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The Impact of Corporate Governance on the Capital Structure of Domestic Companies

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ABSTRACT

The choice of the optimal capital structure is one of the biggest challenges that the company's top management faces due to the fact that the right strategy secures the company's financial stability, sustainable development and capital-raising potential. This study **aims** at establishing a connection between the capital structure of Russian companies and corporate governance. Literature background of the paper consists of foreign and Russian authors' works in the field of behavioral finance. Observations from 60 Russian companies were employed in the study. **The major findings** obtained by economic and mathematical modeling are as follows: 1. positive connection was established between the size of board of directors, number of independent directors and debt in capital structure; 2. positive connection between CEO's age and short-term debt in capital structure; 3. no correlation between gender of directors and debt. The findings of this study may be used for determining the optimal capital structure strategy. Moreover, this information may be taken into account by top-management, directors, etc. for internal valuation of a company's operations including sound valuation of the corporate governance factors that influenced the company's capital structure.

***Keywords*:** corporate governance; capital structure; financial indicators; corporate governance indicators

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INTRODUCTION

Choosing the optimal capital structure is one of the most difficult tasks for the company's management. The financial stability and investment attractiveness of the enterprise, as well as further relationships between the management of the enterprise, owners, and creditors, depend on the correctly chosen strategy. In most cases, the company's management determines the capital structure based on the financial goals (S. Orlova, J. Harper, Li Sun [1]). However, in addition to financial factors, corporate governance also has a significant impact. For example, H. Cronqvist, A. K. Makhija and S. E. Yonker [2], based on the "theory of personality" developed by G. W. Allport [3] and D. C. Funder, C. R. Colvin [4], analyzed 605 large US companies included in the S&P 1500 index and established the relationship between corporate governance factors and capital structure. In the scientific works of both Russian (E. T. Rusanova [5], M. V. Popov [6]) and foreign (Kavaus Ardalan, Mohammed Sowkat Hossain) authors, there is a lot of research on the influence of various internal and external factors on the main financial indicators of enterprises. Obviously, companies that provide services in the same industry and have similar indicators and characteristics may have different capital structure. Hence, it becomes necessary to understand and determine the impact of not only financial but also non-financial factors. Non-financial sources of influence most often include various features of corporate governance, in particular, the role and personal data of the general director (CEO) (Chief Executive Officer) [7], the structure and size of the board of directors [8]. This is due to the fact that it is the top management that largely determines the key vector of the company's development, including financial decision-making [9].

Despite a fairly large number of similar scientific papers, there is no universal and generally accepted theory establishing one and only way for the company's financing, which determines the relevance of the chosen topic.

This work aims at analyzing and determining the impact of corporate governance on the capital structure of Russian companies using economic and mathematical modeling.

LITERATURE REVIEW AND RESEARCH HYPOTHESES

There are three main theories of capital structure: trade-off theory, pecking order theory, and agency cost theory.

Trade-Off Theory

The trade-off theory was developed and described by Kraus and Litzenberger in 1973 [10]. This theory is based on the fact that borrowed capital costs the enterprise less than its own since interest on it is not taxed. However, it should also be taken into account that too much leverage in the capital structure can lead to the financial instability of the company, so the task of management is to find a compromise between the benefits of borrowing and the costs of financial instability that the company will incur in the event of bankruptcy. Costs can be either direct or indirect. The direct ones include, for example, a decrease in the value of assets in the bankruptcy process, and the indirect ones include legal and administrative costs [6].

Pecking Order Theory

The pecking order theory or hierarchy theory was first described by S. Myers in 1984 [11]. According to this theory, the company's management chooses sources of financing in a strictly established manner. Internal sources are mobilized first, such as accumulated retained earnings, then borrowed funds, with preference given to a less risky short-term loan. The next source of financing will be a long-term loan, and only if the borrowed capital can no longer be used, the company issues additional shares [12].

Agency Cost Theory

In the framework of agency cost theory, the choice of capital structure can be viewed as a mean of resolving agency conflicts. Such conflicts can arise between the owners and management of the company, management and creditors, owners and creditors. The essence of the disagreement lies in the fact that the owners, as a rule, want to increase the value

of the company, while the management may be more concerned about their own reputation, career growth, salary, i.e. their interests may diverge, which in turn may lead to the fact that the company's management will make decisions that are unfavorable for the company, "give way" to inefficient projects, etc. In this regard, the owners bear agency costs in order to control the actual management of the company. The capital structure, in turn, plays a very important role, and the right choice will help to avoid conflicts. For example, raising borrowed funds can affect the efficiency of the company's management, since a large share of debt obligations can put the company in a financially unstable position, in which case additional efforts will be required from management, a competent choice of corporate management strategy in order to maintain their work and, accordingly, improve the financial position of the company. It should be noted that in this case, the goals of both parties coincide [13].

