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The Influence of Corporate Governance Mechanisms on Fraud Probability: Evidence from Russian Companies

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Abstract

This study examines the impact of corporate governance mechanisms on the probability of corporate fraud occurrence. We evaluate the board size, the degree of independence, and the frequency of meetings of the board and its committees. We also attempt to analyse the board's gender diversity, but since boards are not gender-diverse in Russia, the significance of this variable cannot be tested. Our empirical study is based on 160 observations of MOEX-listed Russian companies, among which fraudulent behaviour has been revealed in 32 companies over a 5-year period from 2014 to 2018. The relationship between the probability of fraud occurrence and corporate governance was investigated employing a logit model. The data was collected from firms' annual reports and Thomson Reuters Eikon. Data on fraud cases is based on the evidence from the press (including the leading news sources and specialised websites). We detected a significant negative relationship between nomination and remuneration committee chairmen's independence, the share of independent directors, the independence of board and audit committee chairmen and the likelihood of fraud. We also discovered the insignificant influence of board and its committees' size and their meetings' frequency on fraud probability. This paper contributes to the academic research on the relationship between corporate governance mechanisms and probability of fraud occurrence, emphasizing the special role of the establishment of nomination and remuneration committee chairman independence in Russian companies.

Keywords: board of directors, corporate governance, audit committee, nomination and remuneration committee, corporate fraud

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Introduction

The modern business environment, characterised by complex internal corporate processes, has resulted in a rise in the level of information asymmetry. In such an environment, the monitoring function of the board of directors is increasingly relevant. Due to the presence of adverse selection and the temptations of moral hazard in the current digitalised environment, opportunities for fraudulent behaviour become increasingly more numerous. Thus, more attention and effort are required on the part of the board.

According to Deloitte's legal insight [1], fraud related to financial reporting is rare (9%) in comparison to other compliance risks. The main risks arise when working directly with the counterparty (at an 86% incidence rate), due to a conflict of interest (73%), or corruption (59%). Overall, fraudulent behaviour in financial reporting is less frequent in comparison to other risks. The composition of the board of directors influences the monitoring function inside the firm, and the presence of an audit and remuneration committee decreases risks. The compliance function of the board is consequently more critical, so effective corporate governance ought to be able to decrease it. Hence, all types of fraud may be considered in terms of the present corporate governance mechanisms analysis.

Corporate governance management practices are also reflected in the composition of the board of directors and the nomination and remuneration committees [2]. The board acts as a monitoring agent: it decides what punishment to implement in case of a violation of shareholder interests [3]. Senior management may have an incentive to undertake fraudulent action, however, if the board of directors connects the shareholders and management of a company, it partially solves the information asymmetry problem. Board members have the right to claim compensation from the CEO, or, on the other hand, impose punishment in case of non-desirable actions.

Besides, committees also fulfill a monitoring function. According to the Sarbanes-Oxley Act of 2002, audit committee participants should be independent because they are responsible for financial reporting quality and fairness. Members of the audit and remuneration committees are also members of the board. The nomination and remuneration committee authorises the CEO's and other executive officers' optimal remuneration scheme, which decreases their incentive to deviate from fair principles. It is important to note that despite the generality of the foregoing summary, the effect of corporate governance on fraud occurrence may differ in the case of Russian companies because of Russia's unique historical context and legislation.

We present an empirical study based on 160 observations of MOEX-listed Russian public companies. Instances of fraudulent behaviour are accounted for in 32 companies in credible news sources for the period from 2014 to 2018. We will primarily examine the following hypotheses: (1) independence of presiding officers serves to decrease fraud, (2) the level of a board's gender diversity decreases fraud risk, and (3) the frequency of board and committees' meetings decreases fraud probability. We investigated empirical research both for developed and developing countries, including the USA, Canada, Malaysia, and Indonesia.

The examined literature includes the following papers. The papers written by D.W. Yiu et al. [4], and J.F. Brazel, J.J. Schmidt [5], investigated the relationship between corporate governance characteristics and the likelihood of fraud. N. Nasir et al. [6] in their paper, provide evidence on the difference in financial statement fraud probabilities based on whether board directors are Malay or not. Y.G. Shan et al. [7] provide evidence that the size variable is insignificant in their research into the relationship between size and fraud occurrence. I.V. Berezinets et al. [8] outline how Russian companies' corporate structure influences financial quality.

However, we have not found any research papers explaining the relationship between corporate governance characteristics and fraud probability for Russian companies. Countries with developing economies, such as Russia, have specific local characteristics that affect corporate governance and information asymmetry, so we rely upon the results of existing studies and analyse the external effects.

The focus of our research considers whether board structure, audit, and nomination committee presence influence the probability of corporate fraud. We investigate the role of corporate governance mechanisms and their influence on the likelihood of fraud in the context of Russian companies. In particular, we evaluate the effect of gender diversity, number of members, degree of independence, and frequency of board and its committees meetings. The aim of the study is to find the key determinants to optimise corporate governance in Russia, which would decrease the likelihood of fraud in a company, as "enhancing corporate governance in the Russian Federation is the most important measure necessary to increase the stability and efficiency of joint stock companies' operations, as well as the flow of investment in all sectors of the Russian economy both from sources within the country and from foreign investors" (Corporate Governance Code (Russia)).

