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BOARD TENURE AND DISCLOSURE QUALITY:
AN EMPIRICAL ANALYSIS
OF THE CURRENT TRENDS IN EUROPE

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Firma dello studente

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ABSTRACT

Corporate governance has been a topic being widely debated in recent years, mainly due to the need for an effective corporate governance system. The question of “How long should a director stay on his position on the board” is of importance to scholars, policy makers, and boards, but a lack of consensus remains.

To respond to this question, existing literature describes two opposing consequences of tenure on a director’s primary role of monitoring management. On the one hand, tenure is associated with lower information asymmetry. Yet, on the other hand, long tenure is assumed to be contrary to a director’s ability to remain the organization’s objective. The agency theory implies that companies increase financial reporting disclosure to reduce conflicts between principals (shareholders) and agents (managers).

It is essential to understand the importance of disclosures, and effective corporate governance is increasing investors’ confidence and bringing accountability to the stakeholders. The objective of this thesis is to identify the possible effect of board tenure on disclosure quality and to obtain an optimal length of board tenure to deliver sufficient financial reporting disclosure to stakeholders.

Using a panel data of the top ten European Union countries in nominal GDP in three years (2016-2018), the results from this study show that there is a U-inverted relationship between board tenure and disclosure quality. The outcome of this study hence supports both Expertise and Entrenchment theories, that companies should apply the optimal range of board tenure from approximately six years to 8.5 years. However, from a practical perspective, this suggestion could be challenging to implement because firms have to tradeoff different attributes if they want to terminate long-tenured directors.

TABLE OF CONTENTS

ACKNOWLEDGEMENT	3
ABSTRACT	4
TABLE OF CONTENTS	5
LIST OF TABLES.....	8
LIST OF FIGURES.....	9
CHAPTER 1: MOTIVATION AND POSITIONING	10
1.1. BACKGROUND OF THE THESIS	10
1.2. MOTIVATION AND RESEARCH QUESTION.....	11
1.3. OUTLINE OF THE THESIS.....	12
CHAPTER 2: THEORETICAL FRAMEWORK.....	14
2.1. CORPORATE GOVERNANCE	14
2.1.1. <i>Overview of corporate governance</i>	14
2.1.2. <i>Characteristics of good corporate governance</i>	15
2.1.3. <i>Benefits of good corporate governance</i>	17
2.1.4. <i>Stakeholders</i>	18
2.1.5. <i>Responsibilities of the Board of Directors</i>	20
2.1.6. <i>Agency theory</i>	22
2.2. TRANSPARENCY AND DISCLOSURE OF INFORMATION	23
2.2.1. <i>Corporate disclosure definition</i>	23
2.2.2. <i>Transparency and disclosure in European Union countries</i>	26
2.2.2.1. Financial reporting.....	27
2.2.2.2. Nonfinancial reporting.....	27
2.2.3. <i>Benefits of disclosure</i>	29

2.2.3.1.	Benefits of disclosure to shareholders	29
2.2.3.2.	Benefits of disclosure to stakeholders	30
2.2.4.	<i>Cost of disclosure</i>	33
2.2.4.1.	Practical costs	33
2.2.4.2.	Governance costs	35
2.2.5.	<i>Roles of the board of directors in disclosure and financial reporting</i>	36
2.2.5.1.	Financial reporting process.....	37
2.2.5.2.	Director’s duty of care	38
2.2.5.3.	Responsibility of the board in relation to financial reporting.....	39
2.2.6.	<i>ESG index – A proxy for disclosure quality</i>	39
2.2.6.1.	Disclosure focus: Investors.....	40
2.2.6.2.	ESG index and investors’ decisions	41
2.2.7.	<i>An introduction of Thomson Reuter ESG Score</i>	42
CHAPTER 3: LITERATURE REVIEW		44
3.1.	LONGER BOARD TENURE – BETTER KNOWLEDGE.....	46
3.2.	LONGER BOARD TENURE – HIGHER ENTRENCHMENT	48
CHAPTER 4: RESEARCH METHODOLOGY		50
4.1.	METHODOLOGY	50
4.1.1.	<i>Dependent variable</i>	51
4.1.2.	<i>Explanatory variable</i>	52
4.1.3.	<i>Control variables</i>	52
4.2.	DATA SAMPLE AND COLLECTION	53
4.2.1.	<i>Data sample</i>	53
4.2.2.	<i>Data collection</i>	56
CHAPTER 5: RESULTS AND DISCUSSIONS.....		58

5.1.	EMPIRICAL RESULTS OF THE YEAR 2016	58
5.1.1.	<i>Descriptive statistics</i>	58
5.1.2.	<i>Regression results</i>	59
5.2.	EMPIRICAL RESULTS OF THE YEAR 2017	63
5.2.1.	<i>Descriptive statistics</i>	63
5.2.2.	<i>Regression results</i>	64
5.3.	EMPIRICAL RESULTS OF THE YEAR 2018	67
5.3.1.	<i>Descriptive statistics</i>	67
5.3.1.	<i>Regression results</i>	68
5.4.	EMPIRICAL RESULTS OF THE POOLED OLS	72
5.4.1.	<i>Descriptive statistics</i>	72
5.4.2.	<i>Regression results</i>	73
5.5.	SUMMARY OF RESULTS AND DISCUSSIONS	77
CHAPTER 6: CONCLUSION		82
APPENDIX.....		83
REFERENCES		86

LIST OF TABLES

Table 4.1. List of top ten European Union countries by nominal GDP	54
Table 4.2. Data sample by countries.....	55
Table 4.3. Data sample by sectors	56
Table 5.1. Descriptive statistics of variables (2016)	58
Table 5.2. Regression results of equation (1) (2016)	59
Table 5.3. Regression results of equation (2) (2016)	62
Table 5.4. Descriptive statistics of variables (2017)	63
Table 5.5. Regression results of equation (1) (2017)	64
Table 5.6. Regression results of equation (2) (2017)	66
Table 5.7. Descriptive statistics of variables (2018)	67
Table 5.8. Regression results of equation (1) (2018)	69
Table 5.9. Regression results of equation (2) (2018)	71
Table 5.10. Descriptive statistics of variables (Pooled OLS).....	72
Table 5.11. Regression results of equation (1) (Pooled OLS).....	74
Table 5.12. Regression results of equation (2) (Pooled OLS).....	76
Table 5.13. Summary of regression results	77

LIST OF FIGURES

Figure 2.1. The integrated reporting model.....	29
Figure 2.2. Financial reporting process	37
Figure 4.1. Research model	51
Figure 5.1. Descriptive plot – Residual ESGSCORE and board tenure (2016)	60
Figure 5.2. Descriptive plot – Residual ESGSCORE and board tenure (2017)	65
Figure 5.3. Descriptive plot – Residual ESGSCORE and board tenure (2018)	70
Figure 5.4. Descriptive plot – Residual ESGSCORE and board tenure (Pooled OLS)	75

CHAPTER 1: MOTIVATION AND POSITIONING

1.1. Background of the thesis

Corporate governance has been a topic being universally discussed in recent years mainly due to the need of an effective corporate governance system.

Corporate governance covers the broad array of systems, processes, and procedures that seek to regulate the relationship between managers and shareholders in particular and among all firm stakeholders in general (Baker & Anderson, 2010).

Board of directors is one of the most crucial components of corporate governance. The performance of corporate boards has been a matter of great concern. Boards need to create long-term shareholder value while protecting the interest of all other stakeholders. They need to provide a return on investment on a regular basis yet ensure the long-term sustainability of the organization. Being a top performer in a highly complex and competitive environment is a major challenge.

In corporate governance, the monitoring role of boards of directors is a critical component of internal control (Jensen & Meckling, 1976). Boards are responsible for approving major strategic and financial decisions, such as mergers and acquisitions and changes in capital structure, and also for the most important task of all, which is to hire and fire top executives. Not surprisingly, substantial research focuses on the workings of corporate boards. But researchers focus on varying aspects of boards. One essential topic is “how long directors should stay in their positions”, or in other word “board tenure”.

Diversity of tenure involves a balance between new and old directors. Having well-reputed directors on boards for a length of time improves corporate reputations. Directors who have been on the board for long periods, likely will have a good understanding of the company, but this may run the risk of directors not keeping up with changes needed in the business and

defending decisions that may not be appropriate in the present situation. It can also affect the independence of directors.

Board of directors and ownership structure plays crucial role in monitoring managerial activities and also reduces agency costs ((Fama & Jensen, 1983); (Jensen & Meckling, 1976)).

Why corporates should disclose more information in financial reports has been pronounced in several theories like stakeholder theory, agency theory, legitimacy theory and political economy theory (Choi, 1973). The agency theory implies that companies increase disclosure in order to reduce conflicts between principals (shareholders) and agents (managers). In addition, companies aiming to increase their firm value may do so by increased disclosure (Lobo & Zhou, 2001).

Several studies have shown evidence of a significant relation between the characteristics of the board of directors and the integrity of accounting information ((Hashim & Rahman, 2008); (Patelli & Prencipe, 2007)).

Considering the importance of disclosures and effective corporate governance in increasing investors' confidence and bring accountability to the stakeholders, the objective of this thesis is to identify possible impact of board structure, ownership structure and firm attributes on financial disclosure.

1.2. Motivation and research question

The motivation of this thesis considering the fact that disclosures are important tool for communicating financial and non-financial information to the investors and shareholders. It is the responsibility of the board to monitor the activities of managers.

In 2018, Huang & Hilary try to discover the relationship between board tenure and a group of firm performance's measure such as the quality of corporate decisions, firm value, financial reporting quality, and CEO compensation. Using a panel data of US firms which covers S&P 1500 firms over the period 1998-2010, their results show that board firm performance has a

quadratic relation with board tenure, in particular an inverted U-shaped relation. While Huang & Hilary focus on the US market, this study will focus on European Countries. To be specific, the paper uses similar research methodology of Huang & Hilary (2018) in order to investigate the relationship between board tenure and disclosure quality. To obtain the current trends in recent years, the scope of this study is top ten European Union countries over the period 2016-2018.

Based on above background, this thesis tries to answer the following research questions:

- What is the relationship, if any, between board tenure and disclosure quality?
- What is the optimal length of board tenure should companies set up in order to maximize their disclosure quality?

1.3. Outline of the thesis

The thesis consists of six chapters.

Chapter one provides the overview and motivation of the thesis.

Chapter two is the theoretical section which focuses on two critical topics: corporate governance and corporate disclosure. In the end of this chapter, a literature review is presented which provides some empirical results of previous studies attempting to obtain relationships between elements of corporate governance and disclosure quality of corporations.

Chapter three reviews some previous empirical studies that try to explore the effect of board tenure on board effectiveness over period of time.

Chapter four comes up with the methodology of this thesis. In this chapter, regression models are constructed in order to test whether there is a relationship between board tenure and disclosure quality. Moreover, the researcher also introduces how data is collected in this part.

Subsequently, chapter five represents empirical results including descriptive statistics and regression results. This part also includes some practical discussions based on the empirical results.

Finally, chapter six concludes and provides some suggestions for other future researchers.

CHAPTER 2: THEORETICAL FRAMEWORK

The aim of this chapter is to come up with some basic understanding knowledge about the topic of the thesis. To be more specific, this chapter discusses two principal objects which are corporate governance and disclosure quality of companies.

2.1. Corporate governance

2.1.1. Overview of corporate governance

Corporate governance is the set of mechanisms, processes, and relations by which corporations are controlled and operated (Shailer, 2004).

According to OECD (2014 and 2015), “corporate governance involves a set of relationships between a company’s management, its board, its shareholders and other stakeholders. Corporate governance also provides the structure through which the objectives of the company are set, and the means of attaining those objectives and monitoring performance are determined.”

Governance structures and principles point out the distribution of rights and responsibilities among different parties in the corporation (for example the board of directors, managers, shareholders, creditors, internal and external auditors, regulators, and other stakeholders) and include the regulations and procedures for making decisions in corporate affairs (Lin, 2011).

Corporate governance is a multifaceted subject. In broad terms, corporate governance refers to the way in which a corporation is directed, administered, and controlled. Corporate governance also concerns the relationships among the various internal and external stakeholders involved as well as the governance processes designed to help a corporation achieve its goals. Of prime importance are those mechanisms and controls that are designed to reduce or eliminate the principal-agent problem.

Corporate governance is essential because of the possibility of conflicts of interests between stakeholders, primarily between shareholders and upper management or among shareholders

(Goergen, 2012). OECD (2015) claims clearly that the board of director should apply high ethical standards and take into account the interests of stakeholders.

Corporate governance consists of the procedures through which corporations' objectives are assigned and pursued in the circumstance of the social, regulatory, and market environment. These consist of supervising the actions, policies, practices, and decisions of corporations, their agents, and affected stakeholders. Corporate governance practices can be considered as attempts to align the interests of stakeholders ((OECD, OECD Principles of Corporate Governance, 2004), (Tricker, 2009)).

2.1.2. Characteristics of good corporate governance

Good corporate governance is important because it not only provides the cornerstone for the integrity of corporations, financial institutions, and markets, but also is central to the health and stability of world economies.

According to (Mack, 2019) Some characteristics of good corporate governance are:

- Well-defined organizational strategy

Good corporate governance starts with a clear strategy for the organization. The corporation's management team might research the market to identify a profitable niche, create a product line to meet the needs of that target market and then advertise its wares with a marketing campaign that reaches those consumers directly. At each stage, knowing the comprehensive strategy helps the company's labor force stay focused on the organizational mission: meeting the needs of the consumers in that target market.

- Effective risk management.

Even if a company implements smart policies, competitors might steal their customers, unexpected disasters might cripple the company's operations, and economic fluctuations might erode the buying capabilities of the target market. Companies cannot avoid risk, so it is vital to implement effective strategic risk management. A corporation's management might decide to

diversify operations so the business can count on revenue from some different markets, rather than depend on just one.

- Discipline and Commitment

Corporate policies are only as effective as their implementation. A company's management can spend years developing a strategy to push into new markets, but if it can't mobilize its workforce to implement the procedure, the initiative will fail. Good corporate governance requires having the discipline and commitment to implement policies, resolutions, and strategy.

- Fairness to employees and customers

Fairness must always be a high priority for management. For example, managers must push their employees to be their best, but they should also recognize that a heavy workload can have adverse long-term effects, such as low morale and high turnover. Corporations also must be fair to their customers, both for ethical and public-relations reasons. Mistreating customers, whatever the short-term benefits, always hurt a company's long-term prospects.

- Transparency and information sharing

Managers sometimes keep their own guidelines, limiting the information that filters down to employees. But corporate transparency helps integrate an organization. When employees understand management's strategies and are allowed to take part in monitoring the company's financial performance, they know their roles within the company. Transparency is also crucial to the public, who tend not to entrust secretive corporations.

- Corporate social responsibility

Social responsibility at the corporate level is increasingly a topic of consideration in recent years. Consumers expect companies to be good community members, for example, by initiating recycling efforts and reducing waste and pollution. Good corporate governance identifies methods to develop company practices and also promotes social good by reinvesting in the local community.

- Regular self-evaluation

Mistakes will be made, no matter how well the operations of a company are. The key is to perform periodic self-evaluations to identify and mitigate brewing problems. Employee and customer surveys, for example, can supply vital feedback about the effectiveness of the company's current policies. Hiring outside consultants to analyze the company's operations also can help identify ways to improve the company's efficiency and performance.

