

# Board Diversity and Corporate Performance: A Romanian Case Study

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## ABSTRACT

*We analyse the influence of Corporate Governance, as measured by diversity in terms of age, gender, and independence, on the financial performance of the Romanian corporates. Romanian directors have an average age of 52 years and the average age range within the boards is 25 years. Analysis confirms that age, both as a board characteristic and as a measure of separation, has a non-linear influence on financial performance. Performance is obtained when directors are in their early 50s and the age dispersion is moderate. The boards are generally not gender diversified, with the average weight of female directors at 15%. Analysis links gender diversification with lower performance, while where diversification occurs, a non-linear correlation is observed. In this case, performance is associated with moderate gender diversity. Independent directors occupy on average 51% of the board seats. We found that a higher number of independent directors has a negative influence on performance and that introducing one or two independent directors has a consistent positive result. The results for Romanian companies are generally consistent with the literature review.*

**KEYWORDS:** *corporate governance, board independence, age and gender diversity*

**JEL CLASSIFICATION:** *G34 - Corporate Governance*

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## 1. INTRODUCTION

In recent years, studies centred on Corporate Governance have increased in number as well as in terms of disciplines used to decipher the mechanisms that govern it. We can choose many “lenses” by choosing individual or combinations of corporate governance theories, like Agency or Resource Dependence Theories, and other theories, like Diversity Theories or Planning Theories. The scope of the research is to better understand how companies should be steered and controlled and how boards of directors should be constructed and act to be effective.

One of the challenges that arises is that many of the studies extend the body of knowledge for the developed countries, like the United States (US) and the United Kingdom (UK), countries that have a long history of Corporate Governance. While the principles and theories have been proved or explained in that context, we do not know if they are applicable in the context of, for example, Romanian companies. The challenge comes both from an impossible re-writing of the existing literature, so that Romanian corporates are included, and the intrinsic characteristics of the Romanian context - short history of listed companies, data availability and lack of transparency are relevant examples.

The current study extends the coverage of the existing Corporate Governance research and literature to Corporate Romania. The scope is to find which are the relevant corporate

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governance explanatory variables and how they influence the financial performance of the selected companies. I consider it important to provide an academic answer to the debates and different opinions within the Romanian Society. The need for Corporate Governance is generally not understood (Szilagyi et al., 2025) and even the utility of the Board of Directors of state-owned companies is challenged (Butunoiu, 2025).

Choosing proper “lenses” to analyse and understand how Romanian companies are steered and controlled is a challenge itself. The study continues the previous research, that analysed the impact of large shareholders (Szilagyi, 2025a), board size and turnover (Szilagyi, 2025b) on firm performance, by introducing Diversity as an explanatory variable. The study brings together the perspectives of three relevant theory groups: Corporate Governance, Diversity, and Wicked Problems. The hypothesis of the study is formulated as follows: “Diversity is a key factor of Board Effectiveness, which influences Financial performance”.

The hypothesis contains two parts and each of them is analysed separately. The first one links Diversity to Board Effectiveness. Relevant theories and studies are cited, relevant Diversity concepts are explained, and available variables are selected. The link to the Board Effectiveness is provided by the influence of Diversity on the ability of the Boards to decide on important topics like mergers, acquisitions, executive hiring, or financial structure. Such decisions are influenced by the ability of the directors to reach cohesion and a shared sense of purpose. The second part analyses the influence of Diversity, measured by selected variables (like gender, age, independence), on financial performance, measured by Price-to-Book ratio.

## **2. MATERIALS AND METHODS**

### **2.1 Literature Review**

The review was conducted considering the following rationale. The Corporate Governance theories provide the main lenses used in choosing the explanatory variables: age, gender, and independence. They sustain the link between variables and Corporate Governance. Agency Theory is used to analyse if the variables are related to agency costs, while Resource Dependence Theory is used to assess if the variables, as proxy for the skills and experience of directors, contribute or limit the effectiveness of the boards. Further, research on Diversity develops on types of diversity, which provides further insights used to select specific measures for the selected variables. Research that links selected variables to performance is further analysed, sustaining the choice of the variable, but also providing insights on the relevance of the variables in different contexts.

### **Corporate Governance Theories**

#### **Agency Theory**

The theory centres on the divergence between the interests of the agent and the principal, assuming that each of the parties seeks to maximise their own interest. For the purpose of this study, the divergence between the interests of the managers and those of shareholders is relevant. Jensen and Meckling (1976) conducted the first important analyses. Their study shows that the actions of managers will generate a lower value for the firm compared to the case where managers are also shareholders. They define agency costs as the sum of monitoring expenditures by the principal, bonding expenditures by the agent, and residual loss. According to the study, possible solutions to reduce agency costs include internal and external audits, formal control systems, budgetary constraints, and/or incentives offered to managers.

Fama and Jensen (1983) continued the research explaining the reasons for large (open) corporates, where the residual risk is highest for the shareholders, still exist. They analyse the decision process in companies, separating management and control decisions. The question raised is which scenario is more beneficial by comparison: (i) the separation of decision-making, management, and control, and bearing residual risks, or (ii) the retention of all functions by same agents. They show that in small and non-complex organisations, grouping management and control decision is efficient, as long as there is a (reduced) number of agents that share residual rights, such as family members or business associates. In large and/or complex organisations, knowledge and decisions are distributed within the company at different levels and the management and control decision are separated, thus reducing agency costs. At the same time, the residual risk bearing is diversified, being diffused among many agents/shareholders. The study raises the importance of separating the management (executives) and control (directors) functions, explaining the importance of the Board of Directors in addressing agency problems.

