The Association between the Firm Characteristics and Corporate Mandatory Disclosure
the Case of Greece

Despina Galani1, Anastasios Alexandridis and Antonios Stavropoulos

Abstract—The main thrust of this paper is to assess the level of disclosure in the annual reports of non-financial Greek firms and to empirically investigate the hypothesized impact of several firm characteristics on the extent of mandatory disclosure. A disclosure checklist consisting of 100 mandatory items was developed to assess the level of disclosure in the 2009 annual reports of 43 Greek companies listed at the Athens stock exchange. The association between the level of disclosure and some firm characteristics was examined using multiple linear regression analysis. The study reveals that Greek companies on general have responded adequately to the mandatory disclosure requirements of the regulatory bodies. The findings also indicate that firm size was significant positively associated with the level of disclosure. The remaining variables such as age, profitability, liquidity, and board composition were found to be insignificant in explaining the variation of mandatory disclosures. The outcome of this study is undoubtedly of great concern to the investment community at large to assist in evaluating the extent of disclosure in light of firm-specific characteristics.

Keywords—Mandatory disclosure, Annual report, Disclosure index

I. INTRODUCTION

Disclosure of information in corporate annual reports and its determinants have been identified as an important research area and have attracted both analytical and empirical researchers in accounting since the 1970s. Analytical research includes agency theory, signaling theory and competition theory. Reference [13] pioneered the empirical study of the corporate-specific attributes which determines the extent of disclosure.

In the late 1990s, the Athens stock exchange experienced significant development as an emerging capital market. Its status was upgraded by international investment funds in 2000 to that of a developed market. However, the market fell significantly in 2000 and has subsequently showed only limited recovery. Under these conditions, corporate financial reporting has been under the spotlight of regulators, investors and the press, and there has been increasing demand for greater transparency and quality in corporate financial communications with stakeholders.

This paper investigates the disclosure practices of listed companies in Greece to see how they comply with mandatory rules established by the regulatory bodies. In addition, it examines the association between company characteristics and the extent of disclosure. This paper will contribute to the growing literature on the determinants of corporate mandatory disclosure level and the findings of the study would be of immense interest to listed companies, investors, and those involved in standard setting processes.

As far as we are aware there is currently no published study examining the determinants of corporate disclosures reporting by Greek firms. The present paper seeks to fill this gap by testing a set of hypothesis on the influence of several factors on the level of mandatory information disclosed by a sample to Greek companies in their financial statements.

The remainder of this paper is organized as follows: Section 2 reviews previous research on accounting disclosures. Section 3 outlines the research method employed in the study. Section 4 describes the empirical results and, finally, section 5 summarizes the main conclusions and implications of the paper and discusses its limitations.

II. LITERATURE REVIEW

Since, the 1960s there has been an increased interest in accounting disclosure studies investigating various determinants of companies’ disclosure practices. First reference [13] measured disclosure by an index of 31 information items and concluded that financial reporting practices of many US companies need improvement. Several researchers have replicated his methodology. The majority of these studies were applied to developed countries such as the UK [43], [22], the USA ([11], [28], Canada [8], Sweden [15], Switzerland [39], Japan [17] and Hong Kong [44].

A smaller group of studies have examined developing countries, such as Egypt [30], Jordan [36], Nigeria [46], Bangladesh [2].

Also, some studies have adopted a comparative approach to assess the intensity of disclosure across two or more countries, for example reference [7], [48], and [12].
It is worth noting that the essence of the quality of disclosure (dependent variable) is not firmly defined. For instance, reference [11] applied the term adequacy, reference [7] and [44] used the term comprehensiveness and reference [38] used the term of extent.

Furthermore, the number and type of firm characteristics (independent variable) vary among studies. A consistent finding is that size is an important predictor of corporate reporting behavior. Most researchers in this area found a close relationship between size and the extent of disclosure [41], [27], [16], [17], [2], [24], [45], [19]. However, reference [2]; [6] and [4] did not find a relationship between size and level of disclosure.