Our paper considers the case of Russia as a developing country since it is rated "4" in the appropriate OECD classification. It is in the 28th place out of 190 in the business development rating, 58th place in taxation, and 72nd in terms of protecting minority shareholders (Rating Forbes [9]).

We evaluate the specifics of the Russian environment and its law, and hypothesise how this may affect the probability of fraud using actual observations from companies with published news. In particular, Russian laws propose a required minimum size of the board of directors. Hence, the size variable may have an insignificant effect on the probability of fraud in Russia. Usually, the government owns a large stake in a major infrastructural firm in Russia. This situation resulted from the privatisation process in the 1990s, when the government invested in strategically essential companies for the sake of the economy [10]. To

highlight this statement, one may consider P.V. Fedotov, V.I. Murar [10], who report Russian board structure statistics. These authors further highlight that boards mainly consist of independent directors (22%), professional attorneys (52%), and civil servants (26%).

In contrast to conventional practice in foreign jurisdictions, the Russian business environment, is characterised by integrated remuneration and nomination committees [11]. Furthermore, compared to foreign countries, there has not been a long history of joint fiduciary responsibility. The Federal Law [12] on amendments to certain legislative acts of the Russian Federation on the regulation of the activities of Non-State Pension Funds was adopted in 2018 (Federal Law of March 7, 2018, No. 49). The Central Bank of Russia decided to unify fiduciary responsibility for non-state pension funds, brokers, and investment advisors in the autumn of 2020. Another distinction is that fraud cases in Russia are not recorded in explicit detail. Subsequently, our study focuses only on the specifics of Russian corporate governance practices.

The remainder of the paper is as follows. First, the literature review presents evidence on the effectiveness of corporate governance and its relationship to the board and committees' characteristics, including size, frequency of meeting, and independence. Second, we investigate the gender diversity of the board. Third, we present the research on the board's members' independence in more detail. Then the hypotheses are articulated, and the methodology, data, and empirical results are described. In conclusion we present the results of the study and its implications for future studies.

Literature review

Influence of the board and its committees on the likelihood of fraud

In this section, we will explore whether the board and its committees influence corporate fraud. Prior research shows that the most frequent corporate governance mechanisms comprise the board and committee meetings, the level of board members' independence, and the level of women's representation [13]. Some papers, e.g. R. Labelle et al. [14], provide research and analysis of Financial Reporting Quality (FRQ) as an internal governance mechanism – if the quality of a financial report is low, it is easier to find a way to conduct fraud. The literature [15; 16] includes the analysis of the dependence of FRQ on various variables, for example, board independence, tenure, institutional directors' presence, gender diversity, and directors' shareholding.

Shareholders can rebalance a corporate governance policy to decrease the probability of fraud. D.W. Yiu et al. [4] provide research about alternative corporate governance mechanisms to identify those that reduce fraudulent behaviour. The authors used a bivariate probit model and base their research on data from Chinese companies. D.W. Yiu et al. concluded that "strategic alliances, business group affiliation, non-tradable state shares, local government ownership, use of foreign auditors, and foreign listing can deter corporate financial fraud" [4].

Besides this, other studies have found that an internal audit can significantly deter the effectiveness of corporate governance with no outsourced auditors. S. Johl et al. [17] stipulate that an internal audit may substantially affect board quality due to the presence of institutional features mandated by the government. The authors explained that the Malaysian government specifically requires companies to conduct an internal audit and report it in that country, and to submit the results to the local 'Institute of Internal Auditors'. As such, following the institutional features introduced by the government contributes to higher internal audit quality.

The audit committee has a function of reviewing significant issues relevant to the financial reporting preparation, and a function in terms of monitoring internal control and risk management systems. M. Beasley [18] evaluated how board composition influences the probability of fraud, investigated the effect of involving external operators in the audit, and the relevance of the audit committee's presence in a company. This study included 75 companies where fraud was confirmed and 75 non-fraud companies and used a logit model for the analysis. The results indicated that the presence of an audit committee had an insignificant influence on the likelihood of fraud. J.F. Brazel, J.J. Schmidt [5] provided a more detailed analysis of audit committee composition. The authors found that the presence of audit committee members with longer tenure seem to decrease fraud probability. The study revealed that companies with a high fraud likelihood have a pervasive tendency to hire expert directors in audit committees compared to companies where fraud occurrence is less likely.

On the other hand, M.M. Marzuki et al. [2] showed that the characteristics of audit committees might have a positive relationship with the likelihood of fraudulent financial reporting. In particular, the authors considered the level of financial accounting expertise of board members, and whether the committee is 'grey' or not. The data included 64 observations from Malaysian firms for the period between 2002 and 2014. Authors found little evidence that audit committee characteristics decrease fraud, in particular, they suggested the "possible cosmetic role of independent non-executive directors in preventing fraud" [2].