### **Resource Dependence Theory**

Resource Dependence Theory views the board of directors as a provider of essential resources, whether raw materials, information, or competencies, that are critical to the company's success. Access to such resources can be obtained through outside directors. Pfeffer (1972) bases this analysis on organisational and social network theories, showing that the optimal board size should align with the company's need to connect with various sectors of the external environment. A deviation from the empirically ideal board size may indicate weaker governance and diminished performance. Resource acquisition is seen as a strategy to resolve conflicts between the company and external forces, with the board facilitating these interactions. Strategies such as resource diversification help reduce dependence on specific suppliers. Cooptation represents incorporation of key resource providers, such as external directors, into the board.

### **Corporate Governance and Firm Performance**

First steps in measuring the impact of Corporate Governance on firm performance were made by Gompers, Ishii and Metrick (2003). In their aim to build a Governance Index (the "GIM index"), they provide a list 24 variables, related to shareholders rights or takeover defenses. The variables address agency issues, induced by the separation of ownership and control, while the authors provide evidence that "board membership is related to the degree of agency problems". They found that companies that had strongest shareholders' rights significantly outperformed, in terms of market returns, the ones with the weakest shareholders' rights. Building on this research, Bebchuk, Cohen and Ferrell (2009) calculated the "E-index", which filters the six most relevant variables, out of the 24 included in the GIM index. Similar robust results were obtained, with low index (better governance) portfolios outperforming the high index (lower governance) ones.

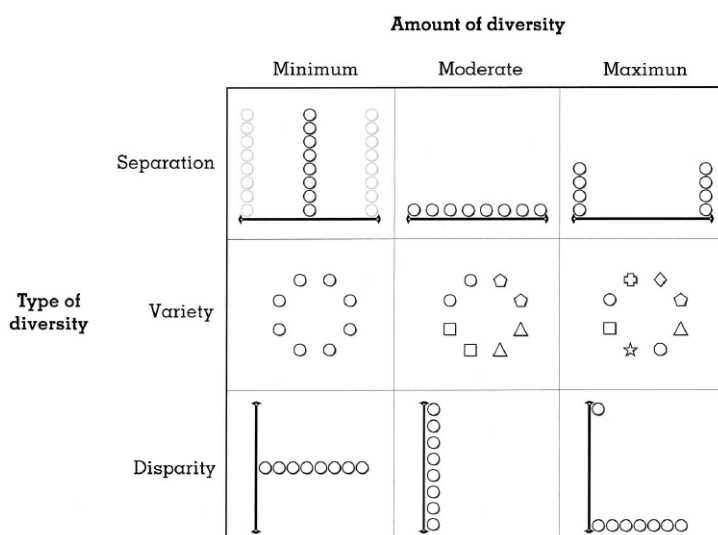
Further relevant studies were conducted by Hermalin and Weisbach (2007), Bhagat and Bolton (2008, 2019). Subsequent studies have confirmed, detailed, refined, or enriched this analysis. They focus primarily on external and visible components, particularly related to potential takeovers or management changes within companies. The rationale is that if the risk of losing control of the company is low, the executives will prioritise personal interests over those of the company, leading to inferior performance.

Unfortunately, none of the variables used in the GIM or E indices is usable for Romanian listed companies (but also, in general), as they are not transparent or not applicable. Poison Pills or Golden Parachutes provisions are not common, or at least are not made public. At the same time, listed companies show a high concentration of ownership, making such provision

less valuable. In other words, those parameters that could be used to optimise/minimise agency costs in developed markets (like the US) are not applicable in Romania.

**Diversity Theories**

Harrison and Klein (2007) provide valuable guidelines for understanding and measuring diversity, relevant in the board context. They define three types of diversity. Separation refers to differences in beliefs or opinions, like, for example, the preference for a specific management style. Variety refers to the differences in kind and is related to different backgrounds, skills, or experience of the directors. Disparity refers to differences in “social assets”, as a reflection of status, influence, or power. As shown in Figure 1, depending on the board composition, we could encounter different amounts of diversity, which could have significant influence on board ability to perform. For example, maximum separation (upper right quadrant) could imply a board not able to make decisions, sustaining opposite views on some strategic options. Maximum disparity (lower right quadrant) could imply a board where all the decisions are made or strongly influenced by one director, which is an influential person outside the board. This could be relevant for the state-controlled companies and the director’s selection process. Even if mapping board variety in detail is difficult, the variables used will consider this approach.



**Figure 1. Types and amounts of diversity**  
 Source: Harrison and Klein, 2007

**Diversity and Corporate Governance**

Adams, de Haan, Terjesen and van Ees (2015) provide a review of the studies centred on the impact of diversity on board performance, finding that the studies generate mixed results. A possible explanation is given by the complexity of the contexts in which diversity impact is measured: timing, sample selection, industry or complexity of the business, ownership type, or concentration. They also distinguish three types of diversity: task-related diversity (considering educational or functional background), non-task related diversity (considering gender, age, race or nationality), or structural diversity (board independence and CEO non-duality). Based on their work, I selected the following variables to be used in the current research: age, gender, and board independence.

**Age and Gender**

Gardiner (2024) provides a review of the relevant empirical studies that link board member age to financial performance, showing that age diversity alone is an inconsistent predictor for performance, financial or non-financial. She also offers another perspective, that other factors

like team processes have a “direct” impact on performance, while they are influenced by age diversity. This provides the link between age diversity, as a non-task related diversity variable, and Board performance. Different backgrounds, networks, skills, and information have an influence on the ability of the Board to solve complex problems (Anderson et al., 2011). The study provides a list of possible parameters that reflect variety types. In addition to average age, we selected from the list standard deviation of age, as a measure of age Separation.