With the exception of size, findings concerning association between company characteristics and corporate disclosure practices are mixed. Reference [40] and [45] found a significant positive association between profitability and the level of corporate disclosures, whereas, reference [8] and [44] observed a significant negative relationship between the two variables and some other researchers find no relationship at all [32].

Similarly, reference [23] and [44] found a positive association between leverage and the level of disclosure. Reference [45] and [10] found no significant association between leverage and the extent of voluntary disclosure.

Findings concerning relationship between auditing type and the level of corporate disclosure are not consistent. Reference [41] confirmed this hypothesis, but reference [22] and [45] did not report any relation.

Association between the level of disclosure and industry types provides mixed evidence. Reference [15] findings report that manufacturing companies disclose more information than other types of companies. But the findings of reference [25] and [37] provide no evidence of this association.

Additionally, prior studies [37], [44] define mandatory disclosure as the presentation of a minimum amount of information required by laws, stock exchanges and the accounting standards setting body of facilitate evaluation of securities.

Reference [4] investigated the mandatory disclosure by 94 listed companies in Bangladesh and found that companies, on average, disclose 44% of the items of information, which leads to the conclusion that prevailing regulations are ineffective monitors of disclosure compliance by companies.

Similarly, the present study concentrates on mandatory disclosure for items of information required by the listing rules of the stock exchange and the approved IASs that listed companies in Greece to disclose those in their annual reports.

III. HYPOTHESES

A. Size

A number of studies over the past decades have successfully tested the influence of firm size on the level of disclosure. Most researchers have found a positive relationship between company size and the extent of disclosure in both developing and developed countries [13], [41], [27], [16], [17], [2], [24], [45], [19]. Several reasons have been advanced in the literature in an attempt to support this positive association.

Firstly, the cost of accumulating and generating certain information is greater for small firms than large firms. Small companies may not be able to afford such costs from their resource base [37]. Larger companies might have sufficient resources to afford the cost of producing information for the user of annual report.

Secondly, the agency cost is higher for large firms because shareholders are widespread, reduce the potential agency cost [47]. Additionally, these firms might publish more information in their reports to supply information relevant to different users.

Thirdly, large companies may tend to disclose more information than smaller companies in their annual reports due to their competitive cost advantage [28], [29]. Hence, small companies disclose less information than large companies.

The size of the company is operationalized using a number of measures, such as turnover, sales, revenues, total assets, number of employees etc. In this study, we have used the natural logarithm of total assets for 2009 as the firm size variable.

Thus, it seems reasonable to hypothesize that:

H1: Companies with different values of total assets disclose varying amounts of financial information

B. Age

Reference [12] identified a number of new variables, such as the age of the company to be investigated by future studies. The rationale for selecting this variable lies in the possibility that old firms might have improved their financial reporting practices over time [5] and secondly they try to enhance their reputation and image in the market [4]. Reference [37] states that the competition argument proposes that young companies are not likely to disclose full information about their financial results and position, because this may prove to be detrimental if sensitive information is disclosed to the established competitors. The resulted hypothesis is:

H2: Older firms are more likely to disclose more mandatory information than younger firms.

C. Profitability

There is a general proposition that a company's willingness to disclose information is positively related to its profitability. One motive for this can be derived from agency theory. It is suggested that managers of profitable companies disclose extensive information in order to show and explain to shareholders that they are acting in their best interests and justify their compensation packages. Similarly, management of a profitable company wish to disclose more information to the public to promote positive impression of its performance. Moreover, companies with high profits are likely to signal to the market their success via high level of information disclosure.
disclosure in their financial statements [45], [44]. Additionally, managements of profitable firms disclose detailed information to increase investors’ confidence [25].