2.1.3. Benefits of good corporate governance

A large number of studies conclude that well-governed European companies perform better than poorly governed companies (Claessens & Yurtoglu, Focus 10: Corporate Governance and Development - An Update, 2012). Approaching corporate governance best practices improves competitiveness and can lead to the following benefits:

- Improved access to external financing. Corporations with good corporate governance have better access to external funding (mainly from abroad investors) because of higher levels of trust between the providers of capital and executive managers.
- A lower cost of capital. Investors who receive high levels of disclosure from well-governed companies are likely to provide capital to those companies at a lower cost. This willingness to invest reflects the investors' improved knowledge of the company's strategy and expected future performance. The London-based Centre for Economic Policy Research found that good corporate governance has a statistically significant relationship to allocating capital to the most productive opportunities (Claessens, Ueda, & Yafeh, Financial frictions, investment, and institutions, 2010)
- Improved operational performance. Sustainable wealth creation within the private sector can be attained only through good management, entrepreneurship, innovation, and better allocation of resources. Effective corporate governance creates value by improving firms' performance through more efficient management and better asset

allocation. (Bruno & Claessens, 2010) found a statistically significant relationship between company performance and good corporate governance practices, particularly the presence of an independent board and board committees.

- Increased company valuation and improved share performance. Many researchers have identified the existence of a “corporate governance premium”—an additional price that investors will pay for shares in well-governed companies (Claessens & Yurtoglu, Focus 10: Corporate Governance and Development - An Update, 2012).
- Improved company reputation. Many European companies indicate that improvements in corporate governance can lead to increased job satisfaction among employees, higher staff retention, and more top- quality recruitment (BITC, 2014).
- Reduced risk of corporate crises and scandals. A company with good corporate governance practices will, by definition, have an effective risk-management system that is more likely to cope with corporate crises and scandals. These companies will have implemented processes, such as enterprise risk management procedures, disaster recovery systems, media management techniques, and business continuity procedures.

2.1.4. Stakeholders

Main parties related to corporate governance include internal and external stakeholders. Internal elements are the board of directors, management, and shareholders. Besides, external stakeholders consist of creditors, auditors, customers, suppliers, government agencies, and the community at large. The agency view of the corporation posits that the shareholder forgoes decision rights (control) and entrusts the manager to act in the shareholders' best (joint) interests. Partly as a result of this separation between the two investors and managers, corporate governance mechanisms include a system of controls intended to help align managers' incentives with those of shareholders. Agency concerns (risk) are necessarily lower for a controlling shareholder.

In private for-profit corporations, shareholders elect the board of directors to represent their interests. In the case of nonprofits, stakeholders may have some role in recommending or selecting board members, but typically the board itself decides who will serve on the board as a 'self-perpetuating' board (Dent & Delaware, 2014).

The degree of leadership that the board has over the organization varies; in practice at large organizations, the executive management, principally the CEO, drives significant initiatives with the oversight and approval of the board (Harvard Business School, 2016).

All parties to corporate governance have an interest, whether direct or indirect, in the financial performance of the corporation. Directors, workers, and management receive salaries, benefits, and reputation, while investors expect to accept financial returns. For lenders, it is specified interest payments, while returns to equity investors arise from dividend distributions or capital gains on their stock. Customers are concerned with the certainty of the provision of goods and services of an appropriate quality; suppliers are concerned with compensation for their products or services, and possible continued trading relationships. These parties provide value to the corporation in the form of financial, physical, human, and other forms of capital. Many parties may also be concerned with corporate social performance.

A critical factor in a party's decision to participate in or engage with a corporation is its confidence that the corporation will deliver the party's expected outcomes. When categories of parties (stakeholders) do not have sufficient confidence that a corporation is being controlled and directed in a manner consistent with their desired results, they are less likely to engage with the corporation. When this becomes an endemic system feature, the loss of confidence and participation in markets may affect many other stakeholders and increases the likelihood of political action. There is substantial interest in how external systems and institutions, including markets, influence corporate governance (Rahim & Kuruppu, 2016).

According to (Burlaka, 2006), there are three types of problems that shareholders encounter when they seek to exercise their control over managers. First, small shareholders frequently lack the expertise and funds to monitor and assess the work of managers who have enormous information at their discretion. Second, large shareholders may have a conflict of interest, which can undermine their incentive to maximize firm value. Third, large shareholders may themselves be part of organizations that face governance problems.

2.1.5. Responsibilities of the Board of Directors

The board of directors is the primary direct stakeholder influencing corporate governance. Directors are elected by shareholders or appointed by other board members, and they represent shareholders of the company. The board is tasked with making important decisions, such as corporate officer appointments, executive compensation, and dividend policy. In some instances, board obligations stretch beyond financial optimization, as when shareholder resolutions call for particular social or environmental concerns to be prioritized.

Boards are often made up of inside and independent members. Insiders are major shareholders, founders, and executives. Independent directors do not share the ties of the insiders, but they are chosen because of their experience managing or directing other large companies. Independents are considered helpful for governance because they dilute the concentration of power and help align shareholder interest with those of the insiders.

Former Chairman of the Board of General Motors John G. Smale wrote in 1995: "The board is responsible for the successful perpetuation of the corporation. That responsibility cannot be delegated to management." (Harvard Business Review, 2000)

A board of directors is expected to play a vital role in corporate governance. The board has responsibility for CEO selection and succession; providing feedback to management on the organization's strategy; compensating senior executives; monitoring financial health, performance, and risk; and ensuring accountability of the organization to its investors and

authorities. Boards typically have several committees (e.g., Compensation, Nominating, and Audit) to perform their work (Charan, 2005).

The Organization for Economic Co-operation and Development (OECD) is an intergovernmental economic organization with 36 member countries, founded in 1961 to stimulate economic progress and world trade. It is a forum of countries describing themselves as committed to democracy and the market economy, providing a platform to compare policy experiences, seek answers to common problems, identify good practices and coordinate domestic and international policies of its members.

The OECD Principles of Corporate Governance (2004) describe the responsibilities of the board; some of these are summarized below (OECD, OECD Principles of Corporate Governance, 2004):

- Board members should be informed and act ethically and in good faith, with due diligence and care, in the best interest of the company and the shareholders.
- Review and guide corporate strategy, objective setting, significant plans of action, risk policy, capital plans, and annual budgets.
- Oversee major acquisitions and divestitures.
- Select, compensate, monitor, and replace critical executives and oversee succession planning.
- Align key executive and board remuneration (pay) with the longer-term interests of the company and its shareholders.
- Ensure the integrity of the corporation's accounting and financial reporting systems, including their independent audit.
- Ensure appropriate systems of internal control are established.
- Oversee the process of disclosure and communications.

- Where committees of the board are established, their mandate, composition, and working procedures should be well-defined and disclosed.

A good board can play a significant role in ensuring excellent firm performance. Board of directors can provide a link between the firm and its environment, secure critical resources (Williamson, 1996); (Hillman, Canella, & Paetzold, The Resource Dependency Role of Corporate Directors: Strategic Adaptation of Board Composition in Response to Environmental Change, 2000)). The board has an important role to play in helping management make strategic decisions (Fama & Jensen, 1983); (Kemp, 2006); (Davies, 1999)). Another critical role of boards is to act as a mechanism of internal governance and monitoring of management (Barnhart, Marr, & Rosenstein, 1994); (Shleifer & Vishny, 2012)). By performing these roles, the active board is likely to help the firm achieve superior performance (Hawkins, 1997); (Gompers, Ishii, & Metrick, 2003)). It is therefore essential to study and understand what makes boards of directors effective.

2.1.6. Agency theory

Agency theory is founded on the assumption that managers are opportunistic and that they pursue selfish interests to the detriment of shareholders (Jensen & Meckling, 1976). This divergence of interest's precipitates conflicts between shareholders and management, which results in agency cost. One of the significant expenses incurred by shareholders is the need to monitor management through the introduction of a layer of scrutiny in the form of a board of directors (Fama & Jensen, 1983). The board of directors is charged with the responsibility of monitoring the decisions and actions of management, thereby reducing opportunistic behavior. According to (Jensen & Meckling, 1976), the shareholders are assured that the managers will make optimal decisions only if appropriate incentives are given, and only if the agent is monitored.

Jensen and Meckling's (1976) positive agency theory provides a framework linking disclosure

behavior to corporate governance. Corporate governance mechanisms are introduced to control the agency problem and ensure that managers act in the interests of shareholders. In theory, the impact of internal governance mechanisms on corporate disclosures may be complementary or substitutive. If it is complementary, agency theory predicts that a greater extent of disclosures is expected since the adoption of more governance mechanisms will strengthen the internal control of companies and provide an “intensive monitoring package” for a firm to reduce opportunistic behaviors and information asymmetry. Managers are not likely to withhold information for their own benefits under such an intensive-monitoring environment, which lead to improvement in disclosure comprehensiveness and quality of financial statements. On the other hand, if the relationship is substitutive, companies will not provide more disclosures for more governance mechanisms since one corporate governance mechanism may substitute another one. If information asymmetry in a firm can be reduced because of the existing “internal monitoring packages,” the need for install additional governance devices is smaller.

2.2. Transparency and disclosure of information

2.2.1. Corporate disclosure definition

Disclosure of accurate, comprehensive, and timely information is critical for the functioning of an efficient capital market. The quality of information presented in annual reports influences investors' and other stakeholders' decisions by mitigating information and incentive problems, as explained in agency theory (Healy & Palepu, 2000).

The aim of annual reports is to provide a fair review of the development of a company's business and its position. Transparent presentation of information in annual reports is especially important for listed companies. The general consensus among financial economists is that a productive disclosure environment and low information asymmetry have many desirable consequences, such as efficient allocation of resources, capital market development, market liquidity, decreased the cost of capital, lower return volatility, and high analyst forecast

accuracy (Kothari, Li, & Short, 2009).

Disclosure term, in the broadest sense, is meant to provide information. Corporate disclosure can be defined as the communication of information by people inside the public firms towards people outside. The main aim of corporate disclosure is “to communicate firm performance and governance to outside investors” (Healy & Palepu, 2000). This communication is not only called for by shareholders and investors to analyze the relevance of their investments but also by the other stakeholders, particularly for information about corporate social and environmental policies.

There are different forms of disclosure. The first one is financial reporting, necessarily financial statements whose contents are defined by accounting standards (for instance the International Financial Reporting Standards, or IFRS). As compliance with good practice in corporate governance is now required, reporting also concerns management (for example, the "comply or explain" principle has been enforced since 2008 in the European Union). Reporting must respect specific rules, even specific formats, restricting the discretion of managers, and allowing stakeholders a better understanding of information. Besides reporting, managers also communicate information in a less formal way, for instance, by press conferences, by an announcement on websites and so on.

Whatever the form the disclosure takes, two other distinctions can be made. The first distinction is based on the opposition between financial and non-financial disclosure. Non-financial information is related to the company's social and environmental responsibility and the company's corporate governance as well as the firm's operating methods or to managers' health (Healy & Palepu, 2000). Besides, the second distinction is based on the opposition between voluntary and mandatory disclosure. Voluntary disclosure is a measure of self-regulation or a response to the expectations of stakeholders and civil society for more disclosure (Chandler, 1997). Mandatory disclosure results from legislation or regulation.

In order to empirically assess the benefits or the costs of disclosure, it is necessary to compare different levels of disclosure. Some authors make the inter-firms comparison, assuming that in the same country, in the same year, some companies disclose more or better than the other ones ((Botosan, Disclosure level and the cost of equity capital, 1997); (Patel & Dallas, 2002)). Others use inter-temporal (Akhigbe & Martin, 2006) or international (Bhat, Hope, & Kang, 2006) comparisons, assuming that some regulations or laws lead to a higher level of disclosure. A firm can increase its level of disclosure in different ways. First, the quantity of information disclosed may be higher. For instance, the European Transparency Directive requires more intermediate knowledge: a biannual financial report and activity report, and detailed quarterly publications, including financial information, e.g., the revenue and the earnings. The Sarbanes-Oxley Act, which has applied to all companies listed in the US market since 2002, required the disclosure of "all material off-balance sheet transactions, arrangements, obligations (...) that may have a material current or future effect on financial condition (...)". Another example is the governance disclosure and Corporate Social Responsibility (CSR) disclosure. For instance, in France, the "Sécurité Financière" law requires a governance report for public companies. The law on the "Nouvelles Réglementations Economiques" requires information about how the public companies take care of the economic and social consequences of their activities. Second, the disclosure may be more frequent. For instance, the general regulation of AMF (the French Financial Market Authority) demands the disclosure of permanent information: any information that could influence the share price. And the manager may decide to give more interviews or to organize meetings with financial analysts. Third, the information disclosed may be more readily available. The general regulation of AMF demands that the classified information is published on the company website and on all the media. Finally, the quality of the information disclosed may be enhanced; it was one of the main objectives of the Sarbanes-Oxley Act. For example, the respect of good practices in corporate governance as the requirement of extern independent

auditors may play an important role (Akhigbe & Martin, 2006). More generally the quality of disclosure can be improved by better internal control or external control, as required by the Sarbanes Oxley Act. The accounting standards play an essential role. The international normalization, thanks to the creation of the International Financial Reporting Standards (IFRS), allows for better clarity, comparability, and understanding of the financial reports by the outsiders, in particular, the non-professional shareholders. Furthermore, the IFRS increases the quality of disclosure thanks to the concept of fair-value (or market-to-market value): assets and liabilities have to be measured by their market value instead of their historical significance for instance (Leuz & Verrecchia, 2000).

To sum up, a higher level of (mandatory or voluntary) disclosure may lead to more, or to more frequent, or to more readily available information, or to a better quality of the disclosed information.

2.2.2. Transparency and disclosure in European Union countries

Companies in Europe are obliged to have high levels of transparency and disclosure. Transparent disclosure enables stakeholders to gain an informed and accurate view of the company and the way it is doing business. It reduces the scope for unscrupulous companies to conceal unwelcome facts. In 2004, the OECD developed a set of revised Principles of Corporate Governance (OECD 2004), an essential reference for international best governance practices. OECD is changing these standards again, with the updated version to be published in 2015.

In Europe, companies should ensure that timely and accurate disclosure is made on all material matters regarding the company, including the financial situation, performance, ownership, and governance of the company. Information should be prepared and disclosed in accordance with high-quality standards of accounting and financial and nonfinancial disclosure. Disclosure should include, but not be limited to, material information on the following:

- The financial and operating results of the company;

- Company objectives;
- Major share ownership and voting rights;
- Remuneration policy for members of the board and key executives and information about board members, including their qualifications, the selection process, other company directorships, and whether they are regarded as independent by the board;
- Related-party transactions;
- Foreseeable risk factors;
- Issues regarding employees and other stakeholders; and
- Governance structures and policies, in particular, the content of any corporate governance code or procedure and the process by which it is implemented.

2.2.2.1. *Financial reporting*

In 2002, the European Union agreed that starting January 1, 2005, International Financial Reporting Standards (IFRS) would apply for the consolidated accounts of the EU listed companies (European Union 2002). More than 100 countries use IFRS to prepare their financial statements.

In July 2014, the European Commission launched a public consultation on the impact of International Financial Reporting Standards in the European Union. In particular, the Commission aims to examine whether the adoption of IFRS has improved the efficiency of EU capital markets by increasing the transparency and comparability of financial statements.

