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Corporate Governance, Financial Management Decisions and Firm Performance: Evidence from the Maritime Industry

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Corporate Governance, Financial Management Decisions and Firm Performance: Evidence from the Maritime Industry

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Abstract

This study investigates the relation between corporate governance with (i) financial management decisions such as earnings management and sub-optimal investment, and (ii) firm performance in maritime firms. The study reveals that important corporate governance measures, such as insider ownership, board size, presence of corporate governance committees, the percentage of directors serving on the boards of other firms and CEO duality, are associated with financial management decisions and firm performance. The associations revealed can potentially assist in mitigating agency problems and improving financial management decisions and performance in maritime firms.

Key words: maritime firms, corporate governance, earnings management, sub-optimal investment, firm performance

Corporate Governance, Financial Management Decisions and Firm Performance: Evidence from the Maritime Industry

1. Introduction

The globalization of the world economy along with the increased competition and the rapid technological advancements in the freight transportation markets, affected the financing environment of the maritime industry, and led more companies to rely on capital markets to finance investment opportunities (Syriopoulos and Theotokas, 2007, Grammenos and Papapostolou, 2012a). Capital markets, however, appreciate the quality of a corporate governance system because it moderates the extent of the agency problems. Agency problems, arise from either the separation of ownership and management (Jensen and Meckling, 1976) or from conflicts of interest between controlling and non-controlling shareholders (Bebchuk and Weisbach, 2010), and may probe self-interested managers (controlling shareholders) to act against the best interests of shareholders (non-controlling shareholders). Agency theory suggests that shareholders may alleviate agency problems by instilling corporate governance mechanisms (Jensen and Meckling, 1976). Research output on the impact of corporate governance on firm policies and performance has been extremely prolific in the general cross section of industrial firms (see, among others, Gompers et al., 2003, Giroud and Mueller, 2011, Brown et al., 2011). Nonetheless, whether the presence of corporate governance mechanisms are effective in mitigating agency problems in very specialized sectors, such as the maritime industry, remains an open empirical research issue which we investigate in this study.

A strong motivation for this study emanates from the recent trends towards Initial Public Offerings (IPOs) in the maritime industry (e.g. Grammenos and Papapostolou, 2012b) coupled with the inherent uncertainty and volatility of the shipping freight markets. Such an

environment, however, exacerbates agency problems and make it easier for managers to engage in (harmful) earnings management practices which could have been, otherwise, mitigated in the presence of a strong corporate governance system (e.g., Larcker et al., 2004, Klein, 2002, Xie et al., 2003). In addition, the maritime industry is characterized by capital intensity as billions of dollars are invested every year for the building and purchase of ships that are high value assets reaching several hundred million for specialized vessels (e.g. LNG ships). In an era of economic downturn it is crucial for maritime firms to have a good understanding of the mechanisms that will safeguard optimal investment decision-making. On this basis, it is important to understand the relation between corporate governance and investments in the maritime industry since the literature indicates that strong corporate governance can mitigate sub-optimal investments in the cross section of industrial firms (e.g., Masulis et al., 2007, Harford et al., 2008, Richardson, 2006, Bohren et al., 2009). Finally, various other maritime industry unique characteristics, such as rising fuel prices and slowdown in global trade intensify the need for effective decision making and at the same time raise the sensitivity of those decisions to firm performance.

The notable lack of comprehensive evidence as to these relationships in the maritime industry renders it an empirical issue of significance. Therefore, in this study, we focus on the maritime industry to investigate: (i) the impact of corporate governance on financial management decisions such as earnings management and sub-optimal investment decisions, and (ii) the relation between corporate governance and maritime firms' performance.

Previous studies examining corporate governance in maritime firms are not only limited in number, but also leave many questions and empirical issues unanswered, especially when it comes to the nexus of corporate governance practices with financial management decisions pertaining to earnings management, investments and firm performance. In addition, to the

best of our knowledge, all previous studies in the context of the maritime industry have chosen a very narrow sample of firms focusing for instance on either Greek shipping companies (e.g. Koufopoulos et al, 2010; Syriopoulos and Tsatsaronis, 2011) or Scandinavian shipping companies (e.g. Randoy et al, 2003). Studies that employ unsatisfactorily small samples, constrained at the same time by short sample periods, may provide results that are qualitatively indicative for some empirical relationships but most of the times may be far from being statistically generalizable even to the geographically constrained population from where the samples have been chosen.

In addition, given the presence of large shareholders in many shipping companies, this industry has a concentrated ownership structure with family owners in many firms as well. Based on theory, blockholders can exert a positive or a negative effect on firm performance; in fact, depending on the percentage ownership and the type of the blockholder, the empirical literature reports alignment (Shleifer and Vishny, 1986) or entrenchment effects (La Porta et al., 1999). Moreover, the family incentive alignment hypothesis argues that family relationships among owners and managers create advantages (Fama and Jensen, 1983) and family controlled firms may operate more efficiently than others (McConaughy et al., 2001). Nevertheless Morck et al. (1988), and Smith and Amoako-Adu (1999) provide evidence of a negative effect of family (insider) ownership on corporate performance. The idiosyncratic nature and characteristics of the maritime industry above provide another motivation and justify further research of the effects of corporate governance.

Despite the voluminous body of general corporate governance literature only a small part deals with industry specific samples and those tend to focus almost exclusively on the banking sector. As argued in Andreou et al. (2012), one benefit of focusing on a single

industry is the mitigation of possible inter-industry variations that usually tarnish inferences of studies that span several industries. This study contributes to the field by focusing solely on the maritime industry which is an industry with unduly specialized environmental and operational characteristics. In particular, concentrating on the maritime industry provides the opportunity to examine corporate governance in a unique macroeconomic setting of market uncertainty, volatility and capital intensity found to influence financial management (Drobetz et al., 2012) and concentrated ownership found to influence firm performance (Tsionas et al., 2012).

Apart from the direct relevance of industry-specific results, focusing on the maritime industry also provides the opportunity to directly control for unique industry related factors improving confidence in the validity of the theoretical and practical implications of the study. It is particularly important to focus on the maritime industry as it is characterized by idiosyncratic factors that place added significance to strong corporate governance mechanisms (which may not be apparent when one considers large and general cross sections of firm observations). One issue of concern is the lack of transparency in ship registration and ownership. Anonymity of ownership is a standard industry practice affected through the widespread use of flags of convenience (international ship registers). The establishment of holding firms in international ship registers provides the possibility to adopt lax corporate governance practices. For instance, even a company like Diana Shipping that is listed on NYSE but incorporated in the Marshall Islands has published a statement (available from the company's website) of significant differences in corporate governance practices in relation to those required by NYSE, but exempted from them.[1] On

[1] Diana Shipping does not fully comply with the NYSE corporate governance requirements such as, among others, the regular meeting of non-management directors in executive sessions, the establishment of a nominating/corporate governance committee of independent directors and a committee charter specifying the purpose, duties and evaluation procedures of the committee, the establishment of an audit committee with a minimum of three members and the requirement to adopt and disclose corporate governance guidelines.

these grounds, we expect that corporate governance in the maritime sector will have different effects to those in the general industry norms and this will be reflected in the firms' corporate practices as well as in the investors' perceptions about those firms.

The paper is organized as follows. Section 2 presents a review of the maritime related literature on corporate governance. Section 3 synthesizes the theoretical literature to develop the conceptual framework for the study. Section 4 presents the dataset and describes the variables deployed in the study. Section 5 analyzes the empirical findings, provides a discussion of the results and assesses their robustness. Finally, section 6 provides a conclusion that includes implications for further research and practice.

2. Literature Review

As previously mentioned studies that deal with corporate governance in the maritime industry are limited in number and constrained in the magnitude and depth of their investigation thus limiting their potential for generalizability.

Syriopoulos and Theotokas (2007) study a single maritime company and find that corporate governance has a central role to play, yet the various inter-relationships between governance and short-term and long-term financial returns remains an un-answered question by the authors' own admission (probing for additional research that would employ a larger data set). In an earlier study, Randoy et al. (2003) examined the effect of three corporate governance mechanisms, namely, founding family CEO, board of director ownership and board independence on maritime firm financial performance. It is found that: (i) maritime firms with a founding family CEO have better financial performance than maritime firms with a non-founding family CEO, (ii) a high level of board independence improves profitability in maritime firms and (iii) there is no significant relation between the

level of board of director ownership and maritime firm profitability. More recently, the study by Syriopoulos and Tsatsaronis (2011) utilizes Greek shipping firms cross-listed on NYSE and/or NASDAQ. These authors found a positive relation between founding family CEO and financial performance, board members' equity ownership and financial performance, albeit at a declining rate, and a negative relation between board independence and shipping firm financial performance. In addition, Syriopoulos and Tsatsaronis (2012) investigated CEO duality/separation and found that the choice of different persons to serve as CEO and chairman exerts a positive impact on the financial performance of shipping firms in support of agency theory. In another related study, Koufopoulos et al. (2010) investigate the effects of organizational demography, organizational size, ownership type, board size, CEO duality and CEO dependence/independence on board configuration. They find that smaller boards enhance the value in Greek shipping companies. This finding aligns with the norm published in the conventional general corporate finance literature which supports a significantly negative relation between board size and corporate performance (e.g., Jensen, 1993). In contrast recently published studies find no relationship between board size and firm performance (e.g., Wintoki et al., 2012). Such conflicting findings add to the argument in favour of examining corporate governance issues across a broader sample of maritime firms to enhance our understanding of the exact relations in this industry. Overall, data and sample period limitations of the extant studies provide us with ample ground for valuable contributions to address specific gaps and research limitations in this strand of literature.

