0,00	0,26	15,62252	-0,47272
165	24	2013	9	0,56	0,11	7,15	0,05	0,00	15,46286	-0,52915
166	24	2014	9	0,67	0,11	7,15	0,00	0,00	15,10859	-0,56805
167	24	2015	8	0,50	0,13	7,15	0,00	0,00	14,83765	-0,39556
168	24	2016	8	0,63	0,13	7,15	0,05	0,00	15,21246	-0,68819
169	25	2010	3	0,33	0,33	10,44	0,25	0,00	17,76332	-0,52158
170	25	2011	3	0,33	0,33	10,44	0,25	0,00	17,96847	-0,69952
171	25	2012	3	0,33	0,33	10,44	0,25	0,00	18,07699	-0,59174
172	25	2013	3	0,33	0,33	16,77	0,00	0,00	18,21171	-0,62963
173	25	2014	3	0,33	0,33	16,77	0,00	0,00	18,55321	-0,8008
174	25	2015	3	0,33	0,33	16,77	0,00	0,00	18,66407	-0,72674
175	25	2016	5	0,40	0,20	14,57	0,00	0,00	18,70121	-0,6341
176	26	2010	3	0,33	0,33	7,57	0,00	0,00	17,84701	-0,49241
177	26	2011	3	0,33	0,33	7,57	0,00	0,00	17,88564	-0,50172
178	26	2012	3	0,33	0,33	7,57	0,00	0,00	17,88251	-0,52659
179	26	2013	3	0,33	0,00	7,57	0,00	0,00	17,86946	-0,49038
180	26	2014	3	0,33	0,00	7,57	0,00	0,00	17,83805	-0,60888
181	26	2015	3	0,33	0,00	7,57	0,00	0,00	18,08439	-0,77256
182	26	2016	3	0,33	0,00	7,57	0,00	0,00	18,06018	-0,59089
183	27	2010	5	0,40	0,00	4,34	0,00	0,00	17,26195	-0,35104
184	27	2011	5	0,40	0,00	4,34	0,00	0,00	17,34833	-0,43278
185	27	2012	5	0,40	0,00	4,34	0,00	0,00	17,20587	-0,40367
186	27	2013	5	0,40	0,00	4,34	0,00	0,00	17,21823	-0,43833
187	27	2014	5	0,40	0,00	4,34	0,00	0,00	17,21823	-0,4567
188	27	2015	5	0,60	0,00	4,34	0,00	0,00	17,27833	-0,51319
189	27	2016	6	0,50	0,00	4,34	0,00	0,00	17,49134	-0,55011
190	28	2010	7	0,43	0,00	11,08	0,00	1,00	21,64239	-0,5777
191	28	2011	7	0,43	0,00	11,08	0,00	1,00	21,25603	-0,34405

192	28	2012	7	0,43	0,00	11,08	0,00	1,00	21,46357	-0,67524
193	28	2013	7	0,43	0,00	11,08	0,00	1,00	21,63453	-0,66105
194	28	2014	12	0,42	0,00	10,54	0,00	1,00	21,76547	-0,63156
195	28	2015	8	0,50	0,00	9,70	0,00	1,00	21,78244	-0,71281
196	28	2016	8	0,50	0,00	9,70	0,00	1,00	21,83363	-0,58743
197	29	2010	3	0,33	0,00	3,21	0,00	0,00	15,35073	-0,68209
198	29	2011	3	0,33	0,00	3,21	0,00	0,00	15,29945	-0,54992
199	29	2012	3	0,33	0,00	3,21	0,00	0,00	15,36275	-0,76919
200	29	2013	3	0,33	0,00	3,21	0,00	0,00	15,34791	-0,65784
201	29	2014	3	0,33	0,00	3,21	0,00	0,00	15,38929	-0,63082
202	29	2015	3	0,33	0,00	3,21	0,00	0,00	15,37231	-0,70825
203	29	2016	3	0,33	0,00	3,21	0,00	0,00	15,42875	-0,73372
204	30	2010	10	0,30	0,00	14,91	0,00	0,00	18,01961	-0,34083
