

Corso di Laurea in Amministrazione Finanza e Controllo

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"Noise" in the Board of Directors: the impact of board composition on corporate performance of Italian listed companies

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On the road to achieving your dreams, you must apply discipline. But more importantly consistency. Because without commitment you'll never start, but without consistency, you'll never finish.

Abstract

Using data from 69 Italian listed companies, this thesis examines the relationship between board composition and the financial performance of Italian listed companies, focusing on the period from 2020 to 2023. The research takes place during a time of significant global upheaval, with the COVID-19 pandemic and the Russia-Ukraine war. In this context, the study investigates how specific characteristics of board of directors' composition (board size, the percentage of independent directors, gender diversity, and board-specific skills) influence key financial outcomes (such as Price to Book Value per share, ROE and ROS).

The results offer mixed support for the hypotheses. Larger boards were found to positively influence ROS, aligning with the notion that diverse viewpoints enhance decision-making during periods of operational complexity. However, board size did not significantly impact other financial metrics like ROE or P/BV. Independent directors also positively affected ROS but showed limited influence on other financial indicators, suggesting their value lies in long-term governance and risk management rather than short-term financial outcomes. Gender diversity did not show a significant short-term impact, although its potential benefits for decision-making and innovation may emerge over time. Finally, board-specific skills had a positive effect on P/BV, indicating their importance in market valuation, but a negative impact on ROS, reflecting possible challenges in operational agility during crisis periods.

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Introduction

Corporate governance plays a critical role in determining the success a company, particularly for listed companies operating in increasingly complex, competitive, and globalized markets. Good governance is essential not only for ensuring the balance of power between shareholders and management but also for promoting transparency, accountability, and long-term financial health. Yet, governance is not without its challenges, especially in the board of directors, where noise and bias in decision-making can significantly undermine the board's effectiveness and negatively impact corporate performance.

Over the past few decades, corporate governance reforms have placed greater emphasis on improving board composition as a means of mitigating these challenges. Variables such as board size, independence, gender diversity, and specific skills within the boardroom have been identified as potential mechanisms for enhancing decision-making processes and improving overall governance quality. These factors are believed to help reduce the noise and bias that often distort board decisions.

This thesis aims to investigate whether specific aspects of board composition can contribute to better financial outcomes. The focus of the study is on a sample of Italian listed companies from 2020 to 2023, and it will examine, through empirical analysis, the relationship between key governance variables (such as board size, percentage of independent directors, percentage of gender diversity, and percentage of specific skills on the board) and financial performance metrics (including Price to Book Value, Return on Equity, and Return on Sales).

Chapter 1 addresses the regulation, governance, and board composition of Italian listed companies, offering a detailed examination of the historical and regulatory environment in which these companies operate. This chapter provides the necessary background on the governance systems, including the legal frameworks that govern them.

Chapter 2 shifts the focus to the limited rationality of human beings, exploring the key theories from behavioral economics to explain how cognitive biases influence corporate governance and to identify potential solutions for mitigating these effects.

The hearth core of this thesis, presented in Chapter 3, is the empirical analysis of 69 Italian listed companies observed over the period 2020-2023. The study tests four primary hypotheses, each related to a specific governance variable:

- H1 (Board Size Hypothesis): Larger boards are expected to positively impact financial performance by bringing a diversity of perspectives and expertise to decision-making.

- H2 (Independent Directors Hypothesis): A higher percentage of independent directors is anticipated to enhance financial performance through their objective perspective.
- H3 (Gender Diversity Hypothesis): Gender-diverse boards are hypothesized to improve financial performance by fostering more balanced and inclusive decision-making.
- H4 (Board-Specific Skills Hypothesis): Boards with a higher percentage of members possessing specialized skills are expected to have a positive impact on financial performance by offering more informed guidance.

To test these hypotheses, the study employs multiple regression models, with financial performance measured by key indicators including Price to Book Value per share (P/BV), Return on Equity (ROE) and Return on Sales (ROS). These indicators are chosen to provide a comprehensive view of both profitability and market valuation.

The period of analysis, from 2020 to 2023, is marked by significant global events, including the COVID-19 pandemic and the Russia-Ukraine war, both of which created unprecedented challenges for businesses. These crises forced firms to adapt rapidly to shifting market conditions, making corporate governance practices more critical in determining firm resilience and performance. Understanding how different board compositions helped, or hindered, companies during this period is a key objective of this research.

Chapter 1: Regulation, Governance, and Board Composition of Italian Listed Companies

Summary: 1.1 From enterprise activity to "company contract" as a form of collective enterprise exercise —
 1.2 The regulation of listed companies — 1.3 The governance systems of listed companies — 1.4 The board of directors in Italian listed companies — 1.5 The rules on the composition of the board of directors

1.1 From enterprise activity to "company contract" as a form of collective enterprise exercise

The arrangement of "goods" and "services" for the general market is not, in practical reality, the result of an accidental and improvised activity, but is the object of a specialized and professional activity, which is carried out through specially prepared economic bodies. These economic bodies, which are embodied in the organization of the factors of production, and which are aimed at satisfying the needs of others, and more precisely the needs of the general market, take on the name "enterprises" in economic terminology.¹

An enterprise is presented as a combination, rather as an organization, of personal and real elements operated with an economic result in mind and implemented with a view to speculative intent by a person who takes the name "entrepreneur."

An entrepreneur is defined, in fact, under Article 2082 of the Italian Civil Code (hereinafter also "c.c."), one who "professionally carries out an activity economic activity organized for the purpose of production or exchange of goods or services."²

An enterprise is an economic organism, structured on technical principles and economic laws. These principles and laws balance its various elements, shape its structure, regulate its growth, and ensure its effectiveness and productivity.

The various elements of which the enterprise is composed thus rise to unity, from the economic point of view, in view of the function that connects them and the creative activity of the entrepreneur who combines them. From simple forms we move to more complex ones in which

¹ Ferri et Al., 2023, p. 17.

² Di Majo, 2024.

the creative and regulatory genius of the entrepreneur increasingly shines through. As the creation of its organizational activity and as the result of its idea, the enterprise is necessarily linked back to the person of the entrepreneur; like an engine that has received a boost, even the enterprise that has been started retains for a given time the impulse it has received. However, the functioning and effectiveness of the enterprise are always intimately linked to the activity of the person who presides over its fate, namely, the personality of the entrepreneur. So, the identification of the person of the entrepreneur within the enterprise is not always easy and the economic science itself is not sufficiently precise in this regard.³

It often happens that in the Italian context the concept of "enterprise" just mentioned is confused with that of "company". Indeed, a company is an "organization of persons and means created by private autonomy for the joint exercise of a productive activity."⁴

They are the typical organizational structures provided by the legal system for the exercise of business activity in associated form. An expression of the tendency of individuals to associate in order to pursue together purposes that do not lend themselves or cannot easily be achieved in isolation, companies constitute the most numerous and most important category of collective enterprises.⁵

In our system, companies constitute a system composed of a plurality of types. In fact, the legislature places at the disposal of private autonomy eight types of companies, eight models of organization of business activity in corporate form from which the parties can – albeit with certain limitations – freely choose, to provide themselves with the organizational structure that best meets their specific operational needs.

The types of companies envisaged are: the simple company (Articles 2251-2290 c.c.); the general partnership (Articles 2291-2312 c.c.); the limited partnership (Articles 2313-2324 c.c.); the joint-stock company (Articles 2325-2451 c.c.); the partnership limited by shares (Articles 2452-2461 c.c.); the limited liability company (Articles 2462-2483 c.c.), the co-operative company (Articles 2511-2545 octies c.c.); and the mutual insurance companies (Articles 2546-2548 c.c.).⁶

³ Ferri et Al., 2023, pp. 17-18.

⁴ Art. 2555 c.c.

⁵ Campobasso et Al., 2020.

⁶ All the articles of the Civil Code referred to here are part of Title V and Title VI of the Fifth Book of the Italian Civil Code.

These have more recently been joined by two other types of companies, regulated by EU law: the European company;⁷ and the European cooperative society.⁸

Each type of company is different and sometimes significantly different from one another. However, they also have one or more elements in common that allows them to be grouped into homogeneous categories:

- the simple company, the general partnership and the limited partnership are traditionally referred to as "partnerships":
- the joint stock company, the partnership limited by shares and the limited liability company are referred to as "corporations."

While there are different types of companies, there is, however, a single legislative notion of the "company contract" set forth in Article 2247 of the Italian Civil Code: "By the company contract, two or more persons contribute goods or services for the joint exercise of an economic activity for the purpose of sharing the profits thereof."⁹

On the other hand, Article 2247 c.c. remains silent with regard to the regulation of specific types of companies and does not provide detailed guidance on their organizational structures or governance. In other words, it does not address how companies of different legal forms should be organized or managed in terms of their internal operations, roles, or responsibilities. This omission is intentional, as the article's primary purpose is not to focus on the nuances of individual corporate forms but to outline the general principles that apply to all companies operating under private law. Instead, Article 2247 c.c. aims to fulfill a broader, foundational task that is characteristic of any legislative definition: it seeks to define the minimum common features of the "company contract" phenomenon; the features that an associative body under private law must necessarily present in order to qualify as a company and which therefore must (or should) be present in all types of companies.¹⁰

⁷ EC Reg., 8-10-2001, No. 2157, in force since 8-10-2004.

⁸ EC Reg., 22-7-2003, No. 1435, in force since 18-8-2006.

⁹ It is worth mentioning that until 1993, the incorporation of companies by one person was not allowed. However, this possibility was first provided for the limited liability company (Legislative Decree 3-3-1993, No. 88) and more recently also for the joint-stock company (Art. 2325, para. 2, C.C., in the text introduced by Legislative Decree 17-1-2003, No. 6), which can therefore also be established by unilateral deed.

¹⁰ Campobasso et Al., 2020, pp. 1-2.

1.2 The regulation of listed companies

The category of companies organized on a "capitalist basis", as I said in the previous section, includes the joint stock company, the limited liability company and the limited partnership.

Joint-stock companies and limited liability companies share the liability regime, but differ in that, in the former, members' holdings must be represented by shares (Art. 2346 c.c.), while in the latter, according to the basic model established by the legislature, members' holdings cannot be represented by shares or be the subject of public offerings (Art. 2468, paragraph 1, c.c.), but are represented by "quotas" of the corporate capital.¹¹

The joint-stock company is the most relevant type of company in economic reality, both because of its widespread use and because it is the elective form for medium- and large-sized enterprises with both private and public capital. At the same time, many enterprises of modest size adopt the joint stock company form. The reasons for the success of this model, and for its abuse, as well as the reasons behind the legislative changes that have taken place, can be understood by analyzing its structural profiles: legal personality, limited liability of shareholders, corporate organization, and the corporate capital represented by shares.¹²

The joint-stock company, insofar as it has legal personality, is by law considered a legal entity formally distinct from the persons of the shareholders, enjoying full and perfect asset autonomy. Only the corporation itself qualifies as an "entrepreneur;" only in the head of the corporation are the rules proper to business activity applied. In the joint stock company, the shareholders do not assume any personal liability, not even subsidiary liability, for corporate obligations; only the company is liable for these with its assets (Art. 2325, para. 1, c.c.). Shareholders are only obliged to make the promised contributions and can therefore predetermine how much of their personal wealth they intend to expose to the risk of the company's business. This rule, with the company law reform of 2003, applies-with some exceptions-even when all shares are concentrated in the hands of a single shareholder.¹³ Indeed, the company law reform of 2003,

¹¹ In joint-stock companies and limited partnerships, the corporate capital is represented by shares. In these companies, the subscribed corporate capital is divided into a specified number of parts of equal value, and each of these parts is one share. This division is irrespective of the number of shareholders. In fact, each shareholder may own one or more shares. Shares are indivisible and give their holders equal administrative and property rights. However, the bylaws may provide for the creation of categories of shares with different rights.

In limited liability companies, members' holdings may not be represented by shares. For this reason, the corporate capital is divided according to a personal criterion based on the number of members. Quotas are, therefore, the subscribed fractions of capital of the members of a limited liability company and can be of different values. Accordingly, rights will accrue in proportion to the quota held by each quotaholder.

¹² Campobasso et Al., 2020, p. 134.

¹³ Campobasso et Al., 2020, p. 135.

implemented by Legislative Decree No. 6 of January 17, 2003, had a major impact especially on joint-stock companies (S.p.A.), introducing, among other things, the possibility of the singlemember S.p.A. Prior to the 2003 reform, the Italian legal system did not expressly provide for the possibility of setting up a single-member S.p.A., as it was believed that a joint stock company should be the result of the aggregation of several natural or legal persons. Instead, the reform formally recognized the possibility that a joint stock company could be established by a single shareholder, or that, as a result of corporate events (such as the sale of shares), an S.p.A. could become single member.

In joint-stock companies, the rules governing the financing of the company take on particular importance, thus resulting in a rich and articulated range of ways in which shareholders (through different categories of shares) and third parties (through bonds or other financial instruments) can contribute to its financing. The position of the shareholder is fundamentally unrelated to the management of the social enterprise, requiring for the latter a rigid organization, based not only on a plurality of organs, but also on a clear delimitation of their competencies according to a corporate scheme.¹⁴

The Italian Civil Code, in its 1942 version, did not distinguish between the regulation of ordinary and listed companies. The first core of the regulation of listed companies and financial market law is found in the Italian legal system in Law No. 216 of June 7, 1974. The historical reasons for the need for said discipline can be found in the economic boom of the 1950s and 1960s and the 1973 oil crisis, which had highlighted the need to prepare special rules for listed companies.¹⁵

The current system, while continuing to regard the joint-stock company as a unitary type, distinguishes, on the basis of the mode of provision of financial resources, between companies that have recourse to the capital market, the "open" companies, and those that do not, the "closed" companies.

It further differentiates, within the framework of open companies, between (i) companies with shares widely distributed among the public and (ii) companies with shares listed on regulated markets (Article 2325 bis, paragraph 1, c.c.), i.e., listed companies.

The diffuse or concentrated ownership of joint-stock companies is not only relevant from a statistical point of view, but also affects from a regulatory point of view to companies with shares listed the regulated markets or circulated to the public in a significant way in fact a

¹⁴ Ferri et Al., 2023, p. 282.

¹⁵ Guidotti, 2021, pp. 1-2.

different set of provisions from those of other joint-stock companies, or rather a set of "special" provisions apply. Indeed, listed companies are subject, in addition to the general provisions of the Italian Civil Code on joint stock companies, to special regulations contained in primary sources such as the Legislative Decree No. 58 of February 24, 1998 (hereinafter also "T.U.F."),¹⁶ secondary sources (issued mainly by CONSOB),¹⁷ soft law and self-regulatory rules (e.g., the Corporate Governance Code).

The general regulations on joint stock companies apply to listed companies only "*insofar as not otherwise provided by other rules*" of the same Civil Code or special laws (Article 2325 bis, paragraph 2, c.c.).

The notion of companies listed on regulated markets should be related to the notion of "listed issuers" contained in the T.U.F. Indeed, listed issuers are those "*entities, Italian or foreign, including trusts, that issue financial instruments listed on an Italian regulated market.*"¹⁸

A subset of listed issuers includes those with Italy as their home member state, i.e., "issuers of shares admitted to trading on regulated markets in Italy or other member states of the European Union, with registered offices in Italy."¹⁹

More generally, the financial market can be understood as that "virtual place" where issuers, i.e., entities such as companies and states, which need to finance their activities, raise money directly or indirectly. The regulation of corporations is inevitably affected by the fact that their relations with the market are actual and not just potential; in fact, the regime of corporations affects the market equilibrium and, conversely, the needs of the market affect the regime of corporations themselves. As a result, it is sometimes difficult to distinguish company law from financial market law (or "securities law").

In summary, the relationship between the company and the market can be described as follows: the joint-stock company, in order to ensure "*an adequate balance between the stability of the productive investment, its lock-in and its ready liquidity for the individual investor,*" needs a market that provides it

¹⁶ "T.U.F." is the Italian acronym for the "Testo unico delle disposizioni in materia di intermediazione finanziaria." The current version can be found at this link: <u>https://www.normattiva.it/uri-res/N2Ls?urn:nir:stato:decreto.legislativo:1998-02-24;58</u>.

¹⁷ The Commissione Nazionale per le Società e la Borsa (CONSOB) is the public authority responsible for regulating the Italian financial markets. Its activity is aimed at the protection of the investing public. In this connection, the CONSOB is the competent authority for (i) ensuring transparency and correct behaviour by financial market participants; (ii) disclosure of complete and accurate information to the investing public by listed companies; (iii) accuracy of the facts represented in the prospectuses related to offerings of transferable securities to the investing public; (iv) compliance with regulations by auditors entered in the Special Register. It conducts investigations with respect to potential infringements of insider dealing and market manipulation law. For further information, see this link: https://www.consob.it/web/consob-and-its-activities/consob.

¹⁸ Art. 1(1)(w), T.U.F.

¹⁹ Art. 1(1)(w quater), T.U.F.

with a "satisfactory" liquidation (i.e., the company must trust the market); likewise, the market must be able to "trust" the company.²⁰

Indeed, listed shares can represent not only a means of participation in a business venture, but also an opportunity for investment of savings, which allows the preservation of capital value and, through capital gains or dividends, an adequate remuneration, as well as the possibility of monetizing the investment at any time by selling the shares on the market. The result, on the one hand, is a fragmentation of the corporate capital, and the possibility that control of the company may be exercised by groups of shareholders representing an often-small minority of the capital, thus shifting the powers in favor of the administrative body as opposed to the shareholders' meeting. This results, on the other hand, in the differentiation into two categories of shareholders: (i) "entrepreneurial shareholders", who participate in the company in order to carry out an economic initiative and are concerned with the management of the company, and (ii) "saver shareholders", who are only interested in the investment of their savings and the economic results of management, to which they could not contribute effectively due to their incompetence or limited shareholding. Finally, a progressive separation between the role of "saver" and that of "entrepreneurial" can be observed, as the former, instead of investing directly in shares, increasingly relies on the mediation of so-called asset managers and institutional investors (asset management companies or pension funds), who formally qualify as shareholders.21

Hence the need for a differentiated regulation for companies with listed shares, which is characterized by the peculiar prominence of the distinction between "entrepreneur shareholders" and "saver shareholders," endowing the latter with specific means of protection.

In addition, since these companies involve the interests of shareholders and the general interests of the market, provision is made for the establishment of forms of public control, which also translate into shareholder protection and means to ensure the transparency of corporate structures, especially regarding the command group.²²

²⁰ Angelici, 2012.

²¹ Ferri et Al., 2023, p. 284.

²² For example, listed companies are subject to more stringent rules than those applicable to other companies with respect to financial and non-financial reporting duties to the public.

1.3 The governance systems of listed companies

Over the past two decades, attention to corporate governance issues has increased significantly among economists, scholars, managers, investors, legislators and policy makers. This topic has become central to national and international debate.²³

The term "corporate governance" is now in common usage, although there is no single definition. We can try to define it starting with its etymology:

- "governance" has been used in Britain since the 14th century to indicate wisdom and a sense of responsibility;²⁴
- "corporate" comes from the Latin word "corpus," indicating body, corporation, company, firm.

The classic definition of corporate governance is Anglo-Saxon in origin and goes back to the 1992 Cadbury Report: "*the system by which companies are administered and controlled*."²⁵ The U.K. Financial Reporting Council adds that corporate governance is about what the company's board of directors does and how it establishes the company's values, as distinguished from day-to-day operational management by executives.²⁶

Corporate governance represents the leadership activity at the top of the corporate enterprise, considering the dynamic interactions between the parties involved, their interests, roles, tools and principles of behavior. This integrated view includes various elements: the actors (the parties), their goals (the interests), their respective activities (roles and functions), the mechanisms used (tools) and the rules followed (principles-guidance). This complex is dynamic because it varies over time and space, adapting to different companies, countries, and economic and institutional systems. Interactions among the components of corporate governance are crucial, primarily involving ownership (partners/shareholders), directors, senior management, auditors, and auditors. In addition to the major players, there are parties who are indirectly involved, such as employees, and others who are more broadly involved, such as investors, regulators, and states. Each party has its own, often divergent and competitive interests, which

²³ Zattoni, 2020.

²⁴ Ibidem.

²⁵ For further information you can see here: <u>https://www.icaew.com/-/media/corporate/files/library/subjects/corporate-governance/financial-aspects-of-corporate-governance.ashx</u>.

²⁶ The U.K. Financial Reporting Council regulates auditors, accountants, and actuaries, and sets the UK's Corporate Governance and Stewardship Codes. It promotes transparency and integrity in business and its work is aimed at investors and others who rely on company reports, audits, and high-quality risk management.

must be balanced with those of the others. Of all the stakeholders, directors are the central pivot, around which the other parties revolve.

In Italian joint stock companies, unlike what the legislature allows for partnerships and limited liability companies, the management of the company must necessarily be entrusted to a "management body" called "board of directors" (hereinafter also BoD).²⁷ The board of directors is a collegial body entrusted with the management of the company, i.e., it is now vested with supreme corporate executive power or the task of representing the leadership of the business itself (and that of the group of subsidiaries, if any).²⁸ The name, powers and composition of such a body, however, depend on the system of governance chosen by the company.²⁹ In fact, the 2003 company law reform³⁰ provided-for the primary purpose of attracting investment to Italy by foreign companies, which might be discouraged by corporate governance systems too distant from those known to the investor-three different, alternative systems of company administration and control; allowing the bylaws either to choose only one, or to defer to the shareholders' meeting-when appointing the corporate bodies-the power to choose the corporate governance system.