2.2.2.2. *Nonfinancial reporting*

Large European listed and unlisted companies (those with more than 500 employees) are required to extend their diversity and nonfinancial reporting activities on a comply-or-explain basis (European Parliament 2014). The following matters must now be disclosed in the nonfinancial statement:

- Diversity policy in the board of directors;

- Environmental aspects;
- Social and employee-related elements; and
- Respect for human rights.

ecoDa has identified the following advantages associated with increased nonfinancial reporting (ecoDa 2013):

- It puts more emphasis on the factors that affect the long-term success of enterprises and the main risks incurred. This should help counter the short-termism reigning in numerous investments and hence management circles.
- It balances the attention to financial as well as nonfinancial indicators of performance and success. This is essential to counter the highly-biased focus on financial performance (information).
- Such information offers investors and other stakeholders a better insight into the strengths and weaknesses of an enterprise and allows improvement in the dialogue with all interested parties.

ecoDa also identified the following disadvantages and hurdles associated with increased nonfinancial reporting (ecoDa 2013):

- In general, it is difficult to measure a number of qualitative nonfinancial indicators or find generally accepted definitions and measuring techniques.
- The relevant reference data differ from one company to another, from one sector to another, and from one country to another. Moreover, there is the question of how to fit the European nonfinancial reporting proposal within individual countries' corporate governance frameworks, tax requirements, and corporate law.
- The obligation to publish nonfinancial and diversity information might risk fostering a culture of reporting instead of a culture of commitment and engagement. Such additional responsibilities might seriously increase directors' liabilities. ecoDa contends

that the risk of revealing more strategic elements to competitors should be limited and pleads against a wide-ranging, exhaustive reporting obligation.

Many leading organizations across Europe are adopting a new integrated reporting model, as shown in the following figure.

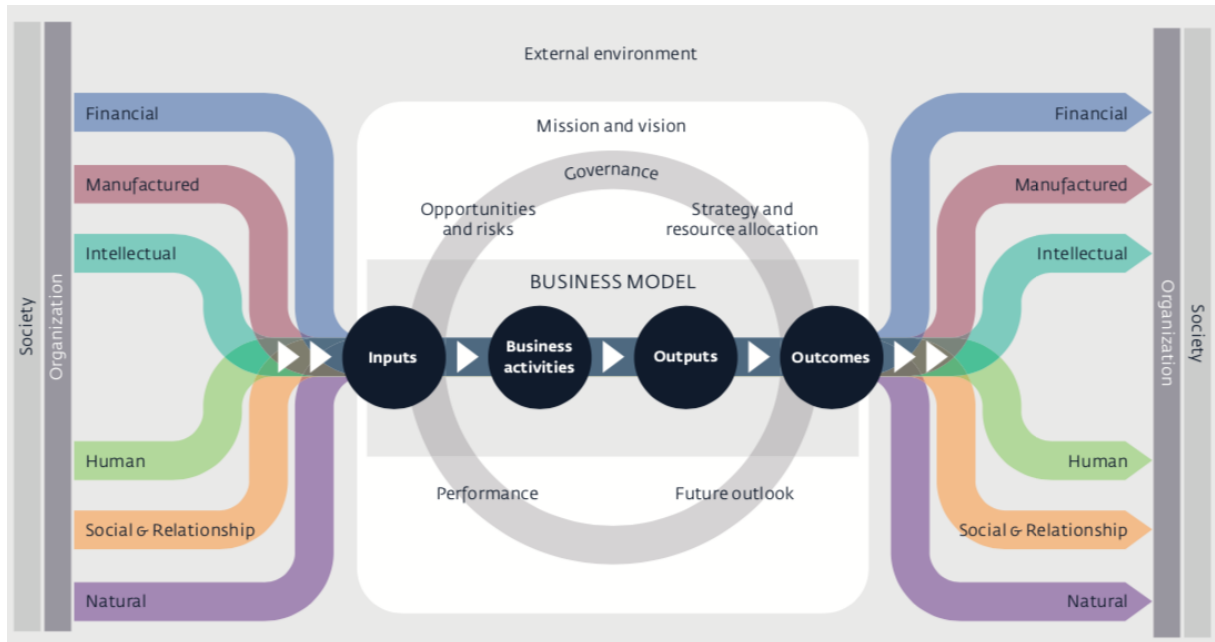


Figure 2.1. The integrated reporting model

(Source: International Integrated Reporting Council, www.theiirc.org (2013))

2.2.3. Benefits of disclosure

2.2.3.1. Benefits of disclosure to shareholders

Whether the disclosure is imposed on the firm by regulation or provided voluntarily by the firm, it is beneficial for shareholders if it creates value.

Most of the studies show that the increase in disclosure creates value for shareholders. This is true whatever the way disclosure is enhanced. For instance, (Goncharov, Werner, & Zimmermann, 2006) show that German firms that comply with the regulation relating to disclosure (according to the ‘comply or explain’ principle) enjoy a higher share price, over a period of a year.

(Patel & Dallas, 2002) show that a firm's disclosure (measured by Standard & Poor's transparency score) increases the price to book ratio.

The disclosure also creates shareholder value by allowing a firm to reduce the cost of its capital. Many studies show this positive impact ((Botosan, Disclosure level and the cost of equity capital, 1997); (Cheng, 2006)). Some studies arrive at less conclusive results. For instance, (Botosan, Evidence that greater disclosure lowers the cost of equity capital) finds that an increased disclosure only benefits to companies that are followed by a few financial analysts. (Botosan & Plumlee, A re-examination of disclosure level and expected cost of equity capital, 2002) show that a more transparent annual report decreases the cost of capital but that more frequent information given during the year increases it.

A firm can gain from its own disclosure by the additional investments that it may be able to implement. (Khurana, Pereira, & Martin, 2006) Show that the more transparent a firm is, the higher the part of a firm growth that is financed externally will be. The underlying idea is that disclosure facilitates external financing, investments, and growth. Similarly, (Utrero-Gonzalès, 2006) finds that a robust regulatory requirement for disclosure leads to lower debt levels: greater disclosure would allow firms to raise equity capital more efficiently.

2.2.3.2. *Benefits of disclosure to stakeholders*

This part discusses the benefits that disclosure offers to stakeholders and society at large, which come from two sources: the avoidance of financial scandals and an improvement in financial stability.

If firms become more civic-minded, behave in a more socially responsible way, and if financial scandals are avoided, then disclosure can be deemed beneficial. (Holder-Webb, Cohen, Nath, & Wood, 2008) try to verify this assertion. They note that the last few years have been marked by regulatory action that led to the development of corporate governance, sometimes in response to financial incidents caused by some questionable managerial practices. (Holder-

Webb, Cohen, Nath, & Wood, 2008) study the disclosure policy of a sample of 50 US firms from 2004. They find significant differences in their structure of governance. Small firms provide less information than large ones, which supply more information about their independence standards, audit committees, management supervision systems, and whistleblowing procedures. However, compared to small firms, large ones do not appear to give superior information about their environment. These results obviously raise questions that lie at the heart of most financial scandals as, in the end, firms' size matters less than respecting good governance, the latter being probably the main criterion to improve financial stability. As we have seen above, one of the main objectives of the disclosure of financial statements is to inform internal and external users on the economic and financial situation of an organization. However, famous fraud scandals (Enron, WorldCom, Global Crossing, Xerox, Adelphia, Global Crossing, Parmalat, Lucent, Tyco, *etc.*) have eroded public confidence in financial reporting. (Rezaee, 2005) explains that false statements have generated losses of more than \$500 billion to investors in recent years and that this has resulted in a loss of credibility in the financial statements. Hence, the global benefits of disclosure for avoiding financial scandals seem at least doubtful. However, audits are usually undertaken to prevent problems related to the credibility of financial statements, and, as we saw above, laws, regulations, and rules have tried to enhance the quality of disclosure.

The second collective advantage of disclosure lies in the financial stability it supposedly provides. (Prescott, 2008) estimates that retention of information and lack of disclosure are dangerous for the balance of the system, if only because the information that concerns market security is like a public good, in that it is useful for everyone: its use by one person does not reduce its value for other users. Disclosure should thus bring benefits. There may be a perverse effect here. However, imagine that a firm voluntarily discloses some information and that

markets interpret the fact that the others do not like the bad news. In such a situation, stability may be at risk because of an increase in transparency.

The issue of financial stability leads to the problem of bank crisis and bank transparency. It appears that banking crises are less likely to happen in financial systems producing comprehensive financial reports characterized by disclosure: (Tadesse, 2005) shows that market discipline ensures the stability of the financial systems and markets in countries that adopt such statements. In a study on the banking systems of 49 countries during the 1990s, he shows that the instability of financial systems and the systemic risks are lower in states that ensure the promotion of financial information disclosure. (Giannetti, 2007) and (Nier, 2005) come to the same conclusions: banks that communicate more information on their assets are less likely to see their financing costs increasing; greater transparency reduces the probability of systemic banking crises thanks to better control of bank risks by depositors. However, (Cordella & Yeyati, 1998) show that transparency may increase the banking sector's sensitivity to systemic shocks: if banks in difficulty have suffered an exogenous trauma, more information generates market reaction which can worsen the bank's situation. (Hasman & Samartin, 2008) also bring to light the potential negative role of disclosure during a banking crisis, mentioning the bank run on the British Northern Rock in 2007.

The banking sector is essential, but corporate disclosure per se can also reduce information bubbles and help relate the valuation of the firm to its fundamental value. Disclosure can thus reward firms that go to the financial markets. (Akhigbe & Martin, 2006) show significant changes in the evaluation of risks following the adoption of the Sarbanes-Oxley Act in the financial services sector. The authors conclude that the financial market rewards firms that are powerfully transparent and that have a high level of governance, and conversely.

Over an extended period, disclosure remains essential for firms that pass through the financial market and who desire stability in their results. For instance, (Ferrell, 2007) empirically

analyzes the impact of disclosure requirements on volatility and stock market returns. The study concludes that mandatory disclosure is associated with a dramatic reduction in the global fluctuations of stock market returns. World Bank economists, in particular, have endorsed the virtues of disclosure as regards financial stability. (Vishwanath & Kaufmann, 1999) point out that promoting greater disclosure is directly aimed at financial stability, contributing to the development of sound institutional infrastructures, drawing up standards and responsible accounting practices, improving incentives to disclose information and reducing to the minimum perverse incentives produced by safety nets, such as deposit insurance.

All in all, then, if private gains for shareholders are sometimes doubtful (or at least not entirely supported by the existing empirical analyses), the benefits for the other stakeholders may prove more important, although they may only realize in the long run.

2.2.4. Cost of disclosure

2.2.4.1. Practical costs

The question is the following (Admati & Pfleiderer, 2000): if the disclosure is so positive, why do firms not engage in it always spontaneously? The sheer fact that firms have been forced to reveal information by one (or more) specific pieces of legislation is in itself showing and allows us to think that disclosure leads to costs that the political decision-makers are more or less ready to impose on their firms (without ignoring the fact that through lobbying these can make known there (in) ability to bear these costs). The very loss of producing and disseminating information cannot be ignored. Even if the permanence of the legal obligation allows procedures to be standardized, and economies of scale to be implemented, the direct cost of disclosure remains a factor. (Bethel, 2007) example quotes the EDGAR information system used by the Securities and Exchange Commission (SEC), through which the equivalent of three million pages passes every day, knowing that before this system existed, every page could be obtained at the cost of \$0.15. The fact that since 2000, the SEC has moved from a periodic information system to a

continuous system strengthens this trend still more. In the same way, as (Coates, 2007) points out, the direct costs of implementing the Sarbanes – Oxley Act can seem low (\$1,000 in 2004 for the monitoring costs required by the new institution overseeing auditors, the PCAOB), even if (Zhang, 2007) show that shareholders anticipated substantial costs of compliance to the Sarbanes – Oxley Act. But firms do not disclose the costs involved in ensuring respect for their documents and procedures, and the auditing costs have increased considerably since the beginning of the decade. The figure of 1 million auditing costs per billion of revenue is often quoted, with annual reductions (that can be attributed to initial fixed costs and to economies of scale) varying from 15% to 40%. As for the indirect costs (see below: these are linked to the opportunity cost of the managers concerned, to growing risk aversion), they are more challenging to measure, even if one can think that they can disappear over time as long as the actors assimilate the rule (Verrecchia, 2001). Moreover, it can assume (Admati & Pfleiderer, 2000) that the more details are given by firms, the higher the cost of producing the information. To sum up, increasing the quality of the information and increasing the quantity of disclosed information generate costs of implementation, whatever it considers voluntary disclosure or mandatory disclosure, and whatever the regulation is. Moreover, the rule may increase these costs. There is scope for control because the hidden costs of transparency are high, whereas the social benefits are substantial: disclosure has significant positive externalities, as highlighted by (Arruñada, 2011). For instance, the temptation to use information distributed by some firms to evaluate other firms whose activity (or value) is not necessarily correlated with the one disseminating the data, leads to an amount of information that is lower than the social optimum. Forcing firms to reveal information can be useful. However, if policymakers over-estimate social advantages, they will require too much transparency, and the level of costs will be sub-optimal. The financial industry case, studied by (Akhigbe & Martin, 2006) is moreover enlightening on this point. The authors examine the impact of the Sarbanes-Oxley Act in order

to assess whether recommendations aimed at reducing the opacity of financial statements have, in net terms, been costly or beneficial. The choice of the sector studied is linked to an assessment of a higher than average opacity (Morgan, 2002). (Akhigbe & Martin, 2006) estimate of gains is based on an event study. The authors show that there are wealth creation effects in the financial industry, apart from investment brokers. However, their estimates reveal that the gains are stronger when firms have good governance practices. Their results follow the idea we already mentioned above: good governance leads to a higher level of quality of the disclosed information, which is rewarded by the financial market participants.

2.2.4.2. Governance costs

The potential costs of disclosure in terms of governance and managerial behavior are also being taken into consideration in discussions. We saw above that an increase in disclosure allows a reduction in information asymmetry, and therefore agency costs. Some authors are, however, modifying this position. (Coates, 2007), analyzing the costs linked to the establishment of the Sarbanes-Oxley Act, suggests that the mandatory increase in disclosure involves two potential costs. On the one hand, opportunity costs are generated because of the additional time spent by managers and their teams on producing more information or information of better quality. On the other hand, more significant risk aversion results from pressure to provide stricter financial standards. He nevertheless considers that these costs would only be linked to establishing the new information required, arguing that the additional attention required from managers and their teams is only necessary when new measures are implemented and that risk aversion reduces once the degree of the increase in responsibilities has been better understood.

For some authors, the costs of governance linked to the increase in legal obligations on disclosure can go well beyond those identified by (Coates, 2007). (Leuz, Triantis, & Wang, 2008) draw on a study analyzing the effects of the Sarbanes-Oxley Act, demonstrating that the cost resulting from it increases the tendency of managers to make their activities opaque in

order to protect their private gains and to reduce external monitoring, in particular when the legal and regulatory protection of investors and managers is weak. Strengthening demands on disclosure even leads some firms to withdraw their stock market listing and so exempt themselves from most of the disclosure obligations – see for example (Leuz, Triantis, & Wang, 2008), (Coles, 2008) or (Coates, 2007). (Prat, 2005) shows that the disclosure of information to a third party can reduce the agent’s incentive to follow the principal’s objective: disclosure, instead of reducing agency costs, increases them.

