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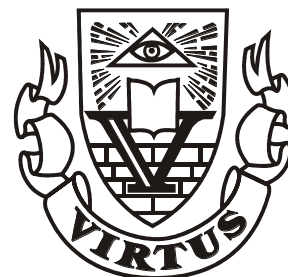
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INVESTOR'S PSYCHOLOGY COMMITMENT LEVEL AND ESCALATORY BEHAVIOR IN INVESTMENT DECISION

Fadhila Hamza*, Anis Jarboui**

Abstract

This study examines the reasons of investor's escalatory behavior in firm's investment decision. It shows the possible influence of three closely related features which are: firm's financial indicators, investor's risk profile, and investor's psychology commitment level, on a firm's investment decisions escalation. This study aims to provide evidence as to whether investor considers the financial and risk's perception features (financial strength and risk profile) in his escalatory behavior while he notes a high psychology commitment level.

The proposed model of this paper uses GLM univariate data analyses to examine this relationship. Investor's risk profile and his psychology commitment level have been measured by means of a questionnaire comprising several items. As for the selected sample, it has been composed of some 360 Tunisian individual investors. Our results have revealed that investors pay more attention to keep their psychology comfort than their financial comfort. It exposed the importance of the investor's commitment bias and its risk perception in explaining his investment decision escalation. Moreover results shows that there is strong and significant empirical relationship linking the investment decision escalation and the interaction effects between the three independent variables. This means that, in practice, investors consider the three factors simultaneously.

Keywords: Commitment Level, Escalatory Behavior, Investor's Risk Profile, Firm's Financial Strength Indicator, Investment Level

JEL Classification: D2, G3, L2, L5, M1

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1. Introduction

Investors should make good decisions, the right decisions in the right way at the right time (Schermerhorn and al, 2011). Essentially, the decision making process involves making choices basing on the accessible information at hand and the alternatives resultant from that information (Gilboa, 2011).

Most investors perceive themselves as rational decision makers. This means that they possess perfect information, distinguish all alternatives, know every consequence, and determine a complete preference scale (March, 2010). However, the reality shows that investors are all subject to *bounded rationality* (Colquitt and al, 2011; Nielsen, 2011). Bounded rationality means that decision makers is unable to know all perfect information and alternatives to make optimal choice (Simon, 1982, 1997, 2009).

Agreed that decision makers habitually do not have all the information and alternatives necessary to make good decisions and, then, are subject to bounded rationality, it is normally that source of error in decision making exist (George and Jones, 2008). "Throwing good money after bad" or the escalation of a failing decision is the major error in decision making, which is a human tendency to persevere a failing course of action. There is an important amount of studies that shows that individuals and groups escalate original decision in a failing course of action in order to rationalize their initial choice (Bobocel and Meyer, 1994; Bragger, 2003; Fai, Wong and al, 2006; Hi and Mittal, 2007; Mullins, 2007; Ross and Staw, 1993; Staw and al, 1997; Street and Street, 2006; Van Putten and al, 2009, 2010)).

The research of explanations of escalatory behavior in investment decision brings us, in the first

time, to be going to consult the traditional theory of rational choice. This theory interprets the inflows or outflows investor's decision in an investment opportunity by the capacity of this opportunity to procure a superior expected utility.

Traditional financial theory of rational choice show that investors pay only attention to the maximization of its utility function in the decision making process. There are two several reasons of investment decision escalation: (1) profitability (Ippolito, 1992; Berk and Green, 2004), and, (2) importance of committed costs (Sirri and Tifano, 1998; Huang and al., 2005),

However, today's phenomena show that the observed investor's behavior poses undeniable questions in the measure that is contrary to predictions of the so-called theory.

Consequently, the emergence of behavioral finance approach founded on the hypothesis of the limited rationality, permits to explain better the investment decision escalation while noting the behavioral biases (optimism, Heaton (2002); loss aversion, Mairesse and Mohnem (2005), overconfidence, Baker et al. (2004); ...) as a determinants of this decision.

In other way, we can also explain the investment decision escalation by referring to contributions of *the theory of commitment*. Thus, an investor faced with negative feedback about a project may feel the need to justify the whole of time and money already sunk into the project (Kundi, 1997; Kundi and al, 2007). White (1986) expresses "commitment to a failing course of action is a need on the part of decision makers to maintain the illusion that they haven't erred". In Staw (1981) word, this happens because, even in the face of negative feedback, decision makers "continue investing commitment to a dying course on the assumption that short term problems are the necessary costs/losses for achieving long term large objectives".

Several, theoretical and empirical studies have tried to express the causes of commitment bias in different ways. Fox and Staw (1979) suggest that manager escalates if "he makes the initial decisions (responsibility pressure)" and/or "is under the pressure of being responsible for the consequences". They also indicate that job insecurity and policy resistance also increase the commitment to an initial chosen decision.

Most of the researchers agree on the four fundamental causes of escalation which are: a) project related; b) human psychology/personality; c) social and d) organizational. (Brockner, 1992; Keil, 1995, 1998, 2000; Hall, 2003; Chee-Wee and al 2006; Kundi and Nawaz, 2006).

She (1991) found that "escalation happens due to the nature of investment, psychological factors and organizational factors".

This study examines the reasons of investor's escalatory behavior in firm's investment decision. It shows the possible influence of three closely related

features which are: firm's financial indicators (the traditional financial theory), investor's risk profile (the behavioral finance theory), investor's psychology commitment level (the theory of commitment), on a firm's investment decisions escalation.

It will provide an important contribution to the setting of explanations of investment decision by the calling of the psychology commitment level as a plausible determinant. This study will provide evidence as to whether investor considers the financial and risk's perception features (financial strength and risk profile) in his escalatory behavior while he notes a high psychology commitment level.

The article is structured as follows: Section 2 presents the related literature and the theories which motivate the empirical work and Section 3 discusses the empirical strategies that were adopted. Section 4 discusses the main results and Section 5 presents the concluding remarks.

2. Literature Review

2.1. Investor's commitment level and investment decision escalation

It is said that "a trapped administrator is one who remains inflexible to change in the face of negatives consequences" (Fox and Staw, 1979). Thus, researchers show that "decision makers may even stick with their bad decision for more than rationally required" (Brockner and al., 1986). In this phase, "projects take a life of their own, thereby eating up more resources and delivering no real value", (Warne and Hart, 1996; Keil and al., 2000; Hall, 2003). Several studies reveals that decisions makers continue to invest in their initial course of action even after receiving considerable negative information concerning its availability (Chee-Wee and al., 2006; Van Putten and al, 2009, 2010; March, 2010).

Meyer and Allen (1991) propose that commitment as a psychological attachment may take the following three forms: affective, normative and continuance types of commitment. These forms may also be seen as bases of commitment, motives engendering attachment (Becker 1992).

Strong commitment depends on the existing of several factors, which are: The context of freedom in which the action was carried out, the public nature of the action, the explicit nature of the action, the irrevocability of the action, the repetition of the action, the consequences of the action, the cost of the action, the reasons for the action (absence of external reasons: promises of a reward, threats of punishment).

According to the circumstances, individuals will feel more or less bound by the act they were encouraged into doing. We can consequently understand why Kiesler (1971) chose to define commitment as the link between individuals and their actions.

H1: A high commitment level will have the greatest influence on the investment decision escalation.

2.2. Investor's risk profile and the investment decision escalation

The analysis of the psychology of the investor provided an important number of advanced that contribute to explain his behavior on investment decision.

In the behavioral finance literature it is documented that investors are more sensitive to losses than to gains. This feature stems from prospect theory and was predictable by Kahneman and Tversky (1979) among others. Thus, investors who present myopic loss aversion are less motivated to invest a greater amount of their wealth into risky assets if they evaluate their investments more frequently.

Samuelson and Zeckhauser (1988) propose in the same setting the bias of statu quo. This bias determines the decision of the investor to maintain the initial investment choice because of the importance of efforts and costs committed in the stage of the hold of position on this choice. He considers these committed costs and efforts like a point of reference. Every time that he is going to change his position on a fund, he is going to commit some similar costs. Of this fact (Mangot, 2005) shows that the agent has a tendency to let the unaltered things because this strategy is considered arbitrarily as the strategy of reference.

Daniel and al. (1998) and Mangot (2005) analyze the bias of conservatism or attribution. According to these authors, the investor keeps his position on his initial choice while granting an important weight on the news that comes to confirm this first choice that to those that come to invalidate it. This bias of attribution maybe in part attached to the phenomenon of cognitive dissonance.

In this setting, Samuelson and Zeckhauser (1988), note that when the investor receives a flow of information to contradictory consequences, he hung a process of selection of information. This process consists to overweight those that go in the sense of the confirmation and to avoid those that come to contradict it. He adopts a strategy aiming to stabilize him psychologically. This strategy is called a confirmation bias.

Thus, in the same order of ideas, we hypothesize in this study that the investor's risk profile influences his investment decision. So, a very defensive risk profile is associated positively with the investment decision escalation.

H2: An investor's defensive risk profile (as opposed to dynamic risk profile) will have positive influence on the investment decision escalation.

2.3. Financial strength and the investment decision escalation

The profitability is traditionally evoked by researches as an important heuristic for the decision making. These researches, generally based on the theory of rational choice, respect the formula of Helmut Schmidt that says "today's profits are tomorrow's investments".

Ippolito (1992) studied the impact of the relative profitability on the nets inflows in funds in the United States. The author verifies a linear and meaningful relationship between these two variables. To the same title, Berk and Green (2004) consider that the increasing slope of the relationship between the relative profitability and the nets inflows in the fund provides a perfect informative signal on the quality of the fund. For this reasons investors choose to invest further in funds to superior profitability.

A number of studies are conducted, lately, while based on the limited rationality hypothesis, aims, on the contrary, to prove a no linear relationship between the past profitability and the investment decision.

Among these works, the survey conducted by Sirri and Tufano (1998) shows, using the different measures of the fund profitability, that for the most funds, the profitability explains positively and meaningfully the inflows in these funds. For funds to moderate profitability the relationship is statistically weak, whereas, for those the underperforming the result shows that these funds don't know any meaningful outflows. Huang and al. (2005) verify an asymmetric relationship between the nets inflows in funds and their relative profitability. These authors verify, that underperforming funds know, for the same reason as those most performing, meaningful inflows.

Thus, in the same way of the traditional financial theory we have the following hypotheses:

H3: company strong financial indicators (Z score) will have a greatest influence on the investment decision level.

3. Methodology

3.1. Data

Our empirical study is based on quantitative research. We use a questionnaire as a method of data collection. Our questionnaire consists of three main parts, based on treated areas in theory:

- The first part aims to collect some company's financial indicators from financial annual statement (Operating profit, total assets, current liabilities, long-term debt, current assets, earnings before interest and tax, R&D expense, sales,...).
- The second part focuses on determination of the level of investor's commitment bias.
- Party three aims to knowing the nature of investor's risk profile and the investor's age.

The questionnaire is addressed to investors in Tunisian individual companies. The subjects were each given one case, chosen at random from the list of investors implanted in the region of Sfax in Tunisia provided by "Agency of promotion of industry" in

this region. Based on the research design, the study required 360 subjects.

As indicated in Table 1, the majority of companies that participated in the study are smaller firms and all respondents are individual investors.

Table 1. Profile of subjects

	Total	Percentage
Firm's Activity		
Agriculture and crafts	24	7
Industry	221	61
Commerce and Service	115	32
Investor's Experience in entrepreneurship		
3-6 years	76	21
7-10 years	242	67
> 10 years	42	12
Investor's Age		
<46	245	68
>46	115	32
Total	360	100

3.2. Variables' measurement

The objective of this section is to determine the variables' measurement.

3.2.1. Escalatory behavior: The investment decision escalation (dependant variable)

The purpose of this article is to provide evidence as to whether investors consider the financial and risk perception features (financial strength and risk profile) in his escalatory behavior (investment decision) while he notes a high psychology commitment bias. The appropriate measure in the literature to evaluate investment decision escalation is the investment level which uses the indicators of overinvestment and underinvestment.

In this study, we will use two indicators of investment level which are: overinvestment (low future investment opportunities and free cash flow) or underinvestment (low free cash flow and Future investment opportunities).

o The free cash flow ratio as conceptualized by Jensen (1986) is measured as operating income before depreciation interest expense and taxes, as well as dividends paid (Lehn and Poulsen, 1989; Gul and Tsui, 1998; Jaggi and Gul, 1999) divided by book value of total assets to account for effects related to size (Lang et al., 1991).

Free Cash Flow Rate (FCFR) = Operating profit / total assets.

o Future investment opportunities are measured by Tobin's Q (Skinner, 1993). Tobin's Q is defined as the ratio of market value of a firm to the replacement value of its assets (Lindenberg and Ross, 1981; Griliches, 1981; Cockburn and Griliches, 1988; Megna and Klock, 1993; Skinner, 1993). In our study,

we will employ an approximation of Tobin's Q, considered as follows (Chung and Pruitt, 1994):

$$Q_{it} = \frac{MVS_{it} + D_{it}}{A_{it}}$$

MVS: market value of common and preferred shares;

D: book value of debt, defined as current liabilities plus long-term debt plus inventories minus current assets;

A: total assets.

