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EDITORIAL

Dear readers!

The recent issue of the journal Corporate Ownership and Control pays attention to issues of executive compensation, investments risks management, corporate audit issues, corporate codes etc. Board of drectors issues and peculiarities of corporate governance in developing countries are also under the scope of researches. More detailed issues are given below.

Stuart Locke and Geeta Duppati explore the impact of corporate governance reforms and changing ownership patterns of core public sector enterprises. *Philip T. Lin`s* study shows that CEO duality are positively related to earnings management in China's unique environment and suggests that internal and external board mechanisms can moderate CEO duality's effects on earnings management. *Sawsan S. Halbouni and Mostafa K. Hassan* aim to identify the mutual relationship between Jordanian practitioners' individualistic/collectivistic cultural orientation and the International Financial Reporting Standards (IFRS). *Enzo Peruffo, Raffaele Oriani and Alessandra Perri* show the influence of information asymmetries is moderated by family ownership, which acts as a signal of divestiture quality. *Raïda Chakroun and Khaled Hussainey* show disclosure quality and its determinants in the Tunisian context and their results showed that board independence (managerial ownership) had both positive and negative effects on disclosure quality. *Alessandro Giosi, Silvia Testarmata and Marco Caiffa* investigates the impact of stock option plans, defined as share-based incentive contracts provided by companies to their employees, on the value relevance of accounting information. *Patrick Velte and Marc Eulerich* identify factors determining the amount and the structure of board compensation in Germany; the analysis indicates that company size has a positive impact and leverage a negative on management board compensation.

Samer Iskandar tests the hypothesis that exchanges' post-IPO owners are value maximizers and whether different types of shareholders have different effects on performance. *Lindrianasari and Ahmad Zubaidi Indra* investigate the impact of the global crisis on the financial performance of banks in Indonesia.

Alfred Bimha intends to establish the level of interactions between the carbon emissions, total assets and the operating costs they report annually. *Godfrey Marozva* explores how the JSE SRI Index performed relative to exchange-traded funds during the period of economic growth as well as during the period of economic decline between 2004 and 2014.

We hope that you will enjoy reading the journal and in future we will receive new papers, outlining the most important issues and best practices of corporate governance!

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SECTION 1
ACADEMIC INVESTIGATIONS & CONCEPTS

AGENCY COSTS AND CORPORATE GOVERNANCE MECHANISMS IN INDIAN STATE-OWNED COMPANIES AND PRIVATELY OWNED COMPANIES - A PANEL DATA ANALYSIS

Stuart Locke*, Geeta Duppati**

Abstract

This paper explores the impact of corporate governance reforms and changing ownership patterns of core public sector enterprises. A number of reforms were introduced by the Government of India in 1991, and intensified in 2004 with the aim of improving efficiency and financial performance across state owned enterprises. The core state enterprises provide a unique opportunity to consider two aspects of the reforms. First, did the reforms have an impact, and second, is there a distinguishable difference between wholly government owned and partially-public shareholding enterprises? The public listed companies provide a suitable reference point for comparison. A comprehensive dataset of 123 SOEs and matching listed public companies for 10 years was collected for the study. A regression approach is adopted with agency cost as the dependant variable and several corporation-specific governance variables. Size and industry are the independent variables. The findings of the study indicate that the agency costs for mixed ownership models tend to be lower than those of the concentrated state-owned firms because they operate in an open market with the market facing the regulatory framework of a competitive environment.

Keywords: Agency Costs, Corporate Governance Mechanisms, State-Owned Companies, Privately Owned Companies

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1. Introduction

This paper examines the impact that changing ownership structures and government-initiated reforms to corporate governance have had on agency cost in state owned enterprises (SOEs) in India. Conventional wisdom might suggest that SOEs are less efficient than the private sector and that progress of reforms toward a private sector model will enhance efficiency and reduce agency costs. The reforms to corporate governance in Indian SOEs, particularly the larger enterprises termed central public sector enterprises (SOEs), provide an interesting context to explore the traditional principal-agent (PA) agency cost. As the movement toward mixed ownership models gains more appeal, the generalizable lessons may have a broader significance.

The Government of India (GOI) avowed an intention to raise billions of rupees from further issues of shares in listed and unlisted SOEs and has engaged in corporate governance reforms designed to enhance the performance of SOEs prior to the initial public offering (IPO) or further sell-down

existing mixed ownership entities (MOE) (Locke & Duppati, 2014). The relative efficiency and associated return-risk attributes of these new MOE are investigated in this paper. In particular, consideration is given to the returns vis à vis private sector counterparts, the level of agency cost and the impact of various reforms introduced by the GOI on returns and principal-agent costs (PA).

Listed public companies operating in similar sectors are included in the analysis as benchmarks for comparisons. There is a traditional view that public sector enterprises, in terms of financial performance, are not as efficient as private sector enterprises. Various empirical studies have purportedly established the veracity of this traditional wisdom and multiple arguments espoused as to why this should be so. However, in the Indian context these studies are a little dated and lack the empirical rigour that might be expected of contemporary investigations. The relationship between ownership structure and firm performance has been an important research topic during the last three decades and has produced ongoing debate in the literature of corporate finance. Agency theory contends agency conflicts are especially severe in firms with large, free cash flows (Jensen, 1986). It is important to examine the Indian case from the perspective of agency conflict because enormous national resources are locked up in the public sector enterprises.

Partial privatisation of SOEs are witnessed in super economies like China with continuing listings of SOEs on the Shenzhen and Shanghai stock exchanges through to much smaller economies like New Zealand, which was at the forefront of privatisation of public sector enterprises in the 1980s and has now embarked upon a partial privatisation of several energy generators. The NZ Government will retain 51% of energy shares and in the case of Air New Zealand; it has retained 53% of shares.

India has a large programme of partial sale of SOEs. Recently announced reforms for SOEs aimed to make them more attractive to private investors facilitating a further issue of shares to the public. With economic liberalisation post-1991, sectors that had been the exclusive preserve of SOEs were opened up to the private sector. The SOEs therefore faced competition both from domestic private sector companies and large multi-national companies (MNCs). In response, in 2007 the GOI empowered the key SOEs that had comparative advantage in terms of strategic importance, turnover, net worth and financial performance, by granting them higher levels of autonomy and financial powers.

A comprehensive dataset of 123 SOEs and matching listed public companies for 10 years has been collected for this study. A range of statistical techniques, including descriptive statistics, t-test, correlation and regression techniques, are used to explore the relationship between agency costs and enterprise related variables.

The remainder of the paper is organised as follows: The second section briefly presents the framework of corporate governance reforms from the Indian context; the third section presents the extant literature and hypotheses; section four presents the data and estimation framework of the study; the fifth section presents empirical discussion and the final section summarizes the findings and proceeds with some critical points and recommendations for potential future research.

2. Background

Corporate governance reforms in India began in the early 1990s and were modified and intensified in 2000 with a goal of ensuring comparable performance between SOEs and their private counterparts. The period 2000 to 2012 was significantly impacted by global events such as sanctions against Iran, a major trading partner, the global financial crisis and domestic events including major terrorism incursions. These factors may confound results in this study to some extent, but the adaptability of SOEs, vis à vis listed public companies, is also worthy of research.

The Department of Public Enterprise (DPE), which is a nodal agency under the Ministry of Heavy Industries and Public Enterprises, Government of India (GOI), issued guidelines delegating decision-making powers to the leading firms and other profitable companies and improved SOE governance through the induction of independent directors and improvements to the performance monitoring system. Substantial progress has been made to remove barriers to competition, reducing government financial support, and listing SOEsSOEs on capital markets. Clause 49 of the Listing Agreement has been instrumental in putting listed SOEs on the same footing as private companies. The 2007 CG Guidelines were geared to raising further awareness of compliance with board, disclosure and other governance practices. Corporate governance reforms also empowered the boards of large SOEs by grantinging financial and operational autonomy, professionalisation of the "Board of Directors" in PSEs and dramatically reducing state compliance guidelines and requirements from 700 to 105 and modifying 25. The boards of the empowered SOEs were given enhanced powers in the area of investment in joint ventures/subsidiaries. The powers included making equity investment available to establish financial joint ventures and wholly owned subsidiaries in India or abroad and to undertake mergers and acquisitions in India or abroad, subject to ceiling of 15% of the net worth of the concerned SOEs in one project, limited to an

absolute ceiling of Rs.500 million (Rs.100 million for second category SOEs (referred to as Navratnas).

A SOE is eligible to attain financial autonomy and should fulfil the following conditions:

- It should be listed on an Indian stock exchange with minimum prescribed public shareholding under Securities Exchange Board of India regulations,
- It should have an average annual turnover of more than Rs.2500 million during the last 3 years,
- It should have average annual net worth of more than Rs.1500 million during the last 3 years,
- It should have an average annual net profit after tax of more than Rs.500 million during the last 3 years,
- It should have significant global presence/international operations.

These empowered SOEs have undertaken a number of initiatives directed toward better performance and enhanced efficiency. They include a Voluntary Retirement Scheme (VRS); Professionalisation of Boards; a Memorandum of Understanding (MoU) system in SOEs. In 2013, amendments to the Companies Act added a new requirement of including gender diversity on boards.

The SOEs operate under dynamic market conditions; while some of them may face a shortage of staff, others may have excess staff. The GOI initiated a Voluntary Retirement Scheme (VRS) to help rationalise SOE manpower. Several measures have been taken by the DPE to professionalise SOEsCPSE boards. Guidelines issued by the DPE in 1992 provide for induction of outside professionals SOEsfor SOESOE boards as part-time non-official directors. Further, it has been decided that candidates from state- level public enterprises (SLPEs) and the private sector will also be considered as non-internal candidates for selection to the post of functional directors in SOEsSOEs subject to the eligibility criteria.

The MOU system was initiated in 1986 following the Arjun Sengupta Committee Report (1984). Since its inception it has been perceived as a practical solution to tackle various issues pertaining to SOEs and includes: i) the widely held perception that SOEs are less efficient than their private sector counterparts; ii) SOEs are unable to perform at efficient levels because of a multiplicity of objectives; iii) lack of clarity of objectives and confused signals imparted to the management followed by diluted accountability, and iv) absence of functional autonomy. The main purpose of the MoU system is to ensure a level playing field for the public sector enterprises compared with the private corporate sector. The management of the enterprise is made accountable to the government through a promise of performance. The government continues to have control over these enterprises by setting targets at the beginning of the year and by 'performance evaluation' at the end of the year (Public Sector Enterprise Survey, 2010-11). Performance evaluation is undertaken based on a comparison of the actual achievements and the annual targets agreed between the government and the SOESOE. The target constitutes both financial and non-financial parameters with different weights assigned to the different parameters. In order to distinguish 'excellent' from 'poor' the annual performance is measured on a 5-point scale (Public Sector Enterprise Survey, 2010-11).

From an international perspective, it is worth mentioning that the period from 2000 onwards featured a phenomenon of global integration as a consequence of cross border mergers and acquisitions by emerging nations into the mature markets. Progress stalled with the global financial crisis that occurred in 2008 and the outcome was economic downturn across the globe affecting the GDP growth rate at varied magnitudes. Later the occurrence of Euro-zone crisis in 2010 also had an impact. Global integration spill-overs from the financial crisis were evident in Asian countries and India was no exception. According to the Reserve Bank of India's annual report (2012), the real GDP growth increased from 6.7% in 2008-09 to 7.4 % in 2009-10 (a period of recovery), and later increased further to 8.5% in 2010-2011. However, the growth in GDP weakened to 6.5% in the year 2011-12.

3. Theory and Hypotheses

Several theories are proposed within the literature, including stewardship, tournament theory (Lazear & Rosen, 1981), institutional theory (Scott, 2004), stakeholder theory (Freeman, 1984), managerial hegemony (Kosnik, 1987), and resource dependent theory (Pfeffer and Salancik, 1978) to explain aspects of corporate governance and provide insights into how owners, directors and management may interact.

Agency theory promoted by Jensen & Meckling (1976) is arguably one of the most important theories in corporate governance. It provides a base from which to investigate the relationship between the provider of resources (shareholder or principal) and user of resources (manager) in a company. The owner of the resource is the principal, and the person who is responsible for the use and control of the resource is the agent. Agency costs arise if the principal and agent have conflicting interests and the agent pursues his/her own benefits at the expense of the principal (Eisenhardt, 1989). According to Jensen & Meckling, agency costs include the monitoring expenditures by the principal, the bonding expenditures by the agent, and the residual loss.

When corporations issue shares publicly and absorb the new resource from outside, potentially mangers may be incentivised to increase their on-the-job consumption, relax, and reduce work effort. Information asymmetry arises when management has information which the owners do not possess (Zahra & Filatotchev, 2004), and when an agent has more information than the principal, the information asymmetry may affect the efficiency of the monitoring and hurt the benefits of principal. The agent will search for all possible opportunities to increase his or her own wealth.

This study provides an Indian context for studying the work of McKnight & Weir, (2009) & Ang, Cole & Lin, (2000). The agency model identifies a number of governance mechanisms which realign the interests of agents and principals and so reduces agency costs (McKnight & Weir, 2009). The traditional agency model identifies governance mechanisms that yield better governance relative to other less effective mechanisms. However, there is a range of optimal governance structures each consistent with performance-maximising (agency cost minimising) outcomes and that performance and governance are endogenously determined. The optimal structures model therefore assumes that the corporate governance reforms in India through clause 49, professionalization of boards and the MOU system, represents a value-maximising outcome for Indian firms. Consequently, the implementation of the reforms will result in a shift in governance structures, thereby enabling the firms to move to another value maximising situation. Alternatively, businesses will incur costs as they adopt the non-optimal structures recommended by the reforms.

An implicit assumption, therefore, is that firms incur trivial costs associated with changing governance structures in response to the DPE guidelines as a consequence of the corporate governance reforms. In this case, the CG reforms neither harm nor benefit shareholders and so will not affect agency costs. Therefore, no relationship is expected between the governance mechanisms and agency costs.

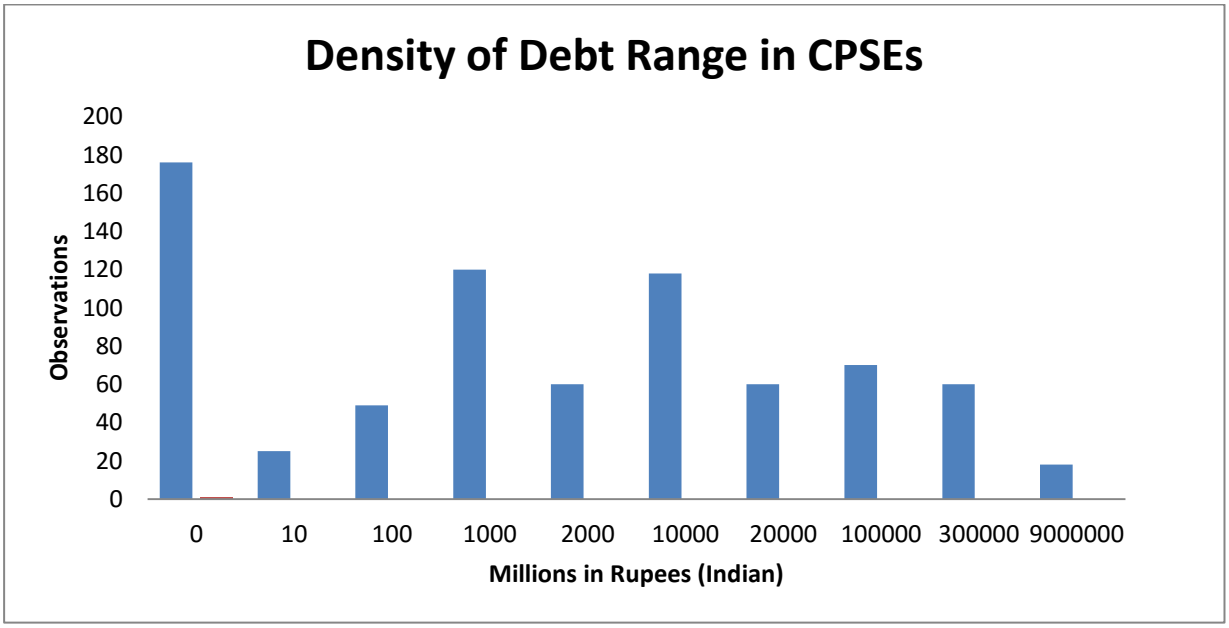
However, the four layered principal-agency relationship model proposed by Scrimgeour and Duppati (2014) indicates challenges for the SOEs in India in spite of the corporate governance reforms in that country. They conclude that bureaucracy, political interference and political patronage continue to persist in Indian cases. Expanding on the study of Scrimgeour and Duppati (2014), the present study empirically examines whether the differences in the degree of financial autonomy granted to SOEs towards encouraging them to be independent in funding their activities and operate in open markets will have any implications on agency costs. For this purpose the study classifies the SOEs into two groups based on their structures: Listed (mixed ownership model) and unlisted (concentrated ownership). The argument is that the listed companies will be subject to market and regulatory conditions and there will be competitive neutrality between the SOEs and privately listed companies, and the issue of state intervention will be less for listed SOEs compared to the unlisted SOEs. The study proposes the following hypothesis:

H_1: Agency costs for listed SOEs and private listed companies (mixed ownership models) will be lower than the unlisted SOEs (concentrated ownership model)

Jensen and Meckling (1976) argue that debt is an important influence on agency cost. Firms with higher levels of debt are more closely monitored by debt-holders and thus managers have fewer opportunities to pursue non-value maximizing activities. Two arguments can be put forward to support the assumption that there is a positive association between a firm's leverage and its corporate governance leading to efficiency improvements. First, highly leveraged firms enhance their corporate governance in order to gain greater reputation. As pointed out by Jensen (1986), debt commits the firm to pay-out cash, and thereby reduces the amount of "free" cash available to managers to engage in the type of pursuits that favours their own personal benefits, like building empires, corporate jets and plush offices. Second, another benefit of debt financing is noted by Grossman and Hart (1982) who suggest that if bankruptcy is costly for managers, perhaps because they lose benefits of control or reputation, then debt can create an incentive for managers to work harder, consume fewer perquisites and make better investment decisions, etc., to reduce the probability of bankruptcy. This mitigation of the conflicts between managers and equity-holders constitutes the benefit of debt financing.

For example, Chung (2000) states that highly leveraged Korean companies would go for corporate governance reform with the introduction of outside directors in order to reduce debt ratio, to enhance the competitiveness of the firm or to show their restructuring efforts to shareholders and stakeholders. Second, Cho and Kim (2003) suggest that highly leveraged firms could be pressured by their borrower, such as financial institution to enhance its corporate governance. Black, Jang & Kim (2003) and Brown and Caylor (2004) also find a positive association between leverage and corporate governance. The graph depicts the uneven distribution of debt across the SOEs.

Graph 1. Variation in Debt Distribution among the SOEs



According to Department of Public Enterprise survey report (2011), the structure of financial investments in SOEs underwent change from 2003 to 2011. While the share of paid-up capital in total investment was 32.57% during 2002-03, it declined to 23.31% in 2010-11. The share of long-term loans on the other hand, went up from 66.56% in 2002-03 to 76.40% in 2010-11. The total investment increased significantly in SOEs over the years. While the GOI continues to have majority equity holding in SOEs (78.41%), the other sources of investment (equity and loans) included financial institutions, banks, private parties (both India and foreign), State governments and holding companies. The share of financial institutions/banks, which was 39.89% in 2004-05, has gone up to 59.93% in 2011.

Nonetheless, debt is mostly contributed by banks and financial institutions which are themselves public sector enterprises, like the Life Insurance Company of India and State Bank of India. This is at odds with the conventional theory about using leverage as a mechanism for mitigating agency conflict. Viewed from a GOI perspective, the data suggests that leverage does not necessarily mitigate agency conflict because the lending institutions are also owned by the GOI. Hence the study proposes

H_2: There are no linkages between the leverage and agency costs

Rath, Nigam & Gupta, (2012) identify an issue with regard to efficiency of SOEs in which many profitable PSEs are generating profits not largely because of their operating profits and efficiency but because of the large interest earnings, which is non-operating income. This is a concern because company managers do not think of increasing operating efficiency/productivity to produce and sell more. Capacity utilisation is vital and companies should think of increasing productivity, resulting in to higher sales and improving profits. The study proposes the following hypotheses:

H_3: There is a positive relationship between net income and agency costs and

H_4: There is a negative relationship between sales/revenue and agency costs.

4. Method and Data

The research method is empirical drawing on financial data, relating to the financial performance of SOEs during the 10 year period 2003-2012, available in published sources. The sample consists of 123 Indian SOEs and private listed companies and a panel dataset is developed. The data covers the period over which significant corporate governance reforms occurred. The financial data are obtained from the databases of Thomson One and Department of Public Enterprise, Ministry of Heavy Industries. Information relating to the corporate governance variables is drawn from the Centre for Monitoring Indian Economy (CMIE) database. Additional information is obtained from the annual reports of the enterprises.

The variables used in the study are consistent with an agency theory approach to corporate governance. The underlying assumption is that the aim of governance is to enhance sustainable returns to stakeholders and increase the value of the enterprise. A regression approach is adopted with agency cost as the dependant variable and several corporation-specific governance variables plus size and industry variables as the independent variables.

The greater financial freedom granted to some SOEsSOEs includes being able to borrow. An increase in borrowing may reduce the cost of capital and improve efficiency. The reforms also altered the mix of directors and corporations can either replace some executive directors with new external directors or the board can expand. Potential entrenchment of directors and culture, which might be associated with higher agency costs, will be reflected in board growth rather than director substitution. Other variables control for size, industry and age effects.

The ratio of sales to total assets is commonly used as a proxy for agency cost (PA) and has the advantage of being generally robust in terms of distributional properties and is relatively simple to calculate. Aivazian (2005) uses this metric as a measure of efficiency when reviewing public sector entities. Efficiency is an important component for getting a corporation ready for partial privatisation and accordingly is a suitable metric when the intentions of the governance reforms are to drive better performance, increase profitability and increase corporate value.

5. Empirical Discussion

The analysis commences with a series of diagnostic tests ranging from descriptive statistics, correlation matrix, observing the trends in growth of sales and total assets to t-test and then random effect and fixed effects regression model. The t-test results of the sales, total assets and efficiency ratio provide a background for comprehending the agency costs in the three sets of companies under consideration.

The descriptive statistics of the Unlisted SOEs Listed SOEs and Private Listed Companies is given in Table.2. With regard to Return on Assets (ROA), Return on Sales (ROS), board size, sales, total assets, net income and efficiency ratio, the results indicate a higher mean for listed SOEs when compared to private listed companies and unlisted SOEs, while the unlisted SOEs and private listed companies have a higher leverage than the listed SOEs. The results indicate higher performance for listed SOEs in comparison to listed private and unlisted SOEs .

Table 1. Descriptive Statistics of the Unlisted SOEs, Listed SOEs and Private Listed Companies

Listed SOEs			Private Listed Companies		Unlisted SOEs	
Variable	Mean	S.D.	Mean	S.D.	Mean	S.D
ROA	0.1864	0.6715	0.1256	0.1634	0.1292	0.4388
Leverage (Lev)	0.4579	1.0567	0.6459	1.27	0.7481	1.7855
Age	42.82	13.41	49	26.34	38	15
Board-Size	14.99	4.60	12.82	3.730	9.88	3.685
Sales	2531416	5314732	1520339	3197547	347746.2	721016.1
Size	2299484	3244410	1928971	3752402	515186.5	1457580
Profitability	206820.5	346344.6	147425.9	279542.7	41304.88	141930.6
Manu	0.7142857	0.4525628	0.725	0.4470	0.4727	0.4997101
Non-Manu	0.2857143	0.4525628	0.278	0.4486	0.4997	0
Efficiency	1.63e+13	7.14e+13	1.302	2.575	1.05	1.757

Through the decade under review there were significant increases both in sales and total assets. Figure 1 presents a chart of trends in sales over the 10-year period and Figure 2 shows the trends in total assets. The unlisted SOEs experienced a doubling of sales (206%), the listed SOEs an increase of 232% and the private sector companies grew nearly seven times at 685%. In terms of total assets, the growth for unlisted SOEs is 194%, for listed SOEs the asset growth is 383% and for privately owned listed companies the growth in total assets is 607%.

The financing of the SOE asset expansion is predominantly through GOI equity injections even though the government was running a deficit. As there was no increase in leverage it appears that there was no incentive to reduce agency cost and management perquisites increased.

Figure 1. Sales for the period 2003 – 2012

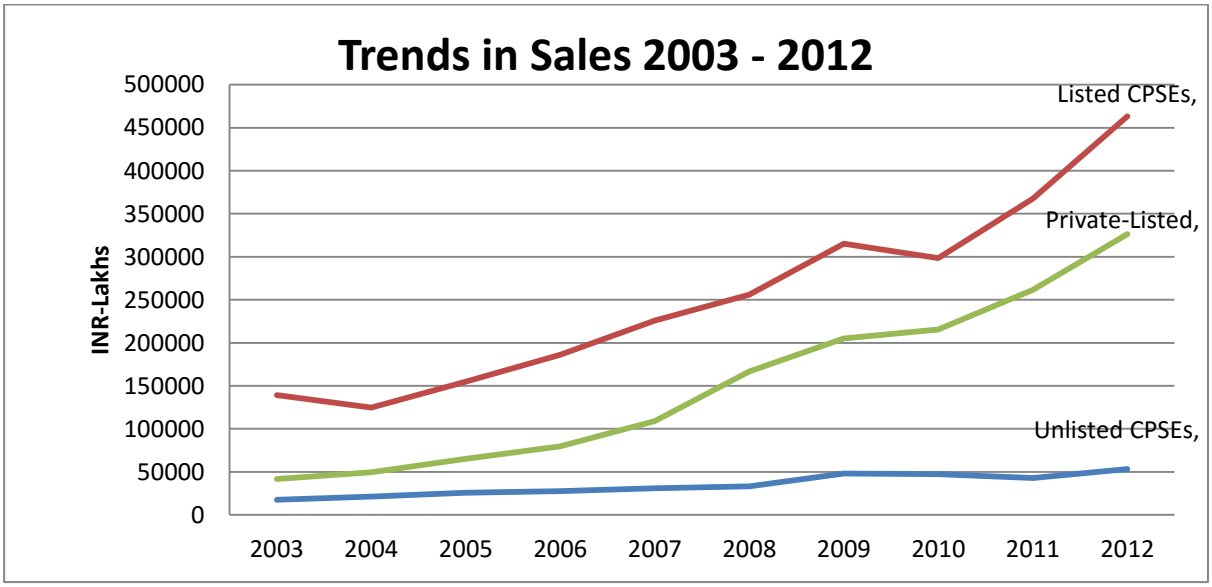
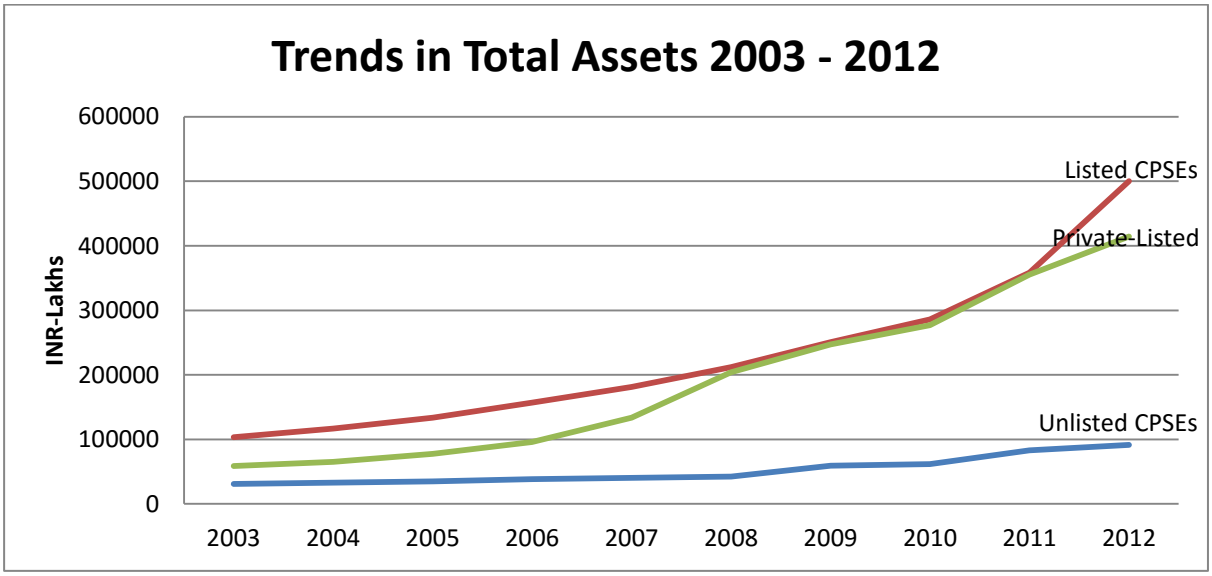


Figure 2. Total Asset for the period 2003 – 2012



The sales, total assets and efficiency ratio for listed SOEs, unlisted SOEs and private listed companies are shown as pairwise comparison in Table 3 where the T-statistics indicate if they are significantly different. For sales, the results reveal significant difference in the mean of sales at 1% level for the listed SOEs and private listed companies in comparison to unlisted SOEs and also between the mean of sales of listed SOEs and private listed companies.

There are significant differences in the mean of total assets, at 1% level, for the listed SOEs and private listed companies in comparison to unlisted SOEs. The mean of total assets is not significantly different between listed SOEs and private listed companies. The t-test results indicate that the difference in the mean of total assets between the listed SOEs and private listed companies is not significant but difference for the mean of sales is significant at 1% level. This indicates a better performance for listed SOEs over private listed companies and also suggests lower agency costs for listed SOEs in comparison with private listed companies.

Table 2. t-Test results of Listed SOEs, Unlisted SOEs and Private Listed companies

	Sales	**Total Assets**	**Efficiency ratio**
Ownership models compared	**t-values**	**t-values**	**t-values**
Listed SOEs vs Unlisted SOEs	**6.82*** **	**8.786*** **	**3.837*** **
Listed SOEs vs Private listed	**2.84*** **	**1.33**	**3.837*** **
Private Listed vs Unlisted SOEs	**7.185*** **	**7.143*** **	**-1.353**

It is evident from Table 2 above that the t-test results show a significant difference at 1% level in the mean of efficiency ratio between listed SOEs and private listed companies. This indicates that the financial autonomy status granted to the listed SOEs is being effectively utilised. Likewise, there is a significant difference at 1% level in the mean of efficiency ratio of listed SOEs and unlisted SOEs, while there is no significant difference in the mean of efficiency ratio between unlisted SOEs and private listed companies. These results are consistent with the view that SOEs with mixed ownership structures operating in the open market economy are subject to less State intervention and operate on more competitive terms than the private listed companies. Concentrated state ownership companies i.e., unlisted SOEs are statistically significantly different at the 1% level in the efficiency ratio indicating a lower level of efficiency in the unlisted SOEs compared to listed SOEs. These results infer that the agency costs in the mixed ownership models (with substantial stake held by GOI) are relatively lower than the concentrated ownership models; accept H_1.

The correlation matrix for the variables was reviewed, revealing that only one pair are above 0.8 which indicates a likely mutlicollinearity problem.

OLS Pooled Regression Model

Ordinary least squares (OLS) regression is a traditional method to estimate the role of efficiency ratio (a proxy of agency costs) on firms' governance and performance determinants andhas been used widely in prior research. The initial regression results obtained in this study used the "vce robust" option to address a potential heterogeneity error and the multicollineartiy, mentioned above, in the model. One recognised problem is that the results can be biased by unobservable factors when using OLS estimation. The study therefore conducts panel data regression with a fixed or random effect model to capture unobserved time-invariant factors. The Hausman test is used to choose between fixed and random effect models.

As there are no missing data issues, as noted above, there is no need to consider completed panel testing. Three samples are considered and the estimations for the listed SOEs, unlisted SOEs and Private listed companies are reported in Table 3.

The Hausman specification test for listed SOEs in Table 3 suggests that the random effect model is more appropriate for estimating the efficiency ratio and its implications to agency costs equation with $\chi2 = 2.46$; Prob> $\chi2 = 0.4828$. Accordingly, a random effect model is pursued for listed SOEs.

In contrast, the Hausman specification test for unlisted SOEs suggests that the fixed effect model is more appropriate for estimating the efficiency ratio and its implications to agency costs equation as above with $\chi2 = 18.86$; Prob> $\chi2 = 0.0003$. Accordingly, a fixed effect model is pursued for unlisted SOEs.

In the case of the private listed companies, the Hausman specification test suggests that the fixed effect model is more appropriate in estimating the efficiency ratio and its implications to agency costs equation as above with $\chi2 = 84.71$; Prob> $\chi2 = 0.0000$. Accordingly, a fixed effect model is pursued for private listed companies.

It is evident from Table 3 that the leverage is negative and significant for listed and unlisted SOEs and negative but insignificant for private listed companies. The significant statistical results at 1% level favours rejection of the null hypothesis for listed and unlisted SOEs while acceptance of the null in the case of the private listed companies. This indicates leverage does not mitigate agency conflict; accept H2.

In the case of listed SOEs, the results show a 1% statistically significant and positive association between company size, sales and efficiency ratio. This indicates that the listed companies are efficiently generating revenues from their investments, suggesting that the increase in sales results in an increase in the efficiency ratio and decrease in agency costs; accept H_3. On the other hand, the significant and negative net income at 1% level indicates that the revenues from non-operating sources are indicative of inefficient utilisation of resources and hence have a negative association with the efficiency ratio and a positive association with agency costs; accept H_4. The board size is significant at 1% level and has a negative association with the efficiency ratio indicating that greater board size tends to increase agency costs.

For the listed private companies the sales are significant at 1% level and have a positive association with the efficiency ratio. Board size is significant at 1% level with a negative association with efficiency ratio, indicating greater board size

tends to increase agency costs. In the case of the unlisted companies, company size has a significantly negative association with efficiency ratio at 1% level indicating that higher investments might not result in generating revenues in proportion to the investments and thereby agency costs tends to increase.

Table 3. OLS Random and Fixed Effects Regression results of Efficiency Ratio (Sales to Total Assets) for different panels of the Listed SOEs

Variables	Listed SOEs	Unlisted SOEs	Private Listed companies
	Random Effect Model - *Z - Values*	**Fixed Effect Model - *t - Values***	**Fixed Effect Model - *t - Values***
Leverage	-3.64***	-2.94***	-0.56
	(0.000)	(0.003)	(0.577)
Company Size	8.22***	-2.44***	-1.64
	(0.000)	(0.015)	(0.102)
Sales	14.65***	0.37	2.45***
	(0.000)	(0.711)	(0.015)
Board Size	-2.03***	-1.13	-2.27***
	(0.043)	(0.260)	(0.024)
Company - Age	0.52	omitted	omitted
	(0.600)		
Profitability	-5.30***	0.78	-1.12
	(0.000)	(0.437)	(0.265)
ROA	0.53	0.88	1.52
	(0.598)	(0.378)	(0.130)
Sector: Manu		na	na
		na	na
Sector: Non-Manu	0.84	omitted	-0.29
	(0.398)		(0.771)
Constant	-0.60	9.04***	3.72***
	(0.545)	(0.000)	(0.000)
Observation	280	549	399
R-Square	0.77	0.036	0.48
Hausman Test	$\chi^2 = 2.46$; Prob> $\chi^2 = 0.4828$	$\chi^2 = 18.86$; Prob> $\chi^2 = 0.0003$	$\chi^2 = 84.71$; Prob> $\chi^2 = 0.0000$

4. Conclusions and Suggestions

The impact of corporate governance changes implemented in India during the period 2003-12 are analysed in this paper. In particular, the possibility that impacts differ between private sector companies listed on the stock exchange, state owned enterprises which have some public shareholding and are listed on the stock exchange (listed SOEs) and SOEs that are unlisted with no public shareholding. Efficiency of public sector versus private sector corporations continues to be debated in the literature and these changes in corporate governance provide evidence of the impact on agency cost, efficiency and return on investment for the differing forms of companies.

A strong upward trend in sales and the value of total assets was most noticeable for mixed ownership corporations, followed by public companies. The mixed ownership companies showed resilience to economic shocks through the period which points to sound governance processes.

The findings of the study indicate that the agency costs for mixed ownership models tend to be lower than those of the concentrated state owned firms because they operate in an open market with market facing the regulatory framework of a competitive environment. Nevertheless, there does appear to be favouritism in access to resource rights and government contracting. In some instances this is overt, such as the granting of exploration permits and in other instances less clear such as in successful tendering of contracts State intervention is an issue and contributes to higher agency costs for concentrated-state owned companies.

Leverage does promote efficiency, returns and lower agency costs. However, the debt is typically bank loans and it is noted that in the listed SOEs State-owned banks have taken significant shareholdings. While this may be interpreted as the financial institutions and banks indicating confidence in SOEs it can also be seen as not reducing the risk to the State sector and likely to reduce risk taking on the part of the corporations as conservative banks exert an influence in the board room. This is an area for important future research.

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THE EFFECTS OF BOARD MECHANISMS AND OWNERSHIP ON THE RELATIONSHIP BETWEEN CEO DUALITY AND EARNINGS MANAGEMENT IN CHINA'S LISTED COMPANIES

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Abstract

The question of whether CEO duality contributes to or constrains earnings management has been debated for decades. Yet there is conflicting evidence in previous literature, this paper firstly finds that CEO duality are positively related to earnings management in China's unique environment. Secondly our empirical evidence suggests that internal and external board mechanisms can moderate CEO duality's effects on earnings management. Board mechanisms, i.e. board independence level and audit committee can moderate the positive relationship between CEO duality and earnings management. Furthermore, the factor analysis shows that certain combination of board mechanisms can also mitigates the effects of CEO power on earnings management.

Keywords: CEO Duality, Earnings Management, Board Mechanisms

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1. Introduction

The *Code of Corporate Governance for Listed Companies in China* does not clearly require the separation of the role of CEO and chairperson. In other words, the regulators in China have allow the listed companies themselves to decide either to separate or unite these two top roles. In practice, the proportion of listed firms in mainland China having CEO duality has been decreasing, from approximately 60% in the early 1990's (Bai et al., 2004) to approximately 17% by the end of the 2010 (Lin et al., 2010). Evidently, there is a trend that an increasing number of firms opt to separate the role of CEO and chairperson. However, this trend is not fully supported by the empirical research as recent findings show that separating CEO and chairperson in China is not always beneficial to firms which are operated in a resource dependent and dynamic environment (Peng et al., 2007). Tian and Lau (2001) document that the separation of CEO and chair is negatively associated with firm performance, a finding supported by Song et al. (2006), when firms have a high level of state ownership. These findings use ROA, ROE and Tobin's Q as the measures of performance and show that duality firms outperform non-duality firms. Different to the above findings, this paper finds that there is a positive association between CEO duality and earnings management. The positive association can be mitigated by the establishment of audit committee and board independence. Disappointingly, there is limited evidence suggesting that non-controlling institutional investors can be a mechanism to counter CEO duality's positive association with earnings management considering the disproportional shareholdings between controlling shareholders and non-controlling institutional investors.

The remainder of the paper is structured as follows. Section two provides the literature review and hypotheses development. Section three explains the methods and the empirical results and discussion are presented in section four. The additional analyses are provided in section five and concluding comments are in section six.

2. Literature and hypotheses

The question of whether CEO duality contributes to or constrains earnings management has been debated for decades. CEO duality in the U.S. is common and research finds there are some benefits associated with duality. Vafeas and Theodorou (1998) and Weir and Laing (1999) find that duality does not have a negative impact on performance in the U.K. Furthermore, Boyd (1995) shows that CEO duality results in better performance in firms in the U.S. In practice, a large number of U.S. firms do not separate the role of the CEO and chairman (Finkelstein and Mooney, 2003). According to

stewardship theory, when the role of CEO and Chairman are held by the same person, the CEO can implement strategies with minimum board intervention (Rechner and Dalton, 1991). In contrast, based on agency theory, the separation of the CEO and chairman is to ensure that the CEO does not have too much power over the board. This conjecture is supported by the U.K.'s regulatory recommendation[1] that a board should be chaired by an independent director. Prior research on the association between CEO duality and earnings management is mixed. Klein (2002) finds that the absolute value of discretionary accruals is positively associated with the CEO who also hold a position on the nomination and compensation committees. The result implies that a CEO with excessive power can easily manipulate earnings. In investigating the relationship between the value of CEO stock options and the incidence of fraudulent financial reporting, O'Connor et al. (2006) find that CEO duality increases the likelihood of earnings management to boost CEO compensation. However, Abdul-

In China, the trend of separating CEO and chair is inevitable as the number of non-duality firms is increasing dramatically from late 1990s to 2010. Based on agency theory, duality can increase the cost of monitoring a board dominated by the CEO (Fama and Jensen, 1983). The separation of the CEO and chairman is to ensure that the CEO does not have too much power over management. However, the *Code of Corporate Governance for Listed Companies in China* does not clearly require the separation of the role of CEO and chairperson. Many board of directors in a traditional SOE is run by a CEO who is also the chairman of the Communist committee of the SOEs. Wu (2002) explains the institutional background for CEO duality in Chinese SOEs and show that CEO duality helps SOEs to perform better due to the lack of ultimate owners and weak supervision.

During the economic reform by the State Council in the 1990's, the CSRC starts to recommend the separation of roles of the CEO and chairman[2]. Separating these roles is likely to reduce earnings manipulation because the CEO is monitored by an independent chairman, which in turn, reduces the likelihood of the CEO disregarding the interests of shareholders. Li and Nai (2004) find that CEO duality is associated with lower Economic Value Added (EVA), a measure for valuing firm productivity, and reduces firm performance. Using a sample of 1954 firm year observations between 2001 and 2004, Wan and Liang (2008) show that CEO duality is associated with lower quality disclosures. Shen and Zhang (2002) find that the Chinese special treatment (ST)[3] firms are more likely to have CEO duality. In China, ST firms are treated as operational failures. Shen and Zhang suggest that CEO duality may be associated with board ineffectiveness in Chinese ST firms. CEO duality can entrust a CEO with dominant power without being monitored, and therefore the lack of supervision may encourage a CEO to manage earnings more often for personal gains in Chinese firms. This leads to the following hypothesis:

Hypothesis 1: There is a positive relationship between CEO duality and earnings management in Chinese listed firms.

Board independence

Even though the China's *Code of Conduct* does not clearly mandate the separation of the role of CEO and chairperson, it recommends an appropriate composition of a "good" board which includes such things as: the level of board independence, board activities and independent directors' expertises. Since then, Chinese firms actively follow the requirement to lift board independency levels (Li and Nai, 2004; Li and Naughton, 2007). A higher percentage of board independence can avoid the conflicts of interest between boards and management and safeguard the monitoring role of the boards. Another argument is the reputation concerns of independent directors in China. Chinese firms like to appoint academically and professionally excellent people as independent directors. These people are very concerned about their reputation because damage to their professional career can be catastrophic and costly. Any detected earnings manipulation or frauds in their affiliated companies can damage their reputation. Therefore, in order to protect their reputation and career, independent directors in China are motivated to increase their monitoring power of management and detect the occurrence of opportunistic earnings manipulation[4]. This study

[1] Please see the Cadbury Report (1992).

[2] Please see the Fourth Plenary Session of the Fifteenth Communist Party of China's Central Committee hosted by the retired President Jiang Zeming who was the incumbent president at the time of the Session in 1999 (http://news.xinhuanet.com/ziliao/2003-01/20/content_697219.htm).

[3] ST stands for special treatment. Since Aril 1998, the Shanghai and Shenzhen Stock Exchanges adopt the ST Rule. A Chinese listed firm is titled as "ST" when it makes two yearly losses consecutively or its net asset is lower than the firm's capitalisation. Investors may avoid buying the shares of these ST Chinese firms. In addition, the ST characteristics make it difficult for the firms to raise capital in share markets because these ST firms cannot pass the thresholds set by the CSRC before Right issues. There are 82 listed ST firms from 1998 to 2000 in Shen and Zhang's research.

[4] For example, recently, Mr. JunSheng Li, the vice chancellor of Central University of Finance and Economics, a leading Chinese university in Beijing, resigned his independent directorship in FHJS (Code: 000046) for reputation concern (http://news.xinhuanet.com/fortune/2011-01/23/c_121013207.htm).

predicts that as Chinese listed firms appoint more independent board members there will be an increase in board monitoring and deterrents to earnings management. The preceding discussion leads to the following hypothesis:

Hypothesis 2: The positive relationship between CEO duality and earnings management will be moderated by high level of board independence.

Audit committee

The monitoring role of the audit committee is important in China due to the weak legal protection in which minority shareholders are subject to expropriation by dominant shareholders and powerful CEO. Country characteristics explain much more of the variance in governance than firm level features(Aguilera and Jackson, 2003; Doidge et al., 2007). The political and economic systems, as well as the characteristics of the listed firms in China are important in considering audit committee effectiveness and their effect on earnings management in China. The role of the audit committee, as a governance mechanism, is to reduce the information asymmetry between stakeholders and managers and, therefore, mitigate agency costs. Audit committee oversight includes financial reporting, internal controls to assess risk, and auditor activity. The State Council published a Provision for Internal Auditing Management in Federal SOEs (October 2004), requiring SOEs to set up an independent audit committee under the board of directors in compliance with the *Code of Conduct* for listed firms and internal control mechanisms. As the State is influential in determining the compliance with the Corporate Governance Code in China (Chambers, 2005) and has increased the emphasis on the role of the audit committee, an independent audit committee is likely to constrain earnings management in China.

Hypothesis 3: The positive relationship between CEO duality and earnings management will be moderated by the presence of audit committee.

Non-controlling institutional investor

The privatisation of SOEs offers institutional investors a mean of pursuing investment opportunities in an emerging market. The Chinese regulators have enacted strategies to encourage financial institutions, domestic and foreign, to invest in listed firms and act as a monitoring party to improve corporate governance in China. In accordance with the partial privatisation of SOEs, financial institutions can raise their holdings in portfolio companies to participate in the growth of this emerging market. Foreign direct investment in China jumped 46% in the first half of 2008, according to government data (Ministry of Commerce, China) released on 4 July 2008. Overseas firms brought in $52.4 billion in investment during the six-month period. Theoretically, institutional investors have more wealth and resources to gather more informative and relevant information than individual investors through their substantial shareholdings (Jiambalvo et al. 2002). In doing so, the sophisticated institutional investors are able to monitor the firm's operation and deter managers from taking actions to harm the firm's long-term development strategies. However, not all of the institutional investors are from long-term perspectives. Short-term institutional shareholdings may encourage managers to manipulate the accounting figures to meet or beat earnings targets to obtain quick profit (Bushee, 1998).

Prior research suggests that financial institutions play a limited role in monitoring the governance of listed firms in China, mainly due to "concentrated State ownership, an immature regulatory environment, inadequate transparency and disclosure of financial information, and weak corporate governance within financial institutions themselves" (Yuan, 2008). However, Yuan's study was conducted in 2003 when there were fewer mutual funds and securities companies. It is therefore important to empirically test the role that non-controlling institutional investors play in the quality of earnings, and consequently, the effectiveness of the recent regulatory reforms. A company may commit to providing higher quality earnings to induce foreign investors to invest. Alternatively, foreign investors will put pressure on companies to improve the quality of their accounting information to protect their investment. Collectively, both foreign and domestic institutional investors may be able to exert pressure on a company to improve the quality of the financial statements. Firth et al., (2007) find the presence of foreign shareholders in Chinese listed firms being negatively associated with discretionary accruals, the measure of earnings management. However, they do not test the level of ownership of foreign investors. It is expected that the higher the collective share ownership of institutional investors, the lower earnings management will be. The preceding discussion leads to the following hypothesis:

Hypothesis 4: The positive relationship between CEO duality and earnings management will be moderated by the level of non-controlling institutional ownership.

3. Methods

Sample

Our sample firms are randomly selected from the top 500 in the Shanghai Stock Exchange (SHSE) and from the top 300 in the Shenzhen Stock Exchanges (SZSE) in 2008. Of the 482 firms we selected, 204 firms have a complete five years' observations. The remaining 278 firms have one to four years' observations because some firms commenced their listing on the exchanges during the sample period and some firms are delisted after experiencing three consecutive years of loss without turnaround.

Model

The model presented below is used to test the relationship between the level of earnings management and CEO duality. Also, other aspects of governance mechanisms, as we discussed in hypotheses two to four are collaboratively tested by equation (1).

$$AABA = \beta_0 + \beta_1 CEODUA + \beta_2 BDIND + \beta_3 AC + \beta_4 INS + \beta_5 LAROWN + \beta_6 STATE + \beta_7 GOV + \beta_8 ADT + \beta_9 BIG4 + \beta_{10} LEV + \beta_{11} ROA + \beta_{12} GROWTH + \beta_{13} INDUSTRY + e_{it} \quad (1)$$

AABA	=Absolute value of abnormal accruals obtained from modified Jones model
CEODUA	=Dummy variable of 1 if CEO is Chairperson at the same time; 0: otherwise
BDIND	=Number of independent directors divided by total number of directors on the board
AC	=Dummy variable of 1 if a firm has an audit committee; 0: otherwise
INS	=Number of shares held by the foreign and domestic institutional investors divided by
LAROWN	= Proportion of shares held by the controlling shareholder
STATE	=Dummy variable of 1 if the firms are controlled by the State; 0: otherwise
GOV	=Dummy variable of 1 if a government official is an independent director on the board;
ADT	=Number of years for current audit firm's appointment
BIG4	=Dummy variable of 1 if the annual report is audited by Big4; 0: otherwise
LEV	=(Long term debt + debt in current liabilities) / total assets
ROA	=Return on asset from Mint Global. It is calculated as earnings before interest and extraordinary income divided by total assets
GRWOTH	= Market capitalisation over book value of equity
INDUSTRY	=This dummy variable is categorised according to the GICS code, mainly focused on Consumer Staples, Material, Consumer Discretionary and Industrial

4. Empirical results and discussion

Table 1 presents the results of the descriptive statistics for the dependent, independent and control variables used in equation (1). The dependent variable AABA is the absolute value of residuals obtained from the cross-sectional regression modified Jones (Kothari et al. 2005). The mean of AABA is 0.170. There are 1033 (83.04%) firms separating the roles of CEOs and chairpersons. SOEs are more likely to separate the roles than the Non-SOEs. The occurrence of CEO duality and turnover are low in the sample. The sample Chinese firms have an average board independence of 35.35%, slightly above the benchmark of one-third of board independence recommended by the China's regulator. Not all of the listed firms have established an audit committee. 707 (56.83%) firms establish an audit committee in the sample. Firms directly or indirectly controlled by the state are more likely to appoint an audit committee than the non-State controlled firms. There was an increasing trend for firms to establish an audit committee from 2004 to 2008 due to the change in governance regulation. On average, the largest shareholders control 40% of the firm's shares, while 17.4 of the shares are collectively held by the non-controlling institutional investors. In comparison, the largest shareholders effortlessly overpower the non-controlling institutional investors with their dominant shareholding. The majority of the sample is made up of State-controlled enterprises (SCEs), which accounts for about 74.35% of the observations and 84.7% of the whole sample, like to employ government officials as independent directors. There are 95.97% of the sample firms disclosing the tenure of the audit firms. The mean of tenure is 6.2 years with a maximum of 17 years which is comparable to the findings by Chen and Xia (2006). Only 8% of the sample employs Big 4 accounting firms. This is consistent with Hu and Jiang's (2007) findings that audit market in China is less concentrated, featured by a number of local non-Big4 accounting firms.

Table 2 shows the correlation matrix between *AABA* and the independent and control variables. Overall, there are a number of statistically significant correlations between board characteristics, ownership and control variables. The correlation results are used as preliminary

guidance for the regression tests. The issue of multi-collinearity between independent variables and control variables is not evident. Most of the coefficients are not considered highly correlated. CEO duality, board independence, audit committee and non-controlling institutional investors are all correlated, as to be expected. The issue of multi-collinearity is avoided as these independent variables are not analyzed in the same regression.

The sample firms are classified into eight industries according to the 2-digit GICS code. When running each regression, *Industry* and *Year* are included as control variables. Variable regressions are run with and without different industry dummies. These regressions yield similar results. Due to the space limit, the regression result on each industry is not shown in the main table. Before interpreting the relationship between variables, it is important to examine the value of adjusted R^2 and VIF to determine whether multi-collinearity is an issue. Overall, nearly all the values of VIF are less than ten, implying that the multi-collinearity level is not high (Rawlings, 1988). Additionally, the value of adjusted R^2 obtained in this study is comparable with those in similar research, showing that 18% of the variance in discretionary accruals is explained by the primary model with the exception of model 2, which has an adjusted R^2 of 29.5%.

Table 3 shows support for H1 with the significant and positive relationship between *CEODUO* (.022, $p< .1$) and earnings management, indicating that Chinese firms with CEO duality are more likely to have a higher magnitude of earnings management. The separation of the roles of CEO and chairperson is one of the solutions to agency problems to ensure that a CEO is not entrusted with excessive power over the board. Avoiding CEO duality is consistent with previous research that criticises the adverse effects of CEO duality, such as domination by the CEO and lack of supervision (Shen and Zhang, 2002, Wang and Liang, 2008). However, the moderating effects of board independence, presence of audit committees and non-controlling institutional investors set in and mitigate the positive effects of CEO duality and earnings management. Therefore, H2 to H4 are supported. The introduction of *BDIND* and *AC* has reduced the positive relationship between *CEODUA* and *AABA* to be insignificant. The coefficient of *CEODUA_INS* and AABA is positively and significantly at 0.05 level. This finding may be interpreted as the institutional investors in China being short-term investors and encouraging management to manipulate earnings for quick profits. Last but not least, the controlling shareholders also contribute to earnings management together with *CEODUA*. Many Chinese listed companies' chairpersons act as the CEOs as their controlling stakes increases.

5. Additional analysis

Factor analysis is used to analyse interrelationships among internal and external corporate governance variables, and to condense the complex information into a smaller set of factors with minimal loss of information. Direct Oblimin rotation[5], principal components factor extraction, is performed to generate the factors. Principal axis factoring is used to compare the results and the findings are consistent (Larcker et al., 2007). The analysis identifies five factors that have an Eigen value of more than one. Furthermore, the Kaiser-Meyer-Olkin measure of sampling adequacy is near the recommended minimum threshold of .60 at a significant level of .01 (Tabachnick & Fiddell, 2001). Investigation of the component matrix detects the variables that loaded onto factors at a level above .50, following removal of cross loading items above .30.

Table 4 presents five factors in each model with loaded variables. These five factors are named based on their components. The results in Table 5 generate an interpretable outcome because in most cases, the variables with similar natures are loaded together at a level above .50. The first factor is *CEOPOWER*, composed of CEO duality and CEO turnover-after-loss. After firms make loss for years, its CEO can be forced out and the role of CEO can be taken over by the powerful chairperson in China. So it is not surprised that *CEODUA* and *CEOTOA* is loaded together. BD size and activity load onto *BDPOWER* with same direction, implying a large board meeting frequently has great board power. Board independence and audit committee independence is a useful tools to counter the excessive power of CEO duality. In addition, Big 4 accounting firms and audit tenure are positively loaded onto the factor named *AUDITOR*, suggesting the Big 4 accounting firms normally have a long engagement with their clients.

CEO power and Board power

The regression results (Table 6) using components generated from factor analysis reveal that certain mechanism needs to complement other mechanisms to become more efficient. Some board characteristics can weaken or strengthen the effectiveness of other mechanisms. First, the coefficient between *CEOPOWER* is positively associated with *AABA* (.137, $p < .05$) in the sample of 1240 firms. The results illustrates that both CEO duality and turnover are positively associated with earnings management and provide support for H1. Second, Table 6 shows that *BDPOWER* has a negative coefficient with *AABA* (-.263, $p <.05$).

[5]Also, Varimax rotation and principal axis factoring are employed in the analysis and they produce similar results.

This indicates that large boards with frequent meetings can be associated with low level of earnings management. Also, greater board power can offset the excessive CEO power and this is associated with lower level of earnings management.

In addition, AC presence as a dummy variable is used in the third model to test the effects of the establishment of an audit committee. However, the result is not significant but it does mitigate the positive relationship between CEO duality and *AABA*, which lend the support to H 3. Similar to Larcker et al. (2007), the result has an adjusted R^2 of .087 to .301. Some of the results are unexpected, such as the positive nature of industrial experience, making the explanation difficult.

6. Conclusion

By testing the relationship between CEO duality and earnings management, this study shows that it is supportive of agency theory rather than stewardship theory for CEO duality in China. The finding is also consistent with the recent trend of dramatic increase in the number of firms choosing to voluntarily separate the roles of CEO and chairperson. Stewardship theory and resource dependence theory may justify the need for CEO duality in conditions of resource scarcity and environmental dynamism (Peng et al., 2007). However, the empirical evidence shows that CEO duality is positively associated with earnings management, suggesting CEO duality is an important factor in management's fraudulent behaviour. Furthermore, the positive relationship between CEO duality and earnings management can be moderated by the board mechanisms, such as board independence and the establishment of an audit committee. The moderation of controlling shareholders' holding cannot reduce the CEO duality's effects on earnings management, suggesting it is hard for non-controlling institutional investors to challenge the dominant CEO power due to the entrenchment effects.