Perhaps the question is not so much one of disclosure as one of the levels of disclosure. (Hermalin & Weisbach, 2008) show that there exists an optimal level of disclosure. As well as the cost of producing information, and the problem of disclosing information to competitors or to the regulator, the increase in the disclosure required by the law is changing relationships between the board of directors or the supervisory board and managers and their teams. It is certain that the increase in disclosure allows the board of directors or the supervisory board to have better supervision of managers. But that can also generate reductions in profit, accelerate the turn-over in managers in an inefficient way and increase the remuneration of managers who demand compensation for a career that is more unstable because of the increase in risk. Furthermore, the likelihood that managers will falsify information to their advantage increases. As for the practical costs, the pernicious effects on governance are due to disclosure per se, but a too demanding regulation can exacerbate the problem.

2.2.5. Roles of the board of directors in disclosure and financial reporting

The board of directors has primary responsibility for the provision of useful and meaningful information for investors and other users of the financial statements. Directors are primarily responsible for the quality of the financial report. While directors are not expected to be accounting experts, they need to be engaged and seek an explanation to support the accounting

treatments chosen and challenge the accounting decisions applied in the financial report when appropriate.

2.2.5.1. *Financial reporting process*

The following chart demonstrates the critical participants in the financial reporting process and their leading interacting roles:

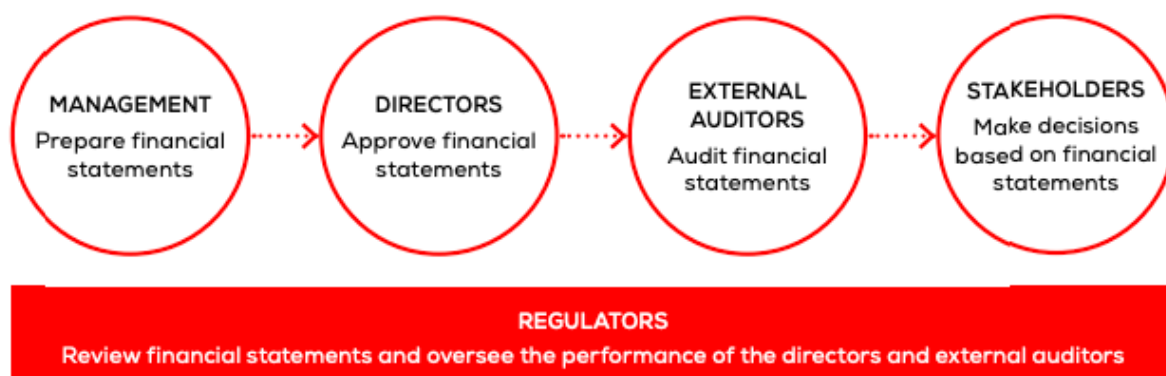


Figure 2.2. Financial reporting process

(Source: Chartered Accountants Australia and New Zealand)

Some important points to highlight in relation to the financial reporting process are:

- **Management** is responsible for preparing the financial statements and for the effective operation of the internal control system and related processes. External providers, such as accounting firms, may be engaged by management to perform some of these tasks.
- **Directors** are responsible for overseeing the financial reporting processes undertaken by management. They have ultimate responsibility for ensuring that legislative requirements related to financial reporting, such as filing with regulatory bodies and providing financial information to investors/shareholders, are complied with.
- **External auditors** carry out an independent audit of the financial statements. External auditors report to the shareholders or investors through an external audit report. Engagement with the external auditors is generally undertaken by the directors on behalf

of the shareholders. Day-to-day interaction during the audit process is usually between the external auditor and management.

- **Stakeholders**, such as shareholders, investors, and other providers of debt capital are the “consumers” in the financial reporting supply chain. They use the information in the financial reports and make decisions based on this information. Other stakeholders, such as customers, suppliers, employees, volunteers, potential funders and the wider community, may also have an interest in the financial performance of an organization and use the information in the financial reports to make decisions.
- **Regulators**, depending on the type of organization and the jurisdiction it is operating in, are responsible for overseeing the entity’s financial reporting compliance, and in some courts, the external auditors.

Moreover, there are other points which are included in some organizations:

- **Audit committees** are standard in larger organizations. This is where the board sets up a separate sub-committee, often referred to as an audit committee, to oversee the financial reporting and audit processes. Such a committee should report back regularly to the full board so that all directors are up-to-date and engaged with financial reporting matters.
- **Internal auditors** are sometimes engaged by organizations to provide assurance over specific areas; therefore, they are not independent. Internal auditors may be permanent staff members, an external firm, or individuals engaged for specific assurance projects.

2.2.5.2. *Director’s duty of care*

Directors’ responsibility for financial reporting arises from the duty of care directors have to the organization it is governing. This duty of care is generally written into legislation and other regulatory requirements around the world. In the European Union, the duty of care of a director requires a director to do the following:

- Devote sufficient time, attention, and diligence to managing the company;
- Act only on an informed basis;
- Possess the necessary skills and experience to make sound business decisions; and
- Consider the likely outcome of his or her decisions carefully.

2.2.5.3. *Responsibility of the board in relation to financial reporting*

Directors do not need to be accounting experts. However, they need to have sufficient financial literacy to understand, monitor, and direct the organization. This means that directors are expected to be able to read and understand the financial statements and to form a view on the accuracy, credibility, and understandability of the information provided. They are also supposed to understand the processes in place to prepare and review the financial statements. “Professional skepticism: Even if they are not accounting experts, directors should question the accounting treatments applied when the treatment does not reflect their understanding of the substance of the arrangement. They should also apply professional skepticism when assessing management views on areas of significant judgment and estimates”.

“Director’s duty of care: Board members should act on a fully informed basis, in good faith, with due diligence and care, and in the best interest of the company and the shareholders.”

“Financial literacy: Directors are not expected to be accounting experts, but should have sufficient and up-to-date knowledge of the accounting principles and practices to perform a useful high-level review of the financial statements. Otherwise, directors should seek help and/or attend training”.

2.2.6. *ESG index – A proxy for disclosure quality*

In order to carry out the quantitative research, ESG index is used as a proxy for corporate disclosure quality in this study. There have been arguments that whether ESG index can be used as a proxy for disclosure quality or not, since it is more related to Corporate Social Responsibility issues. However, both corporate disclosure and ESG reporting are associated

with investors/shareholders' interests. In this part, the reasons why the researcher uses ESG index as a proxy for disclosure quality are discussed.

2.2.6.1. Disclosure focus: Investors

In the financial world, disclosure refers to the act of releasing all relevant information on a company that may influence an investment decision—making public both positive and negative news, data, and other details about its operations, or that impact its operations, in a timely fashion. Similar to disclosure in the law, the concept is that, in the interest of fairness, all parties should have equal access to the same set of facts.

Previous studies provide empirical evidences that the quality of financial information increase volume of investments (Brown and Hillegeist, 2007). It is evident that investors and analysts seek disclosures of forward-looking information, such as performance projections and they tend to invest in and provide coverage of companies that have more forthcoming disclosure policies. (Ajinkya et al, 2005).

Chartered Financial Analyst (CFA) Institute undertakes a study in 2013 to provide investor views on the effectiveness of financial reporting disclosures. It obtains that corporate financial statements and their related disclosures are fundamental to sound investment decision making. The well-being of the world's financial markets, and of the millions of investors who entrust their financial present and future to those markets, depends directly on the information financial statements and disclosures provide. Consequently, the quality of the information drives global financial markets.

According to Bolo and Hassani (2007), financial reporting is one of the products of accounting system that provides the necessary information needed to take economic decisions.

According to Stergios and Michalis (2012), there are two general perspectives that are widely used in the assessment of financial reporting quality. The first is where the quality of financial reporting is determined on the basis of the usefulness of the financial information to its users;

secondly the perspective of financial reporting quality is focused on the notion of shareholder/investor protection. The user needs perspective is mainly concerned with the provision of relevant information to users for making decisions, whereas the shareholder/investor protection perspective aims to ensure that the information provided to users is sufficient for their needs, transparent and competent, (Jonas and Blanchet, 2000).

2.2.6.2. *ESG index and investors' decisions*

The extent of CSR disclosure can be connected with corporate transparency level (Daub, 2007) and management quality and capability for the management to increase business profitably in the future (Eccles et al., 2011).

Amel-Zadeh and Serafeim (2017) carry out a global survey in order to explain how investors use ESG information. Their result reveals that a large majority of investors (82%) consider ESG information when making investment decisions. A key finding from their survey is that of the investors that do consider ESG information in their investment decisions the majority (63%) responded that they do so, because ESG information is financially material to investment performance.

According to (Jan, 2019), the ESG concerns of particular investors vary, as does their view of organizational responses, but all need information to help them make investment decisions. They require insight into management's posture on ESG topics and the related issues and risks, as well as strategies and responses. Investors recognizes that ESG activities can have negative or positive financial consequences and they need to predict and account for the operational, regulatory, and reputational impacts of ESG issues. Investors see the connection between ESG and the value of the business, but they cannot forecast value and factor in related risks without better ESG information.

Previous researchers attempt to discover the relationship between ESG index and firm value as well as firm's financial performance. Empirical results show that investors base on these

outcomes to make their investing decisions into firms. (Tarmuji, Maelah, & Tarmuji, 2016) discover the impact of Environmental, Social and Governance (ESG) practices on economic performance. Using panel data that expand into international perspective, they find the support that social and governance practices significantly influence on economic performance. (Fatemi, Glaum, & Kaiser, 2018) also investigate the effect of environmental, social, and governance activities and their disclosure on firm value. They find that ESG strengths increase firm value and that weaknesses decrease it. ESG disclosure plays a crucial moderating role by mitigating the negative effect of weaknesses and attenuating the positive effect of strengths.

2.2.7. An introduction of Thomson Reuter ESG Score

Environmental, social, and governance (ESG) refer to the three central factors in measuring the sustainability and ethical impact of an investment in a company or business (Kell, 2014). These criteria help to better determine the future financial performance of companies (return and risk). (Eccles, Ioannou, & Serafeim, 2012). The investor has long recognized that ESG factors are essential measures for company valuation, risk management, and even regulatory compliance. One of the significant issues in the ESG area is disclosure. The information on which an investor makes his decisions on a financial level is somewhat gathered merely. With ESG considerations, the practice has been for the company under examination to provide its own figures and disclosures. (Association of British Insurers, *Disclosure Guidelines on Socially Responsible Investment*, 2001).

The Thomson Reuters ESG database covers over 6,000 companies globally and includes more than 400 ESG metrics, which primarily come from corporate, public reporting (annual reports, corporate social responsibility (CSR) reports, company websites, and global media sources).

Thomson Reuters ESG Score is designed to transparently and objectively measure a company's relative ESG performance across ten topics based on company-reported data. The underlying

measures are based on considerations around materiality, data availability, and industry relevance.

Table 2.1. Company’s topics considered in Thomson Reuters ESG Score

ENVIRONMENTAL	Resource Use
	Emissions
	Innovation
GOVERNANCE	Management
	Shareholders
	CSR Strategy
SOCIAL	Workforce
	Human Rights
	Community
	Product Responsibility

(Source: Thomson Reuters website)

A combination of the ten categories, weighted proportionately to the count of measures within each group formulates the three pillar scores and the final ESG Score, which is a reflection of the company's ESG performance, commitment, and effectiveness based on publicly reported information.

Scores Calculation Methodology of Thomson Reuters ESG Score is presented in the Appendix part of this paper.

CHAPTER 3: LITERATURE REVIEW

This chapter review the current knowledge including substantive findings, as well as theoretical and methodological contributions to the particular topic of this thesis which are the relationship between board tenure and disclosure quality. To be specific, this chapter includes two opposing theories which try to explain whether extended tenure would affect positively or negatively on the effectiveness of board of directors.

Recent years have noticed a large number of studies that obtain the relationship between corporate governance characteristics and corporate disclosure issues. In which, many previous authors have focused on the roles of the board of directors and its elements.

The board of directors is one of the most significant governance issues being concerned by many initiatives on corporate governance (Ferrero-Ferrero, Muñoz-Torres, & Fernandez-Izquierdo, 2015) and it plays a critical role in corporate disclosure policies (Fernández-Feijoo, Romero, & Ruiz-Blanco, 2014). Board composition is an essential determinant for corporate disclosure since it is influenced by the choices, motives, and values of those who are involved in formulating and making decisions in the organizations (Khan, Nawaz, & Khan, 2013).

In many European countries, the board of directors might have greater influence over a company's disclosure strategy than its CEO does (Huang S. , 2013). Analyzing the corporate governance means considering the board's characteristics and board's composition, i.e., the number of independent boards, the tenure of boards, the size of the board, as well as board diversity in terms of gender, age, ethnicity, nationality, and educational background (Brown & Caylor, 2006).

According to Hambrick and Mason (1984), demographic traits such as experience, academic background, age group, gender diversity and tenure effect on the values and cognitive key components of top management and make them perform in different decisions, especially in complicated situations, subsequently leading to different organizational outcomes.

Previous findings regarding the relationship between board structure and the level of corporate disclosure have been inconclusive.

Hussain, Rigoni, & Orij (2016) investigate the relationship between particular corporate governance characteristics and the triple bottom line sustainability performance which based on fundamentals of agency theory and stakeholder theory. The study observes that the more independent board, with more women on the board, and a designated CSR committee which meets more frequently, is better able to monitor management decisions regarding environmental and/or social issues.

Rao & Tilt (2016) examine the relationship between corporate governance, in particular board diversity, and Corporate Social Responsibility reporting among the top 150 listed companies in Australia over a three-year period. The results based on the regression analysis reveal that three of the board diversity attributes (gender, tenure and multiple directorships) and the overall diversity measure have the potential to influence CSR reporting. The relationship between independent/non-executive directors and CSR disclosure however is not clear (Chenga & Courtenay, 2006).

Using a direct measure of voluntary disclosure, Cheng and Courtenay (2006) find that boards with a larger proportion of independent, nonexecutive directors (their proxy for board-monitoring effectiveness) are significantly and positively associated with higher levels of voluntary disclosure. In addition, the results also indicate that firms with boards with a majority (> 50%) of independent directors have higher levels of voluntary disclosure than firms with boards that do not have a majority of independent directors.

Board tenure is one of many factors that could be passed over by lots of academic investigators due to its confidential aspect. Board tenure is concerned as a delicate and intimate topic within internal each organization that could lead to a critical problem in collecting and analyzing a precise database.

Board tenure is the average number of years the firm's directors have served on the board (Finkelstein & Hambrick, 1990). Board tenure reflects the likelihood that board members' control over the monitoring of executives will increase as the average tenure period increases (Hambrick & D'Aveni, 1992).

A majority of prior research has explored two competing hypotheses in an attempt to determine whether having long-tenured directors is detrimental or beneficial to a company. The Entrenchment Hypothesis predicts that long-tenured directors become overly deferential to management, fossilized in their thinking, and become ineffective in their role as monitors of management, resulting in a corresponding decrease in governance effectiveness as tenure increases. Alternatively, the Expertise Hypothesis posits that as directors' tenure increases, they gain valuable expertise/experience which results in increased governance effectiveness.