Based on these indicators, investment level is as follows:

- 1 if the investor decides overinvestment: low future investment opportunities and free cash flow
- 0 if the investor decides underinvestment: low free cash flow and future investment opportunities.

3.2.2. Commitment level:

To measure the investor's commitment level, we takes the same steps than the most of studies have used an adaptation of the original questionnaire elaborated by Meyer and Allen (1991) to evaluate organizational commitment (*Organizational Commitment Scale*). This instrument is chosen because of its validity and its multidimensional character shown by several researches (Meyer and al., 2002).

The commitment bias takes 2 follows:

- 2 if the investor has a high level for this bias
- 1 if not

3.2.3. Investor's risk profile

To determinate the nature of the investor's risk profile, we refers to the questionnaire elaborated by Centea organization which is intended exclusively to characterize individual investor's risk profile.

The risk profile takes 2 follows:

- 1 if the investor has a defensive risk profile
- 0 if the investor has a dynamic risk profile

3.2.4. Financial strength indicators

When deciding a choice about where to put their money, savvy investors use ratio analysis. There are three kinds of ratio analysis: Profitability Ratios determine how much profit a company creates, Gearing Ratios evaluate a company's leverage, Liquidity Ratios measure the capacity of a company to meet its debts, and Investment Ratios determine the performance of the overall business. These ratios help investors to get the information they need to make an optimal decision.

Using a model of univariate discriminant analysis, Beaver (1996) envisaged financial distress using thirty financial ratios to evaluate 79 pairs of failed and non-failed companies. Beaver asserted that ratio of current assets to total assets and ratio of net benefits to total assets are capable to distinguish companies that will be bankrupt to those that will not. His model succeeded to predict, respectively, 90% and 88% of cases.

In this study, the financial strength indicator used is Altman's five ratios, which designate three levels of financial strength: strong, moderate, and weak.

Altman (1968) used multivariate linear discriminant analysis (MDA) to determine a cut-off value that enabled him to predict with 95% precision the criteria indicating which companies were in financial distress or vice versa.

The Z score calculated using five of Altman's ratios are as follows.

$$\mathbf{Z\ score = 1.2\ WC/TA + 1.4\ RE/TA + 3.3\ EBIT/TA + 0.6\ MV /BV + 1.0\ Sales/TA}$$

Z score = financial condition of the company (strong, moderate and weak)

WC/TA = working capital/total asset

RE/TA = retained earnings/total asset

EBIT/TA = earnings before interest and tax /total asset

MV/TA = market value of share/book value of debt

Sales/TA = sales/total asset

Based on the Z score, Altman distinguish companies as strong, moderate and weak. In this study, financial strength representing the independent variable measured by Altman's Z score takes the values follows:

- 1 = weak,
- 2 = moderate; and
- 3 = strong.

3.2.5. Control Variables

Our study controls for dept level, R&D intensity and investor's age, as previous research has shown that these three factors do affect investment level.

3.2.5.1. Dept level and investment decision escalation

In corporate finance, the role of liabilities on investment decisions has drawn keen attention. In the first time, the Modigliani-Miller Theorem (MM Theorem) showed that in a perfect market, the level of liabilities does not affect corporate investment behavior. They noted that there is no relationship between fund procurement and the debt ratio. However, as regards the negative effects of liabilities on corporate management, it is noted, that liabilities can influence corporate investment behavior through the following two channels. Firstly, as important liabilities increase bankruptcy risks, corporate managers tend to go in for the limitation of borrowings and/or reducing investments which potentially increase the prospect of underinvestment. Secondly, higher debts level produce larger interest payment weight, which reduces liquidity, thus, debt has a negative impact on the investment level.

Arikawa et al. (2003) adopt the method of estimation used by Lang et al. (1996) and show that the main bank system in Japan facilitated to amplify the disciplinary role of liabilities, principally for low-growth companies. In this setting, Muramatsu (2002), based on the theory of Jensen (1986), asserts that the disciplinary role of liabilities or monitoring by main banks was not significant. Thus, author concludes that overinvestment happened in Japan during the bubble period.

Thus, previous studies have verified the role of liabilities on investment and its effect in restraining overinvestment and facilitating underinvestment. These studies suggest that liabilities limit overinvestment but probably cause underinvestment.

In this study we hypothesize that the importance of the dept level constraints investors to escalate their investment decision by its disciplinary effect.

H5: A high dept level is negatively associated with investment decision escalation.

We observe a number of variables that measure the level of debt. Measures like total debt services ratio has been adopted by several researchers (Hovakimian and al, 2004). While others have envisaged the debt ratio in the medium and long term (Myers, 2001). Titman (1984) has used the debt ratio in the short term.

In this setting we recommend to use the debt ratio as a measure of this variable measured by:

Leverage ratios (LEV) = (total debt / total assets)

This measure is also proposed by Koh (2003), Demaria and Dufour (2007), Jarboui and Olivero (2008), Ben Kraiem (2008) and Sahut and Gharbi (2008).

3.2.5.2. R&D intensity

To investigate the relationship between investment decision escalation and R&D intensity we refer to the notion of entrenchment in terms of manager-specific investments evoked by Jensen and Meckling (1976), and Jensen (1986). Entrenchment is caused by an excessive investment in assets corresponding to managers' skills. These investments enable managers to increase their own return. The degree of entrenchment is described by how specific firm's assets characterize managers' talents.

For these objective managers make too many investments specific to their own skills. The cause is simply that they are investing shareholders' wealth rather than their own. By using shareholders' funds to make manager-specific investments, managers bind shareholders to themselves.

In this study we hypothesize that investor who decide to invest an important sum of his own in specific assets become strongly attached to his project and choose consequently to escalate his initial investment decision.

H6: A high R&D intensity is positively associated with investment decision escalation.

We use the research and development (R&D) intensity as a proxy for firm specific assets.

As Francis and Smith (1995), Cho (1988) and Abdullah et al. (2002), we evaluate R&D intensity variable by the ratio of a firm's R&D expense divided by total assets.

3.2.5.3. Age

Golec (1996), Chevalier and Ellison (1999) discuss the relation between age and the performance of the fund manager. According to these authors age reflects the manager's capacity to resist in situations of stress. In this case the youngest manager resists better to the pressure and tension that characterize this type of profession. Thus, the relation between age and the performance is negative. Authors consider two other arguments in favor of the youngest manager resistance. The first argument is that the youngest managers are generally the most formed to the modern financial theories, the second is that they are generally motivated.

In this setting, Golec (1996) develops a survey that aims to sketch the portrait of an ideal "manager". This survey is realized on a sample of 530 managers in American mutual funds and of which the result shows that the manager who displays the best performances is relatively young (less than 46 years).

To this level we hypothesize that the youngest investor resists better on pressures and tensions in situation of stress. So:

H7: investors younger than 46 years escalate more his investment decision than those are older than 46 years.

Table 2. Operational definitions of variables

Class :	Phenomena :	Measure :	Notation	Prediction
Independent Variable :				
Investment decision escalation	Overinvestment/ underinvestment	<i>Overinvestment:</i> low future investment opportunities and free cash flow <i>Underinvestment:</i> low free cash flow and future investment opportunities.	IDE	
Dependent Variables:				
Commitment level	Psychologic link between the investor and his project	The questionnaire obtained score	CL	+
Financial strenght	Firm's performance indicators	Z score calculated using five of Altman's ratios	FS	+
Investor's risk profile	Qualification of investor's risk profile	The questionnaire obtained score (defensive : 2/ dynamic :1)	RP	+
Control Variables :				
Dept level	Firm's liabilities level	Leverage ratios (LEV)= (total debt / total assets)	DL	-
R&D intensity	Firm's specific assets	Firm's R&D expense/ total assets	RDI	+
Age	Investor's age		AGE	-

3.3. Experimental Design

This study used a 2. 2. 3. factorial design where it is associated only one case for each investor's investment decision. The combination of 3 factors of

independent variables resulted in a 12-case combination, where each case was different. The design is shown in Table 3.

Table 3. Factorial design

Independent variables		
A	B	C
Commitment level	Risk profile	Financial strength
2	2	3

The indicators of the independent variables are shown in Table 4.

Table 4. Detail on indicators of the independent variables

No	Commitment level	Risk profile	Financial strength
1	High	Dynamic	Strong
2	Low	Defensive	Moderate
3			Weak

The combinations of the 12 cases are shown in Table 5.

Table 5. Case combination

No	Commitment level	Risk Profile	Financial strength
1	High	Defensive	Strong
2	High	Defensive	Moderate
3	High	Defensive	Weak
4	High	Dynamic	Strong
5	High	Dynamic	Moderate
6	High	Dynamic	Weak
7	Low	Defensive	Strong
8	Low	Defensive	Moderate
9	Low	Defensive	Weak
10	Low	Dynamic	Strong
11	Low	Dynamic	Moderate
12	Low	Dynamic	Weak

3.4. Analysis and results

Based on the factorial design, the statistical model of the study can be stated as follows:

$$IDE = \alpha + b_1CL + b_2RP + b_3FS$$

Where:

IDE = An investor's investment decision escalation (dummy variable: Overinvestment:1 or Underinvestment: 0)

CL= An investor's commitment level (high: 2, low: 1)

RP=An investor's risk profile (Defensive: 2, dynamic:1)

FS = Financial strength (strong: 3, moderate: 2, weak: 1)

General Linear Model Univariate Analysis of Variance (GLM UNIANOVA) was used to test hypotheses 1, 2, 3 and 4.

4. Results and Discussion

Table 6. GLM univariate test: Tests of between subject effects

Source	Type III sum of squares	Df	Mean square	F	Sig.
Corrected model	55,361 ^a	7	7,909	82,512	,000
Intercept	4,013	1	4,013	41,866	,000
CL	6,036	1	6,036	62,971	,000
RP	3,734	1	3,734	38,954	,000
FS	,240	1	,240	2,504	,114
CL*RP	4,889	1	4,889	51,010	,000
CL*FS	2,667	1	2,667	27,822	,000
RP*FS	2,204	1	2,204	22,996	,000
CL*RP*FS	4,538	1	4,538	47,340	,000
Error	33,739	352	9,585E-02		
Total	162,000	360			
Corrected total	89,100	359			

Note: ^a R squared = .621 (adjusted R squared = .614)

The effect of commitment level on investment decision escalation

The study relied on GLM univariate analysis to test the first four hypotheses shows in table 6 that the commitment level has a significant (0.00 at alpha = 0.05) effect on an investor's investment decision escalation.

This result is consistent with the findings of many searchers such as (Kundi, 1997; Kundi and al, 2007).

In this setting White (1986) affirms that “commitment to a failing course of action is a need on the part of decision makers to maintain the illusion that they haven’t erred”. Moreover Staw (1981) asserts that this happens because, even in the face of negative feedback, decision makers “continue investing commitment to a dying course on the assumption that short term problems are the necessary costs/losses for achieving long term large objectives”.

According to the earlier work of Kiesler (1971), and a numerous researches which coming to enrich this work such as Joule and Beauvois (1998), as far as attitudes are concerned, committing oneself to a counter-attitudinal action leads to a change of attitude or rationalization. While, concerning behavior, committing oneself to a decisional action leads the decision maker to bind to it (freezing effect, low-ball effect). Committing first to an inconsistent action increases the possibility of complying to following more demanding requests as long as the course of action becomes consistent (teasing effect and foot-in-the-door).

However, these studies shows that this type of effect on attitudes and behavior can be obtained only when the first action (preparatory act) was contracted in specific commitment contexts. Therefore, the similar action can be more or less binding, and can

even be perceived as nonbinding. Researchers have shown that “the stronger the commitment the bigger the effects”.

The effect of financial strength on investment decision escalation

The study relied on GLM univariate analysis to test the first four hypotheses shows in table 6 that firm’s financial strength indicators (FS) has a non significant (0.114) effect on an investor's decision escalation.

This result is consistent with the findings of Bellando and Trandieu (2008), and, Goetzmann and Peles (1997) whose shown that inflows in fund is not conditioned by a firm's financial condition.

With respect to the task enjoyment question, individuals receiving the lower Z score will report higher levels of enjoyment than those receiving the higher Z score. This follows the earlier literature on cognitive dissonance (Aronson, 1992, 1994; Festinger, 1957).

According to the theory of cognitive dissonance, an individual registers dissonance when her behavior is inconsistent with her cognitions. Generally, it may be easier to change one’s cognitions than changing one’s actions.

Based on the logic above, investors receiving the low Z score are be in a situation of dissonance shown in the conflict between the cognitions “I exerted effort to earn a large sum of money,” and “I received the low Z score”. Integrating the cognition “I’m not good at this task” diminishes the difference between an investor's expected utility and their low Z score received. Incorporating the last cognition means that investors receiving the low Z score will be pessimistic in their abilities, so reducing the dissonance resulted from having exerted effort only to obtain a low return to their effort.