Table1. Descriptive Statistics (N=1242)

	AABA	CEODUA	BDIND	AC	INS	LAROWN	STATE
Mean	.170	.170	.354	.568	.174	.400	.744
Median	.110	.170	0	1	.144	.387	1
Std. Deviation	.246	.482	.052	.354	.125	.165	.418
Minimum	0	0	.118	0	.004	.065	0
Maximum	3.833	1	.750	1	.718	.852	1
	GOV	AUDT	BIG4	LEV	ROA	GROWTH	TA
Mean	.847	6.243	.082	.252	-.003	4.500	6734
Median	1	6.000	0	.233	.031	2.067	3255
Std. Deviation	.529	3.806	.438	.232	.608	25.962	16117
Minimum	0	1	0	.000	-20.548	-114.531	47
Maximum	1	17	1	3.040	1.992	645.083	347037

AABA: Absolute value of abnormal accruals obtained from Modified Jones Model. CEODUA: Dummy variable of 1 if CEO is Chairperson at the same time; 0: otherwise. BDIND: Number of independent directors divided by total number of directors on the board. AC:Dummy variable of 1 if a firm has an audit committee; 0: otherwise. INS: Number of shares held by the non-controlling institutional investors divided by the total issued share. LAROWN: Proportion of shares held by the controlling shareholder.STATE:1=State Controlled Enterprises, 0=otherwise. GOV: Dummy variable of 1 if a government official is an independent director on the board; 0: otherwise.BIG4:1=audited by Big4, 0= otherwise. LEV: (Short-term debts + long-term debts) / total assets.ROA: ROA at current year. GROWTH: Market capitalisation over book value of equity at current year. TA: total assets at current year, measured by million RMB.

Table 2. Pearson's correlations coefficients (N=1242)

	AABA	*CEODUA*	*BDIND*	*AC*	*INS*	*LAROWN*	*STATE*	*GOV*	*BIG4*	*LEV*	*ROA*
AABA	1										
CEODUA	.025***	1									
BDIND	-.036**	-.431**	1								
AC	-.027**	-.112**	.867**	1							
INS	.019	.036	-.144	-.157**	1						
LAROWN	.074*	.071*	-.062**	-.160**	-.094**	1					
STATE	-.038	.007	-.008	-.081**	.044	-.066*	1				
GOV	-.095**	-.237**	-.142**	-.175**	-.029	-.165**	.064*	1			
BIG4	-.082**	-.014	.009	.011	.034	-.038	.017	-.037	1		
LEV	.047	.144*	.075	.092	-.001	-.004	-.007	-.056	.033	1	
ROA	-.024**	-.136**	.492**	.047	-.021	-.124	-.076	-.075	.086	.566**	1
GOWTH	-.029**	-.051	.086	.647**	.068	-.178**	-.123*	.024	.010	.008	.061

Table 3. Regression results. Dependent variable: (*AABA*)

Variable	Sign	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
Constant	?	0.134***	0.107***	0.135***	0.118***	0.130***	0.238***
		(5.472)	(5.325)	(5.412)	(5.069)	(5.371)	(3.329)
CEODUA	+	0.022*	0.023	0.180	0.021	0.022	0.017
		(1.057)	(0.739)	(1.010)	(0.912)	(0.717)	(0.127)
BDIND	-		-0.070				-0.012*
			(1.052)				(.465)
CEODUA_BDIND			-0.109				
			(1.109)				
AC	-			-0.063			-0.037*
				(0. 717)			(.974)
CEODUA_AC				0.468			
				(0. 632)			
INS	-				0.046		0.029*
					(0.715)		(1.225)
CEODUA_INS					0.078**		
					(2.653)		
LAROWN	?					0.018*	-0.036*
						(1.013)	(1.137)
CEODUA_LAROWN						0.113**	
						(2.415)	
BIG4	-	-0.355***	-0.0274***	-0.029***	-0.0276***	-0.0278***	-0.033*
		(6.580)	(6.069)	(6.016)	(6.694)	(6.702)	(1.238)
GOV	?	-0.348***	-0.301***	-0.382***	-0.305***	-0.314***	-0.378***
		(13.326)	(10.005)	(10.059)	(10.502)	(10.536)	(10.838)
STATE	?	-0.045**	-0.051**	-0.052**	-0.054**	-0.056***	-0.061***
		(3.953)	(3.005)	(3.579)	(3.582)	(3.586)	(3.638)
GROWTH	_	-0.023**	-0.015***	-0.018***	-0.014***	-0.018***	-0.042***
		(5.351)	(5.245)	(5.175)	(5.125)	(5.346)	(4.642)
LEV	+	0.012*	0.033*	0.014*	0.034*	0.004*	0.064**
		(1.272)	(1.412)	(1.212)	(1.013)	(1.029)	(1.266)
ROA	_	-0.037**	-0.073**	-0.070***	-0.071***	-0.073***	-0.035***
		(4.743)	(4.049)	(4.016)	(4.162)	(4.683)	(4.364)
Industry	?	included	included	included	Included		Included
Year	?	included	included	included	Included		Included
Adjusted R^2		0.187	0.195	0.183	0.176		0.182
F		16.585***	11.900***	19.609***	18.013***	17.934***	19.603***
N		1242	1242	1242	1242	1242	1242

***. **.*. : Correlation is significant at the 0.01, 0.05, and 0.1level (2-tailed). *t* – Statistics are provided in parentheses under the estimated coefficient.
AABA: Absolute value of abnormal accruals obtained from Modified Jones Model. *CEODUA*: Dummy variable of 1 if CEO is Chairperson at the same time; 0: otherwise.*BDIND*: Number of independent directors divided by total number of directors on the board. *AC*: Dummy variable of 1 if a firm has an audit committee; 0: otherwise. *INS*: Number of shares held by the non-controlling institutional investors divided by the total issued share. *LAROWN*: Proportion of shares held by the controlling shareholder. *STATE*: 1=State Controlled Enterprises, 0=otherwise.*GOV*: Dummy variable of 1 if a government official is an independent director on the board; 0: otherwise. *BIG4*: 1 = audited by Big4, 0= otherwise.*LEV*: (Short-term debts + long-term debts) / total assets. *ROA*: ROA at current year. *GROWTH*: Market capitalization over book value of equity at current year.

Table 4. Exploratory principal component analysis (N=1240)

Factor	Variables	Loading
CEOPOWER	CEODUA	0.726
	CEOTOA	0.726
BDPOWER	BDSIZE	0.729
	BDACT	0.729
IND	BDIND	0.756
	ACIND	0.756
BDEXP	BDACC	0.712
	BDFIN	0.617
	BDINDS	-0.623
AUDITOR	BIG4	0.709
	AUDT	0.709
CEODUA: Dummy variable of 1 if a CEO is also the Chairperson; 0: otherwise. CEOTOA: Dummy variable of 1 if a CEO is changed after firms make a loss; 0: otherwise. BDSIZE: Number of directors on the board. BDIND: Number of independent directors divided by total number of directors on the board. ACIND: Number of independent directors divided by total number of directors on the audit committee. BDACC: Number of independent directors with accounting experience divided by total number of independent directors on the board. BDFIN: Number of independent directors with financial experience divided by total number of independent directors on the board. BDINDS: Number of independent directors with industrial experience divided by total number of independent directors on the board. BDACT: Number of board meetings during the financial year. BIG4: Dummy variable of 1 if the annual report is audited by Big4; 0: otherwise. AUDT: Number of years for current audit firms appointment.		

Table 5. Pearson and spearman's correlations coefficients for factor analysis (N=1240)

	AABA	*CEOPOWER*	*BDPOWER*	*BDEXP*	*IND*	*ACPRE*
AABA	1					
CEOPOWER	.045	1				
BDPOWER	-.012	-.030	1			
BDEXP	-.091**	-.188**	.125**	1		
IND	-.131**	.144*	.023	.086**	1	
AC	-.010	-.259	.023	.149**	.028	1
AUDITOR	.057*	.017	-.042	-.077**	-.033	-.121**
**.*, Correlation is significant at the 0.01 and 0.05 level (2-tailed).						

AABA: Absolute value of abnormal accruals obtained from Modified Jones Model
CEOPOWER: Factor of *CEODUO* and *CEOTOA*.
BDPOWER: Factor of BDSIZE and *BDACT*.
BDEXP: Factor of BDACC, *BDFIN* and *BDINDS*.
IND: Factor of *BDIND* and *ACIND*.
AC: Dummy variable, 1 = the presence of an audit committee. 0 = otherwise.
AUDITOR: Factor of *BIG4* and *AUDT*. *AUDT*: Auditor tenure, the number of years for current audit

Table 6. Regression results

Variable	Sign	Model 1	Model 2	Model 3	Model 4
Constant	?	.115***	.235***	.016***	.052***
		(2.645)	(3.930)	(3.283)	(5.983)
CEOPOWER	+	.137**	.108*	.117***	.039***
		(2.035)	(1.453)	(6.932)	(5.937)
BDPOWER	-		-.263**		-.082**
			(-1.727)		(2.843)
BDEXP	-		-.213***		-.081***
			(3.535)		(8.514)
IND	-			.132*	.134**
				(1.393)	(4.921)
AC	-			-.181	-.207**
				(1.281)	(2.348)
AUDITOR	?	-.052***	-.005**	-.010	-.021*
		(2.751)	(2.045)	(.236)	(1.923)
LEV	+	.006*	.007*	.012	.034**
		(1.076)	(1.052)	(.754)	(2.863)
ROA	_	-.039***	-.043***	-.046***	-.037***
		(3.821)	(7.867)	(7.987)	(9.829)
GROWTH	_	-.034***	-.044***	-.030***	-.037***
		(4.098)	(4.612)	(5.218)	(5.932)
Industry	?	included	included	included	Included
Year	?	included	included	included	Included
Adjusted R^2		.081	.197	.136	.146
F		15.628***	11.971***	14.628***	15.923***
N		1242	1242	1242	1242

***. **.*. : Correlation is significant at the 0.01, 0.05, and 0.1level (2-tailed). *t* – Statistics are provided in parentheses under the estimated coefficient.
AABA: Absolute value of abnormal accruals obtained from Modified Jones Model. *CEOPOWER*: Factor of *CEODUO* and *CEOTOA*. *BDPOWER*: Factor of *BDSIZE* and *BDACT*. *BDEXP*: Factor of *BDACC*, *BDFIN* and *BDINDS*. *IND:* Factor of *BDIND* and *ACIND*. *AC*: Dummy variable, 1 = the presence of an audit committee. 0 = otherwise. *AUDITOR*: Factor of *BIG4* and *AUDT*. *LEV*: (Short-term debts + long-term debts) / total assets.*ROA*: ROA at current year. *GROWTH*: Market capitalisation over book value of equity at current year.

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AN EMPIRICAL INVESTIGATION OF THE CULTURE-IFRS MUTUAL RELATIONSHIP IN JORDAN

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Abstract

This paper investigates the mutual relationship between Jordanian practitioners' individualistic/collectivistic cultural orientation and the International Financial Reporting Standards (IFRS). It explores Jordanian accountants' perception of the importance of IFRS, the IFRS-embedded cultural values attributed to those accountants, and whether adopting IFRS has contributed to change their cultural orientation. A three-part questionnaire distributed to 81 Jordanian accountants reveals that their cultural orientation is more collectivistic than individualistic. Moreover, accountants who have practiced only IFRS have a more individualistic orientation than those with long experience with the pre-IFRS standards. As the paper analyses only one cultural dimension (i.e., collectivistic versus individualistic), further research should explore other cultural dimensions, such as power distance, masculinity and uncertainty avoidance, religion and language, and their interrelationships with IFRS. Our findings should be relevant to other countries, especially those with developing or emerging economies, as they strive to improve the effectiveness of their corporate financial information.

Keywords: Culture, Developing Countries, IFRS, Jordan

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1. Introduction

Many accounting studies argue that international accounting standards, which are based on Western culture, do not fit the cultural dimensions of developing countries such as those in the Middle East (Chand and White, 2007; Samuels and Oliga, 1982 Hove, 1989; Briston, 1983; Wallace, 1993; Larson and Kenny, 1995; Doupink & Salter, 1995; Askary, 2006; Tyrral et al., 2007; Ballas et al., 2010, Parlakkaya et al., 2011; Zeghal and Mhedhbi, 2012). Nevertheless, many of Middle Eastern securities markets have adopted the International Financial Reporting Standards (IFRS) despite their Western culture orientation (Abd El Razik, 2009).

Indeed, culture is one of the underlying forces affecting the adoption of IFRS, formerly known as the "IAS" (Perera, 1989). Several scholars argue that accounting practices may constitute and reshape the context in which accountants operate (Burchell et al., 1980; Fearnley and Hines, 2007). For example, Hassan (2008 a; b) argues that incorporating new reporting standards, particularly the IFRS, for newly privatized (i.e., formerly public) organizations may increase organizational members' commitment to the kind of liberalization and privatization processes that require more democracy and transparency. Accounting standards sometimes serve to improve accounting practice by inducing cultural change. Dahawy et al. (2002, p. 211) argue That adopting IFRS constitutes a radical change in developing countries since these standards require accountants to exercise professional judgment and increase transparency.

One of the key aspects of studies on the culture-IFRS relationship is their use of either a comparative analysis across different countries or a focused analysis of accounting practices and cultures within a single country (Mir et al., 2009, p. 641); however, such studies have failed to examine how accounting practices contribute to changing accountants' and practitioners' cultures. This paper examines whether there is a mutual effect between Jordanian cultural values, particularly individualism and collectivism, and practitioners' perception of the IFRS. The paper investigates how IFRS

adoption has helped change Jordanian accountants' cultural orientation. To address this question, the paper asks 1) to what extent Jordanian professional accountants perceive the IFRS to be important, 2) what type of cultural values are attributed to Jordanian professional accountants, and 3) whether IFRS adoption, among other societal changes, has contributed to changes in practitioners' cultural values.

Although several IFRS studies have examined the IFRS' effect on and/or suitability for developing and emerging economies (Tyrral et al., 2007; Ballas et al., 2010; Parlakkaya et al., 2011; Zeghal and Mhedhbi, 2012), none has investigated the mutual interrelationship between the perceived importance of IFRS and individualism or collectivism. This paper closes this research gap and expands on prior studies by examining that mutual relationship as it occurs in Jordan, a developing Middle Eastern nation. The paper's results should help the International Accounting Standard Board (IASB) induce a convergence between practitioners' cultures and IFRS adoption (Alfredson et al., 2009).

Jordan was chosen for this study for several reasons. First, despite its collectivistic culture, the country has undergone numerous socio-economic changes over the last twenty years that may have led to cultural changes. Second, though studies have investigated the development and suitability of IFRS in Jordan (Habouni, 2005; AlAkra et al., 2009; Rahalhleh, 2010; Siam and Rahahleh, 2010), none provides an in-depth examination of the relationship between individualism and collectivism and the perceived importance of IFRS in Jordan. Third, Jordan is one of the Middle Eastern countries that requires the application of a full, unmodified version of IFRS, through its Company Act Law of 1997 and Securities Market Law of 2002 (A-Akra et al., 2009, Halbouni, 2009). These circumstances provide an excellent opportunity to investigate the culture-IFRS relationship.

The rest of this paper is organized as follows. The next section provides a literature review and hypotheses development. The third section describes Jordan's institutional context. Section four discusses the design of the empirical study, while section fives discusses the empirical results, and the conclusion closes the discussion.

2. Literature Review and Hypothesis Development

Matsumoto and Kupperbusch (2001) define culture as an "organized system of rules for living, shared by a group of people and communicated from one generation to the next" (p. 114). Culture manifests itself not only in values but also in more superficial ways, such as symbols, heroes, and rituals (Hofstede, 2001, p. 1). Violet (1983) defines culture as a learning behavior and a product of human activities that, in turn, shape our personalities, behavior, and attitudes.

Hofestede (1997) argues that the concept of "national culture" has several dimensions (see also Schwartz, 1994; Trompenaars and Hampden-Turner, 1998; Kluckhohn and Strodtbeck, 1961), one of which is the distinction between Individualism and collectivism. This dimension, Man and Lam (2003) argue, appears to be the most significant difference among cultures. The importance of that dimension is best described by Early and Gibson (1998, as cited in Man and Lam, 2003): "a key distinguishing characteristic of work behavior in societies is the way members relate to one another as a group. The pattern of responses with which individuals relate to their groups reflects their degree of individualism or collectivism" (p. 265).

Individualistic cultures promote the needs, wishes, and desires of individuals over groups, while collectivistic cultures foster the needs, wishes, and desires of in-groups over individuals (Matsumoto and Kupperbusch, 2001). People in collectivistic cultures belong to strong, cohesive in-groups (Ding et al., 2005). Individualism is considered by many Western cultures as an expression of freedom. Collectivism, at the other extreme, is often rooted in societies where basic survival depends on shared group values, in-group cohesion, and obedience to group aims.

Individualism is characterized by an emphasis on the self as separate from others. It evokes a strong motivation in individualists to express their inner attributes (Triandis, 1996). People in individualistic cultures are viewed as independent, with a unique character that distinguishes them from others (Markus and Kitayama, 1991), while collectivism is characterized by an emphasis on belonging to at least one collective. Collectivists value social norms, cooperation, obligations, interpersonal harmony, and group cohesion (Triandis, 1995). People in collectivistic cultures view the self as inherently interdependent on the group to which they belong (Markus and Kitayama, 1991).

Hofstede's model of culture has been criticized on the grounds that 1) the model is not representative, being derived from a survey on a single company in the early 1980s (McSweeny, 2002), 2) the data on which the model is based are too old to be relevant to current issues (Combs et al., 2011), 3) it is not certain that culture can systematically cause behavioral differences among people from different countries (Williamson, 2002). Despite these criticisms, Hofstede's model remains one of the most frequently cited in culture studies; it has been used extensively in business research and has been found to be empirically valid in several studies (e.g., Schwartz, 1992; Trompenaars, 1993; Combs et al., 2011). Given this support, this

study uses Hofsdede's model as a basis for its assumptions and empirical methodology.

2.1 The effect of culture on IFRS

Several studies have examined the influence of culture on accounting practices (Belkaoui and Picur, 1991; Doupnik and Richter, 2004; Patel et al., 2002; Yin Fah, 2008; Clements et al., 2010). Doupnik and Riccio (2006) argue that cultural differences may cause accountants from different countries to differ in their application of a common accounting standard.

Hofstede (1984) has identified four factors operating in international differences among cultural values: uncertainty avoidance, power distance, masculinity (versus femininity) and collectivism (versus individuality). Gray (1988) finds a causal relationship between accounting and cultural values and argues that the accounting values of professionalism (versus statutory control) and flexibility (versus uniformity) characterize the authority and enforcement aspects of an accounting system. He adds that the measurement and disclosure characteristics of an accounting system reflect the accounting values of optimism (versus conservatism) and transparency (versus secrecy). Perera (1989) believes that Gray (1988) helped identify a direct association between the values of the accounting sub-culture and the societal dimensions of individualism and uncertainty avoidance. Differences in accounting systems can thus be explained in terms of their cultural environments (Belkaoui and Picur, 1991; Roberts et al. 1998).

Perera (1989) placed developing and Middle Eastern nations near the bottom of the individualism-versus-collectivism scale. Fechner and Kilgore (1994), Agami and Alkafaji (1978), Ndubizu (1984), and Samuel and Oliga (1982) have discussed the rationale of extending international standards to the developing world despite the wide variety among the nations' values and beliefs. They argue that accounting information is not politically neutral and that the IASs are based on the needs of users in developed countries. Samuel and Oliga (1982) posit that accounting must respond to social needs while reflecting the social, political, legal, and economic conditions of the nations in which it operates; what might be good for developed countries might not be relevant to developing ones.

Chaned et al. (2009) found evidence that cultural values still have a significant effect on how accountants from various cultural backgrounds interpret and apply accounting standards. Doupnik and Riccio (2006) suggest that national cultural values can affect accountants' interpretation of the suitability of IFRSs and that; consequently, differences in cultural values across countries could lead to differences in accountants' recognition, judgments, and disclosure decisions. A number of studies have suggested that differences in cultural values affect accountants' professional judgments (Schultz and Lopez, 2001; Patel et al., 2002; Doupnik and Richter, 2004; Doupnik and Riccio, 2006; Yin Fah, 2008; Tsakumis, 2007; Chand et al., 2009).

For example, Haskins et al. (1996) argue that accounting means different things to financial information users from different cultures. Lawrence (1996) adds that personal beliefs, aspirations, and motivations influence demands for financial information and shape people's choices of accounting practices. Likewise, Mueller et al. (1997) find increasing attention being paid to investigations of culture's influence on accounting concepts, standards, and practices. Therefore, this paper hypothesizes the following:

H1: Jordanian professional accountants' culture orientation influences their perception of the IFRS.

2.2 The effect of IFRS on culture

Jia-xue (2009) argues that, as a society progresses towards more modern and industrialized patterns, its cultural values change. He adds that, when a society moves towards a liberal economy and competitive resource allocation, the advantages of collectivism lessen; the society becomes more complex and diverse, and individualism flourishes. Man and Lam (2003) add that the "individualism" and "collectivism" concepts are not universal or homogenous within nations, as nations comprise many diverse cultures. Man and Lam (2003) stress that every individual has both individualistic and collectivistic tendencies and that life experiences will evoke one tendency or the other.

A fundamental aspect of IFRS adoption in developing countries is their imposition through regulatory requirements. This imposition occurs, Hassan (2008 a; b) argues, not entirely to improve financial reporting and disclosure but also to serve other social and political objectives deemed important by regulators during the course of national transformation. Developing countries adopt IFRS not only to participate in the "global" economy and secure a continuous flow of foreign investment but also to remove, or, as Oliver (1992) terms it, "de-institutionalize," the inherited secretive and collective culture of Arab Middle Eastern countries (Hassan, 2008b).

Furthermore, scholars argue that the cultural values of individualism and collectivism differ in their relative emphases within single groups (Markus and Kitayama, 1991; Schwartz, 1994; Triandas, 1995; Freeman and Bordia, 2001; Oyserman et al., 2002; Ghosh, 2004; Chiao et al., 2009). Despite the views on culture's impact prevalent in accounting studies, this paper contests

the assumption that culture influences accounting practices and examines how the application of IFRS in Jordan has led to a change in the practitioners' culture. Specifically, the paper argues that the introduction of IFRS to Jordan via the 2002 Securities Law helped transform practitioners' collectivistic culture into a more individualistic one.

H2: The introduction of IFRS to Jordan helped change practitioners' collectivistic culture into an individualistic one.

3. Jordan's Institutional Change

Though Jordan has been classified as collectivist (Hofstede, 2011), institutional changes over the last 20 years may have moved it nearer to individualism. This section attempts to analyze the institutional changes behind Jordan's cultural change.

Until World War I, Jordan was part of the Islamic Ottoman Empire. Jordan became a British colony in 1921 (Al-Othman, 2012). In 1948, Jordan gained its independence and joined the United Nations as the Hashemite Kingdom of Jordan. Since then, Jordan has witnessed major socio-economic change in which the government has been a key player. Jordan is a constitutional hereditary monarchy with a parliamentary government. It is politically stable, with freedom of the press and private property guaranteed. Jordan's population is just above 6 million, of which the majority are Arab Muslims, with small communities of Circassians, Armenians, and Chechens, who have adapted to Arabic culture. The state religion is Islam, but others enjoy freedom of religion; about 6% of the population is Christian (U.S. Department of State, 2011). The official language is Arabic, while English is used widely in commerce and government.

Jordan is a small country with limited natural resources. Its economy consists of the service and industrial sectors. The service sector comprises government, tourism, transportation, communication, and financial services, employing about 70% of the workforce. The major Jordanian industries are potash, phosphate, and gypsum mining, while cement, fertilizer, and refined petroleum products manufacturing are also significant industries (U.S. Department of State, 2011). About a third of Jordan's rapid economic growth occurred in the industrial sector, while the service sector's share was equal or higher; agriculture plays a minor role in the Jordanian economy, as the nation's water resources are limited. Jordan's 2011 nominal GDP was $26.893 billion, and its annual growth rate was 3% (Wikipedia, 2013).

Half of Jordan's population consists of indigenous Bedouins, most of whom are employed in the public sector (Beard and Al-Rai, 1999). Most of Jordanians are considered educated and hard-working; and their influence in Jordan life has led to a greater emphasis on Jordan social and economic developments in an attempt to join the global economy (Wikipedia, 2013). Hospitality is a cornerstone of Arab life. It is commonplace for Jordanian families to welcome strangers into their home (TDS, 2011). The typical family in Jordan is extended. Family units are often led by sheikhs whose rule depends on the size of their families, their wealth, and the strength of their personalities. Education levels and social well-being indicators are relatively higher than that on other countries in the region. Most Jordanian woman are Muslims, wear scarves, well educated and receive pay equal to that of males when they work (TDS, 2011), yet they follow the Arab tradition in which their closet male relatives may have some influences in their decisions.

The first Company Law, established by the Ministry of Industry and Trade in 1964, was loosely stated and very limited (Naser and Al-Khatib, 2000). The Temporary Company Law of 1989 required companies to prepare an annual report, including a profit and loss account and balance sheet, with comparative figures and explanatory notes. In 1997, Company Law No. 22 was issued, and Securities Law No. 76 was issued in 2002. Both mandated the use of IASs/IFRSs by all Jordanian public shareholding companies (Al-Akra et al., 2009). In 1995, the Jordanian government brought in the Law for Investment Promotion to attract foreign investments and joint ventures to Jordan.

The first law concerning the auditing profession, the Accounting Auditing Profession Law No. 10, was issued in 1961. Through the 1964 Law No. 12, auditing became compulsory for all public companies. The Profession Law No. 32 was issued in 1985, founding the Jordanian Association of Public Accountants (JACPA). This law regulated auditors and made membership of the association compulsory, effectively superseding law No. 10. In 1986, the Accounts Auditors Classification Regulation was issued, followed in 1987 by the Auditors Association Regulation. In 2003, a new Accountancy Profession Law 73/2003 established the High Council for Accounting and Auditing responsible for the oversight of the auditing profession (Jordan, 2009).

The Jordanian tax law has very limited requirements concerning income measurement and asset valuation methods. The law requires certain types of companies operating in Jordan to prepare their records according to the generally accepted accounting principles approved by the relevant authorities.

Before 1997, The Jordanian government was involved in developing the economy through a

number of state-owned small and medium-sized industrial, financial, and service companies. In 1997, the Jordanian government's participation in public shareholding companies represented around 15% of the total. Due to the debt and inefficiency of Jordan's public sector institutions and corporations, large-scale privatization took place in 1997, with the government's overall investment dropping to 6% by 2004 after the sale of most of its investments through strategies such as initial price offering and divestiture, sales to strategic investors, concession agreements, management contracts, and franchising. To ensure the success of the privatization program and fulfill foreign and new owners' requirements concerning disclosure and accounting information quality, Jordan revised the institutional framework for corporate governance structures, corporate disclosure rules, and legal systems by issuing the 1997 Company Law, 1997 Temporary Securities Law, and the 2002 Securities Law (Al-Akra et al., 2010).

In 2001, Jordan became a member of the World Trade Organization after a series of free market reforms; Jordan now has more trade agreements than any other country in the region. Jordan's free trade agreement with the U.S., the first in the Arab world, made the U.S. one of Jordan's most significant markets. Jordan has six special economic zones that attract significant investment as well as new industries and services to the less developed areas of the country, where unemployment and poverty are particularly acute (Al-Akra et al., 2009). In 2009, the Jordanian banking sector expanded its international operations, through the sector applies conservative policies while managing the national economy, helping the country escape the brunt of the global financial crisis and post a surplus instead (Economy Watch, 2012).

In early 1989, the Jordanian government adopted a structural adjustment program supported by the International Monetary Fund (IMF) and the World Bank (Al-Othman, 2012). However, unemployment increased following the 1990 Gulf War, leading many to leave to find work in the Arab Gulf. In 1991, the government continued its efforts to implement a structural reform program. The reform program included 1) financial loans and aid for investment, 2) transforming the public sector into a private sector (privatization), 3) ending the subsidization of food programs, and 4) rescheduling foreign debts (Al-Othman, 2012). Among the aims of the reform program was ending the misuse of the country's economic resources and improving Jordan's political and economic spheres in the absence of an established infrastructure of transparency and accountability.

The foregoing analysis shows that Jordan is undergoing socio-economic changes that have contributed to changing the country's economic structure. Jordan has adopted the IFRS as part of these changes (Halbouni, 2005). These standards, developed within the Western cultural context, may, together with other changes, reshape the county's collectivistic cultural orientation into a more individualistic one. The next section empirically investigates this possibility.

4. Empirical Study

4.1 Sample

To investigate the interrelationships between cultural values and IFRS in Jordan, a three-part questionnaire was designed and distributed to 150 Jordanian professional accountants (see Table 1). Part one asks four questions measuring the effect of demographic variables (i.e., gender, current work, years with current profession, and qualifications). Following the prior literature, part two asks seventeen questions measuring respondents' perceptions of the importance of IFRS (see Tyrral et al., 2007; Ballas et al., 2010; Parlakkaya et al., 2011; Zeghal and Mhedhbi, 2012; see Table 2). Part three asks seventeen questions measuring respondents' social values (i.e., individualistic versus collectivistic). This last set of questions includes 1) nine questions exploring respondents' individualistic cultural values and 2) eight questions exploring their collectivistic cultural values. The third part's questions, adopted from Tjosvold et al. (2003) and Xie et al. (2007) were designed to test the cultural dimensions of individualism and collectivism in psychology studies. The authors modified these questions to make them applicable to this study and understandable to professional accountants, the target sample. All questions were answered on a five-point scale on which 1 indicates "strongly disagree" and 5 "strongly agree." A total of 101 questionnaires (or 67.3% of those sent) were returned, of which 20 (13.3%) incomplete responses were excluded. Thus, 81 questionnaires (54%) were included in this study.

4.2 Descriptive analysis and reliability test

Table 1 presents the respondents' characteristics and backgrounds. The respondents are accountants working as external auditors (14), internal auditors (11), financial accountants (10), management accountants (7), financial analysts (12), chief accountants (6), heads of accounting departments (8), others (11) working as financial managers, senior consultants, heads of audit departments, or cost accounting controllers; two respondents did not specify their positions.

Table 1 also shows that 81.5% of the respondents are male and 14.8% female. Furthermore, 67.5% have fewer than ten years of

experience in their current profession and work with different aspects of accounting. Therefore, the respondents' profile suggests that the results of this study can be generalized.

Cronbach's alpha was used to test the reliability of the items composing each questionnaire construct. The test results show 83.6% for respondents' perceptions of the importance of IFRS, 65.7% for the individualism constructs, and 81.9% for the collectivism constructs. These scores are near or greater than the 0.70 threshold recommended by Nunnally (1978).

Table 1. Descriptive analysis of organizations' & respondents' backgrounds

Gender	Total	Male	Female	Missing		
No. Cases	81	66	12	3		
Percentage	100%	81.5%	14.8%	3.7%		
Current Position	Total	External Auditor	Internal Auditor	Financial Accountant	Management Accountant	Financial Analyst
No. Cases	81	14	11	10	7	12
Percentage	100%	17.3	13.6%	12.3 %	8.6%	14.8%
		Chief Accountant	Head of Accounting Department	Others	Missing	
		6	8	11	2	
		7.4%	9.9%	13.6%	2.5%	
Years of Post Qualifications	Total	< 5	6 - 10	11-20	>20	
No. Cases	80	36	18	23	3	
Percentage	100%	45%	22.5%	28.8%	3.8%	
Qualifications	Total	Bachelor	Master	Professional Certificate	Others	
No. Cases	81	57	13	8	3	
Percentage	100%	70.4	16%	9.9%	3.7%	

5. Empirical Results

5.1 Results on the perceptions of IFRS

Table 2 shows that the 17 constructs related to respondents' perceptions of the importance of IFRS are highly positive (Average = > 3.00). The table also ranks the constructs based on their mean averages. The findings indicate that Jordanian accountants have a highly positive perception of IFRS and that they believe that it enables the presentation of accurate information, promotes transparency, improves shareholder trust, enhances the quality of financial report analysis, facilitates the quotation of companies in international capital markets, improves the comparability of financial results and decision making, and improves the accuracy of accounting information. The responses to a 17-item survey concerning perceptions of IFRS implementation reveal that Jordanian accountants had highly positive perceptions (Average = 3.92).

To test for significant differences between the neutral value of 3 and the averages of the items listed above, a sample t-test was performed. As Table 2 indicates, the mean value of respondents' positive perceptions of IFRS differs significantly from 3 ($t = 19.731$, $p = .000$). Therefore, we can conclude that Jordanian accountants agree on each question presented in Table 2. We note that question 17 had the lowest mean (2.58), with a significant difference below the neutral value of 3, indicating that respondents are not aware of the importance of IFRS just because "everyone says so," as presented in question 17.

Table 2. Descriptive analysis on the importance of IFRS

Rank		**Mean**	**SD**	**t-value**	**Sig.**
1.	IFRS enables the presentation of accurate information.	4.23	.763	14.367	.000**
2.	The application of IFRS promotes transparency in financial reporting.	4.19	.709	15.043	000**
3.	The use of IFRS increases corporate stakeholder trust.	4.16	.679	15.376	000**
4.	IFRS increases the quality level of financial report analysis.	4.15	.615	16.812	000**
5.	IFRS facilitates the quotation of companies in international capital markets.	4.14	.771	13.265	000**
6.	The use of IFRS increases decision making accuracy.	4.12	.731	13.829	000**
6.	IFRS makes the comparability of the financial results of companies across different periods more reliable and easier.	4.12	.827	12.221	000**
8.	The use of IFRS facilitates the audit activities of corporations.	4.07	.787	12.282	000**
9.	IFRS promises comprehensive and timely financial information.	4.02	.758	12.168	000**
10.	The use of IFRS provides decision makers with more qualitative financial information.	4.00	.671	13.416	000**
11.	IFRS enables the keeping track of pieces of information.	3.94	.659	12.823	000**
12.	I believe that IFRS has a special status.	3.93	.808	10.242	000**
13.	The use of IFRS reduces the work of an investor.	3.83	.905	8.222	000**
14.	IFRS are becoming necessities for achieving efficient corporate governance.	3.80	.872	8.282	000**
15.	The use of IFRS improves relationships with customers and creditors nationally/internationally.	3.65	.809	7.282	000**
16.	The use of IFRS affects the quality of accounting records and documentation.	3.65	.964	6.110	000**
17.	IFRS are good just because everybody says so.	2.58	1.05	-3.608	000**
	Overall Perceptions of IFRS	**3.92**	**.413**	**19.731**	**000****

** Significant at 5%

5.2 Results on the effect of individualistic/collectivistic culture on IFRS

This section presents the empirical results concerning the effect of cultural orientation (individualistic or collectivistic) on the perceived importance of IFRS among Jordanian professional accountants. Table 3 presents respondents' scores on the culture measures. The table shows that the averages for the nine constructs varied between 2.90 and 3.98 within a range of 1.08. Most constructs of the individualism measure are rated as positive (Average = > 3.00), and two items are rated as negative (Average = < 3.00).

These findings show that Jordanian accountants like *competition*, *do the job better than others*, *being independent in professional judgment*, *self dependence*, *being unique*, and *doing their own things*. Table 3 also shows that Jordanian accountants do not like "getting tense because of others' better work," and those who "rarely share their knowledge." As the table also shows, the responses to the nine individualism items reveals that the Jordanian accountants agreed on their positive individualism perceptions (Average = 3.57) of themselves when communicating with others and implementing work-related tasks. These findings indicate that Jordanian accountants have relatively highly individualistic perspectives; the mean value is significantly different from 3 (t = 10.182, p = .000).

Table 3. Respondents' Scores on the Individualism Cultural Measures

		Mean	SD	t-value	Sig.
1.	I like IFRS because competition is a main underlying concept behind these standards.	3.62	1.043	5.323	.000**
2.	If someone applies/knows IFRS better than I do, I become tensed.	2.90	1.125	-.790	.432
3.	It is important that I do my professional job better than others do.	3.96	.834	10.328	.000**
4.	I enjoy working in situations involving competition.	3.98	.856	10.182	.000**
5.	I believe that, without competition, it is not possible to have good standards.	3.29	1.0578	2.431	.017**
6.	If co-workers have knowledge of IFRS, they rarely share their knowledge.	2.99	.968	-.115	.909
7.	Being unique by knowing all aspects of IFRS is very important to me.	3.86	.833	9.337	.000**
8.	When I search for an interpretation of an IFRS, I would rather depend on myself than others.	3.43	.974	3.993	.000**
9.	Being independent in my professional judgment is very important to me.	3.95	.893	9.580	.000**
	Overall Individualism	3.57	.493	10.182	.000**

** Significant at 5%

Table 4 presents respondents' score on the collectivistic measures. The table shows that the averages for the eight constructs varied between 3.75 and 4.70 within a range of 0.95. All the collectivism items are rated highly positively by the accountants (Average = > 3.00), indicating that they have highly collectivist perspectives.

The findings show that Jordanian accountants like "consulting," "helping," "sharing experience," "working, cooperating and spending time with others," and "respecting group decisions." It also shows that the responses to collectivism's 8-construct measures reveal that the accountants agreed on their highly positive collectivism perceptions (Average = 4.16) of themselves, with a mean value significantly different from 3 (t = 12.89, p = .000).

Table 4. Respondents' Scores on the Collectivism Measures

		Mean	SD	t-value	Sig.
1.	In applying IFRS, I am happy to share my experience with others.	4.10	.880	11.178	.000**
2.	It is important to me to have co-workers who have longer experience with IFRS.	3.75	.929	7.295	.000**
3.	If one of my co-workers is facing difficulty in applying IFRS, I will help him.	4.16	.729	13.939	.000**
4.	If my co-worker receives a professional award, I feel proud.	4.15	.935	10.951	.000**
5.	I feel good when I cooperate with others in interpreting and applying IFRS.	4.11	.871	11.419	.000**
6.	Though IFRS takes more time to apply, I have no problem spending that time.	4.11	.758	13.188	.000**
7.	I respect my colleagues' decisions, interpretations, and explanations related to IFRS.	4.01	.787	11.500	.000**
8.	Colleagues should consult each other regarding the application of IFRS.	4.70	4.363	3.514	.000**
	Overall Collectivism	4.16	.785	12.89	.000**

** Significant at 5%

Given the above results, the study finds that Jordanian accountants show a higher level of collectivism perspectives (Average = 4.16) than individualism perspectives (Average = 3.57). The range of the averages' difference is 0.59, indicating that the accountants give the strongest consideration to cooperation, the perceptions of colleagues, and their social image when doing jobs such as consulting, sharing, and supporting. Furthermore, though the accountants have individualism perceptions concerning themselves, they are secondary to behavior related to others.

To test the effect of cultural orientation on the perception of the importance of IFRS, this study examined whether the difference between the collectivistic and individualistic averages is significant. A paired samples t-test was run at alpha significant level 0.05 (2-tailed). The results indicate that a significant difference exists between the individualism and collectivism averages (t= -6.532, p = .000). This result reinforces the culture relativity notion described in Traindas (1995), according to which cultural values may differ in their relative emphases within the same group. Accordingly, we can conclude that, although Jordanian accountants are more collectivistic, they also possess an individualistic culture orientation.

To identify which cultural orientation significantly affects perceptions of IFRS, this study applied a regression analysis, as presented in Tables 5 and 6. Both tables show that individualism and collectivism significantly affect Jordanian accountants' perceptions of IFRS; the P-value is ≤ 0.05. Table 6 shows that 39.1% of participants' perceptions are affected by their collectivistic attributes while only 15.3% are affected by their individualistic cultural values, as indicated in Table 5.

Table 5. Regression results on the effect of individualistic values on the perceptions of IFRS

Independent Variables	B	*Beta*	t-value	**Significance**
Constant	*2.743*		*8.804*	.000
Individualism	*.330*	*.406*	*3.820*	.000**

Note: R^2 = 0.165, Adj. R^2 = 0.153, F-value 14.593, ** significant at 0.01 level.

Table 6. Regression results on the effect of collectivistic values on the perceptions of IFRS

Independent Variables	B	*Beta*	t-value	**Significance**
Constant	*2.067*		*7.768*	.000
Collectivism	*.455*	*.631*	*7.052*	.000**

Note: R^2 = 0.399, Adj. R^2 = 0.391, F-value 49.729, ** significant at 0.01.

This result confirms that Jordanian professional accountants' cultural orientation influences their perceptions of the importance of IFRS. We ran an ANOVA test to determine whether respondents' demographic variables affected their perceptions of the importance of IFRS and their cultural orientation (collectivistic or individualistic). The test shows no significant association between any of the demographic variables and participants' perceptions of the importance of IFRS or cultural orientation.

5.3 Results on IFRS' effects on culture

To test the effect of IFRS on Jordanian culture, the sample was divided into two subsamples based on the respondents' work experience 1) The first group comprises the 54 respondents (67.5% of the sample) with fewer than ten years of work experience, and 2) the second group comprises the 26 (32.5%) with more than ten years. The underlying assumption here is that professional accountants with ten or more years of work experience will have a more collectivistic orientation, whereas those with fewer than ten years of experience will have an individualistic orientation as they have always practiced accounting under the IFRS as required by the 1997 Jordanian Company Law and the 2002 Securities Law. We expected respondents with less than ten years of experience to have a perception of the IFRS significantly different from that of participants with more than ten years of experience since they have been exposed only to the IFRS.

To ensure that work experience was a good proxy for IFRS' influence on cultural orientation, we tested the effect of work experience on the 17 constructs measuring the importance of IFRS, as shown in Table 7. The table indicates that the IFRS perceptions of those accountants with fewer than ten years of experience differ significantly from those of accountants with more than ten years of experience for only three questions and only at the 5% level. The difference is not significant for the other questions measuring the perceived importance of IFRS.

These findings highlight two main issues. First, work experience has little effect on the 17 neutral constructs measuring the perceived importance of IFRS, suggesting that using work experience as a proxy for IFRS' influence on cultural orientation seems acceptable. Second, Table 7 shows that Jordanian accountants with fewer than ten years of work experience place a heavier emphasis on issues related to the quality of accounting information and investment decisions.

In investigating the influence of IFRS application on practitioners' cultural orientation, this study examined the difference between the two groups' responses to the two sets of questions on individualistic and collectivistic cultural orientations (see tables 8 and 9). Tables 8 and 9 show that the Jordanian accountants possess a collectivistic culture. Table 8 shows that both groups tend to oppose the individualistic characteristics associated with IFRS. Table 8 indicates that there is no significant difference in individualistic cultural orientation between Jordanian accountants with fewer than ten years work experience and those with more than ten (F-value = .674, p = .414).

Table 7. Respondents' Perceptions of IFRS, classified by years of experience

		< 10 Years		> 10 Years		F-Value	Sig.
Rank		Mean	SD	Mean	SD	F-Value	Sig.
3.	The use of IFRS increases corporations' stakeholders' trust.	4.16	.773	4.11	.516	6.722	.011**
4.	IFRS increases the quality level of financial report analysis.	4.14	.707	4.12	.431	5.374	.023**
6.	The use of IFRS increases decision making accuracy.	4.14	.842	4.04	.528	9.708	.003**

** Significant at 5%,

Table 8. The effect of IFRS on the individualism cultural orientation

		< 10 Years		> 10 Years		F-Value	Sig.
No.		Mean	SD	Mean	SD	F-Value	Sig.
1.	I like IFRS because competition is a main underlying concept behind these standards.	3.63	1.103	3.62	0.941	1.257	.266
2.	If someone applies/knows IFRS better than me, I get tense.	2.96	1.181	2.81	1.021	.484	.489
3.	It is important that I do my professional job better than others do.	4.057	0.908	3.769	0.652	1.184	.280
4.	I enjoy working in situations involving competition.	3.98	0.866	3.923	0.845	.076	.784
5.	I believe that, without competition, it is not possible to have good standards.	3.28	1.063	3.34	1.056	.023	.880
6.	If co-workers have knowledge of IFRS, they rarely share their knowledge.	3.019	.981	2.962	.958	.147	.703
7.	Being unique by knowing all aspects of IFRS is very important to me.	3.02	0.981	2.962	.958	1.383	.243
8.	When I search for an interpretation of an IFRS, I would rather depend on myself than others.	3.46	1.022	3.308	.838	2.469	.120
9.	Being independent in my professional judgment is very important to me.	4.000	.0112	3.923	.796	.630	.430
	Overall Individualism	3.61	.515	3.50	.456	.674	.414

By contrast, Table 9 shows a tendency to support a collectivistic cultural orientation. The table also indicates that there is no significant difference in collectivistic cultural orientation between Jordanian accountants with fewer than ten years works experience and those with more than ten years except for two questions and only at a 10% significance level. Therefore, we conclude that IFRS had no significant influence on the Jordanian accountants' cultural orientation. Jordanian accountants are generally collectivistic yet possess aspects of the individualistic cultural orientation. These results are consistent with the definition of "cultural relativity" in Triandis (1989), in which every individual possess a mix of cultural orientations, the differences depending on the situation.

Table 9. The effect of IFRS on the collectivism cultural orientation

		< 10 Years		> 10 Years		F-Value	Sig.
No.		Mean	SD	Mean	SD	F-Value	Sig.
1.	In applying the IFRS, I am happy to share my experience with others.	4.000	1.000	4.308	.549	2.883	.094*
2.	It is important to me to have co-workers who have longer experience with IFRS.	3.722	.960	3.77	.863	1.351	.249
3.	If one of my co-workers is facing difficulty in applying IFRS, I will help him.	4.148	.787	4.154	.675	.154	.695
4.	If my co-worker receives a professional award, I feel proud.	4.154	.978	4.12	.864	.855	.358
5.	I feel good when I cooperate with others in interpreting and applying the IFRS.	4.057	.989	4.231	.587	1.885	.174
6.	Though the IFRS take more time to apply, I have no problem spending that time.	4.074	.773	4.192	.749	.118	.733
7.	I respect my colleagues' decisions, interpretations, and explanations related to the IFRS.	4.000	.832	4.039	.720	.095	.759
8.	Colleagues should consult each other regarding the application of the IFRS.	4.222	.769	4.23	.514	3.628	.060*
	Overall Collectivism	4.15	.9004	4.13	.523	1.456	.230

* Significant at 10%

6. Conclusion

This study conducted a survey to investigate the influence of Jordanian practitioners' cultural orientation on their perceptions of IFRS and to determine whether the introduction of IFRS in Jordan has contributed to a change in the practitioners' cultural values. The results show that Jordanian accountants have more collectivistic attributes than individualistic ones. These results agree with the findings in Sabri (2012, p. 208) that Jordanians tend strongly towards collectivism. Nevertheless, the significant differences found for some items based on work experience are consistent with the findings in Freeman and Bordia (2001) and Schwartz (1994) that all societies have at least some aspects of both individualistic and collectivistic worldviews. Our findings indicate that Jordanian accountants' collectivistic attributes affect their positive attitudes to IFRS and that IFRS improves the accuracy of accounting information, promotes transparency and comparability, increases shareholders' trust, and enhances the evaluation and analyses of Jordanian financial information.

Clements et al. (2010) find that there is a lack of association between culture and IFRS because, they argue, the well-designed IFRS accommodates multiple cultural dimensions. This paper partially confirms those findings by showing that Jordanian accountants' cultural orientation has a balancing effect on their perceptions of the importance of IFRS, which thus appears to allow the integration of different cultural aspects. The accountants' positive perceptions of IFRS can also be attributed to Jordan's lack of national accounting standards. Siam and Rahahleh (2010, p. 31) have called upon the Jordanian accountancy profession to design and promote accounting standards that fairly reflect the results of business enterprises in Jordan. Adopting IFRS seems to be appropriate for rather than harmful to developing countries such as Jordan (see also Chamisa, 2000; Joshi and Ramadhan, 2002; Ismail et al., 2010; Bova and Pereira, 2012). However, these results do not agree with those of several other studies (see Perera, 1989a; Irvine and Lucas, 2006; Crains, 1999; Street and Gray, 2001).

Consistent with Sabri (2012), this paper shows that, when political, social, and economic environments change, people's cultural values also change. Sabri (2012) states that social changes such as growth in economic, educational, and democratic terms influence work-related cultural dimensions and hence reshape a society's cultural values. This paper has shown how Jordan's macro socio-economic changes, intertwined with the introduction of IFRS, have contributed to reshaping Jordanian accountants' cultural orientation. This paper therefore has important policy implications for accounting standards setters and regulators both in Jordan and across the international business community.

Although Jordanian accounting regulators must consider cultural sensitivities when discussing the adoption of new accounting practices introduced under the banner of international best practices, they must also recognize that professional accountants' cultural orientation has been reshaped by Jordan's socio-economic changes. They must also understand how the new practices are contributing to the country's societal changes. At the same time, Jordan's accountancy profession must also acknowledge this reality in way that enables a further development of the country's capital market.

Jordan's acceptance of Western-based accounting practices such as IFRS is a sign to international business. Since information-based IFRS is widely accepted in annual reports, international organizations trust not only accounting report information but also the country's modernization policies designed to foster democratization and transparency (Al-Othman, 2012). The results show that Jordanian accountants with fewer than ten years of work experience have perceptions of some IFRS-related aspects significantly different from those of accountants with more than ten years of experience. This difference could be attributed to the modernization policies that Jordan has pursued over the last ten years (Al-Othman, 2012; A-Akra et al., 2009; Shihab-Eldin, 2008). The paper's results indicate that Jordanian accountants have some individualistic features but more collectivist attitudes, consistent with the definition of "cultural relativity" in Triandis (1989), in which every individual possess a mix of cultural orientation, the differences depending on the situation. These results will also help the International Accounting Standard Board (IASB) as they show how IFRS can contribute to bringing about a convergence in practitioners' cultures (Alfredson et al., 2009).

One of this paper's limitations is that it addresses only one of Hofestede's cultural dimensions (individualism versus collectivism) and does not examine other cultural dimensions, such as power distance, masculinity, or uncertainty avoidance. This limitation represents an area of future research, wherein researchers could investigate how IFRS has contributed to changing these dimensions in Jordan. Another limitation is that the paper did not investigate the effect of religion, language, economic development, the legal system, and political forces on the mutual relationship between culture and IFRS. These issues represent more areas for future research.

Examining the interrelationship between cultural orientations and accounting standards in emerging economies and developing countries has become more ambiguous and theoretically

complex, yet the desire to adopt accounting standards that coincide with international ones will continue. This process is becoming increasingly complex, especially given the mismatch between the cultural values of developing countries and the IFRS' embedded values. This study explains how cultural orientation and IFRS affect each other and how both have contributed to reshaping Jordan's professional cultural orientation.

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INFORMATION ASYMMETRIES, FAMILY OWNERSHIP AND DIVESTITURE FINANCIAL PERFORMANCE: EVIDENCE FROM WESTERN EUROPEAN COUNTRIES

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Abstract

Compared to other transactions, corporate divestiture is characterized by greater ambiguity and lower transparency, which can be detrimental to stock market reaction. Drawing upon agency theory and information economics literature, this paper examines the relationship between information asymmetries, family ownership and the divestiture financial performance in Western European countries. Based on a sample of 115 Western European divestiture transactions carried out between 1996 and 2010, we find support for the assertion that information asymmetry impacts divestiture financial performance. We also show that the influence of information asymmetries is moderated by family ownership, which acts as a signal of divestiture quality.

Keywords: Information Asymmetries, Ownership, Financial Performance

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1. Introduction

Corporate divestiture is a major strategic decisions used by firms to streamline and refocus their business. It represents a firm's adjustment of its portfolio structure (Bowman and Singh, 1993), occurring when firms spin off, carve out or sell off a business (Bergh, Johnson and Dewitt, 2007). In recent years, divestiture activity increased substantially worldwide. In Western European Countries, in particular, the number of divestiture transactions carried out between 2005 and 2009 was 65% higher than in the first five years of the century (2000-2004). However, in spite of the growing importance of corporate divestitures in global markets and despite a general consensus on divestiture's positive influence on firms' value creation (Mulherin and Boone, 2000), recent literature suggests that the link between corporate divestiture and post-divestiture performance still needs to be clarified (Lee and Madhavan, 2010; Peruffo, 2013).

From the dominant agency theory perspective, prior works have highlighted that divestiture activity is associated with relevant agency problems (e.g. Bethel and Liebiskind, 1993; Chung and Luo, 2008; Peruffo, Oriani and Folta, 2013). On one hand, it "*involve*[s] *decisions that typically are purely discretionary on the part of management*" (Hanson and Song, 2006: 363), thereby causing the traditional conflicts between owners and managers (Bethel and Liebeskind, 1993). On the other hand, divestiture may be carried out at the expense of minority owners, potentially giving rise to the agency problems between controlling and minority owners (Peruffo, Oriani and Folta, 2013). In order to understand how divestiture performance is affected by agency problems, in this work, we focus on a specific source of agency problems: the extent of information asymmetry. In particular, in case of higher information asymmetries, external investors are not able to determine if the managers are behaving appropriately (Eisenhardt, 1989). Evidence of this problem has already been documented in various settings such as IPO (e.g. Sanders and Boivie, 2004), M&A (e.g. Reuer and Ragozzino, 2008). However, accounting for the impact of information asymmetry on how investors respond to divestiture decisions deserves a specific attention since divestiture is characterized by greater ambiguity and lower transparency (Brauer and Wiersema, 2012).

Furthermore, previous literature has suggested that, in the presence of information asymmetry,

investors rely on certain firms' observable characteristics in order to assess whether and to what extent firm strategies will create value (Sanders and Boivie, 2002). In this regard, corporate governance characteristics may affect investors' assessment about the outcome of transactions (Sanders and Boivie, 2004; Spence, 1974; Stigliz, 2000; Garmaise and Moskowitz, 2004), by acting as signals of the transaction's quality. However, none of the prior works have investigated on the signalling role of ownership identity on divestiture financial performance (Bergh and Sharp, 2012). Ownership identity is relevant because different owners may have different motivations, capabilities and control on the firm's activities (Hautz, Mayer and Stadler, 2013). In addition, recent work indicates that owners' interests may influence management's strategic decisions (e.g., Connelly, Tihanyi, Certo, Hitt, 2010). As a consequence, different owners may drive managers to pursue different operational and strategic objectives when undertaking divestitures. We utilize literature on the organizational implications of ownership identity (Connelly, Tihanyi, Certo, and Hitt, 2010; Hautz, *et al., 2013*) to propose that the identity of the dominant owner may help investors to infer the quality of divestiture decision, thus moderating the impact of information asymmetry on divestiture financial performance (e.g. Eisenhardt, 1989; Gomez-Mejia, Nunez-Nickel, Gutierrez 2001). In doing so, we focus on family ownership, which is the prevalent ownership identity category in Western European countries.

In order to define the ultimate role of both information asymmetry and family ownership for divestiture financial performance, in this paper we ask the following research question: *how do stock markets react to divestiture transactions in the presence of information asymmetries and family ownership?*

In line with our theoretical expectations, our results show that information asymmetry negatively influences divestiture financial performance. In fact, for increasing levels of information asymmetry, investors will likely perceive a higher risk of agency costs associated with the divestiture decision. Moreover, family ownership negatively moderates this relationship. This suggests that, within a divestiture transaction, investors will perceive the presence of family ownership as a condition that increases the likelihood of Type 2 agency costs. Therefore, family ownership exacerbates the negative effect of information asymmetry on investors' response to divestiture decisions.

This study offers several contributions. First, we contribute to the stream of literature that investigates on divestiture financial performance, showing how firms' attributes influence investors' perception of divestiture decision. In line with recent research that has highlighted divestiture transactions' substantial ambiguity (Brauer and Wiersema, 2012), we investigate the influence of information asymmetry on investors' reaction to divestiture decisions. We argue that information asymmetry regarding the divesting firm will drive investors to anticipate a higher degree of divestiture-related agency costs. This will lead them to respond more negatively to divestiture announcements undertaken by firms characterized by high information asymmetry. Moreover, we also examine the moderating role that family ownership may have on investors' response. Agency theory ascribes to family ownership two conflicting roles: a remedy to Type 1 agency costs and a source of Type 2 agency costs. Our work paper shows that, when evaluating the quality of divestiture decisions, investors embrace the second view and perceive family owners in their opportunistic role.

Second, we contribute to the literature on the role of corporate governance characteristics as potential information diffusion mechanisms. Extending previous research on IPO (Sanders and Boivie, 2004) and M&A (Ragozzino and Reuer, 2008), we show that even in the context of divestiture investors rely on the characteristics of the selling firm's ownership structure to gain more knowledge about the value consequences of transactions. Specifically, by investigating on owner identity, we demonstrate that in the presence of a family, the negative relation between the degree of information asymmetry and divestiture financial performance is accentuated due to the costs associated to Type 2 agency problems.