Furthermore, increases in the efficiency of the audit committee's characteristics might not decrease fraudulent activity, but, on the contrary, hide it. The paper by N. Nasir et al. [6] analyses the presence of Malay directors on the board. Authors explore 76 firms exhibiting financial statement fraud and 76 non-fraud firms between 2001 and 2008, and find a positive correlation between the presence of fraud and the presence of Malay directors. This phenomenon may be related to the hypothesis that Malaysians are culturally predisposed towards having 'secretive' personalities. Consequently, the authors suppose that fraud companies tend to 'over-hedge' against fraudulent behaviour

in order to demonstrate their innocence to authorities. N. Nasir et al. explain that "they significantly increase the proportion of independent directors on their boards, increase the frequency of board and audit committee meetings and reduce duality subsequent to the detection of financial statement fraud compared to the non-fraud firms" [6].

Ghafoor et al. [19] have a similar view about excessive corporate governance efforts. From their perspective, tax aggressiveness increases the probability of fraud because tax overpay decreases suspicions on the part of the authorities. Overall, the authors conclude that the presence of institutional investors, an independent board, the presence of females in the board, and the presence of an influential audit committee decrease fraudulent behaviour. As such, greater efforts to increase corporate governance effectiveness may have a reverse relationship to the probability of fraud, depending on the relevant incentives.

Other corporate governance characteristics can also result in counter-intuitive signals to the market about the effectiveness of fraud prevention. S. Ghannamet al. [20] show that experienced directors in the U.S. between 2005–2015 joined the board of a company even if they knew that financial fraud was being conducted, mainly because of a better compensation scheme. So, independent directors may not be an immutable sign of low fraud probability. Hence, the audit committee and directors' independence may provide inconclusive results depending on data. So, while considering the analysis of Russian companies, one can identify several points that require attention.

E.V. Nikitchanova et al. [11] compose an overview of the corporate governance and boards of directors in Russia. They classify committees as "nominal" or "informative". For example, a nomination committee tends to advise on the designation of directors and plays no direct governance role. A recent review of corporate governance in Russian public companies in 2019 [21] shows the principles of the relevant code's chapter 2 that are the most and the least actually observable. According to this review, the principle about independent directors in the formation of remuneration committees is at its least observable level (38%) as of 2019.

Also, P.V. Fedotov, V.I. Murar [10] explain that Russian economy went through a privatisation process, which is why a large share of companies' ownership is governmental. Concerning law specifics, V. Aglamazova [22] writes that the law provides two clauses where CEO must carry out current company's activities (Art. 273 of the Labor Code of the Russian Federation, paragraph 2 of article 69 of the Law on JSC, paragraph 3 of article 40 of the Law on LLC) and to act reasonably and in good faith (Clause 3 of Article 55 of the Civil Code of the Russian Federation). Consequently, the author outlines that Russian corporate legislation defines fiduciary responsibility as based on the trust between the principal and the attorney, whereas in the U.K. and the U.S. it is not only being someone›s legal representative, but one that is about power over another person. The author believes that such a difference can significantly influence this law's effectiveness [22].

The size of the board, the audit committee, the nomination committee, and the remuneration committee may also influence the probability of fraud. In Russia "it is recommended that each committee should consist of at least three board members" (Corporate Governance Code (Russia). Further literature provides some clues on the board composition significance. J. Coles et al. [23] note that a larger board size is necessary for diversified, larger, and high-debt firms. The reason is that such companies need more guidance to function effectively. The main result of this paper is the significantly positive relationship between board size and corporate performance proxied by Tobin's Q. A positive relationship is also found for some audit committee members. E. Al-Matari, M. Mgammal [24] find that audit committee size improves corporate governance effectiveness and outline that corporate performance is significantly less effective with an increased board size.

In addition to the direct influence of the board and committees, some studies are specifically devoted to the influence of their size. Some papers concerning corporate governance in fraud cases show an insignificant relationship between size and fraud probability. For example, H. Uzun et al. [25] use U.S. corporate fraud data between 1978 and 2001 and find that the size of the board and the size of committees does not reflect their efficiency and their incentives to grow. Additionally, Y.G. Shan et al. [7] report no significant relationship between board size and fraud occurrence for Malaysian listed companies from 2007 to 2009.

Moreover, the research shows that the frequency of board's and its committees' meetings might be another determinant in reducing corporate fraud. Russian Corporate Governance Code does not predetermine the exact number of meetings but recommends to hold board meetings "as needed, as a rule, at least once every two months" and audit committee meetings at least once a quarter (Corporate Governance Code (Russia)). Some studies completed in this area show the interdependence between the frequency of meetings and fraud likelihood. The investigation conducted by M.M. Marzuki et al. [2] finds that the frequency of audit committee meetings is insignificantly related to the probability of fraud in Malaysian companies. N. Nasir et al. [6] propose that increasing meeting frequency can result from over-hedging in not to arouse the suspicion of authorities. Therefore, our first hypothesis (H1) is as follows:

H1.a. The number of board meetings increases fraud probability.

H1.b. The number of audit committee meetings increases fraud probability.

H1.c. The number of nomination and remuneration committee meetings increases fraud probability.

A larger number of board meetings and committee meetings indicates the directors' interest in and responsible attitude to the future of the company. However, we believe that it also reflects company rules, which determine the minimum number of meetings.