In this stage, investors may integrate cognitions associated to her ability to reduce dissonance, thereby committing additional effort to rationalize initial effort they exerted in the first choice.

On the other hand, investors who received a high Z score do not experience the dissonance state. As a result, these investors are more probable to be unbiased regarding their abilities on the initial decision.

Interaction between Factors

There are several important findings in this study. As seen in Table 6, all interactions (CL*RP; CL*FS; RP*FS; CL*RP*FS) have a significant effect (0.00 less than $\alpha = 0.05$) on investor's investment escalation. These results show that investors examined the factors simultaneously. Thus, H4 is accepted.

In earlier work (Ross and Staw 1993), we proposed that decision escalation may involve the interplay of four sets of forces over time, which are:

a) Project determinants: this category gathers objective aspects of a project, Northcraft and Wolf (1984), Mc Cain (1986), Bateman (1983) give examples of research on project variables (such as: project's closing costs, project's salvage value,...).

b) Psychological determinants: this rubric includes psychological aspects of decision maker, such as reinforcement traps, individual motivation, decision making errors, and biases in information processing. James (2002), Malcolm and all (2004), Zayer (2007) provide examples of research on psychological determinants.

c) Social determinants: this category gathers interpersonal aspects that may lead to increase investor's commitment in its project. Several researches are conducted on social determinants such as Simonson and Staw. (1992), Keil and Robey (1999), and Heng and al. (2003).

d) Organizational determinants: includes variables such as the level of economic and technical incurred by the organization with respect to the project, the level of political support for a project within an organization... (Pfeffer (1981), Goodman, and al. (1980)).

In this study we employ three variables which are: Commitment level (as a social psychological determinants), investor's risk profile (as a psychological determinants), and firm's financial strength indicator (as a project determinant).

This categorization of variables explains its significant interaction effect in the explanation of the investment decision escalation.

Conclusion

This research examines the determinants of firms' investment decision escalation employing an investor's social psychological aspect which is:

commitment bias introduced simultaneously with the firm's financial indicators, and, investor's risk profile.

Theoretical analysis indicated that escalation of commitment is the tendency of decision makers to maintain to invest time, money, or effort into a failure decision or unproductive course of action. The expression "throwing good money after bad" because they have "too much invested to quit" captures the real meaning of this frequent decision-making error. Escalation of commitment has managerial consequences. Many organizations have experienced large losses, because the manager was determined to justify his original choice by continuing to commit resources to a non profitable decision. March, declare it this way: "Now that I have made my decision, I need to find good reasons for it."

Empirical analysis presents survey of individual investors in Tunisia. The GLM univariate data analyses revealed the importance of the investor's commitment bias and its risk perception in explaining his investment decision escalation. However, empirical relationship analysis between firm's financial indicators and investment decision escalation shows that, in decision making process, investor pays little attention to firm's financial strength.

There is strong and significant empirical relationship linking the investment decision escalation and the interaction effects between the three independent variables. This means that, in practice, investors consider the three factors simultaneously.

Thus, investor's investment decisions analysis realized by integrating the commitment level and the behavioral dimension in risk perception is not consistent with the traditional financial theory which predicated that investors pay only attention to the maximization of its utility function in the decision making process. While, in this study we asserts that the investor, affected by its psychological commitment level and its behavioral risk perception, escalates his initial investment choices in spite of its failure in this decision.

Like any other, this study has its limitations. Even though investment decision escalation is explained only by project and psychological determinants, other factors discussed in previous literature (Ross and Staw 1993), such as the social and organizational determinants, were not considered. These factors could be taken into consideration in future studies.

References

1. Abdullah, F., Weiyu G., and Vivek M. (2002). The relation of managerial holdings with Tobin's Q and R&D expenditures: Evidence from Japanese firms *Multinational Business Review*, vol. 10, no. 1, p. 66-71.
2. Altman, E. (1968). Financial ratios: Discriminate analysis and prediction of corporate bankruptcy. *Journal of Financial*, vol 4, pp.589-609.

3. Arikawa, Y., Miyajima, H., Saito, N., (2003). Kinyūiki zengo no tōshi kōdō to kigyō tōchi – kajō saimu mondai to main bank” in: Hanazaki, M., Teranishi, J. (eds.), Corporate governance no keizai bunseki – henkakuki no nihon to kinyūikigo no higashi Asia, University of Tokyo Press, (in Japanese).
4. Aronson, E. (1992). The return of repressed: Dissonance theory makes a comeback. *Psychological Inquiry*, vol 3, pp.303-311.
5. Aronson, J. (1994). A pragmatic view of thematic analysis", *The Qualitative Report*, vol. 2, no. 1, pp. 1-3.
6. Baker M., Ruback, R.S., & Wurgler J. (2004). Behavioral Corporate Finance: A Survey. SSRN, à paraître (2005) in B. Eckbo (Ed.), *Handbook of Corporate Finance: Empirical Corporate Finance*. SSRN_ID740946.
7. Bateman, T. (1983). Ressource allocation after success and failure: The roles of attributions of powerful others and probabilities of future success. Working paper, department of management. Texas A&M University, College Station.
8. Beauvois, J.-L & Joule R.-V. (1996). *A Radical Dissonance Theory*, Londres, Taylor Francis.
9. Beaver, W. H. (1996). Financial ratios as predictors of failure. *Journal of Accounting Research*, vol.7(2), pp.179-192.
10. Becker, D. (1992). Ohne Haß keine Versöhnung. *Das Trauma der Verfolgten*, Freiburg: Kore Verlag
11. Bellando R, Tran-Dieu L. (2008). La relation entre flux d'entrées nets et rentabilité des fonds : une étude appliquée au cas des OPCVM actions français " Conférence de l'AFFI , 20-22 mai 2008, Lille, France
12. Ben Kraiem, R. (2008). The influence of institutional investors on opportunistic earnings management, *International Journal of Accounting Auditing and Performance Evaluation*, 5 (1), 89-106.
13. Berk J.B., & Richard C. Green, 2004, Mutual fund flows and performance in rational markets, *Journal of Political Economy*, vol.112 (6), pp.1269-1295.
14. Bobocel, D. R., & Meyer, J. P. (1994). Escalating commitment to a failing course of action: Separating the roles of choice and justification. *Journal of Applied Psychology*, vol. 79, pp.360-363.
15. Bragger, J. D. (2003). When success breeds failure: History, hysteresis, and delayed exit decisions. *Journal of Applied Psychology*, vol. 88(1), pp.6-14.
16. Brockner J., Houser R., Birbaum L., Kathy D., Janet N., Sinaia and Rubin JZ. (1986) Escalation of Commitment to an ineffective course of action: The effect of feedback having negative implications for self-identity. *Administrative Science Quarterly*. Vol. 31, pp. 109-126.
17. Brockner, J. (1992). The escalation of commitment to a failing course of action: Toward theoretical progress. *Academy of Management Review*, vol. 17, pp.39-61.
18. Chee-Wee T., Veiko T. and Eric Tze-kuan L. (2006) Agency relationships in the escalation of software projects: an options analytical perspective. Available at: http://www2.wiwi.hu-berlin.de/institute/organisation/Team_dt/Thiele/EscalationandDeescalationofSoftwareProject.pdf.
19. Heng C.S, Tan B. C. Y., and Wei. K.K. (2003). De-escalation of commitment in software projects: Who matters? what matters? *Information & Management*, vol. 41, pp.99-110.
20. Chevalier, J. & Ellison, G., (1996). Risk Taking by Mutual Funds as a Response to Incentives, Working papers 96-3, Massachusetts Institute of Technology (MIT), Department of Economics
21. CHO, M-H, (1998). Ownership structure, investment, and the corporate value: an empirical analysis, *Journal of Financial Economics*, vol. 47, (1), pp.103-121.
22. Chung, Kee H. & Pruitt, S. W. (1994). A simple approximation of Tobin's q, *Financial Management* vol. 23, pp.70-74.
23. Cockburn, I., & Griliches, Z. (1988). Industry effects and appropriability measures in the stock market. *American Economic Review*, vol. 78 (2), pp.419-424.
24. Colquitt, J. A., Lepine, J. A., & Wesson, M. J. (2011). *Organizational behavior: Improving performance and commitment in the workplace*. New York, NY: McGraw-Hill.
25. Daniel K., Hirshleifer D. et Subrahmanyam A. (1998). Investor Psychology and Security Market Under- and Overreactions. *The Journal of Finance*, vol 53, n°6.
26. Demaria, S., & Dufour, D. (2007). Les choix d'options comptables lors de la transition aux normes IAS/IFRS : quel rôle pour la prudence ? *Comptabilité-Contrôle-Audit*, n° 195, pp.195-218.
27. Fai, K., Wong, E., Yik, M., & Kwong, J. Y. Y. (2006). Understanding the emotional aspects of escalation of commitment: The role of negative affect. *Journal of Applied Psychology*, vol. 91(2), pp. 282-297.
28. Festinger, L., & Carlsmith, J. M. (1959). Cognitive consequences of forced compliance. *Journal of Abnormal and Social Psychology*, vol. 58, pp. 203-211.
29. Festinger, L.A. (1957). *A Theory of Cognitive Dissonance*. Stanford: Stanford University Press.
30. Fox, F. V., & Staw, B. M. (1979). The trapped administrator: Effect of job insecurity and policy resistance upon commitment to a course of action. *Administrative Science Quarterly*, vol.24. pp. 449-471.
31. Francis, J. & Smith. A. (1995). Agency costs and innovation: Some empirical evidence. *Journal of Accounting and Economics*, vol. 19, (2-3), pp. 383-409.
32. George, J. M., & Jones, G. R. (2008). *Understanding and managing organizational behavior*. Upper Saddle River, NJ: Prentice Hall.
33. Gilboa, I. (2011). *Rational choice*. Cambridge, MA: MIT Press.
34. Goetzmann, W & Peles, N. (1997). Cognitive Dissonance and Mutual Fund Investors, *Journal of Financial Research*, Vol. 20, pp. 145-158.
35. Golec, J.h., (1996). The effects of mutual fund managers' characteristics on their portfolio performance, risk, and fees, *Financial Services Review*, 5(2), pp.133-148.
36. Goodman P.S., Bazerman, M. & Conlon, E. (1980). Institutionalization of Planned Organizational Change, *Research in Organizational Behavior*, vol. 2, ed. Barry M. Staw et Larry L. Cummings, Greenwich, CT, JAI Press, pp.215-246.
37. Griliches, Z. (1981). Market value, R&D and patents. *Economic Letters*, vol. 7(2), pp.183-187.
38. Gul, F.A., & Tsui, J.S.L. (1998). A test of the free cash flow and debt monitoring hypotheses: Evidence from audit pricing. *Journal of Accounting and Economics*, vol. 24, pp.219-237.
39. Hall P. (2003). Killing IT Projects. *The Journal of Information Technology Management*. Vol.16 (12). Available at:

- <http://www.catalysisgroup.com/articles/losinggamble.pdf>.
40. Heaton, J. (2002). Managerial optimism and corporate finance. *Financial Management*, vol. 31, pp.33-45.
 41. Hi, X., & Mittal, V. (2007). The effect of decision risk and project stage on escalation of commitment. *Organizational Behavior and Human Decision Processes*, vol. 103(2), pp. 225-237.
 42. Hovakimian, A., Hovakimian, G., & Tehranian, H. (2004). Determinants of target capital structure: The case of dual debt and equity issues. *Journal of Financial Economics*, vol. 71, pp.517-540.
 43. Huang, J. K.; Wei, D. & Yan, H. (2005). Participation costs and the sensitivity of fund flows to past performance, *Journal of Finance* forthcoming.
 44. Ippolito R.A (1992). Consumer Reaction to Measures of Poor Quality: Evidence from the Mutual Fund Industry, *Journal of Law and Economics*, vol. 35(1), pp.45-70.
 45. Ross. J. & Staw, B. (1993). Organizational Escalation and Exit : Lessons from the Shoreham Nuclear Power Plant”, *Academy of Management Journal*, vol. 36, (4), pp. 701-732.
 46. Jaggi, B., & Gul, F.A. (1999). An analysis of joint effects of investment opportunity set, free cash flows and size on corporate debt policy. *Review of Quantitative Finance and Accounting*, 12(4), 371-381.
 47. James B. H. (2002). Managerial optimism and corporate finance. *Financial Management*, vol. 31, pp.33-45,.
 48. Jarboui, A., & Olivero, B. (2008). Le couple Risque/ Horizon temporel des investissements est-il gouverné par les institutionnels et les actionnaires dominants?, *Banque et Marchés*, n° 93, Mars-Avril, pp. 20-34.
 49. Jensen, M. C. & Meckling W. H. (1976). Agency Costs and The Theory of The Firm. *Journal of Accounting and Economics*, vol. 3, pp. 305-360.
 50. Jensen, M. C. (1986). Agency Costs of Free Cash Flow, Corporate Finance, and Takeovers. *American Economic Review* vol. 76 (2), pp. 323-329.
 51. Joule, R-V., & Beauvois, J-L. (1998). La soumission librement consentie. *Dunod*.
 52. Kahneman, D., & Tversky, A. (1979). Prospect theory: An analysis of decision under risk. *Econometrica*, vol. 47, pp. 263-291.
 53. Keil M., Cule PE., Lyytinen K. and Schmidt RC. (1998). A framework for identifying software project risks. *Communications of the ACM*. 41(11), pp. 76-83.
 54. Keil, M. (1995). Escalation of commitment in information systems development: A comparison of three theories. *Academy of Management Journal*, vol. 38, pp.348-355.
 55. Keil, M., Mann, J., & Rai, A., (2000). Why software projects escalate: An empirical analysis and test of four theoretical models. *MIS Quarterly*, Vol. 24 (4), pp.631-664.
 56. Keil, M., & Robey, D., (1999). Turning around troubled software projects: An exploratory study of the deescalation of commitment to failing courses of action. *Journal of Management Information Systems*, vol. 15 (4), pp.63-87.
 57. Kiesler, C .A. (1971). *The Psychology of Commitment*, Academic Press, New York.
 58. Koh, P.S. (2003). On the association between institutional ownership and aggressive corporate earnings management in Australia. *The British Accounting Review*, vol. 35, pp.105-128.
 59. Kundi, G.M. (1997). *Fundamentals of management information systems*. 1st Ed. Saad Publications, Dikhan, Pakistan; pp. 87
 60. Kundi, G.M., & Nawaz, A. (2006). IT-Organization Alignment. *Gomal University Journal of Research “GUJR”*, Gomal University, DIKhan, Khyber Pakhtunkhwa, Pakistan, vol.22(2), pp.202-206,
 61. Kundi, G.M., Nawaz, A., & Shah, B. (2007). Politics in IT Projects. *Gomal University Journal of Research “GUJR”*, Gomal University, DIKhan, Pakistan, vol.23(2),pp. 211-215,
 62. Lang, L., Ofek, E., Stulz, R. M., (1996). Leverage, investment, and firm growth, *Journal of Financial Economics*, vol.40, pp.3-29.
 63. Lang, L., Stulz, R. M., & Walkling R.A. (1991). A test of free cash-flow hypothesis the cash of bidder return. *Journal of Financial Economics*, vol. 29, pp.315-335.
 64. Lehn, K., & Poulsen, A.B. (1989). Free Cash Flow and Stockholder Gains in Going Private Transactions. *Journal of Finance*, vol. 44, pp. 771-787.
 65. Lindenberg, E., & Ross S. (1981). Tobin's q ratio and industrial organization. *Journal of Business*, vol. 54 (1), pp. 1-32.
 66. Mairesse, J., & Mohnem, P. (2005). The importance of R&D for Innovation: A reassessment using French survey data. *The Journal of Technology Transfer*, vol. 30, pp.183-197.
 67. Baker, P.M., Ruback, R.S. & Wurgler J.A (2004). Behavioral corporate finance. Working Paper w10863.
 68. Mangot M. (2005). *Psychologie de l'investisseur et des marches financiers*. Dunod, Paris.
 69. March, J.G. (2010). *Primer on decision making: How decisions happen*. New York, NY: Simon & Schuster.
 70. McCain Bruce E. (1986). Continuing Investment Under Conditions of Failure: A Laboratory Study of the Limits to Escalation, *Journal of Applied Psychology*, vol. 71(2), pp.280-284.
 71. Megna, P., & Klock, L. (1993). The impact of intangible capital on Tobin's Q in the semi-conductor industry. *American Economic Review*, pp. 265-269.
 72. Meyer J P, Stanley D J, Herscovitch L & Topolnytsky L (2002). Affective, Continuance and Normative Commitment to the Organization: A Meta-analysis of Antecedents, Correlates, and Consequences”, *Journal of Vocational Behavior*, Vol. 61, pp. 20-52.
 73. Meyer, J.P. & Allen, N.J. (1991). A Tree-component conceptualization of organizational commitment. *Human Resource Management Review*, vol. 1, pp.61-89.
 74. Mullins, J. W. (2007). Good money after bad. *Harvard Business Review*, vol. 85, pp. 37-48.
 75. Muramatsu, K. (2002). Fusai wa kigyō wo kiritsu zuckeruka, main bank wa monitoring kinō wohatasuka, *Shōken Keizai Kenkyū*, vol. 36, pp.107-127 (in Japanese).
 76. Myers, S.C. (2001). Capital structure. *Journal of Economic Perspectives*, vol. 15, pp.81-102.
 77. Nielsen, H. (2011). *Bounded rationality in decision making*. Dobbs Ferry, NY: Manchester University Press.
 78. Northcraft G, B., & Wolf G. (1984). Dollars, sense, and sunk costs: A life-cycle model of resource allocation decisions. *Academy of Management Review*, vol. 9, pp. 225-234.
 79. Pfeffer, J. (1981). *Power in Organizations*, Marshfield, MA: Pitman.

80. Ross, J., & Staw, B.M. (1993). Organizational escalation and exit: Lessons from the Shoreham nuclear power plant. *Academy of Management Journal*, vol. 36, pp.701-732.
81. Ross, J. & Staw, B.M. (1993). Organizational escalation and exit: Lessons from the shoreham nuclear power plant. *Academy of Management Journal*, vol. 36(4), pp.701- 732.
82. Sahut J.M., & Gharbi O. (2008). Investisseurs institutionnels et valeur de la firme, papier de travail, Université de Poitiers et Université Paul Cézanne hal-00645361, pp.1-28.
83. Samuelson W. & Zeckhauser R. (1988). Status Quo Bias in Decision Making. *Journal of Risk and Uncertainty*, vol.1(1).
84. Schermerhorn, J. R., Hunt, J.G., & Osborn, R.N. (2011). *Organizational behavior*. New York, NY: Wiley.
85. Simon, H.A. (1982). *Models of bounded rationality*. Cambridge, MA: MIT Press.
86. Simon, H.A. (1997). *Models of bounded rationality: Empirically grounded economic reason*. Cambridge, MA: MIT Press.
87. Simon, H.A. (2009). *Economics, bounded rationality, and the cognitive revolution*. Northampton, MA: Edward Elgar Publishing.
88. Simonson, I. & Staw, B.M. (1992). Deescalation Strategies: A Comparison of Techniques for Reducing Commitment to Losing Courses of Action. *Journal of Applied Psychology*, vol. 77(4), pp.419-426.
89. Sirri, E.R., & Peter, T. (1998). Costly search and mutual fund flows, *Journal of Finance*, vol. 53, pp.1589-1622.
90. Skinner, D. (1993). The investment opportunity set and accounting procedure choice: Preliminary evidence. *Journal of Accounting and Economics*, vol. 16 (4), pp. 407 – 445.
91. Staw, B.M. (1981). The escalation of commitment to a course of action. *Academy of Management Review*, vol. 6, pp. 577-587.
92. Staw, B.M., Barsade, S.G., & Koput, K.W. (1997). Escalation at the credit window: A longitudinal study of bank executives recognition and write-off of problem loans. *Journal of Applied Psychology*, vol. 82, pp.130-142.
93. Street, M., & Street, V. L. (2006). The effects of escalating commitment on ethical decision-making. *Journal of Business Ethics*, vol. 64, pp. 343-356.
94. Titman, S. (1984). The effect of capital Structure on a firm's liquidation decision. *Journal of Financial Economics*, vol. 13, pp.137-151.
95. Van Putten, M., Zeelenberg, M., & Van Dijk, E. (2009). Dealing with missed opportunities: Action vs. state orientation moderates inaction inertia. *Journal of Experimental Social Psychology*, vol. 45, pp. 808–815.
96. Van Putten, M., Zeelenberg, M., & Van Dijk, E. (2010). Who throws good money after bad? Action vs. state orientation moderates the sunk cost fallacy *Judgment and Decision Making*, Vol. 5, 1, pp. 33–36
97. Warne L. and Hart DN (1996). The impact of organizational politics on information systems project failure-a case study. In: *Proceedings of the 29th Annual Hawaii International Conference on Systems Science*, IV; pp. 191-201.
98. White G. (1986) Escalating Commitment to a Course of Action: A Reinterpretation. *Academy of Management Review*. Vol. 11(2), pp. 311-321.
99. Zayer, E.C. (2007). *Verspätete Projektabbrüche in F&E: Eine verhaltensorientierte Analyse*. DUV, Wiesbaden.

The following paper on pages 381 - 390 was extracted

AN ANALYSIS OF CAPITAL BUDGETING METHODS, THE COST OF CAPITAL AND DECISION-MAKERS IN LISTED SOUTH AFRICAN FIRMS

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Abstract

This study's purpose was to link the length of decision-makers' employment in a firm and their academic qualifications to their choice of capital budgeting methods and of cost of capital techniques. The results show that the net present value (NPV) is more popular than the internal rate of return (IRR) as a capital budgeting technique. Also, irrespective of how long respondents have been employed by a company, they all use a discount rate. However, there is a significant tendency among respondents with postgraduate qualifications to prefer the NPV as a capital budgeting technique. Thus, in South Africa, academic qualifications do play a role in decision-makers' capital budgeting practices.

Keywords: Capital Budgeting Technique, Capital Asset Pricing Model, Cost Of Capital, Internal Rate of Return, Net Present Value

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1 Introduction

In a world of ever-increasing competition, in which firms continuously strive to optimise all production inputs and outputs, efficient decision-making processes, with the decision-makers as the cornerstone, are crucial. Maximising shareholder value should indisputably be the goal of any firm and thus the focus of all management decisions. It is not surprising that precisely how this goal can be attained in the most efficient way is attracting more and more scrutiny from shareholders. Hence, it has become the topic of numerous academic research projects, as indicated in the literature review reported in this study.

The objective of this study was, firstly, to report on the capital budgeting methods and cost of capital practices applied in a sample of listed South African companies. Secondly (and more importantly), this study used a multivariate analysis to link both the length of time for which decision-makers have been employed with the company and their academic qualifications to their choice of capital budgeting methods and cost of capital techniques.

The importance of the capital budgeting decision and process for individual firms and for a country as a whole is well known. Capital budgeting methods and the cost of capital used and applied by practitioners is probably one of the most widely researched topics in the field of corporate finance. However, this article differs from previous research papers in a number of ways. Firstly, the sample used in this survey was not a broad-based one, but was chosen specifically to target a particular type of listed company, namely industrial

companies listed for at least ten years. Secondly, the questionnaires were completed by means of personal interviews. Whilst this method has some disadvantages, it also has a number of advantages, such as a high response rate. Thirdly, the main objective of this paper was to identify the respective academic qualifications and length of employment of the relevant decision-makers and then to link them as individuals to their decisions regarding their selection of capital budgeting methods and cost of capital techniques. This has received little or no attention in prior South African studies on capital budgeting practices.

The value of the results of this study to both practitioners and academics is that the findings inform them on what capital budgeting choices are being made by their employees (or students, in the case of academics). More importantly, it might provide answers to relevant questions such as the following: Are capital budgeting choices influenced by the length of employment and by the level of academic qualifications? Can one trust senior employees or highly qualified employees to make the optimal decisions? Will decision-makers choose different capital budgeting techniques and/or use different cost of capital methods if they are more highly qualified than their peers?

The purpose of this article is therefore not only to provide insight into the choice of capital budgeting methods and cost of capital techniques applied by listed companies, but also to link these choices to the profiles of the individual decision-makers. The results from this study are reassuring, in the sense that some of the findings confirm the results of previous studies. However, surprising results were obtained on both the

AN EMPIRICAL ANALYSIS OF THE EFFECT OF AUDIT QUALITY ON FINANCIAL REPORTING FRAUD

Fujen Daniel Hsiao*, Jerry W. Lin**, Joon S. Yang***

Abstract

Several highly publicized financial reporting fraud cases (e.g., Enron, Tyco International, and WorldCom) have put the role of external auditors and quality of their audit in ensuring corporate financial reporting quality under considerable scrutiny. Much research has been conducted on the determinants of earnings management. Since earnings management is inherently unobservable, most studies use various measures of accruals as proxies for earnings management. This study examines the relationship between audit quality and a more direct measure of earnings management – financial reporting fraud. Contrary to the concerns that nonaudit services are the primary reason for auditor independence impairment that results in lower audit and earnings quality, this study finds no significant relationship between reporting fraud and fees paid to auditors for various services.

Keywords: AAER, Earnings Management, Earnings Quality, Fraud, Audit Quality, Auditor Fees

JEL Codes: G32, O16

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1. Introduction

The role of external audit in ensuring the quality of corporate earnings has come under considerable scrutiny due to several highly publicized financial reporting fraud cases (e.g., Enron, Tyco International, and WorldCom). Since values of the firms as well as many contractual provisions are linked to reported earnings figures, it creates economic incentives for management to engage in earnings management. Former Securities and Exchange Commission (SEC) Chairman Arthur Levitt (1998) expressed his serious concerns over earnings management in his famous “the Numbers Game” speech. He called for a fundamental cultural change for corporate management and the accounting profession.