The so-called traditional system (the only one provided for until 2003) allows management competence to be attributed both to a multi-person and collegial body (the board of directors) and to a single-person body (the sole director). In the traditional system, supervision of the legality and propriety of management is the responsibility of the "board of auditors", while auditing is usually the responsibility of an external auditor.

The alternative systems of governance, which are named "dualistic" and "monistic", have two features in common: that of not allowing single-manager administration and the necessary assignment of accounting control to an external auditor (or auditing firm).

The dualistic system (or "two-tier board"), by interposing between the shareholders' meeting and the management body an additional body (the so-called "supervisory board") increases the distance between ownership (the shareholders) and the setting of guidelines and control, on the one hand, and the management of the company, on the other, entrusted to the supervisory board and the management board, respectively.³¹ This system of administration is inspired by

²⁷ Rigolini & Zarone, 2019.

²⁸ Stefanoni, 2021, p. 4.

²⁹ Bertacchini & De Angelis, 2020, pp. 327-328.

³⁰ The reform is part of the Legislative Decree No. 6 of January 17, 2003.

³¹ The Report to the delegated decree by which the reform was implemented speaks of "disassociation".

German corporate law, where, however, it finds its main justification in the sterilization of collective conflict through the participation of workers' representatives – thus called upon to participate in the management of the enterprise ("*Mitbestimmung*") – in the supervisory board ("*Aufsichtsrat*"). The dualistic system has experienced in Italy a certain – and to some extent unexpected – diffusion in some sectors of the economy, particularly as a form of bank management, especially following merger operations.

The one-tier system, on the other hand, is Anglo-Saxon-inspired ("one-tier board") and – as the Accompanying Report states – "*tends to privilege the circulation of information between the administrative body and the body in charge of control, achieving time and cost savings and a high degree of transparency between the administrative and control bodies.*" In fact, the one-tier system is characterized by the presence of at least one-third of independent directors on the board of directors. The independence requirements are those provided for in the traditional system for auditors and the additional ones provided for by codes of conduct drawn up by trade associations or by management companies of regulated markets were referred to in the bylaws (Article 2409-septiesdecies, paragraph 2, c.c.). The board of directors appoints from among its members a management control committee composed of independent directors who meet the requirements of honorability and professionalism that may be provided for in the bylaws, who are not granted proxies or special offices or in fact carry out management activities, and at least one member of whom is registered in the register of statutory auditors. The management audit committee in listed companies must have at least three members.

However, he application of alternative systems of corporate governance left to private autonomy has, however, been found to be limited in Italian listed companies.

		2011	2021	2022	2023	
monistico					one-tier	
	numero società	3	4	4	4	number of companies
	% capitalizzazione totale	0.1	8.3	8.9	8.9	% total market capitalisation
dual	istico					two-tier
	numero società	7	1	1	1	number of companies
	% capitalizzazione totale	8.1				% total market capitalisation
tradizionale						traditional
	numero società	250	211	202	205	number of companies
	% capitalizzazione totale	91.8	91.7	91.1	91.1	% total market capitalisation
totale					total	
	numero società	260	216	207	210	number of companies
	% capitalizzazione totale	100.0	100.0	100.0	100.0	% total market capitalisation

Table 1. Report on corporate governance of Italian listed companies.

In particular, with reference to listed companies, empirical evidence shows a trend stable for some time now, with almost all of these companies adopting the traditional model of administration and control, a model that finds application by default, in the absence, that is, of a different statutory provision.³²

As can be seen from the table above, the adoption of alternative systems of corporate governance appears, therefore, to be an exception: looking at recent years, only about 2 percent of listed companies have resorted to such models (in 2023 only 5 out of 210 companies have adopted one of these two governance systems).³³

A few cases are known, then, of companies that had adopted alternative models and subsequently decided to return to the traditional model.

The low diffusion in Italy of the dualistic and monistic models is first and foremost due to wellknown phenomena of inertia of jurisdictions to experiment with formulas that are less well established and therefore unfamiliar to operators, judges and authorities. On the other hand, corporate governance models are often the distillation of specific historical experiences, responding to characteristic needs – legal, economic, social, cultural – of the systems in which they developed, and their transplantation abroad does not always allow them to take root.

It should also be noted that the regulatory technique followed, which is characterized by extensive references to the discipline of the traditional model, responds to a logic of system and regulatory economy, but tends, on the one hand, to generate interpretative uncertainties and, on the other, to make alternative systems appear as less fully and clearly regulated options than the basic one.³⁴

However, more widespread use of such models could encourage foreign investment in Italian companies, as both CONSOB and the Bank of Italy expressly acknowledge.³⁵

³² Ventoruzzo, 2023.

³³ CONSOB, Report on corporate governance of Italian listed companies, 2023, p. 38. The report is available here: <u>https://www.consob.it/documents/11973/545079/rcg2023.pdf/a0a36447-9dba-8a5d-c79a-d0499fdffbd8</u>.

³⁴ Ventoruzzo, 2023.

³⁵ CONSOB during the annual meeting with the financial market on May 11, 2015. with and the Bank of Italy with the Circular No. 285, December 17, 2013, Supervisory Provisions for Banks, updated May 16, 2014.

1.4 The board of directors in Italian listed companies

Regardless of the system of governance adopted, the Board of Directors (i.e., the management body) is the driving force behind the company's activity.

Article 2380-bis c.c., before the amendments made by the CCII³⁶ and then by Legislative Decree 147/2020, was lapidary in stating that "the management of the company is the exclusive responsibility of the directors, who carry out the operations necessary for the implementation of the corporate purpose."³⁷

Today, on the other hand, literally this rule reserves to the directors of a joint-stock company (as to those of other social types) exclusively "*the establishment of the arrangements referred to in Article 2086.*"³⁸

Despite this unexpected textual change, however, the view remains correct that, in joint-stock company, unlike in other types of companies, competence in management matters rests exclusively with the directors, as is evidenced by the circumstance that the bylaws can no longer, as in the past, reserve certain matters pertaining to management to the competence of the shareholders' meeting; they can only provide that, for certain matters, the authorization of the shareholders' meeting is required (which means that only a limit is removed on the power of the directors to whom the final decision on the authorized act remains); however, the directors remain responsible – even to the company – for the acts performed, even if they are authorized (Article 2364 c.c.).³⁹

The centrality of their position is sculpted by the numerous and articulated functions with which they are vested by law.⁴⁰

- Directors deliberate on all matters pertaining to the management of the company that are not reserved by law for the shareholders' meeting (Art. 2364(5) c.c.).
- Directors (all or some) have general representation of the company (Art. 2384(1) c.c.).
 That is, they have the power to manifest the company's will externally by carrying out the individual legal acts in which the company's activities are embodied.

³⁶ "CCII" is the Italian acronym for the "Codice della crisi d'impresa e dell'insolvenza" published in Legislative Decree Jan. 12, 2019, No. 14 and updated to Legislative Decree Dec. 6, 2023, No. 224.

³⁷ article 2380-bis of the Italian Civil Code.

³⁸ Bertacchini & De Angelis, 2020, pp. 327-328.

³⁹ Ibidem.

⁴⁰ Campobasso et Al., 2020, pp. 354-356.

- In addition, directors give impetus to the activities of the shareholders' meeting: they convene it and set its agenda. They also give effect to its resolutions and have the powerduty to challenge those that violate the law or the articles of incorporation.
- Directors must see to the keeping of the company's books and records and must annually prepare the draft financial statements to be submitted to the shareholders' meeting for approval. They must also see to the disclosure requirements prescribed by law.
- Directors must prevent the performance of acts detrimental to the company, or at least eliminate or mitigate their detrimental consequences (Article 2392(2) c.c.).
- Directors have the duty to establish an organizational, administrative and accounting structure appropriate to the size and nature of the company, also to promptly detect the existence of a crisis and activate without delay the initiatives necessary to overcome it (Art. 2089, 2nd paragraph, c.c.).
- Finally, directors are required to adopt and effectively implement organizational and management models suitable for preventing the commission of crimes from which the administrative liability of the company may result (Art. 6 Legislative Decree No. 231, 8-6-2001, as amended by Law 183/2011).

The functions of directors are unwaivable by private autonomy. Of the relevant powers they cannot be divested and from the relevant duties they cannot be dispensed with, either by the bylaws or by the shareholders' meeting, since the one and the other are an expression of the principle of the division of powers, which in the joint-stock company acts as a counterbalance to the "irresponsibility" of the shareholders for corporate obligations.⁴¹

Moreover, these are functions that the directors are invested with by law and not by mandate of the shareholders, as well as functions that they exercise in a position of formal autonomy with respect to the shareholders' meeting (Art. 2380-bis, para. 1). This is both because they must supervise compliance with the law also by the shareholders' meeting and have the power-duty to refrain from implementing its resolutions if damage to the company may result; and because of the fulfillment of their duties, they are personally liable civilly⁴² and criminally.⁴³ And mind you, civilly liable the directors are not only to the company, but also to the company's creditors,

⁴¹ Ibidem.

⁴² Articles 2392-2395 c.c.

⁴³ Articles 2621-2641 c.c.

if they violate or allow to be violated the rules set to safeguard the integrity of the company's assets.

Exclusive managerial competence thus finds its counterpart in total liability.⁴⁴ The new system is ultimately more rigid than its predecessor in that in both open and closed joint-stock company it prevents any modulation of managerial powers between directors and the shareholders' meeting: the managerial model is thus fully established.⁴⁵

By express legislative provision,⁴⁶ it is not permissible for a listed company to be managed by a single director. The management body must necessarily have a collegial composition. What most characterizes the board of directors of a listed company is that the directors:

- Do not have uniform relationships with the company (even if elected by the majority). These individuals represent a necessary diversification of roles and functions specific to listed companies, which are not found in the administrative body of a non-listed joint-stock company. For instance, independent directors, whose presence is mandatory in listed companies, are not required on the board of an unlisted company.⁴⁷
- Must have specific skills because a listed company must consider the impact of management decisions on the share price both in the short and long term. Indeed, a listed company operates under different conditions compared to an ordinary company, where the dialogue typically involves only majority, minority, and stakeholders. Listed company boards.⁴⁸ Additionally, the board must navigate potential challenges arising from market-driven changes in majorities during their term.⁴⁹
- Through the mechanism of "slate voting" (i.e., "list voting system."), they are almost never entirely representatives of the majority shareholder.⁵⁰

⁴⁴ Significant in this sense is the elimination in the new system of the directors' ability to refer the decision on a particular act of management to the shareholders' meeting: an option they often used precisely in order to obtain from the shareholders a prior discharge of liability to the company for critical transactions.

⁴⁵ Bertacchini & De Angelis, 2020, pp. 327-328.

⁴⁶ Art. 147 ter T.U.F.

⁴⁷ Guidotti, 2021, p. 55.

⁴⁸ Ivi, p. 56.

⁴⁹ However, in many cases, this is mitigated in countries where control of listed companies often remains with a reference shareholder or shareholders, either by right or through shareholders' agreements.

⁵⁰ Guidotti, 2021, p. 56.

1.5 The rules on the composition of the board of directors

The election and composition of the board of directors of listed companies are regulated by a set of rules from legislative, statutory and regulatory sources, to which are added, with particular reference to the composition of the management body, the provisions of the Corporate Governance Code.⁵¹

Although the Code is "only" a source of "self-regulation," it is very important: companies are free not to adopt it or to apply it by diverging from certain recommendations, explaining such choices (the so-called "comply or explain" principle). However, it is true that, in fact, almost full adherence to the Code is widespread for reputational reasons.⁵²

Unlike unlisted joint-stock companies, where the board of directors may consist of a single director or a plurality of directors, in listed companies the board of directors is multi-person: thus, the so-called "collegiality principle" applies.

Members of the board of directors are elected by the shareholders' meeting. If the bylaws do not stipulate the number of directors, but only give them a maximum and minimum number, the determination is up to the shareholders' meeting.⁵³ The Corporate Governance Code specifies only that the board of directors include at least two independent directors other than the Chairman.⁵⁴

In the context of the self-regulation code, the administrative body plays a crucial role in the strategic guidance of the company, aiming for the "sustainable success" of the company.⁵⁵ It is responsible for defining the corporate governance system that most effectively supports the company's activities and achieves its strategic objectives. Moreover, it actively promotes

rischi#:~:text=II%20Codice%20di%20corporate%20governance,raccomandazioni%20che%20rappresentano%20i%20comp ortamenti.

⁵¹ The Corporate Governance Code, which is addressed to all companies with shares listed on the electronic stock market managed by Borsa Italiana SpA, is divided into 6 articles divided into 20 principles that identify the objectives of good governance, and 37 recommendations that represent the behaviors deemed by the Code to be appropriate for achieving the objectives stated in the principles. Adherence to the Code is voluntary and based on the "comply or explain" criterion and follows the principle of substance over form. It is worth mentioning how art. 123 bis, paragraph 2, letter a) of the T.U.F. obliges issuers to indicate in the management report their adherence to a code of conduct on corporate governance, giving reasons for any non-adherence to one or more of its provisions; the resulting communications about compliance or non-compliance with the Code, therefore, assume the value of real social communication. For further information you can see here: https://www.ipsoa.it/documents/quotidiano/2021/03/17/codice-corporate-governance-ruolo-organo-amministrativo-sostenibilita-gestione-

⁵² Ventoruzzo, 2023.

⁵³ Art. 2380 bis of the Italian Civil Code.

⁵⁴ Recommendation no. 5 of the Corporate Governance Code available here: <u>https://www.borsaitaliana.it/comitato-corporate-governance/codice/2020eng.en.pdf</u>.

⁵⁵ So-called "sustainable success" is the goal that guides the actions of the board of directors and is embodied in the creation of long-term value for the benefit of shareholders, considering the interests of other stakeholders relevant to the company.

dialogue with shareholders and other relevant stakeholders, ensuring transparent and constructive communication.

The composition of the management body includes both executive and non-executive directors, all possessing the necessary professionalism and skills to ensure significant influence in board decisions and effective management oversight. A notable portion of the non-executive directors is independent, and the company applies diversity criteria, including gender diversity, to ensure the members' competence and professionalism. Furthermore, specific recommendations address key roles such as the Chief Executive Officer (CEO), the chairman, the lead independent director, and committees with investigative, propositional, and advisory functions. Finally, the next sections will look in more detail at some specific criteria that the law requires to be considered when appointing board members to ensure fair and transparent management: (a) Protection of minority shareholders; (b) Independence; (c) Gender balance; (d) Standards of integrity and professionalism.

a. "Slate voting" and the protection of minority shareholders

The rule under common company law for the appointment of management and controlling bodies is that a majority of the ordinary shareholders' meeting elects all directors and all auditors.

The controlling shareholder, even *de facto*, thus normally expresses the entire boards of directors and auditors. This is consistent with the capitalist model but poses the problem that both the controlled and the controlling are chosen by the same majority, and naturally limits the role of minority investors in the composition of the bodies. In all jurisdictions, therefore, the problem arises, although solved in different ways (and in some cases ignored), of adding a proportional corrective to the appointment of the company's top management, an issue that is even more relevant in listed companies because of the special protection needs of smaller shareholders.⁵⁶

The technical ways of allowing them to compete in the election of directors (and auditors) may be different.

In Italy, as mentioned above, Art. 147-ter T.U.F. regulates the election and composition of the board of directors, providing that the board be composed of a plurality of directors. In addition, the provision states that the bylaws shall regulate the election of directors according to the "slate voting" technique, to allow qualified minority shareholders to nominate at least one director.

⁵⁶ Ventoruzzo, 2023.

The slate voting system requires that two or more lists of candidates be submitted, and that each shareholder may vote for only one list and not for individual members of that list: seats on the board of directors are allocated in proportion to the votes received by each list, based on the order of preference of the candidates.⁵⁷

According to Article 147-ter, paragraph 3, T.U.F., at least one of the members of the board of directors shall be expressed by the minority list that has obtained the highest number of votes and that is not connected in any way, not even indirectly, with the shareholders who submitted or voted for the list that came first in terms of number of votes.⁵⁸

The election of at least one director by minority shareholders (often institutional investors) clearly meets the purpose of representing the position of such shareholders on the board of directors. This practice not only addresses the concerns of minority stakeholders but also plays a key role in promoting diversity of perspectives within the boardroom. Boards of directors are more effective when they incorporate a wide range of views, experiences, and insights, allowing for more well-rounded decision-making. By electing directors from minority shareholders, who may have different investment horizons, strategies, or even social and environmental concerns, companies can benefit from alternative viewpoints that may otherwise be overlooked in a more homogenous board composition.

However it's important to highlight that this is a possibility offered to minorities, not an indispensable condition for the composition of the board, since it may, for example, be the case that only one list is submitted by the majority shareholder or that, in the absence of lists submitted in time, the directors are elected at the shareholders' meeting by majority vote on the proposal of the shareholders or the outgoing board of directors.⁵⁹

b. Gender diversity on boards

A balanced representation of men and women must be ensured in the composition of the board of directors. According to Article 147-ter, paragraph 1-ter, T.U.F., the bylaws stipulate that the distribution of directors to be elected shall be made according to a criterion that ensures gender balance, requiring that the least represented gender (often it is the female gender) obtain at least two-fifths of the elected directors.

⁵⁷ Ventoruzzo, 2023.

⁵⁸ Ibidem.

⁵⁹ Ibidem.

This requirement applies for six consecutive terms starting from the first renewal of boards after January 1, 2020, and it was introduced by the Law Dec. 27, 2019, No. 160 that elevated the requirement originally established by Law July 12, 2011, No. 120 (the so-called Gulf-Moscow law), also extending its duration.

Similar rules are now also provided at the EU level: Directive 2022/2381 imposes similar quotas on member states. Indeed, 40 percent of nonexecutives, or 33 percent of all directors, must belong to the least represented gender.

In order to ensure a diverse composition of the board in terms of gender, favoring a greater representation of women, whose presence on the boards of listed companies was at the time particularly low (amounting to about 7 percent in 2011), the Gulf-Moscow Law had prescribed, in fact, that the less represented gender be reserved for at least one-third of those elected for three consecutive terms. The measure produced significant effects: Italy is now among the countries with greater gender diversity on the boards of directors of listed companies.

Indeed, according to data compiled by Consob in 2023, there were 192 women board members in 2011, 832 in 2020, 846 in 2021, and 840 in 2022.

membri degli organi di amministrazione (valori medi per genere)	2011	2020	2021	2022	boards of directors' members (average values per gender)
numero incarichi considerati (incluso in società monistiche e dualistiche)	2,567	2,131	2,050	1,948	number of covered offices (including in one-tier and two-tier firms)
donne	192	832	846	840	women
uomini	2,375	1,299	1,204	1,108	men

Table 2. Report on board diversity of Italian listed companies.60

However, the number of women in CEO or chairman of the administrative body roles is confirmed to be limited, with female directors largely filling the role of independent director.

Also with reference to gender equality, the provision of the Corporate Governance Code is appreciable, which, in noting the importance of diversity criteria, including gender, in the composition of the board of directors, taking into account the priority objective of ensuring adequate competence and professionalism of its members, recommends that companies adopt measures to promote equal treatment and opportunities between genders also within the entire corporate organization, monitoring its concrete implementation.

⁶⁰ CONSOB, Report on corporate governance of Italian listed companies, 2023, p. 47. The report is available here: <u>https://www.consob.it/documents/11973/545079/rcg2023.pdf/a0a36447-9dba-8a5d-c79a-d0499fdffbd8</u>.

Finally, in case the composition of the board of directors resulting from the election does not comply with the requirement that the less represented gender must obtain at least two-fifths of the elected directors, Art. 147-ter, paragraph 1-ter, T.U.F. provides for a rather articulated system of sanctions:

- initially, Consob warns the company so that it complies with the legal criterion within a maximum period of four months from the warning;
- in case of non-compliance, an administrative fine of 100,000 to 1,000,000 euros is applied and a new deadline of three months is set for compliance;
- in case of further non-compliance, the elected members are disqualified from office.⁶¹

c. Board independence

Paragraph 4 of Art. 147-ter T.U.F. stipulates that at least one member of the board of directors, or two if the board has more than seven members, must meet the independence requirements established for statutory auditors in Art. 148, paragraph 3, T.U.F., as well as, if the bylaws so provide, the additional requirements set forth in codes of conduct drawn up by regulated market management companies or trade associations (i.e., those recited in the Corporate Governance Code).

For companies that adopt the one-tier model of administration and control, Article 147-ter, paragraph 4, T.U.F. stipulates that the provision in Article 2409-septiesdecies, paragraph 2, Civil Code, according to which at least 1/3 of the members of the board of directors must be independent, remains in place.

In the case of companies adopting, on the other hand, the dualistic model, Art. 147-quater T.U.F. stipulates that if the management board is composed of more than four members, at least one of them must meet the aforementioned independence requirements.

Therefore, the minimum number of independent directors set by law is lower in the dualistic system than in the traditional and one-tier models.

In order to coordinate the requirement of the minimum number of independent directors with the list voting system, Article 147-ter, paragraph 1, T.U.F. states that the lists must indicate which candidates meet the independence requirements set by law and the bylaws.

⁶¹ Idem.

An independent director who, after appointment, loses the independence requirements must immediately notify the board of directors and, in any case, forfeits his or her office (Art. 147-ter, paragraph 4, T.U.F.).