Our study contributes to (and complements) all abovementioned cases by focusing on a US listed sample of maritime firms which is much larger and covers a longer time period than what previous studies have employed for empirical investigation. Further, and equally important, we consider a larger number of corporate governance mechanisms, whereas

some of the variables that we study differ significantly from the ones employed in the past making further contributions to the extant literature. Specifically we have adapted to a large extent the comprehensive framework for evaluating corporate governance developed by Standard & Poor's (2002) and the OECD Steering Group of Corporate Governance (2009). Following this contextual framework and consistent with prior governance literature (e.g., see Ashbaugh-Skaife et al., 2006 and Charitou et al., 2007, among others), corporate governance is reflected in three main categories, viz., (i) ownership structure, (ii) board structure and processes, and (iii) CEO's influence on the board. Following these three dimensions of corporate governance we hand collect relevant empirical proxies to capture the major attributes of governance within each dimension.

3. Conceptual Framework and Hypothesis Development

Corporate governance involves a set of legal, institutional and cultural procedures that affect the way in which the corporation is administered or controlled. Its importance is underpinned by the multi-disciplinary and voluminous literature in the field (see Bebchuk and Weisbach, 2010, and Brown et al., 2011 for comprehensive reviews in the financial management context). Accordingly, corporate governance is crucial in every major strategic and operational decision of the firm. Largely, prior literature has examined the link between corporate governance and earnings management (e.g., Klein, 2002, Xie et al., 2003), sub-optimal investment decisions (e.g., Masulis et al., 2007, Harford et al., 2008, Richardson, 2006, Bohren et al., 2009) and firm performance (e.g., Bhagat and Black, 2000, Weir et al., 2002) using rather large panels of data intermingling many different industries under the same setting. Along this line, prior studies have posited that the effectiveness of corporate governance is an important determinant of financial management decision making process and more broadly of firm performance. This study considers the effectiveness of corporate governance in a very particular industry, namely US listed

maritime firms, in relation to two financial management decisions: earnings management and sub-optimal investment decisions. Furthermore, we also examine the relation between corporate governance and maritime firm performance.

The three corporate governance dimensions are reflected in particular empirical variables as follows. Ownership structure is reflected in three variables viz., (i) the percentage of shares held by institutional investors, (ii) the percentage of the company's stock owned by insiders and (iii) the number of outside blockholders holding more than 5% of the company's stock. Board structure and processes is captured using five variables viz.: (i) board size (ii) the presence of a corporate governance committee, (iii) the quality of the audit committee (iv) outside directors, and (v) busy directors. Finally, CEO's influence on the board is measured by assessing whether the positions of the CEO and the chairman of the board are held by the same person.

3.1 Corporate governance and earnings management

Prior literature has long recognized that firms use accounting standard's discretion to manage reported earnings. Early research focused on the role of accruals management on executive bonuses (e.g., Healy, 1985). Later research examined the use of earnings management, among others, prior to IPOs or seasoned equity offerings (Teoh et al., 1998), insider sales of shares (Beneish and Vargus, 2002) and earnings restatements (Burns and Kedia, 2006).

Such (sub-optimal) managerial behavior assumes that the market participants cannot perfectly detect earnings management, perhaps due to high information asymmetry, and more broadly due to high agency risk problems. Agency theory, however, suggests that a sound corporate governance system helps alleviate agency risk problems because it bridges

the information asymmetry gap between shareholders and managers (Shleifer and Vishny, 1997). Surprisingly, prior evidence on the relation between governance and earnings management is sparse (Cornett et al., 2008). Largely, prior studies focused on the *direct* relation between governance and potential outcomes of earnings management, such as earnings restatements or fraud (e.g., Dechow et al., 1996). Only limited evidence exists on the role of governance in mitigating breakdown use of accounting standard's discretion. More specifically, Klein (2002) and Xie et al. (2003) find that the quality of board structure, particularly that of the audit committee, is negatively related to discretionary accruals. Finally, Cornett et al. (2008) find that institutional investors obstruct earnings management.

The relatively recent trend towards shipping IPOs may exacerbate earnings management in the sense that this agency conflict is more likely to occur around specific corporate events as companies tend to manage earnings to facilitate their desired goals (Hall and Stammerjohn, 1997). In addition, the volatile and uncertain nature of freight rates in the maritime industry may influence decisions with respect to earnings management as it would be relatively easier for managers to take advantage of heightened information asymmetry, characterizing the industry, and conceal such behavior.

Hence, in the same line of reasoning with prior literature, we expect higher levels of institutional ownership and blockholders, the presence of an audit committee, greater board independence, and the separation of CEO and Chair positions, as good corporate governance practices (i.e., preventing earnings management). For instance, Klein (2002) reports a negative relation between board independence and abnormal accruals while reductions in board or audit committee independence associate with increases in abnormal accruals. Xie et al. (2003) find that a lower level of earnings management is associated with

greater independent outside representation on the board and an active and well-functioning audit committee. Rajgopal et al. (2002) report evidence that earnings informativeness increases with institutional ownership since this category of investors have higher levels of sophistication and better information in monitoring the quality of a firm's reported earnings (see also Karamanou and Vafeas, 2005). Yeo et al. (2002) also report that higher block holding is associated with fewer opportunities for earnings management. In addition, the boards' ability to monitor the corporate reporting process is also expected to be more effective when there is separation of the CEO and Chair positions (Dechow et al., 1996).

Regarding insiders' ownership, board size, the presence of a corporate governance policy and busy directors we offer no directional expectations regarding their association to earnings management either because of conflicting results in prior literature or due to the absence of significant empirical evidence to support a directional effect. For instance, Warfield et al. (1995) find that the levels of bad earnings practices decrease as managerial ownership increases. In contrast, Yeo et al. (2002) show that the informativeness of earnings does not always increase with inside ownership since its directional effect is conditional on the insiders' stake at the firm. On different grounds, Yermack (1996) and Eisenberg et al. (1998) find that smaller boards are more effective than larger boards, whilst Dalton et al. (1999) documents the opposite effect (see also Wintoki et al., 2012); therefore the impact of board size on the boards' ability to monitor the reporting process is ambiguous. Finally, Fich and Shivdasani (2006) report that boards with busy directors are associated with weaker corporate governance resulting into weaker profitability without explicitly studying the relation to earnings management practices, whilst Field et al. (2013) find that busy directors may be less effective monitors, yet their experience and contacts arguably make them excellent advisors.

3.2 Corporate governance and sub-optimal investments

One of the most crucial aspects of financial management is the investment decision. Investments should be made with the view of maximizing shareholder's wealth. In practice, however, managers may have incentives to pursue short term, sub-optimal investments, in order to "cater" for investor sentiment and as a result invest in unbeneficial projects (e.g., Bebchuk and Stole, 1993). Recent empirical evidence supports this catering hypothesis. Particularly, McNichols and Stubben (2008) find that managers over-invest in fixed assets during periods of inflated performance. Similarly, Kedia and Philippon (2009) provide evidence that firms hire and invest excessively when earnings are overstated. Polk and Sapienza (2009) find that discretionary accruals and firm investment are positively related. Finally, research has also provided behavioral explanations for the outcome of sub-optimal investments; for instance, Chen and Lin (2013) find that an under-invested firm with a CEO that has a higher level of managerial optimism improves the firm's investment efficiency by reducing the amount of underinvestment, thereby increasing firm value.

Along this line, when decision-makers act in their own best interests two well-known inefficiencies may occur: under-investment and over-investment. Agency theory suggests that shareholders may limit such sub-optimal investments decisions, via the establishment of a strong corporate governance system. In this respect, there is a general consensus in the literature as to the influence of corporate governance for mitigating value destructive bought investments such as mergers and acquisitions. For instance, Masulis et al. (2007) provide evidence that acquirers with strong governance exhibit more positive announcement returns to their bids. However, it is still unclear whether governance can curb sub-optimal investments that occur internally via capital expenditures (Billett et al., 2011). Harford et al. (2008) and Richardson (2006) suggest that poor governance associates with greater industry-adjusted investment. Similarly, Gompers et al. (2003) find a positive

relation between capital expenditures and the GIM governance Index. In contrast, Bertrand and Mullainathan (2003) and Giroud and Mueller (2011) suggest that poor governance is associated with under-investment. Accordingly, the relation between governance and under- and/or over-investment remains largely unresolved.

In the maritime context the evidence of the relation between corporate governance and investment is limited, despite the considerable capital outlays taking place in the newbuilding and second-hand markets, as well as in supporting ship operations. An exception is the study by Syriopoulos and Theotokas (2007) that address relevant issues in the context of mergers and acquisitions and suggests that a poor corporate governance structure adversely affects corporate growth resulting in greater probability of becoming a takeover target. Accordingly, this study aims to investigate empirically the relation between governance and under-/over - investment in the maritime industry.