To address the issue, SEC requires publicly-held firms to disclose the amounts of fees that they paid their external auditors for audit and non-audit services in proxy statements filed on or after February 5, 2001. Such disclosures are expected to provide investors with information about quality of independent audit of corporate annual financial statements in the U.S.

Several studies have examined the SEC’s proposition that fees paid by companies to their independent auditors may impair auditor independence, resulting in lower audit quality and, in turn, lower reported earnings quality (e.g., Ashbaugh et al., 2003; Frankel et al., 2002). The concern is that large fees, especially for non-audit services, create too close a financial relationship between the auditor and audit client, which makes the auditor more reluctant in challenging questionable accounting practices by the client’s management.

Since earnings management is the result of managerial judgment and is inherently unobservable, various definitions of earnings management have been proposed. Schipper (1989, p.92) appears to have captured the essence of earnings management by defining it as “... purposeful intervention in the external financial reporting process with the intent of obtaining private gain ...” Likewise, Healy and Wahlen (1999, p.368) state that “earnings management occurs when managers use judgment in financial reporting and in structuring transactions to alter financial reports to either mislead some

stakeholders about the underlying economic performance of the company or to influence contractual outcomes that depend on reported accounting numbers.” Regardless of its different definitions, earnings management is inherently unobservable; thus, most studies use various measures of discretionary (abnormal) accruals as proxies for earnings management (e.g., Ashbaugh et al., 2003; Dechow et al., 1995; Frankel et al., 2002). Discretionary accruals require assumptions and estimates of non-discretionary portion of the total accruals. Therefore, reliability of estimated discretionary accruals as measure of earnings management decreases in the magnitude of estimation errors (Dechow and Dichev, 2002). Similarly, Guay et al. (1996) show that accruals derived from alternative estimation models involves considerable imprecision. Bernard and Skinner (1996) present similar argument that abnormal accruals derived using the Jones-type models reflect measurement errors partly because of the misclassification of normal as abnormal accruals.

Using data collected from proxy statements, this study examines the relationship between audit quality (proxy by various measures of auditor fees) and a more direct measure of earnings management – financial reporting fraud. Financial reporting fraud can be thought of as the ultimate manifestation of aggressive earnings management. Cases of financial reporting fraud are the results of the U.S. Securities and Exchange Commission’s (SEC) accounting-related enforcement actions and are made public in the SEC’s *Accounting and Auditing Enforcement Releases* (AAERs). The AAERs describe the SEC’s investigations of alleged violations of accounting provisions of the securities laws, including fraud, non-fraudulent but reckless disclosure, and accounting disputes that allege neither fraud nor recklessness (Feroz et al., 1991). Prior studies have examined the operating and financial characteristics, the motivations of management, or the effectiveness (or the lack of) of corporate governance of the firms cited in the AAERs for aggressive or fraudulent financial reporting practices (e.g., Beasley et al., 2000; Beneish, 1999; Bonner et al., 1998; Dechow et al., 1996; Farber, 2005; Leng et al., 2011). Some studies investigate stock price reactions to the news of firms being investigated by the SEC for alleged cases of financial reporting fraud or misconduct (Feroz et al., 1991; Leng et al., 2011; Nourayi, 1994). However, there is little empirical evidence on the relationship between audit quality and financial reporting fraud. This study contributes to the literature by providing empirical evidence on this important issue.

Contrary to the concerns of many in accounting practice and research, this study finds no statistically significant relationship between financial reporting fraud and fees paid to independent auditors for audit services and non-audit services, respectively, for all services combined, or for fees for non-audit services relative to fees for audit services. This finding does

not support the claim that non-audit fees paid to the auditor are the primary reason for auditor independence impairment that results in lower audit and earnings quality.

The rest of the paper is organized as follows. The next section reviews prior research on earnings management and develops research hypotheses. Section 3 describes research methodology. Section 4 discusses the empirical results. The final section summarizes the paper and proves concluding remarks.

2. Prior Research and Hypotheses

Several studies have investigated the determinants and consequences of financial report fraud. Occurrence of fraud appears to be associated with the financial and operating characteristics, motivations of management, negative long-term performance, or effectiveness (or the lack of) of corporate governance of the firms cited in the AAERs for fraudulent or reckless financial reporting practices (e.g., Beasley et al., 2000; Beneish, 1999; Dechow et al., 1996; Farber, 2005; Leng et al., 2011). Also, certain types of financial reporting fraud are more likely to result in auditor litigations (Bonner et al., 1998). Other studies have documented negative stock price reactions up to two to three years prior to the news of firms being investigated by the SEC for alleged cases of financial reporting fraud or misconduct (Feroz et al., 1991; Leng et al., 2011; Nourayi, 1994). In addition, Feroz et al. (2007) find that firms cited in the AAERs have lower earnings response coefficients (i.e., the magnitude of stock price reactions to earnings) for the periods after being cited for fraud compared to those for the periods before being cited for fraud in the AAERs. Also, AAER firms have lower earnings response coefficients than those control firms not cited in the AAERs during the periods before and after being cited for fraud. Furthermore, Johnson et al. (2009) present evidence that the AAER firms earn zero stock returns over the fraud period, and their stock prices decline an average of 23 percent around the first disclosure of potential fraud. The findings suggest that the stock market penalizes those firms charged by the SEC for aggressive or fraudulent financial reporting practices. However, there is little empirical evidence about the relationship between audit quality and financial reporting fraud.

Given the increasing occurrences of earnings management in general and financial reporting fraud in particular, some critics of the accounting profession have argued that non-audit services provided by independent auditors to their audit clients impair auditor independence and are the primary factor contributing to poor quality of audit and, thus, reported earnings. Some recent studies have addressed this issue of auditor independence and earning quality with mixed results. For example, Frankel et al. (2002) propose that a greater economic bond between the audit firm and client will impair auditor

independence. Impaired auditor independence makes the auditor less willing to resist client's biases in reported earnings. As a result, earnings quality is lower. Measuring the economic bond as the relative importance of non-audit fees disclosed in the proxy statements, Frankel et al. (2002) report that the ratio of non-audit fees to total fees is positively associated with small earnings surprises and with the magnitude of discretionary accruals (proxies for earnings quality or earnings management).

However, Chung and Kallapur (2003) argue that the non-audit fees ratio cannot fully reflect the degree of economic dependence, and they find no significant relationship between discretionary accruals and audit fees or non-audit fees. Additionally, Ashbaugh et al. (2003) argue that auditors do not necessarily compromise their independence when clients pay high non-audit fees, with their findings of no association between the non-audit fees ratio and income-increasing discretionary accruals. Kinney et al. (2004) also fail to find an association between non-audit fees and the incidence of restatements as well. Contrary to the concerns of higher auditor fees impairing audit and earnings quality, Antle et al. (2006) apply a simultaneous equations model to test the confluence of audit fees, non-audit fees and abnormal accruals and document that knowledge spillovers from non-audit services actually lead to a *negative* association between non-audit fees and abnormal accruals (i.e., non-audit services resulting in less, not more, earnings management). Other criticism directed towards the Frankel et al.'s (2002) study is that the authors do not consider whether higher audit fees and total fees may also increase the economic bond, which impairs auditor independence with lower earnings quality as a consequence (Kinney and Libby, 2002). We examine this issue in this study

Similarly, Raghunandan et al. (2003) find no evidence supporting the claim that non-audit fees or total fees inappropriately influence the audit of financial statements that are subsequently restated. Their study reports no significant differences between the restatement and control firms in unexpected or actual (as disclosed in proxy statements) non-audit fees, total fees, or ratio of non-audit to total fees. However, like Frankel et al. (2002) and many others, the authors also fail to consider the association between audit fees and earning quality. Likewise, focusing on audit opinions (instead of discretionary accruals), DeFond et al. (2002) report no significant association between auditors' going concern opinions

and non-audit fees, audit fees, total auditor's fees, or fee ratio.

One reason for the mixed results in prior studies is that some focus on non-audit services and fail to consider that higher auditor fees, regardless for audit or non-audit services, will strengthen economic bond of the auditor to the client, resulting in auditor independence impairment and, thus, poor quality of reported earnings. Indeed, in the legal action against KPMG in the audit of Xerox Corporation, the SEC contends that total fees are a material inducement for the auditor to permit Xerox's management to manipulate earnings to meet the performance expectations of Wall Street (SEC 2003). To further examine the relationship between auditors' fees and earnings quality (or the lack of) that results in the SEC's investigation of the firm for misleading or fraudulent financial reporting, this study tests the following hypotheses (stated in the null form):

H1: There is no significant association between audit fees and earnings quality.

H2: There is no significant association between non-audit fees and earnings quality.

H3: There is no significant association between total fees and earnings quality.

3. Research Methodology

3.1 Sample Selection

The initial sample consists of 69 AAER firms, identified from the SEC web site, that were alleged fraudulent or misleading financial reports affecting fiscal periods between 2000 and 2003. These firms are then screened for availability of requisite financial data on *Compustat* and data on fees paid to external auditors in proxy statements. The final AAER sample includes 21 firms, after deleting 29 firms due to incomplete financial data and 19 firms due to missing auditor fee data. We then match each AAER sample firm with a non-AAER firm based on two-digit SIC code and firm size. That results in a final sample of 42 firms. Fiscal year 2000 is the first year that publicly-held companies are required by the SEC to disclose annual fees paid to external auditors for audit and non-audit services. This presents a first opportunity that allows the examination of the association between non-audit fees (and audit fees) and quality of reported earnings. Table 1 presents outcome of the sample selection process.

Table 1. Sample Selection

	Observations
Firms alleged fraudulent or misleading financial reports affecting fiscal periods between 2000 and 2003 identified from AAERs	69
Financial data available from Research Insight (Compustat)	40
Auditor fee data available from the proxy statement	21
Final sample	AAER firms: 21 Control firms*: 21

Note: * Control firms are matched based on two-digit SIC code and firm size (i.e., total assets.)

3.2 Model Specification

We estimate the following logistic regression model, where FRAUD equals “1” if the firm is cited in an AAER for alleged fraudulent or misleading financial

$$\begin{aligned} \text{FRAUD} = & \beta_0 + \beta_1 \text{FEEVAR} + \beta_2 \text{BIG_N} + \beta_3 \text{AUDTEN} + \beta_4 \text{CFO} + \beta_5 \text{ABSCFO} + \beta_6 \text{ACC} + \\ & \beta_7 \text{ABSACC} + \beta_8 \text{MKRTX} + \beta_9 \text{LOSS} + \beta_{10} \text{MKBKF} + \beta_{11} \text{LEVERG} + \\ & \beta_{12} \text{FINACQ} + \beta_{13} \text{LNMVE} + \varepsilon \end{aligned} \quad (1)$$

Prior studies suggest that higher fees paid to the external auditor increase the economic bond between the auditor and the client and thus impair auditor independence. The impaired independence results in poor audit quality and allows for greater earnings management (resulting in lower earnings quality). This study uses auditor fees disclosed in proxy statements to develop three measures of the auditor-client economic bond. The first measure is the natural log transformation of total fees paid to auditors (LNTLFEE). This is consistent with the argument that the economic bond to a client is the total fees paid to the auditor, regardless of the nature of services (Kinney and Libby, 2002). This is also consistent with the SEC’s position in recent enforcement actions against independent auditors (e.g., SEC, 2003).

The second and third measures are natural log transformations of fees for audit (LNAUFEE) and non-audit services (LNNONAU), respectively. These two measures are consistent with the argument that higher fees from either kind of services would presumably increase the economic bond (Kinney and Libby, 2002). These measures allow us to examine the respective relationships between earning management and audit and non-audit fees simultaneously.

The fourth measure is the ratio of non-audit fees to total fees (FEERATIO). This measure is the focus of many recent studies (Basioudis et al., 2011; Brandon et al., 2004; Firth, 2002) on auditor independence and earnings management. This measure is included to obtain empirical results for comparison with prior studies.

In addition to the four auditor fee measures, this study includes two variables as proxies for audit quality. Prior studies suggest that Big-N auditors are less likely to allow earnings management than non-Big-N auditors (e.g., Becker et al. 1998; Francis et al. 1999). The BIG_N variable, either then big-five audit firms (including Arthur Andersen in the test period) or now big-four, (BIG_N) is coded as “1” if the firm is audited by a Big-N auditor for the sample year, and “0” otherwise. Another variable is auditor tenure

reports, and “0” otherwise. FEEVAR indicates the alternative measures of the auditor fee variables (including LNTLFEE, LNAUFEE, LNNONAU, and FEERATIO) and “ ε ” is the error term.

(AUDTEN) measured as the number of years the same auditor has audited the client’s financial statements. Some prior studies argue that auditor independence decreases as the length of auditor tenure increases (Beck et al., 1988; Lys and Watts, 1994). On the other hand, others claim that as auditor tenure increases, the auditor is better at assessing risk of material misstatements by gaining insights into the client’s operations and business strategies (e.g., Arens et al., 2009).