Gender diversity is relevant both from Corporate Governance but also from social perspectives. Terjesen, Sealy and Singh (2009) provide an extended review of the previous studies centred on presence of women on corporate boards, considering theoretical perspectives, characteristics, and impact. The authors conclude that gender diversity contributes to board effectiveness, directly and even more indirectly, through a variety of board processes. The study also considers social theories, provides arguments that explain the relatively low presence of women in boards and offers the examples of Spain and Norway, that set boards gender quotas of 40%. Another study states that 14/16 countries have implemented gender quotas/codes, in the context of board selection (Adams et al., 2015). The study confirms that previous research, focused on the impact on firm financial performance, does not support but neither rejects the business case for board gender quotas, but suggests that other social or non-financial benefits should be considered and further investigated. Another study (Terjesen et al., 2016) finds a consistent link between the presence of the female directors in performance, measured by Tobins’s Q and Return on Assets. I selected Blau’s Index, as a measure of Variety.

### **Board Independence**

When speaking about the board composition, we consider the balance between executive, non-executive and independent directors. We use the “lenses” of Agency and Resource Dependence Theories, while considering diversity perspectives.

A higher number of executive directors is expected to increase agency costs, as their behaviour is influenced by their own interests. For example, they could focus on short term objectives or favour low return/risk projects, to optimise their remuneration. At the same time, while executive directors are the ones that best understand the core business and the context of the company, thus being able to make informed decisions, they could lack specific sets of skills or experiences non-specific for the respective company.

A symmetric rationale is applicable to independent directors. They are expected to monitor the executives, without bias of own interest, as their compensation is not or less dependent on operational targets achievement. They can bring an independent outside view, a variety of skills, experiences, or access to outside resources. They come at both explicit (compensation) and implicit costs, since they do not have the same level of business understanding.

In addition to the above theoretical reasoning, in practice, there are further challenges associated with both types of directors, considering their manifested behaviour, their willingness and ability to manifest their knowledge and duties in an effective manner, as individuals or teams. As previously discussed, diversity, in its different types, could influence the board’s ability to perform.

The starting point for this review is the work of Bhagat and Black. In their first study (Bhagat & Black, 1999), they conclude that there are no arguments to support that greater board independence correlates to firm profitability, while showing that “super-majority independent boards” tend to be less profitable. They suggest that a moderately independent board, with 30-40% inside directors, is “useful” and correlates with better performance. They argue that independent boards perform better on some discrete tasks, while there are other tasks, difficult to evaluate, where they could perform worse. One example of such tasks is the CEO replacement, as boards with at least 60% independent directors are more likely to make such

decisions, even if the difference versus a 40% independent directors board is marginal (Weisbach, 1988). Bhagat and Black (2002) found that previous studies and own research are not supporting the conventional wisdom that board independence improves performance. They found that a common response to low profitability is the increase in board independence, which is not an efficient measure. Some studies, like the one of Agrawal and Knoeber (1996) report a negative correlation between outside directors and firm performance. The offered explanation is that boards are expanded based on reasons that are not related to performance (like politics). Adams and Ferreira (2007) look at board independence from a wider perspective, considering the dual role of the board – to advise and to monitor – and the trade off the CEO must make, as providing more information increases the quality of advice but also the ability of the board to control. Bhagat and Bolton (2008, 2019) included board independence in the list of variables used to assess the corporate governance impact on firm performance. They show that board independence is not a predictor of future stock market performance, while independent boards are more likely to replace the underperforming CEOs.

### **Solving complex problems**

This approach is based on empirical observations and draws on the Forbes and Milliken (1999) model, which links company performance to board effectiveness. The challenge of the boards comes from the fact that they are expected to resolve specific wicked problems, “that cannot be successfully treated with traditional linear, analytical approaches” (Ritchey, 2013). Board information is considered as a key resource for directors to achieve a shared sense of purpose and for being able to perform their steering and control functions.

### **Romanian context**

A general observation that we can make, after reviewing the literature, is that all the studies and findings show a significant dependence on a specific context. For example, a possible conclusion could be formulated as “independent board are more effective, if they are well diversified”. The question that we aim to answer is “which are the relevant ifs for Romania?”.

One thing that can be observed is that many of the listed companies on BVB, including the selected companies, have dominant shareholders. It can be an individual (Aquila, TTS), a foreign corporation (SNP, BRD), or the Romania State (H2O, SNG, SNN, TGN). Studies show that, if we exclude US and UK, this is the norm, namely the control of publicly traded companies is held by a single individual, family or corporation (Gilson, 2006). The associated costs come from possible maximisation of own wealth or interests, at the cost of other investors, managers, or employees (Shleifer & Vishny, 1997). One study (Dahya, Dimitrov & McConnell, 2008) analyses the influence of board independence on performance (as measured by Tobin’s Q), in the context of a dominant shareholder and different investor protection regulations. They found a positive correlation between independence and performance, showing that the correlation is stronger in countries with lower investor protection.

In Romanian context, we mention the provisions of the Bucharest Stock Exchange Guide, which recommends that majority of directors to be non-executives, at least one third of the directors to be independent, and separation of Chairman and CEO roles.