Consequently, in terms of board tenure, there are two opposing views of tenure on disclosure quality in financial reporting. On the one hand, the more extended directors stay in their positions, the better they compromise with the company and have more knowledge about company operations. This may result in increasing quality disclosure of financial reporting when one of the functions of the board of directors is monitoring and advising financial reporting. On the other hand, there have been some critical beliefs that entrenchment leads to a close relationship between board members and executives, therefore decreasing the ability of board members to represent shareholders' and other stakeholders' interests effectively. In other words, extended director tenure could have consequences on high information asymmetry between insiders and outsiders of the firm, therefore leads to low quality in disclosure of financial reporting.

3.1. Longer board tenure – Better knowledge

Directors with longer tenure would logically accumulate more firm-specific knowledge while sitting on the board. Johnson, Schnatterly, & Hill (2013) claim that as directors spend more

time serving on boards, they build organization-specific expertise and gain more knowledge about organizational issues. According to (Forbes & Milliken, 1999) firm-specific knowledge is a form of tacit knowledge about the firm which allows board members to deal effectively with strategic issues and improving the board's ability to provide resources to the firm. (Hillman & Dalziel, 2003) pointed out that board capital, including firm-specific knowledge and experience, is also useful for enhancing the board's ability to monitor management, given its more in-depth insight into management behavior and the firm's situation.

In sum, director tenure should be able to enhance a board's ability both to monitor and provide resources to the firm, and by so doing, reduce its risk of financial distress.

Prior studies indicate that experienced directors can provide better knowledge about the firm and be more efficient in decision making (Hillman & Dalziel, 2003).

(Maere, Jorissen, & Uplander, 2014) in their recent study found a negative association between director tenure and financial distress. Thus, they concluded that firms ending in financial trouble are likely to have boards with shorter tenures compared to those in with longer tenure.

More so, the expertise hypothesis is used to argue that longer tenure is associated with improved director performance because directors develop more expertise over time and become more willing to criticize the management (Bebchuk, Fried, & Walker, 2002). Thus, long tenure boards are expected to have more information and experience at their disposal, and therefore to be able to provide more active monitoring and advice to management.

Companies with a substantial-high tenure indicate the lower social negative impact because the board is more interested in long-term corporate success and establish a good relationship with the workers (Kruger, 2010).

The longer board tenure will provide better experience and understanding of the corporate business environment, so as to lead to a better long-term strategy and policy for corporate sustainability.

3.2. Longer board tenure – Higher entrenchment

On the opposite aspect, (Vafeas, 2003) proposes a management friendliness hypothesis, which suggests that directors with long term tenure are more likely to befriend and less likely to monitor their managers. That means that more seasoned directors have been shown to lose their independence over time and favor management's interests over shareholders.

Schnecke *et al.*, (2006) argues that in addition to becoming too management-friendly, other disadvantages may accompany long board tenure. Extended board tenure may limit cognitive conflict among board members and may restrict the number of views and opinions that are openly discussed and debated by the board. As a result, long-tenured board members may be slow to detect and react to certain legal violations committed within the firm.

(Berberich & Niu, 2011) found long tenure board has negative consequences for governance, because of the lack of effective oversight of executives. Long-term relationships between the boards of directors and executives will increase agency problems and lower the board's oversight function on executives (Byrd & Cooperman, 2010).

As directors spend more time serving on boards, they build organization-specific expertise and their relationships to organizational stakeholders also change. For example, (Hillman, Shropshire, Certo, Dalton, & Dalton, 2011) find that shareholders are discontented with the monitoring of longer-tenured directors.

(Clements, Jessup, Neill, & Wertheim, 2018) explore whether members of board of directors become less effective over time and whether term limits should be placed on their service as corporate board members. Using a sample of over 29,000 firm-year observations, they find a significant positive relationship between board tenure and board quality at low and intermediate levels of board tenure and a significant negative relationship at higher levels of board tenure. They also obtain that the negative effects of having long-tenured directors vary across companies based on particular firm-specific characteristics.

To sum up, major studies have two opposite points of view about “how long a director should stay in the board”. A potential explanation for the mixed results is that tenure has a nonlinear effect to director’s function and company’s disclosure policies. This study tries to obtain the relationship between board tenure and disclosure quality and the result is expected that there is a quadratic relationship between them.

CHAPTER 4: RESEARCH METHODOLOGY

This chapter presents the methodology of the thesis including the research model, the regression models, introduction and definitions of variables, and data sample and collection. In order to carry out the research, the database platform Thomson Reuters Eikon is accessed to obtain data collection and the software R statistical tool is used to function descriptive statistics, correlation, and regression analysis.

4.1. Methodology

The study is a quantitative research. This research is a type of correlational and regression analysis and thus will explain the correlation between the dependent variable and the independent variable. In order to obtain the relationship between board tenure and disclosure quality, a multiple linear regression model is constructed. In this regression model, the dependent variable is ESGSCORE which represents the disclosure quality of companies in financial reporting. The explanatory variable is TENURE which represents the average number of years the board directors stay in his/her position. There are two groups of control variables being used in this research: board characteristics and firm characteristics.

The research model presented in the Figure 4.1 below:

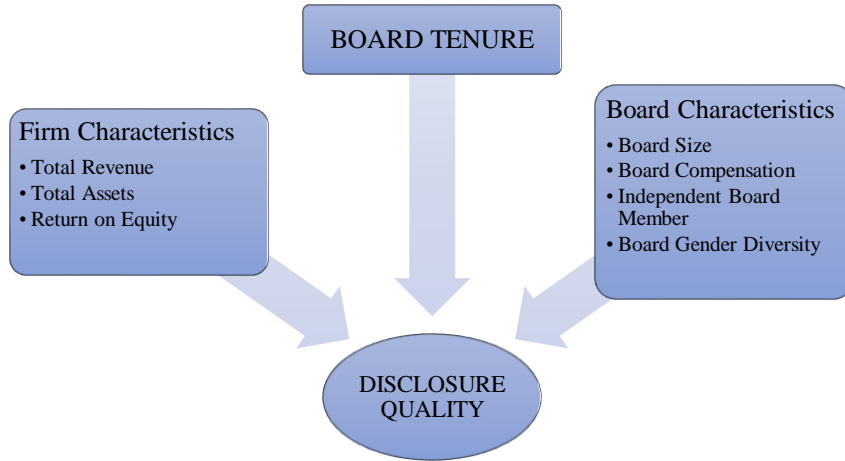


Figure 4.1. Research model

Following the concepts and methodology of (Huang & Hilary, 2018), the author's first test involves panel data estimates relating ESGSCORE to board tenure and other board characteristics and firm attributes. In particular, the following model is tested:

$$ESGSCORE_i = \alpha_0 + \beta_1 TENURE_i + \beta_2 TENURE_i^2 + \beta_3 REVENUE_i + \beta_4 ASSETS_i + \beta_5 ROE_i + \beta_6 BSIZE_i + \beta_7 BINDE_i + \beta_8 BCOM_i + \beta_9 BGEN_i + \varepsilon_i \quad (1)$$

The purpose of the first test is to explore where there is and nonlinear relationship between board tenure and firm's disclosure quality.

Next, to provide a descriptive graphical interpretation of the results, the author regresses ESGSCORE on the control variables (excluding TENURE and TENURE Squared), then plot the residual using locally weighted polynomial curve (LOWESS).

Finally, in order to obtain the optimal length of board tenure, a multiple regression model is being tested with the TENURE value between optimal range:

$$ESGSCORE_i = \alpha_0 + \beta_1 D(TENURE_i \leq x_1) + \beta_2 (TENURE_i \geq x_2) + \beta_3 REVENUE_i + \beta_4 ASSETS_i + \beta_5 ROE_i + \beta_6 BSIZE_i + \beta_7 BINDE_i + \beta_8 BCOM_i + \beta_9 BGEN_i + \varepsilon_i \quad (2)$$

In which, $[x_1; x_2]$ is the value range of optimal board tenure.

4.1.1. Dependent variable

ESGSCORE variable presents for Thomson Reuters ESG Score, which is an overall company score based on the self-reported information in the environmental, social, and corporate governance pillars.

4.1.2. Explanatory variable

TENURE variable presents for Average Board Tenure, which is the average number of years each board member has been on the boards.

4.1.3. Control variables

In this paper, there are two types of control variables being used: company characteristics and board characteristics.

Control variables of company characteristics include:

- REVENUE variable stands for Total Revenue which represents revenue from all of a company's operating activities after deducting any sales adjustments and their equivalents.
- ASSETS variable stands for the natural log of Total Assets Reported which represents the total assets of a company.
- ROE variable stands for Actual Return on Equity which is a profitability ratio calculated by dividing a company's net income by total equity of common shares.

Control variables of board characteristics include:

- BSIZE variable stands for Board Size, which is the total number of board members at the end of the fiscal year.
- BINDE variable stands for Independent Board Members which is the percentage of Independent board members as reported by the company.
- BCOM variable stands for Board Member Compensation which is total compensation of the board member in US dollars.

- BGEN variable stands for Board Member Diversity which is the percentage of females on the board.

4.2. Data sample and collection

To test hypotheses, the author uses multiple regression analysis with panel data. The panel data considers both time series and cross-sectional data (Guajarati, 1995). The main advantage of using panel data is that it allows the identification of specific parameters without making any restrictive assumptions (Verbeek,2008). This paper approaches the unbalanced panel data since there are 576, 623, and 649 observations accordingly to the fiscal year 2016, 2017, and 2018.

4.2.1. Data sample

European Union includes 28 member states. Although each member is incredibly proud of their distinctive national identities, the EU has created the region where business cooperation between member states is becoming increasingly common.

In order to obtain the current trend in corporate governance in the EU, this paper takes into account ten countries that have the highest nominal GDP within the union. According to International Monetary Fund World Economic Outlook (October – 2018), the list of top ten European Union countries by nominal GDP consists of Germany, United Kingdom, France, Italy, Spain, Netherlands, Sweden, Poland, Belgium, Austria.

Table 4.1. List of top ten European Union countries by nominal GDP

Country/Economy	GDP (billions of \$)	Rank (2018)	
		EU	World
Germany	4,029.140	1	4
United Kingdom	2,808.899	2	5
France	2,794.696	3	6
Italy	2,086.911	4	8
Spain	1,437.047	5	13
Netherlands	909.887	6	17
Sweden	554.659	7	22
Poland	549.478	8	23
Belgium	536.055	9	24
Austria	459.401	10	27

(Source: International Monetary Fund, imf.org, 2018)

Average board tenure is an internal issue of the corporation; hence, only public companies have disclosed information about corporate governance. Data is collected from public companies over a 3-year period, from the fiscal year 2016 to 2018. The numbers of observations are 576, 623, and 649 respectively to the fiscal year 2016, 2017 and 2018. The data sample consists of 1848 observations in total. Table and present observations by countries and sectors.

Table 4.2. Data Sample by Countries

	2016		2017		2018		Period	
Country	N	%	N	%	N	%	N	%
Austria	11	1.91%	13	2.09%	12	1.85%	36	1.95%
Belgium	21	3.65%	20	3.21%	15	2.31%	56	3.03%
France	79	13.72%	88	14.13%	77	11.86%	244	13.20%
Germany	69	11.98%	83	13.32%	76	11.71%	228	12.34%
Italy	12	2.08%	16	2.57%	20	3.08%	48	2.60%
Netherlands	35	6.08%	33	5.30%	39	6.01%	107	5.79%
Poland	18	3.13%	19	3.05%	18	2.77%	55	2.98%
Spain	16	2.78%	20	3.21%	13	2.00%	49	2.65%
Sweden	53	9.20%	61	9.79%	85	13.10%	199	10.77%
United Kingdom	262	45.49%	270	43.34%	294	45.30%	826	44.70%
TOTAL	576	100.00%	623	100.00%	649	100.00%	1848	100.00%

Among the top ten countries by nominal GDP in the EU, companies from the United Kingdom account for the majority while they take nearly half of the data sample (44.70%). Germany, France, and Sweden are also some dominant countries in the sample. Austria has the least companies in the sample while there are only 36 Austrian companies of the total of 1848.

Table 4.3. Data Sample by Sectors

Sector	2016		2017		2018		Period	
	N	%	N	%	N	%	N	%
Communication Services	45	7.81%	45	7.22%	40	6.16%	130	7.03%
Consumer Discretionary	94	16.32%	109	17.50%	111	17.10%	314	16.99%
Consumer Staples	38	6.60%	43	6.90%	41	6.32%	122	6.60%
Energy	21	3.65%	18	2.89%	28	4.31%	67	3.63%
Financials	56	9.72%	58	9.31%	55	8.47%	169	9.15%
Health Care	30	5.21%	37	5.94%	41	6.32%	108	5.84%
Industrials	134	23.26%	136	21.83%	154	23.73%	424	22.94%
Information Technology	33	5.73%	42	6.74%	49	7.55%	124	6.71%
Materials	56	9.72%	57	9.15%	60	9.24%	173	9.36%
Real Estate	39	6.77%	46	7.38%	44	6.78%	129	6.98%
Utilities	30	5.21%	32	5.14%	26	4.01%	88	4.76%
TOTAL	576	100.00%	623	100.00%	649	100.00%	1848	100.00%

In terms of sectors, Industrials has the most companies in the sample, with a percentage of 22.94%. The other popular area is Consumer Discretionary while its portion keeps stable at 16-17% over the period. The number of companies operating in the Energy sector is 67, which makes this sector become the least popular in the data sample.

4.2.2. Data collection

Data using in this analytical chapter are collected from Eikon Thomson Reuters database platforms. Starting from the database of the platform, the author uses the "Screener" function and applies the needed filters to collect needed data.

Filters applying to "Screener" function are presented following:

- Country of Headquarters: Germany, United Kingdom, France, Italy, Spain, Netherlands, Sweden, Poland, Belgium, Austria.
- Primary Global Industry Classification Standard (GICS) Sector Description: Communication Services, Consumer Discretionary, Consumer Staples, Energy, Financials, Health Care, Industrials, Information Technology, Materials, Real Estate, Utilities.
- Average Board Tenure (value greater than or equal 0)
- ESG Score (value greater than or equal 0)
- Total Revenue (value greater than or equal 0)
- Total Assets, Reported (value greater than or equal 0)
- Return on Equity, Actual (value greater than or equal 0)
- Board Size (value greater than or equal 0)
- Independent Board Members (value greater than or equal 0)
- Board Member Compensation (value greater than or equal 0)
- Board Gender Diversity (value greater than or equal 0)

At the beginning of the screening process, after applying the first filter, which is "Country of headquarters" of the top 10 nominal GDP countries in the EU, each fiscal year obtains 6441 public companies. After all of the filters are involved, the final sample has 1848 observations, in which there are 576, 623, and 649 observations corresponding to the fiscal year 2016, 2017 and 2018.

CHAPTER 5: RESULTS AND DISCUSSIONS

This chapter provides empirical results from the regressions analysis. The results section is presented year by year from 2016 to 2018 as well as for Pooled OLS. After that, the summary of results and discussion part are provided at the end of the chapter.

5.1. Empirical results of the year 2016

5.1.1. Descriptive statistics

Descriptive statistics of variables in the year 2016 are presented by the table below.