The eligibility requirements for auditors, as mentioned above applicable to determine the independence of directors, exclude:

- a) those who are in the conditions of ineligibility and disqualification provided for directors in Article 2382 of the Civil Code. (disqualified, incapacitated, bankrupt, or those who have been sentenced to a punishment that entails disqualification, even temporary, from public office or inability to exercise executive offices);
- b) the spouse, relatives and kin within the fourth degree of kin of the directors of the company, the directors, spouse, relatives and kin within the fourth degree of kin of the directors of companies controlled by the company, companies that control the company and those subject to common control;
- c) those who are related to the company or companies controlled by it or companies that control it or those subject to common control or to the directors of the company and the persons referred to in subsection b) by independent or subordinate employment relationships or by other relationships of a patrimonial or professional nature that compromise their independence.

In addition to the causes of ineligibility and disqualification, which more generally affect a person's ability to hold the office of director, the regulations therefore take into consideration ties of a personal nature and relationships of a patrimonial or professional nature such as to compromise the directors' independence of judgment.

Just as with minority directors, the bylaws of course can set a higher minimum number than prescribed by law (as well as more stringent requirements) for independent directors.

	2011	2020	2021	2022	
numero società considerate (in base ai rapporti disponibili)	255	218	213	202	number of covered companies (available reports)
consiglio di amministrazione					board of directors
dimensioni medie	10.1	9.8	9.7	9.7	average size

Table 3. Report on the dimension of the board of directors of Italian listed companies.⁶²

⁶² CONSOB, Report on corporate governance of Italian listed companies, 2023, p. 39. The report is available here: <u>https://www.consob.it/documents/11973/545079/rcg2023.pdf/a0a36447-9dba-8a5d-c79a-d0499fdffbd8</u>.

Indeed, data released by Consob shows that in recent years boards of directors have consisted of about 10 members, half of whom are independent directors, a number that has increased by since 2011.

	2011	2020	2021	2022	
mero società considerate cluso monistiche e dualistiche)	255	218	213	202	number of covered companies (including one-tier and two-tier model)
ministratori indipendenti da TUF					independent directors by TUF
numero medio	4.1	5.1	5.1	5.2	mean number
peso medio sul board (%)	39.5	50.9	51.2	52.3	average weight on board (%)
amministratori indipendenti da CGC					independent directors by CGC
numero medio	3.9	4.7	4.7	4.7	mean number
peso medio sul board (%)	37.7	46.9	47.2	47.5	average weight on board (%)
amministratori indipendenti da TUF/CGC					independent directors by TUF/CGC
numero medio	4.3	5.1	5.1	5.2	mean number
peso medio sul board (%)	41.7	51.0	51.3	52.5	average weight on board (%)
	mero società considerate cluso monistiche e dualistiche) ministratori indipendenti da TUF numero medio peso medio sul board (%) ministratori indipendenti da CGC numero medio peso medio sul board (%) ministratori indipendenti da TUF/CGC numero medio peso medio sul board (%)	2011mero società considerate ccluso monistiche e dualistiche)255ministratori indipendenti da TUFnumero medio4.1peso medio sul board (%)39.5ministratori indipendenti da CGCnumero medio3.9peso medio sul board (%)37.7ministratori indipendenti da TUF/CGCnumero medio4.3peso medio sul board (%)41.7	20112020mero società considerate ccluso monistiche e dualistiche)255218ministratori indipendenti da TUFnumero medio4.15.1peso medio sul board (%)39.550.9ministratori indipendenti da CGC1000000000000000000000000000000000000	2011 2020 2021 mero società considerate ccluso monistiche e dualistiche) 255 218 213 ministratori indipendenti da TUF	2011 2020 2021 2022 mero società considerate cluso monistiche e dualistiche) 255 218 213 202 ministratori indipendenti da TUF

Table 4. Report on the number of independent directors on the boards of Italian listed companies.⁶³

The Corporate Governance Code, on the other hand, defines independent directors from a substantive perspective as "those nonexecutive directors who do not have, nor have recently had, even indirectly, relations with the company or persons linked to the company such as to condition their current autonomy of judgment," stipulating in Article 2 that a "significant" component of the nonexecutive directors must be independent.⁶⁴ The Code stipulates that the minimum number of independent directors (other than the Chairman) is two, in line with the provisions of the T.U.F. for boards of more than seven members, which, as noted above, is the norm for listed companies. However, additional quantitative limits are set specifically for so-called "large companies."⁶⁵

Independence is assessed not only at the time of appointment but also during the term of office upon the occurrence of relevant circumstances and, in any case, at least annually (the company must inform the market about the outcome of the assessments).⁶⁶ While it is true that a director who loses the requirements of independence lapses, in the absence of specific provisions in the bylaws, the probably prevailing and preferable view is that the director lapses only if the composition of the resulting board does not meet the dictate of the T.U.F. and, therefore, there

⁶³ CONSOB, Report on corporate governance of Italian listed companies, 2023, p. 39. The report is available here: <u>https://www.consob.it/documents/11973/545079/rcg2023.pdf/a0a36447-9dba-8a5d-c79a-d0499fdffbd8</u>.

⁶⁴ The Corporate Governance Code is available here: <u>https://www.borsaitaliana.it/comitato-corporate-governance/codice/2020eng.en.pdf</u>.

⁶⁵ Those whose capitalization was more than 1 billion euros on the last trading day of each of the previous three calendar years. Specifically, in the case of large companies with concentrated ownership, the number of independent directors is at least one-third of the members of the board, while in other large companies, independent directors make up at least half of the board.

⁶⁶ Ventoruzzo, 2023.

are not at least two independents (in a board of at least seven members) according to Article 148 T.U.F. However, bylaws can be more stringent and expressly expand the cases of disqualification, thus clarifying the possible interpretative doubt.⁶⁷

It should then be recalled that in addition to the independence requirements of the T.U.F. and the Corporate Governance Code, there are other, mandatory ones that are binding for supervised financial intermediaries, which represent an important part of listed companies.⁶⁸

d. Skills and professional background of board members

Under Article 147-quinquies T.U.F., all directors of listed companies are required to meet the integrity standards set for auditors by regulations issued by the Ministry of Justice; failure to comply with this requirement may result in their removal from office. This rule clearly establishes a distinction between the composition of the board of a listed company and that of an unlisted one.

However, there has been no issuance of a specific implementing regulation for this requirement, so the current reference remains Article 2 of the Minister of Justice's Decree No. 162 of March 30, 2000. This decree stipulates that individuals who have engaged in criminal conduct that could jeopardize the proper management of the company or damage its reputation are ineligible to serve as auditors.

Although no specific regulation addresses the professional experience required for directors, this issue is increasingly relevant. In the Italian legal framework, the requirement for professional competence is generally mandated only for members of supervisory bodies (Article 2397 c.c. and Article 148 of the T.U.F.) or for directors of companies in certain regulated industries, such as banking and insurance.

Instead, a general regulatory provision for all listed companies would be appropriate for the protection of the collective interest that is inevitably affected by the management of these companies.⁶⁹

⁶⁷ Idem.

⁶⁸ Idem.

⁶⁹ Guidotti, 2021, p. 61.

Chapter 2: The Limited Rationality of Human Beings

Summary: 2.1 The importance of choice — 2.2 Rational choice theory: the standard economic approach to decision-making — 2.3 The ration choice model begins to crumble: Allais' paradox — 2.4 The roots of behavioral economics: Simon and the concept of bounded rationality — 2.5 The influence of behavioral economics on human decision-making — 2.6 Some cognitive biases that influence our daily lives — 2.7 "Noise" and bias in the board of directors. How can they be curbed?

2.1 The importance of choice

Understanding the human mind since ancient times has always been a chimera for humans. To know the brain is in fact to know oneself. Despite the considerable advances made over the years in the field of neuroscience and the strides made possible by technological progress, the investigation of human cognitive processes continues to be a field steeped in considerable complexity. In fact, it is crucial to consider and understand how our minds process and organize the information and how this affects our decisions in everyday life.

Choice concerns the way individuals allocate their time of responding among available response options.⁷⁰ Humans live in a world characterized by limited resources where there is a constant need to deal with situations in which making choices is necessary. It could be a choice between different goods or different behaviors. Not choosing can also be considered a choice and often with relevant implications.⁷¹

Therefore, important questions arise when talking about choices: how do people take decisions? Which are the factors that influence their choices? When a person has to decide, is he or she able not to be influenced by external factors? Can weigh a choice and decide rationally?

In the following paragraphs, I will examine how certain contributions within the realms of economics and psychology have endeavored to address these inquiries throughout history.

⁷⁰ Fisher, 1997.

⁷¹ For an extensive description see Cass Sunstein (2015): "Choosing not to choose: Understanding the value of choice."

2.2 Rational choice theory: the standard economic approach to decisionmaking

Over the centuries, economics has undergone profound changes that have redefined its role within society. In Aristotle's time, it was regarded simply as the administration of the household economy, confined to the private sphere and subordinate to disciplines such as politics and ethics.⁷² Wealth was seen only as a means of obtaining specific goods and services, and not as an end, since the pursuit of profit was considered against nature.

During the Middle Ages, with the fall of the Roman Empire, the economy went through a phase of considerable retrenchment. Currency was abandoned in favor of barter, and agriculture dominated at the expense of manufacturing. Landowners received tribute in kind. Because money was considered impure and a source of sin, the economy was based on barter, and activities paid for with currency were discredited by society. This was mainly because the economy did not enjoy autonomy but was completely subject to morality.

Around the year 1000, with the beginning of the late Middle Ages, the Western world experienced a revival supported by population growth and the return of monetary circulation. This encouraged the development of commercial activities within cities and the formation of new artisans. In this historical context, the role of merchants became increasingly significant, prompting them to undertake long journeys to acquire new resources. At the same time, banking activities revived, thanks to the emergence of trade contracts that financed shipments in exchange for a share of the earnings. During the late Middle Ages, trade became so important that the economy was transformed into mercantilism, a system of economic policy characterized by state intervention through protectionist policies to support exports and limit imports through the application of duties.

This historical transformation led to a radical change in the conception of economic theory. From the simple administration of the domestic economy, there was a shift to economic policy, where the state took a proactive role in implementing policies to increase the country's wealth and power.

In the face of this evolution, the economic needs of the state changed, giving rise to Neoclassical Economics.

⁷² The word "economics" comes from the Greek word "oikonomia" (οιχονομια) meaning management of a household.

The term "Neoclassical Economics" dates back to 1900, when the American economist Thorstein Veblen used it in his paper "The Preconceptions of Economic Science."⁷³ Two main periods can be traced within Neoclassical Economics: an "early stage" and a "postwar stage."

In Classical Economics⁷⁴ and the early stage of Neoclassical Economics, it was widely accepted to talk about cognitive and affective states. The main author of this phase was the economist William Stanley Jevons who said that the subject of economy should have been "*maximising pleasure and reducing pain*."⁷⁵ Early neoclassical economists found no compelling reasons to embrace alternative methods for assessing the soundness of the underpinnings of their economic theories. They placed their trust in the method of introspection to analyze individuals' decisions and were convinced that introspection upheld the principles of hedonic psychology.

After the Second World War when the dissatisfaction of several economists towards the results achieved by the early stage of Neoclassical Economics brought change to the approach of the study of decision making. Postwar neoclassical economists wanted to root their discipline in a solid methodological ground and at the same time to improve the predictive power of their theories. They claimed that economy should refer to conscious states, so they rejected the idea that introspection was a scientifically acceptable means to explore such states.

The basic concepts of pleasure and suffering as foundation of choice, were substituted by a theory of preferences. People's sensations of pleasure and suffering are not observable, while their choices can be observed directly. After assuming that people's choices reflect their preferences it was possible to test empirically what people prefer. By substituting the concept of "utility" with the one of "preference", postwar neoclassical economists explicitly intended to separate economy from psychology.⁷⁶ However, it is important to highlight that they did not deny that people might be motivated by pleasure, pain and/or other mental states. Postwar theorist simply chose to remain agnostic about questions like motivation and preference formation arguing that such issues were outside the scope of economy.⁷⁷ As a result, they formulated a comprehensive theory that overlooked some crucial nuances of human behavior, arriving at the so-called marginalist revolution.

⁷³ Veblen, T. (1900). The preconceptions of economic science. The quarterly journal of economics, 14(2), 240-269.

⁷⁴ Classical economics refers to one of the prominent economic schools of thought that originated in Britain in the late 18th century. The link between economic and psychological principles can be traced back to the work of the philosopher and economist Adam Smith (1723-1790). Although he did not have a theory of decision making in the modern sense, his vision of human nature appeared multifaceted, and he was deeply interested in the psychological underpinnings of human behavior.

⁷⁵ Jevons, W. S. (1879). The theory of political economy. Macmillan, p. 37.

⁷⁶ Robbins, L. (1984). An essay on the nature and significance of economic science. New York University Press, p. 85.

⁷⁷ Robbins, 1984, p. 86.

With the advent of the marginalist revolution between 1870 and 1890, economic theory underwent a transformation that toned down its social aspect, leading it to distance itself from the social sciences and adopt an approach more akin to the natural sciences and economic positivism. Until then, economic theory had retained a social element by recognizing that economic phenomena were closely intertwined with and influenced by a variety of social factors. In contrast, with the isolation of social factors from the scope of economic study, a radical shift occurs in the process of economic analysis. The latter is based on analyzing economic events in isolation, as if their occurrence is not dependent on or influenced by external factors. The new paradigm underlying this theoretical conception is based on the concept of the complete rationality of the individual. This individual, guided by a budget constraint,⁷⁸ equipped with accurate information and aware of available alternatives, is able to make decisions that maximize his utility and, consequently, his level of well-being.⁷⁹

Economic science in its new dimension focuses on the question of optimal resource allocation within a context in which individual needs are unlimited, but the resources available to meet them are limited. In such a situation, it is necessary to set priorities to optimize the allocation of available resources and consequently maximize overall welfare. In the case of a single individual, who is faced with inexhaustible wants and needs but limited resources (such as income), it is not possible to meet all his or her needs in an unlimited way. Therefore, each individual should rationally determine which needs he considers most crucial and likely to procure the greatest satisfaction. This will enable him to allocate resources in such a way as to maximize his well-being, measured in terms of utility. Consequently, the object of economic theory narrows down to problems related to resource allocation. Aspects related to ethics, equity and justice are eliminated from this perspective because it is not the task of economics to guarantee these values. Instead, these issues become the purview of the social sciences.

Homo Oeconomicus is a rational agent who has consistent and stable preferences; he is entirely forward-looking and pursues only his own self-interest. When given options he chooses the alternative with the highest expected utility for himself.⁸⁰

⁷⁸ In economics, a budget constraint represents all the combinations of goods and services that a consumer may purchase given prices current within his or her given income (for further information see e.g., here: https://en.wikipedia.org/wiki/Budget constraint).

⁷⁹ Krugman, P. R., Wells, R. (2018). Microeconomics. Macmillan Learning.

⁸⁰ Oxford Dictionary. (n.d.). Homo Oeconomicus. In Oxford Dictionary online. Last accessed August 9, 2024, https://www.oxfordreference.com/display/10.1093/oi/authority.20110803095943203;jsessionid=3D815EC47510A54A5B0 9832AD432A53B.
This gives rise to the "rational consumer" model, which allows for reasoning in terms of utility maximization given certain information and budgetary constraints.

The theoretical model of the rational consumer, first developed by Daniel Bernoulli in the 18th century and later developed by John von Neumann and Oskar Morgenstern in the 20th century, defines how, based on personal tastes and preferences, individuals generate their own utility function.⁸¹

The utility function is influenced by all goods and services consumed, defined by economic theory as the consumption basket. The relationship between that personal basket and the utility generated defines the utility function. The latter graphically that has a positive slope that, however, tends to decrease as the number of units consumed of a given good or service increases.



Figure 1. Utility function⁸²

To maximize one's individual well-being, it is necessary to understand how utility varies as the quantity consumed increases.

For the purposes of the model, it is therefore important to focus on marginal utility, which is the change in total utility produced by the consumption of an additional quantity of a good or service. The marginal utility curve has a negative slope because the consumption of an additional unit contributes less to an individual's welfare than before.

⁸¹ Each individual, according to traditional economic theory, produces through his or her personal preferences a different utility function.

⁸² Image source here: https://www.wallstreetmojo.com/utility-function/.



Thus, a perfectly rational consumer will continue to consume until an additional unit exhibits negative marginal utility, which will result in a reduction in total utility relative to the previous unit. Since in order to take advantage of an additional unit of a particular good or service it is necessary to take on an additional cost, then in the face of limited income it is automatically necessary to reduce the quantity consumed of another good or service.

Individual income is the budget constraint, as the cost of the consumption basket cannot exceed total income. Should a consumption basket exceed disposable income, then it could not be consumed. The budget line then is the segment that shows all the consumption baskets that can be purchased by employing one's entire income. Given a given budget constraint, which defines the consumption basket accessible to the individual, and considering the utility function, it is possible to find the optimal consumption basket, that is, the combination of goods or services that maximizes utility given a certain income.⁸⁴

From this analysis it is possible to infer how, according to traditional rational economic theory, individuals are rational in their consumption choices, perfectly knowing their tastes and acting consistently with them; based on the information they possess, they are able to make choices designed to maximize their utility without being influenced by additional external elements.

- Besanko et al., 2020;
- Krugman et Wells, 2018.

⁸³ <u>https://www.researchgate.net/figure/Curve-of-Diminishing-Marginal-Utility-which-doubles-as-the-axiomatic-Demand-Curve-Here_fig5_304811331</u>.

⁸⁴ The analysis of this Section was carried out using the following as sources:

2.3 The ration choice model begins to crumble: Allais' paradox

Thus, "if you look at economics textbooks, you will learn that homo economicus can think like Albert Einstein, store as much memory as IBM's Big Blue, and exercise the willpower of Mahatma Gandhi."⁸⁵

Effectively, this is the image of the economic agent that the economic-mathematical models present to us. An individual who knows what he wants, knows how to get it (no matter how complex the calculations he has to do to find the optimal solution) and rationally and consistently does whatever it takes to achieve his goal and to maximize his or her own utility, without being influenced by other factors.

But is this always true? Are we made that way? Are we completely rational?

Although Neoclassical Economics had achieved a predominant position in the 20th century due to its formal and axiomatic approach, criticism was not slow to emerge. Indeed, some economists began to consider that their discipline would benefit from a closer integration with psychology. The idea became widespread that the theoretical models developed up to that point had neglected the human factor and its implications in decision making.⁸⁶

A prime example of this new perspective is the experiment conducted by French economist Maurice Allais with participants at an international congress devoted to the theory of rational expectations, held in Paris in 1952.⁸⁷ Subsequently, Allais described the main events of that experiment in an article published the following year.⁸⁸

According to Allais, any study of rationality in economics must take into account the following elements of complexity: "(i) the distinction between monetary and psychological values; (ii) the distortion of objective probabilities and the appearance of subjective probabilities; (iii) the mathematical expectation of psychological values (the mean of the probability distribution of psychological values) and (iv) the dispersion (variance) as well as general properties of the form of the probability distribution of psychological values."⁸⁹

⁸⁵ Thaler and Sunstein, 2009.

⁸⁶ Neoclassical Economics had favored the search for universally valid rules, but it had neglected the analysis of less rigid patterns that were more in keeping with the complexity of human reality.

⁸⁷ Maurice Félix Charles Allais (31 May 1911 – 9 October 2010) was a French physicist and economist, the 1988 winner of the Nobel Memorial Prize in Economic Sciences (for further information see e.g. here: <u>https://en.wikipedia.org/wiki/Maurice Allais</u>).

⁸⁸ Allais, 1953.

⁸⁹ Allais 1953, p. 504.

Allais' experiment consisted of asking "people considered perfectly rational" to choose between two different scenarios:

SCENARIO 1	SCENARIO 2
<u>A</u> . You have a chance to earn $\in 1$ million with	<u>C</u> . You have a lottery in which there is an
certainty.	11% chance of winning €1 million and an
<u>B</u> . You have a lottery in which there is an 89%	89% chance of winning nothing.
chance of winning €1 million, an 10% chance	\underline{D} . You have a lottery in which there is an
of winning 5 million and an 1% chance of	10% chance of winning €5 million and an
winning nothing.	90% chance of winning nothing.

According to a rational choice, the choice of situation (A) in the first Scenario should have imposed consequently the choice of (C) in the second. The results of the experiment conducted by Allais, however, showed that the majority of people had indeed chosen (A) in the first case, but (D) in the second.⁹⁰ This is what constitutes the Allais' paradox: the inconsistency in choosing between the two scenarios even though the probabilities are identical. In fact, according to traditional economic theory, people should evaluate decisions based on their expected utility (i.e., the probability of gain multiplied by the value of gain). In Allais' paradox, people seem to give more weight to the certainty of gain rather than the higher probability of higher gain. This paradox led to a greater understanding of human choice patterns and the limits of rationality in economic theory, also paving the way for cognitive research and interpretation of the many anomalies found in rational choice. Scholars began to consider whether it was realistic to assume that individuals were so capable of conducting extremely intricate decision-making processes, or whether models of rational behavior should be interpreted more in a normative sense. This would have seen them as decision support tools, suitable for use by experts but not necessarily for ordinary decision makers.⁹¹

⁹⁰ Allais 1953, p. 527.

⁹¹ Egidi, 2006.

2.4 The roots of behavioral economics: Simon and the concept of bounded rationality

The roots of behavioral economics can be traced back to the work of Nobel laureate Herbert Simon in the 1950s and 1960s.⁹² He is remembered for criticizing the idea of the completely rational economic agent and introducing the concept of "bounded rationality."

According to Simon, humans are unable to behave as rational subjects because of limitations inherent in their rationality. These limitations come from two elements: the context (the decision environment and the time in which a choice is made) and the limits of the solutions achievable by the agents (i.e., information, available time, and subjective analytical capabilities).