Gender diversity as a factor in decreasing the likelihood of fraud

Gender diversity-related board characteristics are a prominent topic that usually results in significant improvements in company performance, because women are more risk-averse and ethical than men [26; 27]. Several papers consider the relationship of financial fraud to the gender diversity of the board of directors. J. Liao et al. [28] find a lower probability of accounting fraud in the presence of female CFOs than with male CFOs for Chinese listed firms between 2003 and 2015. Another interesting result is that the relationship between a female CFO and a lower fraud probability is less significant when the government is the main shareholder in a company. Besides, the authors found that gender-diverse boards significantly decrease fraud probability comparing to boards without women.

In its turn, higher Corporate Social Responsibility (CSR) is associated with lower fraud probability, so one may link it to gender diversity. L. Liao et al. [29] research the relationship between CSR and financial fraud in China. They find that the CSR score is negatively related to fraud and conclude that CSR "is an ethical behaviour that reduces financial misconduct". Concerning recent papers on the topic, A. Wahid [27] evaluates gender diversity of the board of directors. The author states that an increasing number of women on the board leads to fewer financial reporting mistakes, because men are more prone to cognitive conflict. However, the benefit of diversity increases at a diminishing rate, so the board should theoretically balance its gender composition. M.M. Marzuki et al. [2] find that the probability of fraud decreases as the percentage of female directors on the board increases. As such, we may assert that the female directors are necessary for the effectiveness of the Malaysian board.

The question remains as to whether the presence of women is correlated with fewer fraud cases because of individual gender characteristics, or if lower fraud likelihood is, on the other hand, the consequence of board diversity. N. Sandhu [30] provides research about different behavioural "red flags" where the two genders are represented, so that one may consider the probability of a fraudster's gender based on the presence of those red flags. Some authors also show that gender is not as crucial as individual characteristics and state that gender is insignificantly related to fraud. For example, one may consider a paper about women's aversion to corruption by A.-R.Lee, K. Chávez [31], who find that corruption is heterogeneous among women with different individual opportunities. The authors propose that the probability of women's fraud cases varies among different corruption types, and cannot analyse corruption as a general concept. T. Hilliard, P. Neidermeyer [32] provide international evidence that the probability of asset misappropriation in the workplace is higher for women than for men. The authors found a higher probability of asset misappropriation by women than men: twice as likely in Asia and Europe and four times as likely in the Middle East.

T. Hilliard, P. Neidermeyer [32] find that the probability of asset misappropriation by women is higher than by men. Nevertheless, we believe that gender diversity plays an essential role in the board's composition in Russia. Many empirical research studies show a positive dependence of a higher percentage of women on the board and committees on low fraud levels , e.g., the study by J. Liao et al. [28], I.V. Berezinets et al. [8] also provides evidence of a positive relationship between board gender diversity and company performance. Therefore, we expect to find significance in the results of the following hypothesis (H2):

H2: There is a negative relationship between the gender diversity of the board and fraud probability.

Independence of the board and its committees' members

The next corporate governance characteristic to outline is the independence of certain directors and committee members. There are particular recommendations provided in terms of that matter by Russian Code of Corporate Governance. First, it recommends that at least one-third of all directors on the board should be independent directors. Second, the audit committee is expected to consist of independent directors only. Third, for the remuneration committee it is advisable to be "comprised of independent directors and chaired by an independent director who should not concurrently be the board chairman". Forth, the majority of nominating committee members must be independent directors (Corporate Governance Code (Russia)).

A number of studies is dedicated to the investigation of board members' independence. E. Fama, M. Jensen [3] found that the board is most effective in monitoring when it consists of a mix of insiders and outsiders, where the percentage of outsiders is a proxy for a significant level of independence. Also, R. Labelle et al. [14] defined outsiders as "non-executive directors".

Various papers consider independence a significant variable which influences the probability of fraud. For example, M. Beasley [18] concludes that the probability of fraud decreases when the board comprises many outsiders. R. Labelle et al. [14] conducted a comparative analysis of data from the U.S., the U.K., and continental European countries. They investigated the dependence of characteristics of the board of directors and internal audit committees on FRQ and found significant results for the U.S. This allows for claiming that the independence of the board most significantly influences fraudulent reporting. One should note that R. Labelle et al. [14] report contradictory results for Europe because "cultural or legal variables need to be considered". This shows the importance of taking into account continental and country-specific cultural factors. Also, V. Oba et al. [16] provide empirical findings from Nigeria, testing FRQ on board independence, tenure, gender diversity, and directors' shareholding. They found board independence to be the only variable leading to improved financial quality, whereas the remaining factors influence a decrease in financial quality in the context of Nigeria.

R. Aguilera et al. [33] analyse how different corporate governance structures' interdependence influences the performance outcomes on the U.S. and U.K. data. They show that board independence in the U.S. may be more effective than in the U.K. because of information disclosure regulations in the U.S. Hence, directors can communicate with the shareholders, leading to true independence. There is little communication in countries with lower information disclosure; hence, the board is not truly independent. The authors also compared Russian and Japanese automobile companies, finding significant insider control in both. Because of the privatisation of state property after the Soviet Union's collapse in 1991, a large portion of control is assumed by employees and managers in Russia, leading to a large stake in ownership [34].