Finally, we offer an empirical contribution. While prior works on divestiture have mainly focused on the US context (e.g. Abor, Graham, and Yawson, 2011; Owen, Shi and Yawson, 2011), we test our hypotheses on a sample of voluntary divestiture transactions in Western European Countries (Peruffo, 2013). Our multinational sample constitutes an ideal setting because these countries, unlike the US, are characterized by the widespread presence of family owners (Faccio and Lang, 2002).

The paper is organized as follows. In section 2, we provide a review of the existing literature, formulating our hypotheses. In section 3, we describe the construction of the database, the variables and the model. Section 4 presents our results, while section 5 draws conclusions and implications.

2. Theoretical Background

2.1. Divestiture, information asymmetry and agency theory

On average, previous literature has demonstrated that divestitures are value-creating transactions (Mulherin and Boone, 2000). Divestiture may favour a better use of resources (e.g., Bergh, 1998; Bergh and Lawless, 1998; Peruffo, Perri and Gentili, 2013), improve efficiency through the removal of negative synergies across a firm's business portfolio (Capron, Mitchell and Swaminathan, 2001),provide liquidity gains (Denning, 1988) and favour innovation (Moschieri and Mair, 2011; Brunetta and Peruffo, 2014).

With respect to agency theory, changing ownership structure, improving internal governance and separating managerial divisions of a diversified firm can provide with managers new incentives, such that interests of owners and that of managers are more aligned (Hoskisson and Turk, 1990; Denning, 1988). Besides, divestiture also reduces monitoring and bonding costs since the costs of collecting information and the arbitrary allocation of resources are lower (Woo, Willard, and Daellenbach, 1992). As a result, the firm's value is improved (Markides, 1992) and the market reacts positively (Berger and Ofek, 1999).

Yet, recent research highlights that scholars' understanding of divestiture performance is still inadequate (Brauer, 2006), and that additional factors should be accounted for when trying to anticipate the stock market reaction to divestiture events (Lee and Madhavan, 2010).

One very important characteristic of divestitures is that they exhibit significant ambiguity (Brauer and Wiersema, 2012). Compared to other transactions, it is more difficult to rule out what the sources of divestiture value creation are. Moreover, given their confidential nature (Slovin, Sushka, Ferraro, 1995), even less information regarding transactions' financial and strategic aspects is revealed to the market. As a consequence, when assessing the quality of divestiture decisions, investors face great information asymmetry, which makes this task very challenging. The information asymmetry, defined as the uneven distribution of information among individuals (Stiglitz, 2002), is one important factor that scholars need to account for in order to gain a more comprehensive understanding of the stock market response to divestitures.

Under an information economics lens, prior works on M&A have showed that - in presence of information asymmetries - acquirers are not able to distinguish between higher and lower-quality target firms. Meanwhile, target firms have great difficulties in signalling their true value to outsiders (e.g., Reuer and Ragozzino, 2008). Moreover, according to established literature, information asymmetry is one of the main drivers of agency costs (Wiseman, Cuevas-Rodriguez and Gomez-Mejia, 2011).

In agency literature, agency costs typically arise from the relationship between owners and managers. While the former are interested in maximizing the firm value, the latter tend to pursue personal objectives (Amihud and Lev, 1981). Under these conditions, a limit to managers' opportunistic behaviour lies in the presence of a blockholder (Shleifer and Vishny, 1997), who may have both the incentive to monitor management and the power to enforce his own interests, thus limiting managerial discretion (Fama and Jensen, 1983; Jensen, 1989). Whereas ownership concentration may act as a remedy to traditional agency problems between managers and owners (Type 1), recent research has highlighted that it can also be the source of other types of agency cost, i.e. those arising between controlling and minority owners (Type 2) (Johnson, La Porta, Lopez-de-Silanes, Shleifer, 2000). Increasing ownership may in fact lead controlling shareholder(s) to reap private benefits from controlled firms, thus damaging minority investors' interests (Shleifer and Vishny, 1997; Renders and Gaeremynck, 2012).

Agency problems are exacerbated when the principal is unable to maintain full control of the agent's self-interested behaviour, because of his limited information set (Eisehardt, 1989). In the presence of perfect information, the principal can fully observe agents' behaviour, and is thereby able to pay for their actual effort. Conversely, information asymmetry creates a situation of potential moral hazard, in which the agent can perform undesirable actions unbeknownst to the principal.

Agency models provide a useful theoretical lens to explain divestiture performance. In spite of traditional literature predictions on divestiture's ability to increase the firm's value, agency theory suggests that divestiture activity is likely to be affected by significant agency problems (e.g. Bergh and Lim 2008). First, managers have decisional power on divestiture transactions (Hanson and Song 2006), and their conduct may heavily influence divestiture performance. As a result, traditional agency problems (Type 1) may arise as managers use divestiture transactions for the pursuit of their private interests. Second, in the presence of highly concentrated ownership, divestiture may be carried out to favour the controlling owner's objectives, which do not necessarily overlap with the general objective of wealth maximization of the firm. In this latter case, agency problems between controlling and minority owners may emerge (Type 2). As an example, controlling owners can exploit

resources from the firm by fixing an unfair price on the divesting units or by transferring profits from the firm to other companies controlled by the controlling owner (Atanasov, Boone, Haushalter, 2010). In general, in presence of agency costs, divestiture transaction will create lower value for the firm and its shareholders, and instead will serve as a means through which either managers or controlling owners can pursue their private interests.

How will investors assess divestiture transactions under high levels of information asymmetry, i.e. when are agency costs more likely to occur? To capture this effect, we analyse divestiture financial performance. In fact, divestiture financial performance, as measured by the stock market reaction to the divestiture event, reflects investors' evaluation regarding the perception of transaction quality, and provides an "*assessment of the expected financial returns associated with the restructuring event*" (Bergh *et al.*, 2007: 136-137).

We suggest that, in the context of divestiture, information asymmetry about a firm's activities will drive investors to perceive a higher risk of both types of agency problems. On one hand, information asymmetry provides managers with the opportunity to exploit private information to pursue their own interest, and it limits the owners' monitoring ability (Hanson and Song, 2006). On the other hand, it increases the perceived risk that controlling owners use private information within divestiture transactions to extract value from minority owners (Atanasov, Boone, and Haushalter, 2010). Hence, in presence of information asymmetry, both managers and controlling owners will have higher chances to behave opportunistically.

Based on this reasoning, we expect that in the presence of higher information asymmetry, stock market investors will anticipate potential higher agency costs and discount the divesting firm's stock price. Thus, we hypothesize the following:

HYPOTHESIS 1: There is a negative relationship between the degree of information asymmetry and divestiture financial performance.

2.2 The moderating role of owner identity

One of the main sources of ambiguity regarding divestiture decisions lies in the poor understanding investors have of the strategic motivations behind them. Divestiture may be undertaken for a variety of reasons (Brauer and Wiersema, 2012). While it may be used to improve the firm's wealth, as in the case of pre-existing over-diversification or business poor performance, we have highlighted how it can also be a tool to pursue the private interests of agents internal to the firm. On average, however, divestiture is characterized by a lack of public disclosure (Slovin *et al.*, 1995), which prevents investors from having a clear idea on the motivations of divestiture decisions and, hence, on the value consequence of these transactions. A possible remedy to information asymmetry in divestiture transactions stems from the existence of observable indicators regarding the potential value of divestiture transactions. Previous literature has found that corporate governance indicators can downsize the *effects* of information asymmetry (Sanders and Boivie, 2004; Spence, 1974; Stigliz, 2000; Garmaise and Moskowitz, 2004). In the IPO context, Sanders and Boivie (2004) have shown that stock-based financial incentives, blockholders, institutional and venture capital ownership and board structure may be helpful in reducing investors' uncertainty regarding firms' value in emerging markets.

Accordingly, a recent and growing body of literature has focused primarily on the role of ownership identity in several settings. In their seminal work, Thomsen and Pedersen (2000) have reported that different types of owners affect company decisions and their consequent financial performance, while Connelly, Hoskisson, Tihanyi and Certo, (2010) have examined the relationship between different categories of institutional investors and firm's strategic competitive actions. Also R&D investment activities are affected by ownership identity (Munari, Sobrero, and Oriani 2010). In addition, on the specific topic of corporate divestiture, Hoskisson and colleagues (2005) have pointed out why different owners may choose different types of divestitures (related or unrelated refocusing) in emerging economies. More recently, Hautz, Mayer and Stadler (2012) have shown that families are positively related to product and negatively related to international diversification, while state and financial institution are related negatively to product and positively to international diversification. Thus, the identity of the owner has important organizational implications.

Research on the organizational implications of ownership identity provides insights on how specific ownership identities may convey information about the motivation for divestiture, thus influencing investors' reaction to the divestiture decision. We believe that - in presence of information asymmetries - ownership identity may signal the quality of divestiture transactions by affecting the market perception of the strategic and financial aims of divestiture decisions. In particular, in Western European Countries, where family ownership is a widely spread phenomenon, it might be useful to look at its potential role as an "*information diffusion mechanism*" (Ragozzino and

Reuer, 2007) in presence of information asymmetry. Existing literature suggests that family ownership can limit managerial opportunism and narrow the extent of agency problems between managers and owners (Type 1), for several reasons. First, when the dominant owner is a family, its incentive to control managers is stronger because families usually invest most of their wealth in their company (Villalonga and Amit, 2006; Gomez-Mejia, Nunez-Nichel, Jacobson and Moyano-Fuentes 2007; Miller, Le Breton-Miller and Lester, 2010). Second, family owners want to hold down future work opportunities for family members and to preserve both the family and the social identity (Sharma and Manikutty, 2005). Family owners are usually long-term oriented and tend to pursue strategies of continuity (Gomez_Mejia, Makri and Kintana, 2010; Gomez-Mejia et al., 2007). In sum, they have no incentive to behave to the detriment of the firm's wealth (Peng and Jiang, 2010), as their ultimate goal is to pass the firm to later generations (Gomez-Mejia et al., 2007). Moreover, the family's involvement in the executive board acts in the direction of reducing manager-owner agency problems.

Based on these arguments, we can predict that – in presence of information asymmetry - family ownership acts as a positive signal to sort the quality of divestiture transactions. In fact, when there is an expectation of high agency costs due to information asymmetries, the existence of family ownership may act as a signal of stronger monitoring on managers. This should reassure investors about the family's ability to reduce Type 1 agency costs, thus limiting the detrimental effect that information asymmetry has on divestiture financial performance. We thus predict that family ownership will have a positive influence on the relation between information asymmetry and divestiture financial performance:

HYPOTHESIS 2A: The extent of family ownership positively moderates the relation between the degree of information asymmetries and divestiture financial performance.

Whereas traditional agency theory suggests that the presence of family ownership will reduce the extent of agency costs between managers and shareholders (Type 1), family ownership does not in reality have a straightforward effect on the agency problems associated with divestiture activity. As mentioned above, existing literature has documented the potential misalignments between controlling owners and minority shareholders (Type 2) that arise in the presence of concentrated ownership (LaPorta, Lopez-de-Silanes and Shleifer, 1999). Johnson et al. (2000: 22) use the term "*tunneling*" to describe the "*transfer of resources out of a company to its controlling shareholder*", to the detriment of minority owners. Compared to other ownership categories, family owners have a greater incentive to expropriate minority shareholders. Unlike in firms where the large shareholder is an institution such as a bank, an investment fund, or a widely-held corporation, in family-owned firms the private benefits of control are concentrated upon the family itself. Therefore, within the context of divestiture, family controlling owners have a stronger potential incentive to extract value from the firm.

Due to Type 2 agency problem, family ownership may act as a "negative" signal of the quality of divestiture transactions. In fact, it can suggest that family owners may potentially use divestiture in the pursuit of their private interest, to the detriment of minority shareholders. This will exacerbate the negative effect of information asymmetry. On these grounds, we expect a negative effect of family ownership on the relation between information asymmetry and divestiture financial performance:

HYPOTHESIS 2B: The extent of family ownership negatively moderates the relation between the degree of information asymmetries and the divestiture financial performance.

3. Methods

3.1 Data and Sample

We generated a sample of divestiture transactions across the following European countries: Austria, Belgium, Finland, France, Germany, Ireland, Italy, Norway, Portugal, Spain, Sweden, Switzerland, and the U.K. This selection of countries provides the needed variance in terms of governance systems and has the additional advantage of allowing the use of several ownership data sources. As in prior research (e.g. Bergh *et al*, 2007), Thomson One Banker was used to track different types of divestiture events and their announcement dates. We chose the earliest of the announcement dates listed in Thomson One sources and Lexis-Nexis. More specifically, the Thomson Mergers and Acquisitions database was used to identify "sell-offs", while the Thomson New Issue Database was used to detect "equity carve-outs". In the Merger and Acquisition database, events identified as "divestiture" are classified in our sample as sell-offs because they indicate a loss of majority control by the parent company. In the New Issue Database, equity carve-outs are identified as initial public offerings where the issuing firm is the subsidiary of another firm. Sell-offs, and equity carve-outs constitute the primary forms of divestiture identified in the literature (e.g. Chen and Guo,

2005), and our subsequent analysis controls for these different types of actions. We limited our sample to divestitures completed in the years from 1996 to 2010 by publicly listed corporations, and excluded any divestitures by firms operating in utilities (Bergh *et al.*, 2007) because they may have been influenced by regulators, as well as limited partnerships, and could be the result of a reorganization. This process led to a sample of 336 transactions, namely 190 sell-offs, and 146 equity carve-outs.

From this sample of transactions, we selected only those for which we could trace both the measure of information asymmetry on IBES and the divesting firms' ultimate ownership and control chains. To construct ownership structures we relied on Thomson One Banker and Stock Exchange institutional reports, while Datastream and Stock Exchange institutional web sites allowed us to identify dual class shares and cross-holdings. At the end of this process, the final sample includes 115 divestiture transactions.

3.2 Measures

3.2.1 Dependent Variable

According to the event study methodology (Fama, Fisher, Jensen, and Roll, 1969; Warner, Watts and Wruck, 1988), we measured the stock market reaction to the divestiture event with the Cumulative Abnormal Returns (DIVESTITURE PERFORMANCE) using Datastream to draw Stock Market data.

CAR is the sum of the ex-post returns of the security over the event window, minus the normal return of the firm, which is the return that would be expected if the event had not taken place. Through this approach, we are able to detect the effects of the deal on the divesting firm's stock price during a given event window.

3.2.2 Independent Variables

Two explanatory variables were used in order to test the hypotheses.

To test Hypothesis 1, we needed a proxy for the degree of information asymmetry (*INFO ASYMMETRY*). Following Krishnaswam and Subramaniam (1999), we calculated the degree of information asymmetry as the *forecast error* in earnings measured before the announcement of the divestiture. For each firm in the sample, we collected the mean and median monthly earnings forecast for the last month of the year before the announcement of divestiture as the predicted earnings. After that, we measured forecast error as the ratio of the absolute difference between the forecast earnings and the actual earnings per share to the price per share at the beginning of the month. Firms with higher levels of information asymmetry are expected to have greater forecast errors. Data for this variable was obtained from IBES.

To test H2A and H2B, the sample had to be partitioned according to ownership concentration. We split the divesting firms into *widely-held* firms and firms with an *ultimate controlling owner*. Following Faccio and Lang (2002), we assumed as relevant the threshold of 20 percent of the control rights to ensure control, and we defined a company as *widely-held* if no *ultimate controlling owner* exceeded such control threshold.

To test H2A and H2B, for companies controlled by at least one ultimate controlling owner, we considered the control share held by the family owner, consistently with Faccio and Lang (2002). We calculated the control rights of the ultimate controlling owner, so that the independent variable became:

1. (*FAMILY*) – share of control rights held by a *Family or Unlisted Firm*

The control right is defined as the weakest link along the control chain. The cash flow right, instead, is calculated as the product of all the ownership stakes along the control chain (Faccio and Lang, 2002). Hence, we reconstructed the control chain for divesting firms, in order to calculate the control rights of the ultimate controlling owner. A shareholder is defined as "*an ultimate owner at a given threshold if he controls it via control chain*" (Faccio and Lang, 2002: 369). We recorded all owners in the control chain who control at least 5 per cent of voting rights, taking into account dual class shares, pyramidal structures, holding through multiple control chains and cross holdings.

Data to construct this measure were gathered from several sources: Thomson One Banker Data, Datastream, Osiris and other official sources (i.e., Stock Exchange institutional web sites).

3.2.3 Control variables

Several factors may influence the stock market reaction to the divestiture event, including pre-divestiture performance and debt structure of divesting firms, voting rights of remaining categories of ultimate controlling owner, modes of divestiture, systems of governance and industry difference between parent and divested unit (Bergh, 1995; Chen and Guo, 2005; Bergh and Lim, 2008).

First of all, we checked for divesting firm performance (*ROA*) and debt (*DE*) before divestiture, respectively measured through the firm's return on assets and debt-to-equity ratio, averaged for the 2 years prior to the divestiture event. The data needed for these variables were drawn from *Datastream*.

We also checked for voting rights held by the remaining categories of ultimate controlling owner: *widely-held financial institution*, *widely-held corporation and miscellaneous.* Following Faccio and Lang (2002), we calculated the voting rights, to identify the following control variables. Moreover, we accounted for the possibility that stock market reaction to the divestiture event may depend on the social and regulatory context where firms are embedded. Controlling for governance systems, we are able to account for some characteristics that have a powerful influence on divestiture performance (e.g. La Porta et al. 1999). Accordingly, we employed the index developed by Djankov, La Porta, Lopez-de-Silanes, Shleifer (2008) as measure of the degree of *minority shareholders' rights protection* (*MSRP*), since it specifically focuses on the ability of corporate insiders to divert corporate wealth to the detriment of minority owners.

In order to check whether the divestiture performance is influenced by the implementation alternative, we considered modes of divestiture as a further set of controlling variables. We added a dummy variable for the mode of divestiture (ECO), taking the sell-offs as baseline. The data needed for this variable were drawn from *Thomson One Banker*.

We also checked for industry difference between parent firms and divested units. *INDUSTRY* is a dummy variable to which a value of 1 is attributed when the parent firms and divested units operate in the same industries (three-digit SIC codes), and a value of 0 otherwise (Chen and Guo, 2005). The data needed for these variables were drawn from *Amadeus.* We also checked for the size of divesting firms by taking the log of total revenues (*REVENUES*), averaged for two years prior to the divestiture event. The data needed for this variable were drawn from *Datastream*.

Finally, we added a full set of year dummies to look for time effects on divestiture performance.

4. Results

Table 1 reports means, standard deviations and correlations for the studied variables. None of the correlation coefficients raises potential problems of multi-collinearity.

In Table 2, we present the OLS estimations to test our hypotheses.

Model 1 reports the results only for the control variables. The control variables have no significant effect on the *CAR* (Model 1).

In order to check whether different owner identities play a role on divestiture financial performance, we also added a set of control variables to account for the control share held by different categories of dominant owner. In particular, the coefficient of the *Family Owner* is positive and statistically significant (model 2: β= .067, p <.005). It is worth noting that none of the control shares pertaining to owners different from families (*Fin*, *Cor* and *Mix*) have a significant effect on the *CAR*.

In Model 2 we run the OLS to test Hypothesis 1. In particular, we test the relationship between the information asymmetry and divestiture financial performance (*CAR*). To this aim, the dependent variable (CAR) is regressed onto *Information Asymmetry*. The coefficient of *Information Asymmetry* is negative and statistically significant (model 2: β= -.105, p <.010). This means that the degree of *Information Asymmetry* drives stock market expectations related to the quality of divestiture, thus influencing the divestiture financial performance. This evidence is perfectly consistent with our theory, supporting Hypothesis 1. In fact, in our baseline, information asymmetry fuels agency costs, increasing the perceived risk of opportunistic behaviour.

Model 3 reports the Ordinary Least Squares estimation of the empirical model to test our competing Hypotheses (2A and 2B). Here we added the linear interaction between *Information Asymmetry* and *Family* variables. The evidence indicates that *Family* negatively moderates the linear effect of *Information Asymmetry* on *CAR* as the coefficient of the interaction term between *Family* and *Information Asymmetry* is negative and significant (model 3: β= -.370, p <.40). To illustrate the moderating effect of *Family*, we have plotted the slopes on the basis of different levels (%) of *Family* ownership (Fig.1). These results support Hypothesis 2B. When *Family* is at maximum level (93%), the negative relation between the *Information Asymmetry* and divestiture financial performance is accentuated and Type 2 agency problem prevails, while the negative relationship disappears when there is no family ownership (i.e. Family is equal to 0%).

Table 1. Means, Standard deviations and correlations of the variables (n=115)

	Mean	Std -Dev	Min	Max	Divestiture performance	Information Asymmetry	Family	Financial	Miscellaneous	Corporation	ROA	DE	Industry	ECO	MSRP	Revenues
Divestiture Performance	-.001	.042	-.171	.140	1.000											
Info Asymmetry	.047	.097	0	.854	-.184*	1.000										
Family	.098	.185	0	.93	.199*	.115*	1.000									
Financial	.017	.061	0	.42	.083*	.216*	-.015*	1.000								
Miscellaneous	.003	.023	0	.24	-.012	-.042	-.063	-.033	1.000							
Corporation	.011	.059	0	.49	.088*	-.058	-.098*	-.051	-.022	1.000						
ROA	1.241	6.141	-41.88	31.84	-.027	-.151*	.138*	-.108*	-.023	-.037	1.000					
DE	.276	.540	0	3.11	-.072*	.379*	.080*	.113*	-.058	.011	.189*	1.000				
Industry	.341	.476	0	1	-.116*	.050	-.112*	.135*	-.011	-.014	.004	.214**	1.000			
ECO	.333	.473	0	1	-.016	-.071*	-.064*	-.012*	-.009	.011*	-.135*	-.336*	-.182*	1.000		
MSRP	2.101	.556	1.270	2.850	-.026	.016	-.239*	-.018	.107*	-.139*	.052	-.116*	-.090*	-.201*	1.000	
Revenues	6.630	1.236	2.707	10.108	-.082*	-.071*	-.206*	.013*	-.007	-.020	.111*	-.003*	-.048	.258*	-.250*	1.000

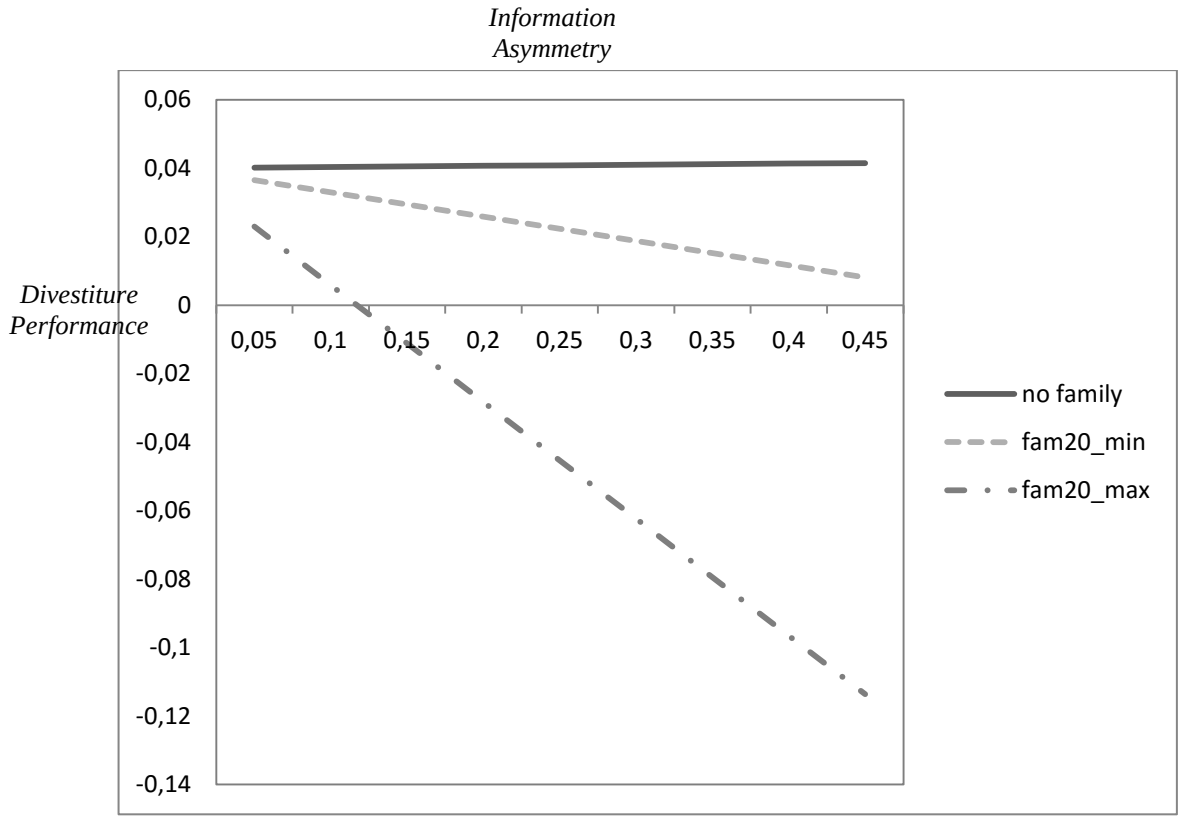
[a]* ($p<.05$); n = 115

Table 2. Results

	Model 1	Model 2	Model 3
Divestiture performance	OLS	OLS	OLS
Information Asymmetry		-.105** (.040)	-.003 (.081)
Family		.065** (.021)	.097*** (.026)
Family*Information Asymmetry			-.371* (.172)
Financial		.047 (.073)	.087 (.092)
Financial*Information Asymmetry			-.600 (.774)
Miscellaneous		.091 (.058)	12.607 (24.075)
Miscellaneous*Information Asymmetry			-0.29 (.26)
Corporation		.913 (.058)	.105 (.071)
Corporation*Information Asymmetry			-.451 (3.90)
ROA	.000 (.000)	-.000 (.000)	-.000 (.000)
DE	-.000 (.000)	-.000 (.000)	-.000 (.000)
Industry	-.000 (.008)	-.006 (.008)	.004 (.008)
ECO	-.009 (.010)	.-.005 (.009)	-.008 (.010)
MSRP	-.004 (.007)	.007 (.007)	.006 (.007)
Revenues	-.004 (.003)	-.002 (.003)	-.000 (.003)
YEAR DUMMIES	YES	YES	YES
Const	.039 (.028)	.013 (.026)	.022 (.032)
Observations	115	115	115
R-Squared	.162	.287	.327
F-statistic	1.03	1.60	1.60

Parameter estimates from the OLS with the standard errors in the parenthesis.
***$p < .001$, ** $p < .01$, * $p < .05$, † $p < .1$

Figure 1. Information Asymmetry and divestiture financial performance for different levels of family ownership



4.1 Robustness checks

In order to validate our results, we also investigate their robustness in several additional ways. Firstly, we have tested the significance of the simple slopes of the variable *Information Asymmetry*, as defined in the Aiken and West (1991). Table 3 reports the results of the simple slopes of *Information Asymmetry* at different levels of *Family*. The results confirm the robustness of our results, showing that the higher the family ownership, the lower the simple slopes of the relation between divestiture financial performance and the degree of information asymmetry. Secondly, we verified the robustness of our results with different specifications of our measure of information asymmetry. We also use the median of monthly earnings. Our results are not affected by this specification, and remain consistent with our theoretical framework. Finally, in order to control for the potential *endogeneity* issue related to the divestiture decision, we estimated a two-step *Heckman* selection model, where the probability of a firm divesting is estimated in the first step and the stock market reaction to the divestiture event is estimated in the second one. This two-step model corrects the potential *endogeneity* bias related to the fact that divesting firms may be systematically different from non-divesting firms and that a common set of factors may affect both divestiture decision and financial performance. In the selection equation of the Two Step Heckman Model, we empirically controlled that the decision to divest might have been affected by some of the variables that also affect divestiture financial performance. In order to correct this potential endogeneity bias, we calculated the likelihood of divestiture decision for the sample and matched firms, that have not divested. In particular, the variable *Divestiture*, which is the dependent variable in the selection equation, takes the value of 1 for divesting firms, 0 for the matched firms that have not divested. As concerns the predictor of the divesting decision, we included the variable *Family* described above. Indeed, previous literature has argued that when the identity of the dominant owner is a family, the firm is usually unwilling to divest (Sharma and Manikutty, 2005). On this basis, divestiture may be either avoided or deffered (Sirmon and Hitt, 2003), even when family is debating on a value-enhancing transaction. However, the results indicated that our main findings are not affected by this endogeneity issue

Table 3. Simple slope of divestiture financial performance for different levels of family ownership

	Family Ownership							
	20%	*30%*	*40%*	*50%*	*60%*	*70%*	*80%*	*90%*
Simple Slope	-.155	-.388†	-.622*	-.856*	-1.089*	-.1.323*	-1.557*	-1.790.*

***$p < .001$, ** $p < .01$, * $p < .05$, † $p < .1$

5. Discussion and Conclusions

In this paper, we have analysed the controversial relationship between information asymmetry, family ownership and divestiture financial performance in West European Countries. We provide evidence for two main findings. First, we show that information asymmetry negatively affects divestiture financial performance. We interpret this result as a consequence of more severe Type 1 and Type 2 agency costs associated with the divestiture transaction in presence of higher information asymmetry. Second, we find that family ownership negatively moderates the relationship between information asymmetry and divestiture financial performance. Our justification is that, in the presence of information asymmetry, stock market investors expect family owners to use divestiture transactions to pursue their opportunistic objectives to the detriment of minority shareholders (Type 2 agency problem).

We contribute to the existing literature in several ways. First, we make a theoretical contribution to the literature on divestiture financial performance. Answering to scholars' recent call for additional attention on the factors influencing divestiture performance (Lee and Madhavan, 2010), we have highlighted that – given the ambiguous nature of divestiture transactions – it is important to account for the impact of information asymmetry. Although consistent evidence has shown that divestiture decisions yield positive abnormal returns (for a review see Lee and Madhavan, 2010), we find that in the presence of information asymmetry, divestiture performance will be lower than expected.

Beyond contributing to make divestiture transactions even more opaque to investors, information asymmetry is also a source of agency costs, which may reduce divestitures' financial performance. Therefore, this work complements prior findings on the role of information asymmetry in different settings such as M&A (Reuer and Ragozzino, 2008) and IPO (Sanders and Boivie, 2004), showing the relevance of adverse selection problem in divestiture setting.

Furthermore, the relationship between information asymmetry and divestiture performance is moderated by family ownership. Whereas agency theory predictions confer to the family a twofold potential role, as it may both reduce Type 1 agency problems and generate Type 2 agency problems, we show that investors endorse the second interpretation. Family ownership causes investors to look at divestitures as transactions driven by the pursuit of the family private interests, to the detriment of minority shareholders. The negative impact of information asymmetry on divestiture financial performance is hence exacerbated by the presence of family ownership.

Second, we contribute to the stream of literature that highlights the role of corporate governance characteristics as "*information diffusion mechanism*" (Ragozzino and Reuer, 2007). We extend this literature by confirming this mechanism in the context of divestiture. Although previous research has already demonstrated how ownership structure affects divestiture performance (e.g. Brauer, 2006; Abor *et al.*, 2011; Peruffo *et al.*, 2013; Peruffo, Oriani and Goranova, 2013), no study has yet elaborated on the role of ownership identity in signalling the quality of a divestiture transaction in the presence of information asymmetries. We have found that, in presence of different degrees of information asymmetry, the identity of the dominant owner does not have a general effect on divestiture financial performance. Indeed, in the presence of higher information asymmetries and greater family ownership, stock market investors perceive a higher risk of expropriation by controlling owners and discounting the price of the divesting firm. This work should, therefore, help clarifying the controversial role of family ownership in divestiture transactions (Sharma and Manikutty, 2005; Peruffo, *et al.* 2013), by shedding light on the conditions under which family ownership may have positive or negative effects on divestiture financial performance. Through the analysis of the signalling role of family ownership, we also answer to recent strategy research's call for greater attention to the crucial role signals can play in reducing the costs of market exchange (Montiel, Husted and Christmann, 2012).

Finally, to the best of our knowledge, this is one of the very few studies (e.g. Capron, Mitchell and Swaminathan, 2001; Haynes, Thomson and Wright, 2003) that use a dataset of European divestiture transactions. This empirical setting allows us to study divestiture performance in a very different governance system (Abor *et al.*, 2011) as compared to other research focused on the US (e.g.,

Owen *et al.*, 2010). We think that for this reason our results are particularly important. These countries constitute an ideal setting because they are characterized by the widespread presence of controlling owners and family ownership (Faccio and Lang, 2002) and the relevance of principal-principal problems (Renders and Gaeremynck, 2012). Moreover, since family control is common also in other settings like Asia, our results provide some insights also to scholars interested in such contexts.

This study also bears some limitations, which at the same time provide potential opportunities for future research. A general caveat is that our intention to build a database of transactions performed in countries different from the US and presenting a different corporate governance system implies a limited number of observations available for our analysis. As a result, we have some specific limitations. First, we consider sell off and equity carve out to be alike, but differences may arise depending on the mode of divestiture. It would be interesting to further explore whether and in what way the characteristics of the transactions interact with ownership structure in affecting the performance. Second, data constraints have prevented us from examining whether the families are founding families or how many people in the family are associated with the firm, either on the board or in top management team. Third, we have only considered ownership structure as a corporate governance feature, leaving aside other potential mechanisms like board composition. Future research should start from these limitations to better understand the role of corporate governance mechanisms in divestiture financial performance.

Finally, we wish to highlight some practical implications of our results. In our study, we contribute to explain under which conditions sellers earn abnormal returns through divestiture transactions. In fact, poor transparency about a firm's activities may allow better-informed agents within the firm to use divestiture transactions to pursue their own interests to the detriment of firm value. This result is consistent with prior works that show evidence of market failures in several settings, such as IPOs (e.g. Loughran, 2008) and M&As (e.g. Reuer and Ragozzino, 2008). Managers of divesting companies should be aware that their ownership identity might affect the divestiture financial performance. Our results are also congruent with prior works (e.g. Ataullah, *et al.*, 2014), that show the importance of developing signalling mechanisms for limiting the effects of information asymmetries. Thus, when the dominant owner is a family, managers should take specific measures to signal the quality of their divestiture to the markets, with the aim of reducing the costs of information asymmetries.

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DISCLOSURE QUALITY IN TUNISIAN ANNUAL REPORTS

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Abstract

This paper explores disclosure quality and its determinants in the Tunisian context. More specifically, we followed Beest and Braam (2012)'s approach in measuring disclosure quality and examined if disclosure quality and disclosure quantity shared the same determinants. We used a sample of 56 annual reports from non-financial companies listed on the Tunisian Stock Exchange for the years 2007 and 2008. Our results showed that board independence (managerial ownership) affects negatively (positively) disclosure quality. However, the results showed that there were different determinants of disclosure quality and quantity. We contribute to disclosure studies by being the first study to examine disclosure quality in Tunisia. In addition, this study enables us to provide the Tunisian companies' stakeholders (like regulators and managers) with a diagnosis of the determinants of disclosure quality and quantity.

Keywords: Disclosure Quality, Disclosure Quantity, Determinants, Annual Reports, Tunisia

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1. Introduction

Disclosure is a mechanism of control that protects investors and makes capital markets more efficient. It is a concept which is difficult to measure directly (Marston and Shrives, 1991). Generally, a proxy (which may be disclosure quantity or quality) must be selected as a variable of interest not directly observable and must be measured with a sufficient degree of accuracy. Nowadays, stakeholders require high quality information with sufficient quantity. Botosan (2004) argued that no universally accepted notion of disclosure quality existed. It could be defined as "information about the reporting entity that is useful to present and potential equity investors, lenders and other creditors in making decisions in their capacity as capital providers" (IASB, 2008). Demand for disclosure quality or decision-useful information arises from information asymmetry and agency conflicts between insiders (managers) and outsides (stakeholders). Consequently, for the users of annual reports, increasing the disclosure quality reduces information asymmetry.

The measurement of disclosure quality is still extraordinary difficult (Hassan and Marston, 2010); Marston and Shrives, 1991; Beattie et al., 2004). Quality has been elusive; it remains a subjective, multidimensional concept dependent on the context of the decision (Beattie et al., 2004). Previous research used different proxies to measure the quality of corporate disclosure. However, recent review articles criticised critically the proxies (Core, 2001 and Beyer et al., 2010). Due to the difficulties of measuring disclosure quality, many previous researches used quantity as a proxy for quality (e.g. Hussainey et al., 2003). In their review paper, Beyer et al. (2010, *p.311)*) argued that: "*A sensible economic definition of voluntary disclosure / financial reporting quality and direct derivation of measures from that definition is missing from the literature. This lack of an underlying economic definition hinders our ability to draw inferences from this work, and we recommend that future research address this issue"*.

In responding to Beyer et al. (2010), recent efforts were undertaken to measure the quality of corporate disclosure in developed countries. These included Anis et al. (2010), Bamber and McMeeking (2010) and Beest et al. (2009). In addition, previous literature suggested that disclosure quality might be related to disclosure

quantity (Eng and Mak, 2003; Gul and Leung, 2004) and, hence, disclosure quality and quantity shared the same determinants. The problem of the use of disclosure quantity as a proxy for disclosure quality generated our main research question: To what extent do disclosure quality and disclosure quantity share the same determinants?

Given the scarcity of studies on the disclosure quality in the emerging economies and the call for research on this topic by Beyer et al. (2010), we aimed to elucidate it in Tunisia. On the one hand, Tunisia is an African developing country of the MENA (Middle East and North Africa) zone. It has an emerging stock market composed of 57 listed companies among which there are 25 financial institutions in which the minority shareholders are not well protected and there is weak regulation of corporate disclosure. On the other hand, the emergence of many changes related to the information environment on the Tunisian Stock Exchange (TSE) especially the promulgation of the Law No. 2005-96 dated 18/10/2005 concerned with the strengthening of financial security and the development of corporate governance in the economy, highlighted the need to disclose high quality information for the users of annual reports having real crises of confidence. However, this created new expectations of the Tunisian financial analysts and portfolio managers relating to the quality of corporate disclosure (Chakroun, 2012).

Disclosure is a complex phenomenon. Through a critical review of disclosure theories, Alhtaybat et al. (2012) sought to map the theories to explain this phenomenon. The previous empirical results, which explained disclosure quantity and quality, were mixed and controversial. Our research objectives were: [a] to measure disclosure quality for a sample of Tunisian companies for the years 2007 and 2008; [b] to identify the determinants of disclosure quality; and [c] to find out if disclosure quality and disclosure quantity shared the same determinants. We contribute to the literature by being the first study to examine the disclosure quality in Tunisia which is one of the developing countries. In fact, research regarding Tunisian disclosure quality and its determinants in is missing from the previous work on disclosure; the matter which makes this research useful. Also, we drew on theories suitable for the Tunisian setting which are the agency and the stewardship theories.

The paper describes disclosure quality in the Tunisian context. It identifies its determinants and concludes with a comparison between the determinants of disclosure quality and quantity. Our empirical test results failed to support the agency theory and provided some support for the stewardship theory. The empirical results, which did not support the predictions of the agency theory, indicated that some corporate governance mechanisms (board independence, managerial ownership) affected disclosure quality. In particular, our test results indicated clearly that disclosure quality was a substitute of board independence and a complement of managerial ownership. This result was in line with previous research which modelled, also, the link between disclosure and corporate governance in the Tunisian setting (Chakroun and Matoussi, 2012). Consistent with Anis et al. (2012) and Bamber and McMeeking (2010), the empirical results indicated, also, that the determinants of disclosure quality differed from the determinants of disclosure quantity.

The remainder of the paper is organised as follows. Section 2 discusses the literature review and the development of the research hypotheses. Section 3 explains the research design. Section 4 describes the data. Section 5 reports the empirical findings. Section 6 concludes the study.

2. Literature review

2.1 Institutional Framework

In Tunisia, the legal obligations for the annual reports are set by the Code of Commercial Companies[6], the firms' accounting system (1997), which was established through harmonizing standards with those of the IASB and the regulation of the Financial Market Council[7] (Chakroun and Matoussi, 2012). Indeed, Article 201 of the Code of Commercial Companies gives no precision about the form and content of the annual report and states only about the fact that it must be "detailed". In addition, Article 44 of the Regulation of the Financial Market Council[8], approved by the Finance Minister's Order of April 7 2000, lists the compulsory information to be provided in the annual report. In Tunisia, since there continued to be no strict regulation of the information disclosed in the annual report and no company had been penalized because of its non-compliance with the Law, we considered that all the information, which accompanied the financial statements in the annual reports, was voluntary information.

In recent years, Tunisia's legal environment of has undergone major changes and these have encouraged the Tunisian companies to disclose information at the highest level of quality in their annual reports. In the main, this is reflected clearly in the promulgation of the Law No. 2005-96, dated 18/10/2005, concerning the strengthening of financial security. In fact, in the Chapter 3 of this Law (Item 3 'new'), we found that: "The annual report on the management of the company must

[6] Which have a field of application covering most of the trading companies

[7] Of which the fields of application extend to all the companies publicly appealing to savings

[8] Which relates to public offering

include the information determined by the regulation of the Financial Market Council and particularly, a presentation on results of operations, their foreseeable evolution and possibly changes in the way of development and presentation of financial statements, as well as elements of internal control". This legislative reform was considered to be an external governance mechanism. In this Law, which was promulgated and became effective in October 2005, the legislator attempted to follow the international trends in information disclosure (e.g. the 2002 Sarbanes Oxley Act in the USA and the 2003 Financial Security Act in France). This Law aimed to reshape the financial disclosure requirements and introduced measures putting a greater obligation on publicly traded companies to improve their communications. In addition, this Law brought several changes to the Code of Commercial Companies and introduced a series of measures to enhance accountability for companies; market transparency; and good corporate governance (Chakroun and Matoussi, 2012).

In addition, despite the absence of a formal regulatory framework to mentor it, we noted a change in the corporate governance environment. This was reflected by the Arab Institute of Business Leaders' publications (in 2008 and updated in 2012) of a Guide about Good Governance Practices of Companies and a Guide of the Annual Report of the Tunisian Companies (in 2009); as well as the establishment (in 2009) of the Tunisian Center of Corporate Governance.

2.2 Literature Review of Measurement Methods to assess the Quality of Financial Reporting

Previous empirical researches developed and used various types of measurement methods and proxies assess and evaluate the quality of corporate disclosure (Healy and Palepu, 2001). We present the measures of: Beattie et al. (2004); Beretta and Bozzolan (2004a, 2004b, 2008); Anis et al. (2012); and Beest and Braam (2012). These measures are considered to be the key attempts to measure disclosure quality.

Beattie et al.'s (2004) first pioneering study to develop a measure of disclosure quality provided a general framework applicable to various types of information. This study stated that quality was a function of the quantity plus there was a four-dimensional framework for the content analysis of accounting narratives, namely: the spread (the number of topics disclosed); the time orientation of the information (historical or forward-looking); the financial orientation (financial/non-financial); and the quantitative orientation (quantitative/qualitative). In addition, this paper presents a computer-assisted methodology; explores the complex concept of quality; and the problematic nature of quality assessment.

Beretta and Bozzolan (2004a) were restricted to the disclosure quality of risk information. The authors proposed a measure which captured four main dimensions, namely: the content of information (the quantity of disclosure based on pre-determined topics)[9]; the economic sign (positive/negative information); the type of information (financial/non-financial information); and the outlook orientation. Beretta and Bozzolan (2004b) argued that the quality of voluntary disclosure ought to be defined from the user's perspective. In this regard, multidimensional frameworks should be based on a detailed analysis of the information needs expressed by specific segments of users on specific issues. Given the multifaceted nature of risk, this seems particularly important in the case of risk communication.

Beretta and Bozzolan (2008) were restricted to the disclosure quality of forward-looking information. They suggested a multidimensional measure which combined disclosure quantity and richness of information. Richness is a function of both width and depth. Disclosure width consists of disclosure coverage (the extent of disclosure of relevant topics) and disclosure dispersion (the spread of disclosure across different topics). Disclosure depth addresses the question of what information is disclosed. They identified four information attributes which represented disclosure depth, namely: outlook dimension; the information measurement type (qualitative/quantitative information; financial/non-financial information); and the economic sign (positive/negative news information).

Anis et al. (2012) contributed to existing disclosure literature by providing a multidimensional measure for disclosure quality; this was supported by a valid framework (Botosan, 2004)[10]. They operationalized the qualitative characteristics of information and aimed to assess the quality of different dimensions of information simultaneously in order to determine the decision usefulness of financial reporting information. As a response to Botosan's (2004) recommendation that disclosure quality measures ought to use a well-established regulatory framework, Anis et al. (2012) considered the Operating and Financial Review best practice (OFR) framework (ASB, 2006) as a base for developing their measure of disclosure quality. This measure represents a sum of the following information attributes: forward-looking orientation; verifiability; relevance;

[9] These topics were chosen based on the guidance on voluntary risk reporting discussed by professional bodies (i.e. FASB, 2001).

[10] Botosan (2004) identified the qualitative attributes of disclosure quality namely,: understandability; relevance,; reliability; and comparability; these enhanced the usefulness of information to economic decision makers.

supplementary and complementary financial statements; comprehensiveness; readability; balance and neutrality; and comparability.

Beest and Braam (2012) examined whether there were differences between IFRS and US GAAP based financial reports in meeting the fundamental and enhancing qualitative characteristics for decision usefulness as defined in the Conceptual Framework of the IASB (2010). Fundamental and enhancing qualitative characteristics are the underlying attributes which contribute to the decision usefulness of information. "For financial information to be useful, it must be relevant and faithfully represent what it purports to represent". The enhancing qualitative characteristics of understandability, comparability, verifiability and timeliness are complementary to the fundamental characteristics and distinguish more useful information from less useful information (IASB, 2010). Although, for a comprehensive assessment, the enhancing qualitative characteristics are perceived to be less important than the fundamental ones, it remains important to include them in the analysis. This study adds to the literature by developing and testing a comprehensive and compound financial reporting quality assessment tool which, both in terms of the fundamental and the enhancing qualitative characteristics as defined in the Conceptual Framework of the IASB (2010), aimed to measure the decision usefulness of financial and non-financial reporting information in annual reports.

Finally, we can say that there is no clear definition of disclosure quality and that its measurement is recognized as a relevant question which is still open in the literature.

2.3 Disclosure Quantity versus Disclosure Quality

On the one hand, disclosure quantity could be defined as the extent or amount of disclosed information. It could be measured via a content analysis which consists of counting the number of statements, sentences or words related to a specific topic (Guthrie et al., 2004; Milne and Adler, 1999; and Unerman, 2000) or via the use of indices (Patelli and Prencipe, 2007; Chau and Gray, 2002; Lang and Lundholm, 1993; Botosan, 1997…). Marston and Shrives (1991) provided a review of the use in accounting research of disclosure indices to measure disclosure quantity. On the other hand, information with high quality is a major factor that helps users of annual report to make rational decisions. In fact, Beuselinck and Manigart (2007) defined disclosure quality in terms of annual reports' decision usefulness of. The disclosure quality was not being measured with a sufficient degree of accuracy (Beattie et al., 2004). Botosan (2004) argued that it was a function of information quality attributes proposed by a regulatory framework. These attributes could be the qualitative characteristics of information as proposed by the conceptual frameworks for financial reporting and proposed by regulatory bodies and recommendatory reports.

The majority of the previous empirical studies did not make a clear distinction between the quantity and quality of disclosure (Hassan and Marston, 2010). In the same vein, Marston and Shrives (1991) argued that the index score "can give a measure of the extent of disclosure but not necessarily of the quality of disclosure". Because of the difficulties in measuring disclosure quality and, in particular, the absence of a generally agreed model and relevant and reliable techniques to measure it, researchers used disclosure quantity as a proxy for the quality of disclosure (e.g. Eng and Mak, 2003; Gul and Leung, 2004). Consequently, it was assumed that more information was related to the reduction of information asymmetries and there was a positive correlation between those disclosure quality and disclosure quantities (Botosan, 1997). Similarly, Amir and Lev, 1996; Hussainey et al., 2003; Schleicher et al., 2007; and Hussainey and Walker, 2009 used the quantity of forward-looking statements as a proxy for disclosure quality. These studies found that this information improved investors' abilities to anticipate future earnings change. In addition, Cerbioni and Parbonetti (2007) disputed the idea that quantity was a good proxy for quality. They individuated other aspects related to the quality of disclosure and used the semantic properties of the disclosed information, and on the content of information, as proxies for the quality of disclosure. Furthermore, Botosan (2004) argued that the measure of disclosure quality of Beretta and Bozzolan (2004a) counted only the number of information items and, hence, it did not differ from quantity-based measures used in previous research.

However, Beattie et al. (2004), Anis et al. (2012) and Berretta and Bozzolan (2008) criticized this approach. They contended that even if the quantity of disclosed information influenced the quality of information, an assessment on disclosure quality could not be based purely on this association. Beattie et al. (2004) overemphasized disclosure quantity as a component of disclosure quality. In addition, the authors did not justify their "key" assumption that firms, disclosing more information, were more likely to have a greater level of quality. Based on a sample of UK firms, Anis et al. (2012) provided empirical evidence that disclosure quantity was not a proper proxy for disclosure quality. In fact, whilst firms might disclose more information, such information could lack accuracy. Also, they showed that the determinants of disclosure quality and disclosure quantity were not identical. In addition Beretta and

Bozzolan's (2008)' tests confirmed that richness and quantity of disclosure were two independent dimensions and they revealed that, in assessing narrative disclosure, quantity was not a good proxy for quality. Their study's empirical evidence supported the hypothesis that the dimensions, considered in the disclosure quality framework, gave a more realistic picture of disclosure than quantity and suggested that, in assessing the disclosure, these dimensions could be used to complement each other.

2.4 Determinants of Disclosure Quality

There was considerable research interest in the impact of corporate governance characteristics on corporate disclosure (Chakroun and Matoussi, 2012; Arcay and Vázquez, 2005; Cerbioni and Parbonetti. 2007; Ho and Wong, 2001; Eng and Mak, 2003; Gul and Leung, 2004; Chau and Gray, 2002; Forker, 1992; Cheng and Courtenay, 2006). We have much to learn still about the impact of corporate governance on the quantity and quality of disclosure. Following Anis et al (2012), we studied the association between corporate governance mechanisms and disclosure quality. Using firm-specific characteristics, Anis et al (2012) found that there were different determinants for disclosure quality and quantity; these supported their arguments that disclosure quantity was not a precise proxy for disclosure quality. Cohen et al. (2004) highlighted the relationship between corporate governance mechanisms and financial reporting quality. They stated that "better" corporate governance led to improved financial reporting. Therefore, in addition to firm specific characteristics, we examined the impact of corporate governance mechanism related to board composition and ownership structure (the board independence; its size; the leadership structure; the managerial ownership; and the family control) on disclosure quality and quantity.

The agency theory explains the relationship between the agency problem and corporate disclosure since it serves as one of the principal monitoring tools in ensuring that a manager's policy decision aligns with his need (Jensen and Meckling, 1976). According to this theory, when the board is independent, this leads to a better control of management and, therefore, to a high quality of disclosure. For a sample of Italian companies, Patelli and Prencipe (2007) showed a positive relationship between the independence of the board and voluntary disclosure. Similarly, previous empirical studies' results (Cheng and Courtenay, 2006; Cerbioni and Parbonetti, 2007; Apostolou and Nanopoulos, 2009; Lim et al., 2007; Chen and Jaggi, 2000) showed a positive relationship between the independence of the board and the voluntary corporate disclosure.

In the Tunisian context, Chakroun and Matoussi (2012) found a negative and significant relationship between the board independence and the extent of voluntary disclosure linked closely to the mandatory one in the annual reports. This result was explained by the fact that independent administrators might be regarded as strangers to the company without being actually independent. The Code of Commercial Companies did not define an independent administrator and the Code did not require companies to include such administrators on their boards. In this case of Tunisia, the independent administrators could be considered to be only managers' advisers. Eng and Mak (2003) and by Barako et al. (2006) found the same results in the settings of Singaporean and Kenyan respectively. In conclusion, as predicted by the agency theory, we expect the positive relationship between the board independence and the quality of disclosure. In fact, through the increase of disclosure quality, the presence of independent administrators leads to a reduction of the agency problems.

H 1: There is a positive relationship between the board independence and the quality of disclosure

There is a complex relationship between the size of the board and disclosure quality. Chakroun and Matoussi (2012) confirmed that, in Tunisia, voluntary disclosure was a recent event. When we assumed that the culture of the quality of disclosure was not deeply rooted in the minds of most of the Tunisian managers, it was very likely to see, in the large-sized boards, members who encouraged the increase of the disclosure quality. Namely, when boards are large, it is more likely that they include administrators who tend to favour the best quality of disclosure. Chakroun and Matoussi (2012) and Barako et al. (2006) stated that there existed a positive and significant relationship between the size of the board and the extent of voluntary disclosure. Moreover Jouini (2013) found a positive but insignificant relationship between the size of the board and the level of financial disclosure. Therefore, we expect that companies with large-sized boards disclose a higher quality of information.

H 2: There is a positive relationship between the size of the board and the quality of disclosure

The stewardship theory argues that shareholder interests are maximised by the combination of functions of board chair and CEO. This theory does not favour of the separation of functions of CEO and chairman of the board. This theory emphasizes the concept of "unity of direction" and that duality provides more control. According to the assumption of the interest alignment of the dominant personality in the company with those of the other shareholders (Morck et al., 1988), we expect that the existence of a leadership structure (combination of functions)

within the company helps the disclosure quality to increase.

In a sample of Kenyan firms, Barako (2007) emphasized the existence of a positive and significant relationship between the leadership structure and the three sub-indexes of voluntary disclosure connected to the general and strategic information; the financial and social information; and the information about the board. In addition, in a sample of Tunisian firms, Haniffa and Cooke (2002) and Chakroun and Matoussi (2012) found a positive and significant relationship between the leadership structure and the extent of voluntary disclosure.

We should mention that the positive sign on duality in position was in contradiction to previous studies (i.e. Laksmana, 2008; Forker, 1992; Eng and Mak, 2003; Gul and Leung, 2004) which drew on the agency theory and argued that CEO duality was associated negatively with corporate voluntary disclosure. We supposed that the stewardship theory and the assumption of interest alignment of the dominant personality with those of the other shareholders in the company were suitable for the Tunisian context. Then, we predicted a positive association between disclosure quality and leadership structure.

H 3: Compared to other firms, the quality of disclosure is higher in firms where there is a leadership structure than in the other firms

The stewardship theory is a collaborative approach which focuses on the board's role of service and administrators are called to advise and stimulate business strategy. Therefore, the social and personal relationships between administrators and the CEO foster collaboration and strengthen the management (Donaldson and Davis, 1991). Consequently, according to this theory, the shareholders-administrators tend to enhance the disclosure quality in order to clear themselves from the other shareholders (non-administrators) and to demonstrate that they do not transfer the company's wealth to their own accounts. Similarly, based on the assumption of alignment of interests, when administrators hold a significant part in the company, ownership and management are held by the same people whose interests converge with those of the non-administrator shareholders. Disclosure quality in the annual reports is of major interest for these non-administrator shareholders.

In accordance with the stewardship theory (Donaldson and Davis, 1991) and the assumption of interest alignment of the controlling shareholders with those of the other shareholders in the firm (Morck et al., 1988), we expect that the managerial ownership helps the disclosure quality to increase. More specifically, the greater the part held by the shareholders-administrators is important, the weaker the divergences of interests become between them and the other shareholders. Namely, when administrators hold a significant part of capital; ownership and management are held by the same persons whose interests converge with those of the non-administrator shareholders interested in the quality of disclosure. Therefore, we expect that increases in the disclosure quality in the annual reports correspond with increases in managerial ownership. A high managerial ownership can help increase the company's disclosure quality (Li and Qi, 2008). In the Tunisian context, Chakroun and Matoussi (2012) found, also, a positive and significant relationship between the managerial ownership and the extent of voluntary disclosure.

H 4: There is a positive relationship between the managerial ownership and the quality of disclosure

Agency problems type II (which are caused by the conflicts between shareholders-directors and non-director shareholders) tend to be intense in the family controlled firms. In fact, family members seem unlikely to take into account the interests of the minority non director shareholders to obtain high quality financial information.

In a family business, the members of the family are involved in its management and have a precise knowledge about their business. We expect that these members do not promote high quality of information. Therefore, compared to other firms, family controlled firms are expected to disclose information of low quality. Indeed, Chau and Gray (2002) and Chen et al. (2006) argued that family controlled firms provided less voluntary information than the non-family ones. Chakroun and Matoussi (2012) showed, also, that, compared to other companies, the extent of voluntary disclosure by family controlled firms was not linked closely to the mandatory one.

H 5: Compared to other firms, the disclosure quality is lower in family controlled firms.

3. Research Methodology

3.1 Sample Selection and Data

This research focused on data of all non-financial sector companies (industrial and of services) listed on the Tunisian Stock Exchange (TSE) and observed in the years 2007-2008. We mention that the number of all listed firms on the TSE was 51 in 2007 and 50 in 2008. This difference in the number of listed firms was explained by two new introductions and three radiations.