However, at the moment there is no theory that can fully explain why companies operating in the same industry and with similar characteristics can have very different capital structures.

That is why studies of the influence of corporate governance factors on the capital structure have recently become very popular. As a rule, the composition of the board of directors is considered as the main indicator, including its size, the proportion of independent directors, the proportion of women and the ownership structure of the company [14–16].

Gender Factor

It is worth noting that as early as 1991, Cox put forward a hypothesis that since the movement for equal rights for men and women began to gain momentum, companies with women on the board of directors began to show better financial results [17]. In his research, he explains this as follows: gender diversity on the board of directors contributes to the management's multifaceted and broader view of the company's future path, which in turn enhances the firm's reputation, and attracts clients and investors. The influence of the managers' gender on the financial performance of an organization is also studied in the work of E. Peni [9], where it is stated that women are more careful in making decisions than men, who are characterized as more inclined to take a risk. Thus, men are predisposed to attracting more borrowed capital, which contributes to the growth of financial risks.

In their work Y. Liu, Z. Wei, F. Xie [18], on a sample of 2000 Chinese companies analyzed not only the connection between women directors and such indicators as return on equity and assets but also determined the correlation between the number of women in the structure of management board, board of directors and company's performance. After conducting a study, the authors concluded that the proportion of women on the board of directors has a positive effect on the company's performance. In addition, D.D. Zelechowski, D. Bilimoria [19], having conducted a study in 73 countries from 1998 to 2008, arrived at the conclusion that companies in which the proportion of women on the board of directors was higher had better financial performance than companies in which the proportion of women on the board of directors was lower or with no women on the board of directors. They also stated that women were inherently more prudent and tried to reduce the company's risks, therefore, the share of borrowed funds in the capital structure was lower.

Age

One factor in corporate governance that influences capital structure decisions is the age of the CEO. The relationship between the indicators is described in the works of J.R. Graham, C.R. Harvey [20], L. Barros, A. Silveira [21]. However, there is no consensus on the nature of the influence. It is generally assumed that older and more experienced managers, in most cases support a conservative money management policy, and mostly raise their own rather than borrowed funds. Such managers are less prone to unprincipled and emotional behavior [22].

At the same time, a number of scientists in their works note that before retirement,

the manager prefers short-term projects [23]. Moreover, according to M.A. Serfling [24], as they grow older, executives prefer to pursue a less risky policy. Since the large companies usually use debt financing to fund their operations, the organization is forced to attract borrowed funds, in this case, in accordance with the pecking order theory of financing, an older manager prefers to use short-term loans, which are less risky compared to long-term ones.

Board of Directors

The board of directors is one of the main instruments of corporate governance, the importance of which in the company's structure is explained by its main functions, including the representation, and defending the interests of the owners, the appointment of the company's management. Members of the Board of Directors directly influence the adoption of the most significant and strategic decisions with regards to the operations and development of the company, set key performance benchmarks. Hence the interest arises in terms of the number of board members and its direct impact on the company's financial performance.

Y.T. Mak, Y. Kusnadi [25], after conducting a study, found that in companies with a large board of directors, the share of borrowed funds in the capital structure is greater than in companies where the board of directors is not so numerous.

Independent directors

Recently, the boards of directors of large companies increasingly include independent directors, who are an important link in decision-making, responsible for monitoring the implementation of management decisions, internal audits, and risk management. In this regard, the question arises: what is the nature and degree of influence of the presence of independent directors on the financial performance of the company? The scientist M.S. Weisbach [26] states that the CEO will expect more control if there are more independent directors. With increased oversight by the board, management autonomy may be reduced, which in turn will affect the company's financial performance.

As a result of studying and analyzing the abovementioned works of foreign and Russian authors, we formulate the following hypotheses:

Hypothesis 1. The more women on the board of directors, the lower the share of borrowed funds in the capital structure (Peni [9], Liu, Wei, Xie [18], Zelechowski [19]).