E. Al-Matari, M. Mgammal [24] find that corporate governance effectiveness is significantly positively related to board member independence. Also, A. Ghafoor et al. [19] investigate fraudulent financial reporting for the period of 1996–2016. The authors show a significant adverse effect on the probability of financial reporting fraud with regard to board independence, the level of influence of the audit committee, the number of women on the board, and the presence of institutional investors. A. Ghafoor et al. [19] find independence to be among variables that significantly deter corporate governance effectiveness. The authors proposed that institutional investors, board independence, an influential audit committee, and the presence of a woman on the board are also among the relevant variables.

By contrast with emerging market examples, empirical evidence from Thailand shows that independence is unnecessary. P. Inya et al. [13] found that board independence is insignificant in terms of corporate governance effectiveness. Nevertheless, the authors present results to the effect that the presence of experienced independent directors (and absence of CEO duality) showed a positive relationship with corporate governance effectiveness. Even if fraud cases were present in the company, independent directors might agree to come aboard if offered an appropriate compensation scheme. S. Ghannam et al. [20] found that outsiders commonly agree to be directors in companies that have previously committed fraud.

Conducting a more detailed analysis of the US legislation, S. Avci et al. [35] demonstrated that attention to outside directors in the U.S. law was excessive because outside directors could be eventually employed by management. Hence, they were not entirely independent, and the hiring of such CEOs cannot be considered an efficient measure to protect shareholders' interests. Authors proposed that giving a greater emphasis to shareholders' monitoring function rather than the presence or characteristics of external agents may be a more optimal solution.

Y.G. Shan [38] found a negative relationship between a firm's performance and board independence using the data of 9302 Australian listed companies. Also, R. Aguilera et al. [33] wrote that insider control leads to a low efficiency of corporate governance strategies. They noted that the intervention of the Central Bank and an independent reward system that make insider control effective in Japan are absent in Russia. Thus, corporate governance with high insider control in Russia appears to be completely ineffective.

Returning to the papers based on developed countries' cases, J. Wall, J. Gissel [36] investigated the board's monitoring function's effectiveness, since directors have a fiduciary responsibility to shareholders. Their goal was to suggest an optimal remuneration scheme to prevent fraudulent actions. The authors conducted a psychological experiment based on the questionnaire and, as a result of the study, recommend more severe sanctions in order to decrease fraud probability. Thus, the number of independent directors had a positive impact on fraud detection.

Based on the paper of R. Labelle et al. [14] who found that the board in the U.S. is effective if it is fully independent, V. Oba et al. [16] also reported a positive relationship in the case of Nigeria. Besides, A. Ghafoor et al. [19] revealed a negative relationship between board independence and the probability of financial reporting fraud.

Research carried out on Russian companies by I.V. Berezinets et al. [8] showed no significant relationship between the degree of board independence and FRQ. P. Inya et al. [13] also indicated that board independence is insignificant for corporate governance effectiveness. Besides, Y.G. Shan [38] found the negative relationship between a firm's performance and board independence. Thus, taking into account that the results are quite different, we present the following hypothesis:

H3.a. The degree of board independence decreases the probability of fraud.

H3.b. The degree of audit committee independence decreases the probability of fraud.

H3.c. The degree of nomination committee independence and remuneration committee independence decreases the probability of fraud.

We also consider the committee chairman's independence separately because a chairman supervises the committee's work. If the chairman is independent, they are interested in lobbying on behalf of company issues, not the specific stakeholders. According to Corporate Governance Code [37], independent directors are the board members who have sufficient expertise and professional work experience, can make objective decisions, are not affiliated with the government, the company, or its significant shareholder, partner, or competitor. We pay special attention to the nomination and remuneration committee chairman because the board and the audit committee chairmen are usually independent in Russian public corporations. In our opinion, in contrast to the board and the audit committee, the chairman's independence of the nomination and remuneration committees is due to a real desire to follow corporate standards to attract investors. We present the following Hypothesis 4:

H4: The independence of the nomination and remuneration committee chairman decreases the probability of fraud.

We believe that the independence of the nomination and remuneration committees' chairman raises corporate governance effectiveness, so we apply a factor considering the relative frequency of meetings to consider the company's demand to organise such sessions.

Size of the board and its committees

In addition to the board, committees, and chairman's independence, we consider the size factor in terms of corporate governance characteristics. The relationship between the size of the board and the firm's performance appears to be controversial. Some papers show a positive relationship between the size variable and corporate performance [23; 24]. Furthermore, I.V. Berezinets et al. [8] find a significant relationship of the board's size with listed public Russian companies' performance. The paper's results are such that the smallest and the largest boards are associated with higher-quality performance. However, the positive relationship outlined is between size and corporate performance, not fraud level. H. Uzun et al. [25], as well as Y.G. Shan et al. [7] showed that board and committee size has an insignificant effect on fraud probability. Consequently, we would like to analyse the effect of board and committee sizes on fraud probability. We present the following Hypothesis 5:

H5.a. The influence of the board size on the level of fraud rate is insignificant.

H5.b. The influence of the audit committee size on the level of fraud rate is insignificant.

H5.c. The influence of the nomination and remuneration committee size on the level of fraud rate is insignificant.

The board and committee size should not reflect their efficiency and pursuit of company growth; which is why we do not consider these factors significant. Similar results, discovered by Y. Uzun et al. [25] and Y.G. Shan et al. [7], support our perspective.