Empirical evidence provide mixed results. Reference [40] found a significant positive association between profitability and the extent of disclosure while others find no relationship [8], [31], [39]. Unexpectedly, reference [44] reported a negative and significant association between the two variables in a sample of companies listed on the Hong Kong Stock Exchange. Profitability can be measured employing different indicators. In this sense, the three measures that have frequently been used in the majority of the studies on this subject as proxies of profitability are return on revenues, return on total assets and return on equity [26]. In this study we have considered as an independent variable representing profitability the return on assets in 2009, which was calculated as the ratio of the net income (income after tax) and equity capital in 2009. Based on some of the previous studies, the H3 purports that:

H3: Firms with high profitability are more likely to disclose more information in their annual reports compared with firms with low profitability.

D. Industry type

Industry type as a determinant of disclosure in financial statements because disclosures differ from one industry type to another. Empirical results based on previous research are mixed. Findings of references [15], [33], [44] report a significant relationship between industry type and disclosure level. But references [25], [45], [37], [34], [35], [4], [5] provide no evidence of this association. For this study, companies have also been divided broadly into two categories: traditional and modern [4]. Traditional are food, textile, paper and cement and modern companies are engineering, pharmaceuticals and chemicals. Thus, the hypothesis developed for the study is as follows:

H4: Modern companies disclose different level of disclosure than traditional companies.

IV. METHODOLOGY

A. Disclosure index construction

A disclosure index was constructed which consists of 100 items of information, in order to measure the degree of compliance of the companies with the required disclosures. By referring to the recommended disclosures by the International Standards Committee a list of mandatory disclosures was prepared based on the information that firms supply in their annual financial reports to shareholders. The study was conducted on a sample of companies listed on the Greek Stock Exchange for the year ended 2009. The choice of firms was based on the availability of data.

A dichotomous approach to scoring the items was adopted, in which an item scores on if disclosed and zero if not disclosed. This procedure is conventionally termed the unweighted approach, and it was adopted for the study as other researchers have used it successfully [46], [18], [24], [2]. Thus, the unweighted disclosure method measures the corporate disclosure score of a company as additive [17] as follows:

\[ DS = \sum_{i=1}^{n} d_i \]

\( d_i = 1 \) if item i is disclosed 
\( =0 \) if item i is not disclosed 
N= number of items

One main problem with the unweighted approach is that a company may be penalized by assigning a score of zero for the absence of an item of information that is not applicable to it. In order to overcome this problem, the relevance of each absent item needs to be investigated and then classified as non-disclosure for a relevant item of reporting and non-applicable otherwise. For companies having non-applicable items, the use of a relative index is suggested [37]. The relative index approach is the ratio of what a particular company actually disclosed to what the company is expected to disclose. In spite of the subjective discrimination between non-disclosure and non-applicable items, this approach is considered to be a more accurate measure than one that assumes that all companies are identical and, therefore, no difference need exist in disclosure requirements. This approach has been employed is several prior studies [15], [25], [37], [44], [45].

B. Model development

Multiple regression was adopted to test the hypotheses developed in this study. Before proceeding to the results of regression analysis, it was instructive to check the existence of multicollinearity among explanatory independent variables. Multicollinearity or collinearity, the situation where two or more of the independent variables are highly correlated, can have damaging effects on the results of multiple regression. The correlation matrix is a powerful tool for getting a rough idea of the relationship between predictors. Another way to assess multicollinearity is to look at the variance inflation factor (VIF). Although there is no hard and fast rule about what value of the VIF should be cause for concern, a value of 10 is good value at which to worry. Alternatively, if the average VIF is substantially greater than 1 then the regression may be biased [9]. The average VIF is close to 1 and this confirms that collinearity is not a problem for this model. Additionally, to test the assumption of independent errors (autocorrelation), the Durbin-Watson statistic was used. As a conservative rule, values less than 1 or greater than 3 should pose a problem [21]. The closer to 2 the value is, the better, and for this data the value is 1.532 which is very close to 2. Hence, the assumption has almost been accomplished. Finally, normality of the residuals was checked and found formally distributed about the predicted dependent variables scores. In sum, the diagnostics indicated that the model was valid and reliable. The estimated multiple linear regression model employed to test the relationship between specific-
related variables and the level of disclosure is presented below:

\[ DS = b_0 + b_1 \text{SIZE} + b_2 \text{AGE} + b_3 \text{PROF} + b_4 \text{IND} + e \]

Where

- \( DS \): disclosure score
- \( b_0 \): intercept
- \( \text{SIZE} \): log of total assets
- \( \text{AGE} \): log of actual number of years in business
- \( \text{PROF} \): ratio of net income to equity
- \( \text{IND} \): 1 for traditional companies, 2 for modern companies
- \( e \): residual error

The predictor variables in the theoretical model are described in the Table 1 below.