We focused on listed companies because they were particularly careful about their disclosure policies. We excluded financial institutions due to the specificity of the disclosure of the financial institutions and because their annual reports differed from those of non-financial firms (Schleicher and Walker, 2010). We included all non-financial firms in our analysis; however, for 2008, we could not obtain the annual reports of two

firms. The number of firms observed in 2008 was 28 whilst, in 2007, their number was 26. This gave us a sample of 54 firm-year observations. We chose the period 2007-2008 because it is quite close to the promulgation of the Law No. 2005-96 concerning the strengthening of financial security. As mentioned, this Law calls firms to enhance their quantity and quality of disclosure and it is predicted that these consequences will be observed a few years thereafter.

Table 1. Distribution of observations by industry and year

Sector of activity	2007	2008
Telecommunications	1	1
Consumer Services	3	4
Travel and leisure	2	2
Health	1	1
Consumer goods	4	4
Food and drinks	3	3
Household products and personal care	2	2
Buildings and building materials	4	4
Industrial goods and services	2	2
Chemistry	2	3
Oil and Gas	1	1
RAW MATERIALS	1	1
Total	**26**	**28**

In order to assess the disclosure quality we used a manual content analysis on the annual reports. We consulted the annual reports of the companies which we collected from the Financial Market Council and the stockbrokers in the market since they were not downloadable directly through the Internet. We collected our data for the characteristics of the companies and the corporate governance mechanisms from the TSE website (http://www.bvmt.com.tn/) and the companies' annual reports.

3.2 Measurement Method to assess the Disclosure Quality

In Tunisia, there are no subjective ratings for disclosure quality. Beest et al. (2009) developed the method selected to assess the disclosure quality. It was applicable to the hard copies of our sample's annual reports. In fact, Beest et al. (2009) produced a comprehensive measure to operationalize the fundamental and to enhance the qualitative characteristic of annual reports' information.

We assessed a score which represented a proxy of the disclosure quality of the 54 annual reports. We based the operationalization of the qualitative characteristics of reporting information on a 19 item index of which 3 were related to relevance; 5 to faithful representation; 4 to understandability; 6 to comparability; and 1 to timeliness. We dropped two items from Beest et al.'s (2009) list of items; these were neither applicable nor relevant to the Tunisian firms (Relevance 3[11] and Understandability 4[12]). In fact, we adapted Beest et al.'s (2009) method to the Tunisian context since Botosan (2004) stated that the researcher ought to recognize that effective frameworks for assessing disclosure quality were likely to be context specific. By using predefined 5 point Likert scales, we coded the reports on the number of items. In order to ensure consistency in the scoring, we read all annual reports twice. As recommended by Botosan (2004) and by Jonas and Blanchet (2000), Beest et al.'s (2009) measure captured all the qualitative characteristics of information discussed in the conceptual frameworks for IASB financial reporting (IASB 2008)[13] and the FASB (FASB 1980). These were namely: the fundamental qualitative characteristics (i.e. relevance and faithful representation)[14]; and the enhancing qualitative characteristics (i.e. understandability, comparability and timeliness)[15]. These qualitative characteristics were mentioned by the Tunisian accounting conceptual framework (1997).

Beest et al. (2009) used multiple items which were drawn from existing measurement items developed already in previous studies (e.g. Jonas and Blanchet, 2000). Appendix A provides an overview of the 19 measured items which we used

[11] To what extent does the company use fair value instead of historical cost?

[12] They are most important and determine the quality of information.

[13] The IASB framework identifies four qualitative characteristics of information that enhance the usefulness of information to economic decision makers: understandability; relevance; reliability; and comparability

[14] They are most important and determine the quality of information.

[15] They can improve decision usefulness when the fundamental qualitative characteristics are established. However, they cannot determine disclosure quality on their own (IASB, 2008).

to operationalize the fundamental and to enhance the qualitative characteristics. The Appendix includes, also, the measurement scales used to assess the values of the distinct items.

In order to compute a standardized outcome for each qualitative characteristic (sub scores), the scores on the related items were added and divided by the total number of items. We measured a sub score for each qualitative characteristic and, then, we measured a score which represented an aggregate measure for the disclosure quality. The aggregated disclosure quality score was a function of five measures (sub scores) representing the quality attributes: relevance; faithful representation; understandability; and comparability and timeliness. We weighted equally the sub scores that composed the aggregated score because there was no reason to prioritize one attribute over the others. Indeed, the ASB (2006) valued all attributes equally. Following Beest et al. (2009), we discuss these qualitative characteristics as follows:

Relevance

Information is considered relevant "if it is capable of making a difference in the decisions made by users" (IASB, 2010, p. 17).The IFRS provide, also, a more specific definition of relevance: "financial information is capable of making a difference in decisions if it has predictive value, confirmatory value or both" (IASB, 2010, p. 17). Information would have a predictive value "if it can be used as an input to processes employed by users to predict future outcomes" (IFRS 2010b, p. 17). Information would have a confirmatory value "if it provides feedback about (confirms or changes) previous evaluations" (IFRS 2010b, p. 17). Usually, information, which has predictive value, has confirmatory value.

Faithful representation

Faithful representation is the second fundamental qualitative characteristic as elaborated in the conceptual frameworks. In order to faithfully represent economic phenomena which the information purports to represent, annual reports must be complete, neutral, and free from material error (IASB, 2010). Economic phenomena, represented in the annual report, are "economic resources and obligations and the transactions and other events and circumstances that change them" (IASB, 2006).

Understandability

The IASB (2010) defined understandability as the quality of information that enabled users to comprehend its meaning. The IASB (2010) argued that understandability was enhanced when information was classified, characterized and presented clearly and concisely.

Comparability

Comparability is considered to be a quality attribute of information which enables users to identify similarities in, and differences between, two sets of economic phenomena (IASB, 2010). In addition, as a quality attribute, comparability helps users to identify the main trends and the analysis of a firm's performance over time (ASB, 2006).

Timeliness

Timeliness means "having information available to decision-makers before it loses its capacity of influencing decisions" (IASB, 2010). Timeliness refers to the time it takes to reveal the information and, in general, is related to decision usefulness (IASB, 2010).

3.3 Measurement Method to assess the Voluntary Disclosure Quantity

Healy and Palepu (2001), who examined corporate disclosure extensively, stated that one of the limitations of the studies on voluntary disclosure was the difficulty in measuring its extent or quantity. We based our measure of disclosure quantity on the Botosan (1997)[16] 's index adapted to the Tunisian context (Appendix B).We dropped eight items which were not disclosed by any company in our sample. Based on the previous studies to identify the information expected by the users of the annual reports and on the Guide of the Annual Report of the Tunisian Companies published in 2009, we added three categories of information, namely: information on intangible assets; social and environmental information; and information on governance.

We used an un-weighted and weighted index based on the views of financial analysts and portfolio managers. According to the un-weighted approach, an item took "1" if disclosed and "0" otherwise. We measured the extent of disclosure by the ratio between the company's score and its maximum possible score for not penalizing it for non-disclosing items when they were irrelevant to its activities.

$$\text{UN DISi} = \sum_{J=1}^{72} x_{ji} / M_i$$

With: Mi: maximum number of items of which disclosure was possible for company "i»;

[16] Several studies, such as the studies of Singleton and Globerman (2002) and Rahman (2002), were based on the Botosan index (1997).

Mi ≤ 72, x ij= "1" if jth item was disclosed and = "0" otherwise.

It should be noted that for the weighting of the disclosure quantity score, we based it on data from an investigation through a questionnaire on a sample of 40 Tunisian financial analysts and Tunisian portfolio managers[17] (Chakroun and Matoussi, 2012). This method reflected the relative utility of each item and admitted that all items provided a different utility to the selected user of the annual report. The respondents were asked to rate the usefulness which they attached to the items on a5 points Likert scale. The values, attached to the items which could be disclosed in the annual reports, were (1=Not useful at all), (2=Little useful), (3=Somewhat useful), (4=Useful) and (5=Very useful). According to the weighted approach, an item took its "weight" if it was disclosed and "0" otherwise. The weight represented the arithmetic average of the points awarded by the respondents to the item[18].

$$W\_DISi = \sum_{J=1}^{72} x_{ij} * P_j \Big/ \sum_{J=1}^{Mi} P_j$$

With: M_i: number of maximum items whose disclosure was possible for company 'i';

$M_i \leq 72$; x_{ij} = '1' If the jth item was disclosed and = '0' otherwise;

P j: jth item weight (arithmetic average of the points awarded by the analysts to the item).

3.4 The Determinants of Disclosure Quantity and Disclosure Quality

We examined the extent to which disclosure quality and disclosure quantity were correlated and, hence, the former could be used as a proxy for the latter. In addition, we examined the extent to which both disclosure quality and disclosure quantity shared the same determinants. We compared the determinants of the disclosure quantity with the determinants of the disclosure quality, especially since previous studies showed that the determinants of disclosure quality and disclosure quantity were not identical (e.g. Anis et al., 2012). We used the following regression model to examine the determinants of disclosure quality and quantity:

DIS i = β0 + β1 YEAR i + β2 INDB i + β3 SIB i + β4 COMFUN i + β5 MAN i + β6 FAM i + β7 AGE i + β8 QAU i + β9 LSIZE + εi

Where;

DIS = disclosure quality (quantity). We measured disclosure quality through the fundamental qualitative characteristics (relevance and faithful representation) and by enhancing qualitative characteristics (understandability, comparability and timeliness) qualitative information characteristics and their aggregation. We measured disclosure quantity by a weighted and an un-weighted score. YEAR = 1 in 2008 and = 0 in 2007. INDB was the independence of the board. SIB was the size of the board. COMFUN was the combination of functions of General Manager and Chairman. MAN was managerial ownership. FAM was family control. AGE was the age of the company. QAU was the quality of auditor, and LSIZE was the size of business.Table 2 shows the definition of each of the variables and the data source.

4. Descriptive Statistics

Firstly, we present the descriptive statistics of the proxies of the disclosure quality and, then, we present the proxies of the disclosure quantity. Afterwards, we present a summary of the descriptive statistics of the independent variables.

Table 3 shows that the means of the sub scores of disclosure quality, namely: relevance (R_DISQUA); faithful representation (FR_DISQUA); understandability (U_DISQUA); and comparability (C_DISQUA). These were close with a little superiority to (U_DISQUA). We noted that the mean observed for the (C_DISQUA) sub score was relatively low and was of the order of 2.70. In other words, in our sample, the firms tended to be weakly concerned by the qualitative characteristic of comparability. The highest mean was observed for the sub score of timeliness (T_DISQUA).Then; it appeared that timeliness was the highest qualitative characteristic for the sampled companies. The mean and median of the aggregate disclosure quality score (DISQUA) increased to 2.90 and 2.86 respectively. In addition, its minimum was 1.95 and its maximum was 4. This result indicated that the disclosure quality of the sampled companies tended to have a medium level since the values of the mean and the median were close to the neutral value "3".

Furthermore, by examining the means and medians values of the disclosure quantity scores W_DIS and UN_DIS), we noted that these values were very close. Such results meant that there was no difference between the weighted and un-weighted measures of the voluntary disclosure quantity.

[17] We circulated 62 questionnaires to the population of financial analysts and portfolio managers. We obtained a 64.51% response rate.

[18] The weight of each item was the sum of points assigned by the respondents to the item divided by the number of the respondents.

Table 2. Summary of the measures of explanatory variables

Explanatory variables	Indicators	Measures used and Availability
Independence of the board	**INDB**	(Number of outside administrators /Total number of administrators)*100 (the website of the TSE)
Size of the board	**SIB**	Total number of administrators (the website of the TSE)
Combination of functions of GM and CH	**COMFUN**	= 1 if a person combine the functions GM and CH and = 0 if not (the website of the TSE)
Managerial ownership	**MAN**	The percentage of shares held by the administrators (the website of the TSE)
Family control	**FAM**	= 1 if the firm is controlled by a family and = 0 if not (the website of the TSE)
Age of the company	**AGE**	Duration of quotation of the company out of Stock Exchange in years (the website of the TSE)
Quality of auditor	**QAU**	= 1 if the firm is audited at least by a « Big 4 » and = 0 if not (the website of the TSE)
Size of business	**LSIZE**	Log (Total assets) (companies' annual reports)
Year	**YEAR**	= 1 in 2008 and = 0 in 2007

Moreover, we could see that, generally, the boards of directors were not independent: the mean and median of the INDB variable reached 28 % and 29 % respectively. The standard deviation of this variable was very close to its mean and increased to 23 %. This could be explained by the variability between the sampled companies regarding the independence of their boards. The review of the SIB variable revealed that the boards of directors tended to be large. The mean of this variable was 8.81 and its median was 9.50. For the COMFUN variable, we noted that 62% of the sampled companies had a Chairman who, at the same time, was the General Manager. The mean and the median of the MAN variable were respectively 59 % and 63%. These results enable us to ascertain that the sampled firms were characterized by a very strong property of administrators. For variable FAM, we could say that more than a third of the observations represented family-controlled companies. This high proportion reflected a characteristic of the Tunisian economic tissue which was the dominance of the family-controlled businesses.

By looking at the control variables, we could see that the mean of the AGE variable increased to 8.75. For the QAU variable, we noted that only 33 % of the observed companies had a « Big 4 » auditor. Finally, the mean of the variable size of business, as measured by the natural logarithm of total assets, was 18.01.

Table 3. Summary of the descriptive statistics

Indicators	N	Mean	Median	Standard deviation	Minimum	Maximum
DISQUA	54	2.90	2.86	0.53	1.95	4
R_DISQUA	54	2.90	2.83	0.92	1.33	5
FR_DISQUA	54	2.84	2.8	0.52	1.8	4
U_DISQUA	54	2.95	3	0.71	1.5	4.25
C_DISQUA	54	2.70	2.58	0.65	2	4
T_DISQUA	54	4.40	4	0.49	4	5
W_DIS	54	52.61	53.71	13.63	10.1	76.17
UN_DIS	54	51.84	51.47	13.74	9.72	76.27
YEAR	54	0.5	0.5	0.50	0	1
INDB	54	0.28	0.29	0.23	0	0.77
SIB	54	8.81	9.5	2.39	3	12
COMFUN	54	0.62	1	0.48	0	1
MAN	54	0.59	0.63	0.17	0	0.89
FAM	54	0.37	0	0.48	0	1
AGE	54	8.75	9	5.43	1	19
QAU	54	0.33	0	0.47	0	1
LSIZE	54	18.01	17.86	0.94	16.38	20.99

DISQUA= Disclosure Quality Score.
R_DISQUA= Disclosure Quality Score on Relevance.
FR_DISQUA= Disclosure Quality Score on Faithful Representation.
U_DISQUA= Disclosure Quality Score on Understandability.
C_DISQUA= Disclosure Quality Score on Comparability.
T_DISQUA= Disclosure Quality Score on Timeliness.
W_DIS= Weighted Disclosure Quantity Score.
UN_DIS= Unweighted Disclosure Quantity Score.

YEAR= 1 in 2008 and = 0 in 2007.
INDB = (Number of outside administrators / Total number of administrators)*100.
SIB = Total number of administrators.
COMFUN= 1 if a person combine the functions GM and CH and = 0 if not.
MAN = The percentage of shares held by the administrators.
FAM= 1 if the firm is controlled by a family and = 0 if not.
AGE = Duration of quotation of the company out of Stock Exchange in years.
QAU= 1 if the firm is audited at least by a « Big 4 » and = 0 if not.
LSIZE = Log (Total assets).

5. Empirical Results and Discussion

5.1 Correlation Analyses

Table 4 shows a significant positive (negative) correlation between the disclosure quality score and the managerial ownership (the independence of the board). More specifically, Pearson's correlation coefficients between the disclosure quality and the managerial ownership and between the disclosure quality and the independence of the board stood respectively at 34 % and 33 % and they were significant at 5%. In addition, this Table shows some significant correlations between some independent variables such as, on the one hand, the correlations between the size of the board, and, on the other hand, the independence of the board and the size of business,. Hence, these results pushed us to conduct further multicollinearity analyses.

Table 4. Matrix of correlation and variation inflation factors

	DISQUA	MAN	FAM	SIB	COMFUN	INDB	QAU	AGE	LSIZE	VIFs
DISQUA	1									
MAN	0.34*	1								1,15
FAM	0.01	0.01	1							1.44
SIB	0.04	0.07	-0.23	1						1.98
COMFUN	0.20	0.21	-0.12	-0.05	1					1.24
INDB	-0.33*	-0.03	0.05	0.27*	-0.28*	1				1.31
QAU	0.002	-0.09	0.02	-0.17	0.13	0.08	1			1.72
AGE	-0.13	0.006	-0.49*	0.46*	-0.09	0.15	0.04	1		1.84
LSIZE	0.16	0.15	-0.27*	0.45*	0.13	0.004	0.39*	0.46*	1	2.27
* indicate significance at a level below 5%; Mean VIF = 1.56										

DISQUA= Disclosure Quality Score.
MAN = The percentage of shares held by the administrators.
FAM= 1 if the firm is controlled by a family and = 0 if not.
SIB = Total number of administrators.
COMFUN= 1 if a person combine the functions GM and CH and = 0 if not.
INDB = (Number of outside administrators / Total number of administrators)*100.
QAU= 1 if the firm is audited at least by a « Big 4 » and = 0 if not.
AGE = Duration of quotation of the company out of Stock Exchange in years.
LSIZE = Log (Total assets).

Moreover, Table 5 shows that the highest correlations between the sub scores of disclosure quality were observed, on the one hand, between the sub score of understandability (U_DISQUA) and the sub score of comparability (C_DISQUA), and, on the other hand, between the sub score of faithful representation (FR_DISQUA) and the sub scores of understandability (U_DISQUA) and of comparability (C_DISQUA),.

We observed, also, with the exception of the timeliness sub score, a strong and positive correlation between the scores of disclosure quantity and all the sub scores of disclosure quality. This indicated that disclosure quantity and qualitative characteristics of information were correlated and disclosure quantity could be a predictor of disclosure quality. Consequently, the prevailing assumption in the literature was that disclosure quantity and quality were correlated and, therefore, quantity represented a proper proxy for quality which could be precise and ought to be tested by multivariate analyses. Furthermore, the correlation between the weighted and un-weighted disclosure quantity scores stood significantly at 99%. This result could be interpreted by the fact of the non-reliability of the weighting of items.

Finally, we focused on the correlation between the quantity and quality scores. Pearson correlation showed a significant positive correlation (0.71) between the quality and the quantity scores (weighted and un-weighted). As discussed earlier, it seemed that the disclosure quantity could be a proper proxy of disclosure quality. Moreover, the correlation analysis yielded logical results about the strong and significant correlations between the aggregate score of disclosure quality and all its sub scores.

Table 5. Matrix of correlation of the Disclosure Quality Scores and the Disclosure Quantity Scores

	R_DISQUA	FR_DISQUA	U_DISQUA	C_DISQUA	T_DISQUA	UN_DIS	W_DIS	DISQUA
R_DISQUA	1							
FR_DISQUA	0.58*	1						
U_DISQUA	0.59*	0.69*	1					
C_DISQUA	0.54*	0.63*	0.66*	1				
T_DISQUA	-0.039	0.13	0.17	0.07	1			
UN_DIS	0.63*	0.53*	0.65*	0.60*	-0.07	1		
W_DIS	0.64*	0.53*	0.66*	0.60*	-0.07	0.99*	1	
DISQUA	0. 78*	0. 83*	0.88*	0.85*	0.13	0. 71*	0. 71*	1
* indicate significance at a level below 5%								
R_DISQUA= Disclosure Quality Score on Relevance. FR_DISQUA= Disclosure Quality Score on Faithful Representation. U_DISQUA= Disclosure Quality Score on Understandability. C_DISQUA= Disclosure Quality Score on Comparability. T_DISQUA= Disclosure Quality Score on Timeliness. UN_DIS= Unweighted Disclosure Quantity Score. W_DIS= Weighted Disclosure Quantity Score. DISQUA= Disclosure Quality Score.								

5.2 Results and Discussion of the Multivariate Analyses

5.2.1 Results Related to the Multiple Regression Models of Disclosure Quality

Before explaining the results of the OLS regression analysis, we tested the model on multicollinearity. Table 4 shows that, for each of the variables, the Variance Inflation Factor (VIF) was smaller than the threshold value "3"; this indicated the absence of the multicollinearity problem.

Table 6 Panel A shows that INDB was negative and significant. Then, we could conclude that this result did not support the predictions of the agency theory. However, consistent with Chakroun and Matoussi (2012) and Jouini (2013), this result allowed us to disprove hypothesis H 1. This substitutive relationship might be explained by the fact that companies would not improve both disclosure quality and board independence at the same time; however, they would chose strategically to improve one at the expense of the other. Besides, with a high value, the coefficient of MAN variable was positive and significant. In this complementary relationship, each mechanism strengthened the other. This result allowed us to confirm hypothesis H 4 and to support the predictions of stewardship theory and the assumption of the alignment of the interests of the shareholders-administrators with those of the other shareholders (Morck et al., 1988). Consequently, the administrators (stewards) were considered to be members of an organization where they contributed to the success and achievement of objectives (Donaldson and Davis, 1991). The coefficient of the SIB variable had the positive expected sign but it is insignificant. Likewise, the coefficient of the COMFUN variable had the positive expected sign but it was insignificant. Also, the coefficient of the FAM variable had the negative expected sign but it was insignificant. In conclusion, the insignificant coefficients of the variables SIB, COMFUN and FAM allowed us to invalidate our hypotheses H 2, H 3 and H 5.

Table 6. Results related to the multiple regression models: Disclosure Quality

Panel A: Disclosure Quality based on the Disclosure Quality Score $DISQUA_i = \beta_0 + \beta_1 YEAR_i + \beta_2 INDB_i + \beta_3 SIB_i + \beta_4 COMFUN_i + \beta_5 MAN_i + \beta_6 FAM_i + \beta_7 AGE_i + \beta_8 QAU_i + \beta_9 LSIZE + \varepsilon_i$			
	Coefficients	t-statistic	P>|t|
Constant	1.115	0.7	0.489
YEAR	0.171	1.18	0.243
INDB	-0.744*	-2	0.051
SIB	0.032	0.66	0.513
COMFUN	0.005	0.03	0.973
MAN	0.823**	2.09	0.042
FAM	-0.032	-0.18	0.859
AGE	-0.024	-1.51	0.137
QAU	0.036	0.19	0.852
LSIZE	0.074	0.7	0.486
Fisher Test	0.0236		
R-squared	29.99%		

Furthermore, by comparing the R2 of the regressions of Table 6 Panel B and Panel C, it appeared that these values were significantly higher for the regressions with the fundamental qualitative characteristics as dependent variables (Panel B) than for the regressions with the enhancing qualitative characteristics as dependent variables (Panel C).

Table 6 Panel B shows that there was no significant relationship between the corporate characteristics and the disclosure quality score on relevance. However, it shows a negative and significant relationship between the board independence and the disclosure quality score on faithful representation and a positive and significant relationship between the managerial ownership and this score. These results are similar to those found for the model with the aggregate score of disclosure quality as dependent variable.

Table 6. Continue

	Panel B: Disclosure Quality based on the Scores of Fundamental Qualitative Characteristics (Relevance and Faithful Representation)					
	$R\_DISQUA_i = \beta_0 + \beta_1 YEAR_i + \beta_2 INDB_i + \beta_3 SIB_i + \beta_4 COMFUN_i + \beta_5 MAN_i + \beta_6 FAM_i + \beta_7 AGE_i + \beta_8 QAU_i + \beta_9 LSIZE + \varepsilon_i$			$FR\_DISQUA_i = \beta_0 + \beta_1 YEAR_i + \beta_2 INDB_i + \beta_3 SIB_i + \beta_4 COMFUN_i + \beta_5 MAN_i + \beta_6 FAM_i + \beta_7 AGE_i + \beta_8 QAU_i + \beta_9 LSIZE + \varepsilon_i$		
	Coefficients	t-statistic	P>|t|	Coefficients	t-statistic	P>|t|
Constant	0.307	0.1	0.918	2.456	1.65	0.106
YEAR	0.366	1.35	0.184	0.025	0.19	0.852
INDB	-0.002	-0.31	0.761	-0.008**	-2.33	0.025
SIB	-0.057	-0.64	0.528	0.072	1.62	0.111
COMFUN	0.005	0.02	0.983	-0.026	-0.2	0.843
MAN	0.009	1.4	0.169	0.011***	3.48	0.001
FAM	-0.063	-0.2	0.845	-0.284	-1.67	0.102
AGE	-0.050	-1.66	0.103	-0.024	-1.39	0.173
QAU	-0.325	-1.02	0.314	0.253	1.46	0.151
LSIZE	0.165	0.86	0.396	-0.024	-0.25	0.803
Fisher Test	1.43			3.09		
R-squared	30.10%			24.20%		

We can say that the positive significant relation between, on the one hand, MAN; and the disclosure quality sub scores on faithful representation (Table 6 Panel B) and, on the other hand, on understandability (Table 6 Panel C); allowed us to strengthen the acceptance of hypothesis H 4. Also, we noted the negative relationship between; on the other hand, INDB and the disclosure quality based on the sub scores of faithful representation and, on the other hand, between understandability and comparability led us to strengthen the rejection of hypothesis H 1. However, based on the sub score of timeliness and as expected in hypothesis H 2 (Table 6 Panel C) we observed a positive and highly significant (at 1%) relationship between the size of the board and the disclosure quality. This result enabled us to partially confirm hypothesis H 2. Besides, in Table 6, the results of all the regressions provided strong support that there were no relationships between, on the one hand, the board's leadership structure ; the family control; the age of the company; the quality of auditor; and the size of business; and, on the other hand, all the disclosure quality scores.

Table 6. (Continued)

	Panel C: Disclosure Quality based on the Scores of Enhancing Qualitative Characteristics (Understandability, Comparability and Timeliness)								
	$U\_DISQUA_i = \beta_0 + \beta_1 YEAR_i + \beta_2 INDB_i + \beta_3 SIB_i + \beta_4 COMFUN_i + \beta_5 MAN_i + \beta_6 FAM_i + \beta_7 AGE_i + \beta_8 QAU_i + \beta_9 LSIZE + \varepsilon_i$			$C\_DISQUA_i = \beta_0 + \beta_1 YEAR_i + \beta_2 INDB_i + \beta_3 SIB_i + \beta_4 COMFUN_i + \beta_5 MAN_i + \beta_6 FAM_i + \beta_7 AGE_i + \beta_8 QAU_i + \beta_9 LSIZE + \varepsilon_i$			$T\_DISQUA_i = \beta_0 + \beta_1 YEAR_i + \beta_2 INDB_i + \beta_3 SIB_i + \beta_4 COMFUN_i + \beta_5 MAN_i + \beta_6 FAM_i + \beta_7 AGE_i + \beta_8 QAU_i + \beta_9 LSIZE + \varepsilon_i$		
	Coefficients	t-statistic	P>|t|	Coefficients	t-statistic	P>|t|	Coefficients	t-statistic	P>|t|
Constant	0.492	0.27	0.788	0.621	0.31	0.756	6.694***	3.39	0.001
YEAR	0.104	0.53	0.595	0.196	1.14	0.262	0.065	0.47	0.639
INDB	-0.008*	-1.75	0.086	-0.011**	-2.21	0.033	-0.003	-1.39	0.170
SIB	0.057	0.91	0.369	0.032	0.49	0.629	0.120***	3.89	0.000
COMFUN	0.167	0.74	0.462	-0.132	-0.68	0.499	-0.137	-0.98	0.332
MAN	0.011*	1.98	0.054	0.005	1.25	0.217	0.006	1.55	0.128
FAM	0.064	0.25	0.806	0.136	0.69	0.493	0.061	0.38	0.703
AGE	-0.019	-0.88	0.381	-0.010	-0.65	0.516	-0.017	-1.08	0.284
QAU	0.109	0.49	0.629	0.050	0.17	0.863	0.297	1.47	0.148
LSIZE	0.082	0.67	0.508	0.100	0.79	0.435	-0.197	-1.58	0.121
Fisher Test R-squared	2.36 12.50%			1.84 9.30%			4.27 9.90%		
*, ** and *** indicate significance at a level below 10%, 5% et 1% respectively									

DISQUA= Disclosure Quality Score.
R_DISQUA= Disclosure Quality Score on Relevance.
FR_DISQUA= Disclosure Quality Score on Faithful Representation.
U_DISQUA= Disclosure Quality Score on Understandability.
C_DISQUA= Disclosure Quality Score on Comparability.
T_DISQUA= Disclosure Quality Score on Timeliness.
YEAR= 1 in 2008 and = 0 in 2007.
INDB = (Number of outside administrators / Total number of administrators)*100.
SIB = Total number of administrators.
COMFUN= 1 if a person combine the functions GM and CH and = 0 if not.
MAN = The percentage of shares held by the administrators.
FAM= 1 if the firm is controlled by a family and = 0 if not.
AGE = Duration of quotation of the company out of Stock Exchange in years.
QAU= 1 if the firm is audited at least by a « Big 4 » and = 0 if not.
LSIZE = Log (Total assets).

5.2.2 Results Related to the Disclosure Quantity Determinants versus Disclosure Quality Determinants

By comparing the R2 of the regressions as shown in Tables 6 and 7, it appeared that these values were significantly lower for the regressions with the disclosure quantity scores as dependent variables than for the regressions with the disclosure quality scores as dependent variables. Next, we present a comparison of the coefficients of the regressions of Tables 6 and 7.

Table 7 shows that only the coefficient of the INDB variable was significant. The negative sign of this coefficient was similar to that found for the regression with the aggregate disclosure quality score as dependent variable; however, its value was lower. In addition, with the exception of the coefficient of the INDB variable, all the coefficients for the independent variables for the regressions with the disclosure quantity scores as dependent variables were insignificant. This was similar to those found in the regression with the aggregate disclosure quality score as dependent variable. Also, many previous studies found insignificant relationships between corporate disclosure and mechanisms of corporate governance. As an illustration, both Ho and Wong (2001)[19] and Cheng and Courtney (2006)[20] found no significant association between CEO duality and voluntary disclosure. However, we noted that, while it was strongly positive and connected significantly to the disclosure quality score, the coefficient of the MAN variable was weakly positive and not connected significantly to the disclosure quantity scores.

In conclusion, we mention that, on the one hand, we found similarities and differences in the relationship between the corporate governance mechanisms and, on the other hand, between the disclosure quantity and the disclosure quality. This result could be interpreted by the fact that there was partial correlation between disclosure quantity and the disclosure quality. Hence, the use of disclosure quantity as a proxy for the quality could be false. Our findings are consistent with the work of (Marston and Shrives, 1991; Botosan, 2004; Beattie et al., 2004). Besides, our results seem to be

[19] who analyzed the relationship between corporate governance structures and the extent of voluntary disclosure in companies listed in Hong Kong

[20] who investigated board composition, regulatory regime and voluntary disclosure in Singapore-listed firms

inconsistent with the results of Hussainey et al., 2003) and Hassan and Marston, 2010) which suggested that quantity was a proper proxy for the quality of disclosure.

Table 7. Results related to the multiple regression models: Disclosure Quantity based on Unweightedand Weighted Disclosure Quantity Scores

	$UN\_DIS_i = \beta_0 + \beta_1 YEAR_i + \beta_2 INDB_i + \beta_3 SIB_i + \beta_4 COMFUN_i + \beta_5 MAN_i + \beta_6 FAM_i + \beta_7 AGE_i + \beta_8 QAU_i + \beta_9 LSIZE + \varepsilon_i$			$W\_DIS_i = \beta_0 + \beta_1 YEAR_i + \beta_2 INDB_i + \beta_3 SIB_i + \beta_4 COMFUN_i + \beta_5 MAN_i + \beta_6 FAM_i + \beta_7 AGE_i + \beta_8 QAU_i + \beta_9 LSIZE + \varepsilon_i$		
	Coefficients	t-statistic	P>|t|	Coefficients	t-statistic	P>|t|
Constant	41.770	1	0.321	48.018	1.22	0.23
YEAR	0.682	0.17	0.864	1.100	0.28	0.781
INDB	-0.169*	-1.98	0.054	-0.162	-1.93*	0.061
SIB	0.568	0.52	0.604	0.651	0.6	0.549
COMFUN	5.773	1.39	0.172	5.560	1.33	0.189
MAN	0.053	0.48	0.634	0.053	0.48	0.633
FAM	1.642	0.38	0.709	1.789	0.40	0.689
AGE	-0.457	-0.95	0.349	-0.527	-1.07	0.290
QAU	-1.976	-0.46	0.646	-1.120	-0.27	0.787
LSIZE	0.378	0.15	0.885	0.031	0.01	0.990
Fisher Test	1.65			1.68		
R-squared	5.92%			5.90%		
* indicates significance at a level below 10%						

UN_DIS= Unweighted Disclosure Quantity Score.
W_DIS= Weighted Disclosure Quantity Score.
YEAR= 1 in 2008 and = 0 in 2007.
INDB = (Number of outside administrators / Total number of administrators)*100.
SIB = Total number of administrators.
COMFUN= 1 if a person combine the functions GM and CH and = 0 if not.
MAN = The percentage of shares held by the administrators.
FAM= 1 if the firm is controlled by a family and = 0 if not.
AGE = Duration of quotation of the company out of Stock Exchange in years.
QAU= 1 if the firm is audited at least by a « Big 4 » and = 0 if not.
LSIZE = Log (Total assets).

Conclusion

We measured the quality of corporate disclosure for a sample of Tunisian companies within the time period 2007-2008. We examined, also, the degree to which disclosure quality and quantity shared the same determinants. We used a new methodology proposed by Beest and Braam (2012) to measure the quality of corporate disclosure. A novel feature of this methodology is that it is applicable to any context and is not restricted to English speaking countries. Our analyses show that [a] some [not all] corporate governance mechanisms affect the quality of corporate disclosure: On the one hand, the effect of board independence on disclosure quality is consistent with a substitutive relationship. Indeed, independent administrators may be regarded as stranger administrators to the firm without being actually independent or may be regarded as advisors to the CEO. On the other hand, the effect of managerial ownership on disclosure quality shows a complementary relationship. In fact, (a) the shareholders-administrators, who have a close idea about the business, can tend to improve the quality of disclosure in order to clear themselves from the other shareholders; and [b] the determinants of disclosure quality and quantity are dissimilar.

The measurement of disclosure quality is still an open question and represents one of the main unresolved and debated issues in disclosure literature. Consequently, it includes many aspects about the firm and cannot be identified as referring only to the items considered in this study. In addition, we considered our sample to be very small and this was due to the small size of the Tunisian population. Moreover, we believe that there is scope for further refinement of the process of calculating the quality of corporate disclosure in annual reports. We used a labour-intensive approach to measure disclosure quality. However, the use of a computerised content analysis approach should save time and effort. Also, the involvement of experts in linguistics, in determining relevant key words, may improve the ability of the computer software packages to calculate the quality of corporate disclosure. However, the potential contribution from the application of linguistic methods remains an area for future research since it is possible that there will be significant difficulties in overcoming some of the classificatory problems of some statements. However, notwithstanding these limitations, this study shows interesting results which can be useful for managers,

regulators, investment professionals, and market participants as a whole.

Finally, disclosure theories show that a rich information environment and low information asymmetry should lead to desirable consequences. These include: [a] an improvement in the investors' ability to anticipate future earnings; [b] an improvement in the analysts' accuracy of earnings forecasts; and [c] a reduction in the firms' cost of capital. Therefore, it would be interesting to extend this study by exploring the economic consequences of disclosure quality. In addition, further research might examine the potential endogenous or simultaneous relationship between disclosure quality and quantity (substitution or complementary relationships).

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Appendix A

Overview of the measurement items and the measurement scales used to operationalize the qualitative characteristics (Source: Beest et al. 2009)

Relevance				
Question no.	**Question**	**Operationalization**	**Concept**	**Literature**
R1	To what extent does the presence of the forward-looking statement help forming expectations and predictions concerning the future of the company?	1 = No forward-looking information 2 = Forward-looking information not in an apart subsection 3 = Apart subsection 4 = Extensive predictions 5 = Extensive predictions useful for making expectation	Predictive value	e.g. McDaniel et al., 2002; Jonas and Blanchet, 2000
R2	To what extent does the presence of non-financial information in terms of business opportunities and risks complement the financial information?	1 = No non-financial information 2 = Little non-financial information, no useful for forming expectations 3 = Useful non-financial information 4 = Useful non-financial information, helpful for developing expectations 5 = Non-financial information presents additional information which helps developing expectations	Predictive value	e.g. Jonas and Blanchet, 2000
R3	To what extent do the reported results provide feedback to users of the annual report as to how various market events and significant transactions affected the company?	1 = No feedback 2 = Little feedback on the past 3 = Feedback in present 4 = Feedback helps understanding how events and transactions influenced the company 5 = Comprehensive feedback	Confirmatory value	e.g. Jonas and Blanchet, 2000
Faithful representation				
Question no.	**Question**	**Operationalization**	**Concept**	**Literature**
F1	To what extent are valid arguments provided to support the decision for certain assumptions and estimates in the annual report?	1 = Only described estimations 2 = General explanation 3 = Special explanation of estimations 4 = Special explanation, formulas explained etc. 5 = Comprehensive argumentation	Verifiability	e.g. Jonas and Blanchet, 2000
F2	To what extent does the company base its choice for certain accounting principles on valid arguments?	1 = Changes nor explained 2 = Minimum explanation 3 = Explained why 4 = Explained why + consequences 5 = No changes or comprehensive explanation	Verification	e.g. Jonas and Blanchet, 2000
F3	To what extent does the company, in the discussion of the annual results, highlight the positive events as well as the negative events?	1 = Negative events only mentioned in footnotes 2 = Emphasize on positive events 3 = Emphasize on positive events, but negative events are mentioned, no negative events occurred 4 = Balance pos/neg events 5 = Impact of pos/neg events is also explained	Neutrality	e.g. Razaee, 2003; Cohen et al., 2004

F4	Which type of auditors' report is included in the annual report?	1 = Adverse opinion 2 = Disclaimer of opinion 3 = Qualified opinion 4 = Unqualified opinion: Financial figures 5 = Unqualified opinion: Financial figures + internal control	Free from material error, verification, neutrality, and completeness	e.g. Maines and Wahlen, 2006
F5	To what extent does the company provide information on corporate governance?	1 = No description CG 2 = Information on CG limited, not in an apart subsection 3 = Apart subsection 4 = Extra attention paid to information concerning CG 5 = Comprehensive description of CG	Completeness, verifiability, and free from material error	e.g. Jonas and Blanchet, 2000
Understandability				
Question no.	**Question**	**Operationalization**	**Concept**	**Literature**
U1	To what extent is the annual report presented in a well organized manner?	1 = Very bad presentation 2 = Bad presentation 3 = Poor presentation 4 = Good presentation 5 = Very good presentation	Understandability	e.g. Jonas and Blanchet, 2000
U2	To what extent are the notes in the balance sheet and the income statement sufficiently clear?	1 = No explanation 2 = Very short description, difficult to understand 3 = Explanation that describes what happens 4 = Terms are explained (which assumptions etc.) 5 = Everything that might be difficult to understand is explained	Understandability	e.g. Jonas and Blanchet, 2000
U3	To what extent does the presence of graphs and tables clarifies the presented information?	1 = no graphs 2 = 1-5 graphs 3 = 6-10 graphs 4 = 11-15 graphs 5 = > 15 graphs	Understandability	e.g. Jonas and Blanchet, 2000
U4	To what extent is the use of language and technical jargon in the annual report easy to follow?	1 = Much jargon (industry), not explained 2 = Much jargon, minimal explanation 3 = jargon is explained in text 4 = Not much jargon, or well explained 5 = No jargon, or extraordinary explanation	Understandability	e.g. Jonas and Blanchet, 2000
Comparability				
Question no.	**Question**	**Operationalization**	**Concept**	**Literature**
C1	To what extent do the notes to changes in accounting policies explain the implications of the change?	1 = Changes not explained 2 = Minimum explanation 3 = Explained why 4 = Explained why + consequences 5 = No changes or comprehensive explanation	Consistency	e.g. Jonas and Blanchet, 2000
C2	To what extent do the notes to revisions in accounting estimates and judgments explain the implications of the revision?	1 = Revision without notes 2 = Revision with few notes 3 = No revision/clear notes 4 = clear notes + implications (past) 5 = Comprehensive notes	Consistency	e.g. Jonas and Blanchet, 2000

C3	To what extent did the company adjust previous accounting period's figures, for the effect of the implementation of a change in accounting policy or revisions in accounting estimates?	1 = No adjustments 2 = Described adjustments 3 = Actual adjustments (one year) 4 = 2 years 5 = > 2 years + notes	Consistency	e.g. Jonas and Blanchet, 2000
C4	To what extent does the company provide a comparison of the results of current accounting period with previous accounting periods?	1 = No comparison 2 = Only with previous year 3 = With 5 years 4 = 5 years + description of implications 5 = 10 years + description of implications	Consistency	e.g. Jonas and Blanchet, 2000
C5	To what extent is the information in the annual report comparable to information provided by other organizations?	1 = No comparability 2 = Limited comparability 3 = Moderate comparability 4 = Very much comparability 5 = Very extensive comparability	Comparability	e.g. IASB, 2008; Jonas and Blanchet, 2000
C6	To what extent does the company presents financial index numbers and ratios in the annual report?	1 = No ratios 2 = 1-2 ratios 3 = 3-5 ratios 4 = 6-10 ratios 5 = > 10 ratios	Comparability	e.g. Cleary, 1999
Timeliness				
Question no.	**Question**	**Operationalization**	**Concept**	**Literature**
T1	How many days did it take for the auditor to sign the auditors' report after book-year end?	Natural logarithm of amount of days 1 = 1-1.99 2 = 2-2.99 3 = 3-3.99 4 = 4-4.99 5 = 5-5.99	Timeliness	e.g. IASB, 2008; Leventis and Weetman (2004)

APPENDIX B

Weights of items (score of disclosure quantity)

Items of (Botosan, 1997) index			
1	**Background Information**		
	1	A statement of corporate goals or objectives is provided	4,33
	2	A general statement of corporate strategy is provided	4,5
	3	Actions taken during the year to achieve the corporate goals are discussed	4,25
	4	Planned actions to be taken in future years are discussed	4,47
	5	A time frame for achieving corporate goals is defined	4,25
	6	Barriers to entry are discussed	3,8
	7	Impact of barriers to entry on current profits are discussed	3,85
	8	The competitive environment is discussed	4,53
	9	The impact of competition on current profits is discussed	4,35
	10	The impact of competition on future profits is discussed	4,5
	11	A general description of the business is provided	3,88
	12	The principal products produced are identified	3,98
	13	Specific characteristics of these products are described	3,75
	14	The principal markets are identified	4,3
	15	Specific characteristics of these markets are described	4,13
2	**Summary of historical results**		
	16	Return-on-assets or sufficient information to compute return-on-assets (i.e. net income, tax rate, interest expense and total assets) is provided	4 ,33
	17	Net profit margin or sufficient information to compute net profit margin (i.e. net income, tax rate, interest expense and sales) is provided	4,32
	18	Asset turnover or sufficient information to compute asset turnover (i.e. sales and total assets) is provided	3,95
	19	Return-on-equity or sufficient information to compute return-on-equity (i.e. net income and stockholders equity) is provided	4,22
	20	A summary of sales and net income for at least the most recent eight quarter is provided	4,22
3	**Key non-financial statistics**		
	21	Number of employees	3,58
	22	Order backlog	3,92
	23	Percentage of order backlog to be shipped next year	4,23
	24	Percentage of sales in products designed in the last five years	3,95
	25	Market share	4,6
	26	Amount of new orders placed this year	4,15
	27	Units sold	4,10
	28	Unit selling price	3,78
	29	Growth in units sold	4,08
	30	Production lead time	3,65
	31	Sales growth in key regions not reported as geographic segments	3,85
	32	Volume of materials consumed	3,7
	33	Price of materials consumed	3,95
	34	Growth in sales of key products not reported as product segments	3,98
4	**Projected information**		
	35	A comparison of previous earnings projections to actual earnings is provided	4,45
	36	A comparison of previous sales projections to actual sales is provided	4,47
	37	The impact of opportunities available to the firm on future sales or profits	4,2
	38	The impact of risks facing the firm on future sales or profits is discussed	4,27
	39	A forecast of market share is provided	4,35
	40	A cash flow projection is provided	4,13
	41	A projection of future profits is provided	4,5
	42	A projection of future sales is provided	4,6
5	**Management discussion and analysis**		
	43	Change in sales	4,3
	44	Change in operating income	4,3
	45	Change in cost of goods sold	4,18
	46	Change in cost of goods sold as a percentage of sales	3,98
	47	Change in gross profits	4,35
	48	Change in gross profits as a percentage of sales	4,17
	49	Change in selling and administrative expenses	3,85
	50	Change in interest expense or interest income	4
	51	Change in net income	4,55
	52	Change in inventory	3,95
	53	Change in account receivable	4,22
	54	Change in capital expenditures or R & D	3,88
	55	Change in market share	4,45

Items added to (Botosan, 1997) index			
6	**Information on the intangibles**		
	56	Description of key customers	3,9
	57	Description of key suppliers	3,87
	58	Description of the activities of R & D	3,65
	59	Results of R & D implemented	3,78
7	**Social and environmental Information**		
	60	Rate of employee absenteeism and number of strike days	3,13
	61	Training and skills development for employees	3,58
	62	Description of charitable donations, grants, financial aid	2,68
	63	Description of the firm's commitment to the community for specific social projects(community activities, cultural, educational, recreational and sports)	2,68
	64	Statement of activities for the protection and preservation of the physical environment(natural resources conservation, energy management, wildlife and flora ...)	3,08
	65	Description of activities to reduce pollution related to business activities	2,95
	66	Production and promotion of ecological products (prohibiting the use of chemical components harmful to health and ecosystems, recyclable packaging design…	2,85
8	**Information on corporate governance**		
	67	Ownership structure (major shareholders)	4,65
	68	Percentage ownership by major shareholders	4,55
	69	Composition of the Board	4,27
	70	The mandates of the administrators	3,82
	71	Profile of administrators	3,85
	72	The frequency of meetings of the Board	3,55

DO STOCK OPTION PLANS AFFECT THE FIRM'S PERFORMANCE? AN EMPIRICAL ANALYSIS ON THE ITALIAN CONTEXT

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Abstract

This study investigates the impact of stock option plans, defined as share-based incentive contracts provided by companies to their employees, on the value relevance of accounting information. The purpose of this study is to analyse the extent to which the value relevance of accounting information is affected by the adoption of stock option plans.
Using panel data, the empirical analysis shows that the value relevance of accounting information is affected by the adoption of stock option plans. They are seen by the market as a "cost" and not as an opportunity or an attempt to align different interests. In addition, the research results show that the market performance does not seem affected by the design of the stock option plans. However, the firm's market performance appears to be more related to the structure of the stock option plans in companies with a higher market capitalization. Thus further research is needed to deeper investigate the impact of the design of the stock option plans and the effect of the endogenous characters.

Keywords: Stock Option, Firm's Performance, Italy

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1. Introduction

Accounting literature defines the value relevance of financial information as the ability of accounting numbers to capture or summarize information that affects stock prices (e.g., Sami and Zhow, 2004). Previous researchers, using an empirical approach, have characterized the value relevance of accounting information as a statistical association between stock market values and accounting numbers (see, for example, Chang, 1999; Core, Guay and Buskirk, 2003; Francis and Schipper, 1999; Kothari and Shanken, 2003). These studies claim that accounting information which is able to change investors' expectations and modify decision makers' behaviour is value relevant.

Basic research maintains that both earnings and book values are important in equity valuation (Barth, Landsman and Lang, 2008; Choi 2007; Feltham and Ohlson, 1996; Gelb and Zarowin, 2002; Kothari and Zimmerman, 1995; Lin and Chen, 2005; Ohlson, 1995; Ou and Sepe, 2002).

Recently, a new stream of research focuses on investigating the effects of different life cycle stages on the value relevance of financial and non-financial information across industries (e.g., Chang and Kim, 2013; Chen, Chang and Fu, 2010; Hellström, 2006; Keener, 2011; Xu, 2007) and during the economic cycle (e.g., Beisland, 2013; Beltratti, Spear and Szabob, 2013; Bepari, Rahman and Mollik, 2013; Devalle, 2012; Paquita, Friday, Eng and Liu, 2006).

Assuming that accounting information disclosed to the financial market and investors' expectations is the driving force behind investment decisions (Beinsland and Hamberg, 2013) and that investors evaluate the firm's financial performance before making an investment decision (Chen *et al.*, 2010), this study considers the financial statements to be the main source of accounting information utilized by investors. Based on this assumption, the research investigates the usefulness of accounting information to investors, adding the question of the

separation between property rights and resource control.

The latter question seems to be a corporate governance matter (Melis, Carta and Gaia, 2012). Under the optimal contracting view, the adoption of a stock option plan would help the market to exercise its function of allowing the stock price to reflect the quality of the manager's action (Edmans and Gabaix, 2011; Jensen and Mekling, 1976; Murphy, 1999 and 2002; Nyberg, Fulmer, and Gerhart, 2010). However, the rent extraction view considers the remuneration paid through stock options to be a tool that allows managers to extract personal rents. Therefore, the stock option plan can lead to the adoption of inefficient compensation systems that provide incentives not related to effective management or financial performance (Bebchuk, Fried and Walker, 2001 and 2002; Edlin and Stiglitz, 1995; Hall and Murphy, 2002 and 2003; Jensen, Murphy and Wruck, 2004). The "camouflage effect" would be limited by greater transparency of stock option plans (Fried, 2008). Specifically, more information about costs and general characteristics of stock option plans would limit opportunistic behaviour of managers, making it difficult for them to use these tools for the extraction of personal rents (Heron and Lie, 2007 and 2009).

So, the link between a firm's performance and their stock option plan appears to be fundamental. In this context, beside the value relevance literature which does not pay attention to this question, some accounting scholars focused on either the short and medium term effect. The former streaming of research uses the event study methodology to calculate the abnormal return of stock price (Ding and Sun, 2001; Gerety, Hoi and Robin, 2001; Kato, Lemmon, Luo, and Schallheim, 2005; Ikäheimo, Kjellman, Holmberg and Jussila, 2004; Langman, 2007), while the latter focused, alternatively, on the medium term performance expressed by the financial ratio or stock market return as a dependent variable (Bulan, Sanyal and Yan, 2010; Duffhues and Kabir, 2008; Hillegeist and Penalva, 2004; Ozkan, 2009; Smith and Swan, 2008; Sanders and Hambrick, 2007).

Therefore, the purpose of this study is to analyse the extent to which the value relevance of accounting information is affected by the adoption of stock option plans based on the framework provided by Ohlson (1995). To this end we compared firms that adopt stock option plans with those that do not. Furthermore, we introduced a specific variable (Structure of Stock Option) intended to evaluate each stock option assignment in term of the optimal contracting view, looking at the ability of the market to discount this information.

Using panel data, the empirical analysis demonstrated that market price appears to be sensitive to income variable and financial return of investment (i.e., EBITDA out of Asset), and not related to financial position (i.e., leverage) or short term returns (i.e., dividends). This means that investors seem to be more interested in the long-term sustainability of production and believe that the firm's effectiveness and efficiency are factors that reduce market uncertainty and investment risk.

Stock option plans are seen by the market as a "cost" and not as an opportunity or an attempt to align different interests. This result is reinforced by the interaction between the stock option grant and the EBITDA variable. This means that the market discounts positively the stock option grant if the cost associated with the risk of extracting personal rent is covered by the achievement of profitability. The structure of the stock option itself does not appear to be value relevant. As we will discuss below, the structure of stock options would be relevant using OLS regression but just for the high capitalized firms.

The paper is organized as follows: the subsequent Section is dedicated to a literature review on the value relevance of accounting information. Section three analyses the literature on stock option plans. Section four discusses the hypotheses development. Section five describes the sample and data selection. Section six outlines the research methods employed. Section seven presents the research results and provides a discussion of the empirical analysis. Section eight concludes with a summary of the research findings and outlines the potential implications for further research.

2. The value relevance of accounting information

A large number of studies assess the relationship between stock market values and accounting numbers and are often referred to as value relevance studies (Barth *et al.*, 2008; Gelb and Zarowin, 2002; Holthausen and Watts, 2001; Ou and Sepe, 2002).

Traditionally the research on value relevance analyses the stock market value at a point in time as a function of a set of accounting variables such as assets, liabilities, revenues, expenses and net income (e.g., Barth, Beaver, Hand and Landsman, 2004; Beaver, 1968 and 2002, Mechelli, 2013). Thus, statistical associations between accounting information and stock prices are used to assess the degree of value relevance of accounting information for investors (Collins, Maydew and Weiss, 1997).

Earnings persistence has been identified as one major determinant of the magnitude of the earnings-returns relation. Various studies have demonstrated that earnings relate to stock prices (e.g., Ball and Brown, 1968; Beaver, 1968; Collins and Kothari, 1989; Kothari, 1992; Kothari and

Sloan, 1992; Lipe, 1990; Lipe, Bryant and Widener, 1998). The measure of this statistical association is represented by the aggregated coefficient on the future earnings changes. According to Gelb and Zarowin (2002), we refer to this measure as the future Earnings Response Coefficient (ERC). The variation can be explained by several factors, such as risk, growth, earnings persistence and interest rate (Collins and Kothari, 1989; Easton and Zmijewski, 1989). Several studies, using the principles of the Capital Asset Pricing Model, have shown that the ERC is a function of the risk-free rate and the business risk. These studies have identified a negative relationship between ERC and stock prices (Collins and Kothari, 1989; Kothari and Zimmerman, 1995). This implies that stock prices are more sensitive to earnings if the capital market requires a lower risk premium (Biddle and Seow, 1991).

Some studies highlight that the relationship depends on the quality of the accounting data (Ahearne, Griever and Warnock, 2004; Ahmed, 1994; Basu, 1997). In particular, scholars have shown how earnings transfer negative information to the capital market faster than positive information, which has led them to question accounting policy. In fact, overly conservative financial statements do not allow the capital market to perceive the real potential of the business development (Givoly and Hyan, 2000; Holthausen and Watts, 2001; Penman and Zhang, 2002).

Nevertheless, a simple earnings capitalization model, without incorporating book value, is likely misleading because book value is believed to be a value-relevant factor. Many studies have found that assets and liabilities relate to stock prices (Amir, Harris and Venuti, 1993; Cornell and Landsman, 2003; Francis and Schipper, 1999; Landsman and Magliolo, 1988). When a firm is viewed with growing concern by the market, its book value acts as a proxy for expected future normal earnings (Ohlson, 1995). The book value is a proxy for the marketable value and/or the adaptation value of equity (e.g., Barth *et al.*, 2004; Barth, Beaver and Landsman, 1998; Burgstahler and Dichev, 1997; Penman 1998; Ou and Sepe, 2002). For example, Penman (1998) has shown that, on average, book values carry more weight than earnings when performing equity valuation for firms with an extreme earnings-to-book ratio (i.e., return on equity). Barth *et al.* (1998) has demonstrated that in pricing book value multiples, the incremental explanatory power of book value (earnings) increases (decreases) when a firm's financial health deteriorates.

Given the significant role that book value plays, it follows that when a firm's current earnings are not perceived as a good indicator of future earnings, due to a large temporary item in current earnings or a change in the firm's future prospects (such as an increased likelihood of liquidation), investors will likely turn to book value for guidance in evaluation (Choi, 2007). This shows that a lesser degree of the firm's financial autonomy corresponds to a greater degree of conservatism and a higher value relevance of accounting information (Mason, 2004; Zhang, 2000). Hence, we can argue that the significance of accounting data is a function of the degree of firm indebtedness. The value relevance of book value will increase in this situation (Lin and Chen, 2005; Callao, Jarne and Lainez, 2007; Choi 2007; Devalle and Magarini, 2012). Moreover, Collins *et al.* (1997) have found that over a forty year window the value relevance of earnings has diminished and been replaced by an increase in the value relevance of book values.

Another question regards the changes of value relevance over time and the related causes (Collins *et al.*, 1997; Francis and Schipper, 1999; Landsman and Maydew, 2002). Both Amir and Lev (1996) and Lev and Zarowin (1999) have claimed that financial accounting information has less relevance for service and technological companies in which intangible factors are not captured by accounting standards that require an expense to book intangible assets. Hence, the increased number of technological and service industries over time may affect the value relevance of earnings and book values due to the relevance of un-monitored intangible assets (Xu, Anandarajan and Curatola, 2011).

Elliot and Hanna (1996) have emphasized that there has been an increase in the number of special income items reported by companies over time. A large number of special items may influence the value relevance of earnings and book values over time. Furthermore, Ohlson (1995) has indicated that the decrease in the persistence of earnings connected with the increase in the number of special items may cause decreased relevance of earnings.