We tentatively expect that in our maritime sample firms with smaller board size, the presence of a corporate governance committee, the presence of busy directors and the separation of the CEO and Chair positions represent practices of good corporate governance which will help to prevent sub-optimal investment decision making. Regarding board size, Yermack (1996) presents evidence that a small board of directors is more effective in taking certain (investment) decisions that are enhancing the firm's performance. Prior literature suggests that serving on the boards of other firms (i.e., busy directors) enables directors to gain experience, expertise and skills that are instrumental for efficient decision making (e.g. Ashbaugh-Skaife et al., 2006, Field et al., 2013), contributing in this respect to higher valuations through a better decision making process. Along the same line of reasoning the presence of a well functioning corporate governance committee can enhance the efficiency of the investments. Masulis et al. (2007) report empirical evidence

that when the CEO is holding also the Chair position leads to value destructive investment decisions, most probably caused by manifestations of empire building behaviors.

Regarding all corporate governance variables that comprise the firm's ownership structure, the quality of the audit committee and outside directors, we do not make specific predictions regarding their association to sub-optimal investments since prior research is not conclusive of a uniform relation. Shleifer and Vishny (1997) argue that shareholders with significant ownership positions have the financial interest and ability to evaluate investment decisions and corporate policies and to protect all shareholders' interest from self-serving managerial behavior relating for instance to sub-optimal investments. Yet there is no consensus in the literature about the net sum of these governance dynamics on investments. For instance, Edmans (2009) and Cornett et al. (2008) highlight the crucial monitoring function of institutional investors in obstructing earnings management and maintaining a long-run (value maximizing) perspective, while Shivdasani (1993) finds that the likelihood of hostile takeovers increases in the presence of blockholders. A competing view, however, is that large outside shareholders may also act as speculators who may pressurize management to engage in short-term investment strategies to maximize short-term earnings (Bushee, 1998, 2001). In terms of insider ownership, greater stakes of insiders in the firms' stock may incentivize them to protect the shareholders' interests, yet research has also shown that certain levels of insider ownership may foster incumbent management behaviors and managerial entrenchment could lead into sub-optimal investment actions (see discussions in Jensen, 1986, Shleifer and Vishny, 1986, Morck et al., 1988, McConnell and Servaes, 1990, Hermalin and Weisbach, 1988, La Porta et al., 1999). In terms of outside directors, there is considerable controversy as to whether outside directors matter in decision making that affects firm performance since data provide only very weak associations (e.g., Bhagat and Black, 2002; Hermalin and Weisbach, 2003).

More recently, Duchin et al. (2010) report a relation between the addition of outsiders in the board and firm performance, albeit this relation is strongly conditional on the cost of acquiring information about the firm.

3.3 Corporate governance and firm performance

A considerable body of literature examines the relation between governance and firm performance. Early empirical research examines the relation between measures of financial performance and individual mechanisms, including: board independence (Morck et al., 1988, Hermalin and Weisbach, 1991), ownership concentration (Cubbin and Leech, 1983), and the structure of CEO compensation (Mehran, 1995). Within this context there are mixed results as to the influence of various governance mechanisms on performance. For instance, certain authors suggest that board independence is positively related to performance (DeFond et al., 2005, Davidson III et al., 2004) whereas others find no such relation (Bhagat and Black, 2000, Hermalin and Weisbach, 1991). A potential explanation for the conflicting results may relate to the fact that performance depends on the efficiency of the overall corporate governance system, rather than on the efficiency of individual mechanisms. Studies attempted to address such problems by analysing a broader spectrum of governance mechanisms (Bhagat and Black, 2000, Weir et al., 2002).

Studies have shown that corporate governance may have an effect on operating and market variables of firm performance. For instance, according to Brown and Caylor (2004) effective corporate governance reduces the amount of discretion or control that managers have over allocating investors' funds (Shleifer and Vishny, 1997) suggesting that better-governed firms have better operating performance. On the other hand Gompers et al. (2003), Bebchuk and Cohen (2004) and Bebchuk, et al. (2004) show that firms with

stronger stockholder rights have higher Tobin's Q, suggesting that better-governed firms are more valuable.

In the maritime context the studies by Randoy et al. (2003), Syriopoulos and Tsatsaronis (2011), Koufopoulos et al. (2010) and Tsionas et al. (2012) are indicative of a varied relationship. For instance, Koufopoulos et al. (2010) find that small boards in Greek shipping companies are more value enhancing for the firms. Randoy et al. (2003) found that there is no significant relation between the level of board of directors ownership and maritime firm profitability, contrary to the predictions of agency theory. The great uncertainty that surrounds the relation between governance and firm performance in the maritime industry warrants motivation for further investigation.

Following the general accounting and finance corporate governance literature, we tentatively expect that in our sample of maritime firms' a higher percentage of the company's stock owned by insiders, the presence of a corporate governance committee and boards with more busy directors capture good corporate governance practices which should enhance firm performance. McConnell and Servaes (1990) find a positive relation for insider ownership, but diminishingly so as ownership becomes more important (see also discussions in Hermalin and Weisbach, 1988, Holderness et al., 1999). Regarding the presence of a corporate governance committee it is expected that it should increase the responsibility on behalf of the board members and heighten their legal liability in the process of decision making which could facilitate better monitoring, therefore reducing management opportunism behaviors. Also recent literature finds that a director who sits on other boards and could be seemingly coined as being a "busy director" is a measure of board competency and expertise which can enhance performance. In this vein, Ashbaugh-Skaife et al. (2006) report that firms receive benefits in the form of better credit ratings by

having formal governance policies and directors in their boards who at the same time sit on other boards outside the company (see also Field et al., 2013).

Regarding the number of the percentage of shares held by institutional investors, large blockholders, board size, the quality of the audit committee, outside directors, and CEO duality we do not form any directional expectations regarding their association to firm performance since prior literature has not definitively established whether their impact is positive or negative. For instance, Smith (1996) and Del Guercio and Hawkins (1999) find a positive relation between institutional investor ownership and various measures of firm performance, however, Agrawal and Knoeber (1996), Karpoff et al. (1996), and Faccio and Lasfer (2000) find no such significant relation; thus, the impact of institutional investor stock ownership on firm performance is still unclear. Several papers indicate that large outside blockholders play a role in management decisions (e.g., Shleifer and Vishny, 1986), yet studies like the one by McConnell and Servaes (1990) which examine the relation between Tobin's Q and blockholder ownership cannot establish a strong positive relation (see also Mehran, 1995). In the mainstream corporate governance literature, smaller boards have generally been considered to be more effective in decision-making and to promote better decision-making which can lead to higher firm performance (e.g., Yermack, 1996). Yet, different studies in the maritime industry (e.g., Randoy et al., 2003, Syriopoulos and Tsatsaronis, 2011, Koufopoulos et al., 2010, Tsionas et al., 2012) have reported conflicting empirical evidence of the relation between board size and firm performance, therefore we refrain from taking a directional expectation about this relation in the maritime industry. Karamanou and Vafeas (2005) report evidence that more effective audit committee structures are associated with higher financial disclosure quality, yet there is no direct empirical relation with respect to firm performance (see also Klein, 2002). A large number of recent studies that examine the relationship between firm performance and corporate

governance provide no concrete evidence that a more independent board leads to better firm performance (e.g., Bhagat and Black, 2002, Bhagat and Bolton, 2008). Finally, other studies report that the net effect of the impact of CEO duality on firm performance cannot be estimated to be uniformly good or bad (see for instance, Finkelstein & D'Aveni, 1994 and Dalton, 1998).

4. Dataset and Variable Description

4.1 Dataset

The sample frame for this study was generated from COMPUSTAT and included maritime firms listed in the US over the period 1999-2010. Maritime firms are those with business activities in deep sea foreign transportation of freight, falling into several categories such as bulk, container, general cargo, tanker, offshore, and vehicle carrier. The sampling frame consisted of 46 firms with 273 firm-year observations. Table A.1 in Appendix reports the number of non-missing and missing observations for all variables utilized in our regression analysis, whereas Table A.2 lists the names of the companies that survived in our analysis. Due to data availability limitations, primarily regarding missing corporate governance measures as displayed in Table A.1, the final sample with full information for analysis ranges from 26 to 32 firms representing 97 to 114 firm-year observations (depending on the regression model specification employed).

Untabulated results show no temporal concentration of sample firms in any one year. Largely, however, firm-year observations fall in the period 2005-2010 with the number of firm-year observations ranging from 12 to 21 per year. Such evidence is consistent with Grammenos and Papapostolou (2012a; b) that document an increase in the number of maritime firms IPOs in 2005.

4.2 Corporate Governance Measures

The sources of corporate governance data were derived from BoardEx. Missing data were also supplemented by hand-collecting the necessary information from EDGAR's annual reports and proxy statements. The measures used for capturing the three corporate governance dimensions were defined as follows. Ownership structure was captured by: (i) the percentage of the company's stock owned by insiders such as officers or directors, %INSIDER, (ii) the percentage of shares held by institutional investors, %INST, and (iii) the number of outside blockholders holding more than 5% of the company's stock, BLOCK. Board structure and processes was captured by: (i) board size defined as the number of the members of the board of directors, BOARD_SIZE, (ii) the presence of a corporate governance committee[2] reflected in a dummy variable that equals one if the firm has a corporate governance committee, and zero otherwise, G_COM, (iii) the quality of the audit committee depending on the number of audit committee members, mirrored in a dummy variable that equals one if the number of members in audit committee lay above the median, and zero otherwise, Q_AUDIT, (iv) the percentage of outside directors that serve on the firm's board, %BRD_IND, and (v) the percentage of directors that serve on the boards of other firms, what is usually referred to as busy directors, %BUSY_DIR.[3] Finally, CEO's influence on the board is measured using a dummy variable that equals one when the positions of the CEO and the chairman of the board are held by the same person, and zero otherwise, DUALITY.

