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"Το Πλαίσιο της Περιβαλλοντικής Κοινωνικής και Εταιρικής Διακυβέρνησης για την εταιρική διαφάνεια με χρήση τεχνικής πολλαπλών μεταβλητών"

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Η παρούσα διπλωματική εργασία υποβάλλεται από τον συγγραφέα της για την εκπλήρωση των απαιτήσεων του ΠΜΣ «Διοίκηση Επιχειρήσεων Φιλοξενίας και Τουρισμού». Ως συγγραφέας δηλώνω υπεύθυνα ότι η συγκεκριμένη διπλωματική εργασία έχει συγγραφεί από εμένα και αναλαμβάνω πλήρως όλες τις συνέπειες του νόμου στην περίπτωση κατά την οποία αποδειχθεί, διαχρονικά, ότι η εργασία αυτή ή τμήμα της δεν μου ανήκει διότι είναι προϊόν λογοκλοπής άλλης πνευματικής ιδιοκτησίας.

Η έγκριση της μεταπτυχιακής εργασίας από το πρόγραμμα δεν υποδηλώνει απαραιτήτως και αποδοχή των απόψεων του συγγραφέα εκ μέρους του Τμήματος.

Ευχαριστίες

Αρχικά οφείλω ένα μεγάλο ευχαριστώ στον επίκουρο καθηγητή του Ελληνικού Μεσογειακού Πανεπιστημίου και επιβλέποντα της διπλωματικής μου εργασίας Δρ. Αλέξανδρο Γαρεφαλάκη. Οι γνώσεις του, η ξεχωριστή προσέγγιση της διδασκαλίας του και η επικοινωνία του με τους φοιτητές κατά τη διάρκεια των διαλέξεων της Διοικητικής Λογιστικής στο μεταπτυχιακό πρόγραμμα Διοίκησης Επιχειρήσεων Φιλοξενίας και Τουρισμού αποτέλεσαν για εμένα κριτήρια επιλογής για την περεταίρω ενασχόλησή μου με το συγκεκριμένο γνωστικό αντικείμενο.

Ιδιαίτερη μνεία θα ήθελα να κάνω στον καθηγητή Κωνσταντίνο Ζοπουνίδη για την πολύτιμη βοήθεια του, η οποία έπαιξε καθοριστικό ρόλο στην ολοκλήρωση αυτής της έρευνας.

Ακόμη, θα ήθελα να ευχαριστήσω όλους τους καθηγητές και επιστημονικούς συνεργάτες του μεταπτυχιακού προγράμματος για την άριστη συνεργασία και τις γνώσεις που μας παρείχαν τόσο σε θεωρητικό, όσο και σε πρακτικό επίπεδο.

Τέλος, θα ήταν μεγάλη παράβλεψή μου να μην ευχαριστήσω την σύζυγο και τα παιδιά μου για τη συνεχή στήριξη όλα αυτά τα χρόνια. Οι θυσίες και οι κόποι που χρειάστηκε να κάνω για να φτάσω στην ολοκλήρωση των μεταπτυχιακών σπουδών μου θα ήταν σίγουρα μεγαλύτεροι χωρίς τη συμβολή και κατανόηση τους.

Abstract

The purpose of this research is to provide to the Board of Directors and CEOs of a firm to be aware of and accountable for the information they provide to the public. As long as the quality of the companies' public information is high, it will be able to retain its investors as well as to obtain new ones more easily.
This research introduces a Multi-Criteria Decision Aid - MCDA tool with the use of the PROMETHEE II method to formulate an alternative aggregate ESG quality approach. We conduct comparisons in a sectorial and regional based perspective during different exam periods before and after the implementation of International Financial Reporting Standards (IFRS), in an attempt to provide a robust framework for corporate disclosure reporting.
The findings are of particular interest to both scholars and decision-makers, including providers of corporate governance indices and rating agencies. The innovation of this research lies among others in using the MCDA method with the ESG framework, which proposes a combination of qualitative and quantitative criteria, enabling experienced and/or not experienced analysts to avoid manipulating techniques in business information.
The sample of companies that research based on was US and European companies incorporating only large-sized ones.

Keywords: ESG disclosures, narrative information, Management Commentary, Management Decision, Composite KPI's, Ma.Co.Index, MCDA methods, Prometheé II.

Περίληψη

Σκοπός αυτής της έρευνας είναι να παρέχει την κατάλληλη ενημέρωση και γνώση στα διοικητικά συμβούλια και στους Διευθυντές (CEO) μιας επιχείρησης για τις πληροφορίες που παραχωρούν στο ευρύ κοινό. Αν η ποιότητα της δημοσιευμένης πληροφόρησης μιας εταιρίας είναι υψηλή (ικανοποιητική), τότε θα είναι και σε θέση να διατηρήσει τους επενδυτές της ή και να προσελκύσει νέους ευκολότερα.
Η έρευνα αυτή εισάγει ένα εργαλείο απόφασης πολλαπλών κριτηρίων - (MCDA tool) με τη χρήση της μεθόδου PROMETHEE II για τη διαμόρφωση μιας εναλλακτικής συνολικής προσέγγισης στην ποιότητα της Περιβαλλοντολογικής, Κοινωνικής και Εταιρικής διακυβέρνησης (ESG). Πραγματοποιούνται συγκρίσεις σε τομεακή και περιφερειακή βάση, κατά τη διάρκεια διαφορετικών περιόδων εξέτασης **πριν και μετά** την εφαρμογή των Διεθνών Προτύπων Χρηματοοικονομικής Αναφοράς (ΔΠΧΑ), σε μια προσπάθεια να παρέχουμε ένα ενιαίο πλαίσιο στην αναφορά Εταιρικής γνωστοποίησης /δημοσιοποίησης.
Τα ευρήματα παρουσιάζουν ιδιαίτερο ενδιαφέρον τόσο για τους μελετητές όσο και για τους υπεύθυνους λήψης αποφάσεων, συμπεριλαμβανομένων και εκείνων που παρέχουν/δημιουργούν τους δείκτες εταιρικής διακυβέρνησης καθώς και των Οργανισμών αξιολόγησης πιστοληπτικής ικανότητας. Η καινοτομία αυτής της έρευνας έγκειται, μεταξύ άλλων, στη χρήση της μεθόδου MCDA με το πλαίσιο ESG, η οποία προτείνει ένα συνδυασμό ποιοτικών και ποσοτικών κριτηρίων, διευκολύνοντας έμπειρους ή/και μη έμπειρους αναλυτές στην αποφυγή τεχνικών παραποίησης των επιχειρηματικών πληροφοριών.
Το δείγμα των εταιρειών βασίζεται μόνο σε μεγάλες εταιρείες των ΗΠΑ και της Ευρώπης.

Λέξεις κλειδιά: Διαφάνεια ESG, Αφηγηματική πληροφόρηση, Διαχειριστικές Αποφάσεις, Σύνθεση KPI's, Δείκτης Ma.Co.I., MCDA μέθοδοι, Prometheé II.

Η διπλωματική αυτή εργασία περιέχει μέρος από επιστημονική έρευνα στην οποία έχουμε λάβει το acceptance letter για να δημοσιευθεί στο διεθνώς αναγνωρισμένο περιοδικό Management Decision το οποίο βαθμολογείται με δύο (2*) αστέρια στην λίστα ABS.

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List of acronyms

AIMR	Association for Investment Management and Research
CEO	Chief Executive Officer
CG	Corporate Governance
CSR	Corporate Social Responsibility
CSP	Corporate Social Performance
DEA	Data Envelopment Analysis
FASB	Financial Accounting Standards Board
ESG	Environmental, Social, Governance
IASB	International Accounting Standards Board
IIAS	International Institute of Administrative Sciences
IFRS	International Financial Reporting Standards
MA.CO.I.	Management Commentary Index
MADM	Multi Attribute Decision Making
MCDM	Multi Criteria Decision Making
MC	Management Commentary
MCF	Management Commentary Framework
MODM	Multi Objective Decision Making
MSA	Multivariate Statistical Analysis
OECD	Organization for Economic Co c
PROMETHEE	Preference Ranking Organization Method for Enrichment Evaluation
AIMR	Association for Investment Management and Research
CEO	Chief Executive Officer
CG	Corporate Governance

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1. Introduction

Throughout the previous 25 years, standard-setting bodies and academics have been discussing and find ways on how to enhance the informativeness of narrative reporting, e.g., in the form of **Management Commentary (MC).** Research in this field has been varying focused on which types of users' MC is to be aimed at, and in turn, perceptions of its possible content have been altered somewhat in composition. Immediately after the end of the last millennium, it seems as if narrative reporting to a rising degree has focused on meeting the needs of a much broader group of stakeholders than the perception of relevant users applied in earlier studies (Nielsen, 2010). One thing that seems to be the dominant discourse in the business narrative reporting debate at present is well-known to all Corporate Social Responsibility (CSR).

The assessment of the Corporate Social Performance (CSP) of a given firm is notoriously tricky (Carroll, 1999). Researches mention quite a few exciting tendencies related to the qualitative nature of CSR. One of the most acclaimed is the Environmental, Social, and Corporate Governance framework (i.e., the so-called ESG factors' framework), which offers opportunities for quantitative and qualitative evaluation of corporate disclosure (Street and Gray, 2001; Bebbington *et al.*, 2007).

A second issue comes from the aggregation of a number of criteria, as corporate social performance is fundamentally a multidimensional concept (Carroll, 1999). Although aspects of CSP until today have been somehow addressed, under our research, we believe that there is still room for providing an overall CSP approach, constituting, therefore, a challenge. Most of the extra-financial rating agencies combine scores across different CSR facets to provide a general assessment, regardless of potential underlying problems.

The concept of narrative info is quite tricky and multidimensional in terms of contributing aspects; most studies use ESG composite scores to measure the CSP. Studies of this scope are facing mainly two key issues. The **first** is related to several criteria used, while the **second** is that all ESG criteria are not of equal importance.

Indicators and especially such as those described as complex, are gradually more recognized as a suitable tool in policy making and public communication for a wide range of thematic fields, such as industrial competitiveness, sustainable development, quality of life assessment, globalization, innovation, and more. Their crucial feature includes making simple comparisons of countries and firms in order to illustrate complex and sometimes indefinable issues in a wide-ranging fields' perspective, e.g., the environment, economy, corporate, social, or technological development. Indicators like these often seem more comfortable to interpret by the public finding a common trend also in other separating indicators; also, they are quite useful in benchmarking countries' performance.

Along with the above, the *Joint Research Centre of the European Commission* asserts that *"no uniformly agreed methodology exists to weight individual indicators before aggregating them into a composite indicator."* In case of a decision problem with a single criterion or a single aggregate measure, the objective function is the single criterion; the constraints are the requirements on the alternatives. Techniques that can be used to address these problems are linear programming, nonlinear programming, discrete optimization, and more. (Nemhauser *et al.*, 1989).

On the other hand, multiple criteria optimization used in case of a finite number of criteria with a feasible number of alternatives (Steuer, 1986). When decision-making problems involve a number of criteria and a finite number of alternatives, the problem goals should be defined clearly. Problems of this type are called Multi-Attribute Decision Making (MADM) (or MSA) problems (Davis and Tama-Sweet, 2012).

The PROMETHEE I (partial ranking) and PROMETHEE II (complete ranking) developed by J.P. Brans and presented for the first time in 1982 was developed by Brans (1982) and extended by Vincke and Brans (1985). As a general view, MCDM includes two parts: Multi-Attribute Decision Making (MADM) and Multi-Objective Decision Making (MODM) (Figure 1.1).

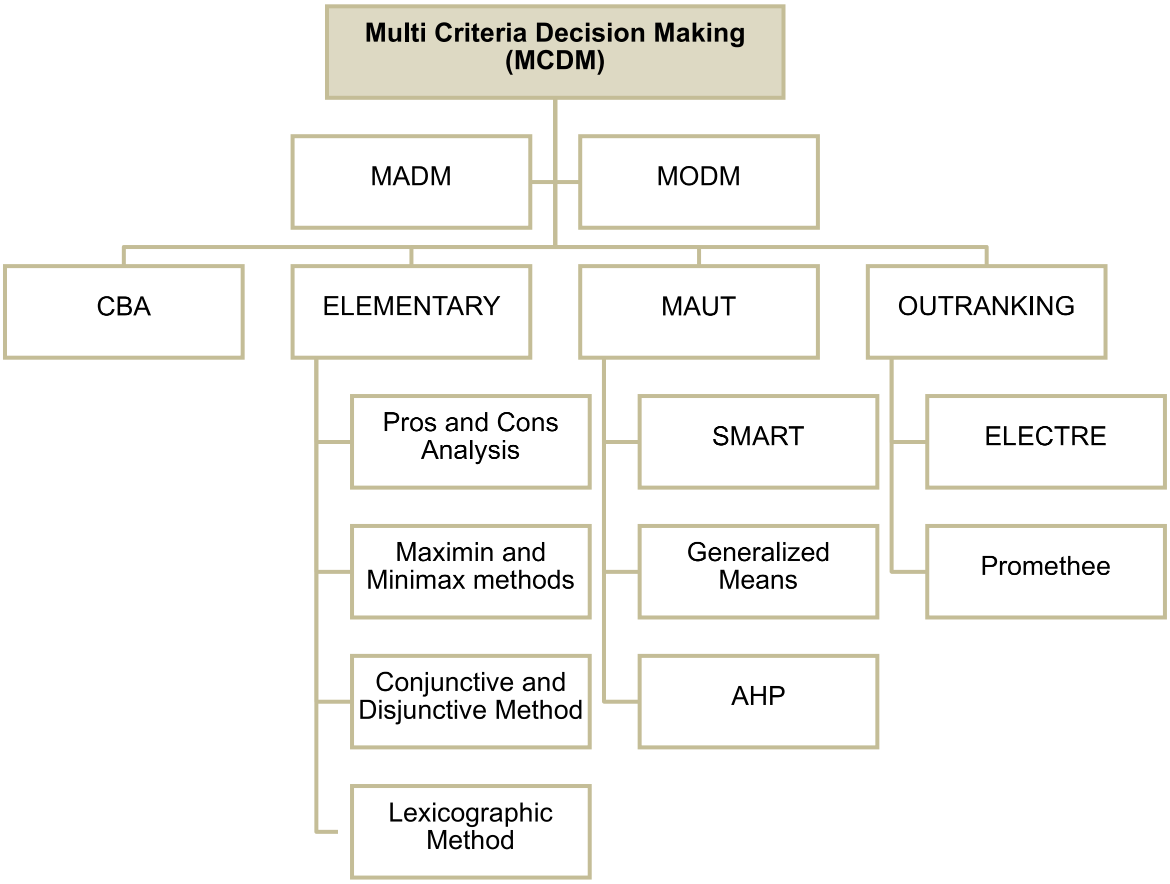

Figure1.1 Basic MCDM framework

The research uses multivariate statistical analysis (MSA. MSA techniques are divided into two main categories: those that investigate the relationship between independent and dependent variables and those that do not have dependent variables and in which interrelations between a range of variables investigated (Hair *et al*., 1995.
In our study, we use the checklist of OECD (2008, pp.20, adding the instructions of the Management Commentary Framework (MCF of 2010 to address the issues mentioned above.
Also, we provide countries-oriented analysis with the use of 56 criteria taken from ESG framework (Garefalakis et al., 2016, between firms of different origin (i.e., European and USA ones), and by making sectoral and period analysis with the year of IFRS implementation taken as a milestone; we take a sample of 525 firms (see Appendix F) from 13 countries (i.e., European ones, as well as from USA and UK, during a time period of 6 years (i.e., 2002 -2007).

1.1 Structure of the Thesis

This Thesis is structured as follows. Section two addresses key literature on the proposed framework of the ESG (Environments-Social-Governance framework and its use to advanced corporate research. Also, it explains the structure of the annual financial statements, the regulatory framework, the terms of narrative information, and the usage of PROMETHEE methodology. Section three refocuses attention on the links between the construction of a narrative information tool with a composite indicator and explains the chosen data. In contrast, in section four, the focus moves to an extended introduction of the methodology used, with the implementation of the Multiple Criteria Decision-Making Method Prometheé II. In section five, we have framed our discussion in three layers: first, by describing the Time-period oriented option, second, by addressing the regional-oriented option and, third, by providing the sectoral-oriented option, respectively. In section six, we conclude the findings of the study and providing elements of its novelty regarding the focus on the ESG framework with the use of MCDA methods. Finally, in section seven, we recommend what scientists in this field can do for further research.

2. Literature Review

2.1 Structure of the annual financial statements

The **annual financial statements** are divided into two main parts. The part of the **narrative information** and the part of the **Financial Statements (quantitative)**.

The narrative part provides mostly verbal information, which accompanies the quantitative part of the financial statements, to give the company's investors a fuller picture of its published financial figures. Similarly, the quantitative part includes the information shown in the Financial Statements: Balance Sheet, Statement of Profit and Loss, Profit, and Loss Table.

In more detail, a comprehensive set of **quantitative information** includes:

The Balance Sheet, which presents the asset situation of the economic unit, as well as the source of the property at a specific time. Also, the balance sheet could be classified as an 'asset X-ray.' Its form is usually found either in Type T (Active-Passive) format, or in list format. In the case of T-format imaging, the left-hand section of the reader includes assets divided into fixed and current assets (Pomonis, 1998). On the other hand, the right side of the balance sheet contains liabilities accounts divided into Equity, Short-Term Liabilities, and Long-Term Liabilities. In the case of a list-in-list display, the Passive is shown just below the Asset. Mear & Firth (1987), following research, concluded that analysts use more data from the Balance Sheet than any other type of financial statement in the decision-making process.

The Statement of Profit and Loss results in positive or negative results, for a given period and which can directly affect the value of the economic unit (Adamidis, 1998). That is why Chandra (1975) becomes more important the information derived from the Statement of Profit and Loss compared to that obtained from other financial statements, such as the Balance Sheet. This conclusion was reached following a survey conducted through questionnaires, focusing on the information sought by analysts (Chandra, 1975). Also, Horngren (1978) and Arnold & Moizer (1984) reached a similar conclusion regarding the usefulness of the Statement of Profit and Loss (1978) and Arnold & Moizer (1984), focusing on the abstraction of information through an interview of Directors (Horngren, 1978; Arnold & Moizer, 1984).

The Results Disposal Table - shows the destination of the corporate result, as shown in the Statement of Profit and Loss. Disposal is not only about the part of the profit directed outside the company (e.g., dividend yield to shareholders) but on the total, including the portion that is heading into storage.

The Cash Flow Statement, which provides information about the cash inflows and outflows of an economic unit. This information may assist the company's management, creditors, investors, and other interested members in analyzing the company's past and future performance and gaining an adequate picture of the company's cash inflows and outflows.

The Statement of Changes in Equity, which presents the financial data is that analyzes the change in the amount of end-of-year equity in relation to that of the beginning of use.

Finally, the Notes complement the quantitative information, providing additional information on the financial situation of the company.

2.2 Regulatory framework

The role of annual financial reporting for a set of parties with a legitimate interest requires an appropriate regulatory and control framework to guarantee the quality of such information (O' Regan, 2006). This framework is based on the following pillars:

The current legislation, which includes legal types, limits, and obligations regulating the operation of companies. It is to be expected that this legislation will vary from country to country. Although national law follows - in its structure - the rules of the three primary schools, namely German, French and Anglo-Saxon, even today, there are quite significant differences between them. These differences, in the context of accounting harmonization, need to be significantly reduced in order to create a single regulatory framework, as this achieves - in a more relaxed way - the evaluation of information by interested members outside the borders of the company's head office.

Accounting standards, similar to legislation, so in the case of accounting standards, most economically developed countries led to the creation of a package of national accounting standards. The need for a common set of standards was perceived several decades ago. It resulted in the creation of two different standards, the European-led International Accounting Standards Board (IASB and the American, with the express the Financial Accounting Standards Board (FASB)). The effort to harmonize standards to eliminate any differences between them has already begun.

Capital market rules - in addition to the legislation and accounting standards common to all economic units in a country, companies whose shares are traded on a stock market must also comply with the rules laid down by the capital market committee responsible in each case. These rules are concerned with issues such as the dispersion of shares, the transparency of transactions, and the course of the company.

2.3 Harmonization of information

The regulatory framework governing annual financial information consists of capital market legislation, accounting standards, and rules. It is well known that each country has developed its framework in order to serve its needs, based on prevailing habits and practices. Although there are clear trends and influences, there is a noticeable difference between different regulatory frameworks in terms of financial reporting regulation.