Dontoh, Radhakrishnan and Ronen (2004), on the other hand, has suggested that the decline in the value relevance of accounting information over time has been "driven by an increase in non-information-based trading". This criticism argues that the evaluation of the economic value of net assets depends on the long-term horizon, whereas accounting information, such as income, book value and dividends, relates to the short-term period (Kumar and Krishnan, 2008).

Nevertheless, many studies argue that in more realistic settings with market imperfections, accounting systems can provide information about book value and earnings which are complementary components of equity value rather than redundant (Aboody, Hughes and Liu, 2002; Bae and Jeong, 2007; Chang, 1999; Feltham and Ohlson, 1996; Ohlson, 1995; Pennman, 1998).

The general framework of the value relevance studies is provided by Ohlson (1995), who expresses the stock price as a function of both earnings and book value of equity.

Given a dividend valuation model and clean surplus accounting, stock price can be written as a linear function of earnings and book value of equity according to the Ohlson model. In this model, abnormal returns (earnings minus cost of booked capital) drive investors' decisions, even if they are expected to be zero in a fully competitive market. Ohlson (1995) has suggested that, as long as forecasts of earnings, book values and dividends follow clean surplus accounting (i.e., $bv_t = bv_{t-1} + x_t - d_t$), stock prices should be determined by book values and discounted future abnormal earnings:

(1)

$$P_t = bv_t + \sum_{i=1}^{\infty} R_f^{-i} E_t[x_{t+i}^a]$$

where, P_t denotes the share price at time *t*; bv_t denotes the book value per share at time *t*; R_f is 1 plus the risk premium; E_t represents the investors' expectation at time *t*; x_{t+i}^{α} represents abnormal earnings per share in period $t+i$; and d_t denotes the dividend per share at time *t*.

A large number of studies have highlighted the role that accounting information plays in capital markets (e.g., Barth *et al.*, 2008; Kothari, 2001). Other studies have shown that the value relevance of accounting information may be sensitive to variations in financial economic conditions. For instance, it has been suggested that value relevance is affected by a financial crisis (Beisland, 2013; Beltratti *et al.*, 2013; Bepari *et al.*, 2013; Devalle, 2012; Davis-Friday and Gordon, 2005; Giosi, Testarmata and Buscema, 2013), and it is generally influenced by the financial health of firms (Barth *et al.*, 1998).

The recent empirical results are mixed with respect to the impact of a financial crisis on the value relevance of accounting information (Özkan and Balsari, 2010). Some studies show that the value relevance of accounting information is significantly lower during a financial crisis (Lim, Walker, Lee and Kausar, 2011). On the contrary, other studies argue that a financial crisis has a positive impact on the value relevance of accounting information (Beltratti *et al.*, 2013; Bepari *et al.*, 2013; Devalle, 2012).

A financial crisis causes an increase in investment uncertainty, market variability and volatility of stock price (Jenkins, Kane and Velury, 2009). Hence, it is possible to predict a deterioration of the value relevance and reliability of accounting information in investors' equity valuation decisions (Barth, Beaver and Landsman, 2001; Barth, Cram and Nelson, 2001). Moreover, a financial crisis shows a lack of transparency resulting in a widespread decline in investor confidence. This phenomenon may lead to liquidity shortages and stock market crashes (Giosi, Di Carlo, Staglianò, 2012).

3. Agency Costs, Stock Option Plans (SOPs) design and firm's performance

The adoption of stock option plans (SOPs) seems to be a solution for the principal-agent problem that had characterized public companies in the twentieth century (see, for example, Adjaoud and Ben-amar, 2010; Agrawal and Knoeber, 1996; Alvarez-Perez and Neira-Fontela 2005). The question has been that the power of agent based on asymmetric information determines opportunistic behaviour aimed at extracting personal benefit (Jensen and Meckling, 1976). The problem of misaligned interest arises and brings to light the importance of the structure of executive remuneration contracts (Anderson and Bizjak, 2003; Armstrong and Vashishtha, 2012).

The agency theory provides the basis to write down incentive contracts based on stock remuneration with the goal of reinforcing the market control function (Baker, Jensen and Murphy, 1988; Fama and Jensen, 1983). As a consequence, the manager obtains market value that reflects the success of its action. Even if the contract is a secondary source of agency cost (Jensen *et al.*, 2004), there still exists the fundamental question of the contract structure as well as the governance environment through which the contract was developed (Baker, 1940; Baker, Gibbons and Murphy, 2002; Dicks, 2012).

In fact, the SOPs appear instrumental to enhance corporate governance (Core *et al.*, 2003) but, at the same time, the contract design reflects corporate governance arrangements (Gabaix and Landier, 2008) and emphasizes either the optimal contracting view or the rent extraction view (Bebchuk *et al.*, 2001 and 2002; La Porta, Lopez-De-Silanes and Shleifer, 1999; Melis *et al.*, 2012; Zattoni and Minichilli, 2009). In the latter case the Executive Directors have the power to influence their own remuneration, and can exploit this power to extract additional rents at the expense of the shareholders (Bebchuck *et al.*, 2002) in firms with either concentrated or widespread ownership.

Zattoni (2007) points out the characteristics of the SOPs design needed to reach the alignment of agent and principal interests and to ensure medium-long term value, that is stock option design in terms of the optimal contracting view avoiding a camouflage effect. These characteristics are: identity of the SOP beneficiary, length of vesting

periods and presence of lock-up mechanism, and performance conditioned vesting or indexed exercise price.

While the identity of the SOP beneficiary seems relevant in the corporate governance studies, the others characteristics appears more significant to our aim.

First of all, the vesting period is related to the process of value creation. If the goal is to align interests in the medium term, the remuneration must be linked to the stock return and future cash flows. Therefore, the analysis of the stock return over a long period is also fundamental to avoid earnings management policies that hide a myopic manager's actions and are not priced by the market (Ronen, Tzur and Yaari, 2006). Stock price does not fully reflect short term firm performance due to both earnings management policies and market fluctuation; hence, long term remuneration contracts are needed to motivate managers toward long term value creation and offer more information to the principal about the outcome of a manager's behaviour (Peng and Roell, 2008).

The presence of the lock-up mechanism reinforces the contract in terms of optimal contracting theory (Hoi and Robin, 2004). The creation of "sustainable" shareholder value relates to the link between stock price, market trend and firm performance. The optimal contracting view requires that stock market price reflects firm performance (Kuang and Quin, 2009) and that the manager's remuneration does not discount market trend not due to the manager's action (Bertrand and Mullainathan, 2001). This is done by means of including a firm performance conditioned vesting ratio and indexed exercise price in the contract design.

With reference to the existing link between performance and stock option grant, the literature focused both on short and medium term.

The first stream of literature, based on event study methodology and cumulative abnormal return measures, focuses mainly on the market reaction to the stock option adoption and assignment. The research results do not seem univocal. Early studies, mainly focused on the U.S. market, found a positive market reaction that was independent from the contract design and not affected by the type of stock plan adopted by the firm (Defusco, Johnson and Zorn, 1990; Larcker, 1983). Further literature, on the other hand, has not reported a significant reaction, likely due to the lack of disclosure that characterizes stock option plans (Gaver, Gaver and Battistel, 1992; Street and Cereola, 2004). More recently, Gerety *et al.* (2001) have concluded that market reaction is insignificant and, hence, shareholders do not benefit from such plans.

Most recent papers have focused on non U.S. markets. In Asian and European countries a positive reaction of the market to the adoption of stock option plans seems prevalent (Ding and Sun, 2001; Kato *et al.*, 2005; Langman, 2007). Moreover, Ikäheimo *et al.* (2004) have underlined that the market reaction is affected by the type of announcement, the type of beneficiary and, more important, the dilution effect. They have reported that stock option plans with limited dilution effect convey positive information to the market, while plans targeting employees are negatively perceived. These conclusions are supported by Triki and Ureche-Rangau (2012) for the French market. They have found that the market reacts positively over short windows, and renewals of stock option plans do not convey new information.

The second stream of literature focuses on the effect of SOPs on corporate long-term performance as measured by long term accounting ratios or stock market returns, usually determined over three years. Even this stream shows mixed results. Cromier, Magnan and Fall (1999) have shown a positive relation with stock return even if dependent on shareholders' control, while Hillegeist and Penalva (2004) have reported a positive and significant relation among SOPs, ROA and Tobin's Q (see also Duffhues and Kabir, 2008; Ozkan, 2009 Smith and Swan, 2008). Conversely, other authors found a negative relation (Bulan *et al*., 2010; Sanders and Hambrick, 2007) or an insignificant relation (Hamouda, 2006; Triki and Ureche-Rangau, 2012), even in the case of managerial stock ownership (Himmelberg, Hubbard and Palia, 1999).

Hamouda (2006) found a positive effect only when the options benefit the firm's executives, while Triki and Ureche-Rangau (2012) have not been able to separate options assigned to executives versus other employees. They have reported that the coefficients of the grant size and grant value variables (analysed separately) are insignificant, which suggests that the characteristics of stock option plans have no significant effects on the firm's long term accounting performance and stock return. Melis *et al.* (2012), on the other hand, have found that stock option plan design does not affect the medium term trend of firm performance.

Lam and Chng (2006) have stressed the lack of studies on the association between firm performance and stock option and have reported interesting results. They have analysed the motivations of the stock option plans as value enhancement, risk taking, tax saving, signalling and cash conservation. In particular, the principal-agent model predicts value enhancement for firms that adopt an incentive alignment mechanism. The agency theory predicts that managerial discretion depends on the resources managed by directors. So, Lam and Chng (2006) have identified firm size, capital intensity, market power, growth opportunities, and R&D and advertisement expenses as sources of managerial discretion.

According to Himmelberg, Hubbard and Palia (1999), these variables are used as instrumental variables able to control endogenous factors that may influence the relation between a stock option grant and performance, that is value enhancement motivation. In this model the value of the stock option (independent variable) is expressed as a function of variables related to specific motivation over panel data covering a ten year period. They found that firms grant stock options for their value enhancement, controlling for endogenous factors. Indeed, they found a convex relation between firm performance and stock option grants, wherein the firm's performance tends to decrease before increasing.

4. Gap Analysis and Hypotheses Development

Following the debate described above we are able to highlight some gaps emerging from the literature review. Firstly, the value relevance literature does not pose any questions about stock option plans. On the other hand, the corporate governance literature has only recently analysed the design of stock option plans. As argued by Melis *et al.* (2012), previous studies on ownership control focused on the adoption of stock options without paying attention to the contract design. Notwithstanding, even though considering contract design in the regression models, this variable used as independent variable reduced the stock option plans to a dummy variable without any quantitative evaluation of each stock option plans.

In reference to long term financial performance, these studies have focused more on long term trends of financial performance ratios rather than on stock return, which is investigated mainly in the short term. Moreover, these studies have not taken the value relevance approach that recognized yearly the relation between market performance and accounting information during a defined period. Furthermore, even if they consider the endogenous factors as instrumental variables aiming at controlling the relation within the regression model, such as firm and market characteristics, they do not consider the elements of design of stock option plans in the relations among variables. In fact, these studies seems limited to the consideration of the grant size or the value of stock option plans.

Stemming from these considerations, the objective of this paper is to test the following hypotheses according to the value relevance approach:

H_{1a}: The adoption of stock option plans produces "value relevant" information;

H_{1b}: The value relevance of accounting information is affected by the adoption of stock option plans;

H_2: The design of stock option plans expressed in terms of the optimal contracting view affects market performance;

H_3: There are endogenous characteristics that affect the relevance of the design of stock option plans.

While the predicted sign of the hypotheses H_{1a}, H_{1b} and H_2 is expected to be positive, we are not able to give an estimation of the sign of the H_3.

5. Sample and data selection

The study considers a sample of 147 firms listed in the Milan Stock Exchange excluding banks and insurance companies. Banks, insurance firms and other financial institutions were eliminated in view of the ownership peculiarities of the financial industry (Faccio and Lang, 2002) and their specific corporate governance regulation. We did not consider companies delisted during the period or companies with missing data.

The study considers 195 stock option plans, related to 63 companies that assigned stock options during the period 2007-2012. From this sample we eliminated stock option grants, which are similar to stock options but without an exercise price. Since some firms granted more than one SOP during the observed period, our final sample comprises 141 SOPs granted during the period 2007-2012.

As argued by Zattoni (2007) there is incomplete data information on the SOPs granted by Italian listed firms and consequently a lack of empirical studies on SOPs. For this reason we used many primary research sources by hand-collecting stock options data from companies' prospectuses according to Scheme 7 of Annex 3A of Consob Regulation n. 11971/1999. Other financial data was gathered from secondary research sources, such as the websites and the official documents provided by the Italian listed companies, the Milan Stock Exchange, Consob (Stock Exchange Commission) and Datastream platform.

6. Research Methods

Our database is a panel data set that follows a given sample of individuals over time, and thus provides multiple observations on each individual in the sample (Hsiao, 2003). Our panel data is balanced because we have the same time periods (i.e., t = 1, ..., T) for each cross-section observation. This study focuses on panels with relatively short time periods (2007-2012) and many individuals.

Panel data usually gives the researcher a large number of data points, increasing the degree of freedom and reducing the collinearity among explanatory variables, improving the efficiency of econometric estimates. More importantly, longitudinal data allows the researcher to analyse a number of relevant economic questions that cannot

be addressed using cross-sectional or time-series data sets.

The oft-touted power of panel data arises from its theoretical ability to isolate the effects of specific actions, treatments, or, more in general, policies. Therefore, the regression equation used in the study of convergence has been reformulated into a dynamic panel data model with individual (country) effects **(**Hausman and Taylor, 1981; Mundlak, 1978).

Moreover, this study uses the fixed-effects (FEs) because the analysis focuses on investigating the impact of accounting variables that vary over time. Statistically, FEs explore the relationship between predictor and outcome variables within an entity (country, person, company, etc.). Each entity has its own individual characteristics that may or may not influence the predictor. The underlying assumption of the FEs' use is that something within the individual may impact or bias the predictor or outcome variables and a control for this is needed. This is the rationale behind the assumption of the correlation between an entity's error term and predictor variables. Therefore, the use of FEs removes the effect of those time-invariant characteristics from the predictor variables in order to assess the predictors' net effect. Another relevant assumption of the FEs model is that those time-invariant characteristics are unique to the individual and should not be correlated with other individual characteristics. Each entity is different and, hence, the entity's error term and the constant (that captures the individual characteristics) should not be correlated with the others.

Therefore, this study proposes a multivariate regression models analysis to verify our hypotheses. The models are multivariate and preferred to a univariate one (Sami and Zhou, 2004). Hence, to test our hypothesis, we propose the following multivariate regression equation:

$$(2)\ P_{i(t)} = \beta_0 + \beta_1 LEV_{it} + \beta_2 EBITDA_{it} + \beta_3 DIVYIELD_{it} + \beta_4 Str.S.O._{it} + \beta_5 DS.O._{it} + \beta_6 DCAP._{it} + \beta_1'^{DS.O._{it}} LEV_{it} + \beta_2' DS.O_{it}.EBTDA_{it} + \beta_3' DS.O._{it}\ DIVYIELD_{it} + \beta_4' Str.S.O._{it}\ DCAP_{it} + \varepsilon_i$$

where the variables are defined as follows:

- Dependent variable:
- $P_{i(t)}$: price per common share, at the end of December of the following year;
- Independent variables:
- LEV_{it} : the current year's Leverage;
- $EBITDA_{it}$: the current year's Earnings Before Taxes, Depreciations and Amortisations (divided by total asset);
- $DIVYIELD_{it}$: the current year's dividend-price ratio;
- $Str.S.O._{it}$: Structure of stock option, constructed as a measure to classify stock option plans.
- $D.S.O._{it}$: dummy variable related to stock option.
- $DCAP._{it}$: dummy variable related to market capitalization

6.1 Accounting information choice as independent variables

First, we introduce leverage to verify if the level of debt is more value relevant during a period of financial crisis. Value relevance studies have emphasized that a greater financial exposure increases the importance of the reported accounting data (Choi, 2007; Holthausen and Watts, 2001). Choi (2007) has shown that a lower degree of a firm's financial autonomy corresponds to a greater degree of conservatism and higher value relevance of accounting information. Hence, we can argue that the significance of accounting information is a function of the degree of indebtedness. In this context, lenders prefer the adoption of very conservative accounting that reveals economic difficulties in advance and limits the subjectivity of the assessments, so that credit risk is more directly perceptible. Creditors and lenders could be more interested in valuing a firm's debt and default likelihood than in valuing the firm's stock prices (Holthausen and Watts, 2001). Finally, in a period of financial crisis, firms with high financial exposure are more risky and, thus, leverage could be more value relevant.

Second, we have chosen the EBITDA variable because most analysed companies that granted stock option during the period find that index a useful measure to align different interests. So EBITDA is the most cited performance indicator in the stock option plans (42 times). We divided EBITDA by TOTAL ASSET with the aim to consider the profitability and size of each company. Value relevance studies pay a lot of attention to the relation between the changes in the stock market values and the creation of new wealth as expressed by the accounting system. Therefore β_2 represents the *Earnings Response Coefficient* (ERC) and expresses the relation between market yield and earnings.

Third, we have chosen the DIVDEND YIELD variable for two reasons: dividends are used as a control tool by the management team and, in accordance with value relevance perspective, dividend is related to book value (Ohlson, 1995). Therefore, we substitute the book value per share (BVS) with the dividend per share (DPS). Dividends paid today influence the future expected earnings, so this variable is also related to the achievement of profitability. Thus our model separates the creation of wealth from the

distribution of wealth by considering the impact of these variables on share price mainly when companies adopt stock option plans.

6.2 Structure stock option variable

A greater degree of specification is required if we take into account the construction of the variable Str. S.O. The index was constructed as follows: we have analysed 195 stock .option plans related to 63 companies that assign stock options during the period 2007-2012. From this sample we eliminated the stock option grants, which are similar to stock options but without an exercise price. The result is a sub-sample of 141 plans. With the aim to summarize the key features of these plans we have constructed the variable taking into account:

- Vesting Period (V.P.)
- Dilutive Effect on Number of Shares (D.E.)
- The difference between market price and exercise price (DIFF.)

For those companies that had more than one assigned option per year, we weighted the variables to consider the cumulative effect deriving from different plans in each year. The variables are evaluated in terms of company perspective in accordance with the optimal contracting view.

Vesting Period (V.P.) is the period between the granting of stock options and the first possible date for their exercise. If we consider the optimal contracting view perspective we assume that: "Long vesting periods will produce a greater effect on these stock option plans". For this reason we assume that coefficient with a positive sign (+) in order to make the Str.S.O. variable and we have weighted the vesting periods in order to assign a high value to the longer vesting periods.

Dilutive Effect on Total Number of Shares (D.E.). We compute that value as follow: N° of S. related to S.O. plan / Total N° of S. This index allows us to evaluate the quantitative impact of these tools. For this reason we have taken this value with a positive sign (+).

The difference between market price and exercise price at the date of assignment (DIFF.). If:

- Mkt.Price < Ex.Price (out of the money). If market price is less than exercise price there is a gain for the individual (rent extraction view).
- Mkt.Price = Ex.Price (at the money). In this case manager and companies are in a neutral position.
- Mkt.Price > Ex.Price (in the money). If market price is greater than exercise price, there is a gain for the companies. The agents will be more motivated to increase market value in order to be able to exercise their stock option (optimal contracting view).

Considering the optimal contracting view perspective we have taken this value with the opposite sign (-). Then we calculated the following linear relation:

$$Str.S.O.i(t) = +\mathrm{V.P.}it + \mathrm{D.E.}.it - \mathrm{DIFF.}it$$

Moreover, using panel data, the study considers the time effects on accounting variables for a robust analysis. Finally, we introduce in the model two dummy variables, named $D.S.O._{it}$ e $DCAP._{it}$. $D.S.O._{it}$ is a dummy variable introduced in order to compute the gap of performance between the companies that adopt stock option plans in the period considered and the other companies. The dummy is equal to 0 for companies that do not adopt plans and 1 for companies that adopt these plans. $DCAP._{it}$ is a dummy variable related to the median of market capitalization of those companies that adopt stock option plans in the period analysed. It is equal to 1 if the market capitalization of a company that granted these compensation tools is higher than the median value of the total distribution. To introduce the interaction between the independent variables and $D.S.O._{it}$, we add as many dummy variables as there are independent variables. The dummy variables are calculated as the multiplication with the independent variables. Regarding $DCAP._{it}$ we considered only the interaction $Str.S.O._{it} * DCAP._{it}$ with the aim to capture results for companies with a high market capitalization that adopt stock option. Our assumption is that: "Firms with greater market capitalization have a greater influence on the disclosure and therefore on stock market".

We based our first analysis on a panel data model, controlling for firm fixed effects and removing all cross-sectional variation. In panel data analysis, the term "fixed effects estimator" (also known as the "within estimator") is used to refer to an estimator for the coefficients in the regression model. If we assume fixed effects, we impose time independent effects for each entity that is possibly correlated with the regressors. Such a test would fail to capture any meaningful relation between firm performance and the use of these tools, even if one existed.

Furthermore, Zhou (2001) argues that the assumption that firm performance is dependent on year-to-year variations contradicts the principal-agent model, whereby executives maximize their utility through efforts that can be predicted by firm characteristics. The cross-sectional data offers an estimate of the independent variables variation related to the dependent variables variation but does not consider the characteristics of each firm, while firm fixed effects in panel data control for the endogenous character of each firm.

Therefore, given the above discussion, we will use both panel data and cross-sectional in our evaluation.

7. Research findings

In order to ensure the absence of a linear relation among the variables we calculated the Pearson correlation. The resulting matrix shows a low degree of correlation among the variables, confirming the validity of the regression model (Table 1). Concerning the robustness of the analysis, we have also examined the multicollinearity risk among independent variables. The problem arises because in non-experimental situations, the explanatory variables in a regression equation are often highly correlated. The presence of high multicollinearity involves the change in the value of the estimate of regression coefficient to a slight modification of the observed values. When some or all of the variables are perfectly collinear, the ordinary least-squares (OLS) estimator of the parameters cannot be obtained as there is no unique solution to the normal equations.

Several indicators of multicollinearity are known in literature, but none of them can be regarded as a synthetic and normalized indicator. One of the most frequently used indicators is *VIF* (*Variance Inflation Factor*):

$$VIF_j = \frac{1}{1-R_j^2} \quad (3)$$

VIF is not a synthetic indicator as it is calculated for each explanatory variable. If the explanatory variable j_{th} is linearly independent from the other explanatory variables, its value equals 1. In the case of extreme multicollinearity the value of the VIF indicator is infinite (Kovács, Petres and Tòth, 2005).

The research results exclude the multicollinearity among independent variables as illustrated in Table 1. This fact is confirmed by the values resulting from the VIF analysis. The highest value is assumed by $Str.S.O$ (3.9), even if it does not appear high in absolute terms.

Table 1. Correlation and VIF analysis

	P	LEV	EBITDA	DIVY.	StrSO	DSO	DCAP
P	1.00						
LEV	-0.01	1.00					
EBITDA	0.12	-0.01	1.00				
DIVY.	0.01	-0.03	0.24	1.00			
StrSO	0.05	-0.02	0.18	0.09	1.00		
DSO	0.04	-0.02	0.19	0.14	0.85	1.00	
DCAP	0.14	-0.01	0.21	0.19	0.49	0.64	1.00

VIF	
LEV	1,006
EBITDA	1,441
DIVYIELD	1,858
StrSO	3,918
DSO	8,036

Source: Our elaboration.

First model

The results of our analysis highlight four main points. Considering the panel data analysis, we have found a statistically significant and positive coefficient for the *EBITDA* variable. This result shows that the stock market reacts positively (in terms of share price) to an increase in profitability ratios.

The coefficient of *DS.O.* is negative and statistically significant. This means that the stock option plan is seen by the market as a "cost" and not as an opportunity or an attempt to align different interests. This result is more appropriate to explain the rent extraction view, while it is quite far from the optimal contracting view.

The structure of the stock option plan defined in terms of the optimal contracting perspective does not seem significant.

However, the coefficient of the variable $DS.O. * EBITDA$ shows that the achievement of profit generates a multiplicative effect on the stock price for companies that adopt these tools. This means that, despite the adoption of stock option plans being seen as a cost associated with the risk of extracting personal rent, this cost must be covered by the achievement of profitability.

Analysing the statistical coefficients reported in Table 2 we can see that R-Squared has a relatively low value, as was our expectation. Statistical literature agrees that for panel data it is quite rare to find measures to adapt to the data (Wooldridge, 2002). P-value assumes a value close to 0; for this reason we can reject the null hypothesis, so the regression slope is statistically different from 0.

Table 2. Output of the Panel Model

Balanced Panel: n=147, T=6, N=882
Residuals :
Min. 1st Qu. Median 3rd Qu. Max.
-26.900 -1.180 -0.150 0.915 39.100
Coefficients :
Estimate Std. Error t-value Pr(>|t|)
LEV 0.0062232 0.0141961 0.4384 0.6612435
EBITDA 11.4799814 2.9914288 3.8376 0.0001351 ***
DIVYIELD 0.1310190 0.0900738 1.4546 0.1462195
StrSO 0.2210234 0.2953736 0.7483 0.4545312
DSO -6.2937520 2.2275539 -2.8254 0.0048517 **
LEV:DSO 0.2208110 0.4231719 0.5218 0.6019689
EBITDA:DSO 15.6915159 7.3430521 2.1369 0.0329381 *
DIVYIELD:DSO 0.0566560 0.1328087 0.4266 0.6697983
StrSO:DCAP -0.1872114 0.4601221 -0.4069 0.6842210
Signif. codes: 0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
Total Sum of Squares: 18030
Residual Sum of Squares: 16926
R-Squared : 0.061243
Adj. R-Squared : 0.050411
F-statistic: 5.26252 on 9 and 726 DF, p-value: 5.7661e-07

Source: Our elaboration.

Table 3. Output of the second model (Cross Sectional Analysis)

Balanced Panel: n=147, T=6, N=882
Residuals :
Min. 1st Qu. Median 3rd Qu. Max.
-12.167 -4.738 -2.643 0.865 6.840
Coefficients :
Estimate Std. Error t-value Pr(>|t|)
INTERCEPT 5.968967 0.490624 12.166 <2e-16 ***
LEV -0.006901 0.023054 -0.299 0.7647
EBITDA 4.9666945 3.816714 1.301 0.1935
DIVYIELD -0.092985 0.116100 -0.801 0.4234
StrSO -0.121046 0.249331 -0.485 0.6275
DSO -3.420329 1.827658 -1.871 0.0616 .
LEV:DSO 0.049852 0.367027 0.136 0.8920
EBITDA:DSO 20.504640 8.160702 2.513 0.0122 *
DIVYIELD:DSO -0.022494 0.180254 0.125 0.9007
StrSO:DCAP 1.169261 0.242848 4.815 1.74e-06 ***

Signif. codes: 0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
Residual Sum of Squares: 8.729 on 872 degrees of freedom
R-Squared : 0.05635, Adjusted R-squared: 0.04661
F-statistic: 5.786 on 9 and 872 DF, p-value: 7.692e-08

Source: Our elaboration.

Second model

The second model of our analysis examines the same sample, taking into account cross-sectional data analysis that does not consider the endogenous characteristics of each firm and the time dependent.

The results reported in Table 3 show us a positive and statistically significant coefficient if we look at the interaction between ⟦Str.S.O.⟧_( )*⟦DCAP.⟧_( ).This means that for the companies with a high market capitalization the stock options plan, during the period, produces a positive effect on the stock market. According to our opinion this different result obtained with the second model may depend on the construction of the ⟦Str.S.O.⟧_( )variable. Probably the second model is able to better explain the relation between the variable ⟦Str.S.O.⟧_( )*⟦DCAP.⟧_( ) and the response variable.

8. Conclusions and implications for further research

The empirical analysis has produced significant research findings. H_1: "*The S.O. plans produce value relevant* information" is accepted: firms that

grant stock option increase their negative impact on share price. Also the second hypothesis H_{1a}: "*The value relevance of accounting information is affected by the adoption of Stock Option Plans (S.O.)*" is accepted, because the adoption of this tool produces a positive effect in terms of profitability.

On the other hand, if we consider the design of stock option plans, assuming the optimal contracting view, we can see that for this variable there are no significant results, which indicates that the design of a stock option plan does not affect market performance. Therefore H_2: "*The design of stock option plans expressed in terms of the optimal contracting view affects market performance*" is not accepted.

The last hypothesis H_3: "*There are endogenous characteristics that affect the relevance of the design of stock option plans*" confirms the statistical significance of Str.SO if we take into account the company's size in terms of market capitalization. Probably this assumption could result from the greater impact associated with the disclosures of larger firms.

The empirical results of this study raise a number of questions for future research in terms of content and research methods.

In terms of content, further research could refine the $Str.S.O.$ variable, adding variables related to accounting ratios;. Second, we could introduce other variables related to "endogenous characters" such as growth opportunities, intangible assets, R&D intensity as a measure of managerial discretion, volatility of financial market and type of industry. Third, additional studies could consider the evaluation of the annual and cumulative cost of S.O. plans as a change in capital reserves. Finally, further research could introduce the volatility of stock price as a measure of uncertainty.

In terms of methods, future studies could include sensitivity analysis in order to evaluate the price data dependency. In fact, a variety of statistical methods could be used, for example Monte Carlo analysis, bootstrap analysis or rolling parameters analysis. Furthermore, additional research projects could use cluster analysis instead of sensitivity analysis to take into account specific characteristics. Finally, the shift from a price regression model to a return regression model could be useful to avoid any impact that the choice of date might have on stock price in keeping with Beaver's (2002) note of caution that "timing and timeliness of information should not be overestimated". It is not possible to determine which model (price or return) is the best to carry out an unbiased analysis. The choice is generally conditioned by the objectives defined ex-ante (Kothari and Zimmerman, 1995).

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DETERMINANTS OF EXECUTIVE BOARD REMUNERATION NEW INSIGHTS FROM GERMANY

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Abstract

Board remuneration in German listed companies becomes more and more subject of public and political discussion, concerning the presumed lack of transparency and too short-term orientation. Besides the increasing regulatory activity, the arrangement of board compensation constitutes a focal economic issue of current empirical corporate governance research. The purpose of our analysis is to identify factors determining the amount and the structure of board compensation in Germany. Our study of 128 German listed companies for the business year 2011 investigates the impact of company-, performance and corporate governance-related factors on board remuneration by means of a multivariate-regression analysis. The analysis indicates that company size has a positive impact and leverage a negative on management board compensation. Furthermore, ROE and return on total capital, as indicators for performance-related variables, both have a positive impact on the average level of management remuneration. However, the corporate governance-related characteristics as ownership concentration and size of the supervisory board have no significant impact on management board remuneration.

Keywords: Corporate Governance, Executive Board Remuneration, Firm Performance, Agency Theory, Financial Incentives, Ownership Concentration, Supervisory Board

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Introduction

Board remuneration in listed companies in the (non) financial sector becomes more and more subject of public and political discussion. In this context it is controversially discussed if board compensation stands in an appropriate relation to the tasks of the executive board members as well as the financial situation of a company. A direct comparison of the absolute amount of the remuneration and the personnel costs per employee, for example in the German Volkswagen AG for the business year 2008, indicates that the annual revenue of the chairman (12.7 million EUR) is 298 times higher than the average costs of an employee. The German legislature has, as a response to the criticism according the lack of transparency and too short-term orientation of the remuneration systems, introduced the Executive Board Remuneration Disclosure Act and the Act on the Appropriateness of Management Board Remuneration.

Besides the increasing regulatory activity, the arrangement of board compensation constitutes a focal economic issue of current empirical corporate governance research. The main purpose of our analysis is to identify factors influencing the amount or the structure of board compensation. While for the Anglo-American system empirical capital market surveys, focusing on management compensation, constitutes a main research area, in Germany only few reliable surveys exist. Therefore our research question is: "Which factors influence the board remuneration in Germany?"

To answer this question, our study investigates possible influencing factors explaining the amount of management board compensation based on a sample of 128 firms in the German Prime Standard (DAX, TecDAX, MDAX or SDAX) for the financial year 2011. Based on the evaluation of previous international research findings and an agency-theoretical foundation of the investigation subject, performance- and corporate governance-related indicators are examined in order to deduce appropriate hypotheses. The considered variables encompass company size, measured by balance sheet totals, turnover and number of employees,

debt to equity ratio, firm performance, indicated by return on equity (ROE) and return on total capital, ownership concentration, including free float and size of the supervisory board.

The present study is structured as follows: chapter 1 describes the normative conditions for the setting of board remuneration of German listed companies, which are characterized by a two tier system. Subsequently in chapter 2 the results of former empirical corporate governance surveys will be assessed into detail. In chapter 3, thus, the empirical results of the investigation of German DAX, MDAX, TecDAX and SDAX-listed companies for the fiscal year 2011 are presented. Besides the formulation of hypotheses (3.1) and the study design (3.2), also the variables used in our analysis (3.3) are described and evaluated by using descriptive statistics (3.4) as well as a multivariate regression model (3.5). Finally the results are summarized in chapter 4.

1. Requirements for the Determination of Management Remuneration in Germany

In accordance to the German Stock Corporation law, the supervisory board (§ 87 paragraph 1 of the German Stock Corporation Act ("AktG")) is responsible for the determination of the total revenue for each board member as well as the underlying remuneration system (Eulerich and Velte, 2013, 73). Pursuant to § 87(1) sentence 1 of the AktG, the supervisory board must ensure that the total remuneration of each individual management board member is in reasonable proportion to the duties and performance of the management board member and the company's situation and may not exceed the normal level of remuneration unless there are special reasons. In publicly traded corporations, thus, in accordance to § 87 (1) sentence 2 of the AktG, the executive board remuneration has to be oriented towards sustainable corporate performance. Furthermore in § 87 (1) sentence 3 of the AktG the aspect of sustainability is specified, so that the variable compensation component has to include a long-term assessment base and the supervisory board should also define a limitation option for extraordinary developments. The determination of executive board remuneration through the supervisory board is in accordance to § 107 (3) sentence 3 of the AktG legally protected by the reservation right of the plenum. So for example an implemented remuneration committee may act only in a preparatory capacity to the supervisory board.

With regard to the management board remuneration structure usually a distinction is made between fixed (non-performance-related) and variable (performance-related) components as well as additional services. The respective components can be calculated on different assessment bases (Eulerich and Velte, 2013, 74). Regarding the time horizon the influencing factors can be divided into short-, medium- and long-term components. For an appropriate measurement furthermore a differentiation into qualitative and quantitative criteria is conceivable. The statutory provisions of the Stock Corporation Law provide for a hybrid between fixed and variable components of the total board revenue.

A reasonable financial reward system plays, with respect to the principal agent-theory, an important role in order to influence the behavior of the management board. Therefore the incentives for opportunistic behavior of the management (agent) at the disadvantage of the general meeting (principal), usually due to conflicts of interests and information asymmetry, should be reduced (Jensen and Meckling, 1976). Conflicts of interest also can arise between executive - and supervisory board, as both constitute agents of the general meeting (Tirole, 1986; Velte and Weber, 2011a). Correspondingly, on an theoretical basis the supervisory board ought strive for the sustainable maximization of the shareholder value, while the executive board pursuits a short-term perspective due to the realization of individual interests (e.g. maximization of his salary and minimization of his assignment). Concerning the design of the management board remuneration system, the growing proportion of fixed salary reduces the performance of the executive board due to the fact that he accordingly lowers his work assignment in order to maximize his individual benefit. In order to meet this conflict of interests the supervisory board would reduce the fixed proportion of the remuneration and rather put performance-related (variable) components into consideration. This should serve as a measure to balance the interests of both the management board (agent) and the supervisory board (principal). Contradictory objectives of both administrative bodies, thus, should be harmonized by a common focus on value-oriented performance measures.

The regulation in § 120 paragraph 4 of the AktG contains the construct of say on pay, thus, the general meeting may approve the management board remuneration system in listed stock corporations (Eulerich *et al,*. 2012; Velte, 2013). However, say on pay until now has been arranged as option of choice without any rights or duties concerning the general meeting (§ 120 (4) sentence 2 of the AktG). In 2013, the old German government tried to upgrade this corporate governance instrument by an annual mandatory remuneration vote by the general meeting, but the federal council of Germany withheld approval (Velte and Baehr, 2013).

Besides the law it should also be referred to the German Corporate Governance Code (GCGC) in clause 4.2.2 – 4.2.5. The total executive board compensation should be determined on a performance assessment base. As criteria for the appropriateness of the salary are mentioned the following:

- tasks of each board member,
- personal performance,
- situation of the company,
- success and the future prospects of the company as well as
- remuneration level in a comparable environment and the common internal remuneration structure.

These guidelines for the determination of the management board remuneration are accompanied by regulations according the external reporting of the management board remuneration, which has been already introduced before the financial crisis 2008/09. In addition to the reporting of the total management board compensation in the notes to the consolidated financial statements (§§ 285 No. 9a sentence 1 - 3, 314 (1) No. 6a sentence 1 - 3 of the German commercial code ("HGB")), listed stock corporations are obliged to disclose the board remuneration on an individual basis in the notes to the consolidated financial statements (§§ 285 No. 9 sentence 5 - 8, 314 (1) No. 6a sentence 5- 8 HGB). This includes a separation by performance-related and non-performance-related components as well as by components with long-term incentive effect. The general meeting is with a three-quarter majority vote authorized (opting out) to exempt the company from the obligation for individualized disclosure for a maximum of five years (§§ 286 (5) and 314 (2) sentence 2 HGB). In addition to the disclosure requirements of listed stock corporations they have to expose the basic elements of the company's remuneration system for the total executive's board remuneration in the group management report (§§ 289 (2) No. 5 and 315 (2) No. 4 HGB). Thus, the chair of the supervisory board shall inform the general meeting uniquely about the basic elements of the company's remuneration system and additionally in case of changes (clause 4.2.3 of the GCGC).

2. Results of the International Management Remuneration Research

Empirical studies on management remuneration have been conducted in the USA first by Roberts (1956), Baumol (1959) and Lewellen and Huntsman (1970). In the majority of the previously studies the relationship between management compensation, company size as well as company's profit have been examined (pay for performance), which indicates a high heterogeneity referring their results (Murphy, 1999, 2485).

The dominant research on the US capital market (Conyon and Schwalbach, 2000, 104) is founded on an outsider-oriented corporate governance system, which is characterized by a comparatively high attractiveness of the equity market and the foundation of the shareholder value policy (Velte and Weber, 2011b, 473). Otherwise the compensation of US management has now moved to the focus of the corporate governance research due to their increasing amount and the implementation of share options respectively stock options (Hüttenbrink, 2012, 68). The first empirical study on management remuneration for European companies has been conducted in Great Britain by Cosh (1975). As a result, further studies were conducted for European and Non-European countries, for example Japan (Kaplan, 1997), Canada (Zhou, 2000), Spain (Angel and Fumás, 1997), Italy (Brunello *et al.*, 2001), France (Alcouffe and Alcouffe, 1997), Denmark (Eriksson, 1999), China (Groves *et al.*, 1995) and Bulgaria (Jones and Kato, 1996). A growing research activity arises from empirical studies which concentrate on the link between firm performance and management compensation. Table 1 gives a summary of main study designs and their results.

A reverse link between management compensation on firm performance has also been tested in several empirical corporate governance studies, mainly at the US capital market. A summary of these studies is presented in table 2.

Table 1. Empirical corporate governance research with regard to the influence of performance on pay

Year of publication	Author(s)	State sample business year	Performance variables	Pay Variables	Main results
2013	Sun/Wei/Huang	2000-2006 322 firm-year observations of insurance companies USA	Sales growth rate Business concentration index Annual stock return Firm sales ROA	Total compensation Cash compensation Stock compensation Options Total incentive compensation	Firm efficiency is positively associated with total CEO compensation
2012	Michiels et al.	529 privately held family firms 2003 USA	ROA	Total CEO cash compensation	CEO compensation in private family firms is more responsive to firm performance in firms with low ownership dispersion and in the controlling-owner stage
2011	Ozkan	390 non-financial firms 1999-2005 UK	Salary Bonus Stock options Long-term incentive plans	Shareholder return	Institutional ownership has a positive significant influence on CEO PPS of option grants
2010	Shaw/Zhang	14,632 CEO-firm-year observations 1993-2005 USA	ROA Annual stock returns	Change in CEO annual cash compensation (total salary and bonus)	No asymmetry in CEO cash compensation for firms with low stock returns
2006	Leone/Wu/Zimmerman	2,751 CEOs 1992-2003 USA	Compounded monthly returns and change in ROA Bad news indicator	Changes in cash pay Changes in equity based pay (option and restricted stock grants)	Positive link between change in cash pay and returns and change in ROA relationship twice as strong for negative stock returns as for positive ones
2003	Aggarwal/Samwick	13,109 executives 1993-97 USA	Returns to shareholders	Short term pay long term pay total pay change in the value of shares and stock options held	Position in the top management team and level of responsibility predict incentive pay Median CEO pps: $ 13.78 ($41.22) per $ 1,000 change in shareholder wealth
2003	Boschen et al.	CEOs of 30 firms 1959-1995 USA	Return on assets (ROA) Annual rate of shareholder return Unexpected performance based on residuals of regression	Cash compensation total pay (cash, stock grants, stock options grants and other noncash compensation)	Unexpectedly positive accounting performance provides a net benefit to CEO pay of 0 over 10 years Unexpectedly positive stock price performance produces positive net benefits in the short and long run
2003	Hartzell/Starks	Executives of 1,914 firms 1992-97 USA	Change in shareholder wealth Tobin's Q	Performance sensitivity of options granted, salary change in cash pay change in total pay (level and change)	Change in shareholder wealth predicts change in total pay Institutional ownership is positively related to PPS and negatively to total pay

Year of publication	Author(s)	State sample business year	Performance variables	Pay Variables	Main results
2001	Joyce	687 CEOs of financial institutions 1993-94 USA	Stockholders Equity ROA	Total cash compensation (salary and bonus)	Small but positive relationship between ROA and CEO salary and bonus compensation (weak support for agency theory)
2000	Attaway	42 firms 1992-96 USA	ROE	Salary and bonus	Small but positive relationship between firm performance and CEO compensation
2000	Tosi et al.	137 articles Metaanalysis -	Absolute financial performance levels Changes in finanial performance Change in ROE-short term Change in ROA	Pay measure used in the source study	40% of the variance in pay is explained by firm size, less than 5% is explained by performance Correlation between pay and performance is 0.212
1999	Ke/Petroni/Safieddine	63 CEOs in the property liability insurance industry 1994-96 USA	ROA change in ROA	Cash pay (level of change)	No significant link between ROA and pay for private insurers Positive link for public insurers
1999a	Aggarwal/Samwick	> 1,000 CEOs and > 3,900 other executives 1993-96 USA	Percentage and dollar returns to shareholders	Total pay (level and change) total play change in the market value of equity and stock option holdings	Increasing variation in performance leads to decreasing pay-performance sensitivity (PPS) PPS was $ 14.52 ($ 69.41) per $ 1,000 change in shareholder wealth
1999b	Aggarwal/Samwick	1,519 CEOs and 6,305 other executives 1992-93 USA	Dollar returns to shareholders at beginning of period	Short term pay long term pay total pay	Returns predict total pay Ratio of own PPS to rival PPS is lower in industries with more competition Evidence of relative performance evaluation in short term pay
1998	Baber/Kang/Kumar	CEOs of 713 firms 1992-93 USA	Raw stock returns (proxy for unexpected returns) unexpected earnings per share	Percentage changes in cash, salary and bonus cash bonus alone stock-based pay total pay	Both performance measures predict changes in cash and total pay Earnings persistence positively moderates the earnings relationship and negatively moderates the returns relationship
1998	Conyon/Peck	Highest paid director of 94 of the top 100 publicly traded firms 1991-94, UK	Total shareholder return	Cash pay	Performance predicts pay, but larger coefficient by more nonexecutives in the remuneration committee and board
1998	Hall/Liebman	CEO of 478 large corporations 1980-94 USA	Firm returns	Total pay changes in market value of stock and stock options change in wealth	CEO pay and wealth are related to firm performance Stronger relationship than previously found CEO PPS has been increasing over time due to larger options grants

Table 2. Empirical corporate governance research with regard to the influence of pay on performance

Year of publication	Author(s)	State sample business year	Pay Variables	Performance variables	Main results
2013	Banker et al.	2,498 firms with 15,512 CEO-year observations 1993-2006 USA	Salary Bonus Cash Pay Equity Pay	ROE Stock Returns (RET)	Salary (bonus) is positively (negatively) associated with past performance for both continuing and newly hired CEOs
2011	Matolesy/Wright	3,503 observations 1999-2005 Australia	Accounting and market-based performance measures (equity versus cash compensation group membership)	ROA ROE Change in market value of equity, adjusted for dividends Change in market value of equity, adjusted for dividends and risk	Firms whose CEOs receive compensation inconsistent with their firm characteristics have a lower performance compared to those firms whose compensation is consistent with their firm characteristics
2009	Jeppson/ Smith/Stone	200 large public companies 2007 USA	Base salary Cash bonuses Perks Stock awards Option awards	Company revenue Year-to-year change in net income Year-to-year change in total shareholder return	No significance between pay and performance
2008	Cheng/Farber	289 restatement firms 1997-2001 USA	Annual option grants/total compensation Annual option grants (in shares)/total shares outstanding	Book to market ratio	Reduced proportion of CEOs' total compensation that is option-based after the restatement; improved operating performance following this reduction
2008	Graffin et al.	264 S&P 500 firms 1992-96 USA	Total direct compensation	Total shareholder return ROE	TMT pay levels and dispersion are affected by CEO status
2006	Balachandran	147 residual income adopting firms with matched pairs 1986-1998 USA	Plan adoption indicator	Change in delivered residual income	Residual income increases once it is included in the pay criteria
2005	Hogan/Lewis	108 firms that adopted economic profit plans (EPP) and matched nonadopters 1983-96 USA	Plan adoption indicator	Economic profit Operating income before depreciation Profit margin ROA Market to book ratio Measures of turnover Investment decisions	Firms that possess characteristics that make it likely they would adopt EPP and which then do adopt EPP outperform nonadopters who were expected to adopt
2005	Kato et al.	344 firms that adopted stock option plans 1997-2001, Japan	Plan adoption indicator Fraction of shares outstanding	Cumulative abnormal returns (CAR) ROA	Adoption of option-based pay is associated with positive CAR (5 day-window), increased ROA and higher levels of managerial ownership

Year of publication	Author(s)	State sample business year	Pay Variables	Performance variables	Main results
2005	Siegel/Hambrick	Top management groups in 67 firms 1991-92 USA	Short and long term pay Vertical, horizontal and overall pay disparity	2-year average market to book and total shareholder returns adjusted for industry performance	Pay disparity is negatively related to performance in high tech firms
2004	Carpenter/Sanders	Executives of 224 multinational corporations from the S&P 500 1992-93 USA	Total pay Long term pay level Structure (long term/total) CEO/top management team (TMT) pay gap	Market to book value (controlled for prior value to capture the change)	CEO pay does not predict MNC performance but TMT total and long term pay do CEO TMT pay gap is negatively related to MNC performance Degree of internationalization is a moderator of all relationships
2003	Certo et al.	CEOs of 193 initial public offering (IPO) firms 1996-97 USA	Indicator of options granted Value of options granted Percentage equity	Percentage price premium	CEO option pay is positively related to IPO valuation CEO equity ownership positively moderated the link
2003	Hanlon/Rajgopal/Shevlin	Executives of 1,069 firms 1992-2000USA	Value of stock options granted	Ratio of annual operating income to sales	1 $ of option grant value is connected with $ 3.71 of future operating income (concave link)
2002	Shaw/Gupta/Delery	379 trucking firms and 141 concrete pipe firms 1994-95 USA	Measures of pay dispersion Measure of individual incentives for drivers	Trucking accidents Out of service Driver performance Concrete pipe labor hours Lost time accidents Employee performance	Pay dispersion predicts higher levels of performance in the presence of individual incentives and independent work and lower levels of performance when work is more interdependent and there are no individual incentives
2002	Carpenter/Sanders	Executives of 199 Standard & Poor's 500 firms USA 1993-1995	Total pay ratio of long-term pay to total	Average ROA	Alignment of TMT pay is positively linked with performance CEO pay structure is related to firm performance through TMT pay structure
2002	Core/Larcker	195 firms that adopted mandatory stock ownership programs 1991-97, USA	Plan adoption indicator Increase in ownership (regression residuals)	ROA (2 years) Buy-and-hold excess returns (immediate and 6, 12 and 24 months) compared to matched control firms	Target ownership programs lead to higher firm performance (ROA and returns at 6 months) and greater managerial ownership
2001	Conyon/Peck/Sadler	532 executive directors of 100 of the largest public companies 1997-98, UK	Cash, incentive and total pay	ROA Annual total shareholder returns	Pay dispersion does not predict firm performance Gap between levels increases as the level increases and cash pay is higher when there are more "contestants"

Year of publication	Author(s)	State sample business year	Pay Variables	Performance variables	Main results
2001	Morgan/Poulson	S&P 500 firms that proposed a pay-for-performance plan 1992-1997 USA	Plan recommendation indicator	CAR Buy and hold return Earnings/Assets Sales/Assets Asset growth Sales growth	Firms that adopt pay for performance plans demonstrate better pre- and ost-announcement performance
2001	Sigler/Porterfield	31 bank CEOs 1988-97 USA	Total compensation Salary & bonus	ROA Changes in bank revenues	Change in total pay for CEO bankers increases or decreases $ 93,870 per year with a slight 0.1% increase or decrease in ROA
1999	Bloom	1,644 major league baseball players on 29 teams 1985-1993 USA	Player salaries used to create multiple measures of dispersion and pay rank	Three stats per player (individual level) Winning percentage Gate receipts Financial performance (team level)	Pay dispersion produces lower organizational and individual performance Individual performance relationship is moderated by individual's pay rank
1998	Wallace	40 firms that adopted residual income plans with matched pairs 1988-1997 USA	Plan adoption indicators	Residual income and shareholder wealth	Residual income based plans affect investment decisions and predict increases in residual income but not shareholder wealth
1996	Bushman et al.	396 firms and 1,476 firm-year observations 1990-1995 USA	Individual performance /bonus Individual performance /salary Long-term plans/salary Individual performance /long-term plans	Market to book value	Positive link between market to book value and individual performance evaluation

In Germany the empirical corporate governance research on management board compensation can be traced to Schmid (1997). These studies reveal that the return on total assets, the shareholder structure as well as the company size have a significant impact on the amount of the Management board Compensation (Schmid, 1997, 67-83). Schwalbach and Graßhoff (1997) show that earnings per share (EPS) and return on sales (ROS) as well as company size have a significant impact on the amount of management board compensation. Additionally a positive relationship between company size and remuneration has been identified. Schwalbach (1999) illustrated in his inquiry a significantly stronger influence of company size, measured by the number of employees, on management board compensation. In contrast, the company performance, measured by ROS, has no impact on remuneration. While Elston and Goldberg (2003) also indicated a positive impact of the revenue and ROE on management board compensation, in accordance to Schmidt and Schwalbach (2007) there is evidence for a positive influence of company size, indicated by market capitalization, but no evidence for the impact of EPS on management board salary. Rapp and Wolff (2008) show that the debt equity ratio has a significant negative and the future investment options as well as the company size have a positive impact on management board remuneration. Although ROE and total shareholder return (TSR) indicate a significant positive impact, the other used key performance indicators are insignificant. In the follow-up study by Rapp and Wolff (2010), however, EPS have been significant positive related to the amount of the management board remuneration, while the operative performance exerted a strong negative influence. Andreas et al. (2012) show in the latest follow-up study a significant positive impact of all key performance characteristics, expect of the total shareholder returns. Table 3 summarizes the research results.

Table 3. German corporate governance research on management board remuneration and firm performance

Nr.	Author	Year of publication	Year of investigation	Sample size	Companay characteristics		Performance characteristics		Corporate Governance characteristics	
1	Schmid	1997	1991	110	Company size	(+)	Return on Total Capital	(+)	Ownership concentration	(-)
									Bank Share concentration	(+)
2	Schwalbach/Großhoff	1997	1988-1992	220	Number of employees	(+)	Return on Sales	(+)		
					Turnover	(+)				
					Industry	(+)				
			1968-1990	83	Revenues	(0)	Return on Equity	(0)		
							Return on Total Capital	(0)		
							Earnings per Share	(+)		
							Market value to Book value	(+)		
3	Schwalbach	1999	1987-1996	196	Number of employees	(+)	Return on Sales	(0)		
					Industry	(+)				
4	Elston/Goldberg	2003	1970-1986	91	Revenues	(+)	Return on Equity	(0)	Ownership concentration	(-)
									Bank Share concentration	(-)
5	Schmid/Schwalbach	2007	2005	80	Market capitalization	(+)	Earnings per Share	(0)		
6	Rapp/Wolff	2008	2005-2006	125	Company size	(+)	Return on Equity	(0)	Ownership concentration	(+)
					Investment opportunities	(+)	Return on Invested Capital	(0)	Management Share	(-)
					Diversification	(0)	Cash Flow over Assets	(0)	Size of the Executive Board	(-)
					Measure of risk	(+)	Total Shareholder Return	(+)	Structure of the Supervisory Board	(-)
					Leverage	(-)			US-listing	(+)
7	Rapp/Wolff	2010	2005-2007	334	Company size	(+)	Earnings per Share	(+)	Ownership concentration	(-)
					Diversification	(0)	Operative Performance	(-)	Management Share	(-)
					Measure of risk	(-)	Market value to Book value	(+)	Size of the Executive Board	(+)
					Leverage	0			Size of the Supervisory Board	(+)
									US-listing	(-)
8	Adreas/Rapp/Wolff	2012	2005-2008	232	Company size	(+)	Return on Equity	(+)	Ownership concentration	(-)
					Investment opportunities	(0)	Return on Invested Capital	(+)	Management Share	(-)
					Measure of risk	(0)	Total Shareholder Return	(0)	External Investors	(-)
					Leverage	(-)	Dividend yield	(-)	Institutional Investors	(0)
					Free Cash Flow	(+)			Size of the Supervisory Board	(-)
					Market competition	(0)			Number of Executive Board meetings	(+)
									Independence of the Managing Director	(0)

3. Empirical study for the German Prime Standard

3.1. Hypotheses

As mentioned in chapter 2, the principal agent theory describes an incentive based remuneration system as an economic approach to reduce conflicts of interests between management and stakeholders in listed corporations. Although, the specific conditions of the respective firms determine the principal agent problems and the resulting agency costs (Tebben, 2011, 58). The empirical study includes different determinants which may have an impact on the amount of the management board remuneration. The determinants presented below are divided into company-related, performance-related and corporate governance-related characteristics (analogous to e.g. Ertugrul and Hegde, 2008; Rapp and Wolff, 2010).

According to the principal agent theory the degree of information asymmetry between management board and shareholders, in terms of moral hazard, affects substantially the agency costs.

Thus, moral hazard has a stronger effect in large corporations because it is more difficult to control the work assignment of board members. With rising company size also the complexity of the company increases. The higher complexity in turn has a strong increasing impact on the executive board's information advantage over the shareholder. Thus, for the owner it might be favorable to offer an incentive based remuneration to reduce agency costs in major enterprises (Tebben, 2011, 59). In this context the following hypothesis can be derived:

H1: Company size has a positive impact on the amount of management board remuneration.

Leverage indicates the relation between debt and equity. Thus, the leverage allows to analyse the influence of external creditors on the corporation. The impact of leverage on management remuneration can be interpreted both positive and negative. Thus, the agency costs, which derive from the separation between ownership and control, can be reduced by an increase of outside capital. Consequently, the incentive based remuneration decreases with a higher level of debt. This would indicate a negative relation between leverage and management remuneration. On the other hand a high debt to equity ratio increases the risk for corporate insolvency. In this context the following hypothesis can be derived:

H2: Debt to equity ratio has a negative impact on the amount of management board remuneration.

Besides the company characteristics also performance-related attributes are included. With regard to the impact of firm performance the incentive based remuneration of management should increase for the cases that the management acts in terms of the shareholder and strives to maximize his benefit. The salary should develop parallel to firm performance (Barkema and Gomez-Mejia, 1998, 138). This should reveal a positive correlation between performance-related characteristics and the amount of management board remuneration (Diamond and Verrecchia, 1982, 278 f). In this context the following hypothesis can be derived:

H3: Firm performance has a positive impact on the amount of management remuneration.

Besides company- and performance-related characteristics also the design of the corporate governance system plays a key role. The empirical research in the Anglo-American area, which supports the one tier system, is in contrast to the German two tier system which is characterized by a separation between management board and supervisory board (Velte and Weber, 2011b, 473). Thus, ownership concentration and supervisory board size are included to analyse their relationship. The owner has an interest to maximize the shareholder value. Therefore investors must supervise the activity of the management (Sapp, 2006, 14). Ownership concentration is considerated an important determinant of management remuneration. Thus, the control function of the respective external owner rises with his company share, so that major shareholders have a stronger impact on the corporate management as small ones (Shleifer and Vishny, 1997, 737). Therefore a high level of ownership concentration is accompanied by a high corporate control. In return, the distribution of the ownership causes that the owner have minor monitoring possibilities to supervise the management board and thus to affect leadership activities (Elston and Goldberg, 2003, 1396). In the case of a higher control activity the amount of the incentive based remuneration can be reduced by a concentrated ownership structure (Tebben, 2011, 59; Wolff and Rapp, 2008, 8; Sapp, 2006, 14). Thus, the following hypothesis can be derived:

H4: Ownership concentration has a negative imact on the amount of management remuneration.