INSERT TABLE 1 ABOUT HERE

[2] The Corporate governance committee plays an important role in overseeing matters of corporate governance for the board, including formulating and recommending governance principles and policies. The committee is charged with enhancing the quality of nominees to the board and ensuring the integrity of the nominating process.

[3] It is observed that there is little variation in the number of the audit committee members therefore it was decided to use a dichotomous variable. The quality of the audit committee, Q_AUDIT, is computed using the full set of information before screening out observations with missing data on any of the variables needed for the analysis. The mean (median) number of audit committee members is 2.809 (3.00).

Table 1 presents the descriptive statistics of the nine corporate governance measures used in the study. Although the number of the observations used in the multivariate analysis varies depending on the model specification, Table 1 presents descriptive statistics for the governance measures used in the earnings management analysis which explores the largest available number of observations, totaling 114. Regarding the ownership structure, on average, more than 20% of shares are held by insiders, about one-third of the companies' stock is owned by institutions, while the number of blockholders that own more than 5% of the company's stock is two. With respect to the board structure and processes measures, it is found that the average size of the board is made up of seven members, about 61% of the observations have a corporate governance committee in place and in 83% of the observations of the sample the audit committee has more members than the industry median firm. In addition, about 72% of the members of the board are outsiders and around 66% of the directors serve on the boards of other firms. Finally, regarding the CEO's influence on the board, it is found that about half of the sample firms have the same person holding the positions of the CEO and chairman of the board at the same time. Overall, except for board size, board independence, and number of blockholders, the average tendency of governance measures in the sample tends to deviate from what is reported in prior literature on US industrial firms (e.g., Larcker et al., 2004, Ashbaugh-Skaife et al., 2006). Specifically, the sample firms present significantly higher (lower) concentration of stock ownership by insiders (institutional investors), more observations having a corporate policy committee in place, a higher percentage of board members to hold positions in boards of other firms, and a lower incidence of CEO duality. These characteristics provide further motivation to investigate the empirical relationships in the context of maritime financial management decisions since it is intriguing to see whether these differences can indeed tout better corporate governance practices that may help resolve agency problems

pertaining to earnings management, sub-optimal investment decisions, and firm performance.

INSERT TABLE 2 ABOUT HERE

Table 2 presents the correlation coefficient matrix of the corporate governance measures. The upper diagonal of this table presents Pearson product-moment correlations, while the lower diagonal presents the Spearman rank-order correlations. There are interesting observations to be made by studying the correlations between corporate governance measures within each category considered. Specifically, it is observed that institutional ownership (%INST) is positively related to the number of outside blockholders (BLOCK), which is expected as these two measures are considered to be complimentary to each other with respect to the role of ownership structure in mitigating agency problems. In addition, inside directors ownership (%INSIDER) is negatively related to institutional ownership (%INST) and the number of outside blockholders (BLOCK), and therefore it can be considered as a substitute mechanism; thus, maintaining a balance with respect to decision making objectives between large outside investors and insiders whose incentives are tight up to the firm's stock performance. Regarding the board structure and processes category, largely the measures are positively related; indicating that they are complements to each other and, in this respect they contribute to mitigating agency conflicts that arise between shareholders and managers. Finally, CEO duality is in general negatively related to the ownership structure and board structure and processes measures, providing evidence that CEO duality in maritime companies facilitates a substitute corporate governance mechanism which can potentially either amplify or depress the information asymmetry problem between shareholders and the top management team.

It is worth noting that in most of the cases the correlation coefficients are relatively low with values ranging from around -30% to +30%. This suggests that inclusion of all nine corporate governance variables in the regression analysis did not raise any multicollinearity issues.[4]

4.3 Control variables

Depending on the regression model considered, a different set of control variables is employed in accord with prior literature. In the earnings management regression models the following control variables are used: firm size, SIZE, return on equity, ROE, financial leverage, LEV and cash holdings, CASH. These control variables have been considered in the regression analysis by various researchers (see for instance, Dechow et al., 1995, McNichols, 2002). In the sub-optimal investment regression models (also in the over-investment or under-investment specifications) in accord with Richardson (2006), free cash flow, FCF, is used as a control variable. In the firm operating performance regression models, besides SIZE, CASH and LEV, the following control variables are also included: firm age, AGE, and the number of the firm's business-segments, NUM_SEG. Finally, in the firm valuation performance regression models, return on assets, ROA, is employed as an additional variable. Control variables of these models follow the same reasoning as in Larcker et al. (2004)

All control variables, except AGE are computed using COMPUSTAT. AGE is hand-collected from the firm's financial statements and it is defined as the log of the number of years since the firm's incorporation. SIZE is the log of total assets (item 6), CASH is cash

[4] We have investigated the Variance Inflation Factor (VIF) in our sample. VIF quantifies the severity of multicollinearity in an ordinary least squares regression analysis. In our case, all VIF values are well below the generally accepted cut-off value of 10.

and short-term investments (item 1) to book value of total assets (item 6). FCF, is defined as operating income before depreciation (item 13) minus interest expense (item 15), minus taxes (computed as item 16 minus the change in item 35), minus preferred dividends (item 19), and minus common dividends (item 21). LEV is the book value of debt (item 9 + item 34) divided by the sum of the book value of debt (item 9 + item 34) and the book value of equity (item 60), ROE is net income (item 172) to book value of equity (item 60), ROA is operating income before depreciation (item 13) divided by total assets (item 6), and NUM_SEG is the number of the firm's business-segments collected from COMPUSTAT's business information – segment company file.

5. Empirical Results

This section presents and discusses the results of the empirical analysis examining the relation between the governance measures and two financial management decisions: earnings management and sub-optimal investments. In addition, this study also examines the relation between governance and maritime firm operating and valuation performance. Initially, the study describes the findings using a baseline model that includes only the control variables in the regression analysis. Following this, the analysis also includes the full set of corporate governance measures. Note that all regression models include year fixed effects and standard errors adjusted for clustering at the firm level to control for potential bias in the estimates when the residuals of a firm are correlated across firms (Petersen, 2009). In addition, all continuous variables are winsorized at the extreme 2%.

5.1 Corporate governance and earnings management

As a surrogate for earnings management, this study relies on measures of abnormal accruals (e.g. Klein, 2002). Unlike cash flows, accruals are more subject to managerial incentives and thus are potentially more useful for assessing the quality of earnings. Consistent with

prior literature, discretionary or abnormal component of total accruals are computed using the modified Jones (1991) model of Dechow et al. (1995). Particularly, in the same line of reasoning as in Larcker et al. (2004), for each year, the following regression model is estimated:

$$TA_{i,t} = \alpha_1 + \alpha_2(\Delta Sales_{i,t} - \Delta AR_{i,t}) + \alpha_3 PPE_{i,t} + \alpha_4 BM_{i,t} + \alpha_5 CFO_{i,t} + \varepsilon_{i,t}.$$

In the above specification, total accruals ($TA_{i,t}$) is the difference between current operating cash flows (item 308) and income before extraordinary items (item 123), $\Delta Sales_{i,t}$ is the change in sales (item 12) from the previous to the current year, $\Delta AR_{i,t}$ is the difference in accounts receivable (item 302) from the start to the end of the year, $PPE_{i,t}$ is the end of fiscal year property, plant and equipment value (item 7), $BM_{i,t}$ is the book to market value measured as the ratio of the book value of common equity (item 60) to the market value of common equity (item 25 x item 199), and finally, $CFO_{i,t}$ the current operating cash flows (item 308). $BM_{i,t}$ and $CFO_{i,t}$ were included because McNichols (2000, 2002) and Dechow et al. (1995) find that high growth firms and firms with extreme performance exhibit large accruals. In order to estimate the above model, all variables are deflated by average total assets (item 6) using the corresponding values from the start to the end of the fiscal year. Moreover, we require at least six observations per year. The residual value derived from the model is the abnormal accruals.

Panel A of Table 3 reports the descriptive statistics for two dependent variables, abnormal accruals, ACCRUALS, which captures directional earnings management tendency, and absolute abnormal accruals, ABS_ACCRUALS, which captures non-directional earnings management tendency. Panel A, also reports descriptive statistics for the control variables used in the regression models. For this sample of 114 observations, as expected from our

construction method, the average abnormal accrual is close to zero, 0.003, while the mean absolute value of abnormal accruals is 0.027.

Panel B of Table 3 presents the results for the abnormal accruals variable (ACCRUALS). Regression model (1) includes only the control variables. The model exhibits an adjusted R^2 of 0.031. As shown, SIZE and ROE are negatively related to directional accruals, consistent with the view that larger and more profitable firms exhibit lower abnormal accruals. Regression model (2) reports coefficient estimates on the association between measures of directional earnings management and governance measures, after taking into account the control variables. In this case, there is a slight increase to the explanatory power of the model with the adjusted R^2 to be equal to 0.037. Only the measure of the percentage of stock owned by insiders (%INSIDER) was found to be a significant determinant of directional earnings management in maritime firms. As expected, however, stronger relations emerge in Panel C of Table 3 that uses non-directional abnormal accruals (ABS_ACCRUALS) as the dependent variable. Results show that stock owned by insiders (%INSIDER) and the number of members in the audit committee (Q_AUDIT) to be significantly related to non-directional abnormal accruals.