## **2.2 Data and Model**

The data are of panel type (balanced panel), combining a cross-sectional dimension and a time dimension. Companies were selected considering their size and the timing of listing. I considered the largest Romanian companies, listed on the Bucharest Stock Exchange (BSE), members of BET and BET-XT indices. They are presented in Table 1. The time frame covers 30 quarters, from December 2017 to March 2025. This generates a number of 540 data points (18 companies x 30 quarters).

**Table 1. List of selected companies**

	<b>Company Name</b>	<b>Market</b>	<b>Ticker</b>
1	Antibiotice SA	RO	ATB
2	BRD - Groupe Societe Generale SA	RO	BRD
3	Bursa de Valori Bucuresti SA	RO	BVB
4	Conpet SA	RO	COTE
5	Electrica SA	RO	EL
6	Evergent Investments SA	RO	EVER
7	Impact Developer & Contractor SA	RO	IMP
8	Infinity Capital Investments SA	RO	INFINITY
9	Lion Capital SA	RO	LION
10	Med Life SA	RO	M
11	Sphera Franchise Group	RO	SFG
12	Romgaz SA	RO	SNG
13	Nuclearelectrica SA	RO	SNN
14	OMV Petrom SA	RO	SNP
15	Transelectrica SA	RO	TEL
16	Transgaz SA	RO	TGN
17	Banca Transilvania SA	RO	TLV
18	Teraplast SA	RO	TRP

Note: Romanian companies listed on the Bucharest Stock Exchange

Table 2 presents the list of endogenous and exogenous variables. Previous chapters show that Corporate Governance can be analysed through lenses offered by Corporate Governance theories and literature recognises the selected endogenous variables, as parameters of Corporate Governance. We used Price to Book ratio as a proxy for financial performance. The literature reveals a multitude of indicators that can be used to measure financial performance (Bhagat and Bolton, 2008; Bhagat and Bolton, 2019). The selection of relevant ones presents several challenges, including data access. We use Price to Book ratio considering its availability and that it provides a “normalisation” of market capitalisation by relating it to book value, making comparable companies that have different sizes.

**Table 2. List and description of selected variables**

	<b>Variable</b>	<b>Type</b>	<b>Category</b>
1	Price to book ratio	Exogenous	Financial performance
2	Age (average)	Endogenous	Diversity
3	Age (standard deviation)	Endogenous	Separation
4	Gender (Blau Index)	Endogenous	Separation
5	Independent directors	Endogenous	Variety

Source: author

The generic Hypothesis of the study is:

**Corporate Governance influences Financial Performance,** (1)

This can be further stated as:

**Board Diversity influences Financial Performance** (2)

The Influence will be assessed by using mainly two empirical methods: visual analysis and regression, linear or non-linear. The model is stated as follows:

$$PB_{it} = \alpha + \beta_1 * \text{Diversity Variable} + \epsilon_{it} \quad (3)$$

if we assume a linear dependence, or

$$PB_{it} = \alpha + \beta_1 * \text{Diversity Variable} + \beta_2 * \text{Diversity Variable}_2 + \epsilon_{it} \quad (4)$$

if we assume a non-linear dependence.

Where:

i – company

t – quarter

$\alpha$  – the intercept of the regression function

$\beta_{1,2}$  – the coefficients for the Diversity Variable

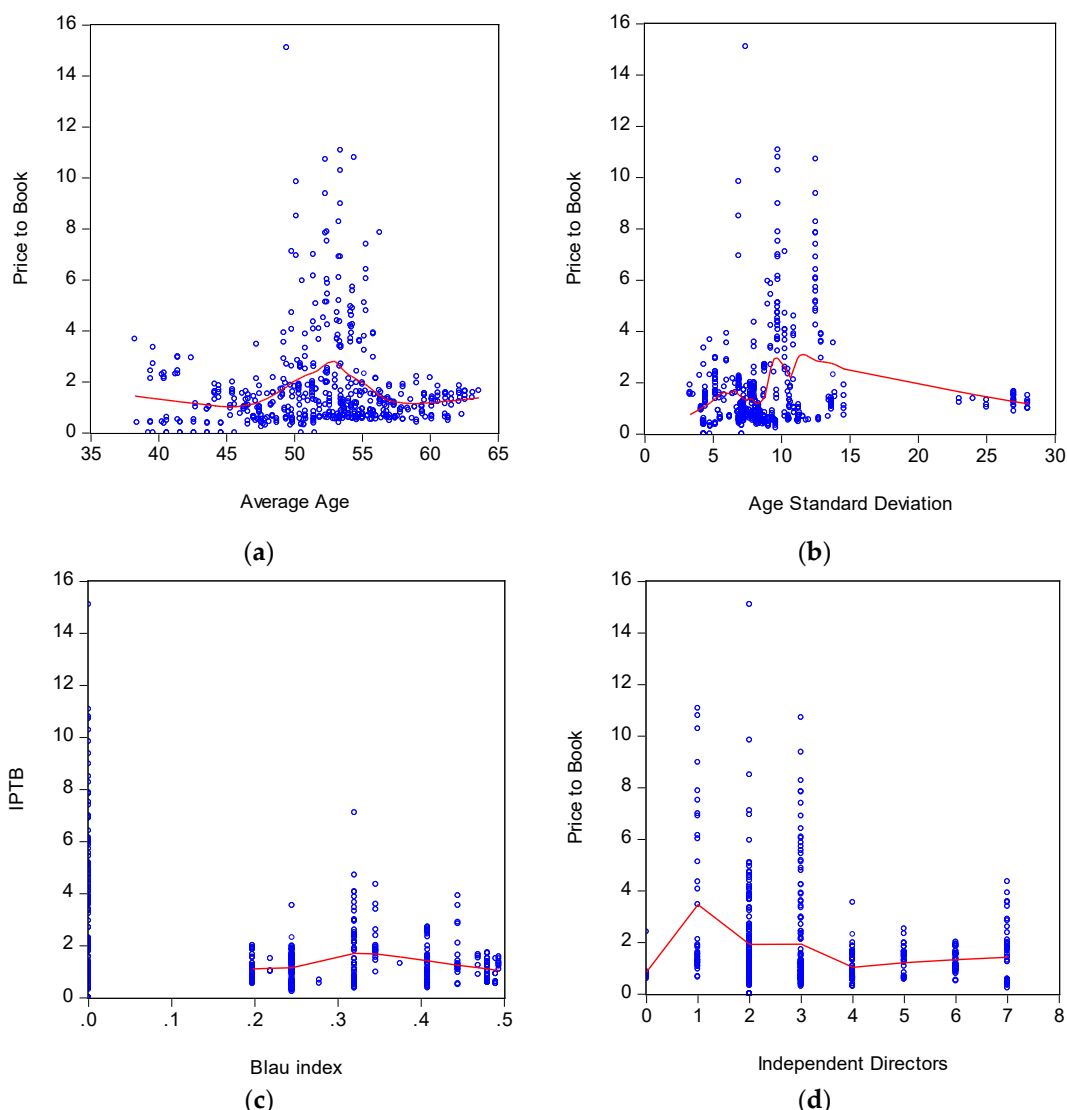
$\epsilon_{it}$  – residual value.