In the German two tier system, the supervisory board influences the activity of the management board due to its control activity. Here, the supervisory board has to ensure that the management board acts in terms of the shareholder. If the supervisory board works efficiently, the monetary incentive components of the remuneration system of the management can be reduced. For this purpose it is suggested that the presence and the efficiency of supervisory boards negatively affect the amount of management compensation (Tebben, 2011, 60). The efficiency of the supervisory board can be measured by the number of its members. In this context the efficiency of the supervisory board decreases with increasing membership. This can be justified by the fact that in large supervisory boards might arise difficulties in respect to voting-, coordination- and decision making processes (Sapp, 2006, 13). This leads to the following hypothesis:

H5: The size of the supervisory board has a positive impact on the amount of management remuneration.

3.2. Study design

The empirical study concentrates on the business year 2011 and includes the DAX, MDAX, SDAX and TecDAX as part of the German Prime Standard. The firms were listed on the Frankfurt Stock Exchange on 1 January 2013. Thus, the database contains a total of 168 shares. The database has been adjusted in four steps due to a better illustration of the influencing factors (Table 4).

Table 4. Sample description

Spalte1	**sample**	**DAX**	**MDAX**	**SDAX**	**TecDAX**
Total shares	168	33	53	51	31
Double notations	8	3	3	1	1
Foreign ISIN	9	-	2	4	3
Financial service providers	23 (21)	5	9 (7)	9	-
New access	2	-	1	-	1
final sample	**128**	**25**	**40**	**37**	**26**

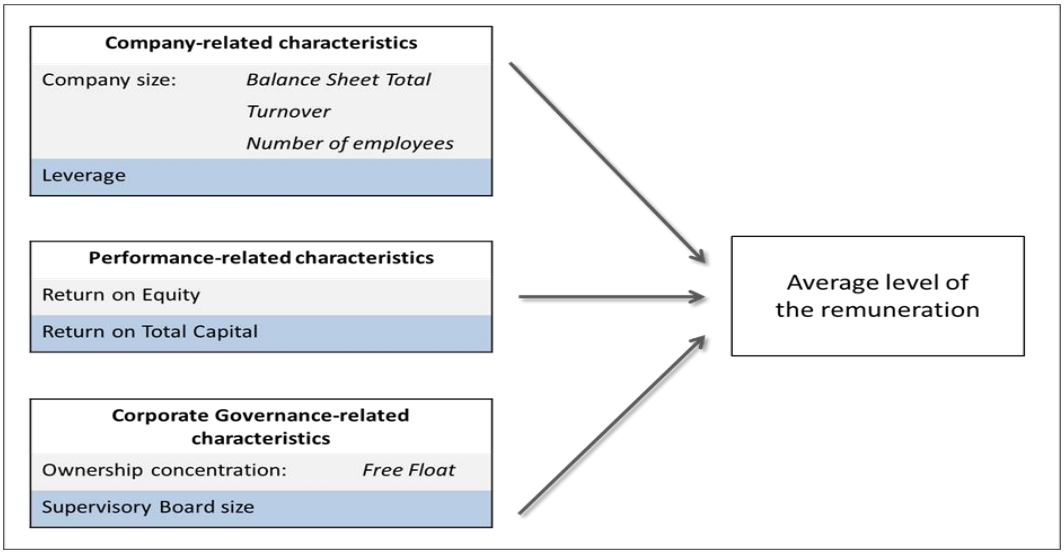
In the first step the double notations, e.g. preferred shares, are excluded. Further the corporations with foreign ISIN code are excluded from the sample because these companies partly provide a different corporate governance system than German stock corporations and, thus, would constrain the actual comparison. In the third step all financial service providers are excluded due to the fact that these corporations are subject to other financial reporting and regulatory requirements, so that a direct comparison would not be advisable. In the last step two further corporations are excluded from the sample because they accessed to the stock exchange first in the project year 2011 respectively the year after. The final sample consists of 128 corporations.

The data for the empirical analysis has been collected from different sources. In the first line the data has been extracted from the Bloomberg database. But in particular the information on management boards remuneration, size of the executive board and supervisory board has been incomplete. Furthermore, the information about the respective variables has not been available for all companies. For the case that required data could not be extracted from Bloomberg, additional information has been reported manually from the annual reports of the company.

3.3. Variables

The average amount of the compensation for each member of the management board during 2011 represents the dependent variable. The total amount is reported without pension provisions and includes short-term and long-term performance-related remuneration components as well as additional services. The independent variables are the determinants as the company-, the performance and the corporate governance-related characteristics (Figure 1).

Figure 1. Determinants of the average management board remuneration



3.4. Results of the descriptive statistics

Table 5 illustrates the results of the descriptive analysis and first the company-related characteristics like company size and debt to equity ratio. The first three determinants, which are used as indicator for the company size, show a similar development. The overall analysis indicates an average balance sheet total of 13,379.59 million EUR, an average turnover of 10,430,096.80 thousand EUR and the average number of employees of 35,258.66 individuals. The analysis of the median of the three determinants describing the company size exposes the following tendency: the median value in all three cases is smaller than the associated mean value. So, the determinants of the DAX-companies indicate a level which exceeds significantly the level of the remaining indices. From this information it can be inferred a left-sided distribution. The large standard deviation of the company size can also be explained with this phenomenon.

A further company-related characteristic constitutes the debt to equity ratio. The mean of the debt to equity ratio in the total sample reveals 181.65 %. The comparison between mean and median value of about 142.33 % shows a slight left-sided distribution. The standard deviation of 146.98 % indicates that all four indices have a relative similar mean value in respect to the debt to equity ratio. This amounts in DAX- companies 195.13 %, in MDAX-companies 211.47 %, in SDAX-companies 184.22 % and in TecDAX-companies 119.13 %.

Table 5. Overview over the results of the descriptive statistics

Determinants	Measure	DAX	MDAX	SDAX	TecDAX	Total Sample
Balance Sheet Total (in Mio. EUR)	Mean Value	58.029,86	5.169,25	993,99	703,61	13.379,59
	Median Value	28.915,00	2.987,55	682,76	500,17	1.588,06
	Minimun	5.275,00	283,19	62,41	89,56	62,41
	Maximum	253.626,00	33.987,00	3.705,28	2.528,43	253.626,00
	Std. deviation	61.551,88	6.265,84	874,16	638,88	34.922,55
Turnover (in thousand EUR)	Mean Value	40.272.990,40	6.797.057,95	978.937,05	774.024,65	10.430.096,80
	Median Value	16.522.000,00	2.692.674,00	577.080,00	531.403,50	1.633.496,00
	Minimun	3.997.000,00	391.688,00	66.345,00	65.103,00	65.103,00
	Maximum	159.337.000,00	66.702.000,00	3.804.452,00	3.217.901,00	159.337.000,00
	Std. deviation	40.625.355,34	11.353.483,97	912.720,17	813.369,68	24.008.842,27
Number of employees	Mean Value	132.740,68	24.306,35	4.139,68	2.660,38	35.258,66
	Median Value	79.159,00	11.192,50	1.869,00	1.776,00	6.343,50
	Minimun	14.338,00	1.224,00	116,00	327,00	116,00
	Maximum	501.956,00	249.953,00	20.000,00	11.924,00	501.956,00
	Std. deviation	131.110,06	41.571,14	4.586,01	2.631,69	78.705,62
Leverage (in %)	Mean Value	195,13	211,47	184,22	119,13	181,65
	Median Value	173,81	178,97	162,07	91,43	142,33
	Minimun	74,90	-2,23	5,93	15,86	-2,23
	Maximum	442,42	1.154,40	637,07	667,04	1.154,40
	Std. deviation	97,17	185,63	134,36	123,49	146,98
Return on Equity (in %)	Mean Value	12,36	6,24	6,40	15,29	9,32
	Median Value	12,82	13,38	12,36	12,56	12,74
	Minimun	-12,43	-311,73	-199,47	-12,87	-311,73
	Maximum	33,35	54,37	47,73	104,89	104,89
	Std. deviation	10,50	52,94	37,19	20,16	36,99
Return on Total Capital (in %)	Mean Value	6,67	7,24	5,88	7,60	6,81
	Median Value	6,29	5,89	5,80	7,82	6,59
	Minimun	-0,94	-19,93	-33,63	-4,64	-33,63
	Maximum	20,13	28,19	23,69	15,80	28,19
	Std. deviation	5,02	7,20	9,29	4,49	7,04
Free Float (in %)	Mean Value	76,51	60,80	58,50	68,73	64,81
	Median Value	74,84	59,30	51,81	72,48	67,93
	Minimun	17,18	10,51	14,53	3,20	3,20
	Maximum	100,00	96,22	100,00	100,00	100,00
	Std. deviation	22,83	25,04	24,77	23,91	24,98
Size of the Supervisory Board	Mean Value	16,28	12,58	8,00	7,19	10,88
	Median Value	17,00	12,00	6,00	6,00	12,00
	Minimun	6,00	3,00	3,00	3,00	3,00
	Maximum	20,00	21,00	20,00	14,00	21,00
	Std. deviation	4,18	4,31	4,65	3,53	5,43

With regard to the performance-related characteristics the referred values are ROE and return on total capital. The mean value for ROE for the total sample is 9.32 %. Due to the fact that the median value shows an amount of 12.24 % and thus exceeds the associated mean value, the sample indicates a right-sided distribution. The standard deviation of 36.99 % results predominantly from the large variation in the sub-sample for MDAX-companies (52.94 %) and SDAX-companies (37.19 %). Whereas the values for the return on total capital with a mean of 6.81 %, a median value of 6.59 % and a standard deviation of 7.04 % present a normal distribution.

As last characteristic type the corporate governance-related items are described, which include the free float and the size of the supervisory board. The free float reveals for the total sample a mean of 64.81 % and is only a few smaller than the median value of 67.93 %, so that a normal distribution can be stated. The standard deviation of the total sample of 24.98 % indicates a high similarity of all four indices.

Finally the size of the supervisory board is analyzed, which for the total sample indicates an average of 10.88 members. This value is rated as plausible as the supervisory board of the examined companies consists of a minimum of 3 members and a maximum of 21 members. Furthermore the median for the total sample comprises 12 members. This complies, in comparison to the mean value, a normal distribution. A further tendency shows the decreasing mean values of the size of the supervisory board. They begin in DAX-listed companies with an average of 16.28 and fall up to 7.19 members in TecDAX-listed companies.

After the description of the values of the determinants in the next step the descriptive statistics for the average management board remuneration will be presented. *Table 6* indicates the average amount of the management board remuneration both index-specific and also for the total sample.

Table 6. Overview over the descriptive statistics for the average level of remuneration

	Measure	DAX	MDAX	SDAX	TecDAX	Total Sample
Average level of the remuneration	Mean Value	2.767.299,09	1.447.620,35	770.391,83	870.890,93	1.392.460,57
	Median Value	2.550.500,00	1.259.766,67	683.333,33	754.553,97	1.020.500,00
	Minimun	803.142,86	218.219,50	249.500,00	298.850,00	218.219,50
	Maximum	8.823.311,38	3.400.000,00	2.953.333,33	2.541.251,33	8.823.311,38
	Std. deviation	1.524.795,74	665.016,54	482.199,92	593.483,34	1.118.881,81

An overall consideration of the sample with respect to the average amount of the management board remuneration exhibits a mean value of 1,392,460.57 EUR. The level of remuneration spreads around this mean value with a standard deviation of 1,118,881.81 EUR. The reason for the large spread of the average amount of the management board remuneration becomes clear when the mean values of each index is examined more in detail. Hence, the mean of the average level of remuneration in DAX-listed companies amounts 2,767,299.09 EUR. The value, thus, is 1.9 times higher than the mean value for MDAX-companies, which amounts 1,447,620.35 EUR. Also the mean value in SDAX-listed companies with an amount of 770,391.83 EUR and TecDAX-listed companies with an amount of 870.890,93 EUR is 3.6 times respectively 3.2 times smaller than the mean value in DAX-companies. Moreover there are also differences between the mean values in MDAX- and SDAX-listed corporations. They differ by the factor 1.92 and the factor between MDAX- and TecDAX-companies is 1.7.

3.5. Multivariate regression analysis

The average level of remuneration is transformed by using a root function. The return on total capital, the free float and the size of the supervisory board are not transformed because they already indicate a normal distribution. The balance sheet total, the number of employees and the leverage are approximated via a logarithmic transformation. The turnover and the return on equity are transformed by using a root function.

The regression model is designed as follows:

Average level of remuneration = f (company-related characteristics, performance-related characteristics, corporate governance-related characteristics)

The results of the regression analysis presented below are based on the above described model, using the transformed data. The calculation was carried out by means of the statistics-program "Stata". The results of the regression analysis are summarized in table 7.

Table 7. Results of the regression analysis

Source	SS	df	MS
Model	12116409.9	8	1514551.24
Residual	9153368.25	119	76919.0609
Total	21269778.2	127	167478.568

Number of obs	=	128
F (8, 119)	=	19.69
Prob > F	=	0.0000
R-squared	=	0.5697
Adj R-squared	=	0.5407
Root MSE	=	277.34

Average level of the remuneration	Coef.	Std. Err.	t	P > | t |	[95% Conf.	Interval]
Balance Sheet Total	112.1103	38.58943	2.91	0.004	35.69942	188.5213
Turnover	.0467609	.0213161	2.19	0.030	.0045529	.0889688
Number of employees	38.06559	35.46473	1.07	0.285	-32.15812	108.2893
Leverage	-63.04869	33.89882	-1.86	0.065	-130.1717	4.074356
Return on Equity	23.73442	12.47556	1.90	0.060	-.9684284	48.43727
Return on Total Capital	7.3678	3.807991	1.93	0.055	-.1724033	14.908
Free Float	1.236257	1.00162	1.24	0.219	-.7441638	3.216679
Supervisory Board size	-12.14465	7.688528	-1.58	0.117	-27.3687	3.079404
_cons	27.6943	257.2255	0.11	0.914	-481.6378	537.0264

This results in the following regression function

$$Y = 27{,}6943 + 112{,}1103X_1 + 0{,}4676X_2 + 38{,}0656X_3 - 63{,}0487X_4 + 23{,}7344X_5 + 7{,}3678X_6 + 1{,}2363X_7 - 12{,}1447X_8$$

with

Y – average level of the remuneration
X_1 – balance sheet total
X_2 – turnover
X_3 – number of employees
X_4 – leverage
X_5 – ROE
X_6 – return on total capital
X_7 – free float
X_8 – supervisory board size.

The regression coefficient for each determinant of the company characteristics describes their expected influence on the average level of remuneration. The balance sheet total, the turnover and the number of employees, which are used as indicators for the company size, reveal a regression coefficient of +112.1103; +0.4676 and +38.0656. Thus, they indicate an expected positive impact on the level of remuneration (H1). Even in the case of the leverage, which indicates a regression coefficient of -63.0487, the expected negative impact on the average level of remuneration can be confirmed (H2).

With regard to the performance-related characteristics ROE and the return on total capital indicate a regression coefficient of +23.7344 and +7.3678. Hence, the expected positive impact on the average level of remuneration can be supported (H3). As regards to the corporate governance-related characteristics the identified effect is in opposite to the expected relation. The impact of the free float on the average level of remuneration proves with a coefficient of +1.2363 to be positive, whereas a negative impact has been expected (H4). The size of the supervisory board shows with a coefficient of -12.1447 a negative influence on the average level of remuneration, which contradicts with the expected positive impact (H5).

In order to answer the question if the regression model is significant for the population, additionally the F-test is applied (Backhaus *et al*,. 2011, 78). The probability that none of the coefficients has a significant influence on the dependent variable indicates 0.0000%, so for the population a high significance of the estimated model can be inferred.

3.6. Model assumptions

The regression analysis is based on specific model assumptions. For the implementation of the regression analysis the assumptions are presumed to be fulfilled (Urban, 1982, 150). One of these assumptions implies that the residuals should not be correlated for the population. This appropriates the condition that autocorrelation should be precluded (Cleff, 2008, 171). In general, autocorrelation usually arises in time series. Due to the fact that the present date is not a time series, the condition of an absent autocorrelation is not considered more in detail.

A further assumption of the regression analysis assumes that there is no multicollinearity between the independent variables. Multicollinearity between two independent variables which are examined on one and the same regression model can be observed if one independent variable can be modeled as linear function of another independent variable. Thus, multicollinearity can be captured as degree to which the independent variables used in one

regression model are mutual linearly dependent (Backhaus et al., 2011, 93). One possible method to detect multicollinearity is the correlation matrix (Table 8).

Table 8. Correlation matrix

	Balance Sheet Total	Turnover	Number of employees	Leverage	Return on Equity	Return on Total Capital	Free Float	Supervisory Board size
Balance Sheet Total	1,0000							
Turnover	0,9491	1,0000						
Number of employees	0,8886	0,9097	1,0000					
Leverage	0,4661	0,4596	0,4053	1,0000				
Return on Equity	-0,2341	-0,1652	-0,1952	-0,0348	1,0000			
Return on Total Capital	-0,3895	-0,2880	-0,3215	-0,4192	0,7925	1,0000		
Free Float	0,0099	0,0140	0,0337	0,0637	-0,0913	-0,1214	1,0000	
Supervisory Board size	0,7220	0,7232	0,7818	0,2981	-0,2267	-0,3155	-0,0296	1,0000

The table illustrates that some of the correlation coefficients indicate above-average values. For improved clarity the three highest correlation values in the table are marked with red. Thus, the relation between the balance sheet total and the turnover (0.9491) and between the balance sheet total and the number of employees (0.8886) are characterized by a high correlation. Furthermore the turnover and the number of employees correlate with a high coefficient (0.9097). The emphasized correlation coefficients can be interpreted as a form of multicollinearity. Consequently the both determinants (balance sheet total and turnover) would indicate low additional information for the prediction of the average level of remuneration. Otherwise these determinants form the company-related characteristic company-size, so that it seems as self-explanatory that the strong relationship between these determinants implies a high correlation.

4. Conclusions

The present empirical study of 128 companies in the German Prime Standard for the business year 2011 has examined factors which may have an impact on the amount of management board remuneration. Based on an evaluation of previous research findings and an agency-theoretical foundation, several company-, performance- and corporate governance-related variables and respective hypotheses have been derived (company-size (balance sheet total, turnover, number of employees), leverage, company-performance (ROE and return on total capital), ownership concentration (free float) and size of the supervisory board).

The regression analysis points out the expected impact of the company-related characteristics (H1, H2). With regard to the company-size (H1) both the balance sheet total and the turnover have a significant positive impact. In contrast, the number of employees reveals a positive but insignificant character. In view to the leverage (H2) the expected negative relationship and its significance can be confirmed. On the other hand the performance-related characteristics (H3), which include ROE and return on total capital, indicate a significant positive impact on the average level of remuneration and confirm the expected effect. However the corporate governance-related characteristics (H4, H5) have no significant impact on management board compensation.

In summary the balance sheet total and the turnover indicate, in accordance to former German studies, a strong positive impact on the level of remuneration. The management board in large companies is confronted with higher requirements and a higher corporate complexity. This leads to a higher responsibility as well as performance pressure and thus is compensated with an increased management salary. Negative effect of leverage on the amount of management remuneration (H2) can be explained by the fact that investors reduce the agency costs by additional monitoring activities. Contrary to the majority of the perceptions of performance-related characteristics, which indicate no impact on the level of remuneration, a significant positive relationship has been identified. Thus, the assumption that the amount of the management board compensation develops parallel to the company performance can be confirmed and the incentive based remuneration proves to be effective.

The corporate governance-related characteristics (ownership concentration and size of the supervisory board), however, indicate no impact on management remuneration. The majority of the empirical studies describe a negative impact of the ownership concentration on the level of remuneration, whereas the size of the supervisory board offers a heterogeneous picture. Due to the fact that previous investigations focus on company-related characteristics, corporate governance-related characteristics remain in the background. This further development is essential because the

country specific corporate governance indicates a considerable impact on the amount and the structure of the management board salary and insofar empirical founded comparative law studies with the present database are only possible with reservation. For future research it would be interesting, to analyze both, the executive board and the supervisory board and compare the results with studies from countries with a monistic governance system.

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РАЗДЕЛ 2
КОРПОРАТИВНОЕ УПРАВЛЕНИЕ И СОВЕТ ДИРЕКТОРОВ

SECTION 2
CORPORATE GOVERNANCE AND BOARD ISSUES

SHAREHOLDER TYPES, THEIR CONCENTRATION AND ITS EFFECTS ON DEMUTUALIZED EXCHANGES' OPERATING AND FINANCIAL RESULTS - AN EMPIRICAL STUDY

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Abstract

Scholars are divided over whether listing the shares of stock exchanges improves their financial performance. Applying simple OLS regressions, I test the hypothesis that exchanges' post-IPO owners are value maximizers. However, recently demutualized exchanges have a high proportion of shareholders with conflicts of interest. Therefore, I also test whether different types of shareholders have different effects on performance. I find that investment managers behave like true value maximizers. The results also show that a higher fragmentation of share ownership is associated with lower performance. The proportion of brokers, who are the most conflicted shareholders in exchanges (since they are large customers as well as owners), is too small to have a measurable effect on performance. Most interestingly I find, by way of an inductive approach to shareholding structure, that strategic shareholders, a wide array of investors with various agendas, are on balance detrimental to shareholder value. This chapter is the first in a trilogy of articles that make up my Ph.D. dissertation. It is followed by an in-depth study of the shareholding structure of individual stock exchanges, notably in order to understand more clearly who these strategic investors are and what effects they have on exchanges.

Keywords: Corporate Governance, Agency Theory, Stock Exchanges, Conflict Of Interest

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1. Introduction

Since the mid-1990s financial exchanges have witnessed major changes in their operating environment. The most important of these include fast-paced technological advances; significant modifications of their legal and regulatory environments; massive entry of new competitors; major shifts in trading patterns in parallel with exponential growth in trading volumes; and strong pressure from customers to reduce trading costs. These developments have induced equally massive changes in the way exchanges are organized and managed, as well as major shifts in their ownership structure, requiring significant modifications in corporate governance.

Over the last 20 years in developed countries most exchanges, which had been structured as cooperatives or user-owned entities since their creation decades - or centuries - earlier, demutualized and adopted corporate structures more in line with those of financial institutions such

as commercial or investment banks. One share-one vote replaced one member-one vote and distribution of dividends replaced the previous, non-profit, norm. Among the exchanges that demutualized, majorities also listed their own shares on their exchange and, in the process, were forced to implement (with various degrees of success) the standards of transparency and governance that they used to impose on their listed customers.

2.Literature Review

2.1 Determinants of exchange ownership

Bradley (2001) traces the origins of mutuals to medieval guilds in northern Europe, which were member associations. Each guild represented a profession and they were originally linked to the boroughs in which they were established. As such, they were part of a public authority. Later, when they separated from the boroughs they came to be seen as private-sector entities.

She draws a parallel with insurance companies in the US, which began originally as stock companies and converted into mutual at the beginning of the 20th century after scandals at many life insurers. In sum, Bradley concludes, the "mutual business form was a vehicle that could promote the trust of those who might deal with the firm".

The New York Stock Exchange, for example, was created on May 17, 1792, when 24 brokers signed the Buttonwood Agreement under a buttonwood tree outside 68 Wall Street. The agreement had two main provisions: the first was a commitment by the brokers to trade with each other, thus eliminating outside competition; the second set a minimum commission of 0.25% on every trade. By agreeing to trade exclusively with each other the brokers were automatically committing themselves to meeting regularly under the same roof to conduct their business. This required that the brokers share the cost of the required premises - in this case the Tontine Coffee House on the corner of Wall Street and Water Street, according to Sobel (2000). This situation automatically turned the brokers into joint owners as well as joint users of what later became the NYSE.

According to Stringham (2002) the London Stock Exchange had similar beginnings. After meeting informally in various locations (mainly coffee houses) to trade financial instruments in the 16th and 17th centuries, and after being banned from the Royal Exchange (a formal market for tradespeople from different trades, including grocers and cloth merchants), a group of 150 brokers formed a club and opened a new and more formal "Stock Exchange" in Sweeting's Alley in the City of London in 1773. They charged an entrance fee for traders who wished to enter and trade securities.

The Amsterdam Stock Exchange, which claims to be the world's oldest organized exchange and is now part of NYSE Euronext Group, also had a very similar early history. "The Amsterdam Stock Exchange Association (Vereniging voor de Effectenhandel) was founded in 1851 to organize and regulate share trading in the Netherlands. Only members of this association were allowed to trade directly on the stock exchange." [21]

There are two main motivations, and several lesser ones, why the user-owned structure made sense. The main ones are: (i) the ability to apply monopoly pricing and extract economic rents as a result; and (ii) self-regulation and fraud prevention.

1) **Monopoly Pricing and extracting economic rents.** Exchange members' efforts to secure economic rents through cartel behavior are well documented. In line with other monopolistic activities, including many utilities, concessions, or licenses to exploit natural resources, there are two straightforward tools to maximize revenues: (a) by fixing prices; and (b) by restricting access to their club. Both (a) and (b) are accurately described by (Krueger 1974; Von Mises 1998), and Kahana and Katz (1990), among many others, and are well illustrated by the Buttonwood Agreement of 1792, which created what later became the NYSE. In effect, the agreement contained two clauses: the first was a minimum commission of 0.25% on all trades (a perfect example of point (a)). Point (b) is enshrined in the second clause of the agreement, in which the original 24 signatories pledge to trade exclusively with each other.

These attributes of mutuals have long been viewed with suspicion by outsiders, and became a focal point of the criticism that ultimately led to the demise of this type of organizational structure.

"Floor trading enables increases in the value of franchise for the exchange members.

Due to lack of transparency and absence of competition from remote liquidity providers, members can extract bigger rents from their clients," say (Jain and Jain 2009). The opacity resulting from the closed circle of floor traders has also made it possible for members to resort to front running - executing trades for their own account before executing a large client order that they know to be large enough to move the market price. The authors refer to several occasions when the NYSE penalized specialists for such unethical practices. In sum, these monopolistic powers enhance the value of existing assets for exchange members in the floor-trading environment.

Pirrong (1999) also highlights the nefarious effects of closed membership: because existing

[21] NYSE website at http://www.nyx.com/en/who-we-are/history/amsterdam

members can restrict the number of new members allowed to join an exchange, they deliberately reduce competition. This generates economic rents for them. "Under plausible conditions, exchanges have enough members to make it unprofitable for competing exchanges to form, but fewer members than is socially optimal," he says.

2) **Self-regulation and fraud prevention.** One of the most valuable assets of an exchange is reputation, as final investors are reluctant to trade on a marketplace where they are exposed to the risk of fraud or bad execution. Jackson (2004) describes reputational capital as "the most valuable asset, the most powerful force behind your business".

Bradley (2001) explains how this applies to exchanges through self regulation. She says the regulation of financial exchanges is based on the idea that investors will only trade financial instruments in markets that work properly, are not rife with fraud, have accurate and readily available price information, and in which trading, clearing, and settlement are efficient. "Because exchanges are an important element in the capital formation process, they must be seen to be clean," she says.

Hannah (2007) also emphasizes this point. Agreeing with Sylla and Smith (1995), he says Britain's more stringent disclosure requirements in the early 20th century help explain why its stock exchange was at least 50% larger than the US's, a country whose economy was twice as big.

Michie (1998) makes a similar point: "in addition to providing a location for buyers and sellers to meet, the main function of an exchange was to lay out rules to prevent fraud, misconduct or dangerous risk-taking." This notion is self-evident, because as an exchange's reputation improves more investors are attracted, bolstering revenues for the exchange's owners and thus increasing its value.

The realization that reputation was a valuable asset dates back to the very early days of exchanges, as do members' efforts to maintain control of the regulatory function. Stringham (2002) reports that attempts by the British government to regulate financial trading was one of the main reasons that led financial brokers to leave the Royal Exchange in 1698 and start trading in coffee-houses, Jonathan's Coffee-house in Exchange Alley being the most notorious. It was also during this period that the brokers started actively rooting out unreliable or dishonest intermediaries. Stringham (2002) says that initially, the only punishment for fraud or defaulting on a trade was banishment from the coffee house. But when the British law courts ruled that coffee houses were public places and owners were not allowed to restrict entry, the traders resorted to writing the names of disreputable or defaulting traders on the wall so that newcomers could avoid them.

There is an ongoing debate as to whether self-regulation leads to stricter rules and enforcement (as members seek to enhance the exchange's reputation), or looser oversight (as members seek to maximize the number of transactions, even if this means turning a blind eye to dodgy trades). The two opposite views are clearly summed up by Cary (1963) and Pirrong (1995). William Cary, a former chairman of the SEC, argues that exchanges are allowed to regulate themselves not because the government does not wish to fulfill this role but rather because market forces provide an incentive for exchanges to take this responsibility seriously and to apply it strictly. Furthermore, he says, self-regulation is not absolute, and the SEC remains the ultimate overseer of the self-regulatory institutions. Pirrong, meanwhile, argues that because competition among exchanges is not absolute, the punishment for weak standards (loss of confidence in the exchange leading to falling activity) is not immediate. Examining 10 exchanges in the US, he says they take "few, if any, measures to curb manipulation". This view was bolsetered by Michael Lewsis's recent allegations that demutualized exchanges have facilitated front-running by high-frequency traders, notably by renting them computer space within their facilities, which allows them to execute trades faster than final investors who transmit their trades through conventional brokers' networks. This issue is also mentioned on pages 31 and 197). Sylla (2007) also argues in favor of outside regulation. He says the view that market forces lead important information to become public does not hold historically, because people with access to information that could be used to make money have strong incentives to keep the information to themselves.

The case against self-regulation, against the backdrop of increasing competition and the race for profits, seems to be gaining ground. Aggarwal, Ferrell and Katz (2006) highlight contradictions in the arguments put forward by proponents of self-regulation. In order to justify it when exchanges were owned by their members, they insisted that the task of regulating market operations was best entrusted to people who are "close to the market". But when questioned about the potential conflicts of interest brought about by demutualization, the same exchange executives now argue that these can be handled by appointing independent directors, who are not too close to the market. Macey and O'Hara (2005) also question the compatibility of profit-seeking behavior with a regulatory role that can upset potential customers. They argue that due to intensifying competition for listings exchanges can no longer be trusted to vet whether companies are fit to offer their shares to outside shareholders, especially retail investors. Oversight of the listing function, they say, should therefore be taken away from exchanges and transferred to the SEC.

Mutually owned exchanges go hand in hand with floor trading, owing to the technological environment of the period (16th-18th centuries), which favored face-to- face trading among people who knew each other. In order to exclude outsiders and decide who could participate, members had to own the premises. And in order to generate the cash necessary for the building and maintenance of the facilities, owners had to generate generous economic rents. The most propitious structure to achieve these interlinked objectives was thus the mutual (or cooperative) structure. The other advantages induced by this choice of governance include:

3) Network effect. The term "network effect" was officially coined in the early 20th century by Theodore Vail, president of Bell Telephone, to justify the creation of a monopoly for telecommunications, but the effect itself was known well before that. It refers to the fact that the value of some activities is directly (or exponentially) related to the number of participants in that activity. One telephone, for example, is useless. But when two people are equipped with telephones, value is created because the two units can communicate. The network effect was further formalized in the 1980s and 1990s as Metcalfe's Law (named after Robert Metcalfe, a senior information technology executive), which states that the value of a network is proportional to the square of the number of connected users. The same logic applies to financial trading: one trader by himself cannot conduct business. Two traders in contact with each other can trade if their needs coincide: that is, if the security that one trader wants to sell is the same that the other wants to buy. Adding traders under the same roof increases the chances of finding a matching need among the crowd, and having access to this pool of traders had value. "Non-members naturally wished to benefit from the network externalities of concentrated trading activity (commonly referred to as "liquidity") and therefore paid members to represent their buy and sell orders on the exchange floor." (Steil 2002).

Hart and Moore (1996) call it the agglomeration effect: "Perhaps above all, the key asset of an exchange is market depth: the fact that traders know that they can deal with many other traders at the exchange (i.e. there is an agglomeration effect)."

4) **Communication.** Price formation requires that traders have access to as much information as possible about the product they are trading. In the absence of telecommunications the best way to ensure the dissemination of such information was physical proximity. According to Michie (1988), arbitrage was taking place in the 1860s between the NYSE and rival exchanges set up in nearby hotel rooms, with non-NYSE members trying to gain market insight by listening at the doors of the official exchange before running to an informal exchange to execute their trades. The value of communication is highlighted by all the early attempts by outsiders to create parallel markets: the curb outside the NYSE in New York, or the Coulisse in Paris.

5) **Transaction costs and economies of scale**. Economies of scale are well documented, especially in microeconomic literature. From Smith (1776) to Chandler (1977), the notion that the average cost of a product falls if total costs are divided by larger number of units produced is well known. Applied to exchanges, it is obvious that as the number of transactions executed in a single location increases, transaction costs (both average costs and marginal costs) decrease. In the case of trades on an exchange, Pirrong (1999) believes that reducing transaction costs was the main motivation for the formation of exchanges. "Spatial and temporal concentration of trade on an exchange reduces search costs incurred to find counterparties," he explains.

6) **Regional or cultural motivations.** Governance regimes also seem to be driven by regional or cultural preferences. Ramos (2006) finds that exchanges in South America are mostly organized as associations, while governmental and member stock exchanges are found primarily in the Middle East. Most demutualized and publicly listed exchanges are found in western Europe and north America. The structure and governance of exchanges, she says, is heavily influenced by the level of economic freedom and the degree of liberalization of capital market controls. She also finds that democracy is an important catalyst of demutualization and going public. "This is consistent with (Rajan and Zingales 2003) view that in democracy incumbents are less able to protect their monopolies and to impose restrictions on competition."

It is important to distinguish between factors (1) and (2), and the others. The pros and cons of monopolies, cartels and economic activities with asymmetric rights (or information) are still being debated, academically and among professionals, legislators and politicians. These debates tackle issues of fairness, efficiency and productivity that are still very relevant today, with many questions remaining unanswered.

Reason (4) belongs to the field of politics and falls outside the scope of financial research, at least under the approach adopted for this dissertation. (Because I focus on corporate governance with a particular emphasis on shareholder behavior, my main sample consists of companies operating in an economic environment that allows free trading of shares unimpeded by political interference). Meanwhile, factors (3) to (5) were mainly the result of the state of technological advancement of

the period, and were thus destined to be gradually eroded.

The demise of open outcry trading on derivatives exchanges is a case in point. Between 1990 and 1997, London-based Liffe was the only exchange to dominate trading in a foreign benchmark futures contract. Futures on 10-year Bunds (German government bonds) were then simultaneously traded on Liffe's open outcry floor and on the all-electronic Frankfurt exchange, DTB (the derivatives arm of Deutsche Boerse).

Since domestic exchanges have a natural advantage over foreign competitors in the trading of their national financial products, Liffe's dominance in Bund-futures trading was widely interpreted as proof of the superiority of open outcry over electronic trading. Locals (the equivalent of "specialists" on the NYSE) were an influential group of Liffe members who trade for their own account and provide market depth. They were actively lobbying against the introduction of electronic trading on the exchange, arguing that the technology available at the time could not offer the same liquidity as human interaction. Their main argument was that multi-tasking (the ability to analyze several factors at once) was more important than pure processing power or speed of execution in the matching of buy and sell orders. Humans, they insisted, were capable of multi-tasking while computers, no matter how fast or powerful, were not. Locals were influential enough, and their arguments sufficiently convincing, to freeze Liffe's management into inaction. Floor trading was maintained at Liffe in spite of rising evidence that electronic trading was gaining ground on exchanges around the world. Liffe even had plans to expand its trading floors. (Luce and Iskandar, 1997)[22]

The City of London was stunned in the second half of 1997, when DTB's 10-year Bund futures overtook Liffe's rival contract in terms of trading volumes. This incident led to a major overhaul of Liffe's management, culminating in the resignation of the chairman and the CEO in early 1998. The incoming managerial team immediately announced the jettisoning of the new trading floor project and pledged to make major investments in a new electronic platform. (Luce and Iskandar, 1998)[23]

Competition, organizational changes and technological advances are all interlinked, and play a defining role in the decision to demutualize, as we shall see in the following section.

Drivers of demutualization

The mutual structure served exchanges well for almost two centuries. It was an obvious choice as long as market participants were not too numerous, and were of roughly equal size (in terms of their inputs and benefits derived from the exchange).

However, as Jensen and Meckling (1976) point out, agency costs exist in "any situation involving cooperative effort between two or more people even though there is no clear-cut principal-agent relationship... It exists in all organizations and in all cooperative efforts ... in universities, in mutual companies, in cooperatives, in governmental authorities and bureaus, in unions."

In a mutual or cooperative, agency costs become noticeable when the institution reaches a certain size, requiring the hiring of professional managers. Clearly, agency costs were not an issue for the signatories of the Buttonwood Agreement, but equally clearly the principal-agent issue had become a problem by the time Richard Grasso retired as CEO from the NYSE in 2003 (as will become clear in the following pages).

Demutualization was at least in part attributable to rising agency costs, as well as to other governance, strategic, competitive and technology-related issues. The recent wave of demutualizations was kicked off in 1993 by the Stockholm Stock Exchange. Several others soon followed, including the Helsinki Stock Exchange in 1995, the Copenhagen Exchange in 1996, the Amsterdam Exchange in 1997, the Australian Exchange and Borsa Italiana in 1998, and the Toronto, Hong Kong and London Stock Exchange in 2000. In 2005, about 60% of the World Federation of Exchanges' (WFE) members were either demutualized or listed.[24]

It is still an open question whether exchanges, which are considered strategic industries in many countries, undergo a mutation in their governance structure for the same reasons that other activities do, or if this latest wave of exchange demutualizations and IPOs was prompted by developments affecting their sector specifically.

Bradley (2001) draws a parallel between exchange demutualizations and those of other industries (notably insurance). "Exchanges demutualize for reasons similar to those identified by other types of mutual firms." She singles out three main arguments for demutualization: subjecting the firm to the discipline of the marketplace; facilitating the raising of capital; and allowing diversification into areas for which the mutual structure is not adapted.

This view is corroborated by the exchanges themselves, in their regulatory filings and declarations by senior executives when announcing their demutualization plans. The CME, which demutualized in 2000 and listed on NYSE in 2002, identified five major objectives for its

[22] Luce, Edward and Samer Iskandar. Liffe or death struggle. *Financial Times,* September 19, 1997

[23] Luce, Edward and Samer Iskandar. Barrow boys in cyberspace. *Financial Times.* March 14, 1998

[24] World Federation of Exchanges. *Cost and Revenue Survey 2005.* Published 2006

demutualization: adopting a governance and managerial structure that could respond quickly to competition; a business model aimed at creating shareholder value; the ability to expand into new business activities; allowing members to cash in on the value embedded in their membership; and facilitating mergers and acquisitions.[25] The Toronto Stock Exchange said that becoming a for-profit business would make it more competitive, more entrepreneurial, and more customer-focused.

These stated motivations are summed up in a survey of exchanges conducted by BTA Consulting and quoted by Scullion (2001) and Serifsoy (2008): according to the survey, the main drivers of (and expected benefits from) demutualization are: (1) to raise capital to modernize their trading systems; (2) to reduce the constrains imposed by vested interests; (3) to control costs; and (4) to increase flexibility, efficiency and competitiveness.

Ramos (2006) and Morsy (2010) conducted in-depth analyses of the process of exchange demutualization, using different methodologies. Ramos tested six hypotheses derived from various parts of financial and management literature, while Morsy adopted a theoretical approach to test whether the different aspects of the Theory of the Firm (Transaction Costs; Property Rights; Behavioral Theory; Agency Theory; and Resource-Based and Dynamic Capabilities) could explain demutualization decisions.

Ramos validates the hypothesis that demutualiziation and going public are responses to rising competition between exchanges. She also finds evidence that gaining the ability to merge or make acquisitions is a motivation for demutualizing and going public. "As mergers are an important instrument in enhancing liquidity, we interpret this as an additional signal of stock exchange competition," she explains. Ramos also validates her hypothesis that exchanges restructure internally prior to going public.

Interestingly, some of Ramos's findings contradict the parallel that Bradley draws between exchanges and other institutions. "Stock exchanges seem to have different reasons from the ones that have been theoretically argued and empirically found for 'common' firms," she writes. Fixed costs, adverse selection costs and liquidity costs are among the factors regularly identified in the literature as drivers of demutualization. But Ramos does not find evidence that they played a role in exchanges' decision to list their shares. She also fails to find evidence that stock exchanges go public to enhance their reputation.

In her theoretical approach relying on the Theory of the Firm, Morsy (2010) also reaches contrasting conclusions. The Transaction Costs Theory, she claims, provides a good explanation for demutualization. The move to electronic trading, Morsy says, has undermined two of the main arguments used by advocates of mutual: price determination and the risk of market manipulation. "The new changes in today's competitive environment, that resulted from the introduction of new electronic systems have led to lower costs of trading for investors, allowed for better price determination, and lowered the chance for market manipulation - that existed under the mutual structure of stock exchanges." Recent advances in technology have also facilitated cross border trading and over time the development of inter-market trading systems (Claessens, Djankov and Nenova 2000). Therefore the shift towards demutualization of stock exchanges became a natural response to technological progress, when the mutual structure became less appealing and more costly for investors.

Similarly, Morsy finds that the Property Rights theory provides a good explanation for demutualization. Because user-owners benefiting from quasi- monopolistic rents are reluctant to jeopardize their privileges, they are inclined to resist any modernization that threatens to loosen their control over the exchange. Eventually, this situation reduces the value of the exchange, as it loses competitiveness and market share. Ultimately, this opportunity cost becomes too burdensome, and pressure to demutualize (in order to increase the value of the exchange for its owners) builds up.

The filter of Behavioral Theory leads to similar results. Morsy explains that as the competitive environment changes, the mutual or cooperative structure of the stock exchange loses its appeal. "The investor-stock exchange relationship has changed to seek better liquidity and services. Members' interests become increasingly divergent and the benefits of the cooperative structure become greatly reduced".

Agency Theory is arguably the most relevant filter in this particular situation. This is because demutualization entails a wholesale shake-up of the entire principal/agent relation. Demutualization brings in profit-seeking outside owners, as well as new professional managers who are separate from the previous owners-cum- customers (mutual owners or members). Therefore, referring to Jensen and Meckling (1976), (Fama and Jensen 1983; Fama 1980), and Elliott (2002), Morsy finds that demutualization is widely beneficial to all stakeholders, because it promises higher profits, more transparency, better management and, overall, increased value for owners and a better proposition for most users (with the exception of the floor brokers who end up losing their economic rents).

One motivation that is harder to document but cannot be discounted is that breaking the hold of

[25] Source: http://www.cmegroup.com/company/history/

the insiders was seen as a desirable end in itself. There is ample evidence that many outsiders (regulators, banks, asset managers, foreign institutions, final investors, and even the managers of exchanges) found the situation counter-productive.

As Richard Grasso, the former chairman and CEO of the NYSE, put it: "[Members] realize economic value from their right to trade on the NYSE floor." The diversity of interests of members "is a continual source of tension and conflict. At times it leads to careful deliberations and consensual judgment. All too often it can lead to cumbersome decision-making and strategic gridlock."[26]

Lee (2010) makes a similar argument. He points out that the direct users of an exchange benefit from inefficiencies in its operation, while the costs of these inefficiencies are borne by end-users. A key example, he says in (Lee 1996), is how traders on the floors of exchanges frequently seek to "protect their position by resisting automation, which typically brings lower trading costs but eliminates the profits of floor traders".

Domowitz and Steil (1999) also find that under the mutual ownership structure, members may resist innovations that enhance the value of the exchange in case this innovation threatens the demand on their intermediation services. Revisiting the subject later, Steil (2002) reiterates his earlier findings. Because members are the entrance point to the exchange, they derive their profits from their role as intermediaries. "They can therefore be expected to resist both technological and institutional innovations which serve to reduce demand for their intermediation services, even where such innovations would increase the economic value of the exchange itself. If the members are actually owners of the exchange, they will logically exercise their powers to block disintermediation." (Steil, 2002)

Michie (1998) also emphasizes members' role as self-regulators, which becomes a source of conflict of interest: "This role as writer and enforcer of the rules led the members of exchanges to use these same rules to safeguard their monopoly."

Concerning competition as a source of pressure for demutualization, it is important to distinguish between exogenous and endogenous competition. Endogenous competition, which I have analyzed in detail above, is defined as competition between existing exchanges, while exogenous competition is due to new entrants.

Ramos introduces a different type of competition: exchanges first compete for listings, but also now compete for traders. Pirrong (1999) gets into more detailed analysis of competition. He says the attitude of the large international financial institutions, which can be members or end-users putting their trades through members, depends on how internationally active they are. Institutions that can trade on several rival exchanges are less inclined to maintain the status quo if an exchange becomes less competitive than another exchange to which they have access.

In addition to competition between exchanges (endogenous) legislation enabling new entrants to launch trading venues has introduced exogenous competition (that is, other institutions providing services that compete with the main functions provided by exchanges).

There are three main reasons for the rise of exogenous competition in western economies. In the US, the 1998 SEC Regulation of Exchanges and Alternative Trading Systems Act[27] (Reg ATS) officially recognized the role of electronic trading networks that had already started competing with exchanges. It was followed in 2007 by Reg NMS, which aimed to establish a level playing field for competition between exchanges and the newcomers. In the EU, two major pieces of legislation led to an overhaul of the competitive environment: the Investment Services Directive of 1993 (ISD)[ix] and the Market in Financial Instruments Directive of 2007 (Mifid). The first created the European passport, allowing financial institutions approved by regulators in one EU country to operate in all EU member states. Mifid broke the monopoly of national exchanges and allowed the creation of alternative trading venues, including ECNs, dark pools and internalized trading, among others.

Aggarwal (2002) says the situation boils down to two main forces driving stock exchanges to demutualize - increased global competition and advances in technology - and finds that these two factors are mutually reinforcing.

Summing up, at the risk of oversimplifying:

- Derivatives exchanges were under more intense competitive pressure than cash exchanges, because they never had a monopoly on the products they listed. Liffe and DTB were in direct competition on European interest rate futures and options. When electronic trading gave DTB a decisive competitive advantage, Liffe was forced into shifting to electronic trading. This required substantial investments, which in turn led to the sale of the entire exchange to Euronext.
- Stock exchanges were challenged by lower-cost new entrants when legislation ended their monopoly on trading in domestic shares. The

[26] Grasso, Richard, A. *Public ownership of the US stock markets.* Testimony before the US Senate Committee on Banking, Housing and Urban Affairs. US Senate, September 28, 1999.

[27] Full text at https://www.sec.gov/rules/final/34-40760.txt

legislative and regulatory changes also allowed them to start competing with each other. This led to mergers between the national exchanges (sometimes preceded by demutualization and/or and IPO).

Effects of demutualization

By 2010 an overwhelming majority of exchanges in the developed world had demutualized, and a substantial proportion of them had listed their own shares. Not all of these exchanges, however, followed the logical route: change of legal structure (from mutual to corporation or limited company), followed by allowing non-members to own shares, followed by an IPO. Notorious examples include the Paris, Amsterdam and Brussels exchanges, which merged into Euronext before listing (the Paris Bourse was thus temporarily a demutualized exchange in the 1990s, but with no outside shareholders before the three-way merger). NYSE also never really went through the process of demutualizing. After several attempts (starting in 1999) were blocked by members [see (Fleckner 2006)], the exchange finally acquired publicly-listed Archipelago (an electronic exchange created in the 1990s) in a reverse merger in 2006, and the merged entity (NYSE Group) became listed as a result of the deal.[x] NYSE Group then merged with Euronext a year later to form NYSE Euronext. Borsa Italiana also never conducted an IPO. After going through the legal process of demutualization in but still owned and operated by a consortium of banks that were its previous user-members, it was acquired by the London Stock Exchange in October 2007 in an allshare takeover.[28]

The effects of the unprecedented wave of demutulizations that has taken place since the early 1990s have been observed in many areas, both intrinsic and extrinsic to the companies that operate the exchanges. The extrinsic areas include: regulation, market liquidity, and the cost of capital of listed companies. The intrinsic areas, on which this dissertation will focus more specifically, include: corporate strategy, financial and operating performance, ownership and governance.

- Strategy

Among the stated objectives of demutualizing exchanges, two aims figure prominently: the ability to acquire or merge with other exchanges and the ability to venture into new activities.

Morsy and Rwegasira (2010) find that demutualized/for-profit stock exchanges that are owned by profit-seeking investors are more likely than mutuals to seek innovative ideas and processes in order to grow their business, and are also more careful in seeking cheap, efficient sources of financing. Demutualized exchanges have extensively used these newly found abilities. A number of mergers have been successfully completed, and many attempts were blocked or failed. OMX/Nasdaq, LSE/Borsa Italiana and NYSE/Euronext belong to the first group; Nasdaq/LSE, LSE/TMX (Toronto), NYSE Euronext/Deutsche Boerse and Singapore/Australia (as well as many other attempted combinations) to the second. However, there is little evidence that such mergers have created value, and many academic studies raise concerns that acquisitions were overpriced.

Examples of successful diversification by listed exchanges include NYSE Group: the reverse merger with Archipelago introduced electronic trading to the venerable Wall Street institution, and the subsequent merger with Euronext made it the second largest derivatives exchange operator in Europe. In 2012 the NYSE Euronext group also unveiled plans to create a major clearing operation for derivatives in London. Similarly Deutsche Boerse has in the past decade and a half created the most fully integrated financial exchange operator in the world, with activities ranging from cash and derivatives trading to information technology to clearing and settlement through its Clearstream subsidiary.

However, it can be argued that demutualization is not a prerequisite for strategic moves, such as mergers. There are many examples of exchanges merging before demutualizing or going public. In Australia the leading exchange, ASX, is a result of the merger of six regional exchanges (Sydney, Melbourne, Brisbane, Adelaide, Perth and Launceston) in 1987, followed by demutualization in 1996 and an IPO in 1998. The Paris Bourse, before its demutualization and three-way merger to create Euronext in 2000, was itself the result of the gradual absorption of small exchanges in Lille, Lyon and Marseille by Paris (the largest exchange among them). Euronext then had an IPO in 2001. The successive operations are outlined by Raulot (2007). In Japan in July 2012, the Tokyo Stock Exchange (the country's main cash market for equities) and the Osaka Securities Exchange (the dominant derivatives exchange), announced plans to merge. The resulting entity was due to become operational in January 2013, under the name Japan Exchange Group. Again, although the OSE is demutualized and listed, the Tokyo Stock Exchange was never demutualized.[29]

But once listed, and with easier access to additional capital through secondary offerings if needed, exchanges have paid handsome prices for

[28] *SEC Historical Society.* The Institution of Experience: Self-Regulatory Organizations in the Securities Industry, 1792-2010. Available at http://www.sechistorical.org/museum/galleries/sro/sro06c.php

[29] Iwamoto, Masaki and Hasegawa, Toshiro. *Tokyo Exchange Merges with Osaka to Form World's No. 3.* Bloomberg. July 15, 2013

acquisitions. Euronext was widely criticized in 2001 when it paid £550million to acquire Liffe (it increased its bid unilaterally at the last minute after submitting a first closed-envelope offer at £500m. The two other bidders, LSE and Deutsche Boerse, had made offers in the region of £350million-£400 million, so in effect Euronext ended up outbidding itself.[30] Polato and Floreani (2009) analyzed the NYSE bid for Euronext and the LSE's acquisition of Borsa Italiana, and came to the conclusion that both acquisition prices were hefty. Based on multiples of other exchanges, they estimated a standalone value for Euronext ranging from €59.5 to €61.2 per share, and €55 to €67 for Borsa Italiana. Euronext shares were trading at around €60 a share immediately prior to the announcement (Borsa Italiana was not listed). NYSE's offer valued Euronext at €93.06 per share and LSE paid €100 per share for Borsa Italiana. The authors offer two explanations for this. First, they point out that a large number of exchange mergers and acquisitions took place between 2002 and 2007, a strong bull market during which share trading was rising exceptionally fast; and this could have led exchange executives to overestimate future growth prospects. Second, the exchanges were facing intense competitive pressures, which might have resulted in what could be deemed rash behavior with hindsight. The bullish argument was confirmed by an executive director of NYSE Euronext. The executive said the NYSE board was surprised by the deterioration in the group's European performance between 2006 (when the merger was agreed) and 2012 (when ICE approached NYSE about a potential acquisition). The board realized that in NYSE's future growth projections, it had assumed that growth rates from 2000-206 would continue at the same rate for years to come. "Although Mifid was being written in Brussels, no-one thought it was relevant to anticipate that Euronext's monopoly was going to disappear and that future trading volumes would be shared with newcomers in the industry."[31]

It is important to remember that Mifid, the EU directive breaking up national exchanges' monopoly, was implemented in November 2007. Chi-X, the first pan- European alternative trading platform for equities, was launched in 2007 as soon as Mifid made it possible, and just weeks after the October 2007 LSE/Borsa Italiana deal. As Polato and Floreani (2009) point out, "the value of trading on Borsa Italiana was €74.6 billion in July 2008 whereas that on Chi-X was €73,5 billion. In March 2009 those figures were €45.9 billion and €57.1 billion respectively".

Thus, in the months following Mifid, not only did absolute trading volumes decline on Borsa Italiana, but it was overtaken in terms of activity by a new-starter less than 18 months old. The authors believe that "at the time of LSE-Borsa Italiana merger the magnitude of competitive pressure was, probably, not fully understood, leading to valuations overestimating exchange values." This view corroborates the opinion expressed by the NYSE Euronext executive director in 2013. "Projections of future revenue growth were extrapolated on a straight-line basis from previous years," the executive said.[32] The importance of Mifid and other market-liberalizing measures has been mentioned and will be revisited in more detail in Part IV of this dissertation.

The other main strategic consideration put forward by exchanges to justify their demutualizations and listings was the ability to expand into new business areas, or diversify. Here again, there are two ways to diversify: horizontally (expanding into new business or geographical areas) or vertically (developing upstream or downstream from one's main activity). The NYSE/Euronext combination illustrates horizontal expansion: it added European cash equity trading and derivatives trading to NYSE's activities. Nasdaq/OMX/Dubai is also a good illustration of horizontal expansion through geographical diversification. Deutsche Boerse is the best example of vertical integration: to complement its cash and derivatives exchanges, it owns clearing and settlement operations to handle post-trading, and earns revenues from selling trading technology and market information.

The pros and cons of vertical vs. horizontal integration, as well as those of focus vs. diversification, are still being debated and deserve closer study. However, a consensus is emerging over the "horses for courses" theory, where some strategic set-ups outperform others in different market environments, and vice versa. It is generally agreed, for example, that since derivatives and cash trading are countercyclical to each other, companies that operate both types of exchanges tend to suffer less during bear markets, when the inevitable decline in equity trading is compensated by a rise in demand for derivatives. Meanwhile, more focused stock exchanges would be expected to outperform in a bull market, and conversely pure derivatives exchanges would outperform in bear markets as investors resort to futures and options for hedging purposes.

These expectations are partly corroborated by Serifsoy (2008), who finds that "horizontally integrated exchanges possess a lower productivity value than cash markets-only operators". However, he also finds "evidence that fully integrated exchanges have a better performance than cash

[30] Interview with investment banker who advised Euronext on the deal

[31] NYSE Euronext executive director in a private conversation in November 2013

[32] NYSE Euronext executive director in a private conversation in November 2013

markets-only venues," although this latter finding could be biased by the importance of Deutsche Boerse, the most fully integrated market which also happens to be one of the most profitable. Serifsoy (2008) concludes by taking "a rather cautious stance regarding conclusions on the comparative performance of business models".

- Financial and operating performance.

Several scholars have examined the financial performance of demutualized exchanges. While most of the literature concurs that there has been an improvement in the operating and financial performance of the demutualized entities, there is no general consensus on whether the improvement can be attributed to the change in legal structure, the admittance of outside shareholders, the listing of the shares on an exchange, or a combination of these factors.

Comparing financial data before and after exchanges listed their own shares on the market, Mendiola and O'Hara (2003) found evidence that financial performance improved after the IPO. "We found that listed stock exchanges generally outperformed both the stocks on their markets and the IPOs listed on these exchanges." Furthermore, the authors present evidence that the performance of stock exchanges with public offerings was positively correlated with the proportion of the equity sold to outsiders. The results, however, were not entirely clear-cut, as the authors themselves acknowledge. "While not every converting exchange exhibited enhanced performance, we interpret our overall results as providing strong evidence that shifting corporate governance from a cooperative to a corporate structure is value-enhancing for exchanges."