Hypothesis 2. The older the CEO, the greater the share of short-term liabilities in the capital structure (M.A. Serfling [24], A. Silveira [21]).

Hypothesis 3. The larger the size of the board of directors (B of D), the higher the share of borrowed funds in the capital structure (Y.T. Mak, Y. Kusnadi [25], T. Tychinskaya [8]).

Hypothesis 4. The more independent directors, the higher the share of borrowed funds in the capital structure (M.S. Weisbach [26]).

Research Methodology

There are several ways to determine the capital structure, presented in *Table 1*. For example, H. Cronqvist, A.K. Makhija and S.E. Yonker [2] in their work use the ratio of short-term and long-term liabilities to the market value of assets as a variable "capital structure". In addition, the ratio of total liabilities to the company's book value is often used. For example, T. Vo. Minh uses it in his works [27]. In his work, the ratio of short-term liabilities to book value and long-term liabilities to book value of the company is often taken separately for the capital structure variable.

In this paper, the ratio of debt variable to the company's assets is taken as the dependent variable "capital structure". In turn, the debt variable is represented both by the amount of liabilities and separately by short-term and long-term liabilities. In this regard, the capital structure in the study is presented in the form of three coefficients (*Table 2*).

The following indicators were taken as explanatory variables: the number of members on the board of directors, the proportion of independent directors on the board of directors, the proportion of women on the board of directors, the average annual board of directors' salary per member, the number of members of the management board, and the age of the CEO.

It is worth noting that, of course, the choice of the capital structure is determined not only

Table 1

Capital structure research methods review

Author	Debt variable	Capital structure variable
Cronqvist H., Makhija A.K., Yonker S.E. [2, p. 20]	The amount of short-term and long-term liabilities	1. Variable debt/assets. 2. Variable debt/company market value
Barros L., Silveira A. [21, p. 293–335]	Long-term liabilities	Variable debt/assets
Minh T. Vo [27]	1. Short-term liabilities. 2. Long-term liabilities. 3. The amount of short-term and long-term liabilities	1. Short-term liabilities/assets. 2. Long-term liabilities/assets. 3. The amount of short-term and long-term liabilities/assets

Source: compiled by the authors.

Table 2

Dependent variables

Designation	Capital structure ratio
Y_1	Short-term liabilities / Book value of assets
Y_2	Long-term liabilities / Book value of assets
Y_3	Liabilities / Book value of assets

Source: compiled by the authors.

by corporate governance factors, but both industry specifics and the efficiency of the company's operations are also considered. That is why the indicators of the financial condition of the company (return on equity (ROE), company value, coverage ratio and quick liquidity ratio) were chosen as control variables C. Chang, X. Chen, G. Liao [28].

The main model is as follows:

$$Y = a_0 + \sum a_i CG_i + \sum b_i F_i + \varepsilon, \quad (1)$$

where the content and designation of the variables included in the equation are presented in *Table 3*.

The presented table separately shows the variables of corporate governance and the financial health of the company. Linear regression will be used as a research method.

DATA ANALYSIS

The sample of companies was formed with the help of Ruslana-Bureau van Dijk and information obtained directly from the annual reports of the companies included in the sample. It contains both absolute and relative indicators, the values of which were found and calculated based on the available data. The empirical base of the study includes financial performance and corporate governance indicators of 60 large Russian companies in 2018.

Table 4 provides descriptive statistics for corporate governance variables and domestic company financial health variables.

According to the descriptive statistics, there are corporations among the analyzed companies whose board of directors and management boards do not have independent directors, foreigners, and women. In addition, the sample includes organizations whose boards of directors consist only from foreigners. The maximum share of women on the board of directors and management board of corporations is 40% and 50% respectively.

It can also be noticed that the indicator of the number of managers on the management

board varies significantly — from 2 to 25 people. There is a great difference in the CEO age: the youngest is 36 years old, and the oldest is 79 years old.

The analysis of descriptive statistics revealed the average composition of the board of directors and the management board of Russian companies, shown in *Fig. 1 and 2*.

On average, the board of directors of Russian companies consists of 10 people, four of which have the status of an independent director, and three are foreign citizens. The gender diversity of board members remains low, as there is predominantly only one woman on the board of directors (*Fig. 1*). The average annual salary of a member of the board of directors in the analyzed companies amounted to 18.4 million rubles.