Globalization, which has been the product of technological progress, as well as fundraising, has created a set of new business needs and brought problems related to international entrepreneurship and investment activity to the fore. ***One of the problems that have arisen is the existence of different regulatory frameworks in terms of annual financial information between companies with their headquarters in different countries.*** Thus, accountants, analysts, and investors are obliged to know and understand different regulatory frameworks in order to be able to carry out their work (Floropoulos, 2007). As this information is vital in decision-making, in many cases, this problem prevented international investment movements, whether they were business plans or capital market investments.

Given the weaknesses that have just been mentioned, the creation of the International Accounting Standard Committee was signed as early as 1973, to create a shared package of accounting standards. Members of the Committee were representatives of the Professional Accounting Organizations of Australia, France, Germany, the United

Kingdom, the United States of America, Japan, Ireland, Canada, Mexico, and the Netherlands. The creation of common accounting standards enhances the comparability of economic and narrative aggregates, while at the same time, reducing the cost and risk of false and distorted information (Ball, 2006).

2.4 International Financial Reporting Standards (IFRS) and Generally Accepted Accounting Principles (GAAP)

As mentioned above, the differences in financial information in the various countries are due to specific factors affecting the development of the accounting system in each country. Moreover, over the years, globalization has been an integral part of each country at a political-social-economic level, resulting in the link between different capital markets, with the result that the information and data presented in the financial statements play a particularly important role (Malikova & Brabec, 2011).

Also, the various investors are favored by globalization as they invest capital in companies in different countries. It is, therefore, necessary to compare the information contained in the financial statements of these companies. The best way to achieve this is to use a joint base, which was a benchmark, as well as a starting point for the preparation of financial statements around the world (Malikova & Brabec, 2011).

Given the above, it is noted that it was imperative to develop a single framework, which would be the primary source of the abstraction of specific accounting standards. At the same time, its character would have global power and application. The objective of these standards was to alleviate the difficulties created by the existing diversity of financial reporting practices, encouraging the creation of appropriate conditions for optimal transparency in both financial statements and corresponding financial transactions. Thus, the creation of a single framework would be a move geared towards increasing the efficiency of the global capital market (Kumar, 2011). This single framework would strengthen the processes of preparing and presenting financial statements, thereby achieving a reliable comparison between companies in the same sector in different countries of the world.

Law 1606/2002 of 2002 was one of the main factors that transformed IFRS as the most widely used set of accounting standards in the world (Guenther et al., 2009; Mirza et al., 2011; Dimitras et al., 2013). Although this legislation entered into force in 2005, from 2002 to 2005, these companies could proceed if they so wished, to **voluntary** adoption of IFRS for the preparation of their financial statements. Thus, various Companies of the European Union, through a series of specific procedures, could resort to voluntary compliance with their financial statements based on IFRS. Cuijpers et al. (2002) mention four ways through which companies could resort to this voluntary adoption of IFRS. More specifically, the first way they quote is through the provision of two separate financial reports. Thus, in this case, one financial report was drawn up following the accounting standards set by the local authorities, thus meeting the required regulatory requirements required by the local authority. In contrast, the second was drawn up under IFRS. A second way through which this voluntary adoption of IFRS could be carried out is through how financial reports are prepared, which will be completed based on IFRS while providing all the necessary compromise procedures set out in local accounting standards.

Also, businesses in some countries of the European Union can comply with two accounting standards. In addition to the European Union, many countries in Africa, Asia, and the Americas designated 2005 as the starting point for the **mandatory** adoption of IFRS (Mirza et al., 2011; Garefalakis et al., 2015b). More and more countries are moving in this direction, talking about the future mandatory use of IFRS, while allowing companies to make voluntary use of IFRS by the mandatory adoption deadline. Thus, it could be said that companies that apply IFRS can be divided into those that have made voluntary or mandatory implementation.

2.5 The quality of accounting information concerning the voluntary and mandatory implementation of IFRS

Based on the separation, which concerns the voluntary and mandatory adoption of IFRS, we understand that the examination of these two cases can lead to separate results. More specifically, the effects of voluntary adoption of IFRS may differ from the corresponding effects that emerge in the mandatory adoption of IFRS, as the condition of mandatory adoption occurs following forced enforcement, while voluntary adoption comes from a subjective and free choice (Horton et al., 2010; Garefalakis et al., 2015a). In order to highlight the changes that may arise from each case individually, we will make a comparison of both voluntary and mandatory adoption of IFRS, while maintaining a common denominator, which will play the role of the fixed factor. In this case, one factor that can act as a representative denominator is that of accounting quality.

More generally, accounting quality is a term often used in the field of accounting. Looking back at the broader literature, we note that there is no specific definition that defines what the term of accounting quality contains precisely. For this reason, we will resort to various definitions and approaches in order to gain a more extensive understanding of this term.

As part of this approach, we could define accounting quality as the ability of accounting to reflect both the financial situation and the corresponding performance of a business (Barth et al., 2008). From another approach, we could look at accounting quality based on the reliability of financial information. *Based on this approach, the high quality of accounting information should be to the benefit of investors, protecting them from some opportunistic management behavior* (Penman, 2002).

In addition to these definitions and approaches, the Council of International Accounting Standards says that specific properties can lead to high accounting quality. More specifically, these properties relate to relevance, faithful representation, comparability, verification capacity, timeliness, and understanding (Schiller & Vegt, 2010). Since the quality of accounting is not something that can be observed outside the broader context of finances, it is considered necessary to develop specific factors that can reflect, and in some way, assess the accounting quality of a company's published data and information (Verleun et al., 2011).

Several indicators of accounting quality have been used in many surveys, with the main ones converging on earnings management, timely loss recognition, and value relevance.

Moving away from the closed framework relating purely to the term of quality accounting, we note that IFRS is capable of influencing the accounting quality itself in a dual way (Barth et al., 2008). More specifically, IFRS can improve, but also worsen accounting quality. We are looking at the literature, specific reasons for why IFRS can move towards improving the quality of accounting (Barth et al., 2008). Initially, IFRS can eliminate specific alternative accounting methods, thereby limiting the self-initiative actions and decisions of the Governing Council. That, in turn, could work in a direction aimed at limiting non-systematic profit management and thus improving the quality of accounting (Barth et al., 2008). Besides, IFRS are standards based on fundamental principles, and to circumvent them is potentially more difficult. Finally, IFRS allows specific measurements, such as the use of Fair Value, which creates particularly significant advantages over local standards, as existing economic conditions are better illustrated.

On the other hand, IFRS can limit accounting quality through alternative methods applied to accounting (e.g., the LIFO method), but they are considered appropriate and representative, both for the financial position and for the overall performance of an undertaking. In addition, a key feature of IFRS is that they are based on Principle-Based Standards, and the absence of specific directives can bring greater flexibility for managers. This flexibility can create further adverse situations, as the strengthening of the self-initiative of managers, resulting from the lack of specific implementing guidelines, is very likely to lead to the manipulation of profits, and therefore to a reduction in accounting quality.

Understanding that IFRS can have a variety of impacts on accounting quality, we will then focus on the existing relationship between the quality of accounting and the voluntary and mandatory implementation of IFRS.

2.5.1 Voluntary implementation of IFRS

Before the mandatory implementation of IFRS, many countries around the world had the opportunity to resort to the voluntary adoption of IFRS. More generally, it is stated that it is that companies that voluntarily adopt IFRS are those seeking access to foreign capital (El-Gazzar et al., 1999). Also, many people report that the voluntary implementation of IFRS enhances accounting quality (Daske et al., 2008). They argue that this is mainly attributed to the nature of the voluntary adoption of IFRS, which stipulates that the application of these standards arises by freedom of choice. Therefore, the parties that have followed this path have more substantial incentives to deliver results that reflect a higher accounting quality.

Seeking an in-depth understanding of the voluntary implementation of IFRS and the changes that such an action can bring to accounting quality, we will refer to specific studies that have dealt with this issue. A representative survey is that of Barth et al. (2008). This survey was based on a sample of companies from 21 countries, which had implemented IFRS from 1994 to 2003. For the optimal display of accounting quality, this survey used specific measurements such as profit manipulation and timely loss recognition.

The results show that companies that voluntarily implemented IFRS up to 2004 show less profit manipulation, more timely loss recognition, and higher profit value. By taking the results aggregated, it is noted that their best interpretation demonstrates that the voluntary implementation of IFRS has enhanced the quality of disclosure of data in the corporate accounts. In addition, the investigation showed that after the adoption of IFRS, companies experienced a more considerable variation in changes in their net income, as well as in their cash flows. Besides, there is a higher correlation between accruals and cash flows.

Another research on the effect of the voluntary application of IFRS on accounting quality is that of Van Tendeloo & Vanstraelen (2005). This research is based on the German companies which first adopted IFRS in the period 1999 to 2001 and analyses the impact of the application of IFRS on accounting quality, with an emphasis on profit manipulation (Guenther et al., 2009).

According to the results, the companies that voluntarily adopted IFRS show an increasing trend in profit manipulation, which also has a direct impact on accounting quality. However, it is noted that this particular increase in profit manipulation is significantly reduced when companies are under the supervision of large audit firms (Big 4).

2.5.2 Mandatory implementation of IFRS

The effect of the mandatory implementation of IFRS on the quality of financial statements depends on whether their quality is higher or lower than those of Greek Accounting Standards (GAS). On this basis, we can understand that if IFRS have a higher quality than the corresponding local accounting standards, then their mandatory application will result in an improvement in accounting quality. In contrast, if IFRS are lower quality standards than always with the corresponding local accounting standards, then their mandatory application will result in a reduction in accounting quality (Barth et al., 2008).

In drawing concrete conclusions on the impact of the mandatory application of IFRS on accounting quality, we will resort to the presentation of specific surveys. Initially, a survey studying the effect of mandatory IFRS on accounting quality is that of Ahmed et al., (2012). In this survey, a sample of 1,600 companies from 20 countries was used. All of these companies had adopted IFRS in 2005. In order to provide an objective comparison measure, a comparative benchmark was also set, consisting of several companies from 15 countries but which had not adopted IFRS. For the development of research, the effect of the mandatory application of IFRS on three groups of accounting quality measurements was examined. More specifically, this research used income smoothing, reporting aggressiveness, and profit management manipulation. The reasons for these three factors have to do with credibility issues, as these measures can provide a faithful representation of accounting quality (Dechow, 2010).

According to the results of the investigation, the companies that compulsorily adopted IFRS concerning those that had not adopted IFRS showed a particular increase in the normalization of their profits and expenses, while at the same time showing a decrease in recognition of their losses. Taking the aggregated results of this survey, we noted that the mandatory application of IFRS has led to a reduction in accounting quality.

Another survey dealing with the effect of mandatory application of IFRS on accounting quality is that of Paglietti (2009). This survey includes 160 companies, which were examined from 2002 to 2007. Although accounting quality is a multidimensional term, this research focuses its interest on the value relevance index. This term expresses the ability of the information contained in the financial statements to summarize the information affecting the value of the business (Francis & Schipper, 1999). The sample of this survey comes from Italy. The fact that this research is limited to one country creates additional interest, as Italy is a traditional country in Europe. Also, Italy adopts civil law and is called upon to implement IFRS, which in turn are based on the English-Saxon accounting system, which is under the umbrella of common law* (Kousenidis et al., 2010).

The results of the investigation showed that the mandatory application of IFRS in Italy favored the 'value of the company' index. In addition, mandatory implementation has also had a more general effect on accounting quality, strengthening it to a significant extent (Kousenidis et al., 2010).

2.6 Narrative information

In recent years, the business environment has faced a wide range of environmental, social, and corporate challenges, which has led to the creation of an increased interest in corporate responsibility issues (Warren & Thomsen, 2012). The reporting requirement of companies are central to the Factors of CG, did not come from a one-sided corporate interest, as it emerged from increased awareness of both investors and stakeholders such as company staff, creditors, and investors. This chapter will also highlight and analyze the new trends of sustainability reports in narrative information, which can

*Douglas Lind, Umbrella Equities: Use of the Federal Common Law of Nuisance to Catch the Fall of Acid Rain, 21 Urb. L. Ann. 143 (1981) Available at: https://openscholarship.wustl.edu/law_urbanlaw/vol21/iss1/4 significantly limit impression management when reading corporate reports but also increase the quality of information (Warren & Thomsen, 2012).

The emergence of various events, such as crises in the business environment, as well as economic disturbances in the stock market, have resulted in the influence of both the audit and the wider accounting sector. The broader climate indicated that there was a serious need to provide further information to stakeholders (Warren & Thomsen, 2012).

It is well known that before the rapid economic turmoil of the 20th century, investors and other interested parties were not receivers of sound information. It was proving that traditional information methods were inadequate, as financial statements placed greater emphasis on quantitative information (financial statements) containing past data rather than forward-looking information (Quick, 2008). Also, interested parties are by their very nature in a perpetual search for information in order to gain an overall view on issues related to the activities of companies (Quick, 2008).

In order to explain these issues, there has been an activity to guide interested parties towards the information needed to take administrative decisions. A first attempt concerns the development of actions carried out mainly in the fields of social and environmental information, and the sustainability reports/reports have emerged, which have acted as a kind of response to the requirements of interdisciplinary information (Quick, 2008).

In particular, it should be noted that sustainability reports reflect the simultaneous integration of economic, environmental, and social actors into the broader environment of corporate behavior while aiming to preserve existing resources in order to be able to use them by future generations.

However, it could not be argued that the condition of sustainability indicates specific objectives such as (a) improving a company's environmental performance, (b) the cost of economic objectives, and (c) the cost of social objectives. That is because the broader concept of sustainability is aimed at decisively linking all three of the above objectives (Dyllick & Hockerts, 2002) in order to provide an overall profitable situation for the enterprise through the use of synergies (Dyllick & Hockerts, 2002).

By submitting financial reports and in particular, reports containing elements of the economic, environmental and social profile, a company takes an advantage, demonstrating that it fulfills at least part of its corporate governance obligations, as well as highlighting that its activities are fully matched with the value system that defends the wider social context (Quick, 2008).

That, in itself, creates additional benefits, as companies through this development can prevent or limit any future claims that may limit the various strategic choices of the company itself (Quick, 2008). Thus, companies, through these actions, can maintain both their position and the level of reputation that accompanies them.

Management Commentary helps to understand corporate goals and reveals the strategies that are being pursued to achieve them. It, therefore, consists of a range of information covering a range of topics and is categorized into future information and those that add quantitative characteristics to the annual financial statements (Dimitras et al., 2017). The narrative information consists of the following five categories (Beattie et al., 2004):

Nature of the company: An adequate understanding of the financial situation of the company requires the presentation of the environment in which it operates, both internally and mainly abroad. Moreover, as has already been pointed out, many analysts place particular emphasis on elements of the industry.

Objectives and Strategies of the company: Through the presentation of the defined objectives, both economic and non-economic, as well as the strategies for achieving them, the opportunity is given to the analysts to evaluate the choices of the management and then to predict the future course of the economic unit. At the same time, it indicates the timetables for achieving the objectives and how their achievement will increase the value of the company and, thus, the property of investors.

Essential Resources, Risks, and Relationships of the company: Resources are a key component of the corporate operation. Within the framework of the MC, it is appropriate not only to indicate the resources but also how they are planned to be used to create value for the enterprise. At the same time, in a dynamic and volatile environment, risk management is becoming increasingly important. Let alone taking into account that they come from the external environment and are, therefore, not directly affected. Identifying risks is particularly important as it reveals the vulnerabilities of the economic unit. Finally, as the company interacts with its environment, it creates relationships with customers, suppliers, partners, and government entities that have the potential to ensure its long-term prosperity.

Results and prospects of the company: The result is the main criterion for any activity. In the MC, the result and therefore, the performance **should be detailed** and, on the other hand, assess whether this result is 'extraordinary' or linked to the future company's prospects. In the same context, it is always necessary to identify and present the information that influenced the above result, whether economic or not, and to predict how this information will change in the future.

Indicators and performance metrics of the company: Feedback and self-control are particularly crucial for the economic unit. For this reason, the MC lists the measures and indicators assessing the achievement of the objectives set and, therefore, its performance. Also, these indicators provide information on the agency's vital resources, risks, and relationships.

2.7 Environmental, Social and Corporate Governance (ESG)

It should be noted that no response has been given to date, which determines whether or not there is a harmonious relationship between the concepts of environmental, social, and corporate efficiency on the one hand and, on the other hand, the respective economic performance of companies. However, <u>the assessment of the factors within the ESG framework allows for a deeper understanding of both the risks and opportunities in the company's environment, thereby ensuring safety and sound risk management</u> (Bassen & Kovacs, 2008).

In terms of environmental, social, and corporate governance, we refer to issues related to specific information, which are in the Management Commentary of the annual financial statements and not in the Financial Statements, and relate to the challenges and performance of companies with these issues. Thus, taking into account the above, narrative information is provided, which reveals a differentiated investment critical view, resulting in a complete picture for investors. Investors then obtain the information needed to evaluate better the companies' narrative and quantitative information (Bassen & Kovacs, 2008).

2.7.1 Environmental information

The United Nations (UN) has shown a particular interest in environmental information, revealing why corporate environmental indicators have rapidly acquired a unique role, becoming the main channel through which companies can confirm compliance with environmental rules and publish relevant implementation reports.

The UN adds that the project to create corporate environmental reports, including environmental indicators to confirm the operation of integrated environmental management systems, as well as elements of environmental responsibility of companies and their adaptation (especially of industries) to environmentally conscious behaviors, is equally important.

Since the early 1990s, many companies around the world have started publishing separate corporate environmental reports (CERs). Over the years, environmental reports have been treated with high interest, and many have adopted them (Kolk, 1999). Both corporate environmental reports and environmental indicators have been criticized for their biased attitude, but also for their general effort to praise them, as they present specific points that reflect the good face of the company, while concealing the poor, thus challenging the results (Hedberg & Von Malmborg, 2003).

2.7.2 Social information

Social Information is a concept that has dominated the broader environment of corporate reporting, as each company has a social responsibility-related policy, producing annually-based reports that include its activity (Crowther & Aras, 2008). Hohnen in 2007 defined Social Responsibility as "*business-implemented policy, which concerns actions for social, cultural, educational and research programs, as well as actions relating to human-centered and fair human resources policy, respect for workers' rights, health and safety rules, strengthening social dialogue, guaranteeing trade union rights, and respect for collective labor agreements*". In order to achieve the ultimate objectives of Social Responsibility, Corporate Social Information is based on specific principles, which are: (a) the provision of quality products and services to consumers, (b) job creation, investing in the development of production and human resources, (c) strict compliance with laws, (d) integrity and reciprocity in relations with all interested parties, (e) respect for human rights and the adoption of acceptable ethical principles in relation to the diversity of workers (Paul Hohnen, 2007).

2.7.3 Corporate governance information

In our effort to present a definition that will be able to fully and adequately reflect the issues of corporate governance, we note that its performance cannot reflect in all its dimensions the framework and functions of Corporate Governance (CG). Looking at the relevant literature, we find that there are several conditions.

The CG is defined as a 'legal framework' which enhances the value of an undertaking (Zingales, 1998) by harmonizing its relations with stakeholders. Corporate governance, therefore, consists of a set of rules, practices, and procedures that shape the corporate profile in terms of relationships, transactions, and so on.

Another definition for CG is that it presents it as the set of options where investors take investment actions, with the certainty that they will earn a share of the capital they have invested (Shleifer & Vishny, 1996). This definition, however, is not complete, as it does not incorporate other dimensions of corporate governance.

Another definition is that it incorporates more dimensions of CG by using the model of traditional financing (Solomon, 2010). This model is expressed through the agency theory, according to which the CG identifies the relations between the shareholders and the company itself, in which the CG is expressed as the system by which undertakings are managed and controlled (Cadbury Report, 1992). Furthermore, CG can also be regarded as a regulatory system, which concerns not only the relationship between the company and its shareholders but also that of the company and a wider environment involving other interested parties within and outside the corporate environment (Solomon, 2010).

Through this approach, the OECD (Organisation for Economic Co-operation and Development) describes CG as the system by which companies' activities are managed and controlled. According to Solomon J. (2010), CG's structure determines the distribution of rights and responsibilities between the various participants in the company, such as the Board of Directors, Directors, and Shareholders. It also recommends the structure through which the objectives, vision, prospects, and strategies of the enterprise are set and identify the means of achieving them with a specific timetable and measurement through quantitative and qualitative indicators. Also, the departments of the company and their operating environment are identified, and sufficient explanations are provided, relating to the rules and procedures for decision-making, about the various corporate affairs, enabling the performance of executives and management to be monitored during the implementation process (Ertuna & Ertuna, 2009).