Methodology

The literature review provided us with several clues on evaluating board and committee composition's influence on fraud level. However, we could not use the methodology with absolute values in the dependent variable like S. Johl et al. [17] due to the low information available, such as, i.e., the rare disclosure of losses from internal frauds by Russian companies. For that reason, to assess the influence of board and committees' membership on the probability of fraud, we preferred to apply a binary model, particularly a logit one, following the experience of many researchers [14; 15], due to several disadvantages that probit and linear probability models (LPM) have presented. They include the heteroskedasticity problem (particularly for LPM) and difficulties in result interpretation. Thus, the dependent variable (*fraud*) equals '1' if a fraud case was detected, and '0' otherwise. We also included the logarithm of the market capitalisation (*lnsize*) as a control variable in the models. The reason for this is the firm size's expected impact on the subject of the study, so we preferred not to ignore it, even though it was not within the scope of research.

According to H1, we should test the influence of the board and committee meetings. So, we use three variables (Table 1): *board_freq* (for the board), *audit_freq* (for the audit committee), and *nc_freq* (for the nomination and remuneration committee), which reflect the number of meetings per fiscal year (i.e., meeting frequency). Additionally, the variables take into account both face-to-face and alternative meeting methods. The reason for this was the absence of reasons to believe that only face-to-face meetings are useful in the Russian case.

As for H2, in order to test the relationship between the board's gender diversity and the probability of fraud, we included the gender diversity variable (*gender*) in the model, calculated as the percentage of women among board members.

To examine H3, as in the case of H1, we included the corresponding variables: *board_ind* – the share of independent directors on the board, *audit_ind* – the share of independent directors on the audit committee, and *nc_ind* – the share of independent directors on the nomination and remuneration committee. To provide for comparability, we outline that the relative variable allows us not to depend on the board size.

H4 required inclusion of the *nc_chair_ind* dummy variable, which equals "1" in the presence of an independent chairman of the nomination and remuneration committee, and '0' otherwise.

Testing H6 about the influence of the board and committee sizes was connected with the inclusion of the corresponding variables: *board_size* – number of board members, *audit_size* – number of audit committee members, and *nc_size* – number of nomination and remuneration committee members.

Table 1. Table of variables

Variable	Symbol	Operationalisation
Fraud event	*fraud*	Dummy variable (1 – fraud is detected; 0 – otherwise)
Company size	*ln_size*	The natural logarithm of the firm's market capitalisation at the end of the year
Board gender	*gender*	The share of women among board members
Board size	*b_size*	The number of board members
Board independence	*b_ind*	The share of the independent directors on the board
Board effort	*b_freq*	The number of board meetings per fiscal year

Variable	Symbol	Operationalisation
Audit committee size	*a_size*	The number of audit committee members
Audit committee independence	*a_ind*	The share of independent directors on the audit committee
Audit committee effort	*a_freq*	The number of audit committee meetings per fiscal year
Audit committee's chair independence	*a_chair_ind*	Dummy variable (1 – the chair of the audit committee is independent; 0 – otherwise)
Nomination & remuneration committee size	*nc_size*	The number of members on the nomination and remuneration committee
Nomination & remuneration committee independence	*nc_ind*	The share of the independent directors on the nomination and remuneration committees
Nomination & remuneration committee effort	*nc_freq*	The number of the nomination and remuneration committee meetings per fiscal year
Nomination & remuneration committee's chair independence	*nc_ind_chair*	Dummy variable (1 – the chair of the nomination and remuneration committee is independent; 0 – otherwise)

Thus, initially, we examine 3 models with the following specifications:

$$Fraud(t) = \frac{e^Z}{1+e^Z}, (1)$$

where

Model 1 (for the board):

$$Z = \beta_0 + \beta_1 \ln(\text{market cap})_i + \beta_2 \text{gender}_i + \\ + \beta_3 \text{board}_i \text{freq}_i + \beta_4 \text{board}_i \text{ind}_i + \\ + \beta_5 \text{board size}_i + \varepsilon; \quad (2)$$

Model 2 (for the audit committee):

$$Z = \beta_0 + \beta_1 \ln(\text{market cap})_i + \beta_2 \text{audit freq}_i + \\ + \beta_3 \text{audit ind}_i + \beta_3 \text{audit size}_i + \varepsilon; \quad (3)$$

Model 3 (for the nomination and remuneration committee):

$$Z = \beta_0 + \beta_1 \ln(\text{market cap})_i + \beta_2 \text{nc freq}_i + \\ + \beta_3 \text{nc ind}_i + \beta_4 \text{nc size}_i + \\ + \beta_5 \text{nc chair ind}_i + \varepsilon. \quad (4)$$

As we tested the models, we realized what factors are the most significant. Using the consistent exception approach, we checked the significance of the variables, then we formulated the new model with the sustainably significant factors. Thus, we selected the necessary analysis variables and decided to implement a logit model to test the hypotheses. Lastly, we formulated the basic models and indicated the next steps of the research process.

Data

Panel data consists of 160 observations for 32 listed Russian public companies for five years (2014–2018). The presence of a listing of the chosen corporations on the Moscow Stock Exchange is considered first. We selected listed companies because the standard of information disclosure is weak in Russia. In contrast, the largest and most reliable companies seek to attract foreign, institutional, and other investors for whom it is crucial to know whether the company meets their internal criteria. Correspondingly, corporations usually inform the market about changes better than private firms, or those less interested in the stock market.