For empirical analysis, we used two methods: visual observation and regression. The scatter graphs, including the nearest neighbour fit line, are presented in Figure 2. In graphs (a) and (b), corresponding to age variables, we can observe that the relationship is non-linear. This is in line with the literature review, where nonlinear correlation is frequently mentioned. Regarding gender, as measured by Blau's Index (c), we can observe a high concentration of data points at zero, meaning that the boards, in general, are not gender diversified. We observe a relatively low number of data points and a non-linear correlation for the diversified boards. Regarding the presence of the independent directors (d), the graph shows a decrease in financial performance, as their number increases.

Further, we use regression to analyse the dependence between the variables. For graphs (a), (b) and (c), we can observe an inverted “U-shape”. Linear and non-linear dependence was tested, according to equations (3) and (4). For the number of independent directors, we introduced dummy variables to test if different number of independent directors have a different influence on performance.

### 2.3 Limitations

One limitation of the empirical analysis is that the governance variables, such as age and gender variables, are non-stationary in levels, according to the unit root test. This raises concerns about possible spurious regression, but the interpretation of these variables relies on their structural meaning rather than short-term fluctuations. First differencing eliminates this substantive interpretation and reduces the ability to capture the non-linear patterns of interest. Following the approach in prior governance studies, we estimate the models in levels. This issue should be acknowledged as a potential limitation, and the results should be interpreted with caution.



**Figure 2. Empirical analysis. Scatter graphs that include nearest neighbour fit line. (a) Correlation between average age and Price to Book; (b) Correlation between standard deviation of age and Price to Book; (c) Correlation between Blau’s Index and Price to Book; (d) Correlation between the number of independent directors and Price to Book.**

Source: EViews

### 3. RESULTS AND DISCUSSIONS

The results of the analysis are presented in Figures 3-12 and the list of abbreviations for the variables used is provided in Table 3.

**Table 3. List of abbreviations**

	<b>Abbreviation</b>	<b>Description</b>
1	AGE_AVG	Average age
2	AGE_AVGSQR	Squared average age
3	AGE_STDEV	Standard deviation of age
4	AGE_STDEVSQR	Squared standard deviation of age
5	IPTB	Price to Book ratio
6	GEN_BLAUDUMMY	Gender – Dummy variable (GEN_BLAUINDEX=0)

	Abbreviation	Description
7	GEN BLAUIINDEX	Gender – Blau’s Index
8	GEN BLAUSQR	Gender – squared Blau’s Index
9	IND_NRDIR	Number of independent directors
10	D <sub>1</sub> – D <sub>7</sub> , D <sub>k</sub>	Dummy variables. D <sub>k</sub> equals 1, if the number of directors is 1 and 0 otherwise

Source: author

Dependent Variable: IPTB  
 Method: Panel Least Squares  
 Date: 09/08/25 Time: 15:52  
 Sample: 2017Q4 2025Q1  
 Periods included: 30  
 Cross-sections included: 18  
 Total panel (balanced) observations: 540

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-24.09495	5.580778	-4.317490	0.0000
AGE_AVG	1.007211	0.218605	4.607445	0.0000
AGE_AVGSQR	-0.009703	0.002128	-4.559070	0.0000

R-squared	0.038550	Mean dependent var	1.769417
Adjusted R-squared	0.034969	S.D. dependent var	1.873157
S.E. of regression	1.840114	Akaike info criterion	4.063072
Sum squared resid	1818.293	Schwarz criterion	4.086914
Log likelihood	-1094.030	Hannan-Quinn criter.	4.072397
F-statistic	10.76555	Durbin-Watson stat	0.241406
Prob(F-statistic)	0.000026		

Figure 3. Regression results Price to Book and Average Age.

Source: EViews.