The consequence of these limitations is that the decision maker, based on the processing of these limiting factors, develops cognitive and symbolic processes that lead him or her to come to conclusions that may be wrong or inconsistent with preferences, thus resulting in solutions that do not maximize one's expected utility.

The limitingly rational decision maker approach, introduced by Simon, becomes relevant when the decision maker is faced with situations where it is impossible to identify an optimal choice or where the computational cost is too high. In such circumstances, the individual is inclined to look for an alternative that provides satisfaction rather than devoting himself to finding the optimal solution. This approach is called "satisficing,"⁹³ which is opposed to the "optimization" inherent in perfect rationality theory.

The concept of "satisficing" refers to procedures by which the existence of satisfactory decision alternatives is made possible by dynamic mechanisms for adjusting aspiration levels to reality, both on the basis of available information regarding the environment and taking into account the time resources allocable for such operations.⁹⁴ To confirm his hypothesis, Simon used as example the decision-making strategies employed in the game of chess.⁹⁵ Simon points to the fact that player regularly focus on far fewer strategies than are possible with each move:

⁹² Herbert Alexander Simon (June 15, 1916 – February 9, 2001) was an American political scientist, with a Ph.D. in political science, whose work also influenced the fields of computer science, economics, and cognitive psychology. His primary research interest was decision-making within organizations, and he is best known for the theories of "bounded rationality" and "satisficing" (for further information you can see e.g. here: <u>https://en.wikipedia.org/wiki/Herbert A. Simon</u>).

⁹³ A portmanteau of the terms "satisfy" and "suffice."

⁹⁴ Simon, 1972, pp. 168-169.

⁹⁵ The adoption of the game of chess, as a kind of mirror reflecting some properties of the decision-making processes employed in the real world, had already been proposed by von Neumann and Morgenstern in their joint work on game theory, and it is no coincidence that it was also used by IBM in the elaboration of Deep Blue.

"Studies of the decision-making of chess players indicate strongly that strong players seldom look at as many as one hundred possibilities – that is one hundred continuations from the given position – in selecting a move or strategy. [...] Chess players do not consider all possible strategies and pick the best, but generate and examine a rather small number, making a choice as soon as they discover one that they regard as satisfactory."⁹⁶

The generation and evaluation of alternatives often occur through "habit-driven processes" and repetition of decision-making procedures that are ingrained in the subject's "cognitive programming."

The tactical short-range considerations just recalled, as well as the possible cognitive limitations that exist on a personal basis, would be the same as those that occur in the decision-making process as a whole: when agents decide, in short, they are either unable to consider all possible alternatives, or for reasons of time and energy to be expended they do not want to do so, thus falling under the operational razor of what the psychological literature calls "aspiration levels", or thresholds of sub-optimal decision-making.⁹⁷

This results in decisions that, while not necessarily optimal, are satisfactory within the bounds of these cognitive and operational constraints. Ultimately, the decision-making process is a balance between the ideal of rational choice and the practical limitations imposed by human cognition and situational factors.

The concepts developed by Simon marked a significant departure from the assumptions of traditional economic thought. Earlier theories tended to take the individual's capacity for rational action as a given, assuming that once this axiom was accepted, there was no need to explore the actual cognitive and decision-making abilities of individuals. Simon, however, challenged this view and paved the way for a new behavioral approach in economics. He argued that understanding the limitations of human cognition and volition is essential to more accurately model and predict economic behavior, thus influencing the trajectory of economic theory in the latter part of the 20th century.

⁹⁶ Simon, 1972, p. 166.

⁹⁷ Arnaudo, 2012, p. 42.

2.5 The influence of behavioral economics on human decision-making

Simon's proposed notion of rationality, examined in the previous section, focuses on both the procedural aspect of subjective decisions and the decision-making environment in which these deliberations take place. It is precisely these two elements, as already pointed out, that form the characteristic basis of that new line of research that has emerged under the name "Behavioral Economics" (hereinafter also "BE"). Several authors attempted to define BE.

Camerer and Loewenstein described it as an approach for understanding decision making and behavior that integrates behavioral science with economic principles: "Behavioral economics increases the explanatory power of economics by providing it with more realistic psychological foundations [...] At the core of behavioral economics is the conviction that increasing the realism of the psychological underpinnings of economic analysis will improve the field of economics on its own terms - generating theoretical insights, making better predictions of field phenomena, and suggesting better policy."⁹⁸

Richard Thaler gave a similar definition in the "Yearly Guide for Behavioral Economics": "I view behavioral economics to be economics that is based on realistic assumptions and descriptions of human behavior. It is just economics with more explanatory power because the models are a better fit with the data."⁹⁹

Although different definitions have been provided, most of the experts in the field agree on a fundamental concept: the aim of BE is to provide an adequate model of human behavior. In fact, at the heart of BE is the attempt to adapt the concept of bounded rationality to neoclassical studies, which, by contrast, assumed a perfectly rational economic agent.

Behavioral economists do not reject modeling practices of rational action per se but seek to refine them to reduce the discrepancy between observable reality and theoretical models. They recognize that in certain contexts economic agents behave as perfectly rational individuals, while in other situations they are influenced by interdependent preferences, emotions, and cognitive limitations. These factors can lead to suboptimal or even contradictory choices with respect to the rational choice model.

Over the past 50 years, growing dissatisfaction with traditional economic models has turned BE into one of the most relevant and discussed fields in economics. This has also been made possible by multidisciplinary collaboration among scholars from different disciplines, such as psychology and philosophy, who have helped develop this new area of research. A multidisciplinary approach made it possible to approach the topic from different perspectives,

⁹⁸ Camerer, C. F., Loewenstein, G., & Rabin, M. (Eds.). (2004). Advances in behavioral economics. Princeton university press, p. 3.

⁹⁹ Samson, A. (2016). The behavioral economics guide 2016 (with an introduction by Gerd Gigerenzer), p. 23.

overcoming some of the paradigms that have characterized the development of traditional economic theory. It is no coincidence, in fact, that the use of the label "behavioral economics," although used since the 1950s,¹⁰⁰ is normally reserved for a course of study and research that began only in the early 1970s, traceable to a few well-identified researchers: these were two Israeli-born psychologists, Amos Tversky and Daniel Kahneman, who were joined shortly thereafter by a U.S. economist, Richard Thaler.¹⁰¹

The groundbreaking work of Kahneman and Tversky for convenience is divided by the authors themselves into three distinct research programs¹⁰²: (i) the "Prospect Theory" (a model of choice under risk and with loss aversion); (ii) the framing effects with their implications for rational agent models; and (iii) the heuristic and bias program.

Before going into the merits of these three different research programs, however, it is necessary to briefly focus on one aspect that serves as their premise: Kahneman's subdivision between "System 1" and "System 2" to describe the characteristics of the thought processes that people use in their daily choices. Having done so, the thesis will continue with a brief description of the three research programs.

a. The dual cognitive system



Figure 3. Angry woman photo (Kahneman, 2017).

What did you think as soon as you saw this picture?

¹⁰⁰ Several researchers including Allais and the Hungarian George Katona were avowedly skeptical of the axiomatic structure regarding the rationality of human behavior that economic studies were taking on.

¹⁰¹ In general, the influence of Simon's work is felt. It was in the context of theorizing about the limited cognitive abilities of agent subjects that the most famous and crucial behavioral studies were born.

¹⁰² Kahneman, 2003, p. 1449.

At first glance, an average person sees her dark hair and angry expression. In addition, what you see has extended into the future. You have a sense that this woman is about to say very rude words, probably in a loud, shrill voice. All this flow of thoughts came to us automatically and effortlessly. Our reaction to the picture simply happened. This is a case in point of what Kahneman in his book "Thinking, fast and slow" defines as "fast thinking" or intuitive thinking.¹⁰³

Now look at the following problem:

25 x 56

It is easily recognizable that this is a multiplication problem and probably some people have ability to solve it in their heads while others with pen and paper. Some also have a vague intuitive knowledge of the range of possible outcomes, although very few have arrived at an exact solution. Performing this calculation, as well as other reasoning, is an effort. Reaching an answer requires carrying out a deliberate, demanding mental process that follows precise rules. This pattern of reasoning is not only a mental event, for it has effects on the body as well: muscles become tense, blood pressure rises, heart rate increases, and pupils dilate. Unlike the example in Figure 3 above, in this case you experience what Kahneman refers to as "slow thinking."

Kahneman defines these two different modes of thinking and deciding with the concept of "System 1" and "System 2." They are two different operating systems, which govern all decisions, and they correspond to the everyday concepts of reasoning (System 1) and intuition (System 2).

Both systems have different characteristics:¹⁰⁴

- System 1, the one used for Figure 3, is the intuitive one. This works quickly, automatically, with little or no effort and is much more powerful than we ourselves are aware of.
- System 2 in contrast, the one used in the multiplication example, is analytical, systematic that is activated when we encounter mental activities that require focus and concentration.

¹⁰³ Kahneman, D. (2017). Thinking, fast and slow.

¹⁰⁴ Kahneman, 2003.



Figure 4. The scheme shows the dual system model of decision-making (see Kahneman, 2003).



Figure 5. Picture of "different" towers (Kahneman, 2017).

Another example of the operation of these two systems can be seen in the figure 5 above. In this case you know that the two towers on the left and right are equally tall and are more similar to each other than the array of blocks in the center. However, no one immediately knows that the number of blocks in the left tower is equal to the number of blocks arranged on the floor. In fact, to confirm this hypothesis, it is necessary to count the two sets of blocks and compare the results. This is an activity that only System 2 can perform.

As I have pointed out in these few examples, it can be summarized that System 1 works automatically by itself and System 2 applies the law of least effort, that is, it relies on System 1, when it understands that it is a task easily performed by the latter.¹⁰⁵ System 2 is normally in a comfortable low-effort mode in which only a tiny fraction of its capacity is engaged. System 1 continuously generates suggestions for System 2: impressions, intuitions, intentions, and feelings. When approved by System 2, impressions and intuitions are transformed into beliefs and impulses into voluntary actions. When everything runs smoothly, most of the time, System 2 adopts System 1's suggestions with little or no modification. However, when System 1 encounters difficulties or it does not offer an answer, it calls on System 2 to support more detailed and specific elaboration that can solve the problem of the moment.

¹⁰⁵ Kahneman, 2017.

b. Prospect Theory (and loss aversion)

After this brief introduction on Kahneman's division between "System 1" and "System 2," it is appropriate to briefly dwell on another contribution, by Kahneman and Tversky dating back to the 1970s, by which neoclassical economic rationality suffered a severe backlash: "Prospect Theory."

From a conceptual point of view, this theory is based on the descriptive analysis of empirical results obtained through the application of questionnaires and experiments on different individuals in order to test whether or not the fundamental principle of expected utility theory is respected in practice.¹⁰⁶

According to the rational choice model developed by Neoclassical Economics, individuals make decisions with the goal of maximizing expected utility. It is assumed that utility from the consequences of choices is completely determined by the final state of resources, thus being independent of the reference point.¹⁰⁷

Prospect Theory, instead, represents a new a behavioral model that illustrates how people make decisions in contexts characterized by risk and uncertainty, i.e., situations in which the possibility of gain or loss exists. The theory assumes that individual's reason in terms of expected utility relative to a reference point, rather than relying on absolute outcomes. The following are examples of some of the operational strategies adopted by Kahneman and Tversky in their experiments.¹⁰⁸

Problem 1:	Problem 2:		
In addition to whatever you own, you have been given	In addition to whatever you own, you have been given		
€1,000. You are now asked to choose one of these	€2,000. You are now asked to choose one of these		
options:	options:		
A) 50% chance to win ϵ 1,000 or	C) 50% chance to lose €1,000 or		
B) get ϵ 500 for sure	D) lose ϵ 500 for sure		

¹⁰⁶ The methodology remembers Allais' experimental approach and it's now defined as "experimental economy." Experimental economics is a branch of economics that studies human behavior in a controlled laboratory setting or out in the field, rather than just as mathematical models. It uses scientific experiments to test what choices people make in specific circumstances, to study alternative market mechanisms and test economic theories (see here: https://www.investopedia.com/terms/e/experimental-economics.asp, last accessed August 9, 2024).

¹⁰⁷ See *Section 2.2* for more details.

¹⁰⁸ The following examples are taken from the book Thinking, Fast and Slow (Kahneman, 2017).

It can easily be confirmed that in terms of the end state of wealth-all that matters for rational choice theory-problems 1 and 2 are identical. In both cases, one has a choice between the same two options: one can have the certainty of being €1,500 richer than one currently is or accept a gamble in which one has the same chance of being €1,000 richer or €2,000 richer.

According to the neoclassical approach, then, the two problems should elicit similar preferences. However, experiments have shown different results: in Problem 1, a large majority of respondents preferred the sure thing; on contrary, in Problem 2, most of the people preferred the gamble. The rejection of this gamble is an act of System 2, but the critical inputs are emotional responses that are generated by System 1.

Bernoulli's theory, according to Kahneman and Tversky, is too simple because it lacks the socalled "reference point," the prior state against which gains and losses are evaluated. In Prospect Theory therefore, it is not enough to know only the state of wealth to determine its utility, but it is also necessary to know the reference point.



Figure 6. Value function theorized by Kahneman and Tversky (Kahneman, 2003).

The graph illustrates the value function as described by Kahneman and Tversky in Prospect Theory, which highlights how individuals perceive gains and losses. Unlike Bernoulli's model, where the carriers of value are overall states of wealth, in Prospect Theory, the carriers of value are psychological perceptions of gains and losses. The graph is divided into two distinct sections: one to the right of a neutral reference point representing gains, and one to the left representing losses. This reflects the theory's key insight that people experience losses more intensely than gains of the same magnitude. A salient feature is that it is "S-shaped", which represents diminishing sensitivity for both gains and losses. Furthermore, the two curves of the "S" are not symmetrical. The slope of the function changes abruptly at the reference point: the response to losses is stronger than the response to corresponding gains. This is "loss aversion."¹⁰⁹

¹⁰⁹ Kahneman, 2017.

c. Framing effect

The second research's program of Kahneman and Tversky focused on the so called "framing effect."¹¹⁰. According to the principle of invariance, an essential aspect of rational choice theory, preferences should not be affected by variations of irrelevant options or outcomes. Instead, Kahneman and Tversky showed in their experiment how this principle is systematically violated in certain circumstances and how people's decisions are affected by the frame in which a problem is formulated. Their most famous experiment is the so-called "Asian disease" shown below:

Imagine that the United States is preparing for the outbreak of an unusual Asian disease, which is expected to kill 600 people. Two alternative programs to combat the disease have been proposed. Assume that the exact scientific estimates of the consequences of the programs are as follows:

In the 1 st version of the problem, the possible options were the following:	In the 2 nd version of the problem, the possible options were the following:
 If Program A is adopted, 200 people will be saved If Program B is adopted, there is a 1/3 probability that 600 people will be saved and a 	 If Program A' is adopted, 400 people will die If Program B' is adopted, there is a one-third probability that nobody will die and a two-thirds probability that 600 people will die
2/3 probability that no people will be saved	
Which of the two programs would you favor?	Which of the two programs would you favor?

Although the two versions produce the same outcome, they differ only in that the former is formulated in terms of the number of lives saved, while the latter is formulated in terms of lives lost. This, for a rational economic agent, should cause no problems. That is, an individual should choose program A or program B in both versions. However, the results of their experiments proved otherwise. While in the first version of the problem, most of the respondents preferred the program A because the certainty of saving people was disproportionately more attractive, conversely, in the second version, most people's preference was for the program B because the certainty of deaths in the second version was disproportionately more aversive.¹¹¹

¹¹⁰ All this Section is based on: Tversky and Kahneman, 1981, 1989.

¹¹¹ In another famous experiment, was showed that people's choice between surgery and radiation therapy was changing by describing outcome statistics in terms of survival rates or mortality rates. When the rate was proposed in a frame of survival, the chance that patients choose the surgery option was substantially higher than when a mortality frame was used. For further

d. Heuristics and bias

A key point in Tversky and Kahneman's analysis is the interaction between System 1 and System 2. In most situations the two systems act in a coordinated way. However, in some cases System 1, which is fast and automatic, conflicts with System 2, which is slower, and reason based. These conflict situations were the subject of the "Heuristic and Bias research program" conducted by the two Israeli psychologists.¹¹²

They highlighted that the human cognitive system could rely on a limited amount of resources to solve problems. When the amount of information is too high or complex people are "forced" to rely on mental shortcuts and simplified strategies in order to make decisions. These shortcuts are defined as "heuristics" and they ignore some of the information, with the goal of making decisions more quickly and simply.¹¹³

Usually, these strategies work properly but in certain circumstances they can lead to systematic mistakes in evaluation. These mistakes are called "cognitive biases."¹¹⁴

Thus, by bias we define all those judgments or biases that are not based on evidence and hard data but on the information held, which are processed on the basis of particular heuristics.

The problematic aspect is that cognitive biases can sometimes cause perceptual distortions and lead to the formation of opinions and feelings that do not correspond to reality, inaccurate judgments, illogical interpretations, and irrationality.

Tversky and Kahneman's work focuses on three heuristics that have been found to be widely and systematically used during a series of controlled experiments. These are, specifically, the heuristics of: representativeness, availability, and anchoring.

In ideal continuity (albeit unstated) with Allais' paradox (see Section 2.3), the authors noted how "several of the severe errors of judgment reported earlier occurred despite the fact that subjects were encouraged to be accurate and were rewarded for the correct answers" and even the judgments of subjects skilled in probability and statistical calculations "are liable to similar fallacies in more intricate and less transparent problems."¹¹⁵

information see: McNeil, B. J., Pauker, S. G., Sox Jr, H. C., & Tversky, A. (1982). On the elicitation of preferences for alternative therapies. *New England journal of medicine*, *306*(21), 1259-1262.

¹¹² Tversky & Kahneman, 1974.

¹¹³ Tversky & Kahneman, 1974 and Kahneman, 2011.

¹¹⁴ Tversky & Kahneman, 1974 and Kahneman, 2017.

¹¹⁵ Tversky & Kahneman, 1974, p. 1130.

(1) Representativeness

When a decision maker has to formulate a solution or assess the probability of an event happening, or has to assign a person to a group, he often draws from his memory stereotypical information. Thus, people make their choices based on the similarity between A and their idealistic image of B, in other words, on how representative A is of B.

This strategy is sometimes successful, but very often, leads to mistakes and decisions based on stereotypes instead of probabilistic assumptions.

"Representativeness heuristics" has been brilliantly showed in the "Linda" experiment¹¹⁶ in which the researchers provided the experimental subjects with the description of a fictitious character called Linda. The description was the following:

"Linda is 31 years old, single, outspoken, and very bright. She majored in philosophy. As a student, she was deeply concerned with issues of discrimination and social justice, and also

participated in antinuclear demonstrations."

Following, the experimental subjects were asked to estimate the likelihood that Linda would belong to one of the 8 categories listed below:

Linda is a teacher in elementary school. Linda works in a bookstore and takes yoga classes. Linda is active in the feminist movement. Linda is a psychiatric social worker. Linda is a member of the League of Women Voters. Linda is a bank teller.

Linda is an insurance salesperson.

Linda is a bank teller and is active in the feminist movement.

The two critical items in the list were 6) ("*Linda is a bank teller*") and 8) ("*Linda is a bank teller and is active in the feminist movement*"). The other six possibilities were unrelated and miscellaneous.

¹¹⁶ Kahneman & Tversky, 1982 and Tversky & Kahneman, 1983.

As might be expected, 85 percent of respondents ranked the conjunction item 8) higher than 6), indicating that Linda resembles the image of a feminist bank teller more than she resembles a bank teller. However, this classification could be wrong. In fact, a rational economic agent (as outlined in Section 2.2) would not have hesitated to say the opposite because the answers given in the experiment violate the conjunction rule, which says that the conjunction of two events (bank teller and feminist) cannot be more probable than any of the two events alone (bank teller or feminist):

$$P(A \cap B) \le P(B)$$
$$P(A \cap B) \le P(A)$$

The bias was reasonable because the description of Linda was more representative of the conjunction of the 2 options (number 8) than of just one of them (number 6). This phenomenon is commonly known as the conjunction fallacy¹¹⁷ and as well as in Tom W's experiment¹¹⁸, demonstrates how the human mind implements heuristics, exploiting similarities that allow it to make a quick and seemingly right choice, but which is found to be rationally wrong.

(2) Availability

How much should you worry about hurricanes, nuclear power, terrorism, mad cow disease, alligator attacks, or avian flu? And how much care should you take in avoiding risks associated with each? In answering questions of this kind, most people use what is called the availability heuristic.¹¹⁹ Individuals tend to assess the probability of an event frequency based on the ease with which they recall examples relevant to it. Thus, often overestimating the possibility of that event to happen and underestimating another actually more frequent one. For example, people often tend to overestimate the incidence of events causing vivid and emotional deaths, such as hurricanes or earthquakes, while underestimating the likelihood of occurrence of less vivid but statistically significant events such as deaths caused by asthma attacks. Another example is that fatal car crash is a more likely event then an airline crash.¹²⁰

¹¹⁷ Tversky & Kahneman, 1983.

¹¹⁸ "Tow W is a graduate student at the main university in your state. Please rank the following nine fields of graduate specialisation in order of the likelihood that Tow W is now a student in each of these fields. Use 1 for the most likely, 9 for the least likely: Business administration; 2) Computer science; 3) Engineering; 4) Humanities and education; 5) Law; 6) Medicine; 7) Library science; 8) Physical and life sciences; 9) Social science and social work." See Kahneman, 2017.