Moreover, according to Russian legislation, listed companies must disclose information that can be crucial for stock evaluation (Regulation of the Bank of Russia dated February 24, 2016 No. 534-P (as amended on June 27, 2019) "On the admission of securities to organized securities") [39]. Published companies' information (e.g., reports) is retrieved from www.e-disclosure.ru. The leading source for us are the companies' annual reports. Furthermore, part of the necessary information is from the Thomson Reuters Eikon terminal.

We found fraud cases by searching through news due to the absence of fraud databases for Russia's public or private companies. We monitored the leading news sources (e.g., Kommersant, Interfax, Ria) and specialised sites (e.g., Pravo (pravo.ru), Banki (banki.ru)). For our purposes, a fraud case is defined as any news about financial reporting scandals, corruption, conflict of interests and local fraud. Overall, we found 32 fraud cases, however, we should emphasise that it is not a full list of fraud cases, as companies often prefer to address conflicts and problems internally and shield the details from publicity.

Statistical description and sample

Means, medians, and pairwise comparisons (fraud vs. non-fraud companies) for the board, committees, and companies' characteristics are found in Table 2. The matched pairs for the pairwise comparison varied from 80 to 71 based on data availability.

The pairwise differences in board composition show that differences in the share of female directors, independent directors, and the annual number of board meetings (both online and offline) are statistically different from zero. On average, non-fraudulent companies in the sample had a higher percentage of women on the board and a higher percentage of independent directors. Non-fraud-linked companies also hold fewer board meetings. The pairwise differences between fraudulent and non-fraudulent companies' audit committees demonstrate no difference in the number

of members or annual meetings. However, non-fraudulent companies have, on average, a significantly higher percentage of independent directors on the committee.

Non-fraudulent companies also have a higher percentage of independent directors on the nomination committee, while the difference in the annual number of meetings and the number of members is insignificant. Also, the pairwise analysis of the companies' market capitalisation shows that fraudulent companies, on average, tend to have a higher valuation.

The percentage of independent directors on the audit and nomination committees, as well as the number of both committees' meetings, are strongly positively correlated. Also, the number of members in both committees is positively correlated (>0.5) with the board size. The firm size (market capitalisation) shows a positive correlation with the board and committee size, and the frequency of their meetings. Firm size correlates negatively (–0,4 to –0.2) with the committee size, meeting frequency, and the independence of the committees' chairmen.

Table 2. Statistical description of board and committees: fraudulent vs. non-fraudulent companies

	Mean			Median		
Category	Fraud	No-Fraud	p-Value	Fraud	No-Fraud	p-Value
Board composition						
Board size (number)	11.32	11.34	0.98	11	1	0.65
Female directors (% of board size)	4.39	8.38	0.08*	0	7.14	0.00***
Independent directors (% of board size)	33.46	39.39	0.05**	36.35	40	0.13**
Meeting frequency (annual number)	26.84	19.88	0.03**	18	15	0.15
Audit Committee						
Committee size (number)	3.26	3.41	0.29	3	3	0.5
Independent directors (% of members)	71.83	83.36	0.02**	66.7	100	0.00***
Meeting frequency (annual number)	7.87	9.09	0.45	8	8	0.47
Nomination Committee						
Committee size (number)	3.23	3.33	0.55	3	3	0,64
Independent directors (% of members)	66.7	81.54	68.48	100		0.03**
Meeting frequency (annual number)	6.07	7.43	0.32	7	7	0.65
Company specifics						
Market capitalisation (bln. rub)	1275.6	611.27	868	200.5		0.00***

***, ** and * indicate significance levels of 1%, 5% and 10% respectively.

Sources: Authors calculations.

Overall, the statistical analysis of the sample showed that the main difference between fraudulent and non-fraudulent companies is the number of independent directors.

Empirical Results

Our empirical analysis consisted of two parts:

- We constructed the correlation matrix of all the dependent variables
- We evaluated the influence of the board and committee composition on the probability of fraud using a logit model.

Model 1

The first model aimed to assess how board composition in terms of gender diversity (*gender*), number of members (*b_size*), degree of independence (*b_ind*), and its frequency of meetings (*b_freq*) affect the fraud probability. The regression model was evaluated in two stages. The first stage included all the variables, and the only significant variable appeared to be company size (*lnsize*). At the second stage, when the *gender* variable was excluded, the model provided better results. As we can see from Table 3, due to negligible number of women among board members, this variable was eliminated from the model. According to the data,

the boards are not gender diverse in Russia since the mean value is only 0.069. Consequently, H2 is not supported. The independence variable (*b_ind*) had a significant effect on fraud probability. Its value indicates that a 1% increase in the degree of board independence results in fraud probability reduction by 0.41%. Significance of the number of members (*b_size*) and frequency of meetings (*b_freq*) is not confirmed.

In addition, the Wald test does not detect multicollinearity problem.