**Age.** The estimation results (Figure 3) show a non-linear correlation between age and performance. For the average board age, the quadratic panel regression shows a positive and statistically significant coefficient on the linear term ( $\beta_1 = 1.007$ ,  $p = <0.001$ ), while the squared term is negative and highly significant ( $\beta_2 = -0.009$ ,  $p < 0.001$ ). This pattern is consistent with an inverted-U shaped relationship, whereby firm performance initially increases with board age up to a certain point, after which it begins to decline. To validate this interpretation, we applied the Lind and Mehlum test of U-shapes using the observed bounds of the average age (Figure 4). The results support the inverted-U hypothesis. At the lower bound of the distribution (38.25 years), the slope of the regression function is positive and significant (0.265,  $t = 4.63$ ,  $p < 0.001$ ), while at the upper bound (63.57 years) it is negative and highly significant ( $-0.226$ ,  $t = -4.15$ ,  $p < 0.001$ ). The maximum point of the curve is located at  $M = -\beta_1/(2\beta_2) \approx 52$  years, suggesting that performance is maximised when directors are in their early fifties.

In addition, we tested the dispersion of directors’ ages (Figures 5 and 6), which according to Harrison and Klein (2007) reflect Separation. The results also indicate an inverted-U relationship between age heterogeneity and performance, with outcomes improving at moderate levels of age diversity but declining when heterogeneity increases.

Wald Test Equation: Untitled				Wald Test Equation: Untitled			
Test Statistic	Value	df	Probability	Test Statistic	Value	df	Probability
t-statistic	4.626486	537	0.0000	t-statistic	-4.148510	537	0.0000
F-statistic	21.40437	(1, 537)	0.0000	F-statistic	17.21013	(1, 537)	0.0000
Chi-square	21.40437	1	0.0000	Chi-square	17.21013	1	0.0000

Null Hypothesis: C(2) + 2*C(3)*(38.25) = 0 Null Hypothesis Summary:				Null Hypothesis: C(2) + 2*C(3)*(63.57) = 0 Null Hypothesis Summary:			
Normalized Restriction (= 0)	Value	Std. Err.		Normalized Restriction (= 0)	Value	Std. Err.	
C(2) + 76.5*C(3)	0.264912	0.057260		C(2) + 127.14*C(3)	-0.226460	0.054588	

Restrictions are linear in coefficients.

(a) (b)  
**Figure 4. Wald test for (a) lower boundary (min=38.25) and (b) upper boundary (max=63.57)**  
 Source: EViews.

Dependent Variable: IPTB  
 Method: Panel Least Squares  
 Date: 09/11/25 Time: 10:42  
 Sample: 2017Q4 2025Q1  
 Periods included: 30  
 Cross-sections included: 18  
 Total panel (balanced) observations: 540

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-0.857870	0.386098	-2.221897	0.0267
AGE_STDEV	0.445990	0.064209	6.945891	0.0000
AGE_STDEVSQR	-0.013518	0.002045	-6.609490	0.0000

R-squared	0.082825	Mean dependent var	1.769417
Adjusted R-squared	0.079409	S.D. dependent var	1.873157
S.E. of regression	1.797245	Akaike info criterion	4.015927
Sum squared resid	1734.559	Schwarz criterion	4.039769
Log likelihood	-1081.300	Hannan-Quinn criter.	4.025252
F-statistic	24.24684	Durbin-Watson stat	0.258000
Prob(F-statistic)	0.000000		

**Figure 5. Regression results Price to Book and standard deviation of Age.**  
 Source: EViews.

**Gender.** The results for gender diversity, measured by the Blau’s Index, reveal a non-linear relationship with firm performance (Figure 7). We introduced a dummy variable to distinguish firms without diversity (Index = 0) from those with some level of diversity. We found a negative and significant correlation ( $\beta = -4.69$ ,  $p = 0.0012$ ), indicating that the presence of diversity is initially associated with a lower performance compared to fully homogeneous boards. However, if the boards are diversified, the coefficient is positive and significant ( $\beta = 21.76$ ,  $p < 0.05$ ), while the squared term is negative and significant ( $\beta = -31.36$ ,  $p < 0.05$ ), confirming the presence of an inverted-U relationship. The turning point is located at a Blau index of approximately 0.35, suggesting that firm performance reaches maximum when boards exhibit a moderate degree of gender diversity. Overall, these findings support the view that moderate levels of diversity may enhance board effectiveness, while excessive diversity may reduce cohesion.

Wald Test Equation: Untitled				Wald Test Equation: Untitled			
Test Statistic	Value	df	Probability	Test Statistic	Value	df	Probability
t-statistic	6.963605	537	0.0000	t-statistic	-5.692490	537	0.0000
F-statistic	48.49180	(1, 537)	0.0000	F-statistic	32.40444	(1, 537)	0.0000
Chi-square	48.49180	1	0.0000	Chi-square	32.40444	1	0.0000
Null Hypothesis: C(2) + 2*C(3)*(3.32) = 0 Null Hypothesis Summary:				Null Hypothesis: C(2) + 2*C(3)*(28) = 0 Null Hypothesis Summary:			
Normalized Restriction (= 0)	Value	Std. Err.		Normalized Restriction (= 0)	Value	Std. Err.	
C(2) + 6.6399999999999988*...	0.356230	0.051156		C(2) + 56*C(3)	-0.311017	0.054636	
Restrictions are linear in coefficients.				Restrictions are linear in coefficients.			

(a)

(b)

**Figure 6. Wald test for (a) lower boundary (min=3.32) and (b) upper boundary (max=28)**

Source: EViews.