Table 5.1. Descriptive Statistics of Variables (2016)

	N	Min	1st Qu.	Median	Mean	3rd Qu.	Max	Std dev.
Dependent variable								
ESGSCORE	576	10.1	50.87	62.33	61.4	73.37	95.11	247.41
Explanatory variable								
TENURE	576	0.38	4.32	5.75	6.083	7.22	16.47	7.22
Control variables								
REVENUE (B\$)	576	0.00	1.04	3.13	11.57	10.53	233.59	592.46
ASSETS (log)	576	7.87	9.31	9.77	9.81	10.23	11.97	0.50
ROE	576	0.00	0.09	0.15	0.23	0.22	26.05	1.20
BSIZE	576	3.00	8.00	10.00	10.63	12.00	22.00	13.49
BINDE	576	0.00	0.44	0.56	0.56	0.71	1.00	0.04
BCOM (M\$)	576	0.00	0.47	0.76	1.54	1.45	69.80	13.60
BGEN	576	0.00	0.18	0.25	0.26	0.33	0.64	0.01

The total observations collected in the year 2016 are 576 companies. The dependent variable, ESGSCORE, has the minimum and maximum value of 10.1 and 95.11. The main effect

explanatory variable TENURE has a minimum amount of 0.38 years and the maximum value of 16.47 years.

5.1.2. Regression results

The Table below reports the multiple regression results for Equation (1) of the fiscal year 2016.

Table 5.2. Regression results of Equation (1) (2016)

Residuals					
Min	1Q	Median	3Q	Max	
-47.162	-7.323	0.969	8.112	29.648	
Coefficients					
	Estimate	Std. Error	t value	Pr(> t)	
(Intercept)	-38.33546	10.07111	-3.80600	0.00016	***
TENURE	3.24801	0.68532	4.73900	0.00000	***
TENURE^2	-0.20228	0.04531	-4.46400	0.00001	***
REVENUE	0.04721	0.02837	1.66400	0.09663	.
ASSETS	6.81123	1.11348	6.11700	0.00000	***
ROE	0.91868	0.47737	1.92400	0.05480	.
BSIZE	0.25542	0.18324	1.39400	0.16389	
BINDE	18.26997	2.64430	6.90900	0.00000	***
BCOM	-0.11639	0.14131	-0.82400	0.41049	
BGEN	32.53807	4.55264	7.14700	0.00000	***
Signif. codes: 0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1					
Residual standard error: 12.31 on 566 degrees of freedom					
Multiple R-squared: 0.3972, Adjusted R-squared: 0.3876					
F-statistic: 41.44 on 9 and 566 DF, p-value: < 2.2e-16					

The results show that both coefficients of TENURE and TENURE SQUARED are statistically significant at the conventional level. The negative coefficient of TENURE SQUARED implements that there is an inverted U-shaped relation that exists between board tenure and ESG score. The model's explanatory power can be considered satisfied, with an adjusted R squared measure 0.3876, implying that the explanatory variables explain 38.76% of the variance in the ESG disclosure score. Among control variables in two groups, REVENUE and ROE present statistical significance at 5% level while BCOM and BSIZE do not show their effect in the model. Other control variables are statistically significant at 1% level.

To provide a descriptive graphical interpretation of the results, the author regress ESGSCORE on the control variables (excluding TENURE and TENURE SQUARED), then plot the residual using locally weighted polynomial curve (LOWESS) in Figure below.

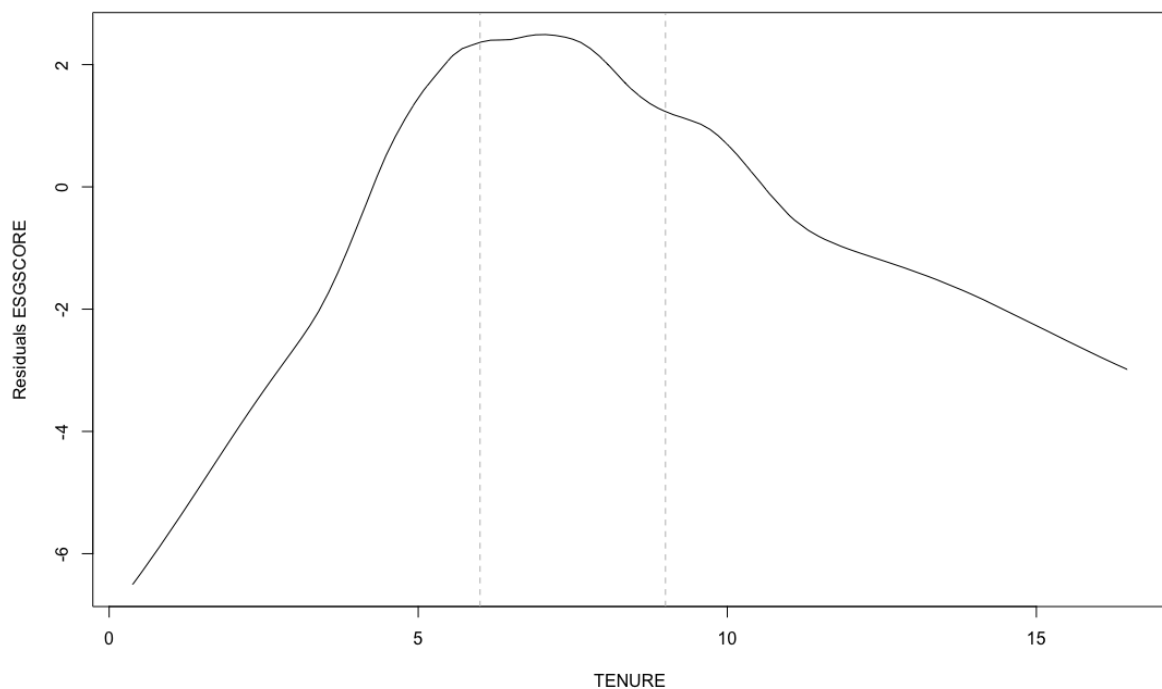


Figure 5.1. Descriptive Plot – Residual ESGSCORE and Board Tenure (2016)

As can be seen from Figure, the value of ESGSCORE increases quickly until board tenure reaches approximately six years, then more moderately until it reaches the tipping point at 7.06

years. Beyond the peak, it starts to decrease, somewhat down to about nine years, then more quickly up to around 12 years. After that, the curve becomes flattered until the board tenure is more significant than 15 years.

Figure presents a relatively flat zone between 6 and 9 years, the author creates two indicator variables: $D(\text{TENURE} \leq 6)$ takes the value 1 if the tenure is below six years, and 0 otherwise, and $D(\text{TENURE} \geq 9)$ takes the value of 1 if tenure is above nine years, and 0 otherwise. The following regression model is estimated:

$$\begin{aligned} \text{ESGSCORE}_i = & \alpha_0 + \beta_1 D(\text{TENURE}_i \leq 6) + \beta_2 (\text{TENURE}_i \geq 9) + \beta_3 \text{REVENUE}_i + \beta_4 \text{ASSETS}_i \\ & + \beta_5 \text{ROE}_i + \beta_6 \text{BSIZE}_i + \beta_7 \text{BINDE}_i + \beta_8 \text{BCOM}_i + \beta_9 \text{BGEN}_i + \varepsilon_i \end{aligned}$$

The table below indicates regression results of Equation (2).

Table 5.3. Regression results of Equation (2) (2016)

Residuals					
Min	1Q	Median	3Q	Max	
-56.151	-7.389	1.241	8.392	31.862	
Coefficients					
	Estimate	Std. Error	t value	Pr(> t)	
(Intercept)	-25.92755	9.88501	-2.62300	0.00895	**
D(TENURE <= 6)	-3.47821	1.16358	-2.98900	0.00292	**
D(TENURE >= 9)	-4.69792	1.67545	-2.80400	0.00522	**
REVENUE	0.05216	0.02863	1.82200	0.06900	.
ASSETS	6.79867	1.12485	6.04400	0.00000	***
ROE	0.99420	0.48235	2.06100	0.03974	*
BSIZE	0.27305	0.18476	1.47800	0.14000	
BINDE	19.53604	2.64441	7.38800	0.00000	***
BCOM	-0.08581	0.14265	-0.60200	0.54770	
BGEN	32.79414	4.59272	7.14000	0.00000	***
Signif. codes: 0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1					
Residual standard error: 12.42 on 566 degrees of freedom					
Multiple R-squared: 0.3859, Adjusted R-squared: 0.3761					
F-statistic: 39.52 on 9 and 566 DF, p-value: < 2.2e-16					

From the results of Table, it can be seen that both variables D(TENURE <= 6) and D(TENURE >= 9) are significantly negative at significance level 1%. The model's explanatory power can be considered satisfied, with an adjusted R squared measure 0.3761, implying that the explanatory variables explain 37.61% of the variance in the ESG disclosure score. Among

control variables, REVENUE has a positive coefficient, and it is significant at the 10% level, while ASSETS, BINDE, and BGEN are also positively substantial at the 1% level. ROE is positively significant to the dependent variable at the 5% level. BCOM and BSIZE have no association with ESGSCORE.

5.2. Empirical results of the year 2017

5.2.1. Descriptive statistics

Descriptive statistics of variables in the year 2017 are presented by the table below.

Table 5.4. Descriptive Statistics of Variables (2017)

	N	Min	1st Qu.	Median	Mean	3rd Qu.	Max	Std dev.
Dependent variable								
ESGSCORE	623	13.18	52.3	63.06	62.14	73.06	95.79	226.63
Explanatory variable								
TENURE	623	0.03	4.35	5.75	6.077	7.415	16.72	7.072
Control variables								
REVENUE (B\$)	623	0.033	1.165	3.278	12.853	10.328	305.179	822.000
ASSETS (log)	623	7.504	9.301	9.781	9.822	10.233	12.034	0.513
ROE	623	0.001	0.096	0.151	0.220	0.215	11.906	0.421
BSIZE	623	3.000	8.000	10.000	10.490	12.000	23.000	13.376
BINDE	623	0.000	0.455	0.571	0.576	0.727	1.000	0.049
BCOM (M\$)	623	0.002	0.489	0.800	1.458	1.476	19.592	4.619
BGEN	623	0.000	0.200	0.286	0.281	0.372	0.714	0.015

Total observations collected in the year 2017 are 623 companies. The dependent variable ESGSCORE has the minimum and maximum value of 13.18 and 95.79. The main effect explanatory variable TENURE has the minimum value of 0.03 years and the maximum value of 16.72 years.

5.2.2. Regression results

The Table below reports the multiple regression results for Equation (1) of the fiscal year 2017.

Table 5.5. Regression results of Equation (1) (2017)

Residuals					
Min	1Q	Median	3Q	Max	
-42.573	-6.526	1.082	7.461	31.477	
Coefficients					
	Estimate	Std. Error	t value	Pr(> t)	
(Intercept)	-42.04010	8.87133	-4.73900	0.00000	***
TENURE	2.45402	0.65254	3.76100	0.00019	***
TENURE^2	-0.16466	0.04372	-3.76600	0.00018	***
REVENUE	0.01996	0.02096	0.95200	0.34150	
ASSETS	7.64588	0.97015	7.88100	0.00000	***
ROE	1.65083	0.72249	2.28500	0.02266	*
BSIZE	0.28491	0.16415	1.73600	0.08313	.
BINDE	17.34768	2.25505	7.69300	0.00000	***
BCOM	0.02884	0.23410	0.12300	0.90199	
BGEN	27.65271	4.01102	6.89400	0.00000	***
Signif. codes: 0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1					
Residual standard error: 11.57 on 613 degrees of freedom					
Multiple R-squared: 0.4183, Adjusted R-squared: 0.4098					
F-statistic: 48.98 on 9 and 613 DF, p-value: < 2.2e-16					

The results show that both coefficients of TENURE and TENURE SQUARED are statistically significant at the conventional level. The negative coefficient of TENURE SQUARED

implements that there is an inverted U-shaped relation that exists between board tenure and ESG score. The model's explanatory power can be considered satisfied, with an adjusted R squared measure 0.4098, implying that the explanatory variables explain 40.98% of the variance in the ESG disclosure score. Among control variables in two groups, REVENUE and BCOM have no association with the dependent variable. ROE and BSIZE are positively significant at 5% and 10% level. Other control variables are significant at 1% level.

To provide a descriptive graphical interpretation of the results, the author regress ESGSCORE on the control variables (excluding TENURE and TENURE SQUARED), then plot the residual using locally weighted polynomial curve (LOWESS) in Figure below.

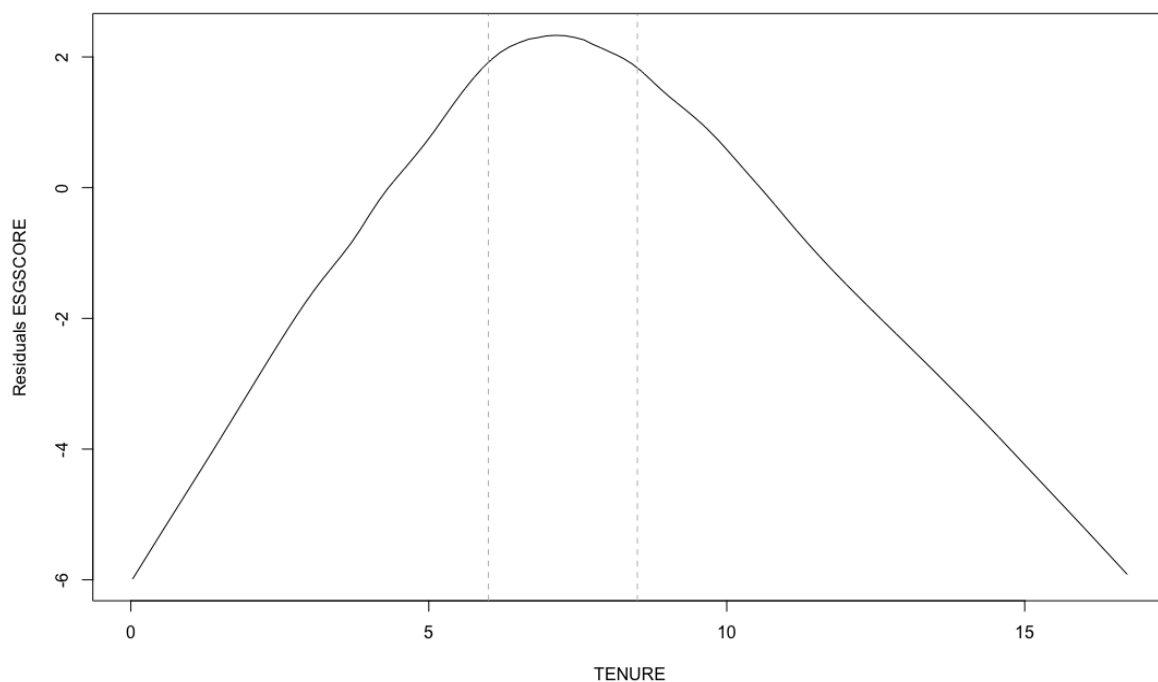


Figure 5.2. Descriptive Plot – Residual ESGSCORE and Board Tenure (2017)

The figure above demonstrates the inverted – U relationship very clearly between ESGSCORE and TENURE. It reaches the maximum value when TENURE is 7.13 years.