2.7.4 From SRI to ESG

In the late 1990s and early 2000s, however, proponents of SRI rebranded the concept as ESG by adding corporate governance factors (the “G” in “ESG”), and they asserted that ESG investing could improve risk-adjusted returns, thereby providing a direct benefit to investors. For example, instead of avoiding the fossil fuel industry to achieve collateral benefits from reduced pollution, the new suggestion was that a fossil fuel company must divest because its share price underestimated its litigation and regulatory risks, and therefore divestment would improve risk-adjusted return. On this view, ESG investing is a kind of active investment strategy that seeks to profit from the market’s mistaken pricing of ESG-related risk and return factors, or from the use of those factors in shareholder voting or engagement with management.
Following Apartheid’s collapse, the fiduciary law issues surrounding Socially Responsible Investing (SRI) mainly laid dormant in the legal literature across the next couple of decades. Investment professionals, however, developed a renewed interest in SRI as investor demand for socially responsible funds increased in the 1990s and further into the 2000s[1]. Between 1995 and 2005, many new SRI funds launched, and their assets under management increased substantially, growing by one estimate from 55 funds to 201 funds and from $12 billion to $179 billion[2]. At the same time, SRI advocates shifted both their investment strategies and their marketing in two related ways. First, SRI funds began explicitly to incorporate corporate governance into their investment strategies, tying sound governance to their social mission and rebranding SRI as ESG. Second, SRI funds began appealing to investors’ financial interests, as well as their ethical sense, by asserting that SRI funds could be both morally and financially superior

[1] e.g., Danny Hakim, On Wall St., More Investors Push Social Goals, N.Y. Times Al, Feb 11, 2001; Susan Sherriek, A Conscience Doesn’t Have to Make You Poor, Bus. Wk. 204, May 1, 2000.
[2] Social Investment Forum, Trends in Socially Responsible Investing 9 (2010), available at https://www.ussif.org/files/Publications/10_Trends_Exec_Summary.pdf [πρόσβαση 25/01/2020]

to other funds, offering excess risk-adjusted returns[3]. The addition of governance factors in the 1990s, widely accepted as relevant to firm value, brought theoretical and empirical credibility to claims regarding an excess return. At the same time, massive corporate bankruptcies such as WorldCom and Enron, tied to misconduct and weak governance, drew further attention to governance factors in investing and were followed by regulatory reforms[4]. In the academy, a highly influential 2003 research by Paul Gompers, Joy Ishii, and Andrew Metrick developed and applied an index of corporate governance,[5] with many follow-on research suggesting that identifiable and measurable governance factors have a significant effect on firm performance. Other indices followed, including a prominent entrenchment index in 2009 by Lucian Bebchuk, Alma Cohen, and Allen Ferrell[6]. A further prod for ESG investing came as a result of the financial crisis of 2007 and the Great Recession, which led to a search for better risk measures, with some suggesting that ESG factors better identify risk[7].

In our effort, to extend the quality of Corporate Social Responsibility (CSR) of a company, the first problem that emerges from the literature is that there is no consensus on the definition of CSR (Dahlsrud, 2005). The inexactness could be a consequence that it could characterize as natural form the fact that CSR reflects the role of a business in society, which is continually changing. Besides the change over time, there is a difference in values and norms between regions, countries, sectors, and continents. For example, U.S.A uses MD&A, EUROPE uses Management Commentary, and the U.K uses 10-K. Thus, these modifications lead to alternating interpretations of the phenomenon called CSR. It is hard to develop a methodology that allows comparison or benchmarking of CSR of different companies in the world since we have already mentioned that the lack of a clear and widely accepted definition of CSR.

CSR seems to be the dominant discourse in the business reporting quality and corporate disclosure debate at present. That is interesting as the discourse thereby conflicts with the normative view of an organization's purpose, namely, to generate profits for shareholders. The CSR discourse, on the other hand, is much more in line with March & Olsen's (1998) view of appropriateness perspective, where corporate actions are much more concerned with communicating core values, mission statements, the business concept, political ideology, and social responsibility (*see* also Söderbaum 2002, pp.191).

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[3] Michael S. Knoll, Ethical Screening in Modern Financial Markets: The Conflicting Claims Underlying Socially Responsible Investment, 75 Bus. Lawyer 681, 682 (2002) (noting "SRI industry's steady)

[4] Sparkes, supra note. The most salient reform was the Sarbanes-Oxley Act, enacted by Congress in 2002. There is reason to doubt the efficacy of the Sarbanes-Oxley reforms. See Roberta Romano, The Sarbanes-Oxley Act and the Making of Quack Corporate Governance, 114 Yale L.J. 1521 (2005).

[5] Paul A. Gompers, Joy L. Ishii & Andrew Metrick, Corporate Governance and Equity Prices, 118 Q. J. Econ. 107 (2003).

[6] Lucian Bebchuk, Alma Cohen & Allen Ferrell, What Matters in Corporate Governance, 22 Rev. Fin. Stud. 783 (2009).

[7] Compare Karl V. Lins, Henri Servaes, & Ane Tamayo, Social Capital, Trust, and Firm performance: The Value of Corporate Social Responsibility During the Financial Crisis, 72 J. Fin. 1785 (2017) (finding that, during the Great Recession, firms with high ESG factors outperformed, but no difference outside the financial crisis); John Nosfinger & Abhishek Varma, Socially Responsible Funds and market Crises, 48 J. Bank. & Fin. 181, 192 (2013) (finding that SRI funds outperform non-SRI funds during crises, but non-SRI funds perform better otherwise), with Pieter Jan Trinks & Bert Scholtens, The Opportunity Cost of Negative Screening in Socially Responsible Investing, 140 J. Bus. Ethics 193, 202 (2017) (finding that "[n]early all combined controversial [low-social score or "sin stocks"] portfolios beat the market during the recessionary period in an economically significant way").

2.8 Measurement of reporting quality and corporate disclosure

In the following section, we are discussing three categories for the measurement of disclosure and reporting, as well as its challenges.

First, we start with broader or more comprehensive measures (e.g., a firm's disclosure policy indicator) and surveyed by slighter or more specific measures (e.g., accruals or a specific disclosure indicator). Generally, we seek to show that, more specific (or narrow) measures facilitate consistent measurement across firms and are also more conducive to measuring quality differences. Nevertheless, on the other hand, with narrower measures (or indicators), we can see that the concern arises that other disclosure activities could serve as a substitute (or as a supplement).

At this point, we seek to provide an example such as; firms could compensate weak earnings quality with additional disclosures. Therefore, without controlling for other disclosure and reporting choices, it is not easy to isolate the effect of the particular measure set in question. Broader measures that characterize a disclosure policy or reporting regime are more likely to capture a firm's commitment to a certain level of transparency, i.e., a promise to provide certain information irrespective of its future realizations, and hence are less likely to be influenced by specific realizations (e.g., poor performance in a given year).

Course, there is a second group of measures that equally used in the broader category is the Extra-financial data Rating methods. Over the past 15 years has developed the extra-financial rating market and has already experienced an initial phase of consolidation. The extra-financial analysis is a new field that primarily developed at the end of the 1990s. The process assesses the Environmental, Social, and Governance (ESG, also known as CSR as we saw above), policies of companies, countries, and other types of securities issuers.

As far as the disclosure's activities (Lang and Lundholm, 1993, 1996; Healy *et al.*, 1999), where we must omit that is based on annual surveys of financial analysts asking them to rank U.S. firms, is a new measure and called the Association for Investment Management and Research (AIMR) rankings.

Following the above, ratings here reflect undoubtedly the utility business for experienced users of such information, and therefore to arrest quantitative and qualitative aspects. The rankings cover an extensive range of disclosure activities, such as annual report information voluntary disclosure or investor relations activities. However, it is only available for big United States companies and for a limited time.

The method considered and the most widespread by researchers is the method of assessing non-economic (Extra-financial) information (Lang & Lundholm, 1993; Welker, 1995; Healy et al., 1999). The methodology of non-economic evaluation has been significantly developed over the last 17 years by measuring information referring to Environmental Information, Social information, and Corporate Governance information (ESG). The leading international providers of non-financial information and assessments are Bloomberg, MSCI, RepRisk, and Thomson Reuters, whom we used to carry out this research. All these providers above offer a global database with environmental, social, and not just information.

On the other hand, we mention the third, which are measures that use (self-constructed) revealing indicators (or tables) that generally based on a checklist of activities corporate disclosures (Botosan 1997. Hail, 2002. Francis *et al.*, 2005).

This research has been singled out by many researchers since the beginning of disclosure indicators to measure revelation was a study conducted by the Cerf (1961). A disclosure index was developed to size the extent of openness in corporate annual reports 529 American Businesses. Alongside Cooke (1989) developed a scoreboard revelation consists of 224 items in large parts that came from a previous notification of scoreboards. Despite the fact, the disclosure scoreboards showed significant variations in scale and measuring elements revealed, generally share an interest in examining the relevance and usefulness of the information issued for investors (Inchausti, 1997). At this point, we should mention one thing that helps to illustrate how existing disclosure scoreboards have evolved and that many built on earlier disclosure studies (Rimmel, 2003) are a chronological review of some of the most frequently quoted disclosure studies. Consequently, the level of disclosed information contained in annual reports is of imminent importance to disclosure theory, as these types of studies often assume that the amount of disclosure stands proxy for the quality of disclosure (Beattie et al., 2004). So, from these studies, we can understand small companies' behavior better and all of these within a short time with equal weight measurements.

It is common knowledge that specific indexes like CIFAR or the S&P Disclosure score are indexes that international studies often rely on. These indexes constructed from annual reports and disclosure checklists. One thing that makes this special is the fact that they are accessible for large firms across several countries and often averaged at the country level (e.g., *et al*., 1998; Hope, 2003; Leuz2003; Khanna et al., 2004; Doidge et al., 2007). Nevertheless, it is also well known that these disclosure indices have quite a few limitations: 1) the selection and coding of relevant disclosures it is not an objective, 2) the construction of an index assigns (equal or subjective) weights to disclosure items that likely differ substantially in their importance and informativeness, and 3) the additive construction does not account for the possibility that some items are complements and others are substitutes (*see* also Akpinar, Jiang, Gomez- Mejia, Berrone, & Walls, 2008; Griffin & Mahon, 1997).

Indeed, at this point, we can mention a problem concerning this measure, which has not been given due importance at an academic level. For example, Chen and Delmas (2011) recently appealed to technical data envelopment analysis (DEA), giving something vastly more complicated in order to produce a composite score µ-law of ESG performance. Identifying the problem and check by non-experts make the problem especially for non-specialists to grasp, even more, that coexist in a variety of methods, which inevitably rely on disputed matters. Recommending a more improvised approach is to use a system of explicit weighting. A careful literature review will give results at this point. For instance, there is work proposed weighting systems based on the results of questionnaires ESG experts (Ruf *et al*.,1998; Waddock and Graves, 1997). However, there are two significant disadvantages that we know of. First, corporate responsibility concerns have evolved significantly from the Decade (Carroll, 1999. Matten and Moon, 2008) and the survey weights may be somewhat outdated; In particular, they do not take into account corporate governance, which is now considered to be one of the pillars of the ESG. Secondly, the approach assumes that the weights are identical across all sectors, which is a solid case. These two weaknesses have long recognized. In his seminal article, Carroll (1999) stated that the "major problem (i.e., to identify social issues that must deal with the firm) is that the issues of change and differ for different industries (pp. 501).

For example, management's commentary (MC), Management Discussion & Analysis, and 10-K footnote, we mentioned above, disclosures are qualitative, text-based, and narrative, which was formerly difficult to use. Nevertheless, recent advances in text analysis, computational linguistics, and our natural language processing allow constructing new measures to narrative disclosures, some of which have dimensions of quality (e.g., Loughran and McDonald, 2011; Dyer et al., 2017). Proxies based text can be widely applied (e.g., around 10 K) or narrower (e.g., in a communication of results), so that the preceding discussion of trade-offs between narrow and broad measures apply here.

Garefalakis *et al*. (2018) supported the Management Commentary as a scientific tool to meet the changing needs of users; business reporting should give much attention to composite indicators. Alongside Mouritsen and Larsen (2005, finds that if MC used correctly, the composite indicators could offer concise and robust data that are a vital complement to the narrative discussion in company reports.

Furthermore, Doni and Inghirami (2011) used the Enhanced Business Reporting Consortium framework which structured from a set of indicators based on three business fields (the Supply Management, the Demand Management, and Support Services) and finds out that, as far as for the investors it would make it easier for them and of course for the stakeholders to compare and then make use of this strategic information in decision-making.
Continuing researchers like Tauringana and Mangena (2009) have studied the reporting of composite indicators by 32 UK media sector companies listed on the London Stock Exchange over the period 2004 to 2007. Nilsson (2000) argue that Economists have long faced the challenges posed by composite indicators and the so-called "weighting and aggregation problem" to the extent that the Organization for Economic Co-Operation and Development (OECD; 2008) has published a user guide on constructing composite indicators. The overhead Organization support that the Composite indicators which compare country performance increasingly recognized as a valuable tool in policy analysis and public communication for broad policy spectra such as industrial competitiveness, sustainable development, quality of life assessment, globalization, and innovation. Mainly, they provide simple comparisons between countries as well as countries and businesses that can be used to illustrate complex and sometimes elusive issues in a wide range of areas, e.g., environment, economy, and corporate, social, or technological development. Generally, as text-based measures are relatively new, there are still substantial debates about what the proxies capture. However, the proper results that display in empirical studies it is an indication that range in the correct paths correctly measuring the quality of narrative information. Additionally, many studies have a revelation that a higher level of narrative disclosure (e.g., management comments) reflects companies trying to satisfy the information needs of a diverse group of stakeholders.
Remaining, we have to mention that international studies often enough from the proxies mentioned above aggregated in a combined measure. It noted many studies researcher from 2003 to 2006 (Leuz, 2003. Lang *et al*., 2003b; Lang *et al*., 2006; Burgstahler *et al*., 2006). According to these studies, an attempt has been made to obtain less specific (or summary) reference measure quality and also addressed issues regarding the measurement error. However, as with the construction of indicators of Revelation (from the third meter), there is the question of how to weigh the qualities of individual income and the theme that exchanges between different properties (e.g., surrogate relations) ignored. Also, we must be careful that the combined proxies measure the same underlying construct.
Moreover, if all the proxies that are suffering from problems of measurement for the same or similar reasons, it is clear that only a combination of measures helps to overcome them. We have more items that combined measures superimpose that aggregation reduces measurement error. Up to now, the weakness is that there are not any studies in this specific category that gives a solution, and this survey ending significant and reliable answers.

2.9 The combination of measures to new novel reporting quality tool

From the above studies, we believe that all offered in their way in research since 1961 with the Cerf survey so far in measuring the quality of narrative information in the financial statements. We do not believe that all methods are on the wrong track all these years. However, we believe that if each one measure method chooses the strongest or most possible points and avoids their weaknesses, we can create a comprehensive and more reliable tool by those who, until now, exist for measuring the narrative information.
More specifically, our investigation will agree with terms of the Sixth measure, which argues that the methods must combine adequately, in order to provide comprehensive information. Also, the previous measure (fifth) gives the basis on which they will push themselves to do this and is none other than the pervasive and credible agenda of

Management Commentary, which was open for comments during 2005 and 2009. This Management Commentary Framework (MCF) has focused on which types of indicators and information companies must disclosing in their annual reports.
However, wanting to avoid the limitation of research of the third measure using equal weight for all indicators (items) of their indices, adopting most of the researches of the fourth measure describing the new generation of the indicators (the composite indicators) who apply non-equal weights to indices considering the case of every company, every sector, and of each region separately. Also, according to the settings in the first measure, we agree that a quality tool that counts the narrative information will be no broader measures (e.g., firm's disclosure policy, some of ESG Information) and narrower measures. It is logical some composite indicators (CI) and some information to be more comprehensive as appropriate for the business. In contrast, others are more specific to indicators (economic indicators and ratios) enough information to offer becomes understandable to recipients and without equivocation.
For CI that we use in our study, we adopt a credible and specific user guide published on the Organization for Economic Co-Operation and Development (OECD) in 2008. The content of which listed ten steps that we follow to build reliable composite indicators. In steps 5 and 6 to select the measurement of weight and ranging method respectively, the base Database Reuters suggested by studies of the second category for the reliable measurement of the above steps.
To sum up, we want to mention that this study is the first revision that proposes a novel tool for measuring the quality of the theoretical (narrative) information using the ten steps of handbook of OECD 2008, where will be analyzed in detail in the next section.

2.10 The usage of PROMETHEE methodology

There exist two types of the Prometheé methodology, the **Prometheé I** that ranks partially and also, the **Prometheé II**, which performs a full, and complete ranking, based on all of the input data. In contrast to Prometheé I, incomparabilities are now absent between the alternatives. As a result, the choice with the higher net-flow identified as the one optimizing all the criteria.
To sum up, the Prometheé II methodology was selected in order to perform evaluation and ranking tasks, the use of the superiority relation in the Prometheé method is applied when the alternative solutions ranked from the best to the worst (Zopounidis, 2001), and because the procedure of assessing and ranking complicated cases of firms in different cases of examination is proper for the application of the above methodology in the sense that it is closer to reality (Zopounidis, 2001).
Regarding the application of Prometheé II in the field of agriculture, food, and environment, there is recent research in where the method is successfully applied for development agencies websites (Andreopoulou et al., 2007; Arabatzis *et al*., 2010), agri-business websites (Andreopoulou et al., 2009), productivity Greek agricultural regions (Koutroumanidis *et al*., 2002), regional prefectures according to tourist resources (Polyzos and Arabatzis, 2006). Nevertheless, this study attempts to deal with the assessment of Firms using the ESG framework for assessing the “quality” characteristics that incorporate disclosure by using the multicriteria method of Prometheé II.

3. Steps in the construction of a narrative tool with Composite Indicators

Often in order to rank countries in various performance and policy areas, researchers and Organizations use Composite indicators, which are synthetic indices of individual indicators and increasingly used for purposes. Via composites and scientific indicators, countries have compared their competitiveness, innovative abilities, degree of globalization, and ESG sustainability. These systematic and specific composite indicators are suitable in their ability to integrate large amounts of information into easily understood formats and are valued as a useful tool. Still, the construction of composites suffers from a small number of methodological difficulties, with the result that they can be misleading and easily manipulated.

Even when there are conceptual difficulties overcome, there remain two main sets of problems. The first concerns the information not available. The building of composites can only draw on the data that exists. There is no sensible way to adjust a composite for information that should reflect in measuring performance but not reflected in available indicators. This problem does not exist in our sample, and the missing information does not affect the quality of the result.

Now at this point, the question is what information is available to researchers. So, as one can see, the second concerns the use of what is available or not. It generally accepted that the most critical problem might be the selection of weights for the different components. Useful to policy, weights need to reflect the relative importance of individual indicators in determining performance outcomes. The selection of weights should differ according to the area studied and either have a theoretical basis or determined through econometric or statistical tests of relevant relationships. These techniques can also help overcome deficiencies regarding non-linearity in the underlying relationships, interaction among variables, risks of double-counting.

In this issue, this research uses the basic operations (steps) of the methodology of the Thomson Reuter, taking into account the key elements that suggested at the study of OECD (2008), in order to construct the weightings and rating measures for our qualitative narrative tool. That specific method of calculation brings the indicators to the same unit to avoid adding up apples and pears by normalization and finally selecting an appropriate weighting and aggregation model and seems to give more information to compare companies, regions, and sectors. In order to construct composite indicators, we must follow ten particulars (OECD, 2020). The operation is essential, and the coherence of the whole process is equally essential: choices made in a single operation can have important implications for other operations.

3.1 Data selection

The representative selection of the sample was made based on geographical and industrial characteristics, as well as the research questions raised in our research. The sample (525 companies) was divided into two parts. The first part of the sample includes countries that compulsorily use narrative information in their annual financial statements (e.g., in the USA), and the other part includes the countries of Europe where narrative information is optional. Our sample includes 266 American companies and 259 European companies, including the total sample of the Asset4 base containing this information (detailed in Appendix G). The EU countries were then selected from western European countries (EU) and namely Switzerland, France, Germany, the Netherlands and Belgium, and the northern European countries, namely Denmark, Finland, Ireland, Norway, Sweden, and the United Kingdom. The countries of Southern and Eastern Europe were not included because the companies included in the asset4 base did not have the size of companies (e.g., 500 employees or 50 million turnover) to reliably compare them with the American companies in the sample. We can see the sample categorization below in table 3.1.