INSERT TABLE 3 ABOUT HERE

On the basis of the above, one major finding of this study is that insiders in maritime firms are positively associated to earnings management. It can be deduced that insiders in the maritime industry are inclined to inflate earnings, consistent with the findings in the general literature which suggest that insiders may attempt to potentially increase their current wealth or perquisite consumption by undertaking actions detrimental to outside investors. Shleifer and Vishny (1997) discuss several ways by which insiders can divert funds including outright theft, dilution of outside investors through share issues to insiders,

excessive remuneration, asset sales to themselves or other corporations they control at favorable prices, or transfer pricing with other entities they control. Lemmon and Lins (2003) provide evidence which is consistent with the view that ownership structure plays an important role in determining whether insiders expropriate minority shareholders, particularly during times of declining investment opportunities. The findings of this study contribute to this stream of literature by identifying that the greater the portion of shares held by insiders in maritime firms the greater the earnings management practices used. In addition, it was found that the higher the quality of the audit committee the less likely it is for managers to pursue earnings management in support of our tentative expectation. According to Xie et al. (2003) an active, well-functioning, and well-structured audit committee may be able to trace and deter earnings management practices, consistent with the recommendations of Levitt's Blue Ribbon Panel (SEC, 1998).

5.2 Corporate governance and sub-optimal investments

Subsequently, the study investigates the effect of corporate governance on sub-optimal investments (i.e. over- or under-investments). Building on the framework developed by Richardson (2006) and Larcker et al. (2004), sub-optimal investments are estimated using an investment regression model that includes known determinants of investment expenditures drawn from agency cost (e.g., Jensen, 1986) and the financing constraint (e.g., Hubbard, 1998) literatures[5]. In that respect, control variables used are the Tobin's Q

[5] Mergers and Acquisitions is another possible setting to examine investment performance. Since both types of investment – capital expenditures and acquisitions - are important and in fact one can gain significant insight for the other about investment decision quality and its association with corporate governance. We have searched the Securities Data Corporation's database for acquisitions in the maritime industry done by public companies. In accordance with prior literature, we set a requirement that the bidding firm should be publicly listed on AMEX, NYSE or NASDAQ, to have a valid CUSIP on the COMPUSTAT-CRSP-MERGED database, and that the deal should be completed or withdrawn within the sample period. These criteria result in a sample of only 15 acquisition deals. The intersection of the acquisition deals with available corporate governance data result in fewer than 10 observations, which leaves no room for a reliable empirical analysis.

measure, firm age and size, as well as financial leverage and cash holdings. Sub-optimal investments are taken to be the residual of the following investment regression model:

$$IE_t = \alpha_1 + \alpha_2 Q_{t-1} + \alpha_3 AGE_{t-1} + \alpha_4 SIZE_{t-1} + \alpha_5 LEV_{t-1} + \alpha_6 CASH_{t-1} + YEAR\ FE + \varepsilon_t$$

where, IE_t is the total investment expenditure, calculated as research and development expenditure (item 46) plus capital expenditure (item 128) plus acquisition expenditure (item 129) less cash receipts from the sale of property, land and equipment (item 107) less depreciation and amortization (item 125) which is used as a proxy for maintenance expenditure, Tobin's Q is the sum of the book value of debt and the market value of equity (item 25 x item 199) deflated by the book value of debt (item 9 + item 34) and the book value of equity (item 60), and YEAR FE, are year fixed effects.

INSERT TABLE 4 ABOUT HERE

Panel A of Table 4 reports descriptive statistics for the sample of 102 observations where corporate governance measures were also available and relevant to our analysis.[6] For this sample the average sub-optimal investment is -0.066, suggesting that maritime firms exhibit a tendency for overall under-investment. This finding may relate to the recent slowdown in global trade, in conjunction with the fact that the financial crisis created problems in the financing opportunities for maritime firms. Furthermore, Panel A reports information about under-investment (UNDER_INVESTMENT) defined as the bottom 2/3 sub-optimal investments observations of the sample and over-investment (OVER_INVESTMENT) defined as the top 2/3 sub-optimal investments observations of

[6] The investment regression model is estimated on a larger sample of observations in which the average value of the regression residual (sub-optimal investments) is zero. The sample of 102 observations is the one comprised by the intersection of the investment model residuals and all available observations for all nine corporate governance measures.

the sample of 102 observations. This approach is useful to identify which particular corporate governance measure(s) help to mitigate under-investment and/or over-investment of free cash flows. Based on the empirical evidence, the average OVER_INVESTMENT (UNDER_INVESTMENT) is 0.106 (-0.232), where in these cases each sub-sample is comprised of 68 observations.

Panel B of Table 4 presents results using the sub-samples of under-investments (UNDER_INVESTMENT) and over-investments (OVER_INVESTMENT). The results from regression model (1) indicate that OVER_INVESTMENT is negatively related to BOARD_SIZE, G_COM and %BUSY_DIR while results of model (2) indicate that UNDER_INVESTMENT is positively related to G_COM. In that respect, maritime firms exhibit lower free-cash flow sensitivity to over-investments when the board size is larger, when there is a corporate governance committee in place and when more directors are sitting on other firms' boards and exhibit greater free-cash flow sensitivity to under-investment when there is a corporate governance committee in place. The results support our tentative expectations with respect to the corporate governance committee and busy directors. In addition it is found that a larger board size in maritime firms may prevent over-investments.

Bohren et al. (2009) report that good governance, as captured by managers who are less entrenched, primarily helps mitigate under-investment rather than reducing over-investment. Masulis et al. (2007) find that managers at firms protected by more antitakeover provisions are less subject to the disciplinary power of the market for corporate control, and thus are more likely to indulge in empire-building acquisitions that destroy shareholder value. Harford et al. (2008) report that the combination of excess cash and weak shareholder rights leads to increases in capital expenditures and acquisitions. By

segregating over-investment and under-investment from the (overall) sub-optimal investment measure, this study was able to identify particular corporate governance practices that have an effect in each case. Collectively, this study reports that for maritime firms, there are quite a few corporate governance practices in place that affect firm-level investment decision making and that good corporate governance practices can both, mitigate the managerial propensity either for over-investment or for under-investment of free cash flows.

5.3 Corporate governance and firm performance

Firm performance was measured by adopting operating and market valuation performance measures. As in Bhagat and Bolton (2008), we use yearly data from COMPUSTAT to calculate return on assets, ROA, as operating income before depreciation (item 13) divided by total assets (item 6). This is the firm's operating performance measure which has been relentlessly employed in similar studies to investigate the relation between governance variables and operating performance (see, among others, Gompers et al., 2003, Giroud and Mueller, 2011). Inverted Tobin's Q, INVERTED-Q, is also used as a measure of market performance. The reason we choose to use the inverted Q (defined as book value to market value of assets) is only due to its better statistical properties (i.e., normality) as reported by previous literature (e.g., Larcker et al., 2004), which should align the definition of the variable with the OLS regression model assumptions.

INVERTED-Q is measured as the sum of the book value of debt (item 9 + item 34) and the book value of equity (item 60) deflated by the sum of the book value of debt and the market value of equity (item 25 x item 199). Note that INVERTED-Q is measured as book value relative to market value, hence the predicted signs will be opposite to prior research that has used the market to book version. According to Larcker et al. (2004) this reciprocal ratio

exhibits better statistical properties (i.e. normality). This measure has been previously employed by landmark research studies that investigate the interplay between corporate governance and firm performance (e.g. Morck et al., 1988, Bhagat and Black, 2000, Gompers et al., 2003). Panel A of Table 5 reports the descriptive statistics for the two dependent variables, ROA and INVERTED-Q and the control variables used in the regression models. For this sample of 97 observations the average ROA is 0.137 while the average INVERTED-Q is 0.911.

INSERT TABLE 5 ABOUT HERE

Panel B of Table 5 reports the results for the firm's operating performance. Regression model (1) includes only the control variables. The model exhibits an adjusted R^2 of 0.378. As expected, ROA increases (decreases) with firm cash availability (corporate structure as captured by the number of business-segments). Regression model (2) includes also the governance variables. The adjusted R^2 of the model increases to 0.579. An incremental adjusted R^2 F-test reveals that governance increases significantly the explanatory power of the model (F-stat = 3.04). Results show that board size (BOARD_SIZE), a corporate governance committee (G_COM) and CEO duality (DUALITY) are statistically significant in explaining the variation in the firm's operating performance as captured by return on assets (ROA).