Dependent Variable: IPTB  
 Method: Panel Least Squares  
 Date: 09/11/25 Time: 11:20  
 Sample: 2017Q4 2025Q1  
 Periods included: 30  
 Cross-sections included: 18  
 Total panel (balanced) observations: 540

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	2.548830	0.127424	20.00276	0.0000
GEN_BLAUDUMMY	-4.687794	1.443790	-3.246868	0.0012
GEN_BLAUINDEX	21.75637	8.889573	2.447403	0.0147
GEN_BLAUSQR	-31.35891	12.83925	-2.442425	0.0149
R-squared	0.107246	Mean dependent var		1.769417
Adjusted R-squared	0.102250	S.D. dependent var		1.873157
S.E. of regression	1.774810	Akaike info criterion		3.992644
Sum squared resid	1688.373	Schwarz criterion		4.024433
Log likelihood	-1074.014	Hannan-Quinn criter.		4.005076
F-statistic	21.46321	Durbin-Watson stat		0.287024
Prob(F-statistic)	0.000000			

**Figure 7. Regression results Price to Book and Blau’s Index.**

Source: EViews.

**Age and gender.** The combined model (Figure 8) explains a substantially larger share of variation in performance ( $R^2 = 0.15$ ) compared to the univariate models, which highlights that demographic characteristics together have an even higher impact on performance. Taken together, the findings provide evidence that the relationship between board composition and firm performance is non-linear: balanced boards, both in terms of gender diversity and age structure, outperform those that are homogeneous.

Dependent Variable: IPTB  
Method: Panel Least Squares  
Date: 09/08/25 Time: 16:09  
Sample: 2017Q4 2025Q1  
Periods included: 30  
Cross-sections included: 18  
Total panel (balanced) observations: 540

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-24.98159	5.295917	-4.717142	0.0000
SEX_BLAUDUMMY	-5.162685	1.430831	-3.608171	0.0003
SEX_BLAUINDEX	25.24090	8.817554	2.862574	0.0044
SEX_BLAUINDEX*2	-37.15544	12.74461	-2.915385	0.0037
AGE_AVG	1.063526	0.207318	5.129933	0.0000
AGE_AVGSQR	-0.010163	0.002017	-5.037899	0.0000
R-squared	0.151205	Mean dependent var		1.769417
Adjusted R-squared	0.143258	S.D. dependent var		1.873157
S.E. of regression	1.733801	Akaike info criterion		3.949558
Sum squared resid	1605.239	Schwarz criterion		3.997242
Log likelihood	-1060.381	Hannan-Quinn criter.		3.968207
F-statistic	19.02544	Durbin-Watson stat		0.302585
Prob(F-statistic)	0.000000			

**Figure 8. Regression results Price to Book (as dependent variable) and age and gender (as independent variables).**

Source: EViews.

**Independent Directors.** The results for board independence (Figures 9, 10 and 11) confirm a significant linear effect, showing a negative and statistically significant coefficient ( $\beta = -0.18$ ,  $p < 0.01$ ), supporting existing evidence that associates higher board independence with lower firm performance. This may reflect the discrete nature of the variable and the concentration of observations at low levels of independence (1–3 directors). Additional tests with categorical dummies indicate that the highest performance is typically observed at one or two independent directors. Wald tests confirm that the performance effect of adding one independent director ( $\beta = 2.62$ ) is significantly higher than that of having two ( $\beta = 1.07$ ,  $p < 0.001$ ) or three ( $\beta = 1.08$ ,  $p < 0.001$ ). These results suggest that the greatest incremental benefit arises when the first independent director joins the board, while additional independents add smaller gains, with no significant difference between two and three.

Dependent Variable: IPTB  
Method: Panel Least Squares  
Date: 09/08/25 Time: 16:35  
Sample: 2017Q4 2025Q1  
Periods included: 30  
Cross-sections included: 18  
Total panel (balanced) observations: 540

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	2.407021	0.169105	14.23388	0.0000
IND_NRDIR	-0.189179	0.044307	-4.269699	0.0000
R-squared	0.032775	Mean dependent var		1.769417
Adjusted R-squared	0.030977	S.D. dependent var		1.873157
S.E. of regression	1.843916	Akaike info criterion		4.065357
Sum squared resid	1829.214	Schwarz criterion		4.081252
Log likelihood	-1095.646	Hannan-Quinn criter.		4.071573
F-statistic	18.23033	Durbin-Watson stat		0.238934
Prob(F-statistic)	0.000023			

**Figure 9. Regression results Price to Book and number of independent directors.**

Source: EViews.

Dependent Variable: IPTB  
 Method: Panel Least Squares  
 Date: 09/08/25 Time: 16:34  
 Sample: 2017Q4 2025Q1  
 Periods included: 30  
 Cross-sections included: 18  
 Total panel (balanced) observations: 540

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.859892	0.496525	1.731821	0.0839
D1	2.615381	0.575221	4.546745	0.0000
D2	1.068008	0.517058	2.065550	0.0394
D3	1.077557	0.519225	2.075319	0.0384
D4	0.184429	0.545353	0.338182	0.7354
D5	0.501495	0.577199	0.868842	0.3853
D6	0.395194	0.555132	0.711893	0.4768
D7	0.608651	0.565135	1.077002	0.2820

R-squared	0.098428	Mean dependent var	1.769417
Adjusted R-squared	0.086565	S.D. dependent var	1.873157
S.E. of regression	1.790246	Akaike info criterion	4.017288
Sum squared resid	1705.051	Schwarz criterion	4.080866
Log likelihood	-1076.668	Hannan-Quinn criter.	4.042153
F-statistic	8.297212	Durbin-Watson stat	0.274327
Prob(F-statistic)	0.000000		

Figure 10. Regression results Price to Book and dummy variables, Dk, showing the additional performance generated by adding the k<sup>th</sup> independent director.