Table 3.1 Sample categorization

Sectors / Sub-Sectors	Number of companies	Rate
Sector 1-Machinery/Materials	**91**	**17,33%**
Sub-Sectors		
Car/Spare Parts	13	2,48%
Telecommunications accessories	5	0,95%
Computer and Office Machines	6	1,14%
Building Materials	4	0,76%
Medical Machinery/Accessories	17	3,24%
Machinery	30	5,71%
Semiconductor	16	3,05%
Sector 2-Utilities	**76**	**14,48%**
Sub-Sectors		
Electricity Companies	14	2,67%
Energy/Services Components	10	1,90%
Media / Publishing Houses	16	3,05%
Fuel/Oil	15	2,86%

Construction/Commercial sector	10	1,90%
Renewable Energy Sources	1	0,19%
Utilities/Other Industries	7	1,33%
Water Companies	3	0,57%
Sector 3-Industrial and Commercial	**71**	**13,52%**
Sub-Sectors		
Space/Defence	15	2,86%
Transport/Packaging	7	1,33%
Industrial Complexes	7	1,33%
Metallurgy / Mines	10	1,90%
Retail Trade (General - Specialized)	10	1,90%
Textiles	22	4,19%
Sector 4-Pharmaceutical	**37**	**7,05%**
Sub-Sectors		
Biotechnology/Medical Research	1	0,19%
Biotechnology / Pharmaceuticals	15	2,86%
Chemical Industry	21	4,00%
Sector 5-Household Products	**62**	**11,81%**

Sub-Sectors		
Distillery	8	1,52%
Construction / Engineering / Materials	4	0,76%
Trade in Food/Medicines	15	2,86%
Food/Smoke	19	3,62%
Building Constructions/ Construction Materials	12	2,29%
Household items	1	0,19%
Paper/Wood Products	3	0,57%
Sector 6-Services	**188**	**35,81%**
Sub-Sectors		
Transport Services	3	0,57%
Air Services	6	1,14%
Banking	33	6,29%
Retail Services/Supplies	18	3,43%
Health Services	6	1,14%
Hotel Industry	16	3,05%
Security	28	5,33%
Investment Services	19	3,62%

Luxury and entertainment items	2	0,38%
Maritime Services	4	0,76%
Personal / Home Products / Services	12	2,29%
Transport/Railways	1	0,19%
Real Estate	8	1,52%
IT Sector	19	3,62%
Telecommunications Sector	13	2,48%
General Sum	**525**	**100,00%**

3.1.1 Why those years?

The main reasons why the six-year period 2002 to 2007 was chosen are because it represents an ideal transition period to objectively and representatively test the quality of verbal information offered by financial statements in the US and Europe regions, where the narrative frameworks were created and first applied (O' Sullivan & Percy, 2004; Davis & Berger, 2011).

Also, this period is made ideal by the reasons that forced the entire global financial and audit community to admit that the financial statements do not carry the quality and reliability that profess (the two above communities) since at the end of 2001 early 2002 appeared one of the biggest scandals in economic history, the bankruptcy of Enron and other large companies such as WorldCom and Global Crossing. Table 3.3 lists the names of companies, sectors, and the year of the biggest corporate accounting scandals of all time (Chartered Professional Accountants Canada, 2015; Corporate Finance Institute, 2016; Garefalakis et al., 2016).

Table 3.2 The biggest corporate accounting scandals of all time

Company Name	*Sector*	Year
Enron	Energy and services	December 2001
WorldCom	Telecommunication	2002
Tyco Scandal	Blue-chip and security systems	2002

HealthSouth	Health	2003
Freddie Mac	Financial Services	2003
American International Group	Insurance Services	2005
Lehman Brothers	Financial Services	2008

Also, in 2008 we had the biggest bankruptcy of the post-war decades, the collapse of Lehman Brothers, which acted like a fuse causing the beginning of the biggest financial crisis of the last 100 years (Garefalakis et al., 2016). In addition, in the period 2002-2007, the largest accounting and audit changes that had ever been made in the accounting years began to be created and implemented (Garefalakis et al., 2016).

The main reasons are the immediate recovery of the credibility of investors and the entire economic society as well as the urgent need for significant corrections in the disclosure of financial statements and specifically in the piece of narrative information (IASB, 2010). Table 3.3 describes the most important changes in the narrative part of the financial statements.

Table 3.3 Timeline of events affecting the narrative part of financial statements

Year	Event
2002	The International Accounting Standards Board is established for the development of International Financial Reporting Standards
2002	The Sarbanes-Oxley Act, also known as the Public Company Reform and Investor Protection Act, is introduced
2002	The narrative framework was originally published in November 2002
2003	The New York Stock Exchange received the approval of the Securities and Exchange Commission for new corporate governance standards for listed companies, requiring boards to have a majority of independent directors, and the appointment, remuneration and audit committees consisting exclusively of independent directors.
2005	The European Union announces that its Member States will require the IFRS framework in the preparation of the consolidated financial statements of listed companies

2005	The IASB published the Discussion Paper of Management Commentary (28/11/2005)
2006	The Operating Financial Review (OFR) standard is replaced by the Financial Reporting Council 's (FRC) Strategic Report.
2006	The FASB and the IASB issued a Memorandum of Understanding (MoU). At this MoU, the two Councils reaffirmed their common objective of developing high-quality, common accounting standards
2007	The Securities and Exchange Commission issues a rule that allows foreign issuers to file financial statements using IFRS, without the need to harmonise with U.S. IAS. By 2007, foreign companies had to harmonise their financial reports with U.S.'s IAS

Finally, it is important to underline that there is no previous research that analyses MC's information so thoroughly for such a long time P-IFRS and A-IFRS (2002-2007) in such a wide range of companies, industries and countries in Europe and America.

3.1.2 Analysis by sub-sector

An analysis shall then be carried out in combination by sub-sector of the company's activity, based on the sample, for the P-IFRS and A-IFRS periods. The data in Table 3.4 show the improvement in the quality of published narrative information reflected in the financial statements for all activity sub-sectors.

Table 3.4 MaCo.Index values by sub-sector

Sectors/Sub-sectors			
Sector 1-Machinery/Materials			
Sub-sectors	**A-IFRS**	**P-IFRS**	**TOTAL**
Car/Spare Parts	0,53	0,48	0,51
Telecommunications accessories	0,56	0,5	0,53
Computer and Office Machines	0,53	0,48	0,51
Building Materials	0,47	0,44	0,45

Medical Machinery/Accessories	0,51	0,47	0,49
Machinery	0,5	0,45	0,47
Semiconductor	0,5	0,46	0,48
Sector 1 Average	**0,51**	**0,47**	**0,49**
Sector 2-Utilities			
Sub-Sector	**A-IFRS**	**P-IFRS**	**TOTAL**
Electricity Companies	0,56	0,48	0,52
Energy/Services Components	0,5	0,44	0,47
Media / Publishing Houses	0,48	0,45	0,46
Fuel/Oil	0,6	0,53	0,57
Construction/Commercial sector	0,49	0,44	0,47
Renewable Energy Sources	0,48	0,41	0,45
Utilities/Other Industries	0,5	0,47	0,49
Water Companies	0,55	0,52	0,54
Sector 2 Average	**0,53**	**0,47**	**0,5**
Sector 3 - Industrial and Commercial			
Sub-sector	**A-IFRS**	**P-IFRS**	**TOTAL**
Space/Defence	0,5	0,44	0,47

Transport/Packaging	0,47	0,47	0,47
Industrial Complexes	0,55	0,5	0,53
Mining/Mining	0,49	0,44	0,47
Retail-General Trade	0,51	0,47	0,49
Retail-Specialized Trade	0,51	0,47	0,49
Textiles	0,47	0,46	0,46
Sector 3 Average	**0,5**	**0,46**	**0,48**
Sector 4 - Pharmaceutical			
Sub-sector	**A-IFRS**	**P-IFRS**	**TOTAL**
Biotechnology/Medical Research	0,48	0,3	0,39
Biotechnology / Pharmaceuticals	0,56	0,5	0,53
Chemical Industry	0,53	0,48	0,51
Sector 4 Average	**0,54**	**0,48**	**0,51**
Sector 5 - Household Products			
Sub-sector	**A-IFRS**	**P-IFRS**	**TOTAL**
Distillery	0,5	0,45	0,48
Construction / Engineering / Materials	0,54	0,47	0,5
Trade in Food/Medicines	0,51	0,48	0,5

Food/Smoke	0,47	0,44	0,46
Building Constructions/ Construction Materials	0,5	0,47	0,48
Household items	0,52	0,48	0,5
Paper/Wood Products	0,57	0,5	0,54
Sector 5 Average	**0,5**	**0,46**	**0,48**
Sector 6-Services			
Sub-sector	**A-IFRS**	**P-IFRS**	**TOTAL**
Transport Services	0,61	0,48	0,55
Air Services	0,55	0,48	0,51
Banking	0,51	0,45	0,48
Retail Services/Supplies	0,5	0,46	0,48
Health Services	0,49	0,47	0,48
Hotel Industry	0,53	0,5	0,52
Security	0,51	0,46	0,48
Investment Services	0,49	0,44	0,47
Luxury and entertainment items	0,48	0,51	0,5
Maritime Services	0,42	0,41	0,41
Personal / Home Products / Services	0,51	0,47	0,49

Transport/Railways		0,55	0,56	0,55
Real Estate		0,42	0,4	0,41
It Sector		0,51	0,45	0,48
Telecommunications Sector		0,51	0,46	0,48
	Sector 6 Average	**0,5**	**0,46**	**0,48**

Small but characteristic variations are detected within the branches of activity. Interest is found in Sector 4 - Pharmaceutical (sub-sector Biotechnology/Medical Research) with an average value of the Ma.Co.I index at 0.39, the lowest in the business sample—also, low prices of the Ma.Co.I index are also found in Sector 6 - Services and, in particular, in the sub-sectors of the Maritime Services and Real Estate Sector, with Prices of Ma.Co.I ranging to 0.41 from the lowest in the sample. On the other hand, Sector 2 - Utilities (Fuel/Oil sub-sector) shows the highest prices of the Ma.Co.I Index, with the best value in the sample being 57%.

4. Methodology

4.1 Theoretical Framework

There was a variety of criteria introduced in our sample firms, aiming to underscore the "quality of disclosure in financial statements. The criteria/characteristics were used to describe variables **X1, X2, …, Xn**. The criteria presented in **Table 4.1**. The value of 0 and the value 1 attributed to the variables X1, X2, …, Xn. for the non-existence and the existence of each criterion, respectively.
Table 4.1 compares the four factors that have been taken into account with the criteria listed in 13 Economic Factors, 7 Environmental Factors, 14 Social Factors, 22 Corporate Governance Factors, across the 56 non-numeric parameters from all 70 parameters of the Ma.Co.I. (Garefalakis et al., 2016). Appendix 1 portrays the 56 factors used to describe the number of Environmental (ENV), Social (SO), Corporate Governance (CG) and Economic (ECON) factors included in the five categories of the context described before, i.e.

Category 1: Firms Nature (Variables X1 to X6)
Category 2: Objectives and Strategies (Variables X7 to X12)
Category 3: Important Resources, Risks, and Relationships (Variables X13 to X29)
Category 4: Results and prospects (Variables X30 to X41)
Category 5: Performance indicators and metrics (Variables X42 to X56)

A correct theoretical framework is the starting point for the construction of composite indicators. The framework should clearly define the phenomenon to be measured and the sub-components, selecting individual indicators that reflect their relative importance and dimensions of the overall complex. The criteria on which the selection of the underlying indicators is the main theoretical framework which is the starting point in constructing the composite indicators tool. The framework that we proposed is called Management Commentary Index (Ma.Co.I). It was developed for a detailed evaluation of financial reporting quality and has delineated by the FASB and the IASB in 2010 in the publication, "An Improved Conceptual Framework for Financial Reporting." or "Management Commentary Framework" (Lemonakis *et al*. 2018). The amount of narrative information revealed in an annual report is what determines an MC's quality. The Ma.Co.I includes 37 constituent points that classified into five categories, as presented below.
Moreover, each category searches a different aspect of a company. **Category 1** deals with the nature or structure of a company, i.e., competition issues, regulatory matters, macro contexts that illustrate its market impression, and more. For **Category 2**, the strategic plans and goals of a company included and prioritized. **Category 3** comprises the company's key resources as well as the involved risks and relationships with other institutions or entities. The emphasis is on the inter- and intra-associations and the managing of crucial risk parameters. **Category 4** emphasizes the company's outcomes and prospects and deals with the financial and non-financial progress of a company. Finally, **Category 5** provides insights into the historical or diachronic company's progress because this derived from performance measures and other indicators. The points created after we studied Management Commentary Framework thoroughly (MCF) 2010 which proposes specific guidelines which have to publish Annual Report to maximize the quality of information

Table 4.1 Variables attributed to criteria, representing the ESG Framework

Variable	Encoding	Abbreviations	Main Topic	Analytic Description
		CG: Corporate Governance **SO:** Social factor **ENV:** Environmental factor **ECON:** Economical factor		
Category 1: Firms Nature				
X1	1	**SO**	Discussion about the company's products	Does the company have a specific policy to protect the health and safety of customers? AND does the company have a specific policy on the quality of its products and services?
X2		**SO**		Does the company apply a policy for its non-compliant products?
X3		**SO**		Does the company monitor the impact of its products or services on consumers or the community at large?
X4	2	**CG**	Identification of company segments.	Does the company describe the implementation of the board's policy?
X5	3	**CG**	Discussion about the	Does the company have a policy to ensure equity of

			operating environment of the company	minority shareholders, by facilitating shareholder participation?
X6		**CG**		Does the company describe the implementation of shareholder rights policy?
Category 2: Objectives and Strategies				
X7	4	**CG**	Discussion of the company's financial goals and strategies	Does the company describe the implementation of its integrated strategy through a public commitment from a senior management? AND does the company describe the implementation of its integrated strategy through the creation of a CSR committee or group (ESC)?
X8	5	**CG**	How non-monetary / common targets create or maintain value	Is the company tracking its integrated strategy through the use of a specific sustainability indicator? AND does the company monitor its integrated strategy through external audits of its reports?
X9	6	**ENV**	Significant changes in company goals and strategy.	Does the company have specific goals regarding the efficiency of its resources? Is there any reference to past goals results?
X10		**CG**		Does the company have the necessary internal improvement and information tools to enhance its performance?
X11	7	**CG**	Exhibition of the company's vision and values.	Does the company have a policy to maintain its primary vision and strategies that incorporate financial and other factors of the business?

X12	8	**CG**	Discuss how values and perspectives relate to strategy	Does the company set specific goals in its strategy?
Category 3: Important Resources, Risks and Relationships				
X13	9	**ECON**	Discussion of the main financial resources available to the company	Does the company describe the implementation of its shareholders' privacy policy by publicly engaging a senior board or board member to avoid misuse of confidential information? AND does the company describe the implementation of its shareholders' privacy policy by applying procedures to avoid misuse of confidential information?
X14	10	**CG**	Discussion about basic non-financial resources available to the company	Does the company describe its policies for the operation of its board of directors?
X15		**CG**		Does the company describe its compensation policy?
X16		**SO**		Does the company describe equal opportunities policy?
X17	11	**CG**	Adequacy of economic and non-economic resources	Does the company mention the challenges and opportunities associated with financial and non-financial problems?
X18	12	**ECON**	Analysis of financial arrangements	Does the company set specific goals to achieve using internal information (targeting)?
X19	13	**ENV**	Address of any inadequate or	Does the company have a policy to reduce the use of natural resources? And does

			redundant environmental resources	the company have a policy to reduce its environmental impact?
X20	14	**ENV**	Addressing the risks and how they are described	Does the company have a risk management system in place?
X21	15	**CG**	Recording of the key external, internal risks and opportunities of the company.	Does the company publish return procedures or recycling programs to reduce the potential risks of products entering the environment? Or does it provide information on the capabilities of its products (or services) to promote efficient, efficient and environmentally friendly use?
X22	16	**SO**	Clarifications of the changes needed to address the risks	Does the company have data on disaster management or disaster recovery systems, and how does it plan to reduce or minimize the consequences of its disaster reputation?
X23	17	**ECON**	Discussion about the key relationships in the company e.g. employees	Does the business have a policy of maintaining an honest and productive employee base?
X24		**ECON**		Does the company describe the implementation of employee satisfaction policy?
X25		**SO**		Does the company monitor its reputation or its relationships with communities?
X26		**SO**		Does the company have a competitive employee benefits policy or good internal employee relations? AND does the business have a policy of maintaining long-

				term growth and employment stability?
X27	18	**ECON**	How these relationships are settled and the likely impact on the company.	Does the company set specific goals it needs to achieve in terms of employee satisfaction?
X28		**CG**		Does the company have policies to maintain a balanced board of directors?
X29		**SO**		Does the company follow Sullivan's global policies? AND has the company respected professional ethics policies or has the company signed the UN Global Compact or is it following the OECD guidelines?
		Category 4: Results and prospects		
X30	19	**ECON**	An explanation of the evolution and performance of the entity during the year	Does the company display data or studies that analyse improvements in employee satisfaction and engagement?
X31		**ECON**		Has the company posted a profit warning over the years?
X32	20	**ECON**	Explanation of the financial position at the end of the year	Does the company issue a separate CSR / H & S / sustainability report in its annual statements?
X33	21	**CG**	Discuss the significant changes in the financial position of the company.	Does the Company's Additional Financial Reports take into account the Company's global operations?

X34	22	**CG**	The degree to which previous results are indicative of future progress	Is the remuneration of management and board members linked to long-term goals (> 2 years)?
X35	28	**ENV**	Company management sets specific goals and explains how to achieve them	Does the company set specific goals regarding the adequacy of resources? AND, does the company comment on the results of past goals?
X36	23	**CG**	Analysis of the company's prospects and how it will implement its goals / strategies for the future.	Are executives' pay linked to sustainability goals (CSR / H&S)?
X37		**CG**		Does the company have the internal processes needed to develop the principles and rules for its shareholders?
X38	24	**ENV**	Determination of objectives for non-financial measures	Does the company have specific targets for reducing pollutant emissions?
X39		**SO**		The company sets specific goals to achieve the quality and responsibility of its products and services
X40		**SO**		Does the company set specific goals to maintain good reputation with the communities?
X41		**SO**		Does the company set specific goals for achieving quality work?
Category 5: Performance indicators and metrics				

X42	25	**ECON**	Discuss the key financial measures used to measure and evaluate progress	Does the company present data or surveys that show any improvements in customer satisfaction and loyalty?
X43	26	**SO**	Discussion about the non-financial measures used to measure and evaluate progress	Does the company describe the implementation of its community policies through a public engagement of its executives or board members? AND does the company describe the implementation of this policy?
X44	27	**SO**	Identify the key financial and non-financial criteria it uses to track progress	Does the company monitor and analyse its performance on quality of work?
X45		**ECON**		Does the company have active clauses related to changes in control?
X46		**ECON**		Does the company control the use of internal information through specific metrics?
X47		**ECON**		Does the company control customer satisfaction or reputation and relationships with communities through the use of surveys or metrics?
X48		**ENV**		Does the company describe the processes it uses to achieve environmental innovation in its products?
X49	28	**ECON**	An explanation of how each measure, or	Does the company control the satisfaction of its employees through surveys or measurements?

X50		**ENV**	quantitative criterion, relates to the CA. How is it defined and calculated?	Does the company set specific environmental goals in order to achieve customer satisfaction and healthy competition?
X51		**CG**		The company controls its board of directors through the establishment of a corporate governance committee
X52		**CG**		Has the company an external auditor for CSR / H & S / sustainability reports?
X53		**CG**		Does the company control the rights of its shareholders through the establishment of a corporate governance committee?
X54	29	**SO**	Indication of performance measures and criteria	Does the company claim to apply quality control systems such as ISO 9000, Six Sigma, Lean Manufacturing, Lean Sigma, TQM or other similar quality protocols?
X55	30	**CG**	The purpose of each of the measures mentioned should be disclosed	Does the company explain how it works with shareholders?
X56		**CG**		Are the company CSR reports issued in accordance with the GRI guidelines?

The **56 state variables** described above refers to the provision of related sources of information. The Prometheé (Preference Ranking Organization Method for Enrichment Evaluation) belongs to the class of Multi-Criteria Decision Aid (MCDA) instruments. Several MCDA techniques have developed over the years that deal with the ranking of numerous alternatives based on a variety of criteria. In other words, the MCDA allows for the selection of the best from the analyzed alternatives. Their development was the result of the practitioner's motivation to provide academics and researchers with improved decision-making processes suitable for multiple real-life criteria decision situations by taking advantage of the recent evolutions in computer technology and the mathematical techniques involved (Wiecek et al., 2008).