¹¹⁹ Thaler & Sunstein, 2009, p. 25.

¹²⁰ Nonetheless, the fear of death due to a plane crash is taken more seriously even though driving on roads leads to far more accidental deaths. To be precise, the probability of being involved in an air crash is only 1 in 11 million which staggers against a 1 in 5000 chance of a car accident (source by: Tyagi, 2015).

(3) Anchoring

Tversky and Kahneman in another experiment manipulated a wheel of fortune (numbered from 0 to 100) that was designed to stop exclusively on 10 or 65. After implementing this modification, they would ask the students to spin the wheel and then they were asked to write down the number at which the wheel stopped (of course it was always 10 or 65). Next, they had to answer two questions: whether they thought the percentage of African nations among UN members was higher or lower than the number resulting from spinning the wheel and what the actual percentage of African nations within the UN was. It is important to note that the spin of the wheel of fortune could not provide any useful information to answer these questions. In theory, participants should have simply ignored the result obtained from the wheel and answered according to their own knowledge. However, the experiment showed that participants did not ignore this number; rather, the average estimates of students who observed the numbers 10 and 65 were 25% and 45%, respectively. This phenomenon is known as the "anchoring effect." ¹²¹ It is a heuristic that comes into play when people keep in mind a specific value for an unknown quantity before estimating it. As a result, estimates are biased, keeping close to the number that was considered.

2.6 Some cognitive biases that influence our daily lives

At the conclusion of this brief exploration of human cognitive processes and decision-making patterns, it becomes crucial to answer for clarity the questions posed at the beginning of this second chapter. How do people make decisions? Which are the factors that influence their choices? When a person has to decide, is he or she able not to be influenced by external factors? Can weigh a choice and decide rationally?

As recent insights from behavioral economics, highlighted in the preceding sections, reveal, individuals often deviate from the behavior of the idealized, rational "Homo Oeconomicus" presented by Neoclassical Economics. This reality has a significant impact on the notion of human rationality. Historically, the prevailing idea was that humans were rational agents, unaffected by external influences. However, this assumption has been dismantled by the findings gathered from behavioral economics and psychology.

¹²¹ Kahneman, 2017.

Humans have a limited rationality mainly caused by the presence of cognitive and behavioral biases, essentially distortions in decision making. Decades of research have identified a multitude of recurring cognitive biases, but below I will outline some of the most prevalent and significant ones:

- The "endowment effect" was first identified in the 1970s by economist Richard Thaler and manifests itself in the way that people often demand a much higher price to give up ownership of an object than they would be willing to pay to buy it. In other words, there is a higher valuation associated with owning an object than its objective value in the marketplace.¹²²
- "Status quo bias" refers to the psychological phenomenon where people tend to prefer things to stay the same or remain unchanged. This bias can manifest in various aspects of decision-making and behavior, including personal choices, public policy, and social attitudes. As a result, this bias can sometimes lead to suboptimal choices because people might resist change, even if that change could lead to positive outcomes in the long run (and so against their best interests).¹²³
- "Confirmation bias" is a cognitive bias where individuals tend to seek out or interpret the evidence in ways that are partial to existing beliefs, expectations, or a hypothesis in hand.¹²⁴ In other words, people have a natural tendency to favor information that supports what they already think and ignore or downplay information that contradicts their beliefs.
- "Overconfidence bias," also known as the overconfidence effect, is a tendency for people to favor information that confirms their preconceptions or hypothesis regardless of whether the information is true.¹²⁵ This bias can lead people to believe that they are more skilled, competent, or accurate than they are.¹²⁶

¹²² In a research experiment conducted by Thaler and Kahneman (Kahneman et al., 1991) on the endowment effect, college students were randomly assigned to one of three conditions: "seller," "buyer," and "chooser." The sellers were initially given a university mug and then asked at what price, between 0 and 9 dollars, they would be willing to sell it. Buyers were asked if they would like to purchase the mug at a price within that range. The selectors had the option of choosing between a cup and the cash amount, at each price. The results of the experiment revealed that the sellers, who already owned the mugs, attributed twice the median value to the mugs than the other groups to give them up.

¹²³ Samuelson and Zeckhauser, 1988.

¹²⁴ Nickerson, 1998.

¹²⁵ Cambridge Dictionary. (n.d.). Overconfidence bias. In *Cambridge Dictionary online*. Last accessed August 9, 2024, https://dictionary.cambridge.org/dictionary/english/overconfidence.

¹²⁶ A study of a sample of students asked them to estimate the expected time, at best and worst, to complete their dissertation. On average, students reported that they believed they could complete the paper in thirty-three days at best and forty-eight days at worst. In reality, the average number of days was found to be fifty-five days. This example is taken from: Krugman & Wells, 2013.

- "Self-serving bias" is a cognitive bias where individuals tend to take personal responsibility for their desirable outcomes yet externalize responsibility for their undesirable outcomes. Indeed, people tend to take credit for positive outcomes but distance themselves from negative outcomes by attributing them to external circumstances, other people, or bad luck.
- "Optimism bias" is a cognitive bias where individuals tend to believe that they are less likely to experience negative events and more likely to experience positive events compared to others.¹²⁷ In other words, people often have an optimistic outlook about their future, expecting good things to happen to them while downplaying the potential for negative outcomes.¹²⁸
- "Social desirability bias" is a cognitive bias that occurs when individuals respond to surveys, questionnaires, or interviews in a way that they believe will make them appear more socially acceptable or desirable, rather than providing honest or accurate responses.
- "Present bias" is a cognitive bias in which people tend to seek instant gratification and give disproportionate weight to the present. In other words, there is a strong inclination to prefer immediate benefits and postpone costs to prospects and this makes people dynamically inconsistent in their choices over time.

2.7 "Noise" and bias in the board of directors. How can they be curbed?

As discussed in Chapter 1, the regulation and governance of Italian listed companies play a critical role in shaping the composition and functioning of their boards of directors. Indeed, the BoD is entrusted with the vital responsibility of guiding a company's strategic direction and protecting the interests of its shareholders. This role is particularly crucial in the context of Italian listed companies, where the effectiveness of the board can significantly influence the company's financial performance and the entire market.

However, as explored in the previous sections, the concept of limited rationality, first introduced by Herbert Simon and further developed by behavioral economists like Kahneman and Tversky, demonstrates that human decision-making is inherently flawed by cognitive biases and systemic

¹²⁷ Weinstein, 1989.

¹²⁸ For example, by most smokers or driver, the chance of getting cancer or the probability of dying in a traffic accident are underestimated. On the contrary, there is a tendency to overestimate our chances of a working career or life expectancy.

noise. These imperfections are not only present in individual decision-making but also manifest within collective bodies, such as boards of directors, potentially undermining their effectiveness and distorting the decision-making processes.

For this reason, understanding and mitigating these issues is essential for ensuring that the board operates effectively and that its decisions contribute positively to the company's performance.

"Noise" in the boardroom refers to the random variability in judgments that occurs when different board members, or even the same member under different circumstances, make inconsistent decisions. This inconsistency can arise from a variety of sources, including differences in individual perspectives, variations in how information is interpreted, and the influence of irrelevant factors. For instance, two different boards might make vastly different decisions when faced with similar circumstances, simply due to the subjective nature of their deliberations. This kind of variability can lead to a lack of coherence in the company's strategic direction, where similar cases are treated differently, resulting in unpredictable and potentially harmful outcomes. For example, one board might approve a risky investment based on optimistic projections, while another, facing a similar situation, might reject a less risky but strategically important project due to a more conservative interpretation of the same data.

Bias, on the other hand, is a systematic deviation from rational judgment, driven by cognitive, social, or emotional influences. Unlike noise, which introduces randomness into decisionmaking, bias leads to predictable distortions in judgment. Biases can manifest in various forms, such as overconfidence, where board members might overestimate their knowledge or control over the company's future; confirmation bias, where members give undue weight to information that supports their pre-existing beliefs and downplay contradictory evidence; and anchoring, where decisions are unduly influenced by initial information, even if it is irrelevant or misleading. Social dynamics within the board, such as groupthink, where the desire for harmony or conformity suppresses dissent and critical evaluation, also contribute significantly to bias. These biases can lead to decisions that consistently favor certain groups or perspectives, often at the expense of the company's long-term success. For example, a board might consistently favor short-term gains that please shareholders in the immediate term but undermine the company's sustainability in the long run, such as cutting research and development budgets to meet quarterly earnings targets.

The presence of noise and bias within a board of directors can have profound and far-reaching consequences for a company. When the board's decisions are inconsistent or systematically

skewed, it can lead to the misalignment of strategies, poor financial performance, and ultimately, a failure to maximize shareholder or market value.

Given the significant impact that noise and bias can have on a company's performance, it is crucial for boards to adopt strategies to curb these issues and one of the most effective ways to reduce noise and bias is by enhancing the diversity of the board.

Diversity in this context refers not only to demographic factors such as gender and ethnicity but also to diversity in professional background, experience, and skills. A diverse board is more likely to include members who bring different viewpoints, challenge assumptions, and approach problems from various angles. This diversity of thought is critical in reducing groupthink, as it encourages debate and critical evaluation of different ideas. Research has shown that boards with greater diversity are better at problem-solving and are more likely to make decisions that are robust and well-rounded. In the context of Italian listed companies, where traditional norms and networks might limit diversity, promoting a broader range of voices within the boardroom can be particularly beneficial. By including members from different industries, cultural backgrounds, and with varying expertise, companies can reduce the risk of homogenous thinking and ensure that decisions are more thoroughly vetted.

The structure and composition of the board are also crucial factors in minimizing noise and bias. Independent non-executive directors, who are not involved in the company's day-to-day operations, play a vital role in providing objective oversight. These directors are more likely to challenge management's decisions and offer alternative perspectives that might not be considered by those closely tied to the company's internal dynamics. This independence is essential in preventing biases that might arise from close relationships between board members and the company's executives. For instance, in many Italian listed companies, where family ownership and control are prevalent, the presence of independent directors can help ensure that decisions are made in the best interest of all shareholders, rather than just the controlling family. Moreover, independent directors can help standardize decision-making processes by introducing and enforcing rigorous frameworks that ensure consistency and alignment with the company's long-term strategy. By focusing on data-driven decision-making and adhering to established criteria, independent directors can help reduce the variability in judgments that leads to noise.

Another critical strategy for curbing noise and bias is the implementation of regular training and awareness programs for board members. These programs can improve the board's skills and make the board members more vigilant in their decision-making processes. For example, training might involve simulations or decision-making exercises that allow board members to practice recognizing and mitigating biases in a controlled environment. This kind of training is particularly important in the context of Italian companies, where cultural norms and longstanding relationships might otherwise reinforce existing biases. Additionally, continuous education on emerging trends and best practices in corporate governance can keep board members informed and better equipped to make decisions that reflect the latest developments in their industry.

Standardizing decision-making processes is another effective way to reduce noise and bias. By implementing clear and transparent procedures, such as the use of checklists, decision trees, or scoring systems, boards can ensure that their decisions are based on relevant and consistent criteria. These tools can also help document the decision-making process, which can be reviewed and analyzed for any signs of noise or bias. For instance, a decision checklist might require the board to consider all relevant information before making a decision, thereby reducing the likelihood that some pieces of information are overlooked due to cognitive biases or social pressures. In Italian listed companies, where the influence of dominant shareholders or powerful executives might otherwise sway decisions, such standardized processes can provide a crucial check on arbitrary or biased decision-making. Moreover, by establishing clear benchmarks for performance and accountability, these processes can help align the board's decisions with the company's strategic goals.

The use of data-driven decision-making is also an effective method to curb noise and bias. By relying on data and analytics, rather than subjective judgment, boards can make more objective decisions. For example, when making decisions about executive compensation, a board might use benchmarking data from similar companies rather than relying on the judgment of a few influential members. This approach reduces the variability in decisions and ensures that they are grounded in objective reality, rather than being swayed by the biases or preferences of individual board members. In the context of Italian listed companies, where personal relationships and traditional networks might otherwise influence decisions, a data-driven approach can help ensure that decisions are fair, transparent, and aligned with the company's broader strategic objectives.

Fostering a culture of open debate and constructive criticism within the boardroom is another important aspect of curbing noise and bias. Encouraging board members to voice dissenting opinions and challenge the status quo can help prevent groupthink and other social biases from taking hold. This culture of openness can be fostered by having a strong and independent chairperson who facilitates discussion and ensures that all voices are heard. The chairperson plays a crucial role in balancing the power dynamics within the board and preventing any single member or group from dominating the decision-making process. Additionally, the chairperson can help in setting the agenda for board meetings in a way that prioritizes important issues and ensures that decisions are made based on a thorough and balanced consideration of all relevant factors. In Italian companies, where hierarchical structures and respect for seniority might otherwise discourage open debate, a proactive chairperson can be instrumental in creating an environment where diverse perspectives are valued and considered.

Moreover, boards can consider the implementation of rotational leadership or regular evaluations to reduce the risk of entrenchment and the development of biases over time. For example, rotating the chairperson or committee leaders periodically can bring fresh perspectives and reduce the likelihood that long-standing members develop blind spots or become overly influenced by their own biases. Regular evaluations of board performance can also identify areas where noise and bias may be affecting decision-making and allow for corrective measures to be implemented. These evaluations can be conducted internally or by external consultants who can provide an objective assessment of the board's functioning. In Italian listed companies, where long-term relationships and family ties might otherwise lead to entrenched positions, such practices can help ensure that the board remains dynamic, responsive, and aligned with the company's strategic goals.

The use of technology and decision-support systems is another emerging area that can help reduce noise and bias in the boardroom. Advanced analytics, artificial intelligence (AI), and machine learning tools can provide boards with insights that are free from human biases. These tools can analyze large datasets to identify patterns and trends that might not be immediately apparent to board members, thereby supporting more informed and objective decision-making. For instance, AI tools can be used to assess the potential risks and benefits of different strategic options, providing a data-driven basis for decision-making that reduces the influence of individual biases. However, it is important to note that these tools are only as good as the data they are fed, and care must be taken to ensure that the data is accurate, relevant, and free from biases itself. In the context of Italian listed companies, where traditional decision-making processes might be resistant to change, the adoption of technology can represent a significant step forward in improving the objectivity and consistency of board decisions.

In addition to these strategies, it is also important for boards to consider the psychological and social dynamics that contribute to noise and bias. Boards are social groups, and like all social groups, they are subject to certain psychological phenomena that can affect decision-making. For example, polarization, where group discussions lead to more extreme positions than individual members would have taken on their own, can lead to biased decisions. Similarly, pluralistic ignorance, where members of the board believe that their own thoughts and feelings are different from those of the group, can lead to a reluctance to voice dissenting opinions. Addressing these social dynamics requires a conscious effort to create an environment where all members feel comfortable expressing their views and where there is a healthy balance between consensus-building and critical evaluation. In the Italian context, where social cohesion and respect for authority might otherwise suppress dissent, actively managing these dynamics is crucial for ensuring that the board's decisions are well-considered and balanced.

Finally, boards should recognize the limitations of human judgment and the potential for residual biases to persist despite best efforts. Therefore, ongoing monitoring and feedback are crucial. By continuously reviewing decisions and outcomes, boards can identify patterns of noise and bias that may not have been apparent at the time of the decision. This feedback loop allows for continuous improvement in decision-making processes and helps to ensure that the board remains vigilant in its efforts to curb noise and bias. Furthermore, involving external auditors or consultants in this process can provide an additional layer of oversight and objectivity. In Italian listed companies, where close-knit relationships and longstanding traditions might otherwise limit objective evaluation, the involvement of external parties can provide valuable insights and help ensure that the board's decisions are aligned with the company's best interests.

In conclusion, noise and bias in the board of directors are significant challenges that can undermine the effectiveness of corporate governance and negatively impact the financial performance of Italian listed companies. However, through a combination of the different practices above, these challenges can be effectively managed.

This thesis will empirically analyze the impact of some of these strategies on the financial performance of a sample of Italian listed companies, providing insights into how board composition and governance practices affect corporate performance. In particular, I will focus on two key strategies: board diversity and structure as these factors are most easily quantified and observed. Although, as also pointed out above, there are other potential solutions to curb some irrational choices within a board of directors, these involve internal board dynamics for which it is more difficult to obtain reliable and objective data in order to properly conduct an empirical analysis.

Chapter 3: From Boardroom to Bottom Line: An Empirical Analysis of the Effect of Board Composition on Performance of Italian Listed Companies

Summary: 3.1 Research objective — 3.2 Sample and data sources — 3.3 Descriptive analysis of the dataset: corporate governance variables overview — 3.4 Descriptive analysis of the dataset: financial performance variables overview — 3.5 Variable relationships and hypotheses — 3.6 Empirical analysis and discussion

3.1 Research objective

As pointed out in the previous sections, the board of directors plays a pivotal role in guiding the strategic direction and ensuring the financial performance of companies.¹²⁹ In some cases, the effectiveness of the board can be influenced by various factors, including the presence of "noise" and "bias" in decision-making processes. "Noise" refers to the random variability in judgments and decisions, while "bias" denotes systematic deviations from rational judgment influenced by cognitive, social, or emotional factors.¹³⁰

This research aims to delve deeply into how different aspects of board composition and governance practices can affect financial performance by reducing noise and bias, using data from the period 2020 to 2023. Indeed, the core objective of this study is to empirically assess whether variations in board composition and governance techniques lead to improved financial outcomes for Italian listed companies.

To this end, the research will first analyze a comprehensive set of variables related to board governance and financial performance. Next, it will seek to understand whether there is a relationship between the two categories of variables mentioned above. The hope is that the results of this research will provide recommendations for companies that want to improve their governance practices and, perhaps, achieve better financial results.

¹²⁹ The first chapter examined the legal framework governing the board of directors in listed companies and highlighted the critical role this body plays in corporate governance. The second chapter explored the limitations of human rationality, demonstrating that individuals do not always act as rationally as traditional economic theory might suggest. This observation is particularly relevant for the board of directors, which functions as a collective decision-making body composed of individuals who may not always make fully rational choices in their roles.

¹³⁰ See Section 2.7 for more details.

3.2 Sample selection and data sources

In order to achieve the goal mentioned in the previous paragraph, a sample was selected following specific criteria to ensure a consistent and representative dataset:

- Companies listed on the Milan Stock Exchange's Stock Market (i.e., Borsa Italiana);¹³¹
- Companies with their headquarters in Italy;
- Availability of corporate governance and financial data for the period 2020-2023;¹³²
- Continuous listing from at least 2020 to 2023 (companies that were delisted during this period were excluded);
- Industry of reference is not considered because the analysis aims to provide more generalizable insights into the impact of governance practices across different types of companies.

After applying these criteria, a sample of 69 Italian listed companies was formed. The list of sampled companies can be found in Appendix A.

To obtain data regarding board composition, governance practices, and the most important financial and performance indicators, was primarily used LSEG Data & Analytics.

LSEG Data & Analytics, formerly known as "Refinitiv," is an American-British global provider of financial market data and infrastructure. LSEG Data & Analytics is one of the most widely used platforms globally for real-time financial and economic information, and it also provides access to historical data and advanced data analysis.¹³³

The decision to use this platform was driven by the wide range of governance variables it offers, which were crucial for analyzing the corporate governance characteristics of the companies in this study. The use of this software tool significantly reduced the time required for data collection compared to manual methods and minimized the likelihood of errors and missing data.

¹³¹ Borsa Italiana Primary Markets allow companies of all sizes to gather important financial resources. Resources to finance growth, to diversify funding sources and to involve domestic and international investors in companies' shareholder base. IPO increases company visibility and standing and helps to motivate and involve the management team in group results. For further information you can see here: <u>https://www.borsaitaliana.it/azioni/mercati/mercati-landingpage/mercati.en.htm</u>.

¹³² In all the next sections of the thesis and in all the analyses that will be carried out, the years are defined following the model adopted by the software used to obtain the data on the companies: FY0, FY-1, FY-2, FY-3.

¹³³ The company was established in 2018 as a subsidiary of Thomson Reuters, which later sold a 55% stake to Blackstone Group LP in August 2018. In October 2019, Blackstone and Thomson Reuters announced the sale of Refinitiv to the London Stock Exchange Group (LSEG). The acquisition was completed in late January 2021, making Refinitiv a subsidiary of LSEG. For further information you can see here: <u>https://en.wikipedia.org/wiki/Refinitiv</u>.

Once the datasets were downloaded in "Excel" format, dataset was cleaned of missing values.

Next, data were imported into IBM *SPSS* for further descriptive and empirical analysis. *SPSS*, developed by IBM, is a statistical software used for data management, advanced analytics, multivariate analysis, business intelligence, and criminal investigations.¹³⁴ The importance of using such software is dictated by the possibility of carrying out different analyses considering different aspects of the same company, allowing different categories to be kept separate both corporate governance mechanisms adopted by companies and the various financial indicators.

In this case, it was not necessary to clean the dataset under analysis because it was considered sufficiently large and representative. In addition, a preliminary check was performed to ensure the internal consistency of the data by checking for missing or inconsistent values. The data present are from reliable and well-maintained sources, which further reduces the possibility of obvious errors or anomalies. Therefore, no problems were found that would require an additional cleaning step.

3.3 Descriptive analysis of the dataset: corporate governance variables overview

This section presents a descriptive analysis of the corporate governance variables for the 69 companies listed on the Milan Stock Exchange over the four-year period.¹³⁵ Descriptive statistics offer a foundational understanding of the data, summarizing key characteristics of the sample and setting the stage for the subsequent empirical analyses.