Source: EViews.

Wald Test:  
Equation: Untitled

Test Statistic	Value	df	Probability
t-statistic	4.771817	532	0.0000
F-statistic	22.77023	(1, 532)	0.0000
Chi-square	22.77023	1	0.0000

Null Hypothesis: C(2) = C(3)  
Null Hypothesis Summary:

Normalized Restriction (= 0)	Value	Std. Err.
C(2) - C(3)	1.547373	0.324273

Restrictions are linear in coefficients.

(a)

Wald Test:  
Equation: Untitled

Test Statistic	Value	df	Probability
t-statistic	-0.045591	532	0.9637
F-statistic	0.002079	(1, 532)	0.9637
Chi-square	0.002079	1	0.9636

Null Hypothesis: C(3) = C(4)  
Null Hypothesis Summary:

Normalized Restriction (= 0)	Value	Std. Err.
C(3) - C(4)	-0.009549	0.209449

Restrictions are linear in coefficients.

(b)

Wald Test:  
Equation: Untitled

Test Statistic	Value	df	Probability
t-statistic	3.284757	532	0.0011
F-statistic	10.78963	(1, 532)	0.0011
Chi-square	10.78963	1	0.0010

Null Hypothesis: C(4) = C(5)  
Null Hypothesis Summary:

Normalized Restriction (= 0)	Value	Std. Err.
C(4) - C(5)	0.893129	0.271901

Restrictions are linear in coefficients.

(c)

Wald Test:  
Equation: Untitled

Test Statistic	Value	df	Probability
t-statistic	-0.855083	532	0.3929
F-statistic	0.731166	(1, 532)	0.3929
Chi-square	0.731166	1	0.3925

Null Hypothesis: C(5) = C(6)  
Null Hypothesis Summary:

Normalized Restriction (= 0)	Value	Std. Err.
C(5) - C(6)	-0.317066	0.370802

Restrictions are linear in coefficients.

(d)

Figure 11. Wald test for restrictions (a) D1 = D2, (b) D2=D3, (c) D3=D4, (d) D4=D5.

Source: EViews.

**Diversity.** When all governance dimensions are considered jointly (Figure 12, the analysis confirms previous results. In the univariate specification, the presence of two or three independent directors is significantly associated with higher performance. However, when board age and gender diversity are introduced simultaneously, the effect of having two independents becomes statistically insignificant. This shift indicates that part of the variance initially attributed to the second independent director is explained by other board characteristics, suggesting overlapping effects across governance dimensions. The results highlight that independence alone cannot be interpreted in isolation, but rather in the broader demographic context of the board. Overall, the combined model explains 20% of the variance in firm performance, substantially more than the univariate specifications. The findings suggest that balanced boards (moderate in age, moderate in diversity, and with limited but meaningful independence) are associated with superior firm performance in Romanian listed companies.

Dependent Variable: IPTB  
Method: Panel Least Squares  
Date: 09/11/25 Time: 12:05  
Sample: 2017Q4 2025Q1  
Periods included: 30  
Cross-sections included: 18  
Total panel (balanced) observations: 540

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-22.61586	5.152044	-4.389686	0.0000
GEN_BLAUDUMMY	-4.117982	1.399013	-2.943491	0.0034
GEN_BLAUINDEX	18.90235	8.619347	2.193014	0.0287
GEN_BLAUSQR	-28.35965	12.45053	-2.277787	0.0231
AGE_AVG	0.966809	0.201741	4.792330	0.0000
AGE_AVGSQR	-0.009230	0.001963	-4.701982	0.0000
D1	1.686488	0.286334	5.889931	0.0000
R-squared	0.203074	Mean dependent var		1.769417
Adjusted R-squared	0.194103	S.D. dependent var		1.873157
S.E. of regression	1.681565	Akaike info criterion		3.890205
Sum squared resid	1507.144	Schwarz criterion		3.945837
Log likelihood	-1043.355	Hannan-Quinn criter.		3.911963
F-statistic	22.63671	Durbin-Watson stat		0.320889
Prob(F-statistic)	0.000000			

**Figure 12. Regression results for Price to Book ratio and selected diversity variables.**

*Source:* EViews.

#### 4. CONCLUSIONS

The Romanian directors have an average age of 52 years and the average age range within the boards of the selected companies is 25 years. The study confirms that age, both as a board characteristic (average age) and as a measure of separation (standard deviation of age), has an influence on financial performance, the latter being more significant. The relation is non-linear for both measures, the best performance being obtained when the directors are in the early 50's and the age dispersion is moderate.

The boards are generally not gender diversified, with the average weight of female directors at 15%. Analysis shows that gender diversification is associated with lower financial performance, which could be explained by the large number of occurrences where the Blau's Index equals zero. However, where the boards are diversified, we observe a non-linear correlation that suggests that the best performance is reached at a Blau's Index of 0.35, associated with moderate gender diversity.

The average number of independent directors is 3.4, which represents on average 51% of the number of board seats. We treat this information with caution, considering that we could not

verify it and that even if the formal independence criteria are met, independent acting is not assured. We mention the appointment process for the state-controlled companies, which is perceived as not being independent, while these companies must comply to specific regulations imposing a high weight of independent directors. Analysis shows that a higher number of independent directors has a negative influence on financial performance and that introducing one or two independent directors has a consistent positive result. In general, this is in line with the literature review, confirming that a moderately independent board is the most effective.

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