### V. EMPIRICAL RESULTS

Table 1 (Descriptive information) presents some descriptive data about the companies being analyzed, including the size of the company (assets, equity and sales), and the leverage degree presented in the debt to equity ratio. There is a wide range of variation within the sample indicated by the minimum and maximum values. Specifically, total assets, have considerable dispersion in the scores, as represented by the minimum, maximum and the standard deviation.

<table>
<thead>
<tr>
<th>LEVEL OF DISCLOSURE</th>
<th>TOTAL ASSETS</th>
<th>PROFITABILITY</th>
<th>AGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>N</td>
<td>43</td>
<td>43</td>
<td>43</td>
</tr>
<tr>
<td>Mean</td>
<td>86</td>
<td>411,988,187</td>
<td>-0.20</td>
</tr>
<tr>
<td>Median</td>
<td>89</td>
<td>83,506,457</td>
<td>0.02</td>
</tr>
<tr>
<td>Std. Deviation</td>
<td>7</td>
<td>1,130,535,222</td>
<td>1.19</td>
</tr>
<tr>
<td>Minimum</td>
<td>70</td>
<td>11,536,425</td>
<td>-7.59</td>
</tr>
<tr>
<td>Maximum</td>
<td>97</td>
<td>6,796,800,000</td>
<td>0.69</td>
</tr>
</tbody>
</table>

Table 2 presents the rest of the descriptive information about the companies including the industry type. The means of disclosure index of the dummy variable (industry type) was tested by using Mann-Whitney and t-tests (both tests relate to two-tailed at 5 percent). The results showed no significant difference between the means of disclosure index in terms of industry type. The initial conclusion is that industry type, can not explain the variation of disclosure index.

<table>
<thead>
<tr>
<th>Disclosure Level Range</th>
<th>Number of Companies</th>
<th>Proportion of Sample (Percent)</th>
</tr>
</thead>
<tbody>
<tr>
<td>70-80</td>
<td>7</td>
<td>16.28</td>
</tr>
<tr>
<td>80-90</td>
<td>18</td>
<td>41.86</td>
</tr>
<tr>
<td>90-100</td>
<td>18</td>
<td>41.86</td>
</tr>
<tr>
<td>TOTAL</td>
<td>43</td>
<td>100.00</td>
</tr>
</tbody>
</table>

In addition, just above 41 percent (18 companies) of the total number of companies in the sample scored between 90-100 percent. This indicates that the mandatory disclosure level of the sample companies listed on Athens Stock Exchange is high.

### VI. REGRESSION RESULTS

The results of the multiple regression analysis of the association between the company characteristics and the depth of information disclosure in the financial statements of a sample of listed companies are documented in Table 6 and show that the F-ratio is 2.684 (P=0.046). The result statistically supports the significance of the model. \(R^2 (0.220)\), which is a respectable result, implies that independent variables explain 18.1 percent of the variance in disclosure index. The higher adjusted R square statistic is found in the study of reference 41.1%, reference [3] at 33.2% and reference [4] at 55.7%.