This study also includes several variables that are frequently used in prior research to control for other factors influencing management’s incentives to manage or manipulate reported earnings. Several measures of firm performance are reported to be correlated with earning management (or earnings quality) in prior studies (e.g., Dechow et al., 1995; Frankel et al., 2002; McNichols, 2000): cash flows from operations deflated by average total assets (CFO), the absolute value of cash flows from operations deflated by average total assets (ABSCFO), total accruals deflated by average total assets (ACC), the absolute value of total accruals deflated by average total assets (ABSACC), annual market returns (MKRTX), and an indicator variable (LOSS) equal to “1” if the firm reports a loss for fiscal year 2000, and “0” otherwise. In addition, Matsumoto (2002) suggests that firms with higher growth prospects are more likely to manage earnings. Growth prospects are measured by the market-to-book ratio (MKBKF). This study also includes leverage (LEVERG), measured as the ratio of total liabilities to total assets, and a financing indicator variable (FINACQ) equal to “1” if the firm issued equity or debt securities during the sample year, and “0” otherwise. Prior studies find leverage and need for external financing are related to earning management (Becker et al., 1998; DeAngelo et al., 1994). Finally, this study controls for firm size measured as the natural log transformation of market value of equity (LNMVE). The definitions of these variables are summarized in Table 2.

Table 2. Definitions of Variables

FRAUD	An indicator variable equal to “1” if the sample firm cited in an AAER, and “0” otherwise (the Dependent Variable);
FEEVAR:	
LNTLFEE	Natural logarithm of total fees paid to the auditor;
LNAUFEE	Natural logarithm of audit fees paid to the auditor;
LNNONAU	Natural logarithm of non-audit fees paid to the auditor;
FEERATIO	Ratio of non-audit fees relative to total fees paid to the auditor;
BIG5	An indicator variable equal to “1” if the auditor is a Big-5 firm, and “0” otherwise;
AUDTEN	Number of years the auditor has audited the firm=s financial statements;
CFO	Cash flows from operating activities, deflated by average total assets;
ABSCFO	Absolute value of cash flows from operating activities, deflated by average total assets;
ACC	Total accruals (i.e., net income minus cash flows from operating activities), deflated by average total assets;
ABSACC	Absolute value of total accruals (i.e., net income minus cash flows from operating activities), deflated by average total assets;
MKRTX	Annual market return of the firm=s common stock;
LOSS	An indicator variable equal to “1” if the firm reported loss for the fiscal year, and “0” otherwise;
MKBKF	Market value to book value for common equity to measure growth prospects;
LEVERG	Leverage ratio defined as ratio of total liabilities relative to total assets;
FINACQ	An indicator variable equal to “1” if the firm issued equity or debt securities during the fiscal year, and “0” otherwise;
LNMVE	Natural logarithm of market value of equity at year end.

4. EMPIRICAL RESULTS

4.1 Univariate Statistics: Correlations and T-Tests

Table 3 presents the mean values of each variable for the pooled (full) sample of 42 firms and sub- groups of AAER firms and control firms with 21 firms each. We also perform a t-test to examine the mean value

difference for each variable between the two sub-groups. Our results show no significant difference between these two groups in most variables, except that the length of audit tenure (AUDTEN) is shorter for AAER firms (t-statistic = -1.92 and p-value = 0.060) and the ratio of market-to-book value (MKBKF) is greater for AAER firms (t-statistic = 1.93 and p-value = 0.061).

Table 3. Descriptive and Univariate Statistics

Variables	Full-Mean (N=42)	Sample Sub-Group			Mean Group Difference	T-Statistics#	P-value
		Group	Mean	N			
LNTLFEE	7.083	AAER	7.140	21	0.114	0.23	0.819
		Control	7.026	21			
LNAUFEE	6.144	AAER	6.194	21	0.099	0.26	0.796
		Control	6.095	21			
LNNONAU	6.483	AAER	6.582	21	0.198	0.33	0.743
		Control	6.384	21			
FEERATIO	0.537	AAER	0.544	21	0.015	0.19	0.850
		Control	0.529	21			
BIG_N	0.929	AAER	0.905	21	-0.047	-0.59	0.558
		Control	0.952	21			
AUDTEN	10.571	AAER	8.048	21	-5.047	-1.92	0.061*
		Control	13.095	21			
CFO	-0.009	AAER	-0.009	21	-0.000	-0.01	0.992
		Control	-0.009	21			
ABSCFO	0.157	AAER	0.132	21	-0.051	-0.82	0.416
		Control	0.183	21			

ACC	-0.262	AAER	-0.304	21	-0.085	-0.32	0.750
		Control	-0.219	21			
ABSACC	0.367	AAER	0.424	21	0.114	0.45	0.655
		Control	0.310	21			
MKRTX	-0.026	AAER	-0.118	21	-0.185	-1.02	0.313
		Control	0.067	21			
LOSS	0.405	AAER	0.381	21	-0.048	-0.31	0.758
		Control	0.429	21			
MKBKF	2.801	AAER	3.786	21	2.970	1.93	0.060*
		Control	0.816	21			
LEVERG	0.563	AAER	0.529	21	-0.067	-0.69	0.494
		Control	0.596	21			
FINACQ	0.952	AAER	1.000	21	0.095	1.45	0.154
		Control	0.905	21			
LNMVE	6.202	AAER	6.607	21	0.810	1.01	0.318
		Control	5.797	21			

Notes:

1. ***, **, and * indicate significance at the 1%, 5%, and 10% levels, respectively, two-tailed.
2. # Test the means for the groups are significantly different from each other.
3. See Table 2 for variable definitions.

Table 4 reports the univariate Spearman's rank correlations and Pearson's correlations between AAER financial reporting fraud and the auditor fee variables. The results show no significant evidence to indicate that total fees, audit fees, or non-audit fee is related to the incidence of fraudulent financial statements (FRAUD). Overall, our univariate results suggest that the provision of audit and/or non-audit services does not seem to associate with the

occurrence of financial reporting fraud. However, this evidence on the relationships between fraud occurrence and auditor fee variables is obtained without controlling for other factors related to the characteristics of the auditor and the firm that may affect the occurrence of financial reporting fraud. To control for these factors, the multivariate logistic regressions are applied with results discussed next.

Table 4. Correlations between Fraud and Other Fee Variables

	FRAUD	LNTLFEE	LNAUFEE	LNNONAU	FEERATIO
FRAUD	1.000	0.037	0.041	0.053	0.029
LNTLFEE	0.049	1.000	0.927***	0.956***	0.628***
LNAUFEE	0.018	0.933***	1.000	0.804***	0.322**
LNNONAU	0.022	0.956***	0.828***	1.000	0.766***
FEERATIO	0.004	0.632***	0.364**	0.751***	1.000

Notes:

1. Pearson's Correlations present in upper right and Spearman's Rank Correlations in lower left.
2. ***, **, and * indicate significance at the 1%, 5%, and 10% levels, respectively, one-tailed.
3. See Table 2 for variable definitions.

4.2 Results of Multivariate Logistic Regressions

Following DeFond et al. (2002) and Frankel et al. (2002), we perform similar multivariate tests as specified in model (1) discussed earlier. Table 5 reports the results from three separate logistic regressions of total auditor fees, audit and non-audit fees, and ratio of non-audit fees to total fees, respectively, on earnings quality as proxy by AAER financial reporting fraud for the full sample. The first logistic regression results are based on total auditor fees. As presented in Table 5, we find no significant

association between total fees paid to the auditors and the occurrence of financial reporting fraud (chi-square value is 0.001). The result is in contrast to the arguments by Frankel et al. (2002) and Larcker and Richardson (2004) that higher total fees paid to the auditor (regardless of types of services) strengthen the economic bond between the auditor and the client, which in turn impairs auditor independence resulting in lower audit quality and, thus, earning quality. Based on our finding, the amount of total fees paid to auditors may not compromise the auditor independence and audit quality.

Table 5. Summary Statistics from Logistic Regression

Variable	Dependent Variable: FRAUD = 1, if an AAER firm; FRAUD = 0, otherwise.		
	Coefficient (Chi-square)	Coefficient (Chi-square)	Coefficient (Chi-square)
Intercept	-10.959 (0.001)	-15.139 (0.001)	-10.084 (0.001)
LNTLFEE	0.017 (0.001)	N/A	N/A
LNAUFEE	N/A	0.674 (0.581)	N/A
LNNONAU	N/A	-0.400 (0.549)	N/A
FEERATIO	N/A	N/A	-1.759 (0.528)
BIG_N	-1.478 (0.632)	2.380 (0.241)	-0.956 (0.233)
AUDTEN	-0.275 (4.908)**	-0.262(5.362)**	-0.279 (5.635)**
CFO	-4.543 (1.136)	-2.949 (0.380)	-5.202 (1.435)
ABSCFO	-5.884 (1.113)	-5.570 (1.002)	-6.227 (1.206)
ACC	4.362 (0.373)	4.758 (0.493)	4.691 (0.501)
ABSACC	4.438 (0.385)	4.601 (0.473)	4.699 (0.494)
MKRTX	-0.565 (0.457)	-0.866 (1.060)	-0.720 (0.743)
LOSS	-0.740 (0.281)	-0.688 (0.209)	-0.941 (0.432)
MKBKF	0.371 (1.489)	0.305 (1.459)	0.319 (1.222)
LEVERG	2.116 (0.614)	1.320 (0.227)	1.544 (0.310)
FINACQ	11.169 (0.001)	11.201 (0.001)	10.547 (0.001)
LNME	0.450 (0.871)	0.342 (0.477)	0.591 (1.718)

Notes:

1. ***, **, and * indicate significance at the 1%, 5%, and 10% levels, respectively, one-tailed.
2. See Table 2 for variable definitions.

Prior studies often fail to consider the relationship between audit fees and earnings quality (e.g., Raghunandan et al., 2003). Thus, the second logistic regression model includes variables based on separate fees for audit and non-audit services. The results in Table 5 suggest that neither audit fees nor non-audit fees is significantly associated with incidence of financial reporting fraud (chi-square values are 0.581 and 0.549, respectively). The finding of no significant association between audit fees and fraudulent statements contradicts the argument that higher fees of either kind (audit or non-audit) would possibly weaken auditor independence and, thus, lower quality of audit and reported earnings. Also, the insignificant relationship between non-audit fees and fraudulent statements appears to be inconsistent with the study results by Frankel et al. (2002), Duh et al. (2009), and much of the comments on the negative effect of non-audit services on audit quality in the press. Our finding of the lack of a significant association between financial reporting fraud and non-audit fees, however, is consistent with the results reported in many other extant studies (e.g., Chung and Kallapur, 2003; Kinney et al., 2004; Raghunandan et al., 2003).

The third logistic regression results are based on the ratio of non-audit fees to total fees. As shown in Table 5, no significant association is found between this fee ratio and financial reporting fraud cited in AAER. The finding is similar to our results from the other two regressions as discussed above. This finding is also consistent with research results in Chung and Kallapur (2003), Kinney et al., (2004), and

Raghunandan et al. (2003). However, it is noted that auditor tenure, as presented in Table 5, is significantly and negatively (at the 5% level) related to the occurrence of fraudulent financial reporting in all three regressions. This result is consistent with the significantly shorter auditor tenure found for AAER fraud firms, as compared to that for non-AAER fraud firms, from our t-test results discussed above. This finding supports the argument of auditor's "learning curve effect," where as the auditor's tenure increases, the auditor's ability to assess misstatement risk and detect fraud increases (Carcello and Nagy, 2004; Fairchild, 2008). It may also provide some explanation for the mixed findings on fraud risk factors in prior studies that fail to control for auditor tenure.

5. Summary and Conclusions

This study examines the association between earnings quality (or the lack of), proxy by financial reporting fraud cited in SEC's AAERs, and audit quality, proxy by auditor fee measures: total fees, audit fees, and non-audit fees. Some prior studies (e.g., Frankel et al., 2002 and Larcker and Richardson, 2004), suggest that higher total fees paid to the auditor strengthen economic bond of the auditor-client relationship, which compromises auditor independence and make the auditor less willing to resist client's biases in reported earnings. Our study contributes to extant research by considering the relationship between alternative auditor fee measures and earning quality. Contrary to the concerns of many in accounting

practice or research, this study, however, does not find statistically significant relationships between AAER financial reporting fraud and (1) fees paid to independent auditors for audit services and non-audit services, respectively, (2) fees for all audit services combined, or (3) fees for non-audit services relative to fees for audit services. These findings are consistent with the evidence in Ashbaugh et al. (2003), Chung and Kallapur (2003), DeFond et al. (2002), Kinney et al. (2004), and Raghunandan et al. (2003) that no significant association exists between non-audit fee ratio and quality of audit or the client's reporting quality (as measured by abnormal accruals, going concern opinions, and restatements). The study also contributes to this stream of research by examining the effect of auditor fees on clear-cut cases of the lack of earnings quality - fraudulent financial reporting. Overall, our findings do not provide evidence for the economic bond between the auditor and the client because of fees paid by the client to their auditor that leads to lower audit and earnings quality. In particular, our findings also do not support the claim that fees for non-audit services are the primary reason for auditor independence impairment that results in lower audit quality and earnings quality, which is used as argument to support restrictions on nonaudit services that auditors may provide to their audit clients.