With more data available by the time they researched the subject, and using a broader range of financial indicators, Morsy and Rwegasira (2010) came to the very different conclusion that there is no strong evidence that demutualization leads to improved financial performance. The authors say they find "persuasive evidence that suggests that the demutualization programs do not improve the financial performance of demutualized stock exchanges". Instead, their empirical study shows an improvement in only a minority of the financial performance indicators they use. They find that "demutualization results in significant improvement in only four out of the eleven financial measures used to test for change in performance [...] The research hypothesis that demutualization improves stock exchange financial performance is not however supported in the remaining financial measures: current ratio, debt equity ratio, debt ratio, fixed assets turnover, total assets turnover, return on equity (ROE) and return on capital employed (ROCE)."

Serifsoy (2008) also finds no benefits from listing and exchange's shares. Instead, he concludes that just moving from a mutual structure to a corporate one confers most of the benefits to be had in terms of financial performance, even if no outside shareholders are allowed to invest in the firm. In any case, he says, the additional costs incurred by listed companies in terms of compliance and transparency obligations are too high compared with the added benefit of an exchange listing for a company that is already demutualized. "Therefore, the case for an IPO, a measure that involves considerable costs, cannot be advocated from an operative performance perspective. However, a demutualization process that retains the exchange's customers as its main owners seems promising." Serifsoy's findings also contradict the widely held view that listed exchanges gain competitive advantage by having better access to capital, which in turn should allow them to invest in performance-enhancing technology. "The assumption that a demutualization process is necessary to install modern trading systems cannot be confirmed empirically," he says. Intriguingly, the mutual exchanges in his sample have a persistently higher portion of electronic order book trading than the demutualized and listed exchanges. His conclusion is that, unburdened by the need to remunerate shareholders, some mutual exchanges are able to invest in technology in order to adopt new trading technologies without changing their governance structure.

Finally, Lee (2002) disputes the argument that exchanges with outside shareholders are necessarily under more pressure than mutuals to deliver higher financial results. He believes that mutually-owned exchanges can generate as much profit as listed ones, but that the cash-flows are just distributed in a different manner. "The main difference between a demutualized, profit-seeking exchange and a non-profit, mutually-owned cooperative exchange, is that the first type of institution can distribute profits in the form of dividends, whereas the second cannot," he says. "This does not mean that the second type of institution does not seek to maximize profits, it just distributes them to its users as fee rebates."

- Ownership and governance

As discussed above, it is widely agreed that breaking the stranglehold of members on exchanges was a desirable objective, and that opening ownership to outsiders was a necessary means to that end. The change in ownership of listed exchanges is widely documented.

Aggarwal (2002) examined the ownership of Deutsche Boerse after its February

2001 IPO. The IPO brought in 300 shareholders, but strategic investors such as banks, brokers and regional stock exchanges maintained a controlling 51% stake; other German institutions owned 15%; US institutions 13%; UK institutions

12%; other institutions 7%; and retail investors bought 2%. The five largest shareholders as of May 2002 were Deutsche Bank (10.1%), German regional exchanges (7.2%), Hypobank (4.7%), Commerzbank (4.6%) and BHF Bank (2.6%).

A similar exercise for the LSE, which listed on July 20, 2001 with a market capitalization of £1 billion, shows the following shareholding structure: institutional investors controlled roughly 25% of the shares, up from the original 15-20% (post-demutualization but pre-IPO); and ownership by members had fallen. As of March 2002 the major shareholders included Fidelity (9.2%), Warburg Dillon Read (4.2%), Cazenove Fund Managers (4.1%), Credit Suisse Asset Management (2.9%) and Legal & General Investment Management (2.8%). By the end of 2007, according to Polato and Floreani (2009), Deutsche Boerse had a "100% floating capital and a shareholding structure dominated by foreign institutional investors, particularly from the Anglo-Saxon financial markets". German investors owned only 18% of Deutsche Boerse's shares (compared with 35% in 2004), while UK investors held 29% and US investors 42%. Similarly for Euronext, which until 2000 was owned by members of its three founding exchanges (Amsterdam, Brussels and Paris); by 2007 Dutch, Belgian and French shareholders controlled only 22% of the shares, with the remainder controlled by international investors.

However, there remain many impediments to open competition and full dedication to shareholder value in the industry.

Many countries still consider the former monopoly exchange to be a strategic industry that needs to be protected. Australia, for example, has a law that puts a 5% cap on the shareholding that any institution can hold in its exchanges. In France, Jean- François Théodore, the CEO of Euronext, was widely criticized for agreeing to a transatlantic merger with NYSE [see (Raulot 2007)]. Many were disappointed that the French government did not intervene to block the deal. After all, the French authorities had intervened to protect Danone, a yoghurt maker, from being taken over by Pepsi Cola! Callaghan and Lagneau-Ymonet (2012) explain that NYSE benefited from a conjunction of factors, including the lack of credibility of some of the merger's critics, namely the French banks, which Euronext accused of having abandoned it.

Even among demutualized and listed exchanges, many are still majority controlled by former members. In many cases, exchanges are also dominant shareholders in other exchanges (after its 2006 failed attempt to take over the LSE, Nasdaq held almost 30% of the shares of its UK rival, a situation that will be examined in detail later in this dissertation). Also, many exchanges have launched, or invested in, alternative trading systems, when these systems were originally seen as a major source of competition that would help transform the exchanges. Many shareholders are also part owners of new platforms that compete with the exchange, or even run their own internalizing system where they execute customers' trades that would otherwise be executed on the exchange.

Such situations put exchange managers in the awkward position of serving several masters. A position that is untenable, according to Jensen (2010), who believes the best way to serve the interests of multiple constituencies (stakeholders with diverging agendas), is to focus on a single objective, preferably shareholder-value maximization. "Without the clarity of mission provided by a single-valued objective function, companies embracing stakeholder theory will experience managerial confusion, conflict, inefficiency, and perhaps even competitive failure," he writes. Jensen does not believe it is possible to maximize more than one factor at the same time.

"Telling a manager to maximize current profits, market share, future growth in profits, and anything else one pleases will leave that manager with no way to make a reasoned decision. In effect, it leaves the manager with no objective."

According to Ruben Lee[33], "Different ownership groups may attempt to promote their own competing interests. They may, for example, seek to minimize the particular fees that they are required to pay. Some of an exchange's members may also be its competitors, and these participants are likely to pursue different goals than those followed by non-competitors. Many financial intermediaries in the cash equity markets, for example, operate their own internal order matching systems in competition with the exchanges of which they are a member."

In short, a significant proportion of an exchange's shareholders are simultaneously its customers and shareholders of its main competitors. The main shareholders will also be represented on the board, as well as on the boards of competing exchanges. Opportunities for conflicts of interest are rife. Listed companies, for example, will logically seek to obtain the lowest possible listing fees, whereas fund managers will no doubt pressure the exchange to maximize income from all sources. Proprietary traders benefit from the lowest possible trading fees. Stockbrokers might have conflicting demands: for higher revenues (as shareholders) and lower fees (as users). Morsy (2010) sums up the potential for conflicts of interest, predemutualization: "The mutual governance structure and the heterogeneity of members of the stock exchanges (local market makers, broker dealers, international banks, etc.)

[33] SWX Group Annual Report 2006

made it difficult for them to ignore their private cost-benefit evaluations and vote for policy change."

There are signs that the shift from user-owned to shareholder-owned entities, and the ensuing quest for value creation through improved efficiency, have led to a shift in the business strategy of exchanges. Hart and Moore (1996) detect a change in the product mix of exchanges post-demutualization, which they interpret as the result of the shift to for-profit status. Traditional functions performed by exchanges, such as providing a trading mechanism, disseminating information, acting as a clearing house, settling trades, etc., are gradually abandoned, starting with the least profitable. "Exchanges no longer need to be vertically integrated in this way. Many of these functions are offered by specialist service providers and, in many cases, exchanges have hived off particular functions."

The governance of exchanges is also influenced, in some cases, by the exchanges' additional role as self-regulator. This situation puts the exchange in the uncomfortable position of having to enforce rules that can antagonize its customers and, consequently, impede its business activity.

The exchange industry, which has operated for centuries as a non-profit sector with public utility connotations, is also fertile ground for the study of stakeholder theory. Two main areas of concern arise: first, the fact that most users are tied to an exchange gives the latter a natural monopoly. This leads many researchers to call for compensatory measures to prevent the "monopolist" from using its advantage to the detriment of users. Second, the dominance of exchanges as the economy's main source of capital means that mismanagement leading to a failure raises the specter of systemic risk.

Most of the literature in this area addresses the questions of whether demutualization was really necessary, or if the shareholder-controlled structure threatens exchanges' ability to respond to their responsibilities (regulatory, systemic, level playing field) other than creating value for shareholders.

Lauzun and Lee (2006) argue that users are very often tied to the exchange, which enjoys a dominant position in its domestic market. Therefore, these users cannot "vote with their feet". Aware of this power, the operators of the "infrastructures can be tempted to enjoy a rent by applying non-competitive prices". Such practices weigh on transaction costs for final investors, and more widely, on the global efficiency of markets. At the very least, extremely strict rules of governance must be imposed, giving priority to the users, Lauzun and Lee add. One way to constrain such possible anticompetitive behavior, the authors believe, is to give users of exchanges voting rights. "We must address the question of users' participation in the capital of listed exchanges. It is undoubtedly very highly desirable."

Reiffen (2008) looks at whether profit seeking could tempt exchanges to relax the enforcement of rules (listing requirements as well as trading restrictions) in order to please their customers (listed companies and stockbrokers) to whom the rules apply. Reiterating the view that exchanges have been given substantial responsibilities with respect to enforcing regulations and protecting investors, he looks specifically at the period during which an exchange converts from mutual to for-profit status. "In contrast to oft-stated concerns, we find that, in many circumstances, an exchange that maximizes shareholder (rather than member) income has a greater incentive to aggressively enforce these types of regulations," he concludes.

This view is contradicted by Kuan (2006). In this contrarian article, and referring to Akerlof (1970), the authors claim that the member-owned structure, and the monopolistic powers associated with it, allow an exchange to treat its customers as "hostages". They believe this is the most effective way to force listed firms to be fully transparent, therefore eliminating "lemons" (or sub-par companies that a profit-seeking exchange might accept to list in spite of their defects).

3. Aims and approach

In their new corporate shape as listed entities, stock exchanges should perform in line with the findings of previous corporate governance research: the owners of listed and easily tradable shares are expected to apply pressure for financial performance, a purpose for which they have to check the temptations of the managers to whom they have devolved wide powers to run the company on a day-to-day basis.

However, due to their recent past as non-profit organizations, exchanges still have a wide array of shareholders, not all of them pure value maximizers. In addition to investment managers, exchanges also count brokers among their owners, as well as strategic shareholders with non-financial objectives.

The literature leads me to expect that financial investors are mostly value maximizers: their concentration in a firm's capital should be positively correlated with higher sales, productivity and profits, and negatively correlated with costs. Conversely, higher dispersion of shares (i.e. a large freefloat) should be positively correlated with higher costs and negatively correlated with productivity and profitability.

In this section, I use a panel consisting of six exchanges. My objectives are twofold. The first objective is to test earlier findings about the effects of stock exchange demutualizations. For example,

the assertion by Lee (2002) that being owned by shareholders does not necessarily imply more pressure on management to achieve higher profits, since mutually-owned exchanges also distribute profits in another form: fee rebates.

The second objective is to make a contribution to agency theory by going beyond the principal/agent conundrum, and delving deeper into the motivations of various types of principals. The approach here is based on the assumption that not all principals are primarily motivated by value maximization. There are situations where principals derive more value through other means (as customers or users of a service) than from their position as shareholders of the company. In order to understand these conflicting motives, I had to analyze to what extent the identity of shareholders influences their behavior.

This approach is innovative in two ways because it leads me to examine corporate ownership not only in terms of fragmentation/concentration as has been done previously by Holderness (2009), Jensen and Meckling (1976), Fama and Jensen (1983) etc., but to delve further into the nature and motivations of shareholders. The second innovation consists of moving beyond the black and white approach of agency theory, where principals are thought to have one straightforward aim (maximizing financial value) and agents to have the opposite aim (expropriating principals by as much as they can get away with).

I have segmented shareholders into three categories depending on the degree of conflict of interest they display vis-à-vis the firm. A fourth category (shares not held by any of the three) also has its attributes, as we shall see below.

In this world, dominated by shades of grey between principal-white and agentblack, some shareholders (notably those that have commercial ties to the exchange in addition to being part-owners) can alternatively wear their principal's white hat or their agent's black hat depending on the situation.

4. Methodology

I use a database covering six exchanges over the period 2002-2011. All the exchanges are listed and their shares very liquid. They all publish audited annual reports and the list and description of their shareholders is available from Thomson One Banker. The full list of performance variables that I test is available in the appendices to this dissertation. A more detailed description of the data and methodologies is given in Part I of this dissertation.

In the following pages I test three hypotheses (linked to shareholder types) empirically through OLS regressions. I approach hypothesis (4) inductively.

- Hypothesis (1). Wide dispersion of shares (or high freefloat) is value destroying and detrimental to financial and operating performance.
- Hypothesis (2). A high proportion of investment managers (IM) shareholders leads to greater value creation and improved corporate performance.
- Hypothesis (3). A high concentration of brokers in the shareholding is detrimental to corporate performance.
- Hypothesis (4). Strategic investors' motivations are unclear, as is the effect of their presence on the exchanges' performance. These effects, if there are any, can be value- enhancing or value-destroying. I therefore approach this part inductively, regressing the performance variables against the proportion of strategic shareholders. The aim is to find out if strategic investors on balance have a significant effect on corporate performance, and determine whether this effect is value-enhancing or value-detroying for other sharholders.

5. Empirical results

Following are the results of OLS regressions involving 16 dependent variables. Each is regressed against four independent variables, representing the proportion of the capital held by: freefloat, IM, brokers and strategic investors.

Testing hypothesis (1)

The first set of regressions shows significant results for 7 of the 16 variables. The results validate the expectation that high dispersion of shares is negatively correlated to productivity (sales per employee) and profitability (return on assets and return on invested capital). High freefloat is also positively correlated to operating expenses, as there is no dominant power to act as a counterweight to management's propensity to use company resources as it pleases.

Table 1. Independent variable: freefloat.
Number of observations: 55

Variable	R-squared	T-stat	P
DividendPayout	0.078	2.04	*
SalesPerEmployee	0.351	-5.25	***
DividendYield	0.068	2.18	*
ReturnOnAssets	0.148	-3.03	*
ReturnOnlnvestCap	0.159	-3.17	**
OperatExpToSales	0.110	2.39	*
DebtToEquityRatio	0.089	2.28	*

There is no obvious causality that would explain the positive correlation to leverage and dividend payout.

Testing hypothesis (2)

Regressing the 16 dependent variables against IM holdings yields 9 significant results. The positive correlations of share price, operating profit margin, sales per employee, return on assets, pretax margin, net margin and return on invested capital are all consistent with earlier literature stating that IMs are value maximizers. The very strong (and robust) negative correlation with leverage is inconsistent with hypothesis

(2), unless professional investors consider that exchanges are already too indebted, or there are no tax benefits to be enjoyed, as described by Modigliani and Miller (1958).

Table 2. Independent variable: IM

Variable	R-squared	T-stat	P
SharePrice	0.193	3.56	***
OperatProfMargin	0.13		
8 2.91	**		
SalesPerEmployee	0.424	6.13	***
BookValuePerShare	0.225	3.89	***
ReturnOnAssets	0.112	2.58	**
PreTaxMargin	0.103	2.68	**
NetMargin	0.136	2.88	**
ReturnOnInvestCap	0.117	2.65	*
DebtToEquityRatio	0.315	-4.94	***

Book value per share is inversely related to goodwill. One explanation for the positive correlation is that IM shareholders demand higher capital spending. This is a rational expectation in a sector where success is determined by investment in information technology. It is perfectly plausible that value-maximizing shareholders insist on constant investment.

Testing hypothesis (3)

Only two variables are correlated to brokers' shareholdings: the quick ratio, which calculates the firm's ability to cover short term liabilities with liquid assets (i.e. the company's short term financial strength); and the ratio of cash flow to sales, a measure of productivity.

Table 3. Independent variable: brokers.

Variable	**R-squared**	**T-stat**	**P**
QuickRatio	0.125	2.48	*
CashFlowToSales	0.126	-2.49	*

Neither result is very robust, which is in large part attributable to the generally low level of brokers' shareholding (and the fact that they are completely absent from two exchanges: LSE and Deutsche Boerse). The negative correlation with cash flow to sales is consistent with the hypothesis that brokers are value destructive.

Hypothesis (4)

A quick reminder here that hypothesis (4) is not clear-cut. The data show that strategic shareholders are not a homogeneous group. The only thing they have in common is that their motivations for holding the shares are not purely financial. At NYSE Euronext, they consist mainly of employees and managers. According to agency theory literature, this group is expected to display signs of entrenchment, with a negative influence on corporate performance. In the case of the London Stock Exchange, the main strategic investors are competitors, a situation that is likely to be destabilizing for the company's management. At Intercontinental Exchange, the main strategic investor is the founder and CEO of the group. This puts him in a position of immense influence, giving him the power to create value for all shareholders (including himself) or to expropriate other investors. The following analysis provides the first opportunity to measure the aggregate effect of such a diverse range of influences.

Nine of the 16 variables show correlations with the shareholdings of strategic investors, and the outcome is clearly that strategic investors are value destroying. Five key performance indicators are clearly negatively correlated to strategic holdings: the share price, operating profit margins, pre tax margins, net income and net margins.

The positive correlation of leverage is consistent with the expectation that other shareholders will seek to impose higher levels of debt as a tool to discipline the managers and employees who account for the bulk of strategic shareholdings.

Table 4. Independent variable: strategic investors

Variable	R-squared	T-stat	P
SharePrice	0.149	-3.05	**
OperatProfMargin	0.085	-2.21	*
PERatio	0.113	2.55	*
BookValuePerShare	0.102	-2.43	*
PreTaxMargin	0.163	-3.21	**
NetIncome	0.125	-2.75	**
NetMargin	0.122	-2.72	**
OperatExpToSales	0.101	-2.28	*
DebtToEquityRatio	0.148	3.03	**

The one puzzling result is that a high level of strategic ownership is associated with a high stock market valuation. This is apparent in the positive correlation of the price/earnings ratio and the negative correlation of book value per share (i.e. strategic shareholding is associated with high goodwill). After looking at the results of the individual case studies in Part III, it will become apparent that this result is consistent with situations such as that of ICE, where the bulk of strategic shareholdings is accounted for by the founder and CEO, who is gradually winding down his stake as he increases the total value of the firm. It is also consistent with situations described by Rappaport and Sirower (1998), where companies growing through acquisitions maximize the valuation of their shares in order to use them as acquisition currency. However, the same result contradicts the situation at NYSE Euronext, where strategic shareholdings are associated with management entrenchment, which is not conducive to higher share valuations. It is also inconsistent with the situation at LSE, where ownership by strategic investors has shattered expectations of a bid for the company.

Conclusion

This empirical study of exchanges' shareholders and their influence on corporate performance allows me to verify some of the findings from earlier work on stock exchanges, as well as to corroborate expectations dictated by the general literature on corporate governance. Two widely held hypotheses are corroborated: that financial investors seek to maximize the value of their investment; and that a high fragmentation of shares leads to lower performance.

I had assumed that brokers are conflicted because they play two simultaneous and conflicting roles, as co-owners and customers. On the one hand, as shareholders, they expect their investment in the exchange to generate value in the form of dividends and capital gains. On the other hand, as customers, it is in their interest to pay as little as possible in fees to the exchange. Tests to determine which of these conflicting attitudes (seeking discounts or demanding financial reward) dominates are not conclusive. This is mainly due to the small presence of brokers relative to the other blocks of shareholders.

My most interesting finding relates to the behavior of strategic investors, who turn out to be value destroying on balance. The term strategic encompasses a wide array of investors with various motivations. In this sample they consist of founders who still have power (at ICE), predators who built up a stake but failed to take full control (Nasdaq in LSE), or entrenched managers (NYSE Euronext).

My results clearly show that strategic shareholders are correlated with bad performance on balance: i.e. that these principals have an overall influence over the exchange that is closer to that of an agent. This leads me to call them Quasi-Agent Principals (QAPs), as in owners whose ambiguous relationship to the asset they have invested in ends up eroding the value of this asset.

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TOUGHNESS OF INDONESIAN BANKING SECTOR FACING GLOBAL FINANCIAL CRISIS 2008: TESTS ON WELFARE OF SHAREHOLDERS

Lindrianasari*, Ahmad Zubaidi Indra

Abstract

This study aims to investigate the impact of the global crisis on the financial performance of banks in Indonesia. The study will also look at the impact of the crisis on the welfare of stakeholders in the form of dividend payments to shareholders. The initial assumption that we have built for this condition and for the explanation in the previous paragraph is that there is a difference between the payment of dividends to shareholders before and after the period of the global crisis. Proof of this assumption is also at the same time can give an answer to the resilience of the Indonesian economy during the global crisis. By using all populations banking companies listed in Indonesia Stock Exchange, this study compared the financial performance of the company before and after the next global crisis with its impact on the payment of dividends.

This study shows that there is a significant decline in its net profit after the global crisis. But there is not enough result to support second hypotheses about decrease of share prices as an excessive market sentiment surrounding global crises. It looks at the stock price actually rose after the global crisis. Other conditions have been found in this study is that there is an increase dividends given to shareholders after the crisis. These findings shows that the banking sector in Indonesia has a fairly strong resilience in the face of the global crisis in 2008. This condition may occur due to the success of fiscal regulation of Indonesia Bank to save Indonesian economy.

Keywords: Global Financial Crisis, Stock Price, Net Income, Welfare of Shareholders

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1. Background

The global crisis that began in the second half of 2008 has resulted in a decline in economic performance in the first half of Indonesia until 2009. Data obtained from www.setneg.go.id showed that the decline in Indonesian export commodities of the year 2008-2009 as shown in Table 1.

Table 1. Indonesia Commodity Exports 2008-2009

No.	Commodity	Decline (%age)
1.	Mineral fuels	15,45
2.	Machinery/electrical equipment	13,58
3.	Aircraft engine (mechanical)	7,09
4.	Rubber and rubber goods	6,14
5.	Fats and oils of animal/vegetable	5,52

Source: http://www.setneg.go.id/

Note from the Secretariat of State of Indonesia shows that the facts show that there has been a deterioration in the performance of Indonesia's foreign trade resulting from various factors. The largest decline in Indonesian export commodities was due to a decline in demand from the export destination countries of Indonesia. Among the export destination is Japan. The decline in exports to Japan in 2009 was the largest decline compared with countries other export destinations, amount to 17.66 percent . Followed by a drop in demand from Taiwan by 11 percent , 10.85 percent of the United States, 9 percent of Singapore, and 8.86 percent of South Korea (Source: Statistics Center Institution of Indonesia, 2009). In the level of the macro economy, the decline in economic performance significant experienced by the United States, Europe, Japan and East Asia in the first quarter-

2009. In the United States, industrial production dropped from about 77 percent in 2008 to about 70 percent in the first quarter of 2009, and capacity utilization fell from about 80 percent in 2008 to about 70 percent in the first quarter of 2009. In Japan, industrial production fell from about 95 percent in 2008 to about 67 percent in the first quarter of 2009 , and capacity utilization fell from about 105 percent in 2008 to about 65 percent in the first quarter of 2009. Export growth Asian countries fell from 20 to 40 percent in the first half - 2008 to minus 14 to minus 40 percent in early 2009.

Another situation worsen in the Indonesian economy during the global financial crisis in 2008 is the decrease amount of foreign currency that circulated in Indonesia (Figure 1) and a decrease in the value of foreign funding (Figure 2).

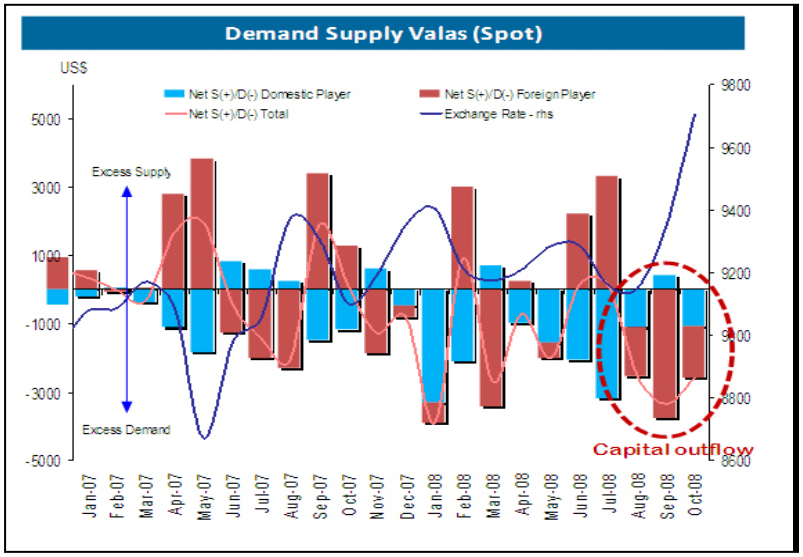

Figure 1. Capital Outflow
Source: Indonesian Central Bank, 2010

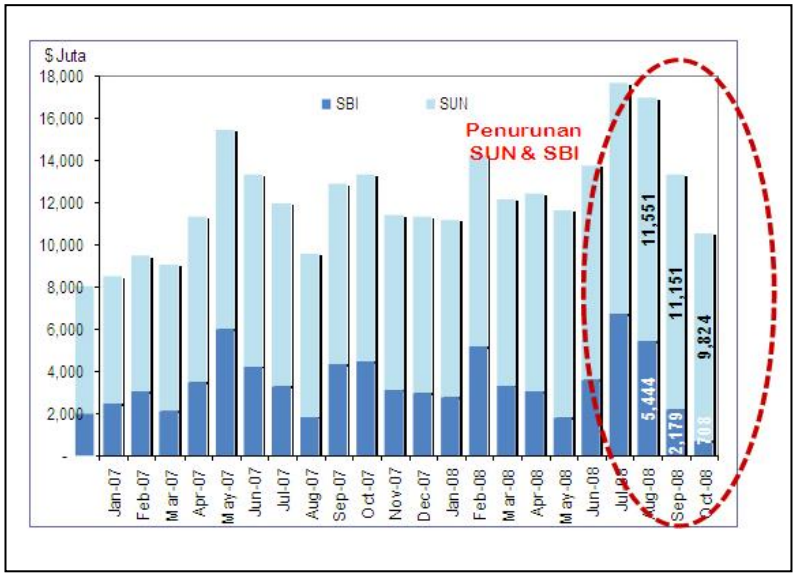

Figure 2. Foreign funding
Source: Indonesian Central Bank, 2010

Faced with this crisis, almost all governments in the world, including the Indonesian government, has already announced stimulus packages hundreds of billions of dollars to move the economy of each country. Central banks have also cut interest rates to ease liquidity for the business world. The reaction of the world's central banks to undertake fiscal stimulus is due to the global financial crisis of 2008 is a tragedy triggered by the impact of the U.S. subprime mortgage, which in turn encourages economic decline in other developed countries. The crisis spread to all of the financial industry in almost every country.

The global financial crisis in Indonesia when it hit the banking sector to small and large scale. At the beginning of the 2008 crisis, the Central Bank of Indonesia is planning to implement a policy to provide protection blanket guarantee to all banks in Indonesia. Many parties are supportive, but some do not support (including the Vice President at the time), until finally, the cancellation policy is applied. Because the blanket guarantee is not applicable, thenthe option is taken is the provision of assistance and protection only to banks struggling to avoid bankruptcy. http://www.katadata.co.id/1/3/opini/wapres-boediono-saya-tidak-menyesal/816/#sthash.EuaCgp5V.dpuf.

In October 2008, there are three large state of enterprises (SOEs) banks, PT Bank Mandiri Tbk., PT Bank BNI Tbk. and PT Bank Rakyat Indonesia Tbk requesting liquidity support from the Government of each of the 5 trillion. Total funding for the three banks inject Rp15 trillion. The funding comes from government money that is in BI. Liquidity assistance was used to strengthen the bank's capital reserves or meet loan commitments infrastructure without having to interfere liquidity. The Government's intention liquidity assistance that the three state-owned bank had no need to borrow from abroad. But, the suffer most are medium banks and small savings fund society declined. The fund is run out of the country or big banks, even that interesting until there are store in a safe deposit box for fear of the bank is closed (Indonesian Central Bank, 2010).

Liquid funds were also given to the Indonesian central bank one private bank in Indonesia, Bank Century**.** Base on this policy, the Central Bank of Indonesia finally providing funds to Bank Century who fail to return the customers money (known as the Bailout Century Bank). However, this scenario has been applied almost perfectly when there are two parties who have a different understanding of the current crisis. The first party, Indonesia will experience a crisis if the Bank Century case is left, and the other party believes that Indonesia is not a crisis. It is well known by the term of **Bailout Century**.

In Indonesia, a study Prasat et al. (2003) describes three important points related to the global financial crisis. First, the (relevant to the theoretical prediction) great crisis will have an impact on financial performance. Second, (contrary to theoretical predictions) integration of the current financial crisis sometimes showed association with an increase in the volatility of consumption among the developing countries, at least in the short term. This second prediction shows that there is the possibility of a reversal of the consequences of the financial crisis is predicted theory of weak private consumption be increased consumption that is not predictable. Lastly, there seems to be a threshold effect relationship crisis with the absorption capacity of each country. Meanwhile, the threshold of each country are not the same.

Continuing studies conducted by Prasat *et al.* (2003), this study will examine the impact of the global financial crisis on the welfare of stakeholders in the form of dividend payments. The initial assumption that we have built over and above these conditions the initial statement is no difference between the payment of dividends to shareholders before and after the period of the global crisis. Proof of this assumption is also at the same time can give an answer to the resilience of the Indonesian economy during the global crisis.

The issue is particularly interesting for Indonesia society and still remains to this day. Moreover, due to the policy of Indonesia Central Bank in order to save the financial problems faced by one of the private banks in Indonesia. The case have not been resolved to this time. This is an important study was conducted to provide empirical evidence of the resilience of the world economy on the banking sector in Indonesia when the global financial crisis which resulted in a decline in the economy of many countries of the world. This study investigates the impact of the global crisis on the financial performance of banks in Indonesia. The study will also look at the impact of the crisis on the welfare of stakeholders in the form of dividend payments to shareholders . The initial assumption that we have built over and above these conditions the initial statement is no difference between the payment of dividends to shareholders before and after the period of the global crisis. Proof of this assumption is also at the same time can give an answer to the toughness of the Indonesian economy during the global crisis.

The purpose of this study is to provide empirical evidence of the impact of the global crisis that occurred in 2008 on the financial performance of the banking sector in Indonesia. This is because, the banking sector into a sector that is highly relevant in the case of a crisis the world as a sector that triggered the global crisis. Finance in developing countries has improved linkages with the condition of other countries globally that have

been shown to be significantly in the last decade. There is some evidence of a threshold effect in the relationship between financial globalization and economic growth of a country. Utilization effect of financial globalization are more likely to be detected when the developing countries have a number of absorption capacity. That is, if a country initially shown to have good economic performance, the impact of the global crisis will be evident in the economy. Preliminary evidence also supports the view that, in addition to sound macroeconomic policies , improve governance and institutions have an important impact on the country's ability to attract capital inflows are less stable and vulnerability to crises.

Contributions can be provided from this research is to improve public confidence in the world to the power of the banking sector in Indonesia, which was due to the government's policy to minimize the impact of the global crisis. In addition, practical contribution is to be given investors increased confidence to invest their capital in the financial sector in Indonesia, as a consequence of the national banking system toughness of in the face of the global crisis. Empirical evidence is expected to show the toughness of of Indonesian banks, as well as to demonstrate the welfare of the shareholders who remain elevated even though the world economy is deteriorating.

2. Literature review and hypotheses development

The term global financial crisis in general is often described as an economic resource scarcity triggered due to the prolonged slump in economic growth stable at strategic level of the world. These conditions have consequences on the emergence of anxiety world community to the impact that will result from this global crisis, especially anxiety that people in developing countries economic system have not been established as well as the economic system in the developed world. Therefore, the issue of the global financial crisis research into topics that are important to be done in developing countries, such as Indonesia.

Several authors have provided a systematic and critical review of the empirical evidence of the impact of the global financial crisis (Prasad *et al.*, 2003; Mitton, 2002). Studies conducted Mitton (2002) using a comparison sample of 398 state enterprises in Indonesia, Korea, Malaysia, the Philippines, and Thailand found that corporate governance has a strong impact on the performance of the company during the financial crisis of 1997 to 1998 occurred in Asia. Testing of the performance of the stock market shows that the level of stock prices merpengaruh significantly to corporate governance. The results of this study indicate that the application of corporate governance has the power to block the financial crisis. The better the governance of a company the better the strength of their blocking effects of the financial crisis.

2.1 Relevant Theory

Value creation is much discussed in the strategic management basically aims to improve the company's image. Value creation is directed at how tough generate revenue management (earnings) for the company. In 1976, Jensen and Meckling has introduced a theory of the firm that examines agency problem, behavior management and ownership structure. This theory is born for the company to reconstruct the theory of substitution models on the profit or value maximization, with each objective is motivated by the claim that there is a theory that when it is no longer enough to explain managerial behavior in large companies. This theory is more popularly known as agency theory. Agency theory try to explain the existence of an agency relationship that defined as a contract between the principal and the agent to perform services in the responsibility to involve delegates have the authority to take decisions in the agent (Jensen and Meckling, 1976). Agency theory is one that fits the theory to explain the distribution of dividends. Al-Yahyaee, Terry dan Walter (2011) using signaling and agency costs in prior their study. They argue that there are numerous studies that examine stock price reactions to dividend announcements that using agency cost and signaling theory as a grand theory to explain several reaction related with dividend.

Associated with the investment objectives of the investor, Gordon and Litner (1963) says that investors are more appreciative of the money for the payment of dividends earned from capital appreciation. While Miller and Modiglini (1963) stated that most investors have a long-term plan and reinvest their dividends in shares of the company. For investors in this group, not only the dividend policy are the deciding factor of their investment choices, but in the long-term risk factors also determine their investment considerations. To express their views of the two is seen that most investors expect additional welfare on investment that they do.

The bird-in-the-hand theory is a theory introduced by Gordon and Litner (1963), stating that a dividend is something related to company policies that impact on the welfare of investors. This theory states that investors actually consider that a bird in hand is worth more than a thousand birds in the air. Furthermore, Gordon and Litner argue that investors view (considering) the dividend is greater than the capital gain when making

investment decisions related to the stock. Investors would prefer a cash dividend at this time.

2.2 Net income

Variables are often used as a consideration of dividend payments used by the company is net income. Growth in net income would affect dividend policy. However, recent research doubting the size of the net income in the company's decision. Some of the reasons for the existence of different market responses to earnings based on historical cost. Investors are risk averse will consider the expected utility value and lowers the risk of their portfolio returns. In one empirical study found that the lower the ERC, the higher beta securities (Collins and Kothari 1989; Easton and Zmijewski 1989). These findings suggest that the net income that fluctuates it will increase the risk of investing in that company. So it is not logical to use the net income in the determination of decision-making, especially in dividend payments.

Capital structure. For companies that have a large debt, increase in earnings before interest, will add strength and security for debentures (debt instruments). Therefore GN in net income more than debtholder addressed to shareholders. For large companies would have little debt ERC its value. Persistence. Intuitively, an increase in money for unexplained reasons for, the ERC will be relatively low. However, the ability of management to cutting cost in production activity - this is called persistent-it will increase ERC.

Earnings Quality. We expect a high ERC for earnings quality. The higher ERC for earnings quality is higher as well. ERC is higher due to the better ability of investors to assume the performance of companies that will come out of the performance now. Earnings quality measure is that earnings = cash flow. If the accrual of profit, means discretionary accrual is also better. Growth Opportunity. The reasons the importance of persistence and the quality of earnings for the ERC means that the disclosure of the components of net income is useful to investors, GN or BN in earnings now may be a warning to future earnings.

Furthermore, the issues that plagued the world after the global crisis shows the number of banks and financial companies are bankrupt. Therefore, hypotheses are developed relating to the above as below.

Ha1: The global crisis has a negative impact on the net income of the banking sector in Indonesia

2.3 Market performance

Discusses the performance of the stock market of companies, means we use the assumption that capital markets are efficient, at least not in the form of a strong half (semi-strong). When some investors behave as experts and wish to move quickly when receiving new information, the market becomes efficient. This condition occurred because investors assume that the firm value in the financial statement is correct. If demand for a particular stock increases (decreases), will result in an increase (decrease) in the stock price. The stock price is a reflection of the value of the company. This condition is consistent with the definition of market efficiency in the semi-strong form, as in Scott (2006) is "An efficient securities market is when the price of securities traded in the market at all times, fully reflect all publicly known information about the securities' .

There are three points that should be noted. *First*, market prices are efficient with publicly known information. *Second*, an efficient market is said to be a relative concept. *Third*, the implication is that investing is a fair game if the market is efficient. The third point implies that investors can not expect to obtain the excess return of a security or portfolio of securities, exceeding or below the normal expected return of a security or portfolio of securities, where the normal expected return risk.

The study conducted by Acharya, Gujral, and Shin (2009) suggested that the banking capital decrease will have increasing of corporate debt of the company. When faced to lower value of shares, the owner control over the company will also be influential. Not only control over a company that would be affected, but also the welfare of shareholders will have an impact on the welfare they get.

Research Acharya et al. (2009) showed that an decrease in the total capital in the study sample during the period 2000-2008. From the total $ 1.76 billion in shares issued by banks in the UK, U.S., and Europe, a decline of $ 1.64 billion surprising (or approximately 93.2%). This fact prompted the company issuing debt securities, which in turn further increase the share of corporate debt in the third quarter period of 2007 until the fourth quarter of 2008. This condition contrasts with the condition of banks in the period 2000-2008.

Paper Bartram and Bodnar (2009) provide an extensive analysis of the effect of the global financial crisis in 2008/2009 in the equity market. They mengivestigasi how big the impact of the global financial crisis over the destruction of equity value compared to other economic conditions. Bartram and Bodnar assess the performance of the overall market on average widely in coverage areas, countries, and sectors. They found that a decrease of about 40% at the end of 2006. However, an even greater decrease occurred in most markets on the period of the early to mid 2008. Even in the period of mid-September to late October 2008 a major part of the collapse with almost all indices ranged 30-40 % in this short period of time (only in 45 days).

The financial sector experienced a fall of greater than the non - financial sector during the period, although both sectors are equally suffered during the height of the crisis (Bartram and Bodnar, 2009). However, their study found that the nature of the global financial crisis is also evident from the high correlation between market and investment style are even more increased during the crisis. Stock prices is often more superior than net income in measuring the performance of managerial. This is because the stock price can not be influenced by management's discretion. Therefore, the stock price performance is rated as a best first layer. The question which requires proof is how the stock price performance during the financial crisis happen? Is the financial crisis impact on share price performance? Because of issues afflicting the world shows the number of banks and financial firms that went bankrupt during the global crisis of 2008, and above the above explanation, the hypotheses is constructed as below.

Ha2: The global crisis has a negative impact on the stock price of the banking sector in Indonesia

2.4 Factors Influencing Dividend Policy

There are several factors that determine the dividend policy of the company, including the rule of law, liquidity position, the need for liquid funds to repay short-term debt, income levels, opportunities to capital markets. As described in the Awat and Mulyadi (1996) there are some factors that will determine dividends policy of corporate: (i) Dividend Pay - out Ratio industry in relation to the existence of the company, (ii) revenue growth, (iii) the persistence of earnings company. Generally in a state of unstable corporate earnings, then managers are reluctant to perform or even increase the amount of dividend payments. (iv) investment opportunities available, (v) the expected profit rate of investment opportunities, (vi) the availability and cost of alternative sources of funding, (vii) the preference shareholders and managers the flexibility to deviate from the maximization of wealth, (viii) expectations regarding the condition general business. At the time of inflation, may profit tends to rise, so that the managers can raise the dividend payment. Thus, in a state of inflation, spending through borrowing will be interesting, than retained earnings, and (ix) the existence of the restrictions given by the creditors.

The factors described above led to curiosity about the condition of payment of dividend after the global crisis that occurred in Indonesia. Because many determinants of dividend policy in the logical view, the dividend payout policy will lead to a reduction in payments. However, of course there are considerations which will also affect the distribution of dividends. Good corporate governance will also determine the dividend payment policy because of good governance will create value for the company is able to compete and ultimately obtain high profits. Study Campello, Graham, and Harvey (2009) showed a great impact on the financial constraints when the crisis in the 2008's.

Gugler (2003) explains that the dividend policy related to several factors, one of which is an opportunity to grow the company. This explanation gives a view that when a company is able to survive in a bad state and still maintaining its growth, it can be predicted that the company is still able to provide a dividend to shareholders. Moreover the Indonesian Central Bank's policy during the global crisis, it is predicted that Indonesian banks have a strong base to get through the crisis while the faint stability performance. Based on the above explanation, the next hypothesis developed are as below.

Ha3: The global crisis has a negative impact on the dividend payment of the banking sector in Indonesia

2.5 Company performance and dividend

The study conducted by Acharya, Gujral, and Shin (2009) suggested that the banking capital decrease will have increasing of corporate debt of the company. When faced to lower value of shares, the owner control over the company will also be influential. Not only control over a company that would be affected, but also the welfare of shareholders will have an impact on the welfare they get.

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Ha4: Net income has an impact on dividend payout

Ha5: Stock price has an impact on dividend payout

3. Research Method

3.1 Data and sample of study

Financial data, of the company's financial statements and stock market data for the return of its shares, will be obtained from the Indonesia Stock Exchange. The data needed are the data for

the three years prior to the 2008 global crisis occurred (ie 2005, 2006, 2007), and the data three years after the global crisis (ie 2009, 2010, 2011).

3.2 Research variables

Financial performance (earnings) and stock price performance (return) of three years before and three years after the global financial crisis will be compared. The financial data of 2008 as a time of crisis is not used in the analysis. Furthermore, earnings and stock returns become a function that determines the level of dividend payments. Dividend number in this research is the value of the dividend payment by the company. So the size of the decrease, increase or constant over the value of the dividends to shareholders can be measured well.

3.3 Statistics tool

For the first hypotheses, the second and third was use different test average Independent sample t-test is commonly used in the model to test the hypotheses that a comparative study in small sample pairs. The sample is a sample pairs the same but have two treatments or two different conditions. In conjunction with this study, two different conditions it was before the global financial crisis conditions to the conditions after the global financial crisis. For the fourth and fifth hypotheses, testing was done using multiple regression. Classical test would be applied to this model.

$$dividend = \alpha_0 + \alpha_1 earnings + \alpha_2 return + \varepsilon_i \ldots\ldots (1)$$

4. Result and discussion

In this section, we discuss the results of testing each hypotheses, how to interpret it, and discuss the results of such testing by providing a logical justification. Before the discussion of the results of testing conducted for each of these hypotheses is done, this paper explained how the acquisition of research data.

4.1 Final data and sampel research

In overall, the observations of this study are classified into two category: three years before the global crisis, and three years after the global crisis. Year of the global crisis itself set in 2008. The sample and sample that used to test each Hypotheses of the study is different, depending on the availability of data to be tested. Total data used to test five hypotheses research in this study is the data as much as 511. Table 4.1 display the amount of research data used for each Hypotheses testing.

Table 2. Reseach data– each hypotheses

Hypotheses	3 years	Sample amount	Total of sample
Hypotheses I	Before crisis	79	
	After crisis	87	166
Hypotheses 2	Before crisis	39	
	After crisis	42	81
Hypotheses 3	Before crisis	47	
	After crisis	84	131
Hypotheses 4	Before crisis	39	
	After crisis	41	80
Hypotheses 5	Before crisis	28	
	After crisis	25	53
Total			**511**

Source: The financial statements of banking firms, the period 2005-2011; data processed

4.2 Hypotheses testing and discussion

The first hypotheses of this study states that the global crisis has a negative impact on net income in the banking sector in Indonesia. This Hypotheses was tested using independent sample t-test. Testing was conducted to determine whether there are differences in the value of the average net profits of companies in the banking sector in the period before and after the global crisis in the world in 2008.

Statistical results of *Levene's Test* showed the value of the F-tested value of 4.684 with a significance of 0.032. This value indicates that the average net profit of the banking company in Indonesia three years before and three years after the global crisis experienced significant differences. The mean value of net income before (after) the global crisis amounted to 9.12 (1.46) indicates that the average net income of banking sector in Indonesia after experiencing crisis is decline. This condition shows that Indonesian banks are also feeling the impact of the global crisis with the decline in net income in almost all banking companies. Support for the Hypotheses of this study also shows that the banking sector in Indonesia are affected by the global financial crisis that occurred in 2008. From the results of this

statistical test can be concluded that this study supported the first Hypotheses.

Just like the first Hypotheses, the second hypotheses testing is also using independent sample t-test to find the average difference over the whole of sample. The second Hypotheses predicts that the global crisis did not have a negative impact on stock returns in the Indonesian banking sector when the global crisis in 2008. The test results demonstrate the value of statistics F-value of 4.251 with a significance of 0.035 . This value indicates that there are differences in stock prices in the Indonesian banking sector before and after the 2008 global crisis . However, the mean stock returns after the crisis were found to have increased from 0.21 before the crisis and after the crisis to 0.28. The results of this test indicate that the Indonesian capital market confidence in the banking sector in Indonesia is still positive when the average international financial sector experienced a decline in performance. With these results concluded that the second hypotheses was constructed in this study are not supported because it shares in the Indonesian banking sector has increased after the global crisis in 2008.

The increase in stock returns in the Indonesian banking sector may occur because of the Bank Indonesia issued a swift fiscal policy when the financial crisis happened. This policy may be provided market confidence for the excellence of investing in the Indonesian banking sector.

In the third hypotheses of this study stated that the global crisis had impact on the payment of dividends in the banking sector in Indonesia supported statistically. Test results show that the F-value for different test average banking sector in the period before and after the global crisis of 0.471 and a significance of 0.495. Mean dividend payments before the global crisis amounted to 6,209 and after the crisis showed that 6,719 of shareholder wealth has no impact on the crisis period. In fact, in the aftermath of the crisis, dividends distributed to the owners of the Indonesian banking sector has increased, although not too big. The results of these tests show that the well-being of the banking sector shareholders registered in the Indonesian capital market is not affected when the global crisis happened in almost all sectors of the financial world.

Tests for the fourth and fifth hypotheses using simple regression because amount of data that can be processed for each hypotheses is separately. As a condition of use of test Ordinary Least Square (OLS) regression, performed classical assumption. The results of the classical assumption for the data used for fourth overall hypotheses meets classical assumptions, and so are the results of the classical assumption for the fifth hypotheses. Table 3 shows the results of testing the classical assumptions for each of the data used to test the two hypotheses.

OLS Model for H_4: $Y = 1{,}70 + 2.76X_1$
R2 = 0,63; Prob.: 0,0000

OLS Model H_5: $Y = 25.85 + 2.29X_1$
R2 = 0,1; Prob.: 0,0081

Table 3. Results Test-Data Classic test for Hypotheses 4 and Hypotheses 5

Hypotheses	**Normality**	**Linearity**	**Auto-Correlation**	**Homokedastisity**
Hypotheses 4	*Prob.=*	*Prob.=*	*Prob.=*	*Prob.=*
Net Income→ Dividend	0,00002	0,2877	0,3389	0,0028
Testing result OLS*): R^2: 0,633 Prob.: 0,00000				
Classical assumption test results above indicate that the data used for testing H_4 normally distributed, linear, does not have auto-collinearity problems, as well as the assumptions are met homokedastisitas. From the results it was concluded that the data is good and consistent.				
Hypotheses 5	*Prob.=*	*Prob.=*	*Prob.=*	*Prob.=*
Stock Return → Dividend Testing result LS*): R^2: 0,129 Prob.: 0,0081	0,1414	0,3663	0,5350	0,1889
Classical assumption test results above indicate that the data used for testing H_5 normally distributed, linear, does not have auto-collinearity problems, as well as the assumptions are met homokedastisitas. From the results it was concluded that the data is good and consistent.				

Testing using Eviews:3.0

The fourth hypotheses of this study states that net income affect the level of dividend pay out. The fourth hypotheses testing results show probability value 0.0081, and R2 of 12.9%. These results

indicate that the value of dividend distributed to shareholders in Indonesia related to the company's net income. These results are relevant to the findings of most of the research in this study. This finding an excuse to support the fourth hypotheses of this study, because the statistical results provide empirical evidence that net income be the primary consideration for the banking company in Indonesia when will distribute dividends to the owners of the company.

Testing for the fifth hypotheses which states that stock prices affect the level of dividend pay out done using OLS. From the statistical results of testing the fifth hypotheses, the probability values obtained 0.0000, and R2 of 63%. The results of this test indicate that the amount of the dividend is given to the owner of the banking company in Indonesia to consider the company's stock price in a given year. This statistical value is the reason for our study supports the hypotheses that all five built in this study. This finding provide empirical evidence that at the same time the company's stock price is also a major consideration for businesses when banks in Indonesia will distribute dividends to the owners of the company.

Table 4. Hypotheses testing result

Panel A	**Hypotheses**	**F-value**	**Sign**	**Conclusion**	
Hypotheses 1,2 and 3	*Ha1*	*-4,684*	*0,032*	*Ha1 supported*	
Testing by simple	*Ha2*	*4,521*	*0,035*	*Ha2 not supported*	
Indendent t-test sample	*Ha3*	*0,491*	*0,495*	*Ha3 not- supported*	
Panel B	**Hypotheses**	**F-value**	**R^2**	**Sign**	**Conclusion**
Hypotheses 4 and 5	*Ha4*	7,5905	0,129	0,0081	*Ha4 supported*
Testing by simple regression	*Ha5*	*135,011*	*0,634*	*0,0000*	*Ha5 supported*

Since fourth and fifth hypotheses have supported result, it's give empirical evidence that shareholder wealth banking company in Indonesia is very depend on the company's performance and market confidence in the company. These conditions also provide insight to the banking businesses that value chain linking corporate profits, stock prices, and the value of dividends happened in the banking company in Indonesia. The result of this study support Gordon's study (1959) that stated three possible hypotheses with respect to what an investor pays for when he acquires a share of common stock are that he is buying (i) both the dividends and the earnings, (2) the dividends, and (3) the earnings. Table 4 shows the results of hypotheses testing.

5. Conclusion, implications, limitations and suggestions

This section is the last part of our study. Respectively will be discussed conclusions, implications, limitations, and suggestions that need to be given from this study. Conclusion of the study describes the findings of research on the issues important to do this study were derived from the results of sample testing. Implications of the study will explain the significance of the findings of this study related to real practice associated with shareholder wealth during the global crisis.

Furthermore, because this study is not free from shortcomings, which are caused by the limitations imposed by the researcher, then at the end it will be explained the limitations encountered during the implementation of this study. Limitations of the study are described in detail, according to the encountered during the study and can not be avoided despite efforts to overcome these limitations have been done. Thus, at the end of the study, we will provide suggestions for future researchers to conduct research related to this topic. Hopefully future studies can contribute increasingly more scientific means for the world of academics, practitioners, and even for those policy makers.

Conclusion

This study shows that there is a significant decline in its net profit after the global crisis. But there is not enough result to support second hypotheses about decrease of share prices as an excessive market sentiment surrounding global crises. It looks at the stock price actually rose after the global crisis. Other conditions have been found in this study is that there is an increase dividends given to shareholders after the crisis. These findings shows that the banking sector in Indonesia has a fairly strong resilience in the face of the global crisis in 2008. This condition may occur due to the success of fiscal regulation of Indonesia Bank to save Indonesian economy.

Other findings in this study is that the consideration of the provision of dividends to the shareholders is not only limited to the net income. It is seen as the share price is also a consideration when the management company set the value of the dividends to the owners of the company.

Implication. These results of study imply that the banking in Indonesia is quite resilient in the face of a major crisis which hit the world in the year 2008. These results also provide other implication that the fiscal policy implemented by

the Central Bank of Indonesia on target so as to provide reinforcement for the relevant sectors. It also indicates that government intervention can reduce the global impact. The better a policy issued by the government, the stronger the economy.

Limitation. This study can not be separated from the limitations and drawbacks, especially in terms of the availability of financial data banking companies listed on the Indonesia Stock Exchange. However, this study as much as possible to cope with the use of other data sources. As stock return data we obtained from sources http://finance.yahoo.com. But by revealing the source reference, the validity of the data can still be maintained in this study.

Suggestion. Future studies are expected to continue to expand this issue to the macro aspects and possible comparisons between countries. Issues such as fiscal policy as to what was effective in strengthening the banking system of the world, it needs to be investigated. Although highly contingent nature, the characteristics of which may occur in similar economies can provide meaningful information.

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РАЗДЕЛ 3
КОРПОРАТИВНОЕ УПРАВЛЕНИЕ В РАЗВИВАЮЩИХСЯ СТРАНАХ

SECTION 3
CORPORATE GOVERNANCE IN DEVELOPING COUNTRIES

IMPACT OF CARBON EMISSIONS ON TOTAL ASSETS AND OPERATING COSTS: AN ANALYSIS OF THE JSE100 COMPANIES

Alfred Bimha*

Abstract

There is a definite concern in the rise of carbon emissions globally from traditional methods of production (Stern, 2008; IPCC, 2007). More so it is now widely acclaimed that by adopting production processes that reduce carbon emissions to low levels, companies will succeed in reducing their operating costs (Dietz et.al, 2009; Sims et.al, 2003). There has been limited study in investigating how the present state of companies' carbon emissions output is related to their operating costs and total assets. Therefore the study intends to establish the level of interactions between the carbon emissions, total assets and the operating costs they report annually. A panel data analysis was done on these three variables using a sample of the top 100 Johannesburg Stock Exchange (JSE) reporting companies in South Africa. The study utilized the data of companies that report their emissions to the Carbon Disclosure Project (CDP) annually and are the top 100 JSE Companies by market capitalization and categorized the CDP reporting companies into 7 industrials sectors. The 7 industrial sectors are Consumer Discretionary, Consumer Staples, Energy and Materials, Financials, Health Care, Industrials and IT and Telecoms. The results indicate that in the short run there is no strong relationship between carbon emissions output and operating costs. More so, the carbon emissions have a very weak and statistically insignificant relationship with total assets.

Keywords: Carbon Emissions, JSE100, South Africa, Panel Data Analysis

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1. Introduction

Climate change is a phenomenon that is now a main agenda on almost all corporate boards worldwide (Wiedmann & Minx, 2007). The increased interest in climate change by most firms stems from the rationale that human-induced activities and corporate operations are the main cause of global warming which leads to an adverse change in climate patterns (Pearce et.al, 1996; Verweij et.al, 2006; Stern, 2007). Various ways of dealing with climate change through corporate behavioral change have been developed. Currently the popular corporate ways of solving climate change include measuring and disclosing carbon emissions of business operations and adapting or innovating to

carbon emissions free production processes (Dietz et.al, 2009; Sims et.al, 2003). The assertion by Kolk et.al (2008) that firms are engaged in continual progress of reducing carbon emission raises the question of how the companies that are currently disclosing their emissions in annual public statement are being viewed in the financial markets.

The mantra of growing green economies and industries makes it imperative to study the status quo of a company's production processes and the ongoing change from high carbon production processes to lower ones (Pearce et.al., 1989; Fankhaeser et.al, 2008; Makower & Pike, 2009; Stern, 2007). The move from high carbon production processes to lower ones presents a challenge of revamping production processes and the assets used for production (Stern, 2007; Winkler & Marquand, 2009). More so the South African National Development Plan insists on delinking economic activity from environmental degradation and the use of carbon –intensive energy (National Planning Commission, 2011). The National Treasury in South Africa intends to introduce a carbon tax in 2015 and hence it is imperative to measure the amount of carbon emissions in relation to assets size of a firm and its operating costs to determine its vulnerability to increased costs of carbon tax. Hence in this study, the investigation of how the seven (7) sectors of the (Johannesburg Stock Exchange Top 100 companies) JSE100 companies' assets and operating costs are related to the carbon emissions they produce is done. Such a study is significant in determining the transition from a company dependning on high carbon production processes to lower ones. The main interest is looking at how the high carbon intensive sectors of the JSE100 are fairing compared to the low carbon intensive sectors. More so the research will establish the sectors that are more susceptible to carbon emissions. Such information will be beneficial to investors who intend to invest in sectors that are addressing climate change and also the policy makers in South Africa with regards to implementing the carbon tax.

The main aim of this study is to establish the extent of the relationship that exists between carbon emissions of the JSE 100 CDP (Carbon Disclosure Project) reporting companies and their operating costs and total assets. The study will first present and critic relevant work and literature and establish a theoretical framework of how carbon emissions can be linked to operating costs, company assets and firm performance in general. The next section will present the methodology used to undertake this study and a section on results and their discussion will follow ending with a conclusion.