For this Thesis analysis, following Kosmidou and Zopounidis (2008a; 2008b), we were based on one of the most recent MCDA techniques, the Prometheé II method.
The Prometheé methodology gives the researcher the ability to solve a decision problem where a finite set of comparable alternatives is to be evaluated according to several and often opposing criteria. The implementation of the Prometheé II method involves the construction of an evaluation table (Table I), in which the alternatives are estimated on the preferred criteria and ranked from the best to the worst. The PROMETHEE methods are considered to provide solutions for multicriteria problems of the form (1) and their associated evaluation table.

$$max\ \{ g_1(a), g_2(a), g_3(a), ... , g_j(a) , ... , g_k(a) \mid a \in A \} \quad (1)$$

where:

A is a finite set of possible alternatives $\{\alpha_1, \alpha_2, \ldots, \alpha_i, \ldots, \alpha_n\}$ & $\{g_1(*), g_2(*), \ldots, g_j(*), \ldots, g_k(*)\}$ is a set of evaluation criteria.

Additional requirements for the application of PROMETHEE are the consideration of the relative significance of the selected criteria (i.e., the weights) and the information on the individually defined preference function of the decision-maker regarding the comparison of the alternatives in terms of every single criterion.
The weights are typically arbitrary positive numbers, determined independently from the measurement units of the criteria. These numbers represent the relative significance of each criterion. The higher becomes the value of the weight, the higher the significance of the relevant criterion, and conversely. According to Macharis *et al*. (2004), the selection of the weights is of high importance in the case of multicriteria decision analysis, since it reflects the decision-makers' insights and priorities.

Table 4.2. Evaluation Table

a	$g_1(*)$	$g_2(*)$	…	$g_j(*)$	…	$g_k(*)$
α1	$g_1(\alpha_1)$	$g_2(\alpha_1)$	…	$g_j(a_1)$	…	$g_k(a_1)$
α2	$g_1(\alpha_2)$	$g_2(\alpha_2)$	…	$g_j(a_2)$	…	$g_k(a_2)$
.	.	.	.	.	.	.
.	.	.	.	.	.	.
.	.	.	.	.	.	.
αi	$g_1(\alpha_i)$	$g_2(\alpha_i)$	…	$g_j(a_i)$	…	$g_k(a_i)$
.	.	.	.	.	.	.
.	.	.	.	.	.	.
.	.	.	.	.	.	.
αn	$g_1(\alpha_n)$	$g_2(\alpha_n)$	…	$g_j(a_n)$	…	$g_k(a_n)$
Source: Brans and Mareschal (2005)						

The preference structure of Prometheé based on pairwise comparisons. That means that a separate preference function for each criterion must be defined for all pairs of alternatives, reflecting the degree of preference for an alternative ***a*** over ***b***. Vincke and Brans (1985) suggested six specific types of preference functions; the researcher can easily define its preference structure. No matter, which is the preference function, the decision-maker has to define the values of ***q, p,*** and ***σ*** parameters. In contrast to ***q***, which is an indifference threshold that corresponds to the most significant deviation, ***p*** is a strict preference threshold with the smallest deviation, capable of generating a full preference sufficiently for the decision-maker. As far as the ***σ*** parameter is concerned, it represents an intermediate value between ***q*** and ***p***.

According to Brans *et al.,* (1986), this preference degree for all couples of actions, can be represented by the preferred index of the following form:

$$\Pi(\alpha,\beta)=\frac{\sum_{j=1}^{n} w_j P_j(a,b)}{\sum_{j=1}^{n} w_j}$$

Where:

- w_j is the weight for each criterion
- P_j (a, b) expresses the degree at which **bank a** is preferred to **bank b**, when all the criteria considered at once. Its value varies between 0 and 1.

A value equal to unity for the index will imply a strong preference of a bank ***a*** over ***b***, while a zero value will imply a weak preference, respectively. From the preference functions described above, this study utilized the Gaussian form for all the selected criteria. This function requires only for the parameter **σ** to specified, and at the same time, due to the lack of discontinuities, it gives robust and stable results.

As for the ranking of alternative actions, two flows should be defined, the leaving and the entering flow, briefly described below:

$$\Phi^{+}(\alpha)=\sum_{b\in X}\pi(a,b)$$
$$\Phi^{-}(\alpha)=\sum_{b\in X}\pi(b,a)$$

Where:

X is the total of alternative solutions

$$aPb\ if\colon \varphi+(a)\ >\ \varphi+(b)\ and\ \varphi-(a)\ <\ \varphi-(b)$$
or
$$\varphi+(a)\ >\ \varphi+(b)\ and\ \varphi-(a)\ =\ \varphi-(b)$$
or
$$\varphi+(a)\ =\ \varphi+(b)\ and\ \varphi-(a)\ <\ \varphi-(b).$$

The leaving flow $\boldsymbol{\varphi^{+}(a)}$ expresses how an alternative dominates all the other alternatives of X (the outranking character of a). On the other hand, the entering flow $\boldsymbol{\varphi-(a)}$ measures how an alternative surpassed by all the other alternatives of ***X*** (the outranked character of a). According to PROMETHEE I partial ranking an action **a** is favored over an action **b**, (aPb) if the leaving and entering flows of action **a** are greater and smaller respectively than those of action **b**:

In the case that the leaving and entering flows of two actions ***a*** and ***b*** are the same, the indifference situation can be written with the following expression (aIb):

$$aIb\ if\colon\ \varphi+(a)\ =\ \varphi+(b)\ and\ \varphi-(a)\ =\ \varphi-(b)$$

Two alternative actions also can be incomparable, (aRb), if the entering flow of action **a** is worse than the corresponding flow of action **b**, while the leaving flow implies the opposite:

$$aRb \; if \; : \; \varphi + (a) \; > \; \varphi + (b) \; and \; \varphi - (a) \; > \; \varphi - (b) \; or \; \varphi + (a) \; < \; \varphi + (b) \; and \; \varphi - (a) \; < \; \varphi - (b)$$

In this research, we utilized only the PROMETHEE II method, which provides a complete ranking of the comparable alternatives from the best to the worst. The net flow implied by Φ(a), which is the difference between the two flows, corresponds to a value function for which the higher the value, the higher the attractiveness of alternative ***a*.** For each action, ***a є X***, the net flow can be described as follows:

$$\Phi(a) \; = \; \Phi + (a) - \Phi - (a)$$

The outranking relations in the PROMETHEE II method are such that:

$$\alpha PIIb \; if \quad \Phi(a) \; > \; \Phi(b),$$
$$\alpha IIIb \; if \quad \Phi(a) \; = \; \Phi(b)$$

When, αPIIb, alternative ***α*** is preferred over ***b***.

Also, when αIIIb, the decision-maker is indifferent between alternatives ***α*** and ***b***.

5. Research Analysis in a multiple-perspective view

In this section, our score is to analyze Prometheé II scores taken in order to derive appropriate analysis regarding the state of corporate disclosure for the sample firms. It is quite essential to underscore the 3-way perspective view of the results of the study (Figure 5.1). We proceed to the analysis using a multiple perspective use that decomposed into the following options: a) Time-period oriented option, b) Regional-oriented option, and c) Sectoral-oriented option, respectively.

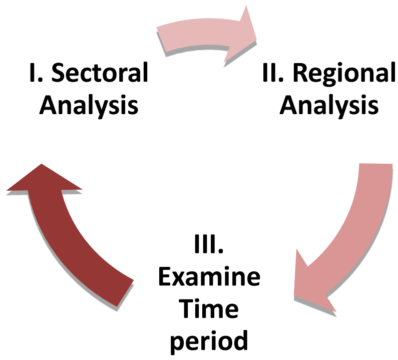


Figure 5.1. ESG framework in a multiple-perspective MCDA view (I), (II), and (III).

First, we run the Prometheé II method for the entire sample of firms during the years 2002 to 2010, according to the following time-frame divisions:

Table 5.1. Prometheé firms' average scores per exam period (A), (B) or (C)

exam Periods	Average Prometheé scores
(A) PIFRS	-0,0001
(B) CRISIS	-0,1722
(C) AIFRS	0,0001

Where the

- **(A) PIFRS period (Appendix B)** includes the years 2002, 2003 and 2004
- **(B) CRISIS period (Appendix C)** includes the years 2008, 2009 and 2010
- **(C) AIFRS period (Appendix D)** includes the years 2005, 2006 and 2007

We can see from Table 5.1 that the scores obtained from Prometheé II are, on average higher in period (C), i.e., **after** the adoption of IFRSs by the sample firms. That indicates that the adoption of International Financial Reporting Standards has strengthened the framework for harmonization of the financial principles for corporate disclosure, in which companies tend to apply them. The lower scores identified by the analysis appear to present during the financial crisis in period (B) that affected the global economy.
The most important factors that increase Prometheé scores during the exam periods portrayed in Table 5.2.

Table 5.2 Key E-ESG factors increasing Prometheé scores during exam periods (A)-PIFRS, (B)-Crisis and (C)-AIFRS (%)

	Frequencies per exam period		
ESG Factors	(A)	(B)	(C)
FACTOR 1 (Environmental Indicators)	17,94%	15,48%	21,07%
FACTOR 2 (Social Indicators)	21,68%	10,09%	21,86%
FACTOR 3 (Economic Indicators)	16,93%	31,03%	19,10%
FACTOR 4 (Corporate Governance Indicators)	43,45%	43,40%	37,98%

***Remark**: 1% the lowest and 100% the highest score showed*

We can see from Table 5.2. that Factor 4 examined in the context of the ESG takes the highest scores concerning all other factors considered. This case is evident for all the periods considered, i.e. (A), (B) and (C), which characterizes the importance of adopting the parameters related to corporate governance issues' also, it provides evidence of the positive relationship between the quality of corporate disclose and its liaison with Corporate Governance (CG) practices implemented by the sample firms.

Table 5.3. Prometheé scores per Region (II Regions-oriented perspective)

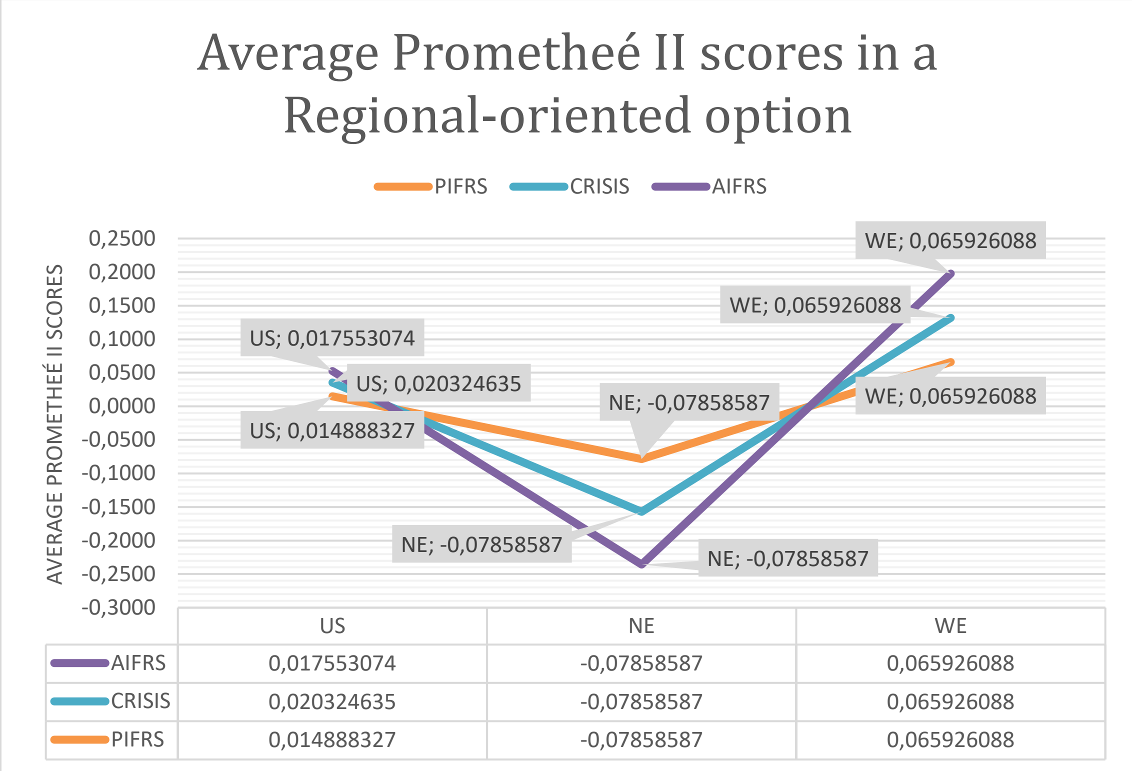
Examine period	USA	North Europe	Western Europe
(A)	0,0149	-0,0786	0,1832
(B)	0,0203	-0,0741	0,0659
(C)	0,0176	-0,0718	0,1559

In other words, firms that perform well enough in the Prometheé II method are those that give a high priority on CG issues and are therefore more concerned about corporate transparency in terms of financial literacy. Also, these firms tend to provide a higher level of "quality" regarding the fair representation of their financial statements.

On the other hand, Environmental indicators (ENV) (i.e., Factor 1 of the analysis) are the ones that show lower average scores when the Prometheé II method is applied. However, there is a tendency for these firms, after adopting IFRSs, to put more emphasis on how their business interacts with the environment while trying to manage their resources in a way that protects the environment and, at the same time, contributes to their better management.

Secondly, we take the Regional-oriented discipline and examine differences in average scores of Prometheé II for firms with differences in origin regarding the following regions: USA, North Europe (with the UK included), and Western Europe.

Under the scope of this research, we take into account the specificity of our research; we analyze the behavior of the sample of businesses in relation to the geographical characteristics of their place of residence, which in this work is the USA, Northern Europe, which includes the countries in the present study (i.e., Denmark, Sweden, Finland, Norway, Ireland, and the United Kingdom) and Western Europe, which includes the countries in the present study (i.e., Switzerland, France, Germany, Netherlands, and Belgium).



Graph 5.1 Average Prometheé II scores in a Regional-oriented option

From Table 5.3 and Graph 5.1, we can see that companies based in Western Europe show the best average scores when considering Prometheé II. That is because the sample of firms concerned has high average scores due to firms based in Belgium, France, and Germany. Businesses based in these countries show the highest average scores on Prometheé II.
The above sample categorizations, according to the period under consideration (P-IFRS and A-IFRS), the geographical data of the areas under consideration, namely: USA and Europe, which includes Western and Northern Europe, shown in Graph 5.1.
Thirdly, we take the Sectoral-oriented discipline and examine differences in average scores of Prometheé II for firms in **different Economic Sectors (ES).** The sample firms are from 6 sectoral groups take into account the specificity of our research; we analyze the behavior of the sample firms regarding their sectorial orientation. Table 5.4 depicts the industry fields for each sector examined in the study.

Table 5.4 Firms' Sectors

Sector	Industry
1	Computers / Office Equipment, Healthcare Equipment/Supplies, Automobiles / Auto Parts, Semiconductors / Semiconductor Equipment, Machinery / Equipment / Components, Communications Equipment, Construction Materials
2	REIT-Residential/Commercial, Media / Publishing, Oil / Gas, Utilities - Water / Others, Energy-Related Equipment / Services, Renewable Energy, Utilities – Multiline, Electric Utilities
3	Containers/Packaging, Metal / Mining, Aerospace / Defense, Retailers - Specialty Retailers – Diversified, Textiles / Apparel, Industrial Conglomerates
4	Chemicals, Biotechnology / Medical Research, Biotechnology / Pharmaceuticals

5	Homebuilding/Construction Supplies, Food/Drug Retailing, Construction / Engineering / Materials, Food/Tabacco, Beverages, Paper / Forest Products, Household Goods
6	Investment Services, Insurance, Hotels/Entertainment Services, Personal / Household Products / Services, Healthcare Providers / Services, Telecommunications Services, Commercial Services / Supplies, Air Freight / Courier Services, Software/IT Services, Banking Services, Airline Services, Real Estate Operations, Marine Services, Rails/Roads Transportation

Average Prometheé scores per Firms' sector during the exam periods (A), (B), and (C) are also portrayed in Table 5.5.

Table 5.5. Sectoral Analysis during the exam periods per exam period

	Sectors						
Periods	**1**	**2**	**3**	**4**	**5**	**6**	**Average**
(A)	0,0005	-0,0342	0,0000	-0,0493	-0,0013	0,0238	-0,0101
(B)	0,0033	-0,0228	0,0092	-0,0220	-0,0052	0,0103	-0,0045
(C)	0,0032	-0,0264	-0,0020	-0,0372	-0,0176	0,0231	-0,0095

The analysis of table 5.5 provides valuable insights regarding the sectors with the highest average scores during the exam periods. Sector 3 attains the most favorable scores amongst the sample, especially during the periods (A) and (B). On the other hand, Sectors 1 and 6 show the best average scores for the (C) period, including the period after the inauguration of IFRS from the sample firms. In other words, firms' orientation in new technology, materials, and Services (e.g., Banking Services, Airline Services, Real Estate Operations, Marine Services, Rails/Roads Transportation) is at the forefront (see also Table 5.6).

Table 5.6. Sectoral Analysis during the exam periods per exam firms' origin

SECTORS		AUSTRIA	BELGIUM
SECTOR 1	(A)	-0,06	0,21
	(B)	-0,02	0,15
	(C)	-0,05	0,12
SECTOR 2	(A)	-0,17	-0,73
	(B)	-0,25	-0,63
	(C)	-0,13	-0,74
SECTOR 3	(A)	-0,74	0,42
	(B)	-0,78	0,47
	(C)	-0,79	0,34
SECTOR 4	(A)		0,25
	(B)		0,30
	(C)		0,26
SECTOR 5	(A)		0,14
	(B)		0,09
	(C)		0,08
SECTOR 6	(A)	-0,12	0,16
	(B)	-0,14	0,16
	(C)	-0,22	0,16

SWITZERLAND	SWEDEN	NORWAY	NETHERLANDS	IRELAND	GERMANY	FRANCE	FINLAND	DENMARK
0,15	0,08		-0,04		-0,20	-0,07	-0,42	0,49
0,09	0,06		-0,05		-0,21	-0,03	-0,33	0,42
0,15	0,11		-0,01		-0,21	-0,05	-0,38	0,35
	-0,51	-0,49	0,19	0,15	-0,14	-0,03		-0,41
	-0,41	-0,44	0,16	0,14	-0,09	-0,06		-0,32
	-0,47	-0,49	0,22	0,13	-0,11	-0,07		-0,43
0,10	-0,67	0,49			-0,20	0,40	-0,58	
0,10	-0,66	0,46			-0,07	0,43	-0,59	
0,06	-0,67	0,49			-0,19	0,41	-0,53	
-0,31	-0,35		-0,02		0,23	0,75		0,70
-0,29	-0,36		0,08		0,22	0,63		0,64
-0,30	-0,34		0,06		0,21	0,73		0,59
0,26	-0,38	-0,44	0,26	-0,08	0,41	0,14	-0,37	0,46
0,29	-0,39	-0,49	0,24	-0,08	0,38	0,13	-0,46	0,45
0,26	-0,45	-0,43	0,30	-0,12	0,35	0,11	-0,38	0,36
0,36	-0,23	-0,11	-0,08	-0,73	0,04	0,15	0,02	-0,11
0,27	-0,26	-0,11	-0,09	-0,66	0,03	0,13	-0,16	-0,07
0,34	-0,23	-0,09	-0,03	-0,68	0,03	0,19	-0,07	-0,10

Average scores	UNITED STATES	UNITED KINGDOM
0,00	0,01	-0,21
-0,01	0,02	-0,21
-0,01	0,02	-0,18
-0,19	0,02	0,04
-0,17	0,03	0,03
-0,18	0,03	0,05
-0,07	0,02	0,10
-0,05	0,01	0,15
-0,07	0,01	0,12
0,11	-0,05	-0,24
0,11	-0,01	-0,20
0,11	-0,04	-0,21
0,03	-0,05	0,04
0,01	-0,03	0,01
0,01	-0,05	0,02
-0,05	0,05	-0,06
-0,07	0,04	-0,05
-0,05	0,04	-0,04

6. Conclusions

Research on the “quality” of the annual financial statements, and in particular the portion of the narrative / verbal information contained therein, has long been underestimated, mainly due to the lack of indicators that allow an objective measurement and analysis of business narrative information. This study focuses on the use of an MCDA method, the Prometheé II, with the use of a sample firm during a very significant transitional period for international accounting standards and narrative information standards as well. This transition period, defined before the application of International Financial Reporting Standards-IFRS (i.e., years 2002-2004 for this study), continues in the period of the global financial crisis (i.e., years 2005-2007) and ends up with the period of the inauguration of IFRS (i.e., years 2005-2007). This research examines the geographical area features selected based on survey data, such as Northern Europe, Western Europe, and the USA. The results of the survey show that since the adoption of International Accounting Standards (IAS), there has been an improvement in the quality of the annual financial statements. However, this improvement has further reflected in ESG-Environmental Information.