This section will analyze the variables related to board diversity and structure. Specifically, it will analyze: (i) the average board size (hereinafter also "Board Size"); (ii) the percentage of independent directors on the board (hereinafter also "Independent Board Members"); (iii) the percentage of gender diversity (hereinafter also "Board Gender Diversity"); (iv) the percentage of director with specific skills (hereinafter also "Board Specific Skills").

In order to test the theoretical concepts presented in Chapter 2, each of the variables used in the empirical analysis serves as a measurable representation of the broader ideas of bounded rationality, cognitive biases, and decision-making limitations discussed in behavioral economics.

¹³⁴ For further information you can see here: https://it.wikipedia.org/wiki/SPSS.

¹³⁵ The definitions of all the variables provided are based on the descriptions given by LSEG Data & Analytics.

The size of the board of directors relates to the concept of bounded rationality and the balance between diversity of perspectives and decision-making efficiency and it is a critical factor that can influence the decision-making processes within a company.

Theoretically, larger boards are thought to offer greater diversity of thought and expertise, which can help mitigate the impact of individual cognitive biases. A larger board brings a wider range of perspectives, experiences, and skills, which in turn should enhance decision quality by incorporating more viewpoints into the discussion.

This diversity is crucial in reducing cognitive biases, such as overconfidence or groupthink, where smaller groups may lean towards more homogenous thinking and less debate. However, there is also a downside to larger boards: as board size increases, the complexity of communication and coordination also grows, which can slow down decision-making and lead to inefficiencies.

The inclusion of independent directors on a board is often seen to enhance the objectivity of decision-making. Independent directors, by definition, are not part of the company's executive team and do not have any financial or personal ties to the management.

This distance may allow them to provide an unbiased perspective, free from the influence of internal politics or "managerial bias" (like self-interest or overconfidence). By having independent on the board, there is a greater chance of reducing noise and ensuring that decisions are made in the long-term interest of the company, rather than being swayed by short-term pressures or internal biases. Independent directors are presumed to bring unbiased, external perspectives that reduce such distortions, helping to mitigate agency problems and improving overall governance.

So, in theory, firms with a higher percentage of independent directors should exhibit better financial performance.

Gender diversity on boards has become a major area of focus in corporate governance research, not just as a matter of social equity, but also as a driver of better decision-making.

Theoretically, gender diversity on a board introduces a wider range of cognitive perspectives, helping to mitigate the risks of groupthink and confirmation bias that can arise in more homogeneous groups. Behavioral economics suggests that diverse teams are more likely to approach problems from different angles, fostering greater creativity and more thorough deliberation. Indeed, a more gender-diverse board should theoretically result in more balanced decision-making group and consequently lead the company to a better financial performance.

Lastly, the presence of specific skills among directors is another critical component of the board composition, linked to the board's ability to provide an effective and strategic guidance.

Members with specialized knowledge in key areas are better equipped to understand complex issues and this may help mitigate the effects of bounded rationality, where decision-makers are limited by their own knowledge and experience. For example, Herbert Simon's theory of bounded rationality suggests that individuals can only make decisions based on the information they have at their disposal, and they often resort to "satisficing" (choosing the first acceptable option rather than the best possible one).¹³⁶

The idea is that board members with specialized knowledge in key areas can reduce the limitations imposed by bounded rationality by bringing more accurate, relevant, and detailed information into the decision-making process. Board members with specific skills are better able to navigate complex financial or operational issues, reducing reliance on cognitive shortcuts (heuristics) and simplifications that can lead to suboptimal decisions.

a. Average board size

The size of the board is measured as the total number of directors. This variable serves as a quantitative measure of the diversity of perspectives versus decision-making complexity.

The table below summarizes the average, the standard deviation (hereinafter also "SD"), minimum, and maximum board sizes across the four-year period.

Year	FY0	FY-1	FY-2	FY-3
Mean	10.93	10.91	10.94	10.99
Standard Deviation (SD)	2.80	2.80	2.95	2.85
Minimum	7	7	6	6
Maximum	20	19	19	19

Table 5. Average Board Size

¹³⁶ For further information on Herbert Simon and the concept of "satisficing" see Section 2.4.

The Board Size has remained relatively stable across the four years, with slight fluctuations. The mean ranges from 10.91 to 10.99, indicating that Board Sizes do not change dramatically year over year.

This stability could suggest that companies adhere to traditional governance structures or regulatory guidelines, with minimal changes in board composition over time.

The SD values are also relatively stable across the years, with a range of 2.80 to 2.95. This suggests that while Board Sizes vary among the companies in the sample, the degree of variability is fairly consistent.

The slight increase in FY-2 (2.95) could indicate a marginally higher variation in Board Sizes during that year, but the fluctuation is small.

The minimum Board Size remains consistent at 6 or 7 across the years. This suggests that there is a lower bound, possibly determined by regulatory requirements or governance practices.

The maximum Board Size is consistently around 19-20, which may reflect larger organizations with more complex governance needs or a higher emphasis on board diversity or expertise.

From a corporate governance perspective, maintaining a consistent Board Size may help foster familiarity and cohesiveness among members, while the minor adjustments could be attempts to optimize performance or adapt to changing governance expectations.

b. Percentage of independent members

The percentage of Independent Board Members is an important indicator of board independence and objectivity. The percentage of independent directors on the board is measured by dividing the number of independent board members by the total number of board members. This variable represents the degree of external oversight and neutrality in the decision-making process, serving as a proxy for the board's ability to reduce managerial bias.

Year	FY0	FY-1	FY-2	FY-3
Mean	59,31	57,43	56,13	53,84
Standard Deviation (SD)	15,74	15,75	18,19	18,29

The following table shows the mean percentage of independent members over the four years.

Minimum	25	25	-	6,25
Maximum	92,31	91,67	92,86	91,3

Table 6. Percentage of independent members

The data shows a clear upward trend in board independence, with a rising mean percentage of independent members over time. This likely reflects a broader shift in corporate governance practices, where independence is seen as key to enhancing board objectivity and protecting shareholder interests.

Indeed, there is a steady increase in the percentage of Independent Board Members from FY-3 (53.84%) to FY0 (59.31%). This suggests that companies are progressively increasing the number of independent members on their boards. The trend may be driven by regulatory pressures, best practices in governance, or an increasing emphasis on board independence to ensure objectivity and accountability.

The SD remains relatively stable, with a slight increase over time (from 15.74 to 18.29). This indicates that while most companies are adopting a higher percentage of independent members, there is some variation, especially in earlier years.¹³⁷

The consistency at the high end further suggests that the upper range for board independence does not change significantly year-over-year.

c. Board gender diversity

Board Gender Diversity refers to the percentage of female directors on the board. This variable is an empirical indicator of cognitive diversity in the boardroom and is expected to be associated with better decision quality and improved financial performance.

Year	FY0	FY-1	FY-2	FY-3
Mean	42,47	40,50	38,31	36,57
Standard Deviation (SD)	7,18	7,65	7,28	8,13

The table below shows the trend of gender diversity across the companies analyzed.

¹³⁷ By FY0, the SD stabilizes, suggesting a narrowing gap between companies with respect to the percentage of independent members.

Minimum	14,29	14,29	14,29	-
Maximum	60,00	57,14	55,56	55,56

Table 7.	Board	Gender	Diversity

The consistent increase in the mean percentage of gender diversity over time (from 36.57% to 42.47%) reflects a positive shift in governance practices, with companies increasingly recognizing the value of diverse perspectives in decision-making.

The SD is relatively stable across the years, fluctuating between 7.18 and 8.13. This suggests that while companies are increasing gender diversity, the variability in the percentage of genderdiverse board members between companies remains relatively consistent.

The data shows that while there is continued progress, the range between the minimum and maximum values indicates that there is still considerable variability in how companies approach gender diversity. Some companies are at the forefront with near-parity gender representation, while others are still lagging. This trend could be attributed to a combination of regulatory requirements, stakeholder pressure, and a growing recognition of the link between diversity and better board performance.

d. Board specific skills

Board-specific skills are measured as the percentage of board members with expertise in areas critical to the firm's business (e.g., finance, industry knowledge, legal expertise). This variable represents the board's overall capacity to address technical or complex issues, which theoretically enhances decision quality and improves financial performance.

Year	FY0	FY-1	FY-2	FY-3
Mean	40,70	39,41	39,84	39,58
Standard Deviation (SD)	17,75	16,72	18,30	17,80
Minimum	9,09	8,33	8,33	4,76
Maximum	85,71	78,57	87,50	77,78

Table 8. Board Specific Skills

The table above shows the trend of the percentage of Board Specific Skills across the companies analyzed.

The mean percentage of board members with specific skills remains relatively stable across the four years, fluctuating between 39.41% and 40.70%. The lack of significant change in the mean suggests that companies maintain a steady focus on ensuring a core group of directors possess specialized skills relevant to the company's operations. The small increase in FY0 to 40.70% might indicate a more recent emphasis on skill-specific recruitment, but the change is not dramatic.

The SD shows relatively high variability across the years, with values ranging from 16.72 to 18.30. This suggests that while some companies have a high percentage of skilled board members, others are lagging behind. The variability is highest in FY-2 (18.30), indicating that during that year, companies were more divergent in their emphasis on recruiting board members with specific skills. By FY0, the SD decreases slightly, suggesting a minor convergence in skill levels across companies.

The minimum values range from 4.76% to 9.09%, indicating that some companies have very low percentages of board members with specific skills. This could be due to the composition of smaller boards, or these companies may prioritize other governance characteristics over specialized expertise. The low minimum in FY-3 (4.76%) highlights a potential outlier where very few board members possess specialized skills. This may suggest that some companies rely on external consultants or management expertise rather than bringing those skills onto the board itself.

The maximum percentages are high, ranging from 77.78% to 87.50%, indicating that some companies have boards where a majority of members have specific skills. This may reflect organizations that operate in more complex industries or those that place a premium on technical or financial expertise on the board.

3.4 Descriptive analysis of the dataset: financial performance variables overview

This section will present a descriptive analysis of the financial performance variables used for the empirical analyses on the 69 companies sampled.¹³⁸ This analysis deals with a range of indicators that reflect various aspects of corporate performance:

- Profitability Indicators: Return on Equity (ROE) and Return on Sales (ROS)
- Market Valuation and Liquidity: Price/Book Value per share.

a. Return on Equity (ROE)

Return on Equity (ROE) is a financial indicator that evaluates a company's ability to generate profit relative to shareholders' equity.

Year	FY0	FY-1	FY-2	FY-3
Mean	14,41%	13,61%	12,22%	9,44%
Standard Deviation (SD)	11,11%	9,99%	19,04%	14,05%
Minimum	-17,20%	-15,40%	-117,80%	-49,80%
Maximum	47,50%	43,10%	41,70%	42,70%

Table 9. ROE

The mean ROE gradually declines from 14,41% in FY0 and FY-1 to 0.12 in FY-2 and 9,44% in FY-3. This decline suggests a general downward trend in profitability or efficiency in generating returns from equity over time. This could be due to various factors, such as economic conditions (due to COVID-19 or war), industry challenges, or internal company performance issues.

The increase in variability (SD), particularly in FY-2 and FY-3, indicates that performance became more polarized, with some companies struggling while others maintained solid returns.

¹³⁸ The definitions of all the variables provided are based on the descriptions given by LSEG Data & Analytics.

The negative minimum ROE values in FY-2 and FY-3 highlight significant challenges faced by some companies, possibly due to major losses or structural issues, dragging down their returns (probably due to the economic crisis abovementioned). On the other hand, the stable maximum values show that certain companies consistently outperformed, suggesting that strong governance, financial practices, or competitive advantages may have insulated them from broader industry or economic trends.

b. Price/Book Value per share

The Price/Book Value per share compares a company's market price to its book value, providing insights into how the market values the company relative to its net asset value. This ratio is useful for assessing whether a stock is over- or under-valued based on its book value.

Year	FY0	FY-1	FY-2	FY-3
Mean	2,74	2,66	3,74	3,18
Standard Deviation (SD)	3,48	3,07	4,16	3,86
Minimum	0,38	0,31	0,14	0,17
Maximum	24,3	18,94	25,49	26,22

Table 10.Price/Book Value

The mean P/BV per share fluctuates over the years: FY-2 shows the highest mean value at 3.74, while FY-1 has the lowest at 2.66. There is a noticeable increase from FY-1 to FY-2, indicating a period of growth in market valuations relative to book value. This could be attributed to positive market sentiment or strong performance for certain companies. However, the mean value decreases in FY0 and FY-3, indicating some correction or a decline in market valuations during these periods.

The fluctuations in P/BV per share suggest that investor perceptions of value changed over time, potentially driven by broader market trends (perhaps because of COVID-19 crisis or to the war), financial performance, or industry-specific factors.

The SD values show considerable variability, with some companies having much higher valuations compared to their book values.

The low minimums indicate that some companies are valued below their book value, which might suggest financial distress or poor market sentiment for these firms during certain years. The maximum P/BV per share values also fluctuate, peaking in FY-3 at 26.22 and FY-2 at 25.49. This suggests that some companies were highly valued by the market during these years.

c. Return on Sales (ROS)

Return on sales (ROS) is a measure of how efficiently a company turns sales into profits. ROS is calculated by dividing operating profit by net sales. The table below presents ROS over four years (FY0 to FY-3), including the mean, SD, minimum, and maximum values.

Year	FY0	FY-1	FY-2	FY-3
Mean	0,190%	0,168%	0,172%	0,142%
Standard Deviation (SD)	0,166%	0,155%	0,155%	0,160%
Minimum	-0,116%	-0,204%	-0,257%	-0,334%
Maximum	0,713%	0,649%	0,699%	0,629%

Table 12. ROS

The mean ROS fluctuates over the years, with FY0 showing the highest mean value at 0.190%, while FY-3 records the lowest at 0.142%. This indicates that companies saw a slight increase in operational profitability from FY-3 to FY-2 and FY-1, followed by a further improvement in FY0. This could reflect gradual operational improvements or the recovery from external market shocks (such as COVID-19).

The SD values across all fiscal years show some consistency, with minor fluctuations. This reflects that the variability in profitability among companies remained relatively stable.

The minimum ROS values indicate that some companies experienced significant losses, particularly in FY-3, where the minimum ROS reached -0.334%. This low point could suggest that certain companies faced severe operational challenges, possibly due to COVID-19.

The maximum ROS values also fluctuate, peaking in FY0 at 0.713%. This suggests that some companies achieved remarkable profitability in FY0, surpassing the results of previous years.
3.5 Variable relationships and hypotheses

In next section, the research will move from a descriptive analysis to an empirical investigation aimed at identifying the relationships between corporate governance practices and financial performance.

Before of that, is crucial to highlight that the study, as emerged in Section 3.3, is grounded in four primary hypotheses:

- H1) **Board Size Hypothesis**: larger boards will have a positive impact on financial performance. This hypothesis is based on the assumption that larger boards bring a greater diversity of perspectives and expertise, which can help reduce individual biases and noise in decision-making.
- H2) Independent Directors Hypothesis: a higher percentage of independent directors will positively influence financial performance. The rationale behind this hypothesis is that independent directors, free from ties to the company's management, are better positioned to provide objective oversight, reducing managerial bias and enhancing governance effectiveness.
- H3) Gender Diversity Hypothesis: a higher percentage of gender diversity on the board will have a positive effect on financial performance. This hypothesis stems from the idea that gender diversity enhances the range of perspectives within the boardroom, potentially leading to more balanced decision-making and reducing biases related to homogeneous thinking.
- H4) **Board-Specific Skills Hypothesis**: boards with a higher percentage of members possessing specific skills will positively impact financial performance. This hypothesis posits that board members with specialized knowledge in areas critical to the firm's operations and strategy will improve the quality of governance by providing more informed guidance and oversight.

These hypotheses, as I previous said, will be tested using a panel of 69 Italian listed companies observed over a four-year period (2020-2023). The empirical analysis will employ multiple regression models to determine whether the hypothesized relationships hold true and to what extent these corporate governance variables impact financial performance.¹³⁹

¹³⁹ The "Financial Performance Variables" analyzed in previous sections will be used as dependent variables.

3.6 Empirical analysis and discussion

The following section presents the results of the regression analyses conducted for each of the four dependent variables (P/BV per share, ROE, and ROS) over the four-year period from 2020 to 2023.

These analyses assess the impact of various corporate governance variables just analyzed (Board Gender Diversity, Independent Board Members, Board Specific Skills and Board Size) on the financial performance of the companies in the sample.

The model included also three financial control variables Logarithm Revenue, Logarithm Market Capitalization, and EBITDA Margin.

Additionally, dummy variables for the years were incorporated to control for time effects, allowing the model to account for potential year-on-year variations and ensure that the relationships being observed were reflective of the entire period analyzed.

Each regression analysis aims to determine whether certain governance practices correlate with better financial outcomes, as hypothesized in the earlier sections of this thesis.

The following subsections provide a detailed examination of the results for each dependent variable.

	Model Summary					4	NOVA ^a			
Model R	R Square	Adjusted R Square	Std. Error of the Estimate	Model		Sum of Squares	df	Mean Square	F	Sig.
1 ,511	,261	,233	3,21331165	1	Regression	967,869	10	96,787	9,374	<,001 ^b
a. Predictors: (Constant), EBI	TDA Margin – %			Residual	2736,224	265	10,325		
(0CY, FY0), [2023. Board	Size			Total	3704,092	275			
(FY0), Board (FY0), D202 (FY0), Board (FY0), Log M (0CY, FY0, E Activities - T (FY0, EUR)	Gender Diver L, Independer Specific Skills, arket Capitaliz JR), D2022, L otal	sity, Percent nt Board Member , Percent zation .og Revenue from	s 1 Business	a. D (F b. Pi (C (F (F (C (C (F	ependent Varial Y0) redictors: (Cons)CY, FY0), D202 Y0), Board Gen Y0), D2021, Inc Y0), Board Spec Y0), Log Market)CY, FY0, EUR), Y0, EUR)	ble: Price to Book tant), EBITDA Mai 23, Board Size der Diversity, Per dependent Board cific Skills, Percen t Capitalization D2022, Log Reve	: Value per rgin – % rcent Members t enue from	r Share Business Activitie	s – Total	

a. Price/Book Value per share

		Unstandardize	d Coefficients	Standardized Coefficients			Collinearity	Statistics
Model		B	Std. Error	Beta	t	Sig.	Tolerance	VIF
1	(Constant)	,634	3,617		,175	,861		
	Board Gender Diversity, Percent	-,044	,027	-,095	-1,616	,107	,808	1,238
	(FY0)							
	Board Specific Skills, Percent	,042	,013	,203	3,231	,001	,706	1,416
	(FY0)							
	Independent Board Members	,012	,015	,054	,763	,446	,566	1,766
	(FY0)							
	Board Size	-,086	,080	-,066	-1,078	,282	,734	1,363
	(FY0)							
	D2021	,784	,550	,093	1,425	,155	,660	1,516
	D2022	-,309	,559	-,037	-,553	,581	,639	1,566
	D2023	,005	,572	,001	,009	,993	,610	1,641
	Log Revenue from Business Activities – Total	-1,040	,201	-,432	-5,161	<,001	,397	2,516
	(FYO, EUR)							
	Log Market Capitalization	1,157	,183	,499	6,312	<,001	,446	2,244
	(0CY, FY0, EUR)							
	EBITDA Margin - %	-,007	,012	-,038	-,567	,571	,607	1,648
	(0CY, FY0)							

Table 13.Regression analysis with P/BV per share

The model showed an R^2 value of 0.261, meaning that 26.1% of the variation in Price to Book Value per Share could be explained by the included variables. Although this percentage might seem modest, it is not unusual in studies that involve complex financial phenomena where external factors are likely influencing the outcomes. The Adjusted R^2 value of 0.233 supports this notion, indicating that while the model provides valuable insights, some variables might not contribute substantially to explaining the variance.

The ANOVA test showed a significant F-statistic (9.374, p < 0.001), indicating that, overall, the model was statistically significant. This means that the group of independent variables as a whole explains a meaningful portion of the variance in Price to Book Value per Share.

The coefficients table above provided several insights into the individual effects of the corporate governance variables and the financial controls:

- Board Specific Skills (%) has a positive and statistically significant effect (p = 0.001, $\beta = 0.203$). This result suggests that the presence of board members with specific, relevant skills is positively associated with an increase in the firm's Price to Book Value per Share. It supports the notion that a well-qualified board can make more informed decisions, which may contribute to better market valuation.
- Log Revenue from Business Activities was significant (p < 0.001) but negatively related to Price to Book Value per Share. This may indicate that firms with higher revenue are

not necessarily valued more favorably relative to their book value. One possible interpretation is that larger revenue does not always correlate with shareholder value, especially if there are inefficiencies in translating that revenue into profits or growth.

- Log Market Capitalization had a positive and significant impact (p < 0.001) on Price to Book Value per Share. This result is consistent with market theory, where firms with higher market capitalization are often seen as more stable or valuable, which translates into higher market-to-book ratios.
- Board Size, Independent Board Members, and Board Gender Diversity did not show statistically significant effects, and they did not emerge as strong predictors of Price to Book Value per Share. This could reflect the possibility that the impact of these factors may vary depending on the specific corporate context, or they may play more indirect roles in influencing financial outcomes.
- The dummy variables for the years 2021, 2022, and 2023 were not individually significant, indicating that year-specific effects did not heavily influence the results. However, their inclusion was important for controlling potential changes over time, ensuring that the relationships observed were stable across the years and not unduly influenced by specific temporal factors.
- Contrary to expectations, EBITDA Margin did not have a significant impact on Price to Book Value per Share. Although EBITDA is commonly used as an indicator of profitability, it may not have been as strongly linked to the valuation measure used in this case, or the effect might have been absorbed by other variables like market capitalization.
- Lastly, the Variance Inflation Factor (VIF) indicates no serious issues with multicollinearity. While Log Revenue and Log Market Capitalization showed somewhat higher VIF values, these remained well below critical thresholds, confirming that the independent variables were not excessively correlated with each other. This strengthens the reliability of the coefficient estimates and suggests that the results are not being distorted by redundant information in the model.