2. Literature Review

Climate Change and Measurement of Carbon Emissions

The phenomena of climate change has to do with how natural and human induced activities that produce green house gases (GHG) lead to a formation of a blanket around the earth's globe. The blanket formed by the GHGs traps the sun rays leading to increased earth's surface temperature which will affect the atmospheric weather patterns leading to adverse weather of typhoons, floods, drought, melting of glaciers, uncontrollable fires, rising of ocean wave levels amongst a host of similar weather repercussions (Andronova & Schesinger, 2000; Gore, 2006). Such adverse weather conditions are not favorable to economic activities of agriculture, mining and other manufacturing activities. There is a high link in energy use and emission of green house gases by most sectors of the economy or at a national scale (Schipper et.al, 1997; Richmond & Kauffman, 2006; Soytas et.al, 2007). Most of the studies have concentrated on analyzing the relationship between energy use, economic growth and carbon emissions and mostly at national level and at the perceived highly carbon intensive industries (Oil and gas, electricity generation, coal mining, transport, heavy manufacturing and so forth).

However companies have other sources of carbon emissions besides energy use and these are reflected in the scopes 1, 2 and 3 of carbon emissions measured using the Greenhouse Gas Protocol Corporate standards (GHG Protocol). The GHG Protocol Corporate Standards are used by companies in preparing a GHG emissions inventory. There are three scopes of quantifying carbon emissions from a company's activities; scope 1 is all GHG direct emissions; scope 2 are the indirect emissions from consumption of purchased electricity, heat or steam and scope 3 pertains to other indirect emissions such as extraction and production of purchased materials and fuels, transport related activities in vehicles not owned or controlled by the company and outsourced activities (GHG Protocol, 2008). With this background it is essential to link the carbon emissions of companies to the operating costs they incur and the assets they use to produce income. A company that is incorporating low carbon production processes should have lower carbon emissions output compared to one which is still using high carbon emission processes (Enkvist et.al, 2008).

Financial or Economic Performance and Environmental Performance

The main concern in literature is coming up with metrics that measure environmental performance at

firm level. Environmental performance alongside other components of economic sustainability and social responsibility are summed up and termed corporate sustainability. It is envisaged that a sustainable firm is one who has a balance of these three components (Dyllick & Hockerts, 2002; Elkington 2007). However for this study the intersection of economic and environmental sustainability is of interest since the aim is to find out how economic sustainability relates to environmental sustainability.

In literature there is a wide coverage of the relationship of financial performance and environmental performance of firms. There is a concern of how the disclosure of environmental information affects a firm's share price. Cohen and Konar (2006) found a negative correlation between bad environmental practices and intangible assets of firms. However they asserted that conflicting results from studies of financial performance and environmental performance relationship are attributed to small samples and unclear environmental criteria. Busch and Hoffman (2011) in the same vein established a credible proxy for environmental performance being the carbon emissions measured by a firm and relates them to the financial indicators of units of production, turnover or sales, total costs, cost of goods sold, value added, earnings before interest and tax and market capitalization or equity. The carbon performance metrics or indicators suggested by Busch and Hoffman cover carbon emissions dependency, intensity, exposure and management. However, King and Lennox (2001) also found a positive relationship between low pollution output and high financial performance but this is attributed to specific firm characteristics and strategic position. Using a resource based perspective of the firm Russo and Fouts (1997) indicated that there is a positive relationship between environmental performance and financial performance and this relationship tend to strengthen as the industry grows.

In another study by Orlitzky et.al (2003), they did a meta-analysis of 52 studies which looked at the relationship between Corporate Social/Environmental Performance (CSP) and Corporate Financial Performance (CFP). The main outcome of the study indicates that there is a high correlation between corporate social responsibility and accounting measures and the corporate environmental responsibility had a lower correlation to accounting measures. This is in contrast to studies reviewed above though they give contexts to when a high correlation between environmental performance and financial performance is realized. Albertini (2013) also did a similar meta-analysis study and had the same outcome as Orlitzky however Albertini reiterated the need to standardize environmental performance measures so as to derive consistent results. Another study by Veen and Venugopal (2014) also agree that the positive relationship between economic performance and environmental performance are achieved under different contexts. Telle (2006) argues that most studies which proved a positive relationship between economic performance and environmental performance did not take into cognizance the problem of omitted variable bias seriously. In this case omitted variables include good management and use of more efficient technology. These are considered to cause improved positive effect of economic performance and environmental performance, however when firm specific characteristics are considered the positive effect tends to vanish away or change.

The main concern however, is the absence of studies on how operating costs relate to amount of carbon emissions produced by firms. There has been no wide study around this relationship and this study aims at unraveling this relationship and initiates an insightful understanding of it. As can be observed there is more literature which confirms a positive relationship between financial or economic performance and environmental performance albeit under different contexts of firms size, type of industry and firm specific characteristics of management and type of technology being used. From empirical studies done so far the most popular econometric methods of testing this relationship has been simple regression (Bragdon and Marlin 1972; Jaggi and Friedman, 1992; Orlitzky, 2001), and with this insight, the next section sets out to establish the methodology.

3. Methodology

Sample and Data Collection

The sample of the study consists of the companies that are listed on the Johannesburg Stock Exchange (JSE) that report to the Carbon Disclosure Project (CDP) annually since 2007. The targeted companies for the CDP report are the top 100 companies by market capitalization. The carbon disclosure project is an independently run research survey that solicit information from voluntary companies targeted each year through a questionnaire to provide data of measured and disclosed carbon emissions, management of reducing carbon emissions and strategies being adopted in reducing these emissions amongst a host of questions. The study has incorporated the companies that participated each year in the CDP survey since 2009, and therefore the sample size differs each year. Panel data is collected from 2009 to 2013 and it can be observed that there are no consistent carbon emissions data for most companies since 2007, only beginning in 2009 is significant data observed. Therefore the companies

with reported emissions in the CDP report are considered from 2009 to 2013 and Table 1 presents the number of companies that participated in each sector.

Table 1. Sample data Characteristics

Year	2013	2012	2011	2010	2009
Number of responding companies JSE 100	79	75	78	67	55
Responding companies by sector (in the sample)					
Consumer Staples	5	6	7	5	3
Consumer Discretionary	7	8	8	7	3
Energy and Materials	8	20	20	19	16
Financials	7	16	18	15	10
Health Care	5	4	4	3	3
Industrials	9	8	9	8	9
IT & Telecommunications	2	3	3	3	2
Total	43	65	69	60	46
% of sample to CDP JSE responding companies	54%	87%	88%	90%	84%

Source: CDP Reports 2009, 2010, 2011, 2012, 2013

The Mcgregor BFA database was used in collecting the financial data of total operating cost and total assets of each CDP participating company and the carbon emissions data was collected from CDP annual reports. Unbalanced panel data is used since some companies were not consistently reporting their emissions every year. This panel data set contains the observations on the variables X_1 ,X_2 and Y and the data are denoted as follows:

$(X_{it1}, X_{it2}, Y_{it})$, $i = 1, \ldots,n$; and $t = 1,\ldots,T$

Where the first subscript, i refer to the entity being observed, and the second subscript, t, refers to the date at which it is observed and 1 denotes variable 1 and 2 denotes variable 2. Reinterpreting this to our data:

X_1 will be total assets
X_2 will be total operating costs
Y will be either scope 1 or scope 2 emissions

The data is structured in sectors as they appear in the CDP reports being (seven) 7 in number and these include: Consumer Staples, Consumer Discretionary, Energy and Materials, Financials, Industrials, Health Care, and finally IT and Telecommunications. Scope 3 (other indirect) emissions have been left out since they only appear in the CDP report of 2012 only and Scope 1 and 2 are only used. Operating costs and total assets are chosen on the basis of being proper proxies of the sources of emissions. These two variables embody the operational parameters of scoping sources of emissions in a production process of a firm (GHG Protocol, 2008). The scope of the study is mainly on the cost - emissions relationship and not the profit – emissions relationship.

Model Estimations

The aim of the study was to find the relationship that exists between operating costs of a company, the total assets it has and the carbon emissions it produces and the following hypotheses are postulated to fulfill the research aim:

Hypothesis: There is correlation between Total Assets, Total Operating costs and Carbon Emissions on each of the 7 categorized sectors of the JSE 100 CDP reporting companies.

H_o: There is no correlation between Scope 1 carbon emissions and total assets

H_a: There is correlation between scope 1 carbon emissions and total assets

H_o: There is no correlation between Scope 2 carbon emissions and total operating costs

H_a: There is a correlation between Scope 2 carbon emissions and total operating costs

The study makes use of Panel Least Squares Multiple Regression model to analyze the relationship between scope 1 and 2 emissions, and total assets and operating costs. This regression model was deemed appropriate since the study makes use of panel (longitudinal) data. Panel data consists of two or more units with two or more periods. In the case of the data collected, there are four variables (Scope 1 emissions, Scope 2 emissions, operating costs and total assets) and 5 periods (2009 to 2013).

The general panel least regression model is as follows:

$Y_{it} = \beta_1 X_{it1} + \beta_2 X_{it2} + \mu_{it}$ for $i = 1, 2, \ldots, N$ and $t = 1, 2, \ldots, T$

Where:

Y_{it} is the value of Y for the *ith* unit for the *tth* time period

X_{it1} is the value of X_1 for the *ith* unit for the *tth* time period

X_{it2} is the value of X_2 for the *ith* unit for the *tth* time period

μ_{it} is the error for the *ith* unit for the *tth* time period

Two regression models are estimated based on the above model estimation as follows:

First equation (Model 1):

$Scope1_{it} = \beta_1 Total\ Assets_{it1} + \beta_2 Operating\ Costs_{it2} + \mu_{it}$ for $i = 1, 2, \ldots, N$ and $t = 1, 2, \ldots,$

Where:

$Scope1_{it}$ is the value of Y for the *ith* unit for the *tth* time period

$Total\ Assets_{it1}$ is the value of Total Assets for the *ith* company for the *tth* time period

$Operating\ Costs_{it2}$ is the value of Operating Cost for the *ith* unit for the *tth* time period

μ_{it} is the error for the *ith* company for the *tth* time period

Second Equation (Model 2):

$Scope2_{it} = \beta_1 Total\ Assets_{it1} + \beta_2 Operating\ Costs_{it2} + \mu_{it}$ for $i = 1, 2, \ldots, N$ and $t = 1, 2, \ldots,$

Where:

$Scope2_{it}$ is the value of Scope 2 carbon emissions for the *ith* unit for the *tth* time period

$Total\ Assets_{it1}$ is the value of Total Assets for the *ith* company for the *tth* time period

$Operating\ Costs_{it2}$ is the value of Operating Cost for the *ith* unit for the *tth* time period

μ_{it} is the error for the *ith* company for the *tth* time period

These two equations will be run for each sector and this will bring the total fixed effects regression model runs to fourteen (14) since the panel data is categorized into 7 sectors. The descriptive results of the data to be analyzed are presented in table 2, whilst table 3 and 4 present the results of the two regression models.

4. Results and Analysis

Table 2 shows the descriptive statistics of each sector and its variables. It can be observed that the Financials sector has the largest aggregated amount of total assets valued at R28.4 trillion followed by Energy and Materials Sector at R10.1 trillion, however the lowest total assets are recorded in the Health Care Sector with R433 billion . With regards to operating costs the Energy and Materials Sector has the highest sum value of R514 billion and the least sum value of operating cost is in the health care sector at R19 billion. Scope 1 and 2 emissions aggregated values are highest in the Energy and Materials sector with 586 million tCO_2e and 358 million tCO_2e respectively whilst the lowest aggregated scope 1 and 2 emissions is found in the Health Care Sector valued at 352,220 tCO_2e and 2,444,540 tCO_2e respectively. The accept or reject criteria based on the results presented in tables 3 and 4 of the regressions done is detailed in table 5.

In this study two regression models are run per each sector and in the first model scope 1 (direct) carbon emissions is the dependent variable and total assets and operating costs are the independent (explanatory) variables the results are displayed in table 3. It can be observed that the intercepts of the Consumer Discretionary and IT and Telecommunications sector are negative and statistically insignificant. The rest of the sectors have positive coefficients and are statistically significant. Consumer Staples, Energy & Materials, Financials and Health Care sector indicate that an increase in operating costs will lead to an increase in scope 1 (direct) carbon emissions output. The largest increase is experienced in Energy and Materials sector were an increase by one tCO2e of scope 1 (direct) carbon emissions is explained by 89% increase in operating costs. However by and large the decrease and increase of total assets of a company are insignificant to the decrease or increase of the scope 1 (direct) carbon emissions of the sectors under study.

In the second regression model scope 2 (indirect) carbon emissions is the dependent and total assets and operating costs are the independent (explanatory) variables and the results are displayed in table 4. The intercepts of all the sectors are statistically significant except for the health care sector which is insignificant. With regards to Energy & Materials sector the operating cost coefficient is the highest amongst the sectors and statistically significant were an increase by one ton of carbon emission (CO2e) of the scope 2 (indirect) carbon emissions is explained by a 43% increase in operating costs. However similar to model one, total assets coefficients explain a marginal increase in scope 2 (indirect) carbon emissions across the sectors though the coefficients of Consumer Discretionary sector, Consumer Staples sector, Financials sector and Health Care sector are statistically significant.

By classifying sectors into high carbon intensive sectors and low carbon intensive sectors, the implications of the results of this study can easily be understood. The high carbon intensive sectors are Energy and Materials sector and the Industrials sectors. These sectors rely mainly on high volumes of carbon intensive input materials into their production processes such as cement, oil, coal, water and electricity. The low carbon intensive sectors rely less on the carbon intensive input materials and these include the Consumer Staples, Consumer Discretionary, Financials and Health Care sectors. IT and Telecommunications seem to be between a high carbon intensive sector and a low carbon intensive sector judging from the intercept, which is midway for both scope 1 and scope 2 emissions. From the results of the two models it can be observed that high carbon intensive sectors tend to have increased operating costs leading to increased carbon emissions both directly and indirectly compared to the low carbon intensive sectors. However most of the negative coefficients of total assets and operating costs on both runs are statistically insignificant for most of the low carbon intensive sectors confirming how their operations and the assets they hold are climate friendly and thus leading to low carbon emissions.

Table 2. Descriptive Statistics for the Data Variables

		Mean	Median	Standard Deviation	Minimum	Maximum	Sum	Count
Consumer Discretionary Sector	*Scope1 (tCO_2e)*	164,165	15,663	299,294	412	873,154	4,432,443	27
	Scope2(tCO_2e)	174,060	144,554	129,962	19,106	569,719	4,699,627	27
	Total Assets(R'000)	17,807,567	7,078,000	24,585,153	3,690,330	104,204,000	480,804,314	27
	Operating Cost(R'000)	5,088,716	1,123,536	12,630,643	197,343	48,771,000	137,395,337	27
Consumer Staples Sector	*Scope1(tCO_2e)*	392,146	161,323	462,186	5,916	1,513,037	12,940,816	33
	Scope2(tCO_2e)	388,038	297,134	318,987	32,112	1,208,967	12,805,242	33
	Total Assets(R'000)	49,611,733	12,193,600	76,459,075	1,827,046	247,506,417	1,637,187,185	33
	Operating Cost(R'000)	2,910,533	941,300	3,992,682	124,766	12,980,641	96,047,588	33
Energy and Materials Sector	*Scope1(tCO_2e)*	7,063,801	896,529	15,519,829	2,262	66,895,000	586,295,479	83
	Scope2(tCO_2e)	4,315,658	2,107,933	5,966,283	176,980	28,798,955	358,199,641	83
	Total Assets(R'000)	121,847,392	41,004,000	232,198,357	4,063,000	1,313,087,395	10,113,333,567	83
	Operating Cost(R'000)	6,197,736	1,662,000	12,440,006	2,936	71,089,443	514,412,053	83
Financials Sector	*Scope1(tCO_2e)*	30,753	2,434	80,239	-	366,625	2,029,684	66
	Scope2(tCO_2e)	158,043	62,177	166,472	856	672,612	10,430,866	66
	Total Assets(R'000)	430,941,608	227,492,500	544,622,695	8,635,964	1,994,711,775	28,442,146,115	66
	Operating Cost(R'000)	1,669,802	846,529	2,161,892	21,478	11,363,671	110,206,940	66
Health Care Sector	*Scope1(tCO_2e)*	19,568	16,365	11,266	-	41,931	352,220	18
	Scope2(tCO_2e)	135,808	145,778	91,358	27,130	366,360	2,444,540	18
	Total Assets(R'000)	24,060,977	25,701,750	15,227,685	4,333,196	49,495,000	433,097,589	18
	Operating Cost(R'000)	1,092,065	970,737	798,392	220,258	3,430,000	19,657,167	18
Industrials Sector	*Scope1(tCO_2e)*	370,219	146,412	861,867	321	5,400,000	14,438,553	39
	Scope2	604,863	92,869	2,042,372	6,376	9,520,000	23,589,672	39
	Total Assets(R'000)	19,731,880	18,928,600	12,667,548	5,131,000	56,798,678	769,543,326	39
	Operating Cost(R'000)	1,544,694	1,201,300	1,198,892	236,845	4,108,127	60,243,074	39
IT & Telecommunications Sector	*Scope 1(tCO_2e)*	157,802	48,599	240,428	8,100	744,074	1,893,627	12
	Scope 2(tCO_2e)	403,234	381,590	193,306	55,186	721,969	4,838,813	12
	Total Assets(R'000)	71,568,474	49,636,000	48,111,897	16,766,689	147,449,000	858,821,689	12
	Operating Cost(R'000)	10,220,663	8,428,500	5,690,448	622,284	19,594,000	122,647,956	12

Table 3. Results from Model 1 (Scope 1 relationship with Total Assets and Operating Costs)

Sector	Consumer Discretionary	Consumer Staples	Energy and Materials	Financials	Health Care	Industrials	IT & Telecommunications
Constant/Intercept	-8,544.31 *(43,956.17)*	146,828.10 *(73,022.62)* **	4,387,582 *(1,808,839)* **	42,170.10 *(12,545.80)* ***	9,559.24 *(3,833.84)* **	503,781.60 *(265,941.10)* *	-108,825.60 *(101,793.30)*
Operating Costs	0.01189 *(0.00293)* ***	0.090573 *(0.063346)*	0.894163 *(0.633011)*	0.010513 *(0.010906)*	0.011293 *(0.002865)* ***	-0.036402 *(0.272154)*	-0.010261 *(0.027391)*
Total Assets	0.006301 *(0.001502)* ***	-0.000369 *(0.003308)*	-0.023518 *(0.033914)*	-0.0000672 *(0.0000433)*	-0.0000966 *(0.00015)*	-0.003919 *(0.025757)*	0.005191 *(0.00324)*
R-Squared Adjusted R-squared	0.662236 0.634089	0.523014 0.491215	0.143722 0.122315	0.053516 0.023469	0.548824 0.488667	0.011127 -0.04381	0.656857 0.580603
S.E. of regression	181,045	329,673.30	14,539,730	79,291.92	8,056.25	880,544.10	155,703.00
Total panel (unbalanced) observations	27	33	83	66	18	39	12

Table 4. Results from Model 2 (Scope 2 relationship with Total Assets and Operating Costs)

Sector	Consumer Discretionary	Consumer Staples	Energy and Materials	Financials	Health Care	Industrials	IT & Telecommunications
Constant	116,758.10 *(24,947.20)* ***	171,022.10 *(34,147.45)* ***	1,683,271.00 *(347,059.80)* ***	81,373.76 *(21,480.51)***	20,991.87 *(30,293.52)*	1,441,560.00 *(610,352.80)* **	416,539.40 *(138,438.80)* **
Operating Costs	-0.001178 *(0.001659)*	0.195405 *(0.029622)* ***	0.433995 *(0.121455)* ***	-0.012041 *(0.018673)*	0.057824 *(0.022640)* **	0.437598 *(0.624612)*	0.008651 *(0.037252)*
Total Assets	0.003555 *(0.000852)* ***	-0.007089 *(0.001547)* ***	-0.000471 *(0.006507)*	0.000225 *(0.0000741)* ***	0.002147 *(0.001187)* *	-0.07666 *(0.059115)*	-0.001421 *(0.004406)*
R-Squared Adjusted R-squared S.E. of regression	0.422988 0.374903 102,751.60	0.781025 0.766427 154,164.60	0.786700 0.781368 789,721.00	0.355394 0.334930 135,761.10	0.571601 0.514481 63,657.34	0.072439 0.020908 2,020,908	0.018187 -0.199994 211,756.00
Total panel (unbalanced) observations	27	33	83	66	18	39	12

Standard error is in brackets

,,*** indicates significance at 90%, 95% and 99% level, respectively*

Table 5. Accept/Reject criterion

Sector	Model 1		Model 2	
	Operating Cost	*Total Assets*	*Operating Cost*	*Total Assets*
Consumer Discretionary	***Reject H_o , Accept H_a***	***Reject H_o Accept H_a***	Accept H_o , Reject H_a	***Reject H_o Accept H_a***
Consumer Staples	Accept H_o , Reject H_a	Accept H_o , Reject H_a	Reject H_o Accept H_a	***Reject H_o Accept H_a***
Energy & Materials	Accept H_o , Reject H_a	Accept H_o , Reject H_a	Reject H_o Accept H_a	Accept H_o , Reject H_a
Financials	Accept H_o , Reject H_a	Accept H_o , Reject H_a	Accept H_o , Reject H_a	***Reject H_o Accept H_a***
Health Care	***Reject H_o Accept H_a***	Accept H_o , Reject H_a	***Reject H_o Accept H_a***	***Reject H_o Accept H_a***
Industrials	Accept H_o , Reject H_a	Accept H_o , Reject H_a	Accept H_o , Reject H_a	Accept H_o , Reject H_a
IT & Telecommunications	Accept H_o , Reject H_a	Accept H_o , Reject H_a	Accept H_o , Reject H_a	Accept H_o , Reject H_a

Conclusion

The study aimed at presenting the general relationship of carbon emissions, total assets and operating costs of the companies in the seven sectors of the CDP JSE 100. The results have shown that high carbon intensive sectors (Energy & Materials and Industrials) tend to have a strong correlation between operating costs and carbon emissions. On the other hand the low carbon intensive sectors (Consumer Discretionary, Consumer Staples, Financials, Health Care and IT & Telecommunications tend to have a weak correlation between operating costs and carbon emissions. In relation to the link between total assets and carbon emissions all sectors showed a weak correlation and mostly statistical insignificance of the relationship. This might be a possibility that most of the companies are replacing the perceived carbon emissions 'causing' assets with assets that facilitate the limitation of emission of carbon into the environment. Such assets might be fuel efficient cars, green buildings, clean source of energy (wind power, solar power) and carbon emission free production machines amongst a host of measures.

However in our study the main issue was the limited range of data (from 2009 to 2013). Our data was panel in structure but was only limited to five years and this could have possibly caused most of the results to be statistically insignificant. Added to that was the issue of unbalanced panel data and this could have biased our results. However the given data was run through an unbalanced panel regression model which removed this problem thus our results were improved to an extent. However there is need to do an intense sector by sector to unravel the intricate dynamics of the relationship of carbon emissions to total assets and operating costs. Broader models should be adopted to come up with more statistically significant models that can establish the relationship in detail. It is envisaged that as the data range grows annually, the relationship can be predicted more accurately. However the data that was used has to a certain extent confirmed a general relationship on the variables under study. Scope 3 (other indirect) carbon emissions were not considered for this study due to their unreadily availability for the years under review. It will be encouraged that for future study scope 3 be included in the analysis. Future research should also decompose the operating costs of each sector and regress or correlate them to the carbon emissions in order to deepen and subjectively compare this relationship across the sector and this also applies to the total assets.

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THE PERFORMANCE OF SOCIALLY RESPONSIBLE INVESTMENT FUNDS AND EXCHANGE-TRADED FUNDS: EVIDENCE FROM JOHANNESBURG STOCK EXCHANGE

Godfrey Marozva*

Abstract

The research reported in this article explored how the JSE SRI Index performed relative to exchange-traded funds during the period of economic growth as well as during the period of economic decline between 2004 and 2014. The JSE SRI Index and exchange traded funds are analysed by a single factor model as well as other risk-adjusted performance measures including the Sharpe ratio, the Treynor ratio and the M-squared ratio. The single-factor model regression results suggest that during the period of economic growth the JSE SRI index neither significantly outperformed nor underperformed the exchange-traded funds. However, the JSE SRI Index significantly underperformed the exchange-traded funds during the period of economic decline. Further tests that engaged other risk-adjusted measures indicated that the exchange-traded funds performed better than the JSE SRI index in both periods. Based on this research it is recommended that further research be conducted using models that can control for the liquidity difference in funds.

Keywords: Socially Responsible Investment Index, Exchange-Traded Funds, Performance, Capital Asset Pricing Model, Sharpe Ratio, Treynor Ratio, M-Squared Ratio

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"Not everything that can be counted, counts; and not everything that counts can be counted."
Albert Einstein (1879-1955)

1. Introduction

For many years investment professionals believed that the ultimate goal for investing was to maximise return at any given level of risk. Markowitz (1952) in his seminal work of portfolio theory suggested that since investors are rational and averse to risk, they aim at maximising return per any given level of risk. However, there has been a paradigm shift in the way investors construct their investment portfolios; individual choices are no longer governed by risk and return only but also by the social, ethical and environmental practices (Pretorius and Giamporcaro, 2012). Consequently, the financial institutions have responded to these changes through the establishment of socially responsible investment (SRI) funds.

Although the principles of socially responsible investing (SRI) have been known for many decades, the need for ethical screening of corporate behaviour has become necessary in view of reports of some serious corporate environmental and accounting scandals over recent decades (Bauer, Derwall and Otten, 2007). The surge in interest in socially responsible investing paved the way for the introduction of SRI indices by many stock exchanges in the past two decades. However, the performance of SRIs has been in the centre of debate by many finance professionals because both theory and empirical research have shown that these strategies have had positive as well as negative effects on the portfolio performance of those funds (Rathner, 2013).

Bauer, Derwall and Otten (2007) believe that investing in SRI funds will always come at a cost and hence will always underperform their conventional peer instruments. Furthermore, these writers argue that selecting securities based on a certain criterion entails forgoing other securities which do not meet the threshold of social, ethical and environmental screening, thereby forgoing the benefits of diversification. Other scholars such as Schröder (2007) argue that screening securities based on business ethics, social responsibility and environmental issues can be a costly exercise resulting in low performance of portfolios based on this criterion. Another group, namely Jones, Van der Laan, Frost and Loftus (2008), holds the view

that companies that do not meet SRIs screening criteria always produce better returns regardless of how the economy performs. Supporters of these views therefore claim that SRI funds are likely to underperform their conventional peers under any economic environments.

Contrary to the idea that SRIs come at a cost and ultimately underperform, other researchers such as Cortez, Silva and Areal (2009) show that social screening has resulted in an increase in returns of the portfolio. Their argument is based on the idea that people in general always want to do good. By investing in SRIs, investors believe they can support social activities and non-profit organisations or have the guarantee that their investments are not used to finance companies involved for example in the weapon industry or in polluting activities. Basso and Funari (2003) assert that the commonality and social responsibility features that characterise SRIs satisfy a deep human need to act according to one's conscience and behave in a socially useful manner that will benefit society. This provides one of the foremost motivations for investors to choose socially responsible mutual funds as investment vehicles leading to their enhanced returns.

However, proponents of socially responsible investment funds argue that while there may be less potential breadth in an SRI fund's portfolio resulting in poor diversification, those firms that are chosen for the portfolio are substantively better managed than the average firm. Thus they tend to generate equal or higher financial returns, even on a risk-adjusted basis (Barnett and Salomon, 2006).

In view of the conflicting evidence in literature, the research reported in this article sought to examine the performance of socially screened mutual funds during periods of economic growth as well as economic decline. This research focused on assessing the performance of SRIs during a recovery or contraction stages in the economy. The performance of the SRI indexes was estimated by the single-factor model (Capital Asset Pricing Model) to calculate the Jensen´s alpha (α) which is the extra-return that is not explained by the risk exposure with respect to the benchmark index. Other risk-adjusted measures were also employed and the t-statistic measure was used to measure the significance of the differences in performance.

This article contributes to the existing empirical work in three ways: Firstly the investigation relates to whether the JSE SRI Index outperformed the JSE All Share Index for the years 2004 to 2014. Unlike the research by Gladysek and Chipeta (2012), this research examined the performance during the period of economic growth and economic decline. Secondly, the returns investigated were adjusted for risk by utilising the Sharp ratio, the Treynor ratio, the M-squared measure and the Jensen's alpha. Thirdly, the analysis was based on a much longer period of 10 years and used much more recent and high-frequency data – instead of analysing yearly average returns, quarterly returns were examined.

The rest of the article is organised as follows: section 2 provides a review of related theoretical and empirical literature, section 3 presents the data and methodology, section 4 presents the findings, and the last section contains the conclusions.

2. Development of socially responsible investments in South Africa

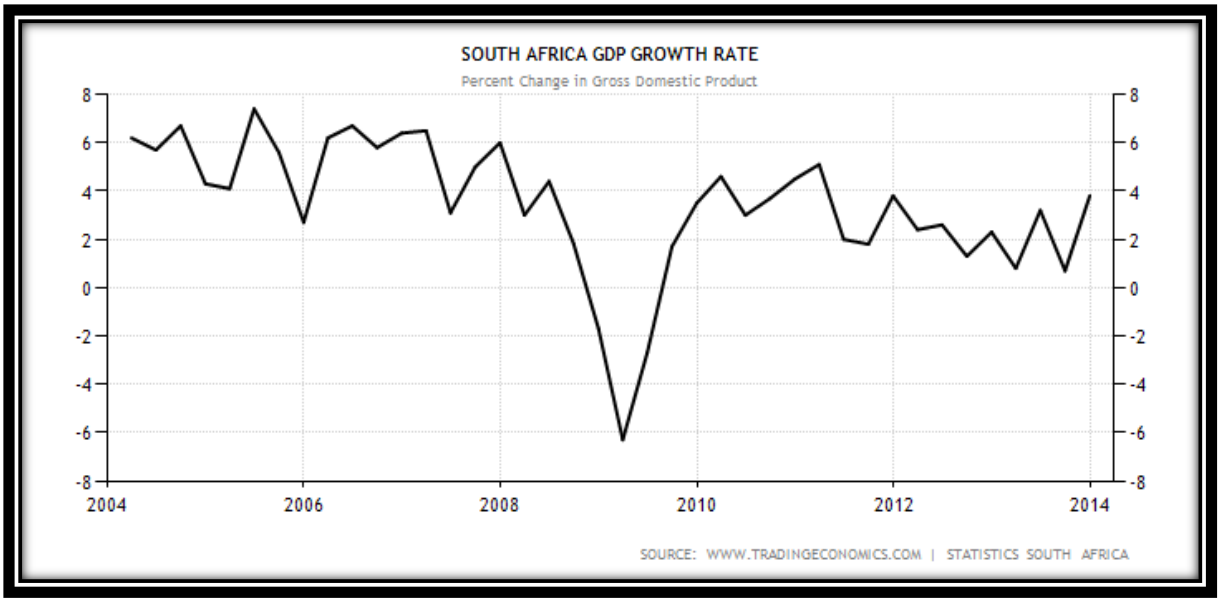
This article focuses on the relative performance of socially responsible investments and therefore the developments of this investment segment in South Africa are discussed. According to Giamporcaro and Viviers (2014), the South African SRI industry is believed to have great potential. Research conducted by Viviers, Bosch, Smit and Buijs (2009) indicates that the South African SRI market had 35 SRI-labelled funds in 2006 available to investors, amounting to approximately 0.7% of total assets under management.

In July 2009, research conducted by Pretorius and Giamporcaro (2012) revealed that there were 38 SRI-labelled products in South Africa, with an approximate market value of ZAR23.28 billion (about US$2.9 billion). More recent research reveals that the market has grown slightly since 2009 with a total of 52 SRI-labelled funds in existence at December 2011. Thirteen SRI funds were discontinued over the period July 1992 to December 2011 due to poor performance. However, the number of SRI funds still remains very marginal compared to mainstream investments. Developments in the SRI funds are closely associated with capital markets and economic growth. The next section discusses trends in capital markets development and economic growth in South Africa.

3. Capital markets and economic growth trends in South Africa

Many developments, both in the international arena and South Africa's local arena in the past decade resulted in a highly volatile gross domestic product (GDP) growth rate for South Africa. The South African economy in the past decade went through distinct economic cycles, particularly the recession during the period from 2008 to 2010. These cycles could have had some influence on the performance of SRI funds and exchange-traded funds (ETFs). The graph below (Fig. 1) shows the trend in GDP growth in the past 10 years.

Figure 1. South African gross domestic product growth rate

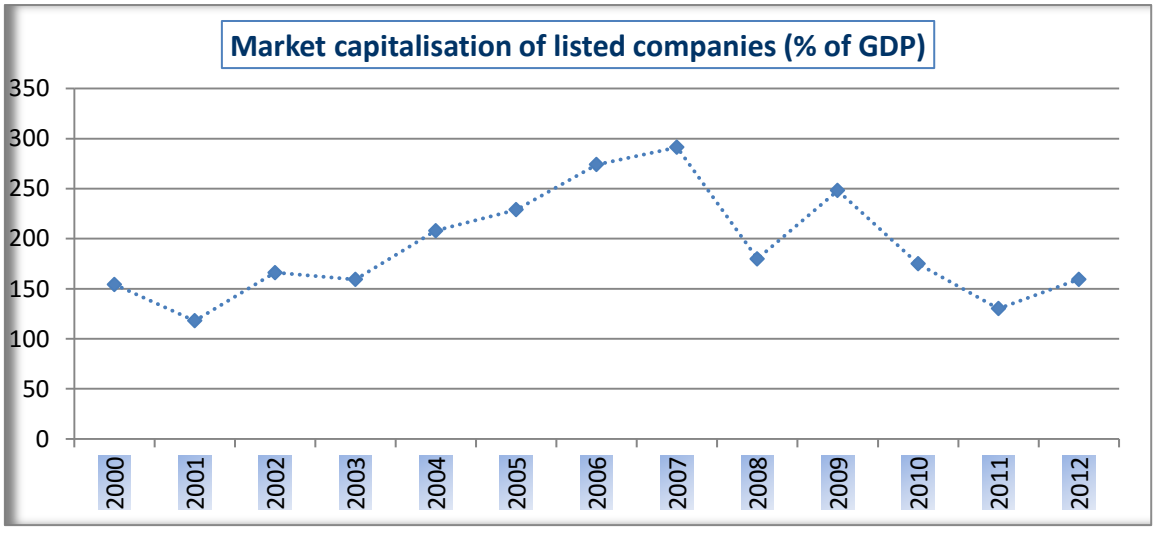


The graph in Figure 1 shows that there was neither an increase nor a decrease on average over the period of 2004 to 2007 that was followed by a steep fall in 2008 until 2009. The fall in GDP could have been a result of the country having gone through an economic recession coupled with a spillover effect of the global economic crisis in 2008/9 which resulted in a wobbly and uncomplimentary economic outlook.

Furthermore, the business environment in general was not favourable to investors as investments and trading were thin on all spheres, thereby negatively affecting GDP growth. The fall in GDP was not disastrous because the government intervened quickly with substantial government infrastructure development programmes. This helped the country to recover quickly compared to other affected countries such as the United States of America (USA) and Britain. Towards the end of 2009 there was a significant increase in the country's GDP growth rate from -6.3% to around 4% in the first quarter of 2010, and ever since the South African GDP growth rate has been fluctuating around 3%. South African capital markets almost went through the same trend as shown in Figure 2.

South Africa is Africa's biggest institutional investment market with assets under management worth more than ZAR4 trillion (approximately US$500 billion) (Giamporcaro and Viviers, 2014). The graph in Figure 2 shows the development in South African capital markets using stock market capitalisation as a proxy.

Figure 2. Johannesburg stock exchange market capitalisation
Source: World Bank Global Statistical Indicators (2014)



According to the World Bank global statistical indicators web site, the Johannesburg Stock Exchange (JSE) is the largest stock market in Africa and the 14th largest stock market in world. At the end of 2012, the JSE had a market capitalisation of approximately US$900 billion. The JSE is one of the nascent emerging markets' stock exchanges.

As shown in Figure 2, there has been an exponential growth in the JSE market capitalisation ratio as a percentage of GDP from the year 2000 to beginning of 2007. The capitalisation ratio increased undeterred until the financial crisis in 2008. The JSE witnessed a slump during the crisis and this continued until the end of 2011 despite all the robust financial market regulations the country prides in having. This could have been a result of how financial markets operate. Globalisation resulted in highly interconnected financial institutions such that a contagion effect was extensive during the crisis. The performance of capital markets obviously reflect the performance of investment instruments that make up that market such as stocks, indices, bonds and mutual funds. The following section discusses the performance ETFs and SRIs aiming to understand their performance relative to the market and to each other.

4. Performance of socially responsible investments

Socially responsible investments are playing an increasing role among the financial investments of international capital markets. The term 'socially responsible investment' refers to the practice of making investment decisions on the basis of both financial and social performance. Many mutual funds across the world apply SRI as a strategy and use an array of social screening methods to determine their portfolios. Screens are usually based on environmental, social or ethical criteria.

The main question regarding the studies on the performance of SRI investment funds is whether these funds perform better than traditional investment funds that have no restricted investment universe (Schröder, 2004). There are three views on the theoretical front that explain the performance of SRIs relative to the conventional mutual funds. These three views will now be discussed.

The first view maintains that socially screened investments underperform the portfolios that are not screened. Studies consistent with this view include those undertaken by Jones, Frost, Loftus and Van der Laan (2007), Schröder (2007), and Bauer, Koedijk and Otten (2005) who posit that SRI funds or indices underperformed in financial performance against conventional funds or indices. This is a perplexing result since SRI funds are restricted to a subset of the total investment universe and should therefore exhibit at best the same performance as comparable to conventional portfolios (Schröder, 2007). However, proponents of this theory argue that the additional costs of monitoring social performance will also cause lower returns. Accordingly, these funds should exhibit underperformance relative to conventional portfolios. Moreover, conventional funds that employ no social screens improve financial performance through benefits received from increased portfolio diversification (Barnett and Salomon, 2006).

Gregory, Matatko and Luther (1997) developed a two-factor capital asset pricing model (CAPM) which incorporated a 'size premium' to control for size bias in measuring the excess returns of SRI funds. Therefore, this regression based on two benchmarks indices was more appropriate for performance measurement because many SRI equity funds invest a larger part of their portfolio in small-cap stocks. Gregory et al. (1997) ultimately found evidence to support cross-sectional monthly returns of SRI trusts underperformed conventional trusts, but the results were again not found to be statistically significant (Jones et al., 2008). The utilisation of market indices as performance benchmarks for analysing SRI returns is appropriate as the match-pair analysis can sometimes remove distinguishing characteristics of the SRI fund since this type of analysis attempts to match fund characteristics between the control and treatment groups as closely as possible (Jones et al., 2008).

The second view maintains that socially screened investments outperform their conventional funds peers. Study by Derwall, Günster, Bauer and Koedijk (2003), established that the performance of some SRI portfolios outperformed their conventional counterparts; although not by a statistically significant margin. Other studies, such as those by Derwall et al. (2003), Kempf and Osthoff (2007) and Cortez, Silva and Areal (2009) concluded that SRI funds did in fact outperform their conventional counterparts over various stages and in various markets, although not to a statistically significant margin. Consistent to the theory of outperformance by SRIs, Hill, Ainscough, Shank and Manullang (2007) and Kempf and Osthoff (2007) assert that social screens represent filters that enable the identification and selection of firms with higher quality of management relative to their less responsible competitors. As a result, portfolios composed of socially responsible stocks would benefit from improved performance in the long run (Cortez et al., 2009). Therefore, funds that employ social screens effectively eliminate underperforming firms from their portfolio in order to improve financial performance.

Orlitzky, Schmidt and Rynes (2003) performed a meta-analysis of 52 funds in search of the relationship between corporate social

performance and corporate financial performance. The results confirmed that socially responsible investing outperformed traditional portfolios. The relationship was strongest for the social dimension within corporate social performance.

Focusing on the relationship between human resources management and firm performance in a study of around 500 multi-industry USA companies, Becker and Huselid (1998) showed that a high performance human resources management system has an economically and statistically positive effect on company performance and therefore on returns. Bauer, Günster and Otten (2004) also analysed the effect of corporate governance on stock returns and firm value. They used the Deminor Corporate Governance ratings to build a portfolio of well-governed companies against a portfolio of companies with bad corporate governance. They found positive results for style-adjusted returns, with weaker positive results.

Earlier study by Luther, Matatko and Corner (1992) attempted to identify the effects of social screening on portfolio performance by utilising the Jensen's alpha to measure the difference in performance. The results from the study by Luther et al. (1992) provided some weak evidence of superior performance (or greater returns) of the SRI funds as opposed to the FTSE All Share Index.

The third view maintains that the performance differential of SRI funds and traditionally managed funds does not deviate significantly from zero. Statman (2006) compared the returns of socially responsible indices and found no statistically significant differences between their returns and the return of the Standard and Poor (S&P) 500 Index of conventional companies.

In the studies by Bauer et al., (2005), Renneboog, Horst and Chendi (2008) and Otten, Bauer and Rad (2006) they were not able to find a significant performance gap between screened and non-screened portfolios. For instance, Otten et al. (2006) concluded that there were no statistically significant differences between the returns of ethically screened and unscreened portfolios in Australia for the period 1992 to 2003. Bauer et al. (2005) investigated the performance of international ethical mutual funds, corrected for investment style and found no significant difference in risk-adjusted returns between SRI and conventional funds for the period. Due to these inconsistences the research reported in this article tried to close the gap by analysing data through unconventional methods. The following section reviews methodologies previously employed and briefly explains what this research will add to existing methods.

To date much of the international research on SRI has been performed on USA and European samples and has employed a variety of methodological and statistical approaches to estimate the financial performance of these funds. These studies inevitably produced inconsistencies as a result of the interpretation difficulties of various studies (Jones et al., 2008). Although there are limitations when a CAPM model is used (for example, the assumptions underlying the CAPM model are not realistic and the model's parameters cannot be estimated precisely) it was decided that this is still the best model for this research.

However, the CAPM still continues to flourish because of its relative simplicity and the fact that alternative asset pricing models do not tend to perform any better (Jones et al., 2008). Bauer et al. (2007) suggested this viewpoint as they applied the single-factor CAPM and the multi-factor CAPM models to their study; and thereby confirmed similar results with both these models. In the current research the returns were further investigated by utilising other risk-adjusted return measures which include the Sharp ratio, the Treynor ratio, the M-squared measure and the Jensen's alpha. The following section assesses the performance of ETFs and SRIs relative to the market as well as relative to each other.

5. Data, empirical model specification and estimation techniques

Empirical research was used to properly demonstrate the effect that social screening has on the financial performance of mutual funds during periods of economic growth and economic decline. The research reported in this article used modern portfolio and stakeholder theories to evaluate the link between mutual funds practising socially responsible investing and their respective financial performance. Similar studies by Jones et al. (2008) also made use of a historical research design to investigate the performance of ethical mutual funds in Australia and the UK.

5.1 Data sources and definition of variables

The quarterly time series data for the period between 2004 and 2014 was utilised. All the data used in this research was obtained from the Johannesburg Stock Exchange, the central bank of South Africa (SARB) and World Bank Global Statistical Indicators. Both the JSE All Share Index and the JSE SRI Index were used instead of selecting particular portfolios. For conventional mutual funds this research utilised exchange-traded funds that are currently listed on the JSE that were active in the periods between 2004 and 2014. Since this research focused only on the ETFs that were active, analysis was done on the funds with the longest data history in the data set and other funds that did not meet the minimum prescribed time length of seven years were excluded.

The limitation of this research is that the McGregor BFA database only provided data on only ETFs that were active. The final sample of this research comprised eight 8 ETFs that were divided into two categories of small-cap stock funds and large-cap stock funds. To have a better understanding of the ETFs a summary of the descriptive statistics on the included ETFs is given in Table 1.

Table 1. Descriptive statistics on JSE ETFs

Portfolio type	Large-cap ETFs	Small-cap ETFs
Number of funds	5	3
Number of fund-month observations	72	72
Average monthly return (%)	0.94 1.02	-2.25 1.94
Average size (million Rands)	753 1,242	274 152
Average age (in years till 04/2014)	8.00 0.00	7.83 28.86

This table shows summary statistics on selected JSE ETFs. The first two lines show the number of included funds and the number of fund-month observations. The next lines show average values of the selected funds characteristics and (below) the standard deviation.

Source: Data acquired from McGregor BFA database

The performance of ETFs as shown in Table 1 was compared to the market during periods of economic growth (2004 to 2007 combined with 2011 to 2014) and periods of economic decline (2008 to 2010). Another comparison was done between SRIs and the JSE all-share index. This comparison was intended to identify whether ethical unit trusts outperformed or underperformed their conventional counterparts in relation to the JSE Index during the different stages of the business cycles. The following sub-section discusses the main model to be used in this research.

5.2 Model specification and estimation techniques

The Capital Asset Pricing Model (CAPM) based on the single-index model was used in the research. This is also the main model that has been utilised in other studies on SRI funds and ETFs performance. Rathner (2013) showed that Jensen's alpha (1968) and Carhat's four-factor alpha are the most prominent measures to evaluate the performance of funds; therefore this research utilised the Jensen's alpha and other risk-adjusted performance measures.

The intercept of CAPM, αi, gives the Jensen's alpha, which is typically interpreted as a measure of out- or underperformance relative to a market proxy (Statman, 2000):

$$Rit - Rft = \alpha i + \beta i\,(Rmt - Rft) + \varepsilon it \qquad (1)$$

This model is expressed algebraically, where *Rit* is the return on fund *i* in month *t*, *Rft* the return on a local one month T-bill in month *t*, *Rmt* the return on the relevant equity benchmark in month *t* and εit an error term (Bauer et al., 2005). This equation (1) was used to compute Jensen's alphas for both the portfolio of ethical and conventional mutual funds.

Data analysis was conducted by means of using E-Views statistical software. A p-value of 0.05 was used to determine statistical significance (Alpha) between ethical and conventional mutual funds. To enhance the comparability a 'difference portfolio' was constructed by subtracting conventional fund returns from ethical fund returns. This portfolio serves to examine differences in risk and return between the two investment approaches.

The Sharpe ratio, the M-squared ratio and the Treynor ratio were also utilised to gauge the performance of ethical and conventional funds during periods of economic growth and decline. The Sharpe ratio and the M-squared measures use standard deviation to measure a fund's risk-adjusted returns. The higher a fund's Sharpe ratio or M-squared ratio, the better its returns have been relative to its degree of risk. On the other hand the Treynor ratio uses systematic risk (beta) to adjust returns for risk.

5.3 Socially responsible investments and exchange-traded funds Jensen's alpha (α) analysis

The performance of the SRI indexes is estimated by the single-factor model (CAPM). The single-factor model is used to calculate the Jensen´s alpha, which is the extra-return that is not explained by the risk exposure with respect to the benchmark index. The βi coefficient is used to compare the relative risk of the SRI index and ETFs. As in the CAPM a $\beta i > 1$ indicates that the risk of the SRI index or ETFs is higher compared to the benchmark because a

benchmark return of one would translate into a return of the SRI index, which is larger than one. For βi < 1 the SRI index or ETFs have a lower risk compared to the benchmark. In Table 2 regression results from the CAPM are presented for the two sub-periods.

Table 2. The results of the one-factor model (CAPM) by sub-periods

Portfolio type	**Alpha** (α)	$\boldsymbol{Beta(\beta_t)}$	$\boldsymbol{R^2 / \ Nr.Obs}$
Panel A: Sub-period (2004 to 2007 and 2011 to 2014) – Economic growth			
JSE SRI Index	-0.02323*** 0.0004	0.1047*** 0.0235	0.4322 28
Conventional ETFs	-0.0253*** 0.0010	-0.0041 0.0730	0.0150 11
Difference	-0.0000 0.3181	-222.7577 68.2824	0.2642 11
Panel B : Sub-period (2008 to 2010) – Economic decline			
JSE SRI Index	-0.0324*** 0.0016	-0.0570 0.03513	0.2084 12
Conventional ETFs	-0.0313*** 0.0013	-0.0258 0.0221	0.1197 12
Difference	-0.03208*** 0.0062	43.7679 28.6614	0.1891 12

In Table 2 the results of the one-factor model (CAPM) for equally weighted portfolios of SRI Index and conventional ETFs are shown. The 'difference portfolios' are constructed by subtracting the returns of conventional funds' portfolios from the returns of JSE SRI funds index. These are presented in two sub-periods of economic growth and economic decline. Standard errors are reported below their respective coefficients.
**Coefficient is statistically significant at the 10% level.*
***Coefficient is statistically significant at the 5% level.*
****Coefficient is statistically significant at the 1% level.*

The second column of Table 2 contains the estimated values for the alpha parameter. The results show that the SRI Index and ETFs underperformed in relation to the market, as the alpha coefficients are significantly negative in both periods under review, which is during the period of economic growth and the period of economic decline. The main results as shown in Table 2 suggest that during the period of economic growth the ETFs and the SRI index performed equally: the difference is almost zero and is not significant. This is a clear indication that the performance of the SRI stock indexes did not deviate systematically from the exchange-traded funds. However, the results indicate that SRI index at 10% level significantly underperformed the ETFs during the period of economic decline.

The third column shows the results for the *beta*-coefficients and their test of significance. The estimated values can be interpreted as a measure of risk relative to the benchmark index. For the SRI index and ETFs the estimated betas are below one for all the funds during different economic cycles. In all cases beta is statistically insignificant except for the SRI Index during economic growth. In Table 3 regression results from CAPM are presented for the entire period of research.

Table 3. The Results of the one-factor model (CAPM) for the entire period of study

Portfolio Type	**Alpha** (α)	$\boldsymbol{Beta(\beta_t)}$	$\boldsymbol{R^2 / \ Nr.Obs}$
JSE SRI Index	0.0285 0.0229	1.5437* 0.8694	0.0766 40
Conventional ETFs	-0.1920** 0.0863	-5.6138* 3.0283	0.1404 23
Difference	-0.0089 0.0202	57.7881 39.2207	0.0930 23

In Table 3 the results of the one-factor model (CAPM) for equally weighted portfolios of SRI Index and conventional ETFs are presented. The 'difference portfolios' are constructed by subtracting the returns of conventional funds' portfolios from the returns of JSE SRI index. Standard errors are reported below their respective coefficients.
**Coefficient is statistically significant at the 10% level.*
***Coefficient is statistically significant at the 5% level.*
****Coefficient is statistically significant at the 1% level.*

Focusing on the entire period, the results from Table 3 show that the SRI Index outperformed the benchmark index (JSE All Share Index) but the results are not statistically significant. ETFs underperformed the JSE All Share Index, as the alpha coefficient is significantly negative. The difference in the performance of the SRI Index and ETFs shows that the SRI underperformed in relation to the SRI Index. However, the difference is not significant and therefore signifies that this underperformance does not deviate systematically from the exchange-traded funds.

Contrary to the results shown in Table 2, the estimated betas for both the SRI Index and ETFs were above one. In all cases beta is statistically significant at 10% level. This implies that these investment instruments have a relatively higher risk than the market. Therefore further analysis was done using other risk-adjusted measures as indicated in the following section.

5.4 SRIs and ETFs' Sharpe ratio (SR), Treynor ratio (TR) and M-squared analysis

The analysis of the relative returns of the SRI Index and ETFs employing risk-adjusted measures which include the Sharpe ratio, the Treynor ratio and the M-squared measure are shown in Table 4.

Table 4. Results of other risk-adjusted performance measures by sub-periods

Portfolio Type	Sharpe ratio	Treynor ratio	M-squared
Panel A: Sub-period (2004 to 2007 and 2011 to 2014) – Economic growth			
JSE SRI Index	-5.1000	-0.0500	-0.0001
Conventional ETFs	-1.9807	15.3101	-0.0020
Difference	-3.1200	-15.3601	0.0021
Panel B: Sub-period (2008 to 2010) – Economic decline			
JSE SRI Index	-65312	-0.2552	-0.0005
Conventional ETFs	-1.8119	0.5329	-0.0001
Difference	-4.7193	-0.7881	-0.0004
In Table 4 the results of the Sharpe ratio, the Treynor ratio and the M-squared risk-adjusted performance measures on SRIs and conventional ETFs are presented. These are presented in two sub-periods of economic growth and economic decline.			

As can be seen in Table 4, the results for the sub-period (2004 to 2007 and 2011 to 2014) show that, in general, socially responsible funds underperformed in relation to the conventional exchange-traded funds under two risk-adjusted measures, namely the Sharpe ratio and the Treynor ratio. The analysis of the sub-period (2008 to 2010) indicates that exchange-traded funds outperformed socially responsible funds under all measures. The results of the analysis that focused on the entire period of research are presented in Table 5.

Table 5. Results of other risk-adjusted performance measures for the entire period of research

Portfolio type	Sharpe ratio	Treynor ratio	M-squared
JSE SRI Index	-0.4498	-0.0074	-0.0001
Conventional ETFs	-0.0474	0.0661	-0.0002
Difference	-0.4024	-0.7350	0.0001
In Table 5 the results of the Sharpe ratio, the Treynor ratio and the M-squared risk-adjusted performance measures on the JSE SRI Index and conventional ETFs are presented.			

In the case of the Sharpe ratio and the Treynor ratio, as shown in Table 5, exchange trade funds outperformed the socially responsible funds on a risk-adjusted basis over the entire period. Although the M-squared measure shows that the SRI Index outperformed, the performance is close to zero and exceptionally weak.

The overall results indicate that the SRI Index performed poorly in relation to their exchange-traded funds. Similar results were obtained by Rathner (2013) and Bauer, Derwall and Otten (2007), who found that investing in SRI funds underperforms their conventional peer instruments. Therefore these findings are inconsistent with the assumption reported by Bauer et al. (2005) that socially responsible mutual funds offer superior risk-adjusted performance compared to conventional funds. In all cases but one SRI mutual funds underperformed the conventional exchange-traded funds when measured as a single factor alpha, although not statistically significant in all the comparisons. This is a clear indication that the performance of the SRI stock indexes do not deviate systematically from the exchange-traded funds. However, the results indicate that the SRI

Index at 10% level significantly underperformed the ETFs during the period of economic decline.

Previous studies that attempted to analyse the performance of SRIs in relation to their conventional peers have often led to conflicting results due to small samples, use of different methodologies, and subjective environmental performance criteria. The contribution of this research to the body of empirical research lies therein that the data analysed was divided into two distinct periods: one of economic growth and the other a period of economic decline. In addition to the commonly used single-factor model, other risk-adjusted return models were used in the analysis of data in this research. Quarterly returns were also used, thus improving the quality of the time series. In the light of these findings a number of conclusions can be drawn and recommendations can be made, as discussed below.

6. Conclusions and recommendations

In the context of rapid growth in SRIs around the world as a result of the increasing of investors' awareness of ethical, social, environmental and governance issues, the aim of this research was to compare the performance of the JSE SRI Index with conventional ETFs during periods of economic growth and economic decline.

Using the single-factor model (CAPM) with the JSE All Share Index as the benchmark, the performance tests suggest that during the period of economic growth the JSE SRI Index neither significantly outperformed nor underperformed ETFs. This confirms the results of most of the earlier studies, namely that SRIs do not lead to a significant outperformance compared to conventional benchmarks.

However, the results indicated that the SRI Index significantly underperformed the ETFs during the period of economic decline. This is an indication that ETFs can systematically outperform the SRI Index during periods of economic decline. These findings are rather perplexing. Theoretically, one would expect that funds that are restricted according to social criteria besides the disadvantage of poor diversification would have a higher ability to explain the returns that are constructed on the basis of a restricted universe of stocks. The results also show that SRI Index and ETFs underperformed the market, as the alpha coefficients are significantly negative.

Results from other risk-adjusted return measures provided strong evidence that the JSE exchange-traded funds performed better than the JSE SRI Index over different periods of economic growth.

Overall, the findings of the research confirm various writers such as Bauer and Otten's argument that investing in SRI funds will always come at a cost and hence will always underperform their conventional peer instruments. These authors contend that selecting securities based on a certain criterion entail forgoing other securities which do not meet the threshold of social, ethical and environmental screening, thereby forgoing the benefits of diversification.

This research has contributed to the body of knowledge through the use of the Treynor ratio, the Sharpe ratio and the M-squared measure as alternative performance measures other than the conventional, namely the Jensen's alpha. Economic cycles were also taken into consideration where the performance of SRIs and ETFs during the period of economic growth as well as period of economic decline was determined.

The research did not focus on differences in funds liquidity; therefore, it is suggested that future research be conducted to categorise funds into large-cap stock funds and small-cap stock funds. Other models like the multi-factor model may be utilised to help resolve the liquidity problem in gaining additional insight into the drivers of ETFs and SRI fund performance.

Based on the research outcome and discussions, it seems that the screening of funds on the basis of social, ethical and environmental factors does not count. With investors, what counts is not the understanding of the investment phenomenon or the ideology, but the return relative to risk. Therefore, in the world of investment everything that can be counted counts.

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