Panel C of Table 5 reports the results for the firm's valuation performance. Regression model (1) includes only the control variables. The model exhibits an adjusted R^2 of 0.469. INVERTED-Q decreases with firm leverage. Regression model (2) includes also the governance variables. The adjusted R^2 of the model increases to 0.641. An incremental adjusted R^2 F-test reveals that governance increases significantly the explanatory power of the model (F-stat = 2.88). Results show that board size (BOARD_SIZE) and busy directors

(%BUSY_DIR) contribute in a statistically significant manner in increasing the firm valuation level.[7]

The results of this study suggest that insiders, the presence of a corporate governance committee and CEO duality are all positively related to the firm's operating performance. The finding that insider ownership and the presence of a governance committee contribute positively in the firm's profitability follows the same line of reasoning with the general corporate governance literature (see, for instance, discussions in Ashbaugh-Skaife et al., 2006, Bhagat and Bolton, 2008, and Brown et al., 2011 among others) and is in accord to our tentative expectations. Nonetheless, a major finding of this study is that CEO duality in the cross section of maritime firms is positively related to operating performance. The latter evidence is against the gist of agency theory which posits that the dual role of the CEO also serving as the chairman of the board is detrimental to the firm's profitability since it compromises the monitoring and control of the CEO and therefore heightens self-serving managerial behavior (Peng et al. 2007). In this vein, we provide unique evidence that CEO duality in maritime companies departs from the norm previously reported for industrial firms since for this sample it is found to facilitate a substitute corporate governance mechanism which contributes to higher firm operating performance. Yet, this finding lends credence to the stewardship theory which argues that CEO duality moves in lockstep with strong and unequivocal leadership sheltered under the power of one manager who is in a position to engage in better and expedite decisions which are value enhancing (Donaldson and Davis, 1991).

[7] We have re-run the analysis using Tobin's Q (i.e., market value to book value of assets) as our firm valuation measure and results stay unchanged in that board size (p-value = 1.53%) and busy directors (p-value = 2.67%) appear with a positive sign consistent (but with the opposite sign) with the results we report in the paper using the INVERTED-Q measure.

Finally, the study finds that board size and busy directors are associated with higher firm performance. In particular, it was found that board size is significantly and negatively related to the firm's Tobin's Q, that is, maritime firms with larger boards exhibit higher valuations. It worth noting that the relation between board size and firm performance in the maritime industry documented in this study is also standing out from the general corporate finance literature where eminent scholars either support a significantly negative relation between board size and corporate performance (e.g., Jensen, 1993) or no relationship between board size and firm performance (e.g., Wintoki et al., 2012). Other studies, such as the one by Lipton and Lorsch (1992), argue that optimal board size is between seven and nine directors. In addition, Yermack (1996) and Eisenberg et al. (1998) suggest that higher coordination costs and process losses create an inverse relation between board size and firm performance. Hence, in this vein, the general literature suggests that smaller boards are more effective, whereas we find the opposite effect for the maritime sample firms. Finally, Raheja (2005) models optimal board size as a function of director and firm characteristics, such as firm complexity (Coles et al., 2008). Given that the average size of the board in our sampled firms is seven, it may be argued that for the traditional maritime firms the introduction of a bigger board of directors may contribute toward higher firm valuations. Obviously, our empirical observation is of great importance since it indicates the influence of the special characteristics of the maritime industry that makes corporate governance in maritime firms deviate from the norm.

A negative and significant relationship is found between the firm's Tobin's Q and the busy directors' measure, consistent with the view that busy directors that serve on the boards of other firms contribute to higher firm performance in maritime firms. Prior literature suggests that serving on the boards of other firms enables directors to gain experience, expertise and skills that are instrumental for efficient decision making (e.g. Ashbaugh-

Skaife et al., 2006, Field, 2013), contributing in this respect to higher valuations. Other studies, however, emphasize the fact that busy directors may be just too busy to pay enough attention to manage the firm prudently (Fich and Shivdasani, 2006). Our findings, for the maritime industry provides support to the first thesis.

5.4 Additional analysis

In this section, the study elaborates further on the regression analysis presented in Tables 3-5 to address concerns for: (i) an endogenous feedback relationship between corporate governance and either financial management decisions or firm performance, (ii) dependency resulting from the clustering of the data at the firm level, and (iii) influential observations that can distort statistical inference based on the estimation of the slope and intercept of the regression line.

Regarding the endogenous feedback relationship similar to prior literature this study investigates whether corporate governance can predict *changes* in financial management decisions or firm performance. To perform this task, in the spirit of Ashbaugh-Skaife et al. (2006) and Harford et al. (2008), this study repeated the main regression analysis after including lagged values of each dependent variable in each model specification to find that the main conclusions still hold true as reported earlier, hence they are not driven by endogeneity. Our main inferences on the relations between corporate governance measures with firm corporate governance policies remain robust also in regression model specifications where corporate governance measures are lagged by one period to form a pure causal relation regression model between our dependent variables and governance measures.

Regarding the dependency resulting from the clustering of the data at the firm level, ideally, we would like to make formal inferences about population effects to control for potential omitted variables which are either constant over time or constant over firms. Random effects regression models do assume that data within clusters are dependent to some degree. The degree of this dependency is estimated along with estimates of the usual model parameters, thus adjusting these effects for the dependency resulting from the clustering of the data. In this respect, we have re-estimated the regression model specifications using a random effects model to find that major inferences as discussed before remain unaltered.

Finally, to check the validity of our inferences in the presence of influential observations in our sample, we adopt three approaches that can mitigate the effect of possibly spurious fitting of our regression models. First, following the norm in the financial economics literature, we repeat all of our analysis where continued variables of corporate governance measures are winsorized at the more extreme 5% and 95% percentiles to avoid undue influence of outliers. Second, we repeat all of our analysis using robust least squares regression analysis. In this respect, we utilize a diagnostic technique for evaluating the sensitivity of the inference conducted using OLS and for revealing the possible economic role played by these regressors (Knez and Ready, 1997). Robust regression is an important tool for analyzing data that may be contaminated with outliers since it provides stable results in the presence of any outliers. We adopt the M-estimator which is employing the Huber error metric function (see discussions in McDonald et al., 2009) to immunize the estimated slope and intercept of the regression line in the presence of any extreme observations. The Huber function utilizes the robustness of least-median error function and the unbiasedness of the least-squares error function to estimate the regression coefficients and has proved to be an efficient tool for robust optimization problems for various tasks. Third, we have also re-run our main analysis using bootstrapping by resampling (simple

random sampling with replacement) from our original sample to estimate the bias of our estimators and the corresponding standard errors (Efron and Tibshirani, 1993).

INSERT TABLE 6 ABOUT HERE

Further empirical evidence is presented in Table 6, where panel A shows the regression analysis coefficients following adoption of robust M-estimator and panel B the results following bootstrapping analysis. In Table 6 model specifications follow the corresponding ones reported in Tables 3, 4, and 5, yet control variables are not reported for the sake of brevity. In spite of the treatment adopted in this section as a robustness check of our inferences, the results in Table 6 still reveal statistically significant relations between ownership structure and board structure and processes measures with directional (abnormal) accruals. Similarly, board structure and processes measures are found to relate to non-directional (absolute) abnormal accruals. With regard to under- and over-investments regression analysis, ownership structure measures and board structure and processes measures are important and statistically significant determinants. Finally, board structure and processes measures relate significantly to firm operating and valuation performance. For the sake of brevity the results for the 5% and 95% winsorization are not presented but are similar. Overall, the results provide strong support to our main findings in Tables 3, 4 and 5.

6. Conclusions

Research in corporate governance practices revealed important relations to financial management decisions enabling corporations to improve various aspects of their operations and performance. Despite the recognition that industry-specific research may reveal associations that differ from the norm, research in the maritime industry has been limited. This was partly because of the relatively recent exposure of maritime firms to public

scrutiny and partly because of the difficulty of collecting relevant data to undertake empirical studies. In addition, the nature of the maritime industry characterized by capital intensity and relative secrecy manifested through an elaborate system of ship registration and ownership renders corporate governance systems not just important but virtually indispensible for safeguarding the assurances sought by the financial markets and the shareholders. Maritime firms increasingly look towards the financial markets to source funds for investing in the capital intensive and uncertain shipping markets. The idiosyncratic characteristics of the shipping markets coupled with the peculiar ship registration and ownership practices render corporate governance imperative as a means for safeguarding the interests of shareholders and investors as corporate governance moderates the extent of agency problems between managers and market participants.

In addition, such idiosyncratic characteristics are likely to give rise to potentially varying corporate governance effects than those considered to be the norm in other industries. This study comes to fill a distinct void in the extant literature by investigating the association between key governance indicators and important financial management variables and firm performance. The results vindicate the decision to undertake research of this nature, since statistically significant associations between corporate governance indicators and financial management decisions in maritime firms may either depart from previous findings or support relations that have been inconclusive and ambiguous.

This study, which was motivated by the aforementioned characteristics and the lack of quantitative scientific approaches examining corporate governance in maritime firms, makes the following contributions to the theoretical literature. The study has found that corporate governance in maritime firms is associated with financial management decisions such as earnings management and sub-optimal investment and with firm performance. In

particular it was found that insider ownership in maritime firms is positively associated to earnings management, that a higher quality audit committee reduces the possibility for managers to pursue earnings management, and that board size, the presence of a corporate governance committee and busy directors are negatively related to over-investment, while the presence of a corporate governance committee is positively related to under-investment. Finally, the study finds that board size, insiders' ownership, busy directors and CEO duality are all associated with firm operating performance. The study also suggests that a large board size may be an optimal value maximizing outcome for the maritime industry.