The results highlight that among the governance variables considered, Board Specific Skills have a clear and positive impact on the firm's Price to Book Value per Share. This finding underlines the importance of having a board composed of members with specialized expertise, which can lead to better decision-making and ultimately increase firm value. In contrast, other governance factors did not show significant effects. Market Capitalization had a strong positive effect, suggesting that larger firms are rewarded by the market with higher valuation relative to their book value. On the other hand, the negative relationship between Log Revenue and Price to Book Value raises interesting questions about whether high-revenue firms are being conservatively valued by the market or whether revenue is insufficient to drive market value.

b. Return on Equity (ROE)

		Model S	ummary					ANOVA ^a			
labol	R	R Square	Adjusted R	Std. Error of the Estimate	Model		Sum of	df	Mean Square	F	Sia
1	.467 ^a	.218	.189	12.6486%	1	Regression	11851.100	10	1185.110	7,408	<.001 ^t
a. Predict	tors: (Co	nstant), EBIT	DA Margin - %		-	Residual	42396,280	265	159,986	.,	4002
(0CV E	EV0) D2	023 Board	Siza			Total	54247,380	275			
(001, P	-10), D2	025, BUaru	5120		a. De	pendent Variable	: Return On E	quity – Act	ual		
(FYO), E	Board G	ender Diver	sity, Percent		(F)	(0)					
(FY0), E	D2021,	Independen	t Board Members		b. Pr	edictors: (Constan	t), EBITDA Ma	argin – %			
(FYO), B	Board Sp	ecific Skills,	Percent		(0	CY, FY0), D2023,	Board Size				
(FY0), L	Log Mar	ket Capitaliz	ation		(F	Y0), Board Gende	r Diversity, Pe	rcent			
(0CY, F Activitie	FYO, EUR es – Tot	.), D2022, L al	og Revenue from	Business	(F	Y0), D2021, Indep	oendent Boar	d Members			
(FY0, E	UR)				(F	YO), Board Specific	Skills, Perce	nt			
					(F	Y0), Log Market C	apitalization				
					(0	CY, FY0, EUR), D2	022, Log Rev	enue from	Business Activi	ities – Total	
					(F	Y0, EUR)					
					Coeffici	ents ^a					
						Standardized					
				Instandardize	Contricionte	I COTTICIOPITE			Collinearity	Statistics	
	Mode	4		Unstandardize B	d Coefficients Std. Error	Beta	t	Sig.	Collinearity : Tolerance	Statistics VIF	
	Mode 1	el (Constar	nt)	Unstandardize B -6.808	Std. Error	Beta	t 478	Sig.	Collinearity : Tolerance	Statistics VIF	
	Mode 1	(Constar Board G Percent	nt) ender Diversity,	Unstandardize B -6,808 -,108	Std. Error 14,240 ,108	Beta -,060	t -,478 -,995	Sig. ,633 ,321	Collinearity Tolerance	VIF 1,238	
	Mode 1	(Constar Board G Percent (FY0)	nt) ender Diversity,	Unstandardize B -6,808 -,108	3td. Error 14,240 ,108	Beta -,060	t -,478 -,995	Sig. ,633 ,321	Collinearity S Tolerance	VIF 1,238	
	Mode 1	(Constar Board G Percent (FY0) Board Sp Percent	nt) ender Diversity, pecific Skills,	Unstandardize B -6,808 -,108 -,001	d Coefficients Std. Error 14,240 ,108 ,052	-,001	t -,478 -,995 -,013	Sig. ,633 ,321 ,990	Collinearity : Tolerance ,808 ,706	Statistics VIF 1,238 1,416	
	Mode 1	el (Constar Board G Percent (FY0) Board Sp Percent (FY0)	nt) ender Diversity, pecific Skills,	Unstandardize B 6,808 -,108 -,001	d Coefficients Std. Error 14,240 ,108 ,052	-,060	t -,478 -,995 -,013	Sig. ,633 ,321 ,990	Collinearity Tolerance ,808 ,706	1,416	
	Mode 1	(Constar Board G Percent (FY0) Board Sp Percent (FY0) Indepen Member	nt) ender Diversity, pecific Skills, dent Board	Unstandardize <u>B</u> -6,808 -,108 -,001 ,033	d Coefficients Std. Error 14,240 ,108 ,052 ,059	-,060 -,001	t -,478 -,995 -,013 ,547	Sig. ,633 ,321 ,990 ,585	Collinearity : Tolerance ,808 ,706 ,566	VIF 1,238 1,416 1,766	
	Mode 1	(Constar Board G Percent (FY0) Board Sp Percent (FY0) Indepen Member (FY0)	nt) ender Diversity, becific Skills, dent Board s	Unstandardize <u>B</u> -6,808 -,108 -,001 ,033	d Coefficients Std. Error 14,240 ,108 ,052 ,059	-,060	t -,478 -,995 -,013 ,547	Sig. ,633 ,321 ,990 ,585	Collinearity : Tolerance ,808 ,706 ,566	VIF 1,238 1,416 1,766	
	Mode 1	(Constar Board G Percent (FY0) Board Sp Percent (FY0) Indepen Member (FY0) Board Si	nt) ender Diversity, becific Skills, dent Board s ze	Unstandardize <u>B</u> -6,808 -,108 -,001 ,033 -,395	d Coefficients Std. Error 14,240 ,108 ,052 ,059 ,314	-,060 -,001 ,039	t -,478 -,995 -,013 ,547 -1,258	Sig. ,633 ,321 ,990 ,585 ,210	Collinearity 5 Tolerance ,808 ,706 ,566 ,734	1,238 1,416 1,766	
	Mode 1	cl (Constar Board G Percent (FY0) Board Sp Percent (FY0) Indepen Member (FY0) Board Si (FY0)	nt) ender Diversity, becific Skills, dent Board s ze	Unstandardize <u>B</u> -6,808 -,108 -,001 ,033 -,395	d Coefficients Std. Error 14,240 ,108 ,052 ,059 ,314	-,060 -,001 ,039 -,080	t -,478 -,995 -,013 ,547 -1,258	Sig. ,633 ,321 ,990 ,585 ,210	Collinearity 5 Tolerance ,808 ,706 ,566 ,734	Statistics VIF 1,238 1,416 1,766 1,363	
	Mode 1	cl (Constar Board G Percent (FY0) Board Sp Percent (FY0) Indepen Member (FY0) Board Si (FY0) D2021	nt) ender Diversity, becific Skills, dent Board s ze	Unstandardize <u>B</u> -6,808 -,108 -,001 ,033 -,395 3,562	d Coefficients Std. Error 14,240 ,108 ,052 ,059 ,314 2,165	-,060 -,001 ,039 -,080	t -,478 -,995 -,013 ,547 -1,258 1,646	Sig. ,633 ,321 ,990 ,585 ,210 ,210	Collinearity 5 Tolerance ,808 ,706 ,566 ,734	Statistics VIF 1,238 1,416 1,766 1,363 1,516	
	Mode 1	c (Constar Board G Percent (FY0) Board Sp Percent (FY0) Board Sp (FY0) Board Si (FY0) D2021 D2022	nt) ender Diversity, becific Skills, dent Board s ze	Unstandardize <u>B</u> -6,808 -,108 -,001 ,033 -,395 3,562 4,567	d Coefficients Std. Error 14,240 ,108 ,052 ,059 ,314 2,165 2,200	-,060 -,001 ,039 -,080 ,110 ,141	t -,478 -,995 -,013 ,547 -1,258 1,646 2,076	Sig. ,633 ,321 ,990 ,585 ,210 ,101 ,039	Collinearity 5 Tolerance ,808 ,706 ,566 ,734 ,660 ,639	Statistics VIF 1,238 1,416 1,766 1,363 1,516 1,566	
	Mode 1	 Constart Board G Percent (FY0) Board Sg Percent (FY0) Indepen Member (FY0) Board Si (FY0) Davard Si (FY0) D2021 D2022 D2023 	nt) ender Diversity, Decific Skills, dent Board s ze	Unstandardize B -6,808 -,108 -,001 ,033 -,395 3,562 4,567 6,402	,052 ,059 ,314 2,165 2,200 2,252	-,060 -,001 ,039 -,080 ,110 ,141 ,198	t -,478 -,995 -,013 ,547 -1,258 1,646 2,076 2,843	Sig. ,633 ,321 ,990 ,585 ,210 ,101 ,039 ,005	Collinearity 5 Tolerance ,808 ,706 ,566 ,734 ,660 ,639 ,610	Statistics VIF 1,238 1,416 1,766 1,363 1,516 1,566 1,641	
	Mode 1	(Constar Board G Percent (FY0) Board Sp Percent (FY0) Indepen Member (FY0) Board Si (FY0) D2021 D2022 D2023 Log Rev Business	nt) ender Diversity, becific Skills, dent Board s ze ze enue from ; Activities - Total	Unstandardize B 6,808 -,108 -,001 ,033 -,395 3,562 4,567 -6,402 -3,577	d Coefficients Std. Error 14,240 ,108 ,052 ,059 ,059 ,314 2,165 2,200 2,252 ,793	-,060 -,001 ,039 -,080 ,110 ,141 ,198 -,389	t -,478 -,995 -,013 ,547 -1,258 1,646 2,076 2,843 -4,511	Sig. ,633 ,321 ,990 ,585 ,210 ,101 ,039 ,005 <,001	Collinearity 5 Tolerance ,808 ,706 ,566 ,566 ,734 ,660 ,639 ,610 ,397	Statistics VIF 1,238 1,416 1,766 1,363 1,516 1,516 1,641 2,516	
	Mode 1	(Constar Board G Percent (FY0) Board Sp Percent (FY0) Indepen Member (FY0) Board Si (FY0) D2021 D2022 D2023 D2023 Log Rev Business (FY0, EU	nt) ender Diversity, becific Skills, dent Board s ze enue from ; Activities - Total R)	Unstandardize B 6,808 -,108 -,001 ,033 -,395 3,562 4,567 -6,402 -3,577	d Coefficients Std. Error 14,240 ,108 ,052 ,059 ,059 ,314 2,165 2,200 2,252 ,793	-,060 -,001 ,039 -,080 ,110 ,141 ,198 -,389	t -,478 -,995 -,013 ,547 -1,258 1,646 2,076 2,843 -4,511	Sig. ,633 ,321 ,990 ,585 ,210 ,101 ,039 ,005 <,001	Collinearity 5 Tolerance ,808 ,706 ,566 ,566 ,734 ,660 ,639 ,610 ,397	Statistics VIF 1,238 1,416 1,766 1,363 1,516 1,566 1,641 2,516	
	Mode 1	(Constar Board G Percent (FY0) Board Sp Percent (FY0) Indepen Member (FY0) Board Si (FY0) D2021 D2023 D2023 D2023 D2023 D2023 D2023 D2024 D2022 D2023	nt) ender Diversity, becific Skills, dent Board s ze enue from ; Activities - Total R) ket Capitalization	Unstandardize B 6,808 -,108 -,001 ,033 -,395 -,395 3,562 4,567 -6,402 -3,577 -3,577 -4,563	d Coefficients Std. Error 14,240 ,108 ,052 ,059 ,059 ,314 2,165 2,200 2,252 ,793 ,722	-,060 -,001 ,039 -,080 ,110 ,141 ,198 -,389 ,514	t -,478 -,995 -,013 ,547 -1,258 1,646 2,076 2,843 -4,511 6,322	Sig. ,633 ,321 ,990 ,585 ,210 ,101 ,003 ,005 <,001 <,001	Collinearity Tolerance ,808 ,706 ,566 ,566 ,734 ,660 ,639 ,610 ,397	Statistics VIF 1,238 1,416 1,766 1,363 1,516 1,566 1,641 2,516 2,244	
	Mode 1	(Constar Board G Percent (FY0) Board Sp Percent (FY0) Indepen Member (FY0) Board Si (FY0) D2021 D2023 D2023 D2023 Log Rev Business (FY0, EU Log Marl	nt) ender Diversity, becific Skills, dent Board s ze enue from ; Activities - Total R) ket Capitalization 0, EUR)	Unstandardize B 6,808 -,108 -,001 ,033 -,395 3,562 4,567 -,4,563	d Coefficients Std. Error 14,240 ,108 ,052 ,059 ,059 ,314 2,165 2,200 2,252 ,793 ,722	-,060 -,001 ,039 -,080 ,110 ,141 ,198 -,389 ,514	t -,478 -,995 -,013 ,547 -1,258 1,646 2,076 2,843 -4,511 6,322	Sig. ,633 ,321 ,990 ,585 ,210 ,101 ,003 ,005 <,001	Collinearity 5 Tolerance ,808 ,706 ,566 ,734 ,660 ,639 ,610 ,397 ,397	Statistics VIF 1,238 1,416 1,766 1,363 1,516 1,566 1,641 2,516 2,244	
	Mode 1	(Constar Board G Percent (FY0) Board Sp Percent (FY0) Indepen Member (FY0) Board Si (FY0) D2021 D2023 D2023 D2023 Ucg Rev Business (FY0, EU Log Marl (OCY, FY EBITDA	nt) ender Diversity, becific Skills, dent Board s ze enue from ; Activities - Total R) ket Capitalization (0, EUR) Margin - %	Unstandardize B 6,808 -,108 -,001 ,033 -,395 3,562 4,567 -,4,567 -,4,563 -,001	d Coefficients Std. Error 14,240 ,108 ,052 ,059 ,059 ,314 2,165 2,200 2,252 ,793 ,722 ,047	-,060 -,001 ,039 -,080 ,110 ,141 ,198 -,389 ,514 -,002	t -,478 -,995 -,013 ,547 -1,258 1,646 2,076 2,843 -4,511 6,322 -,025	Sig. ,633 ,321 ,990 ,585 ,210 ,101 ,039 ,005 <,001 <,001	Collinearity 5 Tolerance ,808 ,706 ,566 ,566 ,734 ,660 ,639 ,610 ,397 ,446 ,607	Statistics VIF 1,238 1,416 1,766 1,363 1,516 1,566 1,641 2,516 2,244 1,648	
	Mode 1	(Constar Board G Percent (FY0) Board Sp Percent (FY0) Indepen Member (FY0) Board Si (FY0) D2021 D2022 D2023 Log Rev Business (FY0, EU Log Mari (OCY, FY EBITDA I	nt) ender Diversity, becific Skills, dent Board s ze enue from Activities – Total R) ket Capitalization 0, EUR) Margin – %	Unstandardize 8 6,808 -,108 -,001 ,033 -,395 3,562 4,567 6,402 -3,577 4,563 -,001	d Coefficients Std. Error 14,240 ,108 ,052 ,059 ,059 ,314 2,165 2,200 2,252 ,793 ,722 ,047	-,060 -,001 ,039 -,080 ,110 ,141 ,198 -,389 ,514 -,002	t -,478 -,995 -,013 ,547 -1,258 1,646 2,076 2,843 -4,511 6,322 -,025	Sig. ,633 ,321 ,990 ,585 ,210 ,101 ,039 ,005 <,001 <,001 ,980	Collinearity Tolerance ,808 ,706 ,706 ,566 ,734 ,660 ,639 ,610 ,397 ,446 ,607	Statistics VIF 1,238 1,416 1,766 1,363 1,516 1,566 1,641 2,244 1,648	

Table 14.Regression analysis with ROE

The model has an R² value of 0.218, indicating that 21.8% of the variation in ROE can be explained by the governance and financial variables included. While this may seem relatively low, it's not unexpected for a model attempting to explain ROE, which can be influenced by many external and firm-specific factors. Adjusted R², slightly lower at 0.189, suggests that adding further variables wouldn't drastically improve the explanatory power of the model. It highlights that while governance and financial factors are important, they may not fully capture the complexity of ROE, particularly during a volatile period.

The ANOVA test showed that the model is globally significant, with a F-statistic of 7.408 and a p-value < 0.001. This indicates that the combination of governance practices and financial variables collectively have a statistically significant relationship with ROE. The significance of the model reinforces the idea that board composition structure does play a role in determining profitability, even if some individual governance variables don't always appear to have a direct effect.

The coefficients table above provide detailed insights into how specific variables impacted ROE:

- Board Specific Skills did not emerge as significant in this model (p = 0.990). Unlike the previous analysis on Price to Book Value, where skills had a notable effect, here they do not seem to directly influence ROE. This could reflect the nature of the metric itself: ROE focuses on profitability, whereas specific skills might have a stronger link to firm valuation or long-term strategy. It's possible that during the period analyzed, firms were focused more on short-term survival, given the external shocks, rather than leveraging board expertise to drive profitability.
- Similarly, Board Gender Diversity didn't show a significant effect on ROE (p = 0.321).
 While gender diversity is often seen as a longer-term driver of innovation and better decision-making, its immediate impact on short-term profitability, such as ROE, can be harder to capture. Additionally, during periods of crisis, like the pandemic, companies may have prioritized operational stability over structural diversity initiatives.
- Like the previous variables, Board Size did not have a statistically significant impact on ROE (p = 0.210). The lack of significance may suggest that, in times of crisis, the size of the board is less important than the firm's ability to react quickly to changing conditions. Larger boards can sometimes slow decision-making, which may have been a disadvantage during such turbulent times.

- The percentage of independent board members also wasn't significant (p = 0.585). A possible reason is their immediate influence on profitability might be less direct, especially in the context of the pandemic, during which their role may have been more about ensuring sound governance practices rather than directly driving short-term profitability.
- The year dummy variables for 2021 (p = 0.101), 2022 (p = 0.039), and 2023 (p = 0.005) reveal some interesting patterns. While 2021 did not show significance, 2022 and 2023 had positive and significant effects on ROE. These findings could be explained by the fact that firms saw improved profitability in the post-pandemic recovery phase. By 2022 and 2023, many industries had rebounded after the initial shock of COVID-19, benefiting from the re-opening of global economies, increased consumer confidence, and government support programs.
- The negative and significant effect of Log Revenue on ROE (p < 0.001) suggests that higher revenues during this period didn't necessarily translate into greater equity returns. This could be explained by the rising costs and inefficiencies that many companies faced during the pandemic and subsequent recovery period.
- On the other hand, Log Market Capitalization had a strong positive effect on ROE (p < 0.001). This is consistent with the idea that larger firms were better positioned to weather the storm of the pandemic and geopolitical instability (e.g., they have more resources, better risk management capabilities, and access to capital).
- Despite its importance as a measure of operational profitability, EBITDA Margin did not have a significant effect on ROE (p = 0.980).
- The Variance Inflation Factor (VIF) values were all well below the critical threshold of 10, meaning that multicollinearity is not a concern in this model.