205	30	2011	10	0,30	0,00	14,91	0,00	0,00	18,14641	-0,42175
206	30	2012	10	0,30	0,00	14,91	0,00	0,00	17,87436	-0,26955
207	30	2013	10	0,30	0,00	14,91	0,00	0,00	18,36006	-0,62155
208	30	2014	10	0,30	0,00	14,91	0,00	0,00	16,89267	-0,05298
209	30	2015	10	0,30	0,00	14,91	0,00	0,00	17,18817	-0,25119
210	30	2016	10	0,30	0,00	14,91	0,00	0,00	19,2601	-3,39368
211	31	2010	6	0,33	0,00	10,70	0,00	0,00	14,22785	-0,37736
212	31	2011	6	0,33	0,00	10,70	0,00	0,00	14,38225	-0,35186
213	31	2012	6	0,33	0,00	10,70	0,00	0,00	14,04518	-0,39922
214	31	2013	6	0,33	0,00	10,70	0,00	0,00	14,63389	-0,28551
215	31	2014	6	0,33	0,00	10,70	0,00	0,00	12,42743	-0,46233
216	31	2015	6	0,33	0,00	10,70	0,00	0,00	14,8461	-1,44327
217	31	2016	6	0,33	0,00	10,70	0,00	0,00	15,13678	0,029969
218	32	2010	9	0,50	0,13	6,14	0,00	0,00	14,72472	-0,21702
219	32	2011	9	0,50	0,13	6,14	0,00	0,00	14,93573	-0,47823

220	32	2012	9	0,50	0,13	6,14	0,10	0,00	15,21399	-0,14503
221	32	2013	9	0,50	0,13	6,14	0,10	0,00	15,46413	-0,45618
222	32	2014	6	0,33	0,17	6,47	0,10	0,00	15,63127	-0,34314
223	32	2015	5	0,40	0,20	6,30	0,10	0,00	15,28717	-0,38627
224	32	2016	5	0,40	0,20	6,30	0,10	0,00	15,27146	-0,64177
225	33	2010	10	0,60	0,00	7,15	0,00	0,26	15,76741	-0,22673
226	33	2011	10	0,60	0,00	7,15	0,00	0,26	15,83248	-0,26386
227	33	2012	10	0,60	0,00	7,15	0,00	0,26	15,62252	-0,47272
228	33	2013	9	0,56	0,11	7,15	0,05	0,00	15,46286	-0,52915
229	33	2014	9	0,67	0,11	7,15	0,00	0,00	15,10859	-0,56805
230	33	2015	8	0,50	0,13	7,15	0,00	0,00	14,83765	-0,39556
231	33	2016	8	0,63	0,13	7,15	0,05	0,00	15,21246	-0,68819
232	34	2010	6	0,33	0,00	11,94	0,00	0,25	18,74563	-0,69925
233	34	2011	6	0,33	0,00	11,94	0,00	0,25	18,79213	-0,5911
234	34	2012	6	0,33	0,00	11,94	0,23	0,00	18,82375	-0,65516
235	34	2013	6	0,17	0,00	11,94	0,24	0,00	18,88617	-0,72076
236	34	2014	6	0,17	0,00	11,94	0,24	0,00	18,87806	-0,58327
237	34	2015	5	0,40	0,20	12,55	0,24	0,00	18,92766	-0,40667
238	34	2016	7	0,43	0,14	11,11	0,24	0,00	19,01418	-0,40843
239	35	2010	6	0,33	0,17	14,41	0,00	0,00	16,19907	-0,50259
240	35	2011	6	0,33	0,17	14,41	0,00	0,00	16,17993	-0,41064
241	35	2012	6	0,33	0,17	14,41	0,00	0,00	16,13919	-0,39823
242	35	2013	6	0,33	0,17	14,41	0,00	0,00	17,25333	-1,26803
243	35	2014	6	0,33	0,17	14,41	0,00	0,00	17,01747	-0,28454
244	35	2015	6	0,33	0,17	14,41	0,00	0,00	17,29626	-0,67102
245	35	2016	6	0,33	0,17	14,41	0,00	0,00	17,4071	-0,34808