Model 2

Model 2 evaluated how the audit committee performance, reflected by the meetings' frequency (*a_freq*), the number of members (*a_size*), and the degree of independence (*a_ind*), impacts fraud probability. The results shown in Table 3 indicate that among all Model 2 variables, there are two significant variables – the level of independence and the control variable size. Consequently, the increment in the share of independent directors by 1% leads to a decline in the fraud probability by 0.26%, proving H3.b at the 5% significance level. Significance of the meetings› frequency (*a_freq*) and the number of members (*a_size*) is not revealed.

Besides, the Wald test does not detect multicollinearity.

Model 3

With Model 3, we examined the influence of the last committee's under consideration – the nomination and remuneration committee. It can be seen from Table 3 that there are one significant variable and one significant control variable. It refers to the independence of the chairman (*nc_chair_ind*): the independent committee head noticeably diminishes probability of fraud by 0.24%, consistent with H4. The independence variable (*nc_ind*) appears to be insignificant, even though it is negatively correlated with the dependent variable, as we proposed. Also, *nc_freq* seems to have an insignificant effect, and has a negative relationship that contradicts our hypothesis. Consequently, we reject H1.c and H3.c. The insignificance of the committee size (*nc_size*) was anticipated, and thus H6.c is proven.

The model was also tested for multicollinearity, and the Wald test does not detect it.

Table 3. Logit model's specifications

Independent variable	Model 1	Model 2	Model 3
Lnsize	0.00057***	0,00055***	0.00047**
	0.0002	0,0002	
Gender	–4.62603		
	3.61615		
b_ind	–2.7775		
	1.74383		
b_size	–0.0349		
	0.120356		
b_freq	0.017734		
	0.013941		
a_size		0.0931769	
		0.3662542	
a_freq		–0.0333549	
		0.080822	
a_ind		–1.671224**	
		0.9166131	
nc_size			0.399214
			0.308366
nc_freq			0.009023
			0.0961266
nc_ind			0.009489
			1.14994
nc_chair_ind			–1.66421*
			0.865961
Const	–0.7096	–1.207474	–1.998201
	1.575665	1.646325	1.804469
Pseudo R2	0.1406***	0.097**	0.0963*

***, ** and * indicate significance at the 1%, 5% and 10% levels, respectively.
Sources: Authors calculations.

Control variable

According to the models, company size (*ln_size*) has a significantly positive effect on the fraud probability at the 1% and 5%, levels. However, the relationship is relatively stable, so we conclude that company size should be incorporated into the regressions to receive accurate estimations.

Conclusion

Overall, we couldn't test the hypothesis on the negative relationship between the gender diversity and fraud probability as the representation of women on the board is extremely scarce in Russia. Nevertheless, the mean-median

analysis shows that non-fraud companies in the sample had a higher percentage of women on the board and a higher percentage of independent directors.

If a non-executive director is present on the nomination and remuneration committee, the board's and committees' efforts reduce fraud at a decreasing rate. The independence, effort, and size of the board and committees are insignificant variables.

The degree of independence of board and committee members is not statistically significant. This aligns with the results obtained by I.V. Berezinets et al. [8], who also explore Russian data and does not align with research using data from the U.S. and Nigeria, which, on the contrary, found this variable significant. Such insignificance does not allow us to reveal the effect of members' independence on the probability of fraud. However, the independence of the nomination and remuneration committee chairman significantly decreases the probability of fraud. This result indicates that hiring an independent chairman can prevent fraud. However, nomination and remuneration committees frequently play just a minor role in the Russian context [8].

The non-control size variable is insignificant in all our hypotheses. We may suppose that the reason behind this is the minimum board size, as set by Russian legislation. We furthermore accept the last hypothesis (H5), i.e., that the board and committee size does not influence the probability of fraud. This result is in alignment with foreign literature on the topic. However, I.V. Berezinets et al. [8] found the size variable to be the only significant one in terms of the quality of financial reporting. We suggest that size may be significant for reporting quality, as I.V. Berezinets et al. [8] found, because one of the board's and audit committee's functions is to provide and review financial reporting. However, we investigate the effects on the probability of fraud that includes financial reporting manipulation, and is much more comprehensive, according to Deloitte's legal insight [1].

To conclude, the result is that shareholders who desire optimisation should pay more attention to board and committee chairpersons' diversity and independence. According to our results, the independence of the whole board and committees can be ignored, and it seems to be more convenient and cheaper for the company to pay attention to just one person's independence.

One of the possible reasons for fraud is inadequate manager remuneration. Salary rigidity may provide incentives for fraud on the part of top managers. Hence, the probability of fraud occurring in the whole company increases. One possible method to reduce it is to set stricter rules as a reference for the nomination and remuneration committee. For example, a more severe punishment suggestion acts as a signal that prevents fraud.

Possible future studies and limitations

Future studies should aim to replicate the results in a larger sample. Besides, they may focus on financial accounting fraud in Russian companies and consider various levels of fraud: the levels of employees and top management. We suggest that conducting an anonymous survey among Russian companies and creating a database can contribute to significant progress in the study of the influence of corporate governance on the level of corporate fraud. Also, Russian specifics would be taken into account in the survey. The results could be useful for Russian companies and firms from other developing countries in demonstrating similar institutional characteristics. Our findings may be used to inspire the reduction of losses from internal offenses.

Furthermore, the results of the investigation of Russian companies presented in this study provide an opportunity to highlight the direction for further research involving Russian-language news.

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