Let us turn to the consideration of the average composition of the management board of domestic enterprises (*Fig. 2*).

The executive management team of corporations on average includes 10 top managers, only one of which is a female. The team is headed by the CEO, whose average age is 54 years (*Fig. 2*).

According to statistics, the presence of women in the composition of the board of directors and the management board of Russian companies is not widespread today, in the share ratio, it is only 7% of the total number of participants.

To analyze the relationship between the selected indicators, a correlation matrix was built (*Fig. 3*)

According to the matrix, a strong correlation between financial indicators and such corporate governance variables as the size of the board of directors, the proportion of independent directors, the number of members of the management board, and the age of the CEO is observed.

Table 3

Description of variables

Designation	Content
Corporate governance variables	
CG_1	Number of members on the board of directors
CG_2	Share of independent directors in the board of directors
CG_3	Share of women on the board of directors
CG_4	Average annual board of directors salary per member
CG_5	Number of members of the management board
CG_6	Average director salary (in the board of directors)
CG_7	Age of the Chairman of the Management Board (CEO)
CG_8	Share of foreigners on the board of directors
Control variables (variables of the financial health of the company)	
F_1	Return on equity
F_2	Return on assets
F_3	Return on capital employed
F_4	Profit
F_5	Coverage ratio
F_6	Quick liquidity ratio
F_7	Company value

Source: compiled by the authors.

RESEARCH RESULTS

Based on the results of the analysis of the correlation matrix, regressors were selected and the models presented in *Table 5* were calculated.

The cells opposite the variables indicate the value of the coefficient for each indicator, and in parentheses — the standard error.

Statistical significance at the level: 0 “***”; 0,001 “**”; 0,01 “*”; 0,05 “.”; 0.1 “ ” 1.

Thus, according to the results of the study, we can conclude that there is an influence of the indicators included in the model on the dependent variable of the model — the capital

Table 4

Descriptive statistics

Variable name	mean	sd	median	min	max
Board of Directors	11.05	2.41	10.00	5.00	15
Share of independent directors	30.93	16.93	28.79	0.00	77.78
Share of foreign directors	26.32	27.25	19.09	0.00	100
Share of women on the board of directors	7.67	9.03	7.42	0.00	40
Number of members of the management board	9.5	4.09	9.00	2	25
Share of women on the management board	15.67	13.99	14.29	0.00	50
Average salary on the board of directors	18 353 454	23 503 056	9 998 261	260 400	144 000 000
Average salary on the board of directors (logarithm)	6.99	0.54	7.00	5.42	8.16
Age of the CEO	53.62	10.78	51.00	36	79
Return on equity	25.07	59.45	15.09	–83.52	358.87
Return on capital raised	16.18	50.10	9.20	–46.59	366.83
Return on assets	5.52	11.42	3.88	–43.02	32.74
Coverage ratio	1.26	0.73	1.05	0.14	3.59
Profit margin	10.91	19.39	7.06	–45.09	54.41
Liquidity ratio	1.14	0.85	0.84	0.06	3.43
Company value	640 035 622	1 108 838 353	186 600 000	143 500	458 400 0000
Company value (logarithm)	8.12	0.97	8.27	5	10
Asset value	1 728 212 861	4 643 190 055	299 459 696	1 202 293	27 112 200 000
Short-term liabilities	468 022 515	1 449 075 719	78 467 204	660 311	9 470 480 000
Long term duties	698 739 148	2 243 664 235	86 314 300	9 181	14 205 720 000
Short-term liabilities/assets	0.31	0.24	0.25	0.02	0.97
Long-term liabilities/assets	0.30	0.23	0.27	0.01	0.93
All liabilities/assets	0.61	0.28	0.64	0.10	1

Source: compiled by the authors.