One limitation of this study is that it uses the first few years of disclosed fees paid to external auditors. Data from later years might provide additional insights. In addition, this study makes no distinction among different components of non-audit fees because of insufficient number of sample firms reporting such data. We suggest that future research may examine the effect of different components of non-audit fees on reported earnings quality to provide some insights into this important issue.

References

1. Antle, R., E. Gordon, G. Narayanamoorthy, and L. Zhou. 2006. The Joint Determination of Audit Fees, Non-Audit Fees, and Abnormal Accruals. *Review of Quantitative Finance and Accounting* 2(3), 235-266.
2. Arens, A., R. Elder, and M. Beasley. 2009. *Auditing and Assurance Services: An Integrated Approach*. 13th edition. N.J.: Prentice Hall.
3. Ashbaugh, H., R. LaFond, and B. Mayhew. 2003. Do Nonaudit Services Compromise Auditor Independence? Further Evidence. *The Accounting Review* 78 (July), 611-639.
4. Basioudis, I. G., F.A. Gul, and A. C. Ng. 2011. Non-Audit Fees, Auditor Tenure, and Auditor Independence. Working paper. University of Aston and Hong Kong Polytechnic University.
5. Beck, P., T. Frecka, and I. Solomon. 1988. An Empirical Analysis of the Relationship between MAS Involvement and Auditor Tenure: Implications for Auditor Independence. *Journal of Accounting Literature* 7, 65-84.
6. Becker, C.L., M.L. DeFond, J. Jiambalvo, and K.R. Subramanyam. 1998. The Effect of Audit Quality on Earnings Management. *Contemporary Accounting Research* 15, 1-24.
7. Beasley, M.S., J.V. Carcello, D.R. Hermanson, and P.D. Lapedes. 2000. Fraudulent Financial Reporting: Consideration of Industry Traits and Corporate Governance Mechanisms. *Accounting Horizons* 14 (December), 441-454.
8. Beneish, M.D. 1999. Incentives and Penalties related to Earnings Overstatements that Violate GAAP. *The Accounting Review* 74 (October), 425-457.
9. Bernard, V., and D. Skinner. 1996. What Motivates Managers' Choice of Discretionary Accruals? *Journal of Accounting and Economics* 22 (1-3), 313-325.
10. Bernard, V.L. and J. K. Thomas. 1990. Evidence that Stock Prices do not Fully Reflect the Implications of Current Earnings for Future Earnings. *Journal of Accounting and Economics* 13 (December), 305-340.
11. Bonner, S.E., Z. Palmrose, and S.M. Young. 1998. Fraud Type and Auditor Litigation: An Analysis of SEC Accounting and Auditing Enforcement Releases. *The Accounting Review* 73 (October), 503-532.
12. Brandon, D.M., A.D. Crabtree, and J.J. Maher. 2004. Non Audit fees, Auditor Independence, and Bond Rating. *Auditing: A Journal of Practice and Theory* 23(2), 89-103.
13. Carcello, J.V., and A.L. Nagy. 2004. Audit Firm Tenure and Fraudulent Financial Reporting. *Auditing: A Journal of Practice and Theory* 23 (2), 55-69.
14. Chung, H., and S. Kallapur. 2003. Client Importance, Nonaudit Services, and Abnormal Accruals. *The Accounting Review* 78 (October), 931-955.
15. Duh, R., W. Lee, and C. Hua. 2009. Non-Audit Service and Auditor Independence: An Examination of the Procomp Effect. *Review of Quantitative Finance and Accounting* 32(1), 33-59.
16. DeAngelo, H., L. DeAngelo, and D.J. Skinner. 1994. Accounting Choice in Troubled Companies. *Journal of Accounting and Economics* 10, 193-225.
17. Dechow, P.M., R.G. Sloan, and A.P. Sweeney. 1995. Detecting Earnings Management. *The Accounting Review* 70, 193-225.
18. Dechow, P.M., and I.D. Dichev. 2002. The Quality of Accruals and Earnings: The Role of Accrual Estimation Errors. *The Accounting Review* (January), 35-59.
19. DeFond, M. L., K. Raghunandan, and K. R. Subramanyam. 2002. Do Non-audit Service Fees Impair Auditor Independence? Evidence from Going Concern Audit Opinions. *Journal of Accounting Research* (September), 1247-1274.
20. Farber, D.B. 2005. Restoring Trust after Fraud: Does Corporate Governance Matter? *The Accounting Review* 80 (April), 539-561.
21. Fairchild, R. 2008. Auditor Tenure, Managerial Fraud and Report Qualification: a Behavioral Game-Theoretic Approach. *International Journal of Behavioral Accounting and Finance* 1(1), 27-37.
22. Feroz, E.H., K. Park, and V. Pastena. 1991. The Financial and Market Effects of the SEC's Accounting and Auditing Enforcement Releases. *Journal of Accounting Research* 29 (Supplement), 107-142.
23. Feroz, E.H., J.W. Lin, and J.S. Yang. 2007. The Effects of the SEC's Accounting and Auditing Enforcement Releases on the Market Response to Earnings Information. Working Paper, University of Washington Tacoma.

24. Firth, M. 2002. Auditor-Provided Consultancy Services and their Associations with Audit Fees and Audit Opinions. *Journal of Business Finance and Accounting*, 29(5&6), 661-693.
25. Francis, J.D., D. Philbrick, and K. Schipper. 1994. Shareholder Litigation and Corporate Disclosures. *Journal of Accounting Research* 32, 137-164.
26. Francis, J.R., E.L. Maydew, and H.C. Sparks. 1999. The Role of Big 6 Auditors in the Credible Reporting of Accruals. *Auditing: A Journal of Practice & Theory* 18, 17-34.
27. Frankel, R.M., M.F. Johnson, and K.K. Nelson. 2002. The Relation between Auditors' Fees for Nonaudit Services and Earnings Management. *The Accounting Review* 77 (Supplemental), 71-105.
28. Guay, et al. 1996. A Market-Based Evaluation of Discretionary Accrual Models. *Journal of Accounting Research* 34 (Supplement), 83-105.
29. Healy, P., and J. Wahlen. 1999. A Review of the Earnings Management Literature and Its Implications for Standard Setting. *Accounting Horizons*, 365-383.
30. Johnson, S., H. Ryan, and Y. Tian. 2009. Managerial Incentives and Corporate Fraud: The Sources of Incentives Matter. *Review of Finance* 13(1), 115-145.
31. Kinney, W.R. Jr. and R. Libby. 2002. Discussion of the Relation between Auditors' Fees for Nonaudit Services and Earnings Management. *The Accounting Review* (Supplement), 107-114.
32. Kinney, W.R., Z.V. Palmrose, and S. Scholz. 2004. Auditor Independence, Non-Audit Service, and Restatement: Was the U.S. Government Right? *Journal of Account Research* 42, 561-588.
33. Larcker, D.F., and S.A. Richardson. 2004. Fees Paid to Audit Firms, Accrual Choices, and Corporate Governance. *Journal of Accounting Research*, 42(June), 625-658.
34. Leng, F., E. H. Feroz, Z. Cao, and S.V. Davalos. 2011. The Long-Term Performance and Failure Risk of Firms Cited in the US SEC's Accounting and Auditing Enforcement Releases. *Journal of Business Finance and Accounting* 38 (7&8), 813-841.
35. Levitt, A. 1998. The Numbers Game. Speech Delivered at the NYU Center for Law and Business. New York, NY, September 28. Available at www.sec.gov.
36. Lin, J.W., M.I. Hwang, and J.D. Becker. 2003. A Fuzzy Neural Network for Assessing the Risk of Fraudulent Financial Reporting. *Managerial Auditing Journal* 18 (8), 657-665.
37. Lys, T., and R. L. Watts. 1994. Lawsuits Against Auditors. *Journal of Accounting Research* 32, 65-93.
38. Matsumoto, D. 2002. Management's Incentives to Avoid Negative Earnings Surprises. *The Accounting Review* 77 (September), 483-514.
39. Moriarty, G.B., and P.B. Livingston. 2001. Quantitative Measures of the Quality of Financial Reporting. *Financial Executive* 17 (July/August), 53-56.
40. McNichols, M.F. 2000. Research Design Issues in Earnings Management Studies. *Journal of Accounting and Public Policy* 19, 313-345.
41. Nelson, M. W., J. A. Elliott, and R.L. Tarpley. 2002. Evidence from Auditors about Managers' and Auditors' Earnings Management Decisions. *The Accounting Review*, 175-202.
42. Nourayi, M.M. 1994. Stock Price Responses to the SEC's Enforcement Actions. *Journal of Accounting and Public Policy* 13 (Winter), 333-347.
43. Owers, J. E., C. M. Lin, and R. C. Rogers. 2002. The Informational Content and Valuation Ramifications of Earnings Restatements. *International Business and Economics Research Journal*, 71-84.
44. Palmrose, Z.V., and S. Scholz. 2004. The Circumstances and Legal Consequences of Non-GAAP Reporting: Evidence from Restatements. *Contemporary Accounting Research* 21 (1), 139-180.
45. Palmrose, Z.V., V. J. Richardson, and S. Scholz. 2004. Determinants of Market Reactions to Restatement Announcements. *Journal of Accounting and Economics* 37(1), 59-89.
46. Raghunandan, K., W.J. Read, and J.S. Whisenant. 2003. Initial Evidence on the Association between Nonaudit Fees and Restated Financial Statements. *Accounting Horizons* (September), 223-234.
47. Richardson, S., I. Tuna, and M. Wu. 2002 Predicting Earnings Management: The Case of Earnings Restatements. Working Paper, London Business School, University of Hong Kong.
48. Schipper, K. 1989. Commentary on Earnings Management. *Accounting Horizons* (December), 91-102.
49. Securities and Exchange Commission (SEC). 2003. Civil Action No. 03-CV-0671(DLC), available at www.sec.gov/litigation/complaints/comp17954.htm.
50. Wu, M. 2002. A Review of Earnings Restatements. University of Hong Kong.

THE FINANCIAL IMPACT OF STRIKES: A WORKER'S PERSPECTIVE

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Abstract

The consequences of labour strikes are many and varied and the aim of this manuscript is to focus solely on the financial ramifications of a particular strike. More specifically, it investigates the gains and costs from a worker's perspective, using the ex post data of three case studies of strikes that took place in 2010, involving the trade unions of Transportation Network (TRANSNET), Passenger Rail Agency of South Africa (PRASA) and Members of Automotive Manufacturers Employers' Organisation (MAMEO). The findings indicate that for Transnet the present value of the net benefits and costs was negative, indicating that the strike was not profitable from a worker's point of view, while it was indeed profitable as far as the PRASA and MAMEO strikes are concerned. The study also reveals that a breakeven number of strike days, appropriate to the peculiarities of each case, can be determined which can be used as a benchmark to monitor the length of the strike period.

Keywords: Industrial Action, Labour Unions, Living Standards, Wage Negotiations, Net Gains / Losses, Breakeven Strike Days

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1. Introduction

Strike action has proven to have far-reaching implications, for economies, corporate institutions and employees alike. In fact, Von Holdt (2002:288) reported that trade union activities in the years leading up to the first democratic elections in South Africa in 1994 were regarded by members as purely political. Since the change of government the trade union struggle has toned down and the militancy and the solidarity of the workers have diluted. Robertson (2007:781) confirmed that industrial conflict and political struggle are very much intertwined, observing that the strike has been a key tool, not only of industrial conflict but also of political struggle.

South Africa is a fine example of the interconnectedness of labour and politics. Basset and Clarke (2008:788) indicated that The Congress of South African Trade Unions (COSATU), one of the major trade union alliances in South Africa, played a pivotal role in the election of President Zuma in 2009. Despite rumours suggesting weakened support for the Tripartite Alliance in South Africa, Beresford (2009:411) provided arguments to the contrary, stating that COSATU's members remain extremely supportive of the (ANC) government of the day. COSATU has also been at the forefront of the struggle for democracy, a process in which numerous workers sacrificed their jobs and security for what they believed in. It is an open question whether the

subsequent policy-making by government has justified the support given by COSATU, especially in the case of the working class and the poor.

Industrial action in general and strikes specifically influence corporate culture and the risk profiles of the companies involved as well as the working and living conditions of workers. The financial impact of strikes is obviously a significant feature that must be factored into the decision-making process. An analysis of the financial benefits or disadvantage of striking from a worker's perspective is perhaps an angle that has not been explored too often in the past. This article attempts to shed some light on the feasibility of a strike from an employee's perspective by analysing the wage increases and relevant strike data for three South African institutions that experienced strike action during 2010, namely TRANSNET, PRASA and MAMEO.

The findings are that for TRANSNET, the present value of the net benefits and costs were negative, meaning that purely from a financial perspective, the workers would have been better off if they accepted the initial offer and did not strike. For PRASA and MAMEO, the strikes did result in net gains for the workers and this was accomplished, to a large extent by the relative short durations of the strikes. It is also points out that the longer the strike lasts, the smaller the net benefits become in terms of present value and that a breakeven point in strike days is reached when the net benefits are zero. If the strike

carries on past the number of breakeven days the negative impact of losing wages causes the present value of the net loss to increase in magnitude.