### TABLE IV: MULTIPLE REGRESSION RESULTS

<table>
<thead>
<tr>
<th>Model Summary</th>
<th>Std. Error of the Estimate</th>
<th>Durbin-Watson</th>
</tr>
</thead>
<tbody>
<tr>
<td>R</td>
<td>R Square</td>
<td>Adjusted R Square</td>
</tr>
<tr>
<td>.469</td>
<td>.220</td>
<td>.138</td>
</tr>
<tr>
<td>Anova</td>
<td>Sum of Squares</td>
<td>df</td>
</tr>
<tr>
<td>Regression</td>
<td>504,817</td>
<td>4</td>
</tr>
</tbody>
</table>

Furthermore, the findings show that disclosure compliance is high among listed companies. The analysis indicate that the highest disclosure score obtained is 97, and the lowest is 70. The mean disclosure score is 86 (median 89). This suggest that there is an important improvement in the level of information disclosure of the sample companies compared to the earlier studies (Table 4), such as references [20], [41], [1], [34].

It is also evidence from Table 3 that there were notable variations in the level of information items disclosed. Only 16.28 percent (7 companies) of the sample companies scored between 70-80 percent, while 41.86 percent (18 companies) scored between 80-90 percent.

TABLE 3: DESCRIPTIVE INFORMATION

<table>
<thead>
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<th>Disclosure Level Range</th>
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<tr>
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<td>100.00</td>
</tr>
</tbody>
</table>
Firm size: Firm size coefficient shows that this variable is significantly positively correlated to the disclosure level, thereby suggesting that large firms disclose more data than small ones. This suggests that large Greek companies tend to disclose more information than small ones and can afford to do so [34], since their competitive advantage will not be affected by disclosing more information. The result agrees with references [41], [11], [22], [14], [46], [15], [16], [17], [18], [45], [41].

Firm age: It seems that firm age does not explain the variation in disclosure level among the Greek firms while the age variable is not significant. A similar result was found by reference [4].

Profitability: From the results, none of the above performance-related variables provides an explanation of the disclosure level variation. The observations are not surprising as reference [28] indicated that performance could serve as a yardstick for the information asymmetries between management and shareholders, thus, the direction of the relationship is unclear. Evidence from earlier studies is also mixed as discussed previously. In particular, the conclusion of this study concurs with the findings of references [45], [44], [39].

VII. CONCLUSION AND LIMITATIONS

Since Greece adopted the IASs in 2004 in an attempt to improve the quality of financial reporting in the country, relatively few attempts have been made to investigate the depth of information disclosure and factors that may influence the information disclosure of listed Greek companies. This study, therefore, set out to examine such a relation. Consequently, a group of company characteristics was tested to determine the depth of information disclosure.

To investigate this association, a sample of non-financial Greek firms listed on the Athens Stock Exchange were used. An additive and unweighted disclosure index, compiled of 100 mandatory items, was constructed to assess the depth of information disclosure of the sample companies. Moreover, the determined companies’ attributes were then regressed against the constructed disclosure index to recognize factors that may influence the depth of information disclosure.

mandatory disclosure practices of Greek companies appear to be extensive. Specifically, the study reveals that firms, on average, report 86% of the mandatory information. Although improvements in mandatory disclosure level can still be made. This is because there is evidence that some companies do not provide sufficiently extensive mandatory information required (minimum disclosure score is 72%). Improvements can be achieved by introducing educational policies to raise the awareness of companies about their disclosure responsibilities.

Size is a dominant corporate characteristic in explaining mandatory disclosure practices. The results of the regression analysis reported a significantly and positively relation between size and disclosure level.

On the other hand, it is found out that firm age and profitability have no effect on mandatory disclosure level.

The study provides several contributions to accounting research and to accounting practice and regulation.

It also suggests that the Greek Commission of Stock Exchange, who monitors the quality of disclosure, should improve their review of the disclosure content of annual reports to ensure higher levels of compliance with mandatory disclosure requirements.

The limitation of the research is a single year and a single country. In order to understand the nature of overall disclosure, it is necessary to undertake a study taking 5 or 10 years’ data in order to investigate whether the quality of disclosure has improved over time. The present study is limited to only 50% of the companies listed on the Greek stock exchange. Future research could investigate disclosure performance of all the listed companies. Research could also explore the variations in disclosure between listed and unlisted companies. Moreover, firm characteristics like liquidity, audit firm, industry type should be investigated as determinants of mandatory disclosures.

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