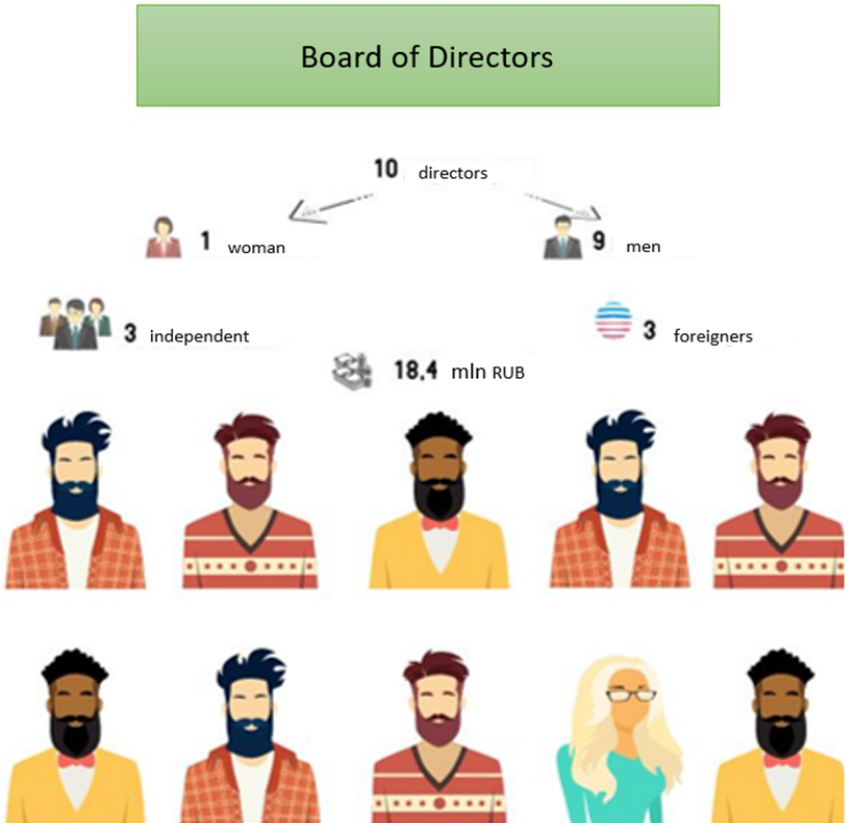

Fig. 1. **Russian average board of directors**

Source: compiled by the authors.

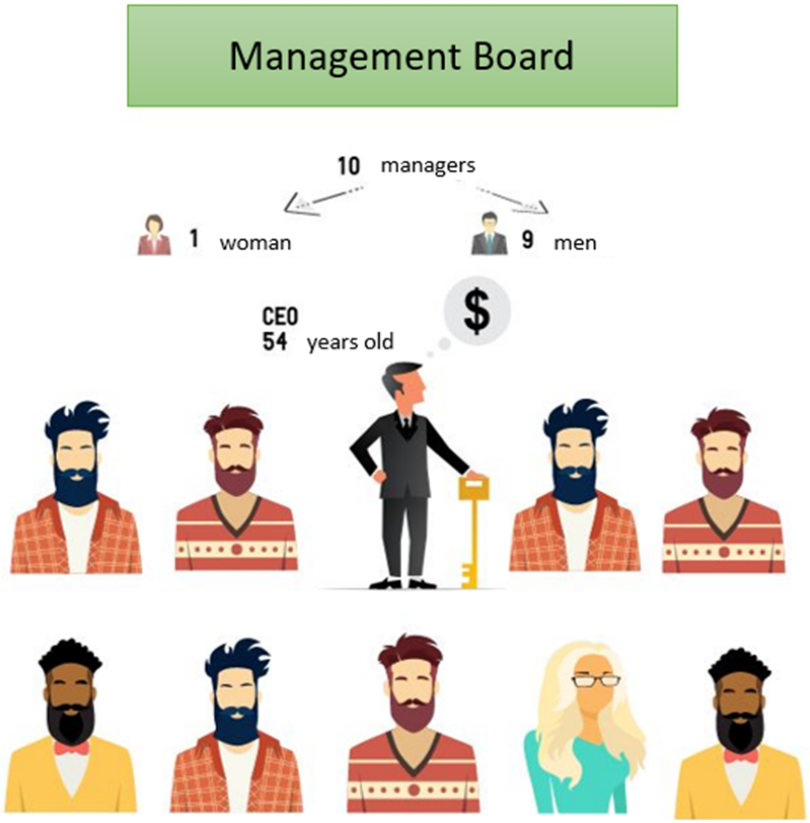

Fig. 2. **Russian average management team**

Source: compiled by the authors.