The results provide important implications for management practice, especially for maritime firms that wish to enhance shareholder, as well as customer value. Companies that seek to enhance their corporate governance systems can do so in the knowledge that corporate governance will reduce agency related risks and improve the company's image in the financial markets. Maritime firms should seriously contemplate the enhancement of their corporate governance practices. As maritime companies increasingly turn to the financial markets for capital generation they come under closer scrutiny by investors and shareholders. Corporate governance provides early warning mechanisms that contribute positively to systemic stability in the financial markets. This is very important in the current era of low freight rates and difficult shipping market conditions. On this basis maritime firms should aim at increasing their board size, ensuring that quality audit committees are in place and that there is a clear strategy and vision set forth by the corporate governance committee. It is also in the interest of maritime firms to appoint directors that may sit on the boards of other firms according to the findings of the study. This supports the hypothesis that knowledge and expertise are value-enhancing attributes in the board of maritime firms. Finally, the results of this study provide some evidence that holding the positions of the

CEO and the chairman of the Board may not be a harmful practice in the maritime industry as it may be in other industries.

The wide range of corporate governance indicators point to several avenues for future research, particularly, in the context of the idiosyncratic and unique findings of this study. In terms of research, the study has examined a number of important corporate governance variables but has not exhausted either the variables or the inter-relationships that can be studied in the maritime context particularly after the acknowledgement that the maritime industry may differ from the norm with regard to the effects of corporate governance. One important research direction is to empirically examine whether industry characteristics such as uncertainty, volatility and capital intensity, together with other firm-specific factors such as type of shipping sector, influence the relation between corporate governance practices and either financial management decisions or firm performance.

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Appendix

Table A.1
Data availability and loss of observations due to missing data

Corporate Governance Variables	Number of *non-missing* observations	Number of *missing* observations	Dependent and Control Variables	Number of *non-missing* observations	Number of *missing* observations
%INSIDER	222	51	ACCRUALS	192	81
%INST	230	43	SUB_OPTIMAL_INVESTMENT	192	81
BLOCK	243	30	INVERTED-Q	254	19
BOARD_SIZE	247	26	SIZE	265	8
G_COM	235	38	ROE	255	18
Q_AUDIT	230	43	LEV	262	11
%BRD_IND	223	50	CASH	262	11
%BUSY_DIR	222	51	FCF	248	25
DUALITY	212	61	ROA	255	18
			AGE	252	21
			NUM_SEG	204	69

Table A.2
Company names, nationality and specialization

Company Name	Nationality/incorporation	Specialization
Costamare Inc	Greece	Containers
Dht Holdings Inc	Norway/Bermuda	Tankers
Diana Shipping Inc	Greece	Dry bulk
Dryships Inc	Greece	Dry bulk
Eagle Bulk Shipping Inc	US	Dry bulk
Euroseas Ltd	Greek/Marshall Islands	Dry bulk/containers
Freeseas Inc	Greece	Dry bulk
Frontline Ltd	Bermuda	Tankers
General Maritime Corp	US	Tankers
Globus Maritime Ltd	Greece	Dry bulk
Mc Shipping	Monaco/Bermuda	LPG/product tankers
Navios Maritime Acquisition	Greece	Dry bulk
Navios Maritime Partners Lp	Greece	Dry bulk
Newlead Holdings Ltd	Greece	Dry bulk/tankers
Oceanfreight Inc	Greece	Dry bulk
Omega Navigation Ent Inc	Greece	Product tankers
Overseas Shipholding Group	US	Tankers/product tankers
Paragon Shipping Inc	Greece/Marshall Islands	Dry bulk
Quintana Maritime Ltd	Greece	Dry bulk
Safe Bulkers Inc	Greece	Dry bulk
Scorpio Tankers Inc	Monaco/Marshall Islands	Product tankers
Seanergy Maritime Hldgs Corp	Greece/Marshall Islands	Dry bulk
Seaspan Corp	Hong Kong/Marshall	Containers
Sino Shipping Holdings Inc	China	Dry bulk
Stealthgas Inc	Greece	LPG/product tankers
Tbs International Plc	US	Multi-purpose/dry bulk
Teekay Corp	Canada/Marshall Islands	Tankers/Products/Gas
Teekay Lng Partners Lp	Canada/Bermuda	LNG
Teekay Offshore Partners Lp	Canada/Bermuda	Shuttle tankers/FPSO
Teekay Tankers Ltd	Bermuda/Marshall Islands	Tankers/product tankers
Tsakos Energy Navigation Ltd	Greece/Bermuda	Tankers/product tankers
Ultrapetrol Bahamas Ltd	Bahamas	Tankers/barges/offshore

Tables

Table 1

Descriptive statistics of corporate governance measures

Measures	Mean	Std. Dev.	percentiles		
			25%	50%	75%
Ownership structure					
%INSIDER	0.203	0.210	0.022	0.132	0.338
%INST	0.306	0.240	0.095	0.280	0.511
BLOCK	2.158	1.605	1.000	2.000	3.000
Board structure and processes					
BOARD_SIZE	6.947	2.249	5.000	7.000	8.000
G_COM	0.605	0.491	0.000	1.000	1.000
Q_AUDIT	0.833	0.374	1.000	1.000	1.000
%BRD_IND	0.715	0.176	0.600	0.714	0.857
%BUSY_DIR	0.658	0.245	0.500	0.703	0.857
CEO's influence on the board					
DUALITY	0.491	0.502	0.000	0.000	1.000

Table 2

Pearson (Spearman) correlations of corporate governance measures are presented in the upper (lower) diagonal

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Ownership structure									
(1) %INSIDER	---	-0.354***	-0.227**	-0.085	-0.265***	-0.286***	-0.545***	-0.356***	0.192**
(2) %INST	-0.416***	---	0.600***	0.316***	0.223**	0.189**	0.209**	0.244***	-0.482***
(3) BLOCK	-0.228**	0.647***	---	0.436***	0.170*	0.309***	0.219**	0.080	-0.361***
Board structure and processes									
(4) BOARD_SIZE	-0.091	0.297***	0.325***	---	0.109	0.120**	0.237**	-0.013	-0.220**
(5) G_COM	-0.366***	0.184**	0.186**	0.126	---	0.457***	0.356***	0.057	-0.355***
(6) Q_AUDIT	-0.352***	0.175*	0.337***	0.203**	0.457***	---	0.325***	-0.153	-0.267***
(7) %BRD_IND	-0.570***	0.280***	0.276**	0.315	0.459***	0.418***	---	0.342***	-0.302***
(8)%BUSY_DIR	-0.423***	0.267***	0.059	0.000	0.071	-0.139	0.288***	---	0.018
CEO's influence on the board									
(9) DUALITY	0.271***	-0.460***	-0.372***	-0.175*	-0.355***	-0.267***	-0.410***	0.001	---

*****, ** and *, indicate significance (two-tailed) at the 0.01, 0.05 and 0.10 level or better, respectively.**

Table 3

Descriptive statistics and ordinary least squares (with clustered standard errors at the firm level) for earnings management

Panel A: Descriptive statistics

Variables	Mean	Std. Dev.	percentiles 25%	50%	75%
ACCRUALS	0.003	0.039	-0.021	-0.001	0.019
ABS_ACCRUALS	0.027	0.028	0.009	0.020	0.034
SIZE	6.885	1.083	6.127	6.706	7.837
ROE	0.138	0.629	0.027	0.124	0.305
LEV	0.536	0.204	0.404	0.554	0.685
CASH	0.082	0.063	0.037	0.065	0.111

Panel B: Regression analysis of abnormal accruals with control variables and corporate governance measures

Variables	(1) ACCRUALS (control variables)		(2) ACCRUALS (control variables + corp. govern. measures)	
	Coef.	t-statistic	Coef.	t-statistic
Intercept	0.050	1.74*	0.016	0.46
SIZE	-0.008	-2.17**	-0.006	-0.90
ROE	-0.015	-1.76*	-0.013	-1.40
LEV	0.035	1.52	0.020	0.72
CASH	-0.014	-0.26	-0.011	-0.15
Ownership structure				
%INSIDER			0.058	2.24**
%INST			-0.002	-0.11
BLOCK			-0.000	-0.15
Board structure and processes				
BOARD_SIZE			-0.000	-0.03
G_COM			0.009	0.94
Q_AUDIT			0.001	0.14
%BRD_IND			0.023	0.79
%BUSY_DIR			0.002	0.06
CEO's influence on the board				
DUALITY			-0.010	-0.84
Year Fixed Effects		Yes		Yes
Obs.		114		114
Adj. R^2		0.031		0.037
F-stat for incremental explanatory power of the governance measures				0.082

Panel C: Regression analysis of absolute abnormal accruals with control variables and corporate governance measures

Variables	(1) ABS_ACCRUALS (control variables)		(2) ABS_ACCRUALS (control variables + corp. govern. measures)	
	Coef.	t-statistic	Coef.	t-statistic
Intercept	0.051	2.45**	0.035	1.81*
SIZE	-0.003	-1.17	-0.004	-1.07
ROE	0.000	-0.18	-0.002	-0.41
LEV	-0.002	-0.17	-0.003	-0.20
CASH	0.024	0.65	0.010	0.27
Ownership structure				
%INSIDER			0.040	2.40**
%INST			0.005	0.29
BLOCK			-0.000	-0.09
Board structure and processes				
BOARD_SIZE			0.001	0.74
G_COM			0.005	0.74
Q_AUDIT			-0.016	-2.35**
%BRD_IND			0.034	1.48
%BUSY_DIR			-0.004	-0.29
CEO's influence on the board				
DUALITY			-0.001	-0.10
Year Fixed Effects		Yes		Yes
Obs.		114		114
Adj. R^2		0.036		0.077
F-stat for incremental explanatory power of the governance measures				0.489