In one hand, the geographical area of the USA which mandatory applies the rules of the narrative framework "Management Discussion and Analysis" (MD&A) does not seem to offer a significant improvement in the quality of the financial statements relative to companies operating in Europe (i.e., in Northern and especially in Western Europe), where the adoption of the narrative framework is not mandatory.

Specifically, the sample firms' implementing the ESG framework derived from the ASET4-Thomson Reuters are studied, and the multicriteria method applied for taking the total ranking in order to identify the ‘superior’ ones, during the exam periods.

We made our analysis by using a multiple perspective use that decomposed into a three-dimensional perspective, i.e., time - period orientation, regional, and sectoral-oriented options, respectively. The harmonization of financial elements through the adoption of IFRS has strengthened the framework for stability and clarity regarding the financial principles for corporate disclosure. Also, through the framework of ESG, it is essential to underscore the clear evidence of the positive relationship between the quality of corporate disclose and its direct effect on the Corporate Governance (CG) practices implemented by the firms. It is by far one of a critical importance element after the inauguration of IFRS as a globally attested way of financial reporting.

On the other hand, our research proclaims that sample firms of the European mainland in contrary to what may expected tend to increase the Prometheé II scores, because they acquire improved knowledge, and perhaps the appropriate culture in terms of reporting their actual and fair activity in their financial disclosure statements. That can be characterized, in some way, a tendency over firms’ financial harmonization literacy that is mainly existing in advanced geographical regions.

Although to some extent, standardization is feasible, harmonization seems to be the only realistic choice of financial reporting, according to Jones and Wolnizer (2003). Though, it is not sure that the creation of an ordinary level of financial reporting quality results from the standardization of accounting standards. That is because there are significant differences from country to country in terms of corporate practices and the environment in which they interact.

The novelty of this survey is essential and is divided into the following main components:

The first component adds new knowledge to the study of narrative information by filling substantial gaps in the literature. In particular, the "transitional" period from 2002 to 2007, which includes the most prominent corporate accounting scandals of all time, is being studied for the first time with the usage of Promethee II. Nor are there any previous surveys that analyze the information of the MC so thoroughly for such a long period of P-IFRAS and A-IFRS, in such a sample of companies (525), divided into 46 sub-branches, six branches and 13 countries in Europe and the USA.

The second component investigates the understandable and reliable measurement of the quality of narrative reporting of the annual financial statements, using two proposed composite indicators, the unweighted Ma.Co.Index.

The third component concerns the effectiveness of the proposed composite indicators. Is it that particular emphasis is placed on the reporting of the four E-ESG (ECONOMICAL, ENVIRONMENTAL, SOCIAL, CORPORATE GOVERNANCE) factors as the combination of qualitative and quantitative criteria enables experienced and non-investors to reduce information manipulation (Garefalakis et al., 2017; Dimitras et al., 2017). By comparing the company's objectives, risks, and strategies and comparing them with the company's economic indicators (e.g., total debt), over the past three years, they have been able to predict the viability of companies (Garefalakis & Dimitras, 2016). For example, according to the research by Garefalakis & Dimitras (2013), it is shown that the Ma.Co.I index can reliably identify and record the quality of the annual financial statements and, thus, the viability of companies.

Moreover, as a **fourth component**, the cost of developing such an accounting project, in which a large volume of quality information should be published by small and medium-sized enterprises, is particularly high, according to Riahi & Belkaoui (2004).

As a **Fifth** and penultimate **component**, auditors (internal and external) will be asked to check companies' narrative information on a specific framework, and this will minimize the formal employment relationship that most companies ask of them.

After that, they will be held accountable in case of low scoring in their company's narrative information.

Finally, in the **sixth component**, this research proposes a real and, at the same time, an innovative solution to the most significant problem plaguing the annual financial statements around the world, which is the falsification and concealment of information.

7. Further research implementations

These specific data could be applied and executed for further future research and better results with other methods except PROMETHEE II.

In section 4, we explained, in order to be able to encode the data, we separated the numeric (14) and non-numeric (56) from the total 70 parameters of the MA.CO. I. So in future research, a researcher could run this data for all 70 parameters of MA.CO. I including those 14 numeric parameters (not included), encoding them with specific decisive criteria.

Lastly, the specific process we carried out this research could be done for the next few years up to and including 2020.

Appendix

Appendix A: Suggested directions/points of the narrative information framework

Categories:

(1) the nature of the business;

(2) management's objectives and its strategies for meeting those objectives;

(3) the entity's most significant resources, risks and relationships;

(4) the results of operations and prospects; and

(5) the critical performance measures and indicators that management uses to evaluate the entity's performance against stated objectives.

No of Points	***Categories***
	Category 1: The nature of the business
Point 1	(a) the industries in which the entity operates;
	(b) the entity's main markets and competitive position within those markets;
	(c) significant features of the legal, regulatory and macro-economic environments that influence the entity and the markets in which the entity operates;
Point 2, Point 3	(d) the entity's main products, services, business processes and distribution methods;
Point 4	(e) the entity's structure and how it creates value.
	Category 2: Objective and strategy
Point 5 , Point 7	Management should disclose its objectives and strategies in a way that enables users of the financial reports to understand the priorities for action as well as to identify the resources that must be managed to deliver results. For example, information about how management intends to address market trends and the threats and opportunities those market trends represent provides users of the financial reports with insight that may shape their expectations about the entity's future performance.
Point 6	Management should also explain how success will be measured and over what period of time it should be assessed.

No of Points	Categories
Point 8	*Management should discuss significant changes in an entity's objectives and strategies from the previous period or periods.*
Point 9, Point 10	Discussion of the relationship between objectives, strategy, management actions and executive remuneration is also helpful.
Category 3: Key resources, risks and relationships	
Resources	
Point 11, Point 12	Management commentary should set out the critical financial and non-financial resources available to the entity and how those resources are used in meeting management's stated objectives for the entity. Disclosure about resources depends on the nature of the entity and on the industries in which the entity operates.
Point 13- Point 17	Analysis of the adequacy of the entity's capital structure, financial arrangements (whether or not recognized in the statement of financial position), liquidity and cash flows, and human and intellectual capital resources, as well as plans to address any surplus resources or identified and expected inadequacies, are examples of disclosures that can provide useful information.
Risks	
Point 18	Management should disclose an entity's principal risk exposures and changes in those risks, together with its plans and strategies for bearing or mitigating those risks, as well as disclosure of the effectiveness of its risk management strategies. This disclosure helps users to evaluate the entity's risks as well as its expected outcomes. Management should distinguish the principal risks and uncertainties facing the entity, rather than listing all possible risks and uncertainties.
Point 19	Management should disclose its principal strategic, commercial, operational and financial risks, which are those that may significantly affect the entity's strategies and progress of the entity's value. The description of the principal risks facing the entity should cover both exposures to negative consequences and potential opportunities.
Point 20	Management commentary provides useful information when it discusses the principal risks and uncertainties necessary to understand management's objectives and strategies for the entity. The principal risks and uncertainties can constitute either a significant external or internal risk to the entity.
Relationships	
Point 21	Management should identify the significant relationships that the entity has with stakeholders, how those relationships are likely to affect the performance and value of the entity, and how those relationships are managed.

No of Points	*Categories*
Point 22	This type of disclosure helps users of the financial reports to understand how an entity's relationships influence the nature of its business and whether an entity's relationships expose the business to substantial risk.
Category 4: Results and prospects	
Results	
Point 23, Point 24	Management commentary should include explanations of the performance and progress of the entity during the period and its position at the end of that period. Those explanations provide users of the financial reports with insight into the main trends and factors affecting the business.
Point 28	In providing those explanations, management should describe the relationship between the entity's results, management's objectives and management's strategies for achieving those objectives.
Point 25 - Point 27	In addition, management should provide discussion and analysis of significant changes in financial position, liquidity and performance compared with those of the previous period or periods, as this can help users to understand the extent to which past performance may be indicative of future performance.
Prospects	
Point 30a	Management should provide an analysis of the prospects of the entity, which may include targets for financial and non-financial measures.
Point 29	This information can help users of the financial reports to understand how management intends to implement its strategies for the entity over the long term.
Point 30b	When targets are quantified, management should explain the risks and assumptions necessary for users to assess the likelihood of achieving those targets.
Category 5: performance measures and indicators	
Point 31 , Point 32	Performance measures are quantified measurements that reflect the critical success factors of an entity. Indicators can be narrative evidence describing how the business is managed or quantified measures that provide indirect evidence of performance. Management should disclose performance measures and indicators (both financial and non-financial) that are used by management to assess progress against its stated objectives.
Point 33a	Management should explain why the results from performance measures have changed over the period or how the indicators have changed. This disclosure can help users of the financial reports assess the extent to which goals and objectives are being achieved.

No of Points	***Categories***
Point 34	The performance measures and indicators that are most important to understanding an entity are those that management uses to manage that entity. The performance measures and indicators will usually reflect the industry in which the entity operates.
Point 37	Comparability is enhanced if the performance measures and indicators are accepted and used widely, either within an industry or more generally. Management should explain why the performance measures and indicators used are relevant.
Point 36	Consistent reporting of performance measures and indicators increases the comparability of management commentary over time. However, management should consider whether the performance measures and indicators used in the previous period continue to be relevant.
Point 33b	As strategies and objectives change, management might decide that the performance measures and indicators presented in the previous period's management commentary are no longer relevant. When management changes the performance measures and indicators used, the changes should be identified and explained.
Point 35	If information from the financial statements has been adjusted for inclusion in management commentary, that fact should be disclosed. If financial performance measures that are not required or defined by IFRSs are included within management commentary, those measures should be defined and explained, including an explanation of the relevance of the measure to users. When financial performance measures are derived or drawn from the financial statements, those measures should be reconciled to measures presented in the financial statements that have been prepared in accordance with IFRSs.

Appendix B: PIFRS period-per Country / per Industry

Countries	**1**	**2**	**3**	**4**	**5**	**6**	**averages**
AUSTRIA	-0,0620	-0,1719	-0,7408			-0,1234	-0,2745
BELGIUM	0,2097	-0,7349	0,4175	0,2543	0,1355	0,1597	0,0736
DENMARK	0,4901	-0,4128		0,7018	0,4553	-0,1118	0,2245
FINLAND	-0,4167		-0,5753		-0,3743	0,0152	-0,3378
FRANCE	-0,0653	-0,0314	0,3974	0,7456	0,1398	0,1534	0,2232
GERMANY	-0,1957	-0,1379	-0,2022	0,2262	0,4087	0,0382	0,0229

IRELAND		0,1513			-0,0794	-0,7329	-0,2203
NETHERLANDS	-0,0401	0,1891		-0,0169	0,2619	-0,0801	0,0628
NORWAY		-0,4932	0,4943		-0,4406	-0,1063	-0,1364
SWEDEN	0,0777	-0,5054	-0,6727	-0,3469	-0,3814	-0,2286	-0,3429
SWITZERLAND	0,1512		0,0992	-0,3071	0,2556	0,3576	0,1113
UNITED KINGDOM	-0,2080	0,0407	0,1019	-0,2410	0,0351	-0,0608	-0,0553
UNITED STATES	0,0071	0,0182	0,0159	-0,0528	-0,0457	0,0457	-0,0019
Averages	-0,0047	-0,1898	-0,0665	0,1070	0,0309	-0,0519	-0,0501

Appendix C: CRISIS period-per Country / per Industry

Countries	**1**	**2**	**3**	**4**	**5**	**6**	**averages**
AUSTRIA	-0,0214	-0,2455	-0,7776			-0,1418	-0,2966
BELGIUM	0,1450	-0,6326	0,4724	0,3011	0,0853	0,1611	0,0887
DENMARK	0,4175	-0,3200		0,6382	0,4470	-0,0725	0,2220
FINLAND	-0,3346		-0,5945		-0,4554	-0,1584	-0,3857
FRANCE	-0,0337	-0,0621	0,4281	0,6286	0,1330	0,1284	0,2037
GERMANY	-0,2060	-0,0877	-0,0672	0,2195	0,3845	0,0281	0,0452
IRELAND		0,1393			-0,0806	-0,6635	-0,2016
NETHERLANDS	-0,0540	0,1604		0,0834	0,2403	-0,0922	0,0676
NORWAY		-0,4372	0,4628		-0,4879	-0,1093	-0,1429
SWEDEN	0,0607	-0,4136	-0,6642	-0,3575	-0,3867	-0,2553	-0,3361
SWITZERLAND	0,0933		0,0985	-0,2882	0,2920	0,2695	0,0930
UNITED KINGDOM	-0,2147	0,0327	0,1488	-0,2043	0,0070	-0,0530	-0,0473
UNITED STATES	0,0200	0,0347	0,0096	-0,0121	-0,0280	0,0380	0,0103
Averages	-0,0116	-0,1665	-0,0483	0,1121	0,0125	-0,0709	-0,0523

Appendix D: AIFRS- period-per Country / per Industry

Countries	1	2	3	4	5	6	averages
AUSTRIA	-0,0534	-0,1269	-0,7926			-0,2169	-0,2975
BELGIUM	0,1224	-0,7440	0,3411	0,2585	0,0850	0,1634	0,0377
DENMARK	0,3510	-0,4283		0,5905	0,3617	-0,1016	0,1546
FINLAND	-0,3844		-0,5250		-0,3844	-0,0744	-0,3421
FRANCE	-0,0519	-0,0651	0,4065	0,7343	0,1120	0,1882	0,2207
GERMANY	-0,2063	-0,1075	-0,1860	0,2105	0,3546	0,0336	0,0165
IRELAND		0,1270			-0,1179	-0,6758	-0,2223
NETHERLANDS	-0,0080	0,2156		0,0637	0,3026	-0,0264	0,1095
NORWAY		-0,4944	0,4915		-0,4321	-0,0929	-0,1320
SWEDEN	0,1059	-0,4744	-0,6720	-0,3413	-0,4483	-0,2324	-0,3437
SWITZERLAND	0,1502		0,0623	-0,2997	0,2596	0,3424	0,1030
UNITED KINGDOM	-0,1845	0,0547	0,1166	-0,2091	0,0214	-0,0440	-0,0408
UNITED STATES	0,0152	0,0290	0,0106	-0,0362	-0,0455	0,0396	0,0021
Averages	-0,0131	-0,1831	-0,0747	0,1079	0,0057	-0,0536	-0,0565

Appendix E: Scores Prometheé – for the examine periods

Firms' ID	Average	Average	Average
	Prometheé scores (PIFRS period)	Prometheé scores (Crisis)	Prometheé scores (AIFRS period)
1	-0,811	-0,748	-0,738
2	-0,842	-0,731	-0,845
3	-0,824	-0,778	-0,806
4	-0,641	-0,687	-0,585
5	-0,751	-0,689	-0,693
6	-0,721	-0,645	-0,702
7	-0,772	-0,648	-0,765
8	-0,749	-0,723	-0,795

9	-0,811	-0,743	-0,926
10	-0,904	-0,804	-0,698
11	-0,491	-0,797	-0,506
12	-0,563	-0,765	-0,573
13	-0,761	-0,753	-0,76
14	-0,773	-0,799	-0,77
15	-0,857	-0,512	-0,79
16	-0,736	-0,404	-0,77
17	-0,681	-0,675	-0,668
18	-0,752	-0,663	-0,749
19	-0,736	-0,714	-0,705
20	-0,76	-0,728	-0,712
21	-0,731	-0,673	-0,66
22	-0,667	-0,623	-0,769
23	-0,704	-0,649	-0,721
24	-0,672	-0,635	-0,697
25	-0,744	-0,537	-0,717
26	-0,701	-0,549	-0,697
27	-0,703	-0,552	-0,684
28	-0,574	-0,672	-0,643
29	-0,689	-0,686	-0,669
30	-0,68	-0,665	-0,645
31	-0,711	-0,541	-0,662
32	-0,686	-0,532	-0,599
33	-0,66	-0,622	-0,702
34	-0,641	-0,679	-0,66
35	-0,454	-0,623	-0,453
36	-0,581	-0,647	-0,525
37	-0,634	-0,629	-0,529
38	-0,647	-0,678	-0,646
39	-0,686	-0,715	-0,714
40	-0,676	-0,736	-0,585
41	-0,612	-0,64	-0,614
42	-0,707	-0,451	-0,637
43	-0,689	-0,558	-0,729
44	-0,64	-0,645	-0,573
45	-0,659	-0,613	-0,692
46	-0,661	-0,634	-0,687
47	-0,709	-0,469	-0,748
48	-0,711	-0,51	-0,619
49	-0,702	-0,59	-0,54
50	-0,488	-0,68	-0,583

51	-0,575	-0,673	-0,535
52	-0,561	-0,664	-0,624
53	-0,593	-0,474	-0,518
54	-0,643	-0,545	-0,621
55	-0,556	-0,696	-0,549
56	-0,464	-0,499	-0,538
57	-0,522	-0,637	-0,543
58	-0,585	-0,613	-0,543
59	-0,516	-0,516	-0,593
60	-0,605	-0,658	-0,641
61	-0,245	-0,711	-0,299
62	-0,617	-0,762	-0,59
63	-0,592	-0,614	-0,616
64	-0,571	-0,541	-0,608
65	-0,562	-0,597	-0,494
66	-0,539	-0,544	-0,566
67	-0,534	-0,516	-0,6
68	-0,647	-0,534	-0,578
69	-0,601	-0,673	-0,584
70	-0,495	-0,624	-0,489
71	-0,512	-0,688	-0,539
72	-0,585	-0,599	-0,562
73	-0,576	-0,539	-0,545
74	-0,52	-0,569	-0,456
75	-0,538	-0,614	-0,544
76	-0,575	-0,475	-0,551
77	-0,577	-0,535	-0,572
78	-0,508	-0,591	-0,476
79	-0,549	-0,528	-0,581
80	-0,618	-0,495	-0,611
81	-0,526	-0,467	-0,542
82	-0,606	-0,51	-0,633
83	-0,669	-0,579	-0,614
84	-0,559	-0,664	-0,583
85	-0,552	-0,561	-0,531
86	-0,574	-0,617	-0,346
87	-0,371	-0,562	-0,499
88	-0,505	-0,531	-0,449
89	-0,481	-0,525	-0,417
90	-0,557	-0,659	-0,51
91	-0,53	-0,598	-0,494
92	-0,487	-0,515	-0,379

93	-0,488	-0,425	-0,411
94	-0,501	-0,571	-0,582
95	-0,573	-0,506	-0,539
96	-0,493	-0,557	-0,493
97	-0,26	-0,622	-0,237
98	-0,374	-0,421	-0,442
99	-0,564	-0,558	-0,58
100	-0,464	-0,562	-0,523
101	-0,508	-0,637	-0,549
102	-0,453	-0,595	-0,465
103	-0,481	-0,501	-0,449
104	-0,423	-0,514	-0,406
105	-0,466	-0,601	-0,456
106	-0,483	-0,685	-0,496
107	-0,477	-0,532	-0,571
108	-0,271	-0,56	-0,314
109	-0,486	-0,569	-0,506
110	-0,322	-0,567	-0,415
111	-0,432	-0,506	-0,373
112	-0,284	-0,475	-0,318
113	-0,372	-0,468	-0,38
114	-0,413	-0,525	-0,428
115	-0,417	-0,451	-0,452
116	-0,555	-0,557	-0,52
117	-0,499	-0,58	-0,472
118	-0,464	-0,484	-0,465
119	-0,39	-0,434	-0,331
120	-0,398	-0,374	-0,472
121	-0,399	-0,425	-0,386
122	-0,456	-0,353	-0,419
123	-0,392	-0,246	-0,433
124	-0,478	-0,477	-0,434
125	-0,345	-0,519	-0,301
126	-0,305	-0,514	-0,343
127	-0,43	-0,446	-0,45
128	-0,418	-0,523	-0,431
129	-0,475	-0,378	-0,351
130	-0,346	-0,408	-0,297
131	-0,464	-0,573	-0,419
132	-0,395	-0,544	-0,416
133	-0,46	-0,406	-0,425
134	-0,444	-0,397	-0,377