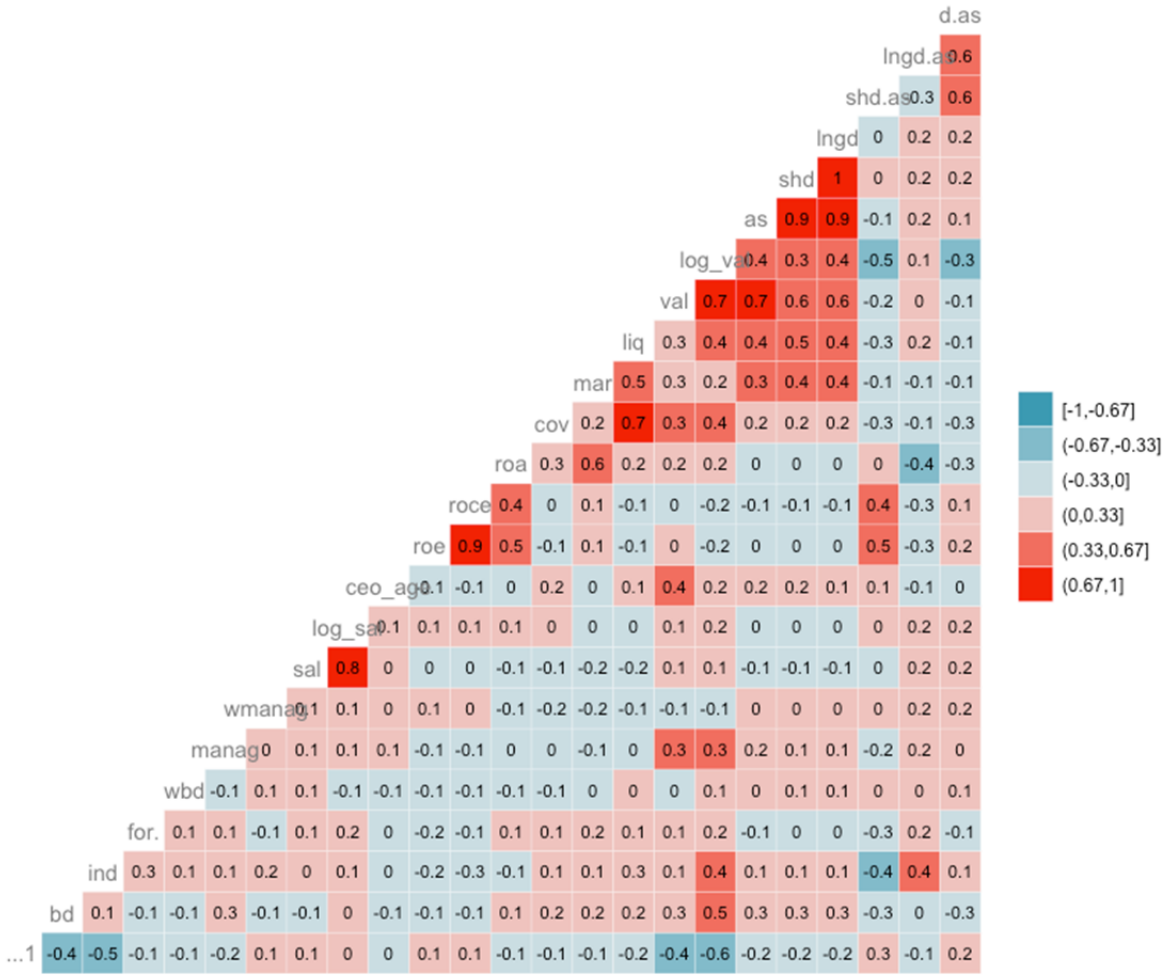

Fig. 3. **Correlation matrix**

Source: compiled by the authors.

structure. This means that our hypotheses were partially confirmed, the results are given in *Table 6*.

Based on the data obtained, it can be argued that the coefficient for the indicator "the share of women on the board of directors" is insignificant, respectively, hypothesis 1 that the more women there are on the board of directors, the less borrowed funds the company uses, was not confirmed. It is worth noting the fact that these results do not completely contradict the hypotheses put forward by foreign authors, for example, Y. Liu, Z. Wei, F. Xie [17], D.D. Zelechowski, D. Bilimoria [19], since, according to the descriptive statistics provided, there is on average only one woman on the board of directors of a large Russian company, which differs significantly from the number of women in the management of foreign companies. Based on this, it can be assumed that this factor is significant. However, in Russian realities, due to the weak gender diversity, this indicator does not have a special impact on the capital structure.