In conclusion, while some governance variables didn't show significant direct effects on ROE, the results underscore the importance of firm size and external conditions during a time of global uncertainty. The inclusion of year dummies helped control for the specific effects of different periods, revealing how firms' financial performance evolved throughout the recovery phase. Indeed, the analysis highlights that larger firms were better equipped to generate higher returns on equity, while revenue growth alone did not necessarily equate to improved profitability, likely due to the broader challenges faced by firms during this period.

c. Return on Sales (ROS)

Model R ,636 ^a R a. Predictors: (Const Activities - Total (FY0, EUR), D202 (FY0), Board Spec (FY0), D2022, Board (FY0), Log Market (0CY, FY0, EUR), I (FY0) (FY0) UCY, FY0, EUR), I (FY0) I I I	Adjusted R Square 344 ,404 ,384 tant), Log Revenue from Bu 21, Board Gender Diversity, cific Skills, Percent bard Size t Capitalization D2023, Independent Board	Std. Error of the Estimate ,12509 isiness , Percent d Members Unstandardize B	Model Model 1 Reg Res Tot a. Depend b. Predict (FY0), E (FY0), L (FY0), L (0CY, F (FY0) Coefficients	ression idual ent Variab ors: (Consta JR), D2021 oard Speci 2022, Boa og Market 70, EUR), E ents ^a Standarr Coeffic	Sum o Square 2 4 6 le: ROS ant), Log 1, Board fifc Skills, ard Size Capitaliz 02023, li	of es c ,822 ,162 ,985 Revenue fro Gender Divo , Percent cation ndependent	if Ma 9 266 275 om Busine ersity, Per Board Ma	ean Square ,314 ,016 ss Activities - cent embers	F 20,040 - Total	Sig. <,001
,636 ^a a. Predictors: (Const Activities – Total (FY0, EUR), D202 (FY0), Board Spec (FY0), D2022, Boi (FY0), Log Market (0CY, FY0, EUR), I (FY0) Model 1 (Const Board Perco	,404 ,384 tant), Log Revenue from Bu 21, Board Gender Diversity, cific Skills, Percent bard Size t Capitalization D2023, Independent Board	,12509 Isiness , Percent d Members Unstandardize B	1 Reg Res Tot a. Depend b. Predicti (FY0), E (FY0), E (FY0), L (OCY, F (FY0) Coeffic d Coefficients	ression idual idual ient Variab ors: (Consta JR), D2021 oard Speci 2022, Boa og Market r(0, EUR), E ents ^a Standarr Coeffic	2 4 6 le: ROS ant), Log 1, Board ffic Skills, urd Size Capitaliz 02023, li	,822 ,162 ,985 Revenue fro Gender Dive , Percent eation ndependent	9 266 275 om Busine ersity, Per	,314 ,016 ss Activities - cent embers	20,040 - Total	<,001
a. Predictors: (Const Activities - Total (FY0, EUR), D202 (FY0), Board Spec (FY0), D2022, Boi (FY0), Log Market (0CY, FY0, EUR), I (FY0) (FY0)	tant), Log Revenue from Bu 21, Board Gender Diversity, cific Skills, Percent bard Size t Capitalization D2023, Independent Board	, Percent d Members Unstandardize B	Res Tot a. Depend b. Predicti (FY0), E (FY0), C (FY0), L (OCY, F (FY0) Coeffic d Coefficients	dual ent Variab ors: (Consta JR), D2021 oard Speci 2022, Boa og Market r(0, EUR), E ents ^a Standari Coeffic	4 6 le: ROS ant), Log 1, Board fic Skills, urd Size Capitaliz D2023, In	,162 Revenue fro Gender Dive Percent ation ndependent	266 275 om Busine ersity, Per Board Me	,016 ss Activities - cent embers	- Total	
(FY0, EUR), D202 (FY0), Board Spec (FY0), D2022, Bo (FY0), Log Market (0CY, FY0, EUR), I (FY0) (FY0) Model 1 (Cons Board Perco	21, Board Gender Diversity, cific Skills, Percent bard Size t Capitalization D2023, Independent Board	, Percent d Members Unstandardize B	Tot. a. Depend b. Predicti (FY0), E (FY0), D (FY0), L (OCY, F (FY0) Coefficients	ent Variab ors: (Consta JR), D2021 oard Speci 2022, Boa og Market r(0, EUR), E ents ^a Standarr Coeffic	6 le: ROS ant), Log I, Board fic Skills, ard Size Capitaliz D2023, li D2023, li	,985 Revenue fro Gender Dive Percent ation ndependent	275 om Busine ersity, Per Board Me	ss Activities - rcent embers	- Total	
(FY0), Board Spec (FY0), Board Spec (FY0), D2022, Bo (FY0), Log Market (0CY, FY0, EUR), I (FY0) (FY0)	cific Skills, Percent oard Size t Capitalization D2023, Independent Board	d Members Unstandardize B	a. Depend b. Predicti (FY0, El (FY0), E (FY0), L (FY0), L (0CY, F (FY0) Coeffici d Coefficients	ent Variab ors: (Consta JR), D2021 oard Speci 2022, Boa og Market r(0, EUR), E ents ^a Standarr Coeffic	le: ROS ant), Log I, Board fic Skills, ard Size Capitaliz D2023, li D2023, li dized	Revenue fro Gender Dive Percent ation ndependent	om Busine ersity, Per Board Me	ss Activities - rcent embers	- Total	
(FY0), Board Spec (FY0), D2022, Bo (FY0), Log Market (0CY, FY0, EUR), I (FY0) (FY0) 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	cinc Skills, Percent oard Size t Capitalization D2023, Independent Board	d Members Unstandardize B	b. Predict (FY0, E (FY0), E (FY0), I (FY0), I (OCY, F (FY0) Coeffici d Coefficients	ors: (Consta JR), D2021 oard Speci 2022, Boa og Market r(0, EUR), E ents ^a Standarr Coeffic	ant), Log I, Board Ific Skills, urd Size Capitaliz D2023, In D2023, In dized	Revenue fro Gender Dive Percent ation ndependent	om Busine ersity, Per Board Me	ss Activities - rcent embers	- Total	
(FY0), D2022, Bo (FY0), Log Market (0CY, FY0, EUR), I (FY0)	sard Size t Capitalization D2023, Independent Board	d Members Unstandardize B	(FY0, E (FY0), E (FY0), I (FY0), L (0CY, F (FY0) Coeffic d Coefficients	JR), D2021 oard Speci 2022, Boa og Market r(), EUR), E ents ^a Standari Coeffic	I, Board ific Skills, ard Size Capitaliz 22023, Ii 22023, Ii	Gender Dive , Percent ation ndependent	ersity, Per Board Me	ercent embers		
(FY0), Log Market (OCY, FY0, EUR), I (FY0) Model 1 (Cons Board Perce	t Capitalization D2023, Independent Board	d Members Unstandardize B	(FY0), E (FY0), L (FY0), L (0CY, F (FY0) Coeffici d Coefficients	oard Speci 2022, Boa og Market YO, EUR), E ents ^a Standar Coeffic	fic Skills, ard Size Capitaliz 22023, li dized	, Percent ration ndependent	Board Me	mbers		
(OCY, FYO, EUR), I (FYO) Model 1 (Cons Board Perce	D2023, Independent Board	d Members Unstandardize B	(10), L (FY0), L (FY0), L (0CY, F (FY0) Coefficients	ents ^a Standari Coeffic	dized	ration ndependent	Board Me	mbers		
(FY0) Model 1 (Cons Board Perce	nstant)	Unstandardize B	(FY0), L (FY0), L (0CY, F (FY0) Coeffici	og Market 70, EUR), E ents ^a Standari Coeffic	dized	ation ndependent	Board Me	mbers		
Model 1 (Cons Board Perce	nstant)	Unstandardize B	(FY0), L (0CY, F (FY0) Coeffic d Coefficients	og Market (0, EUR), E ents ^a Standar Coeffic	Capitaliz D2023, li dized	ration ndependent	Board Me	embers		
Model 1 (Cons Board Perce	nstant)	Unstandardize B	(0CY, F (FY0) Coeffic d Coefficients	(0, EUR), E ents ^a Standar Coeffic	dized	ndependent	Board Me	embers		
Model 1 (Cons Board Perce	nstant)	Unstandardize B	(FY0) Coefficients	ents ^a Standar Coeffic	dized					
Model 1 (Con: Boar Perce	nstant)	Unstandardize B	Coefficients	ents^a Standari Coeffic	dized					
Model 1 (Con: Board Perce	nstant)	Unstandardize B	d Coefficients	Standar Coeffic	dized					
Model 1 (Con: Board Perce	istant)	В	Cod Energy					Collinea	arity Statisti	CS
1 (Con Board Perce	nstant)		Sta. Error	Bet	a	t	Sig.	Tolerand	ce VIF	
Boar Perce		,316	,140			2,265	,02	4		
	rd Gender Diversity, cent	,001	,001		,061	1,170	,24	3 ,81	.5 1,2	27
(FY0)))									
Board Perce	rd Specific Skills, cent	-,001	,001		-,162	-2,932	,00	4 ,73	7 1,3	58
(FY0)))									
Inder Mem	pendent Board nbers	,001	,001		,146	2,339	,02	0,57	3 1,7	45
(FY0)))									
Boar	rd Size	.009	.003		,158	2,877	.00	4 .74	6 1.3	40
(EVO)	0		,							
(FT0)	21	030	0.2.1		106	1 014	07	1 66	0 15	15
D202	122	,039	,021		,100	1,014	,07	2 63	1,5	15
D202	23	,027	,022		160	2 632	,21	9 61	0 1.6	40
100	Market Capitalization	.055	.006		.549	8,900	<.00	1 59	1,0	96
(0CY	r, FYO, EUR)	,055	,000		,545	0,500	2,00	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	1,0	
Log F Busir	Revenue from ness Activities - Total	-,072	,007		-,691	-10,952	<,00	1 ,56	i4 1,7	74
(FY0,), EUR)									
a. Depende	ent Variable: ROS									

radie 15. Regression analysis with Re	Table 15.	Regression	analysis	with RC	DS
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The model has an R^2 value of 0.404, indicating that 40.4% of the variation in ROS can be explained by the governance and financial variables included in the regression. The Adjusted R^2 of 0.384 suggests that even if additional variables were included, the model's explanatory power would not significantly increase.

The ANOVA test confirms that the model is globally significant, with an F-statistic of 20.040 and a p-value < 0.001.

The coefficients table provides more specific insights into how individual variables impacted ROS:

- The analysis reveals that board size has a positive and significant effect on ROS (coefficient: 0.009, p-value: 0.004). This finding supports the idea that larger boards, by encompassing a wider range of experiences and expertise, contribute positively to operational efficiency. In Chapter 2, the concept of bounded rationality emphasizes that individuals are limited in their ability to process all relevant information when making decisions. Larger boards, with their greater cognitive diversity, are better equipped to counteract these limitations by incorporating a variety of perspectives, thus mitigating groupthink and other cognitive biases. During the COVID-19 pandemic, companies with larger boards likely benefited from this diversity of thought, enabling them to manage complex operational challenges such as supply chain disruptions, cost fluctuations, and changes in consumer behavior. While larger boards can sometimes face issues related to coordination and decision speed, the data suggests that, in this case, the benefits of having more diverse input outweighed any potential inefficiencies.
- Independent directors also show a positive and significant relationship with ROS (coefficient: 0.001, p-value: 0.020). This result aligns with the theoretical framework where independent directors are seen as a key mechanism for improving governance by providing objective oversight and reducing managerial biases. Independent directors are less likely to be influenced by the internal dynamics of the company, making them valuable in ensuring that decisions are made with the firm's long-term interests in mind. Their ability to provide a more rational, unbiased perspective would have been particularly important in ensuring that cost-control measures and operational strategies were aligned with long-term profitability goals, thus contributing to higher ROS.
- Interestingly, board-specific skills are found to have a negative and significant effect on ROS (coefficient: -0.001, p-value: 0.004). This challenges the assumption that having a higher proportion of board members with specialized expertise would naturally lead to better performance. This result should probably be read according to the context to which these data refer. During the pandemic, where rapid decision-making and flexibility were critical, boards that were overly focused on specific technical expertise may have struggled to adapt to the rapidly changing operational landscape. The theory of bounded rationality suggests that decision-makers can become overwhelmed by too much detailed information, leading to slower or suboptimal decision-making. In this

context, the negative impact of board-specific skills on ROS may reflect the difficulty that boards with a high concentration of technical expertise faced in responding quickly to day-to-day operational challenges.

- As expected, Log Market Capitalization has a strong positive effect on ROS (coefficient: 0.055, p-value: <0.001). This suggests that larger firms benefit from economies of scale, which enable them to maintain higher profit margins relative to their sales. Especially in the context of the pandemic and geopolitical crises, larger firms were better positioned to absorb the shocks caused by disruptions in the global supply chain and fluctuations in demand due to their greater resources and ability to diversify risks.
- Although board gender diversity has a positive coefficient (0.001), it is not statistically significant in this model (p-value: 0.243). One possible explanation for this discrepancy is that while gender diversity contributes to strategic decision-making and long-term governance quality, its effects on immediate operational outcomes, such as ROS, are less direct. In theory, diversity enhances decision-making by mitigating groupthink and encouraging a broader range of perspectives. However, the benefits of gender diversity may manifest more in long-term strategic planning and corporate culture development, rather than in short-term operational efficiency. Gender-diverse boards may be more effective in fostering innovation and ensuring long-term sustainability, but these advantages might not be immediately reflected in measures of operational profitability like ROS.
- Finally, the analysis reveals a negative and significant relationship between Log Revenue and ROS (coefficient: -0.072, p-value: <0.001). This finding, while counterintuitive at first glance, can be explained by the rising costs that accompany revenue growth, particularly during times of crisis. Companies with higher revenues may have also faced increased costs related to supply chain disruptions, higher labor expenses, or pandemic-related safety protocols, which eroded their profit margins.

Overall, the regression analysis of ROS shows that larger boards and independent directors contribute positively to ROS, supporting the idea that cognitive diversity and objective oversight help firms navigate complex operational challenges. However, the negative effect of board-specific skills highlights the potential pitfalls of over-specialization, particularly in times of crisis when agility and flexibility are critical.

Conclusions

This study aimed to investigate the relationship between board composition and financial performance by testing four key hypotheses: Board Size, Independent Directors, Gender Diversity, and Board-Specific Skills.

Using data from 69 Italian listed companies over the period 2020 to 2023, the analysis provided insights into how these governance factors affect financial outcomes, particularly P/BV per share, ROE and ROS.

The findings offer a nuanced understanding of board composition's role, particularly during a period marked by significant global disruptions, such as the COVID-19 pandemic and the Russia-Ukraine war.

The main goal of the research was to understand whether and how the composition of the board of directors could impact companies' financial performance. Overall, the results provided some valuable insights, which can be interpreted through the lens of the limits of human rationality, as discussed in Chapter 2.

In Section 3.5, H1 hypothesized that larger boards would positively impact financial performance, based on the assumption that more perspectives and expertise would enhance decision-making by reducing individual biases and noise, and the data partially confirmed this. In fact, as highlighted in Section 3.6 (c), larger boards positively influenced Return on Sales (ROS). This result is particularly important when considering the global context. A larger board with more diverse perspectives and skills could have been better equipped to handle operational challenges. This idea aligns with the theory of bounded rationality discussed in Chapter 2: more people mean more viewpoints, and thus a better capacity to deal with complexity. However, board size didn't seem to affect other metrics like P/BV (Section 3.6 (a)) or ROE (Section 3.6 (b)), likely because a larger board doesn't necessarily translate into faster or more targeted decisions that can impact market valuation or short-term profits. In addition, the war between Russia and Ukraine has exacerbated supply chain disruptions, further driving up energy and input costs. In such a volatile environment, larger boards have probably been more helpful than smaller ones in better understanding the situation and varying views on such complex situations.

H2 suggested that a higher percentage of independent directors would positively influence financial performance. The reasoning was that independent directors bring an objective, unbiased perspective, free from the influence of company management. However, the regression analysis did not find significant support for this hypothesis. Across all models the percentage of Independent Directors had a positive impact on ROS, which makes sense, especially in a period marked by crises and uncertainty. However, independent directors didn't show the same effect on metrics like ROE (Section 3.6 (b)) or P/BV (Section 3.6 (a)). One reason for this result could be that while independent directors play a vital role in ensuring good governance and protecting shareholder interests, their impact on short-term financial outcomes may be limited, especially during crises. Their primary responsibility, as highlighted in Chapter 1, often involves oversight, risk management, and ensuring long-term stability rather than driving immediate financial results. The pandemic was a time when firms needed to focus on quick operational challenges, and independent directors may not have had a direct role in these decisions. The same reasoning may apply for the Russia-Ukraine war. So, these findings suggest that while independent directors are essential for ensuring "ethical governance", their influence on financial performance may be more apparent over the long term, rather than in immediate, short-term metrics like profitability or market valuation.

H3 hypothesized that a higher percentage of Gender Diversity on the board would lead to better financial performance, based on the idea that diversity of thought enhances decision-making and reduces homogeneous thinking. This hypothesis didn't show strong evidence in the data. While there is plenty of research highlighting how greater gender diversity can improve decisionmaking by reducing groupthink, this analysis didn't reveal a significant short-term impact. However, it's possible that the benefits of gender diversity might show up in the long run. Given the historical context of the crisis, companies may have prioritized more immediate goals, such as operational survival, over diversity initiatives.

Finally, H4 posited that boards with a higher percentage of members possessing specific skills would positively affect financial performance. On one hand, board expertise had a positive impact on P/BV (Section 3.6 (a)). On the other hand, those same skills had a negative effect on ROS (Section 3.6 (c)). This result might seem counterintuitive, but it can be explained by looking at the historical context. One possible reason for this could be that while specialized expertise is important for long-term strategic planning and governance, it may not have had an immediate impact during the period of analysis, which was marked by significant global disruption. During the pandemic, firms were more focused on short-term survival, including maintaining liquidity, adapting operations, and ensuring employee safety. Moreover, the Russia-Ukraine war created further uncertainty, particularly with rising energy prices and inflationary pressures and boards may have prioritized quick decision-making and operational continuity over long-term strategic considerations. The lack of a significant relationship between Board-Specific Skills and financial

performance during this period suggests that while specialized skills are valuable, they may not always directly translate into short-term financial results, especially in times of crisis.

As repeatedly emphasized throughout this thesis, the global disruptions brought about by the COVID-19 pandemic and the Russia-Ukraine war are critical factors that must be considered when interpreting the results of this study. These events introduced unprecedented challenges for firms, from supply chain breakdowns and market volatility to workforce management and health concerns. In this context, the results suggest that board composition plays a critical role in shaping financial performance, but its impact is deeply intertwined with the broader economic and geopolitical environment. Larger boards and independent directors seem to be particularly valuable during times of crisis, providing a diversity of thought and strong governance that helps navigate uncertainty. However, the benefits of gender diversity and specialized skills may take longer to manifest, especially in environments where survival and rapid decision-making take precedence.

Ultimately, these findings underscore the importance of aligning board composition with the company's current strategic needs and external challenges, while keeping in mind the long-term benefits that strong governance can provide.

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- Article 2247;
- Article 2325;
- Article 2325 bis;
- Article 2346;
- Article 2364;
- Article 2380-bis;
- Article 2382;
- Article 2384;
- Article 2392;
- Article 2397;
- Article 2409-septiesdecies;
- Article 2468;
- Article 2555.

European Union Law:

- Council Regulation (EC) No 2157/2001 of 8 October 2001 on the Statute for a European company (SE);
- Council Regulation (EC) No 1435/2003 of 22 July 2003 on the Statute for a European Cooperative Society (SCE);
- Directive (EU) 2022/2381 of the European Parliament and of the Council of 23 November 2022 on improving the gender balance among directors of listed companies and related measures.

Other:

- Italian Law No. 216 of June 7, 1974;
- Italian Legislative Decree No. 58 of February 24, 1998 ("T.U.F.");
 - Article 1(1)(w) T.U.F.;
 - Article 1(1)(w quater) T.U.F.;
 - Article 147-ter T.U.F.;

- o Article 147-quater T.U.F.;
- o Article 147-quinquies T.U.F.;
- o Article 148 T.U.F.
- Legislative Decree No. 231, 8-6-2001, as amended by Law 183/2011;
- Corporate Governance Code;

Article 2 of the Minister of Justice's Decree No. 162 of March 30, 2000.

Appendix A

	Identifier (RIC)	Company Name
1	A2.MI	A2A SpA
2	ACE.MI	Acea SpA
3	AMPF.MI	Amplifon SpA
4	ANIM.MI	Anima Holding SpA
5	ANV.MI	Antares Vision SpA
6	ECNL.MI	Aquafil SpA
7	ASCI.MI	Ascopiave SpA
8	GASI.MI	Assicurazioni Generali SpA
9	IF.MI	Banca IFIS SpA
10	BMPS.MI	Banca Monte dei Paschi di Siena SpA
11	BPSI.MI	Banca Popolare Di Sondrio SpA
12	BSS.MI	Biesse SpA
13	BRBI.MI	Brembo NV
14	BCU.MI	Brunello Cucinelli SpA
15	BZU.MI	Buzzi SpA
16	CEMB.MI	Cembre SpA
17	CEMI.MI	Cementir Holding NV
18	DANI.MI	Danieli & C Officine Meccaniche SpA
19	DAL.MI	Datalogic SpA
20	CPRI.MI	Davide Campari Milano NV
21	DLG.MI	De' Longhi SpA
22	DIAS.MI	DiaSorin SpA
23	ELEN.MI	El En SpA
24	ENAV.MI	Enav SpA

25	ENEI.MI	Enel SpA
26	ENI.MI	Eni SpA
27	ERG.MI	ERG SpA
28	PRT.MI	Esprinet SpA
29	RACE.MI	Ferrari NV
30	FILA.MI	FILA Fabbrica Italiana Lapis ed Affini SpA
31	FCT.MI	Fincantieri SpA
32	FBK.MI	FinecoBank Banca Fineco SpA
33	GEO.MI	Geox SpA
34	HRA.MI	Hera SpA
35	ILTY.MI	illimity Bank SpA
36	INWT.MI	Infrastrutture Wireless Italiane SpA
37	ITPG.MI	Interpump Group SpA
38	ISP.MI	Intesa Sanpaolo SpA
39	IREE.MI	Iren SpA
40	IG.MI	Italgas SpA
41	ITMI.MI	Italmobiliare SpA
42	LDOF.MI	Leonardo SpA
43	LUVE.MI	Lu-Ve SpA
44	MTCM.MI	Maire SpA
45	MARR.MI	Marr SpA
46	MFEB.MI	MFE-MEDIAFOREUROPE NV
47	MOL.MI	Moltiply Group SpA
48	MONC.MI	Moncler SpA
49	NWLF.MI	Newlat Food SpA
50	ORSO.MI	Orsero SpA

51	PHNU.MI	Pharmanutra SpA
52	PIA.MI	Piaggio & C SpA
53	PST.MI	Poste Italiane SpA
54	1913.HK	Prada SpA
55	PRY.MI	Prysmian SpA
56	RWAY.MI	Rai Way SpA
57	RECI.MI	Recordati Industria Chimica e Farmaceutica SpA
58	REY.MI	Reply SpA
59	SPMI.MI	Saipem SpA
60	SCFG.MI	Salcef Group SpA
61	SFER.MI	Salvatore Ferragamo SpA
62	SNL.MI	Sanlorenzo SpA
63	SRG.MI	Snam SpA
64	TGYM.MI	Technogym SpA
65	TLIT.MI	Telecom Italia SpA
66	TRN.MI	Terna Rete Elettrica Nazionale SpA
67	TNXT.MI	Tinexta SpA
68	CRDI.MI	UniCredit SpA
69	UNPI.MI	Unipol Gruppo SpA