Figure presents a relatively moderate zone between 6 and 8.5 years, the author creates two indicator variables: $D(\text{TENURE} \leq 6)$ takes the value 1 if the tenure is below six years, and 0

otherwise, and $D(\text{TENURE} \geq 8.5)$ takes the value of 1 if tenure is above 8.5 years, and 0 otherwise. The following regression model is estimated:

$$\text{ESGSCORE}_i = \alpha_0 + \beta_1 D(\text{TENURE}_i \leq 6) + \beta_2 (\text{TENURE}_i \geq 8.5) + \beta_3 \text{REVENUE}_i + \beta_4 \text{ASSETS}_i + \beta_5 \text{ROE}_i + \beta_6 \text{BSIZE}_i + \beta_7 \text{BINDE}_i + \beta_8 \text{BCOM}_i + \beta_9 \text{BGEN}_i + \varepsilon_i$$

The table below indicates regression results of Equation (2).

Table 5.6. Regression results of Equation (2) (2017)

Residuals					
Min	1Q	Median	3Q	Max	
-45.768	-6.836	1.026	7.427	33.107	
Coefficients					
	Estimate	Std. Error	t value	Pr(> t)	
(Intercept)	-32.43569	8.61882	-3.76300	0.00018	***
D(TENURE <= 6)	-2.97776	1.08173	-2.75300	0.00608	**
D(TENURE >= 8.5)	-3.21597	1.47243	-2.18400	0.02933	*
REVENUE	0.02409	0.02108	1.14300	0.25362	
ASSETS	7.61798	0.97488	7.81400	0.00000	***
ROE	1.63296	0.72634	2.24800	0.02492	*
BSIZE	0.29183	0.16498	1.76900	0.07740	.
BINDE	17.99609	2.25432	7.98300	0.00000	***
BCOM	0.04792	0.23483	0.20400	0.83838	
BGEN	27.61900	4.03672	6.84200	0.00000	***
Signif. codes: 0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1					
Residual standard error: 11.62 on 613 degrees of freedom					
Multiple R-squared: 0.4128, Adjusted R-squared: 0.4042					
F-statistic: 47.88 on 9 and 613 DF, p-value: < 2.2e-16					

From results of Table, it can be seen that both variables D(TENURE \leq 6) and D(TENURE \geq 8.5) are significantly negative (at 1% and 5% level). The model's explanatory power can be considered satisfied, with an adjusted R squared measure 0.4042, implying that the explanatory variables explain 40.42% of the variance in the ESG disclosure score. Among control variables, REVENUE and BCOM have no association with the dependent variable. ROE and BSIZE are positively significant at 5% and 10% level. Other control variables are significant at 1% level.

5.3. Empirical results of the year 2018

5.3.1. Descriptive statistics

Descriptive statistics of variables in the year 2018 are presented by the table below.

Table 5.7. Descriptive Statistics of Variables (2018)

	N	Min	1st Qu.	Median	Mean	3rd Qu.	Max	Std dev.
Dependent variable								
ESGSCORE	649	11.13	50.58	61.15	60.48	72.44	95.93	255.432
Explanatory variable								
TENURE	649	0.250	4.130	5.440	5.825	7.040	20.150	6.980
Control variables								
REVENUE (B\$)	649	0.046	0.800	2.249	9.893	7.788	388.379	701.407
ASSETS (log)	649	7.831	9.201	9.605	9.672	10.107	12.031	0.507
ROE	649	0.000	0.094	0.142	0.217	0.215	11.099	0.318
BSIZE	649	3.000	7.000	8.000	9.801	12.000	21.000	11.518
BINDE	649	0.000	0.462	0.600	0.595	0.750	1.000	0.049
BCOM (M\$)	649	0.019	0.422	0.720	1.210	1.265	38.359	4.755
BGEN	649	0.000	0.222	0.300	0.299	0.385	0.667	160.037

Total observations collected in the year 2018 are 649 companies. The dependent variable ESGSCORE has the minimum and maximum value of 11.13 and 95.93. The main effect explanatory variable TENURE has the minimum value of 0.25 years and the maximum value of 20.15 years.

5.3.1. Regression results

The Table below reports the multiple regression results for Equation (1) of the fiscal year 2018.

Table 5.8. Regression results of Equation (1) (2018)

Residuals					
Min	1Q	Median	3Q	Max	
-46.621	-7.815	1.41	7.866	33.404	
Coefficients					
	Estimate	Std. Error	t value	Pr(> t)	
(Intercept)	-69.1332	8.29975	-8.33	4.95E-16	***
TENURE	2.84185	0.5991	4.744	2.59E-06	***
TENURE^2	-0.17982	0.03968	-4.532	6.97E-06	***
REVENUE	0.01269	0.0213	0.596	0.5515	
ASSETS	10.20845	0.93528	10.915	< 2E-16	***
ROE	1.62891	0.84465	1.929	0.0542	.
BSIZE	0.35701	0.17871	1.998	0.0462	*
BINDE	17.26254	2.26792	7.612	9.75E-14	***
BCOM	-0.2012	0.22798	-0.883	0.3778	
BGEN	0.25692	0.03801	6.759	3.14E-11	***
Signif. codes: 0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1					
Residual standard error: 11.91 on 639 degrees of freedom					
Multiple R-squared: 0.4528, Adjusted R-squared: 0.4451					
F-statistic: 58.75 on 9 and 639 DF, p-value: < 2.2e-16					

The results show that both coefficients of TENURE and TENURE SQUARED are statistically significant at the conventional level. The negative coefficient of TENURE SQUARED implements that there is an inverted U-shaped relation that exists between board tenure and ESG score. The model's explanatory power can be considered satisfied, with an adjusted R

squared measure 0.4451, implying that the explanatory variables explain 44.51% of the variance in the ESG disclosure score. Among control variables in two groups, REVENUE and BCOM have no association with the dependent variable. ROE and BSIZE are positively significant at 10% and 5% level. Other control variables are positively significant at 1% level. To provide a descriptive graphical interpretation of the results, the author regress ESGSCORE on the control variables (excluding TENURE and TENURE SQUARED), then plot the residual using locally weighted polynomial curve (LOWESS) in Figure below.

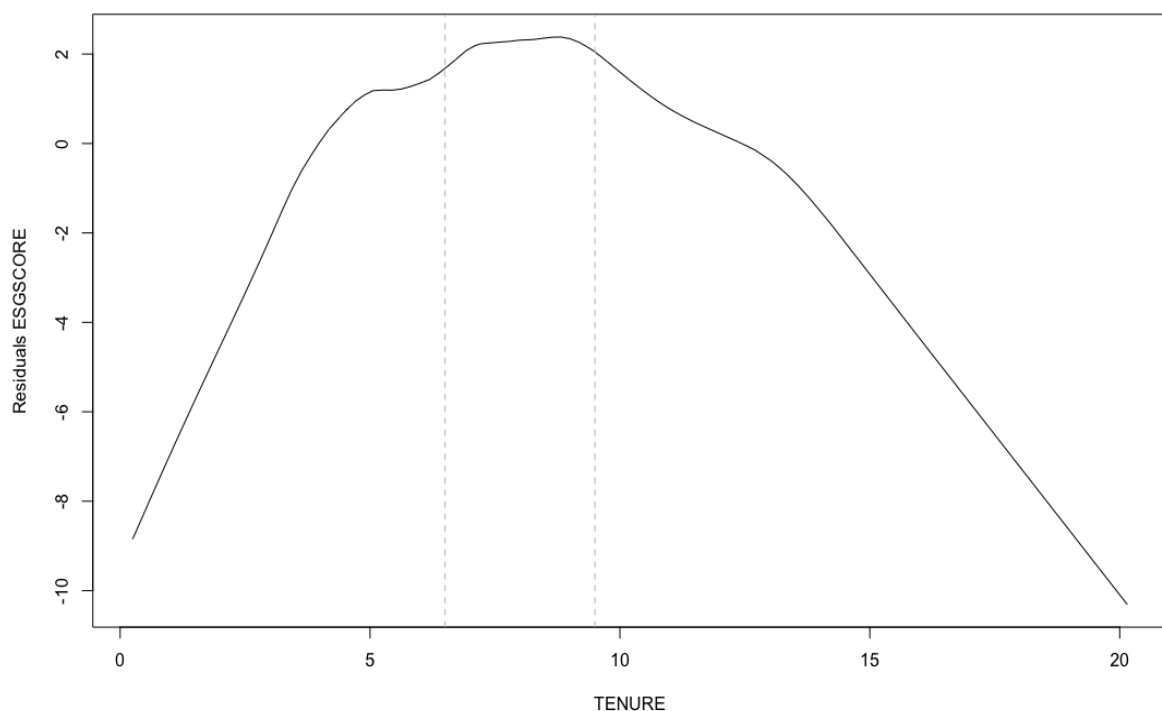


Figure 5.3. Descriptive Plot – Residual ESGSCORE and Board Tenure (2018)

As can be seen from Figure, the value of ESGSCORE increases quickly until board tenure reaches approximately 6.5 years. At this point, ESGSCORE starts to fluctuate, then reaches the peak when TENURE is 8.82 years. After the highest point, the curve has a downward trend continues.

Figure above presents a relatively fluctuated zone between 6.5 and 9.5 years, the author creates two indicator variables: $D(\text{TENURE} \leq 6.5)$ takes the value 1 if the tenure is below six years,

and 0 otherwise, and $D(\text{TENURE} \geq 9.5)$ takes the value of 1 if tenure is above 9.5 years, and 0 otherwise. The following regression model is estimated:

$$\text{ESGSCORE}_i = \alpha_0 + \beta_1 D(\text{TENURE}_i \leq 6.5) + \beta_2 (\text{TENURE}_i \geq 9.5) + \beta_3 \text{REVENUE}_i + \beta_4 \text{ASSETS}_i + \beta_5 \text{ROE}_i + \beta_6 \text{BSIZE}_i + \beta_7 \text{BINDE}_i + \beta_8 \text{BCOM}_i + \beta_9 \text{BGEN}_i + \varepsilon_i$$

The table below indicates regression results of Equation (2).

Table 5.9. Regression results of Equation (2) (2018)

Residuals					
Min	1Q	Median	3Q	Max	
-44.852	-7.924	1.446	8.128	32.738	
Coefficients					
	Estimate	Std. Error	t value	Pr(> t)	
(Intercept)	-58.23407	8.19828	-7.103	3.26E-12	***
D(TENURE <= 6.5)	-2.53777	1.16619	-2.176	2.99E-02	*
D(TENURE >= 9.5)	-2.98249	1.86381	-1.6	1.10E-01	
REVENUE	0.01749	0.0216	0.81	4.19E-01	
ASSETS	10.16955	0.94818	10.725	< 2e-16	***
ROE	1.67134	0.85648	1.951	5.14E-02	.
BSIZE	0.3851	0.18089	2.129	3.36E-02	*
BINDE	17.68603	2.29886	7.693	5.45E-14	***
BCOM	-0.21632	0.23142	-0.935	0.3503	
BGEN	0.26128	0.03847	6.791	2.54E-11	***
Signif. codes: 0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1					
Residual standard error: 12.06 on 639 degrees of freedom					
Multiple R-squared: 0.4381, Adjusted R-squared: 0.4302					
F-statistic: 55.35 on 9 and 639 DF, p-value: < 2.2e-16					

From the results of Table, D(TENURE \leq 6.5) is negatively significant at the 5% level, while D(TENURE \geq 9.5) is not associated with the dependent variable. The model's explanatory power can be considered satisfied, with an adjusted R squared measure 0.4302, implying that the explanatory variables explain 43.02% of the variance in the ESG disclosure score. Among control variables, REVENUE and BCOM are not significant. ROE and BSIZE is positively significant at 10% and 5% level. Other control variables are positively significant at 1% level.

5.4. Empirical results of the Pooled OLS

5.4.1. Descriptive statistics

Descriptive statistics of variables of the Pooled OLS are presented by the table below.

Table 5.10. Descriptive Statistics of Variables (Pooled OLS)

	N	Min	1st Qu.	Median	Mean	3rd Qu.	Max	Std dev.
Dependent variable								
ESGSCORE	1848	10.100	51.240	62.080	61.320	73.040	95.930	243.437
Explanatory variable								
TENURE	1848	0.030	4.260	5.645	5.991	7.220	20.150	7.094
Control variables								
REVENUE (B\$)	1848	0.001	0.983	2.811	11.414	9.448	388.379	708.860
ASSETS (log)	1848	7.504	9.264	9.731	9.765	10.183	12.034	0.510
ROE	1848	0.000	0.093	0.147	0.223	0.216	26.050	0.625
BSIZE	1848	3.000	8.000	10.000	10.290	12.000	23.000	12.878
BINDE	1848	0.000	0.455	0.571	0.579	0.727	1.000	0.048
BCOM (M\$)	1848	0.000	0.457	0.758	1.397	1.386	69.804	7.476
BGEN	1848	0.000	0.200	0.286	0.281	0.368	0.714	0.015

The total observations collected for the Pooled OLS are 1848 companies. The dependent variable, ESGSCORE, has the minimum and maximum value of 10.1 and 95.93. The main effect explanatory variable TENURE has a minimum value of 0.03 years and the maximum value of 20.15 years.

5.4.2. Regression results

The Table below reports the multiple regression results for Equation (1) of Pooled OLS.

Table 5.11. Regression results of Equation (1) (Pooled OLS)

Residuals					
Min	1Q	Median	3Q	Max	
-48.927	-7.296	1.094	7.593	32.596	
Coefficients					
	Estimate	Std. Error	t value	Pr(> t)	
(Intercept)	-52.58588	5.11739	-10.276	< 2e-16	***
TENURE	2.8817	0.36995	7.789	1.12E-14	***
TENURE^2	-0.18402	0.02459	-7.484	1.12E-13	***
REVENUE	0.02026	0.01321	1.534	0.125258	
ASSETS	8.51198	0.56798	14.986	< 2e-16	***
ROE	1.26659	0.35472	3.571	0.000365	***
BSIZE	0.30426	0.1004	3.03	0.002476	**
BINDE	17.57903	1.36571	12.872	< 2e-16	***
BCOM	-0.09416	0.10495	-0.897	0.36974	
BGEN	27.5534	2.32707	11.84	< 2e-16	***
Signif. codes: 0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1					
Residual standard error: 11.91 on 1838 degrees of freedom					
Multiple R-squared: 0.4204, Adjusted R-squared: 0.4175					
F-statistic: 148.1 on 9 and 1838 DF, p-value: < 2.2e-16					

The results show that both coefficients of TENURE and TENURE SQUARED are statistically significant at the conventional level. The negative coefficient of TENURE SQUARED implements that there is an inverted U-shaped relation that exists between board tenure and ESG score. The model's explanatory power can be considered satisfied, with an adjusted R

squared measure 0.4175, implying that the explanatory variables explain 41.75% of the variance in the ESG disclosure score. Among control variables in two groups, REVENUE and BCOM have no association with the dependent variable. BSIZE is positively significant at the 5% level. Other control variables have a positive relationship with ESGSCORE at the 1% level. To provide a descriptive graphical interpretation of the results, the author regress ESGSCORE on the control variables (excluding TENURE and TENURE SQUARED), then plot the residual using locally weighted polynomial curve (LOWESS) in Figure below.