135	-0,444	-0,558	-0,424
136	-0,336	-0,502	-0,407
137	-0,379	-0,384	-0,409
138	-0,499	-0,265	-0,366
139	-0,361	-0,339	-0,347
140	-0,356	-0,398	-0,292
141	-0,368	-0,401	-0,338
142	-0,405	-0,479	-0,318
143	-0,407	-0,473	-0,408
144	-0,359	-0,366	-0,382
145	-0,342	-0,421	-0,318
146	-0,389	-0,398	-0,392
147	-0,385	-0,351	-0,403
148	-0,386	-0,293	-0,32
149	-0,329	-0,412	-0,279
150	-0,382	-0,287	-0,322
151	-0,37	-0,272	-0,387
152	-0,317	-0,312	-0,306
153	-0,351	-0,353	-0,375
154	-0,35	-0,444	-0,369
155	-0,393	-0,509	-0,364
156	-0,379	-0,428	-0,28
157	-0,293	-0,425	-0,175
158	-0,218	-0,329	-0,197
159	-0,318	-0,393	-0,191
160	-0,262	-0,386	-0,266
161	-0,256	-0,401	-0,263
162	-0,172	-0,322	-0,127
163	-0,074	-0,421	-0,079
164	-0,289	-0,469	-0,213
165	-0,186	-0,443	-0,294
166	-0,204	-0,329	-0,218
167	-0,356	-0,386	-0,368
168	-0,292	-0,294	-0,231
169	-0,348	-0,402	-0,333
170	-0,238	-0,225	-0,282
171	-0,321	-0,31	-0,325
172	-0,316	-0,38	-0,283
173	-0,326	-0,468	-0,231
174	-0,268	-0,478	-0,276
175	-0,329	-0,421	-0,341
176	-0,377	-0,448	-0,452

177	-0,369	-0,463	-0,349
178	-0,343	-0,384	-0,26
179	-0,258	-0,5	-0,265
180	-0,247	-0,411	-0,221
181	-0,244	-0,415	-0,284
182	-0,289	-0,425	-0,281
183	-0,278	-0,36	-0,201
184	-0,152	-0,325	-0,141
185	-0,206	-0,275	-0,189
186	-0,23	-0,247	-0,265
187	-0,279	-0,301	-0,27
188	-0,278	-0,215	-0,269
189	-0,238	-0,209	-0,253
190	-0,26	-0,336	-0,233
191	-0,241	-0,289	-0,262
192	-0,25	-0,377	-0,314
193	-0,217	-0,361	-0,259
194	-0,253	-0,422	-0,261
195	-0,258	-0,354	-0,266
196	-0,198	-0,343	-0,219
197	-0,194	-0,325	-0,225
198	-0,245	-0,305	-0,21
199	-0,219	-0,418	-0,153
200	-0,172	-0,327	-0,08
201	-0,166	-0,259	-0,228
202	-0,155	-0,271	-0,174
203	-0,22	-0,308	-0,246
204	-0,224	-0,349	-0,192
205	-0,171	-0,336	-0,221
206	-0,129	-0,266	-0,209
207	-0,076	-0,247	-0,196
208	-0,189	-0,352	-0,239
209	-0,044	-0,37	-0,112
210	-0,102	-0,388	-0,086
211	0,009	-0,34	-0,064
212	-0,091	-0,309	-0,167
213	-0,132	-0,21	-0,067
214	-0,144	-0,186	-0,073
215	-0,071	-0,333	-0,075
216	-0,076	-0,251	-0,066
217	0,058	-0,209	0,08
218	-0,14	-0,267	-0,114

219	-0,104	-0,342	-0,014
220	-0,122	-0,465	-0,081
221	-0,119	-0,256	-0,117
222	0,029	-0,265	0,111
223	0,117	-0,232	0,137
224	-0,162	-0,223	-0,194
225	-0,045	-0,41	-0,066
226	-0,119	-0,287	-0,054
227	-0,05	-0,231	-0,056
228	-0,082	-0,19	-0,017
229	0,018	-0,269	-0,006
230	-0,104	-0,198	-0,079
231	-0,134	-0,184	-0,12
232	-0,194	-0,198	-0,208
233	-0,084	-0,314	0,056
234	0,104	-0,35	0,095
235	-0,107	-0,365	0,004
236	-0,028	-0,363	-0,019
237	-0,075	-0,227	-0,015
238	0,044	-0,288	0,016
239	-0,09	-0,247	0,015
240	0,012	-0,175	-0,017
241	-0,108	-0,126	-0,148
242	-0,092	-0,193	-0,122
243	-0,029	-0,263	-0,012
244	0,109	-0,184	0,127
245	0,1	-0,113	0,065
246	-0,094	-0,278	-0,069
247	-0,063	-0,315	0,003
248	-0,034	-0,281	0,065
249	0,029	-0,235	0,024
250	-0,012	-0,267	0,028
251	-0,031	-0,142	-0,006
252	-0,045	-0,188	0,021
253	0	-0,196	0,027
254	0,034	-0,15	0,007
255	0,009	-0,195	0,043
256	0,053	-0,094	0,052
257	0,04	-0,128	0,036
258	0,017	-0,247	0,112
259	0,054	-0,139	0,036
260	0,023	-0,226	0,044

261	0,025	-0,208	-0,004
262	0,049	-0,148	0,106
263	-0,001	-0,287	0,09
264	0,049	-0,266	0,053
265	0,11	-0,174	0,066
266	0,021	0,024	0,091
267	0,038	-0,103	0,048
268	0,029	-0,116	0,004
269	-0,034	-0,185	0,032
270	-0,005	-0,245	-0,015
271	-0,009	-0,088	-0,001
272	0,035	-0,109	0,002
273	0,099	-0,205	0,029
274	0,014	-0,241	0,052
275	0,126	-0,283	0,192
276	0,075	-0,089	0,128
277	0,029	-0,188	0,05
278	0,048	-0,14	0,104
279	0,093	-0,045	0,125
280	0,152	-0,084	0,167
281	0,181	-0,15	0,294
282	0,136	-0,217	0,213
283	0,082	-0,325	0,024
284	0,034	-0,08	0,016
285	0,156	-0,01	0,216
286	0,031	-0,03	-0,01
287	0,142	-0,048	0,203
288	0,222	-0,109	0,202
289	0,114	-0,018	0,09
290	0,149	-0,083	0,223
291	0,169	-0,148	0,137
292	0,243	-0,171	0,196
293	0,021	-0,13	0,012
294	0,051	-0,135	0,094
295	0,134	-0,092	0,255
296	0,155	-0,04	0,096
297	0,033	-0,223	0,091
298	0,154	-0,211	0,116
299	0,113	-0,147	0,163
300	0,131	-0,143	0,123
301	0,232	-0,023	0,25
302	0,13	0,044	0,156

303	0,085	0,036	0,087
304	0,071	0,032	0,112
305	0,13	0,094	0,175
306	0,215	-0,034	0,233
307	0,074	-0,062	0,141
308	0,272	0,014	0,252
309	0,135	-0,148	0,084
310	0,188	-0,041	0,177
311	0,097	-0,074	0,063
312	0,108	-0,037	0,172
313	0,14	-0,004	0,181
314	0,211	-0,131	0,195
315	0,168	-0,055	0,152
316	0,224	0,061	0,082
317	0,175	0,165	0,152
318	0,161	-0,01	0,165
319	0,182	0,02	0,168
320	0,137	0,015	0,142
321	0,195	0,004	0,221
322	0,198	-0,078	0,192
323	0,186	-0,028	0,205
324	0,214	0,014	0,225
325	0,225	0,056	0,238
326	0,257	-0,146	0,257
327	0,221	-0,153	0,205
328	0,198	-0,046	0,188
329	0,301	0,057	0,307
330	0,201	0,147	0,15
331	0,21	0,09	0,29
332	0,235	0,023	0,21
333	0,192	0,002	0,228
334	0,263	-0,081	0,247
335	0,29	0,076	0,287
336	0,221	0,039	0,174
337	0,178	0,022	0,216
338	0,174	0,048	0,175
339	0,197	0,053	0,159
340	0,187	0,003	0,137
341	0,27	0,016	0,238
342	0,306	0,138	0,34
343	0,191	0,074	0,196
344	0,262	0,073	0,284

345	0,263	0,142	0,193
346	0,197	0,068	0,225
347	0,151	0,021	0,127
348	0,34	0,029	0,286
349	0,261	0,086	0,226
350	0,272	0,085	0,253
351	0,205	0,142	0,258
352	0,312	0,159	0,315
353	0,223	0,13	0,28
354	0,29	0,196	0,277
355	0,247	0,229	0,257
356	0,295	0,008	0,256
357	0,253	-0,009	0,264
358	0,271	0,005	0,254
359	0,312	0,098	0,359
360	0,314	-0,038	0,289
361	0,261	0,031	0,299
362	0,267	0,038	0,255
363	0,286	0,037	0,295
364	0,328	-0,114	0,26
365	0,308	-0,01	0,281
366	0,365	0,071	0,333
367	0,33	0,074	0,294
368	0,272	0,054	0,257
369	0,291	-0,008	0,314
370	0,309	0,078	0,269
371	0,306	0,111	0,33
372	0,355	0,191	0,435
373	0,369	0,086	0,359
374	0,339	0,054	0,359
375	0,213	-0,036	0,347
376	0,187	-0,022	0,332
377	0,244	0,013	0,309
378	0,356	0,089	0,333
379	0,337	0,138	0,295
380	0,321	0,207	0,329
381	0,334	0,103	0,335
382	0,346	0,069	0,34
383	0,355	0,122	0,354
384	0,392	0,252	0,42
385	0,342	0,225	0,327
386	0,356	0,132	0,336

387	0,316	0,068	0,29
388	0,315	0,125	0,282
389	0,449	0,162	0,493
390	0,463	0,14	0,367
391	0,386	0,084	0,351
392	0,333	0,073	0,301
393	0,328	0,116	0,328
394	0,412	0,076	0,356
395	0,4	0,027	0,39
396	0,423	0,052	0,49
397	0,441	0,15	0,435
398	0,317	0,19	0,338
399	0,406	0,073	0,433
400	0,307	0,083	0,31
401	0,437	0,167	0,446
402	0,388	0,198	0,41
403	0,4	0,072	0,417
404	0,347	0,074	0,336
405	0,485	0,206	0,469
406	0,435	0,021	0,356
407	0,406	0,242	0,357
408	0,376	0,219	0,362
409	0,38	0,246	0,33
410	0,402	0,193	0,358
411	0,433	0,208	0,459
412	0,526	0,174	0,431
413	0,389	0,11	0,364
414	0,48	0,102	0,429
415	0,485	0,113	0,5
416	0,419	0,02	0,339
417	0,455	0,041	0,418
418	0,43	0,292	0,356
419	0,347	0,249	0,301
420	0,403	0,206	0,464
421	0,367	0,172	0,389
422	0,466	0,172	0,542
423	0,463	0,254	0,477
424	0,471	0,107	0,42
425	0,474	0,162	0,449
426	0,491	0,218	0,461
427	0,48	0,288	0,433
428	0,48	0,297	0,507

429	0,507	0,109	0,526
430	0,525	0,05	0,564
431	0,517	0,186	0,539
432	0,547	0,316	0,503
433	0,477	0,327	0,495
434	0,445	0,28	0,407
435	0,364	0,265	0,316
436	0,434	0,297	0,354
437	0,495	0,201	0,405
438	0,6	0,231	0,502
439	0,511	0,176	0,48
440	0,471	0,14	0,351
441	0,517	0,155	0,506
442	0,61	0,182	0,637
443	0,649	0,232	0,629
444	0,514	0,162	0,407
445	0,498	0,172	0,462
446	0,631	0,239	0,58
447	0,559	0,235	0,492
448	0,651	0,234	0,688
449	0,533	0,116	0,528
450	0,608	0,151	0,631
451	0,556	0,155	0,505
452	0,583	0,137	0,55
453	0,538	0,213	0,516
454	0,566	0,184	0,539
455	0,553	0,204	0,571
456	0,602	0,318	0,648
457	0,486	0,249	0,523
458	0,623	0,267	0,566
459	0,569	0,215	0,513
460	0,572	0,182	0,572
461	0,638	0,278	0,437
462	0,611	0,19	0,643
463	0,652	0,212	0,626
464	0,586	0,239	0,534
465	0,608	0,296	0,544
466	0,581	0,166	0,565
467	0,661	0,185	0,62
468	0,641	0,238	0,594
469	0,674	0,188	0,545
470	0,646	0,153	0,582

471	0,588	0,196	0,544
472	0,706	0,166	0,611
473	0,624	0,112	0,638
474	0,694	0,272	0,668
475	0,6	0,27	0,578
476	0,596	0,32	0,542
477	0,52	0,335	0,519
478	0,643	0,333	0,649
479	0,69	0,269	0,624
480	0,686	0,325	0,681
481	0,644	0,37	0,641
482	0,657	0,281	0,606
483	0,649	0,213	0,682
484	0,691	0,271	0,685
485	0,687	0,337	0,73
486	0,701	0,356	0,638
487	0,7	0,444	0,705
488	0,636	0,331	0,506
489	0,58	0,288	0,576
490	0,553	0,381	0,543
491	0,634	0,223	0,599
492	0,629	0,288	0,517
493	0,529	0,251	0,496
494	0,614	0,229	0,663
495	0,713	0,439	0,715
496	0,662	0,323	0,628
497	0,714	0,413	0,726
498	0,744	0,282	0,673
499	0,752	0,38	0,696
500	0,697	0,325	0,526
501	0,617	0,295	0,653
502	0,714	0,312	0,647
503	0,655	0,395	0,733
504	0,778	0,31	0,751
505	0,72	0,385	0,708
506	0,786	0,348	0,724
507	0,716	0,315	0,792
508	0,641	0,323	0,678
509	0,754	0,305	0,743
510	0,58	0,351	0,457
511	0,772	0,392	0,71
512	0,685	0,245	0,645

513	0,532	0,29	0,576
514	0,746	0,285	0,706
515	0,684	0,318	0,595
516	0,788	0,314	0,737
517	0,767	0,269	0,699
518	0,708	0,307	0,726
519	0,818	0,449	0,746
520	0,547	0,381	0,455
521	-0,454	-0,623	-0,453
522	-0,581	-0,647	-0,525
523	0,463	0,254	0,477
524	0,471	0,107	0,42
525	0,474	0,162	0,449

Appendix F - Sample Companies List – Bases: Asset 4, Thomson Reuters

a/a	Company's name	Country	a/a	Company's name	Country
1	3i Group plc	UNITED KINGDOM	263	Kudelski SA	SWITZER LAND
2	3M Co	UNITED STATES	264	Kungsleden AB	SWEDEN
3	A/S Det Ostasiatiske Kompagni	DENMARK	265	Kuoni Reisen Holding AG	SWITZER LAND
4	AB SKF	SWEDEN	266	L-3 Communications Holdings, Inc.	UNITED STATES
5	AB Volvo	SWEDEN	267	Laboratory Corp. of America Holdings	UNITED STATES
6	ABB Ltd.	SWITZERLA ND	268	Ladbrokes PLC	UNITED KINGDO M
7	Abbott Laboratories	UNITED STATES	269	Lagardere SCA	FRANCE
8	Accor SA	FRANCE	270	Legg Mason Inc	UNITED STATES
9	ACE Limited	UNITED STATES	271	Lexmark International Inc	UNITED STATES
10	adidas AG	GERMANY	272	Lincoln National Corporation	UNITED STATES

a/a	Company's name	Country	a/a	Company's name	Country
11	Adobe Systems Incorporated	UNITED STATES	273	Linde AG	GERMAN Y
12	AEGON N.V.	NETHERLAN DS	274	Linear Technology Corporation	UNITED STATES
13	AFLAC Incorporated	UNITED STATES	275	Lloyds Banking Group PLC	UNITED KINGDO M
14	Agfa-Gevaert NV	BELGIUM	276	Lockheed Martin Corporation	UNITED STATES
15	Aggreko plc	UNITED KINGDOM	277	Loews Corporation	UNITED STATES
16	Agilent Technologies Inc.	UNITED STATES	278	London Stock Exchange Group Plc	UNITED KINGDO M
17	Air France - KLM	FRANCE	279	Lonza Group AG	SWITZER LAND
18	Akzo Nobel N.V.	NETHERLAN DS	280	L'Oreal SA	FRANCE
19	Albemarle Corporation	UNITED STATES	281	Louisiana-Pacific Corporation	UNITED STATES
20	Alfa Laval AB	SWEDEN	282	Lowe's Companies, Inc.	UNITED STATES
21	Allegheny Technologies Incorporated	UNITED STATES	283	LSI Corp	UNITED STATES
22	Allergan, Inc.	UNITED STATES	284	M&T Bank Corporation	UNITED STATES
23	Allianz SE	GERMANY	285	Macy's, Inc.	UNITED STATES
24	Altria Group Inc	UNITED STATES	286	Man Group PLC	UNITED KINGDO M
25	Amazon.com, Inc.	UNITED STATES	287	ManpowerGroup Inc.	UNITED STATES
26	Amer Sports Oyj	FINLAND	288	Marathon Oil Corporation	UNITED STATES

a/a	Company's name	Country	a/a	Company's name	Country
27	American Express Company	UNITED STATES	289	Marks and Spencer Group Plc	UNITED KINGDOM
28	Andritz AG	AUSTRIA	290	Marsh & McLennan Companies, Inc.	UNITED STATES
29	Anglo American plc	UNITED KINGDOM	291	Masco Corporation	UNITED STATES
30	Anheuser Busch Inbev SA	BELGIUM	292	Mattel, Inc.	UNITED STATES
31	Aon PLC	UNITED STATES	293	Mayr-Melnhof Karton AG	AUSTRIA
32	AP Moeller - Maersk A/S	DENMARK	294	McCormick & Company, Incorporated	UNITED STATES
33	Apartment Investment and Management Co.	UNITED STATES	295	McDonald's Corporation	UNITED STATES
34	Apollo Education Group Inc	UNITED STATES	296	MeadWestvaco Corp.	UNITED STATES
35	Applied Materials, Inc.	UNITED STATES	297	Medtronic, Inc.	UNITED STATES
36	Applied Micro Circuits Corporation	UNITED STATES	298	Merck & Co., Inc.	UNITED STATES
37	AREVA SA	FRANCE	299	Meredith Corporation	UNITED STATES
38	ARYZTA AG	SWITZERLAND	300	Metlife Inc	UNITED STATES
39	Ashland Inc.	UNITED STATES	301	METRO AG	GERMANY
40	ASML Holding N.V.	NETHERLANDS	302	Metso Oyj	FINLAND
41	ASSA ABLOY AB	SWEDEN	303	MGM Resorts International	UNITED STATES
42	AstraZeneca plc	UNITED KINGDOM	304	Micron Technology, Inc.	UNITED STATES
43	AT&T Inc.	UNITED STATES	305	Microsoft Corporation	UNITED STATES

a/a	Company's name	Country	a/a	Company's name	Country
44	Atlas Copco AB	SWEDEN	306	MLP AG	GERMAN Y
45	Atrium European Real Estate Limited	AUSTRIA	307	Mobistar SA	BELGIUM
46	Autodesk, Inc.	UNITED STATES	308	Modern Times Group Mtg AB	SWEDEN
47	Automatic Data Processing	UNITED STATES	309	Monsanto Company	UNITED STATES
48	AutoNation, Inc.	UNITED STATES	310	Monster Worldwide, Inc.	UNITED STATES
49	AutoZone, Inc.	UNITED STATES	311	Morgan Stanley	UNITED STATES
50	Avon Products, Inc.	UNITED STATES	312	Motorola Solutions Inc	UNITED STATES
51	Axa SA	FRANCE	313	Muenchener Rueckversicherun gs-Ges. AG	GERMAN Y
52	Axfood AB	SWEDEN	314	Murphy Oil Corporation	UNITED STATES
53	BAE Systems plc	UNITED KINGDOM	315	Nabors Industries Ltd.	UNITED STATES
54	Baker Hughes Incorporated	UNITED STATES	316	National Grid plc	UNITED KINGDO M
55	Balfour Beatty plc	UNITED KINGDOM	317	National-Oilwell Varco, Inc.	UNITED STATES
56	Ball Corporation	UNITED STATES	318	Navistar International Corp	UNITED STATES
57	Baloise Holding AG	SWITZERLA ND	319	NCR Corporation	UNITED STATES
58	Bank of America Corp	UNITED STATES	320	Neopost SA	FRANCE
59	Barclays PLC	UNITED KINGDOM	321	Nestle SA	SWITZER LAND
60	Barratt Developments Plc	UNITED KINGDOM	322	Newell Rubbermaid Inc.	UNITED STATES