Hypothesis No. 2 was confirmed, according to which the older the CEO of the company, the greater the share of short-term borrowed funds in the capital structure. The data obtained are consistent with the results of earlier studies by M.A. Serfling [24]. The coefficient of the indicator "age of the CEO" is positive and significant, which indicates the presence of a direct relationship between the variables.

Based on the results obtained, the coefficient "the size of the board of directors" turned out to be significant, hence hypothesis 3 was

Table 5

Research results

Variable	Model 1	Model 2	Model 3
Non-financial indicators			
Company value log	−0.1182549 (0.0248227) ***		
Age of the CEO	0.0042298 (0.0022041)*		
Board of directors			0.0256454 (0.0128185)
Share of women on the board of directors	0.0023019 (0.0026010)	−0.0007659 (0.0025762)	−0.0004548 (0.0033271)
Share of independent directors		0.0040483 (0.0014464)**	
Management board		0.0087869 (0.0056402)	
Salary log		0.0909936 (0.0429113)*	
Financial indicators			
Return on assets		−0.0082338 (0.0021021)***	−0.0114820 (0.0033499)**
Return on equity	0.0015417 (0.0004034)***		0.0019316 (0.0006241)**
Coverage ratio		−0.0952991 (0.0472095)*	−0.1595280 (0.0620133)*
Liquidity ratio		0.1112057 (0.0406046)**	0.1312256 (0.0514884)*
Model indicators			
R-Squared	0.4603	0.4973	0.393
Adj. R-Squared	0.421	0.4296	0.3243
F-statistic	11.73	7.349	5.719
p-value	5.89e-07	4.005e-06	0.0001217

Source: compiled by the authors.

put forward, stating that the larger the size of the board of directors, the higher the share of borrowed funds in the capital structure, was confirmed. The result coincides with the conclusions of Y.T. Mak, Y. Kusnadi [25].

The coefficient for the "share of independent directors" indicator is also positive and significant, which indicates a direct relationship and proves that the more independent directors on the board of directors, the greater the share of borrowed funds compared to equity in the company's capital structure of domestic companies.

CONCLUSIONS

By conducting an econometric analysis using linear regression, it was confirmed that corporate governance factors affect the capital structure of domestic companies. In particular, a positive relationship was found between the share of borrowed funds in the capital structure of domestic companies and the size of the board

Table 6

Analysis of the research results

Hypotheses	Factors	Results
Hypothesis 1. The more women on the management board/board of directors, the less borrowed funds the company uses	The share of women on the management board/board of directors	Not confirmed
Hypothesis 2. The older the CEO, the greater the share of short-term liabilities in the capital structure	The age of the CEO	Confirmed
Hypothesis 3. The larger the size of the board of directors (B of D), the higher the share of borrowed funds in the capital structure	The size of the board of directors	Confirmed
Hypothesis 4. The more independent directors, the higher the share of borrowed funds in the capital structure	The number of independent directors on the board of directors	Confirmed

Source: compiled by the authors.

of directors, which is explained by the fact that when a decision is made by a large number of people, responsibility is blurred, and this, in turn, entails making more risky decisions, including in terms of capital structure. The positive relationship between the number of independent directors and the share of borrowed funds in the capital structure only confirms the above. In addition, the study found a positive relationship between the share of short-term borrowings in the capital structure and the age of the CEO, which coincides with the hypotheses put forward by foreign authors earlier, stating that the older the manager, the greater the share of short-term loans from the enterprise due to the fact that he is committed to completing as many projects as possible before the end of his career and therefore expects all loans to be repaid before the end of his career.

The choice of capital structure is a strategically important decision, the responsibility for which lies with the company's management. In this regard, managers and other stakeholders should have a clear understanding of the role and nature of the influence of certain factors, including corporate governance factors, on the capital structure. That is why this study is relevant today. It complements the existing work in the framework of the agency cost theory of capital structure and can become the basis for further research in this area.

In addition, the results obtained during the study can be applied in forecasting and determining the capital structure, which can be useful to the top management of Russian enterprises, members of the boards of directors, analysts, financial analysts, and other interested parties.

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E.A. Fedorova — Academic Adviser of the research, formulation of scientific hypotheses, tested by model experiment method.
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M.K. Tregubova — literature analysis, problem statement, conceptual framework development.
A.Yu. Maximova — statistics collection, description of the results.
V.D. Emel'yanova — data visualization design, conclusions.

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