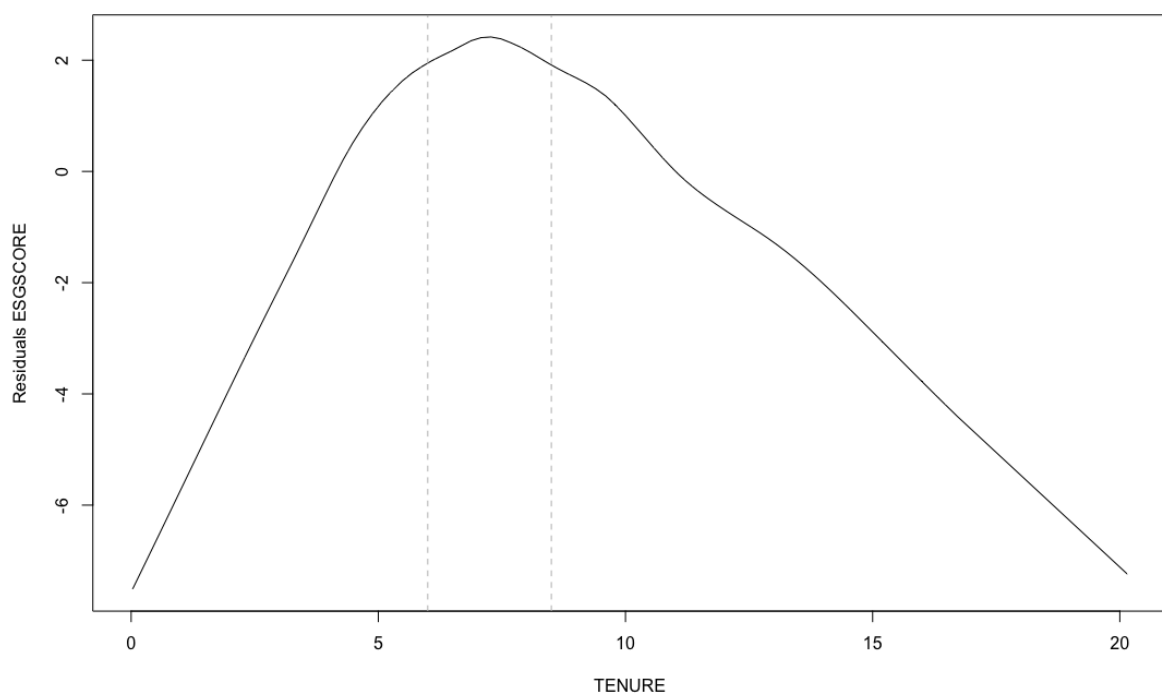


Figure 5.4. Descriptive Plot – Residual ESGSCORE and Board Tenure (Pooled OLS)

As can be seen from Figure, the value of ESGSCORE increases quickly until board tenure reaches approximately six years, then more moderately until it reaches the tipping point at 7.28 years. Beyond the peak, it starts to decrease continuously until TENURE is larger than 20 years. Figure presents a relatively flat zone between 6 and 8.5 years, the author creates two indicator variables: $D(\text{TENURE} \leq 6)$ takes the value 1 if the tenure is below six years, and 0 otherwise,

and $D(\text{TENURE} \geq 8.5)$ takes the value of 1 if tenure is above 11 years, and 0 otherwise. The following regression model is estimated:

$$\text{ESGSCORE}_i = \alpha_0 + \beta_1 D(\text{TENURE}_i \leq 6) + \beta_2 (\text{TENURE}_i \geq 8.5) + \beta_3 \text{REVENUE}_i + \beta_4 \text{ASSETS}_i + \beta_5 \text{ROE}_i + \beta_6 \text{BSIZE}_i + \beta_7 \text{BINDE}_i + \beta_8 \text{BCOM}_i + \beta_9 \text{BGEN}_i + \varepsilon_i$$

The table below indicates regression results of Equation (2).

Table 5.12. Regression results of Equation (2) (Pooled OLS)

Residuals					
Min	1Q	Median	3Q	Max	
-56.635	-7.39	1.251	7.911	33.247	
Coefficients					
	Estimate	Std. Error	t value	Pr(> t)	
(Intercept)	-41.45204	5.03039	-8.24	3.23E-16	***
D(TENURE <= 6)	-2.87952	0.65286	-4.411	1.09E-05	***
D(TENURE >= 8.5)	-2.72739	0.89574	-3.045	2.36E-03	**
REVENUE	0.02508	0.01336	1.877	6.07E-02	.
ASSETS	8.46131	0.5741	14.738	< 2e-16	***
ROE	1.31648	0.35865	3.671	2.49E-04	***
BSIZE	0.3186	0.10149	3.139	1.72E-03	**
BINDE	18.35005	1.37481	13.347	< 2e-16	***
BCOM	-0.08051	0.10598	-0.76	0.44754	
BGEN	27.92706	2.35253	11.871	< 2e-16	***
Signif. codes: 0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1					
Residual standard error: 12.04 on 1838 degrees of freedom					
Multiple R-squared: 0.4078, Adjusted R-squared: 0.4049					
F-statistic: 140.7 on 9 and 1838 DF, p-value: < 2.2e-16					

From results of Table, both $D(\text{TENURE} \leq 6.5)$ and $D(\text{TENURE} \geq 9.5)$ are negatively significant at 1% and 5% level. The model's explanatory power can be considered satisfied, with an adjusted R squared measure 0.4049, implying that the explanatory variables explain 40.49% of the variance in the ESG disclosure score. All control variables have positively significant in the model except variable BCOM. REVENUE and BSIZE are significant at 10% and 5%, while ASSETS, ROE, BINDE, and BGEN are significant at the 1% level.

5.5. Summary of results and discussions

The Table below indicates the summary of regression results.

Table 5.13. Summary of regression results

	Optimal length of tenure (years)	
	Min	Max
2016	6**	9**
2017	6**	8.5*
2018	6.5*	9.5
Pooled OLS	6***	8.5**
Signif. codes: 0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1		

From the above results, it can be recognized that there is a quadratic relationship between average board tenure and disclosure quality in spite of considering each year or the whole period. Disclosure quality first increases to the tipping point and then decreases with the larger board tenure. The benchmark group is firms with tenure between 6 (or 6.5 in 2018) and 8.5 (or 9 in 2016) years. The results from regression analysis also indicate that board tenure have negative relationship with disclosure quality if board tenure is not in benchmark range. These results are a consistent of the study of (Huang & Hilary, 2018).

To revise the literature review, there are two competing hypotheses determining whether having long-tenured directors is detrimental or beneficial to a company. The Expertise Hypothesis posits that as directors' tenure increases, they gain valuable expertise and experience which results in increased governance effectiveness. On the contrary, the Entrenchment Hypothesis predicts that long-tenured directors become overly deferential to management, outdated in their thinking, and become ineffective in their role as monitors of management, resulting in a corresponding decrease in governance effectiveness as tenure increases. The results from regression analysis strongly support both Expertise and Entrenchment Hypothesis.

One important thing is to discuss about the main functions of board members. (Livnat, Smith, Suslava, & Tarlie, 2016) posit that board members serve three main functions: (i) monitor managers' performance, (ii) advise managers on general business matters (for example, acquisitions, strategic directions, compensation packages or hiring decisions), and (iii) advise managers on technical aspects of the company's business (for example, specifics of supply chain organization or a marketing campaign)."

Board members with longer tenure would logically accumulate more firm-specific knowledge while sitting on the board. If directors spend more time serving on boards, they build organization-specific expertise and gain more knowledge about organizational issues. Firm-specific knowledge is a form of tacit knowledge about the firm which allows board members to deal effectively with strategic issues and improving the board's ability to provide resources to the firm.

According to the regression results from previous part, before reaching the optimal range, board tenure has a negative relationship with disclosure quality. Companies which have board tenure less than 6 years (or 6.5 years in 2018) do not provide sufficient disclosure quality for the interests of stakeholders. To interpret this situation, it can be acknowledged that when directors first enter an organization, they require a certain amount of time in order to understand internal

perspective of firms. Through regression analysis, this study suggests that board members need approximately 6 - 6.5 years to gain accumulated firm-specific knowledge. Therefore, they can provide sufficient and adequate financial reporting disclosure to firm's stakeholders. This result is dissimilar to the previous paper of Huang & Hilary (2018). Using a panel data of US firms which covers S&P 1500 firms over the period 1998-2010, they suggest the minimum value in optimal tenure is 8 years. Similarly, another study of Huang (2013) trying to explain the relationship between average tenure of independent directors and firm value suggests that the optimal tenure of director should be around 9 years.

On the other hand, the regression results also support the Entrenchment Hypothesis. If directors stay on the board more than 8.5 years (or 9 years in 2016), financial reporting disclosure quality is negatively affected. Extended board tenure may limit cognitive conflict among board members and may restrict the number of views and opinions that are openly discussed and debated by the board. As a result, long-tenured board members may be slow to detect and react to certain legal violations committed within the firm. The results are consistent with the research of (Clements, Jessup, Neill, & Wertheim, 2018) who explore whether members of board of directors become less effective over time and whether term limits should be placed on their service as corporate board members. Using a sample of over 29,000 firm-year observations, they find a significant positive relationship between board tenure and board quality at low and intermediate levels of board tenure and a significant negative relationship at higher levels of board tenure. They also obtain that the negative effects of having long-tenured directors vary across companies based on particular firm-specific characteristics.

Based on the regression analysis, this study suggests that firms should have optimal average board tenure from around 6 to 8.5 years. In reality, it is difficult for firms to always optimize their board tenure. This can happen for different reasons. First, firms may not know what that optimal length of tenure is, and it may take some time for the different parties to learn it. Second,

even if this optimal tenure length is known, it may not be possible to immediately reach it. For example, it is not feasible to increase tenure length if a director leaves. Conversely, it may not be practical to terminate directors when their tenure is too long. Firms may have to trade off different attributes. For example, it may not be difficult to retain directors with specialized knowledge. Firms may have to tradeoff between keeping a director with this expertise and pushing board tenure beyond its optimal point, or optimizing the tenure length by discarding this experience. Furthermore, replacing directors too frequently is costly in the time and resources because a new director needs to learn about the company. Longer board tenure also brings signals to the markets that the firm is stable and is not subject to board ‘refreshment’ efforts by activist investors. Agency problems, stock ownerships, legal considerations, social norms, and other similar factors may also lead firms to retain directors beyond the optimal tenure length.

According to a study of (Papadopoulos, 2018), there are some key strategies for firms to proactively manage board composition:

- Conduct annual individual director evaluations that consider the needs of the company. A robust board and director evaluation process can help measure both group and individual performance. Such board assessment programs may also include an external component, whereby a third party conducts an independent assessment once every certain period of time.
- Review and assess director skills in the context of long-term strategy and an evolving market environment. A specific focus on skills relevant to the changing needs of the company can enable boards to recruit directors with the perception to address new problems.
- Establish board renewal and succession programs with medium and long-term goals. A board renewal program with specific goals creates a framework that allows the board to

plan and target its refreshment and tenure balance to specific objectives, while offering greater flexibility compared to term limits or mandatory retirement age policies.

CHAPTER 6: CONCLUSION

In order to adapt the need of an effective corporate governance system, this study examines the relationship between board tenure and firm's disclosure quality. Using a panel data of top ten European Union countries in nominal GDP over three-year period (2016-2018), the results show that board tenure and disclosure quality have a quadratic relationship. To be specific, the study has found that there is an optimum length of tenure that the disclosure quality has maximum value. The outcome suggests that firms should apply the optimal director tenure from approximately 6 to 8.5 years. However, this result is not easy in practical situations because firms have to tradeoff different attributes when they want to terminate long-tenured directors. The results from regression analysis of this study contribute to existing researches. When directors stay on the board for a certain amount of time and gain enough firm-specifics knowledge, they have good effectiveness in monitor function. However, extended tenure could create high entrenchment with firm's management that leads to a negative effect in financial reporting disclosure quality.

Due the limited ability of the author, this thesis has a number of limitations that future researches can learn on experience and get better. Firstly, although being argued, ESG index is the extent of firm's CSR policy, hence it's more associated with disclosure quality of non-financial information although the topic has been argued in recent years (Hoang, Abeysekera, & Ma, 2016). Secondly, components of control attributes should be broadened. Particularly, other board characteristics should be taken into account such as board gender diversity, board age, and board structure (Rao & Tilt, 2016). In term of firm attributes, some elements could have effect on disclosure quality such as firm age, financial leverage, and audit committee (Raithatha & Bapat, 2014). Thirdly, future researches can focus on some other geographical data, developing economies is a potential target that currently being lack of investigation.

APPENDIX

Scores Calculation Methodology of Thomson Reuters ESG Score

Category Scores Calculation

Percentile Rank scoring methodology is adopted to calculate the ten category scores. It is based on three factors:

- How many companies are worse than the current one?
- How many companies have the same value?
- How many companies have a value at all?

Percentile rank score is based on the rank, and therefore it is not very sensitive to outliers. The distribution of the scores generated with percentile rank score is almost flat; for this reason, average and standard deviation of the scores generated with percentile rank score are not overly useful.

$$\text{score} = \frac{\text{no. of companies with a worse value} + \frac{\text{no. of companies with the same value included the current one}}{2}}{\text{no. of companies with a value}}$$

Each category score is the equally weighted sum of all relevant indicators for each industry used to create it. The normalized weights are calculated excluding quantitative indicators with no data available in the public domain as it would be highly inaccurate to assign a default value.

Category Benchmarks

To calculate the Environmental and Social category scores, Thomson Reuters Business Classification (TRBC) Industry Group is used as the benchmark as these topics are more relevant and similar to companies within the same industries. To calculate the Governance categories, Country of Headquarters is used as the benchmark as best governance practices are more consistent within countries.

Category Weights

To calculate the overall Thomson Reuters ESG Score, automated, data-driven, and objective logic that determines the weight of each category is applied. The category weights

are determined by the number of indicators that make up each category in comparison to all indicators used in the TR ESG Score framework. This means that higher weight is assigned to themes that are more mature in terms of disclosure, and the relative performance scores of companies are calculated with a higher degree of confidence. As a result, categories that contain multiple issues with relatively higher transparency like Management (composition, diversity, independence, committees, compensation, etc.) and companies reporting more information across these topics will have higher weight than lighter and less reported categories such as Human Rights or CSR Strategy. Each category consists of a different number of measures. The count of measures per category determines the weight of the respective category. Detailed counts and weights are provided in the table below:

Pillar	Category	Indicators in Rating	Weights	Pillar Weights
Environmental	Resource Use	19	11%	(11% + 12% + 11%)
	Emissions	22	12%	
	Innovation	20	11%	
Social	Workforce	29	16%	(16% + 4.5% + 8% + 7%)
	Human Rights	8	4.5%	
	Community	14	8%	
	Product Responsibility	12	7%	
Governance	Management	34	19%	(19% + 7% + 4.5%)
	Shareholders	12	7%	
	CSR Strategy	8	4.5%	
TOTAL		178	100%	

Calculation of individual category scores

Qualitative metrics are Boolean questions, and the values are Yes, No or NA. If the company does not report on the parameter, it is answered as No or NA depending on the default value of each measure (details of the default values are available in the ESG Glossary, available

on request.) All Boolean data is converted to numeric values for the percentile score calculation.

Details are available in the table below:

Boolean value	Numeric value
Yes	1
No	0.5
N/A	0

Quantitative metrics are either assigned a numeric value or NA. If a measure has a value, then the percentile rank formula is applied. Not available quantitative measures have no impact on the score as the percentile rank considers only companies with numeric values. Each measure has a polarity indicating whether the higher value is positive or negative.

Industry Group Relevancy

Some indicators are industry-specific, thus not relevant for all the companies. If an index is not appropriate for a particular sector, then the same is excluded from the calculation, and its value will be N/R (not relevant).

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