a/a	Company’s name	Country	a/a	Company’s name	Country
61	BASF SE	GERMANY	323	NEXT plc	UNITED KINGDOM
62	Baxter International Inc.	UNITED STATES	324	NextEra Energy, Inc.	UNITED STATES
63	Bayer AG	GERMANY	325	NiSource Inc.	UNITED STATES
64	BB&T Corporation	UNITED STATES	326	NKT Holding A/S	DENMARK
65	BBA Aviation plc	UNITED KINGDOM	327	Nordstrom, Inc.	UNITED STATES
66	BEAM Inc	UNITED STATES	328	Norsk Hydro ASA	NORWAY
67	Becton, Dickinson and Co.	UNITED STATES	329	Norske Skogindustrier ASA	NORWAY
68	Bed Bath & Beyond Inc.	UNITED STATES	330	Northern Trust Corporation	UNITED STATES
69	Belgacom SA	BELGIUM	331	Northrop Grumman Corporation	UNITED STATES
70	Bellway plc	UNITED KINGDOM	332	Novartis AG	SWITZERLAND
71	Bemis Company, Inc.	UNITED STATES	333	Novo Nordisk A/S	DENMARK
72	Best Buy Co., Inc.	UNITED STATES	334	Nucor Corporation	UNITED STATES
73	Big Lots, Inc.	UNITED STATES	335	NV Bekaert SA	BELGIUM
74	BillerudKorsnas publ AB	SWEDEN	336	NVIDIA Corporation	UNITED STATES
75	Biogen Idec Inc	UNITED STATES	337	Oc Oerlikon Corporation Pfaeffikon AG	SWITZERLAND
76	BNP Paribas SA	FRANCE	338	Occidental Petroleum Corporation	UNITED STATES

a/a	Company's name	Country	a/a	Company's name	Country
77	Boston Scientific Corporation	UNITED STATES	339	Old Mutual plc	UNITED KINGDO M
78	Bouygues SA	FRANCE	340	Olin Corporation	UNITED STATES
79	Bovis Homes Group plc	UNITED KINGDOM	341	Orkla ASA	NORWAY
80	BP plc	UNITED KINGDOM	342	Outokumpu Oyj	FINLAND
81	Bristol-Myers Squibb Co	UNITED STATES	343	PACCAR Inc	UNITED STATES
82	British American Tobacco plc	UNITED KINGDOM	344	Pall Corporation	UNITED STATES
83	British Sky Broadcasting Group plc	UNITED KINGDOM	345	Parker-Hannifin Corporation	UNITED STATES
84	Broadcom Corporation	UNITED STATES	346	Patterson Companies, Inc.	UNITED STATES
85	Brown-Forman Corporation	UNITED STATES	347	Paychex, Inc.	UNITED STATES
86	Brunswick Corporation	UNITED STATES	348	Pearson plc	UNITED KINGDO M
87	C.R. Bard, Inc.	UNITED STATES	349	Permanent TSB Group Public Hldg Ltd Co	IRELAND
88	CA, Inc.	UNITED STATES	350	Pernod Ricard SA	FRANCE
89	Cabot Corp	UNITED STATES	351	Persimmon plc	UNITED KINGDO M
90	Campbell Soup Company	UNITED STATES	352	Petroleum Geo-Services ASA	NORWAY
91	Cap Gemini SA	FRANCE	353	Peugeot SA	FRANCE
92	Capita PLC	UNITED KINGDOM	354	Pfizer Inc.	UNITED STATES
93	Cardinal Health Inc	UNITED STATES	355	Pinnacle West Capital Corporation	UNITED STATES

a/a	Company’s name	Country	a/a	Company’s name	Country
94	Carlsberg A/S	DENMARK	356	Pitney Bowes Inc.	UNITED STATES
95	Carnival Corporation	UNITED STATES	357	Plum Creek Timber Co. Inc.	UNITED STATES
96	Carrefour SA	FRANCE	358	PMC-Sierra Inc	UNITED STATES
97	Castellum AB	SWEDEN	359	PNC Financial Services Group Inc	UNITED STATES
98	Celesio AG	GERMANY	360	PostNL NV	NETHER LANDS
99	CenterPoint Energy, Inc.	UNITED STATES	361	PPL Corporation	UNITED STATES
100	Centrica PLC	UNITED KINGDOM	362	Principal Financial Group Inc	UNITED STATES
101	CenturyLink, Inc.	UNITED STATES	363	Prosafe SE	NORWAY
102	Charles River Laboratories	UNITED STATES	364	ProSiebenSat.1 Media AG	GERMAN Y
103	Chesapeake Energy Corporation	UNITED STATES	365	Provident Financial plc	UNITED KINGDO M
104	Chevron Corporation	UNITED STATES	366	Prudential Financial Inc	UNITED STATES
105	Ciena Corporation	UNITED STATES	367	Public Service Enterprise Group Inc.	UNITED STATES
106	Cintas Corporation	UNITED STATES	368	PulteGroup, Inc.	UNITED STATES
107	Cisco Systems, Inc.	UNITED STATES	369	Punch Taverns plc	UNITED KINGDO M
108	CIT Group Inc.	UNITED STATES	370	QLogic Corporation	UNITED STATES
109	Citigroup Inc	UNITED STATES	371	QUALCOMM, Inc.	UNITED STATES
110	Citrix Systems, Inc.	UNITED STATES	372	Quest Diagnostics Inc	UNITED STATES

a/a	Company’s name	Country	a/a	Company’s name	Country
111	Clariant AG	SWITZERLA ND	373	RadioShack Corporation	UNITED STATES
112	Close Brothers Group plc	UNITED KINGDOM	374	Randstad Holding nv	NETHER LANDS
113	CMS Energy Corporation	UNITED STATES	375	Rautaruukki Corporation	FINLAND
114	Coach, Inc.	UNITED STATES	376	Raytheon Company	UNITED STATES
115	Cobham plc	UNITED KINGDOM	377	Regions Financial Corporation	UNITED STATES
116	Coca-Cola Enterprises Inc	UNITED STATES	378	Renault SA	FRANCE
117	Cofinimmo NV/SA	BELGIUM	379	Rentokil Initial plc	UNITED KINGDO M
118	Colgate-Palmolive Company	UNITED STATES	380	Rexam PLC	UNITED KINGDO M
119	Coloplast A/S	DENMARK	381	Reynolds American, Inc.	UNITED STATES
120	Comcast Corporation	UNITED STATES	382	Roche Holding Ltd.	SWITZER LAND
121	Comerica Incorporated	UNITED STATES	383	Rockwell Automation	UNITED STATES
122	Commerzbank AG	GERMANY	384	Rockwell Collins, Inc.	UNITED STATES
123	Compagnie de Saint Gobain SA	FRANCE	385	Rolls-Royce Holding PLC	UNITED KINGDO M
124	Compagnie Financiere Richemont SA	SWITZERLA ND	386	Royal Bank of Scotland Group plc	UNITED KINGDO M
125	Compagnie Maritime Belge SA	BELGIUM	387	Royal Dutch Shell Plc	NETHER LANDS
126	Computer Sciences Corporation	UNITED STATES	388	Royal Dutch Shell Plc	UNITED KINGDO M
127	Compuware Corporation	UNITED STATES	389	RPM International Inc.	UNITED STATES

a/a	Company's name	Country	a/a	Company's name	Country
128	ConocoPhillips	UNITED STATES	390	RWE AG	GERMAN Y
129	Consolidated Edison, Inc.	UNITED STATES	391	Safran SA	FRANCE
130	Constellation Brands, Inc.	UNITED STATES	392	Sampo Oyj	FINLAND
131	Continental AG	GERMANY	393	Sandvik AB	SWEDEN
132	Convergys Corporation	UNITED STATES	394	Sanofi SA	FRANCE
133	Cookson Group plc	UNITED KINGDOM	395	SAP AG	GERMAN Y
134	Cooper Tire & Rubber Co	UNITED STATES	396	SAS AB	SWEDEN
135	Corio N.V.	NETHERLAN DS	397	SBM Offshore N.V.	NETHER LANDS
136	Costco Wholesale Corporation	UNITED STATES	398	Scania AB	SWEDEN
137	Credit Agricole SA	FRANCE	399	Schibsted ASA	NORWAY
138	Credit Suisse Group AG	SWITZERLA ND	400	Schindler Holding Ltd	SWITZER LAND
139	Cummins Inc.	UNITED STATES	401	Schlumberger Limited.	UNITED STATES
140	Cytec Industries Inc	UNITED STATES	402	Schneider Electric SA	FRANCE
141	Daily Mail and General Trust plc	UNITED KINGDOM	403	Schroders plc	UNITED KINGDO M
142	Daimler AG	GERMANY	404	SCOR SE	FRANCE
143	Darden Restaurants, Inc.	UNITED STATES	405	Sealed Air Corp	UNITED STATES
144	Dassault Systemes S.A.	FRANCE	406	Sears Holdings Corp	UNITED STATES
145	De La Rue plc	UNITED KINGDOM	407	Securitas AB	SWEDEN
146	Dean Foods Co	UNITED STATES	408	SEGRO plc	UNITED KINGDO M

a/a	Company's name	Country	a/a	Company's name	Country
147	Delhaize Group	BELGIUM	409	Sempra Energy	UNITED STATES
148	Dell Inc.	UNITED STATES	410	Serco Group plc	UNITED KINGDO M
149	Deutsche Bank AG	GERMANY	411	Severn Trent Plc	UNITED KINGDO M
150	Deutsche Boerse AG	GERMANY	412	Siemens AG	GERMAN Y
151	Deutsche Lufthansa AG	GERMANY	413	Signet Jewelers Ltd.	UNITED STATES
152	Deutsche Telekom AG	GERMANY	414	Skandinaviska Enskilda Banken AB	SWEDEN
153	Devon Energy Corp	UNITED STATES	415	Smith & Nephew plc	UNITED KINGDO M
154	Dexia SA	BELGIUM	416	Smiths Group plc	UNITED KINGDO M
155	D'Ieteren SA	BELGIUM	417	Societe Generale SA	FRANCE
156	Dixons Retail PLC	UNITED KINGDOM	418	Sodexo SA	FRANCE
157	DNB ASA	NORWAY	419	Solvay S.A.	BELGIUM
158	Dominion Resources, Inc.	UNITED STATES	420	Sonova Holding AG	SWITZER LAND
159	Dover Corp	UNITED STATES	421	Southwest Airlines Co.	UNITED STATES
160	Dynegy Inc	UNITED STATES	422	SSAB AB	SWEDEN
161	E I Du Pont De Nemours And Co	UNITED STATES	423	SSE PLC	UNITED KINGDO M
162	EADS NV	NETHERLAN DS	424	Starbucks Corporation	UNITED STATES

a/a	Company's name	Country	a/a	Company's name	Country
163	Eastman Chemical Company	UNITED STATES	425	Starwood Hotels & Resorts Worldwide Inc	UNITED STATES
164	eBay Inc	UNITED STATES	426	State Street Corporation	UNITED STATES
165	Edison International	UNITED STATES	427	STMicroelectronic s N.V.	FRANCE
166	Elekta publ AB	SWEDEN	428	Stolt-Nielsen S.A.	NORWAY
167	Eli Lilly & Co.	UNITED STATES	429	Storebrand ASA	NORWAY
168	Elisa Oyj	FINLAND	430	Straumann Holding AG	SWITZER LAND
169	EMS-Chemie Holding AG	SWITZERLA ND	431	Stryker Corporation	UNITED STATES
170	Eniro AB	SWEDEN	432	Suedzucker Mannheim Ochsenfurt AG	GERMAN Y
171	Entergy Corporation	UNITED STATES	433	Sulzer AG	SWITZER LAND
172	Enterprise Inns plc	UNITED KINGDOM	434	SUPERVALU INC.	UNITED STATES
173	EOG Resources Inc	UNITED STATES	435	Svenska Cellulosa AB SCA	SWEDEN
174	Equifax Inc.	UNITED STATES	436	Svenska Handelsbanken AB	SWEDEN
175	Equity Residential	UNITED STATES	437	Swedish Match AB	SWEDEN
176	Erste Group Bank AG	AUSTRIA	438	Swiss Life Holding AG	SWITZER LAND
177	Essilor International Cmpgn Gnl d'Opq SA	FRANCE	439	Swiss Re AG	SWITZER LAND
178	Estee Lauder Companies Inc	UNITED STATES	440	Swisscom AG	SWITZER LAND
179	Etablissementen Franz Colruyt NV	BELGIUM	441	Symantec Corporation	UNITED STATES

a/a	Company's name	Country	a/a	Company's name	Country
180	Exelon Corporation	UNITED STATES	442	Syngenta AG	SWITZERLAND
181	Express Scripts Holding Co	UNITED STATES	443	Synovus Financial Corp.	UNITED STATES
182	Exxon Mobil Corporation	UNITED STATES	444	SYSCO Corporation	UNITED STATES
183	Fabege AB	SWEDEN	445	T. Rowe Price Group, Inc.	UNITED STATES
184	Family Dollar Stores, Inc.	UNITED STATES	446	Target Corporation	UNITED STATES
185	Federated Investors Inc	UNITED STATES	447	Tate & Lyle PLC	UNITED KINGDOM
186	FedEx Corporation	UNITED STATES	448	Taylor Wimpey plc	UNITED KINGDOM
187	First Horizon National Corporation	UNITED STATES	449	Technicolor SA	FRANCE
188	FirstEnergy Corp.	UNITED STATES	450	TECO Energy, Inc.	UNITED STATES
189	Fiserv, Inc.	UNITED STATES	451	Tele2 AB	SWEDEN
190	Flughafen Wien AG	AUSTRIA	452	Telenor ASA	NORWAY
191	Fluor Corporation (NEW)	UNITED STATES	453	Television Francaise 1 SA	FRANCE
192	FMC Corp	UNITED STATES	454	TeliaSonera AB	SWEDEN
193	Forest Laboratories, Inc.	UNITED STATES	455	Tenet Healthcare Corp	UNITED STATES
194	Freeport-McMoRan Copper & Gold Inc.	UNITED STATES	456	Teradyne, Inc.	UNITED STATES
195	Fresenius Medical Care AG & Co. KGaA	GERMANY	457	Tesco PLC	UNITED KINGDOM

a/a	Company's name	Country	a/a	Company's name	Country
196	Frontier Communications Corp	UNITED STATES	458	Texas Instruments Incorporated	UNITED STATES
197	Frontline Ltd.	NORWAY	459	Thales SA	FRANCE
198	Fyffes plc	IRELAND	460	The Allstate Corporation	UNITED STATES
199	G4S plc	UNITED KINGDOM	461	The Bank of New York Mellon Corporation	UNITED STATES
200	Geberit AG	SWITZERLA ND	462	The Boeing Company	UNITED STATES
201	Gecina SA	FRANCE	463	The Clorox Co	UNITED STATES
202	General Dynamics Corporation	UNITED STATES	464	The Coca-Cola Company	UNITED STATES
203	General Electric Company	UNITED STATES	465	The Dow Chemical Company	UNITED STATES
204	General Mills, Inc.	UNITED STATES	466	The Goodyear Tire & Rubber Company	UNITED STATES
205	Genuine Parts Company	UNITED STATES	467	The Home Depot, Inc.	UNITED STATES
206	Givaudan S.A.	SWITZERLA ND	468	The Jones Group Inc.	UNITED STATES
207	GKN plc	UNITED KINGDOM	469	The Kroger Co.	UNITED STATES
208	GlaxoSmithKline plc	UNITED KINGDOM	470	The Procter & Gamble Company	UNITED STATES
209	GN Store Nord A/S	DENMARK	471	The Progressive Corporation	UNITED STATES
210	Goldman Sachs Group Inc	UNITED STATES	472	Tiffany & Co.	UNITED STATES
211	Grafton Group plc	UNITED KINGDOM	473	Time Warner Cable Inc	UNITED STATES
212	Great Portland Estates PLC	UNITED KINGDOM	474	Tomra Systems ASA	NORWAY

a/a	Company's name	Country	a/a	Company's name	Country
213	Greencore Group plc	IRELAND	475	Topdanmark A/S	DENMARK
214	Groupe Bruxelles Lambert SA	BELGIUM	476	Torm A/S	DENMARK
215	Halliburton Company	UNITED STATES	477	Total SA	FRANCE
216	Hammerson plc	UNITED KINGDOM	478	Travis Perkins plc	UNITED KINGDOM
217	Harman International Industries Inc./DE/	UNITED STATES	479	Trelleborg AB	SWEDEN
218	Heidelberger Druckmaschinen AG	GERMANY	480	TUI AG	GERMANY
219	Henkel AG & Co KGaA	GERMANY	481	TUI Travel PLC	UNITED KINGDOM
220	Hess Corp.	UNITED STATES	482	Tyco International Ltd.	UNITED STATES
221	Hewlett-Packard Company	UNITED STATES	483	U.S. Bancorp	UNITED STATES
222	Humana Inc	UNITED STATES	484	UBS AG	SWITZERLAND
223	Huntington Bancshares Incorporated	UNITED STATES	485	Unilever N.V.	NETHERLANDS
224	ICAP plc	UNITED KINGDOM	486	Union Pacific Corporation	UNITED STATES
225	Illinois Tool Works Inc.	UNITED STATES	487	Unisys Corporation	UNITED STATES
226	IMMOFINANZ AG	AUSTRIA	488	United Parcel Service, Inc.	UNITED STATES
227	Independent News & Media PLC	IRELAND	489	United States Steel Corporation	UNITED STATES
228	Infineon Technologies AG	GERMANY	490	United Technologies Corporation	UNITED STATES

a/a	Company's name	Country	a/a	Company's name	Country
229	ING Groep NV	NETHERLANDS	491	United Utilities Group PLC	UNITED KINGDOM
230	International Business Machines Corp.	UNITED STATES	492	UnitedHealth Group Inc.	UNITED STATES
231	International Flavors & Fragrances Inc	UNITED STATES	493	Unum Group	UNITED STATES
232	International Game Technology	UNITED STATES	494	UPM-Kymmene Corporation	FINLAND
233	Interpublic Group of Companies Inc	UNITED STATES	495	Uponor Oyj	FINLAND
234	Intertek Group plc	UNITED KINGDOM	496	Valeo SA	FRANCE
235	Intuit Inc.	UNITED STATES	497	Valero Energy Corporation	UNITED STATES
236	Invesco Ltd.	UNITED STATES	498	Valora Holding AG	SWITZERLAND
237	ITT Corp	UNITED STATES	499	Veolia Environnement SA	FRANCE
238	IVG Immobilien AG	GERMANY	500	Verizon Communications Inc.	UNITED STATES
239	J Sainsbury plc	UNITED KINGDOM	501	Vestas Wind Systems A/S	DENMARK
240	J.C. Penney Company, Inc.	UNITED STATES	502	Viacom, Inc.	UNITED STATES
241	Jabil Circuit, Inc.	UNITED STATES	503	Vinci SA	FRANCE
242	Janus Capital Group Inc	UNITED STATES	504	Vivendi SA	FRANCE
243	Johnson Controls Inc	UNITED STATES	505	Vodafone Group plc	UNITED KINGDOM
244	Johnson Matthey PLC	UNITED KINGDOM	506	voestalpine AG	AUSTRIA
245	JPMorgan Chase & Co.	UNITED STATES	507	Volkswagen AG	GERMANY

a/a	Company's name	Country	a/a	Company's name	Country
246	Julius Baer Gruppe AG	SWITZERLA ND	508	Vulcan Materials Company	UNITED STATES
247	KB Home	UNITED STATES	509	W.W. Grainger, Inc.	UNITED STATES
248	KBC Groep NV	BELGIUM	510	Walgreen Company	UNITED STATES
249	Kerry Group PLC	IRELAND	511	Wal-Mart Stores, Inc.	UNITED STATES
250	Kesko Oyj	FINLAND	512	Wells Fargo & Co	UNITED STATES
251	KeyCorp	UNITED STATES	513	Wereldhave NV	NETHER LANDS
252	Kimberly Clark Corp	UNITED STATES	514	Whirlpool Corporation	UNITED STATES
253	Kingfisher plc	UNITED KINGDOM	515	Whitbread plc	UNITED KINGDO M
254	Kingspan Group plc	IRELAND	516	Whole Foods Market, Inc.	UNITED STATES
255	KLA-Tencor Corporation	UNITED STATES	517	Wienerberger AG	AUSTRIA
256	Klepierre SA	FRANCE	518	Williams Companies, Inc.	UNITED STATES
257	Kohl's Corporation	UNITED STATES	519	Wolters Kluwer	NETHER LANDS
258	KONE Corporation	FINLAND	520	Xcel Energy Inc	UNITED STATES
259	Konecranes Abp	FINLAND	521	Xilinx, Inc.	UNITED STATES
260	Koninklijke DSM N.V.	NETHERLAN DS	522	XL Group plc	UNITED STATES
261	Koninklijke Philips NV	NETHERLAN DS	523	Zimmer Holdings, Inc.	UNITED STATES
262	Kraft Foods Group Inc	UNITED STATES	524	Zodiac Aerospace SA	FRANCE
			525	Zurich Insurance Group Ltd	SWITZER LAND

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