*****, ** and *, indicate significance (two-tailed) at the 0.01, 0.05 and 0.10 level or better, respectively.**

Table 4

Descriptive statistics and ordinary least squares (with clustered standard errors at the firm level) for sub-optimal investment, over- and under-investment

Panel A: Descriptive Statistics

Variables	Mean	Std. Dev.	percentiles 25%	50%	75%
SUB_OPTIMAL_INVESTMENT	-0.066	0.337	-0.218	-0.047	0.110
OVER_INVESTMENT	0.106	0.231	-0.047	0.039	0.184
UNDER_INVESTMENT	-0.232	0.249	-0.346	-0.163	-0.047
FCF	0.056	0.087	0.020	0.050	0.085

Panel B: Regression analysis of over- and under-investment with control variables and corporate governance measures

Variables	(1) OVER_INVESTMENT (control variables + corp. govern. measures)		(2) UNDER_INVESTMENT (control variables + corp. govern. measures)	
	Coef.	t-statistic	Coef.	t-statistic
Intercept	-0.168	-0.33	-0.507	-0.83
FCF	8.827	1.07	11.343	1.21
Ownership structure				
%INSIDER*FCF	-0.019	0.00	-6.553	-1.10
%INST*FCF	-1.302	-0.30	11.341	1.24
BLOCK*FCF	0.290	0.42	-0.958	-1.02
Board structure and processes				
BOARD_SIZE*FCF	-1.119	-2.10**	-0.313	-0.63
G_COM*FCF	-3.455	-1.79*	3.709	4.21***
Q_AUDIT*FCF	-1.433	-1.14	-1.722	-1.43
%BRD_IND*FCF	12.069	1.04	-8.088	-1.11
%BUSY_DIR*FCF	-5.803	-2.09**	-5.191	-1.56
CEO's influence on the board				
DUALITY*FCF	-0.309	-0.20	-0.544	-0.26
Main (level) effects		Yes		Yes
Year Fixed Effects		Yes		Yes
Obs.		68		68
Adj. R^2		0.202		0.269

*****, ** and *, indicate significance (two-tailed) at the 0.01, 0.05 and 0.10 level or better, respectively.**

Table 5

Descriptive statistics and ordinary least squares (with clustered standard errors at the firm level) for firm operating (ROA) and valuation (inverted Tobin's Q) performance

Panel A: Descriptive Statistics

Variables	Mean	Std. Dev.	percentiles 25%	50%	75%
ROA	0.137	0.069	0.082	0.129	0.178
INVERTED-Q	0.911	0.301	0.698	0.876	1.029
SIZE	6.898	0.972	6.169	6.738	7.687
AGE	1.719	1.000	1.099	1.386	2.565
CASH	0.077	0.064	0.036	0.054	0.094
LEV	0.548	0.211	0.404	0.590	0.695
NUM_SEG	1.433	0.978	1.000	1.000	1.000

Panel B: Regression analysis of ROA with control variables and corporate governance measures

Variables	(1) ROA (control variables)		(2) ROA (control variables + corp. govern. measures)	
	Coef.	t-statistic	Coef.	t-statistic
Intercept	0.209	2.83***	0.199	2.43**
SIZE	-0.022	-1.62	-0.020	-1.95*
AGE	0.021	1.49	0.015	1.69*
CASH	0.275	1.95*	0.132	1.15
LEV	0.026	0.50	0.019	0.45
NUM_SEG	-0.013	-1.99*	-0.000	-0.02
Ownership structure				
%INSIDER			0.100	2.21**
%INST			0.005	0.16
BLOCK			-0.003	-0.42
Board structure and processes				
BOARD_SIZE			-0.006	-1.66*
G_COM			0.037	2.64**
Q_AUDIT			-0.018	-1.00
%BRD_IND			-0.021	-0.42
%BUSY_DIR			0.040	1.45
CEO's influence on the board				
DUALITY			0.035	1.96*
Year Fixed Effects		Yes		Yes
Obs.		98		98
Adj. R^2		0.378		0.579
F-stat for incremental explanatory power of the governance measures				3.04***

*****, ** and *, indicate significance (two-tailed) at the 0.01, 0.05 and 0.10 level or better, respectively.**

Panel C: Regression analysis of inverted Tobin's Q with control variables and corporate governance measures

Variables	(1) INVERTED-Q (control variables)		(2) INVERTED-Q (control variables + corp. govern. measures)	
	Coef.	t-statistic	Coef.	t-statistic
Intercept	1.560	8.07***	1.305	4.38***
SIZE	-0.023	-0.78	0.091	2.77***
AGE	0.015	0.35	-0.005	-0.09
CASH	-0.448	-0.80	-0.055	-0.12
LEV	-0.376	-1.59	-0.537	-3.55***
ROA	-1.031	-1.71*	-0.950	-1.47
NUM_SEG	0.030	1.21	0.034	1.82*
Ownership structure				
%INSIDER			0.133	0.59
%INST			-0.124	-0.90
BLOCK			0.033	1.04
Board structure and processes				
BOARD_SIZE			-0.048	-3.41***
G_COM			0.008	0.09
Q_AUDIT			0.158	0.99
%BRD_IND			-0.080	-0.41
%BUSY_DIR			-0.411	-2.66**
CEO's influence on the board				
DUALITY			-0.051	-1.02
Year Fixed Effects		Yes		Yes
Obs.		97		97
Adj. R^2		0.469		0.641
F-stat for incremental explanatory power of the governance measures				2.88***

*****, ** and *, indicate significance (two-tailed) at the 0.01, 0.05 and 0.10 level or better, respectively.**

Table 6
Robustness analysis

Panel A: Robust Regressions

Variables	ACCRUALS		ABS_ACCRUALS		OVER_INVESTMENT		UNDER_INVESTMENT		ROA		INVERTED-Q	
	Coef.	Chi-Square	Coef.	Chi-Square	Coef.	Chi-Square	Coef.	Chi-Square	Coef.	Chi-Square	Coef.	Chi-Square
Ownership structure												
%INSIDER	0.025	1.410	0.015	1.520	1.127	0.020	-2.436	0.270	0.123	9.520***	0.236	3.220*
%INST	-0.016	0.830	0.005	0.200	-0.521	0.010	9.646	2.940*	0.015	0.160	-0.054	0.220
BLOCK	0.000	0.030	0.001	0.210	0.491	0.710	-0.618	0.950	-0.002	0.110	0.017	0.790
Board structure and processes												
BOARD_SIZE	-0.001	0.180	0.001	0.760	-1.278	6.610***	-0.438	1.710	-0.007	3.740*	-0.039	9.800***
G_COM	0.011	2.230	0.002	0.210	-1.571	0.920	4.041	10.250***	0.038	7.390**	-0.055	1.290
Q_AUDIT	-0.003	0.060	-0.016	5.750**	-1.969	1.890	-1.136	0.970	-0.031	2.270	0.396	30.780***
%BRD_IND	-0.008	0.110	0.014	1.130	9.781	0.910	-3.345	0.300	-0.016	0.130	-0.141	0.950
%BUSY_DIR	0.008	0.270	0.002	0.050	-7.452	5.360**	-3.383	1.080	0.052	3.840*	-0.401	19.950***
CEO's influence on the board												
DUALITY	-0.004	0.290	0.004	0.720	0.702	0.280	0.243	0.020	0.025	3.140*	-0.008	0.030

Panel B: Bootstrap Regressions

Variables	ACCRUALS		ABS_ACCRUALS		OVER_INVESTMENT		UNDER_INVESTMENT		ROA		INVERTED-Q	
	Coef.	t-statistic	Coef.	t-statistic	Coef.	t-statistic	Coef.	t-statistic	Coef.	t-statistic	Coef.	t-statistic
Ownership structure												
%INSIDER	0.060	1.853*	0.042	1.807*	3.600	0.324	-2.048	-0.259	0.094	1.806*	0.092	0.421
%INST	0.003	0.054	0.009	0.494	4.875	0.479	-0.169	-0.010	0.009	0.136	-0.133	-0.760
BLOCK	-0.002	-0.457	-0.001	-0.236	-0.694	-0.369	0.346	0.285	-0.002	-0.254	0.033	0.926
Board structure and processes												
BOARD_SIZE	0.000	-0.059	0.001	0.643	-0.404	-0.678	-0.573	-1.451	-0.006	-1.230	-0.039	-2.296***
G_COM	0.011	0.998	0.008	0.849	-4.809	-1.815*	3.342	2.715**	0.034	2.152**	-0.004	-0.094
Q_AUDIT	0.001	0.025	-0.017	-1.738*	-0.406	-0.387	-6.260	-1.432	-0.022	-0.999	-0.066	-0.325
%BRD_IND	0.022	0.506	0.031	1.135	13.214	0.868	-4.163	-0.402	-0.022	-0.291	-0.439	-2.785***
%BUSY_DIR	-0.001	0.018	-0.005	-0.130	-7.210	-1.478	-0.818	-0.151	0.037	1.243	-0.039	-2.296***
CEO's influence on the board												
DUALITY	-0.009	-0.678	-0.001	-0.007	0.837	0.254	-2.257	-0.925	0.034	1.682*	-0.064	-0.885

*****, ** and *, indicate significance (two-tailed) at the 0.01, 0.05 and 0.10 level or better, respectively.**