The remainder of the paper is organised as follows:

- Section 2: Background and literature research;
- Section 3: Research questions;
- Section 4: Research approach and assumptions;
- Section 5: Case studies and results;
- Section 6 : Duration of strikes and breakeven days;
- Section 7: Main drivers of net gain or loss per worker; and
- Section 8: Conclusions.

2. Background and literature research

South Africa has a long history of wage negotiations and industrial action that significantly impacted the country's image as a fair return/risk investment opportunity destination. Asiedu (2002:107) commented on sub-Saharan Africa's inability to attract foreign direct investment (FDI). Greater FDI would bring with it employment, managerial skills and technology and therefore accelerates growth and development. In an effort to model the input variables that have the greatest impact of FDI, Asiedu (2002) included, among others, return on investment in the host country and political risk. One can only speculate what the impact of major strikes are on these variables and consequently on the amount of FDI in South Africa.

Internationally and locally, strikes have resulted in the loss of productivity and sales income for employers and also had a tremendous impact on the lives of the employees involved. According to Banjo and Balkaran (2009:121) 2007 brought the biggest wave of strikes in South Africa since the end of apartheid. These strikes were considered the longest and the most intense the country has ever seen. In research done at a Durban University of Technology by Parker (2012:447) it was found that more than 81% of the students that responded were of the opinion that government should step in to settle the dispute when a strike occurs.

Jordaan and Ukpere (2011:1093) observed that industrial relations should be seen as a jewel with many facets, such as power, collective bargaining, different approaches, conflict, employers, employees, trade unions and the relationship between employers and employees. They also concluded that South Africans would only be able to maintain a harmonious labour relationship leading to sustainable economic growth, if it is based on equity, justice and love for humanity. Handley (2005:235) corroborated this view in stating that state and business interests are joined in the quest for a growing economy.

Carmody (2002:255) noted that the restructuring of the South African economy for increasing globalisation had major consequences for employment and the autonomy of the South African state. He remarked that in spite of the elimination of sanctions, since 1996 when economic reforms were introduced in South Africa, more than half a million jobs had been lost, compared to the 600 000 that were intended to be created. Carmody (2002) furthermore pointed out that in the first nine months of 2000, when the gold price dropped, more than 9% of gold miners lost their jobs and that the declines in employment has continued unabated since then. It was estimated that each of these gold miners supported ten people financially.

Hirschsohn (2003) reported that since 1994, South African companies have responded to intensifying international competition by a process of progressive tariff reduction. This in turn led to massive job losses in manufacturing in recent years. Piazza (2005:306) remarked that globalization led to the erosion of worker power as employers started outsourcing production abroad because of the profit squeeze. Von Holdt and Webster (2008:337) observed that increased competitive pressure, both locally and internationally, has led to management efforts to drive down labour costs in order to improve efficiency. They also commented that the globalization and restructuring of South African companies have been followed by closures and retrenchments, leading to growing unemployment. Trimikliniotis, Gordon and Zondo (2008:1336) found that massive inequalities among African states cause mass migrations toward the richer regions in search of jobs. In this context, political turmoil, poverty and inequality in the sub-Saharan region have resulted in an increase in migration to South Africa, exacerbating the challenges posed regarding employment.

As far as the impact of strikes are concerned, Nevin (2007:64) commented that excessive wage increases could push local inflation out of its 4% to 6% target range, at that time, with increased interest rates the inevitable consequence. This underlines the knock-on effect of abnormal wage increases, affecting the inflation rate, which in turn affects interest rates and the cost of capital and finally, shareholder value. According to The Economist Intelligence Unit (2009:11), in focusing on international risk rating, labour market risk plays an important role in determining the overall risk rating of a country and South Africa scored 57% (out of a 100% for maximum risk) in the 2009 risk rating for labour market risk. In financial terms, increased risk is associated with decreases in shareholder value (Gitman, 2010:207).

In a study based on American companies for the period 1962 to 1982, Becker and Olson (1986:425) concluded that strikes indeed had a significant effect on shareholder equity as measured by changes in the share prices associated with the strikes. They also

found that the stock market consistently underestimated the cost of a strike to shareholders as nearly two thirds of the total decrease of 2.7% in returns occurred after the strike was announced. Dividson III, Worrell and Garrison (1988:387) had some findings consistent with that of Becker and Olson (1886) and additionally found that the markets react more severely to strikes that turn out to be long in duration.

Wage strikes also significantly impacted the living standards of employees, sometimes for the better and sometimes for the worse. Bekker and Van der Walt (2010:138) report that just after the South African government spent billions in hosting the FIFA World Cup in 2010, around 1,3 million state sector workers stopped working for four weeks in what was then the biggest strike in recent South African history. There were partial victories and partial defeats, as well as many expensive lessons that were learnt in the process. Alegi (2008:416) alluded to the fact that a series of strikes at the construction sites of soccer stadiums in Cape Town and Durban for the World Cup 2010 were eventually resolved with wage increases and bonuses for workers. A further investigation into the financial ramifications of strike action from the perspective of an employee would hopefully provide a better understanding of possible outcomes and scenarios.

In contrast to the South African scenario, evidence produced by Rosenfeld (2006:257) based on strike activity in the United States, indicated that strikes at the time no longer positively influenced worker pay at the industry-region level. Strike activity also failed to accomplish a narrower wage distribution for workers in specific industries and regions. Rosenfeld (2006) concluded that 'Whatever the specific circumstance, the general effect of the once-powerful strike has withered away, rendering an already uneven battle that much more lopsided.' Gill (2008:10), in a study based on Australian companies highlighted the dwindling of union power and the importance of cooperation between management, government and trade unions in order to pursue high performance work practices (HPWP), which is in the best interest of all stakeholders.

Sitas (2004:833) did a study based on a sample of South African citizens and found that the 'transition' since the 1990s affected different groups in varying ways. For 51% of the sample, those considered to be 'upwardly mobile', the decade since the release of Mandela in 1994 has been materially fortuitous. For 25% no significant improvements in life standards transpired and they remained stuck in their old job and activities. For 22% the 'transition' brought the loss of jobs and previous resources and they were forced to rely on the informal sector to survive. The remaining 2% took the low road to serious crime and/or the peddling of drugs.

In spite of the better outlook for some, a vast number of employees in South Africa are currently

facing considerable erosion in the level of their lifestyles and quality of life. This is due to, among other factors, increases in energy and food costs and the general upward trend in consumer price inflation. Workers seek relief from these economic hardships through the wage negotiation process. According to Bhorat, Van der Westhuizen and Goga (2009:65) 'In the period 1995 to 2005, union membership not only awarded wage premiums across the wage distribution, it also served to reduce wage inequality.'

Ferguson (2007:77) indicated that the ANC government substantially raised pensions in 1994 and also instituted grant schemes, like disability and child support that have been expanded since their inception. In spite of this, the poor majority of South Africans have in some ways become worse off since the end of apartheid. The main contributing factor was that the 'Growth with Employment and Redistribution' (GEAR) policy led to massive job shedding, especially low-skilled, low-tech jobs most often held by the poor. Ferguson (2007) reported that unemployment in South Africa had doubled from 2,2 million in 1994-1996 to 4,5 million in 2003. The official estimate of unemployment was conservatively approximated at 26,7% of the economically active population. In many poor households it was only the pensions and the grants that kept them afloat financially.

Bond (2011:113) stated unambiguously that the current South African government has failed to address the serious problem of poverty and unemployment, while resorting to 'crony capitalism' and 'tokenistic welfarism' and that this has led to a spate of labour unrest. Hodge (2009:488) presented another perspective by concluding that the main reason for the persistently high and increasing rates of unemployment since the mid-1990s was the very large increase in the labour force in South Africa, and not the lack of growth or employment performance of the economy.

In South Africa the major bargaining tool at the workers' disposal is industrial action. In order for the wage negotiation process to benefit workers, it must leave them in a better position than if they had accepted the employers' initial offer. The purpose of this article is to gain new insights in establishing the effect of industrial action on the income of workers. According to the Annual Industrial Action Report (2010) by the Department of Labour, approximately 20 674 737 working days were lost in 2010 from 74 work stoppages in South Africa. Employees lost R407 082 302 in total wage, compared to R238 458 414 in 2009 and this is due to the no-work-no-pay principle implemented by employers. In conjunction with this, the median salary increase given by employers was 9%, which is well above the consumer price inflation that ranged between 5.9% and 3.4% in 2010.

According to the GINI index of South Africa (2012), which gives a measure of the degree of

inequality in the distribution of family income in a country, South Africa is ranked as one of the most unequal societies in the world. With South Africa being the largest economy in Africa, employees are becoming more restless in their need to gain better wages. Labour unions have justified their demands for above-inflation wage increases by pointing to the fact that workers need to feel an improvement in their living standards and not just keep abreast with inflation.

3. Research questions

From the discussion of the background on strike action above, it is clear that it is a multi-faceted phenomenon that has both quantitative and qualitative consequences that affect a range of stakeholders. Considering the diverse impact and pervasive nature of the strike repercussions, it only makes sense to explore the financial impact in greater detail. To date, some evidence of the impact of strikes on shareholder value have been reported, but very little, if any, research has investigated the financial impact from the perspective of the worker in South Africa. The research questions of this study are therefore to determine the financial impact of a strike on an employee and to ascertain what the drivers are that have the greatest influence on the net financial gain or loss for the worker.

4. Research approach and assumptions

For the purpose of accessing financial data, it was decided to use a case study approach and to gather the appropriate data from three big South African trade unions that had strike activity in 2010. Some general assumptions had to be made to facilitate consistency and comparability of calculations.

Assumptions:

- The average remuneration in terms of cost to company in each case amounts to R130 000;
- Employers have implemented the “no work no pay” policy and lost wages due to industrial action are deducted equally over a three month period;
- Salary negotiations occur in 12 month cycles; and
- The effects of taxation, both from a company and an employee perspective, are ignored.

5. Case studies and results

The profitability of embarking on a strike, from the viewpoint of the worker is determinable by using both quantitative and qualitative factors. For example, not only do the decisions taken impact on the finances of both employer and employee, it also affects the hours worked, the working conditions and other factors. This study seeks to measure only the quantitative gains or losses of industrial action.

The profitability of industrial action is measured as the difference between the final increase settled on and the employers’ initial offer. The gain or loss is measured in nominal terms and then the time value of money is taken into account by discounting the monthly gain or loss by the current prime lending rate of 9% per annum. Each of the three scenarios is based on actual wage negotiations where industrial action has been employed by workers as a negotiation tool and is now discussed briefly.

TRANSNET

Workers of this major publicly owned enterprise embarked in strike action that lasted for 17 days, demanding an across the board wage increase of 15%. Management’s initial wage offer was an 11% increase. The parties agreed on the following:

- An 11% across the board increase;
- 1% once-off increase in May based on annual salaries; and
- 1000 contract workers were to be given permanent employment by October 2010 and an agreement was reached regarding the placement of the remaining contract workers.

It was widely reported that the economy lost R7 billion as a result of the prolonged strike action. In this case workers ended up accepting managements’ initial offer of 11% as it was significantly above the inflation rate of 5.7% that prevailed at that time. Although the settlement did result in employees getting a premium above inflation, the industrial action eroded those gains as a result of lost wages incurred during the period. The net result of the industrial action for workers was that they were worse off, both in terms of nominal value and present value.

PRASA

On the 17th of May 2010 workers declared a dispute with management, demanding a 16% wage increase, whilst management revised their initial offer from a 3% to an 8% wage increment. The industrial action lasted for 13 days and 12 000 workers were engaged in the strike, disrupting train operations of both Metro Rail and Shosholoz Meyl. On settlement of the dispute, the parties agreed on the following:

- A 10% across the board wage increase;
- A 12.5% salary increase for Shosholoz Meyl workers earning less than R70 000 per annum;
- A 12% salary increase for Metro Rail workers earning less than R70 000 per annum; and
- All workers will receive a once-payment of R1 000 in June 2010.

The net result of this industrial action for the workers was that they were better off, both in terms of nominal value and present value.

MAMEO

On the 11th of August 2010, 31000 workers in seven vehicle manufacturing plants embarked on industrial action. The strike lasted for 8 days. Workers demanded an across the board increase of 15%, while employers offered a wage increase of 7%. Workers also demanded the same benefits to be afforded for short-term and contract workers with permanent employment after three months of work, a reduction in working hours to 8 hours per day from Monday to

Friday and the scrapping of the use of labour brokers. The parties agreed to the following:

- A 10% across the board wage increase;
- Medical, pension and other benefits to be extended to short term employees; and
- The discontinuance of the use of labour brokers by January 2011.

The net result of this action was that the workers gained in terms of nominal value and present value.

Table 1 contains a summary of the results and calculations for the three strike actions.

Table 1. Summary of results of three strike actions

	TRANSNET	PRASA	MAMEO
Employer's initial wage offer	11%	8%	7%
Workers' initial wage demand	15%	16%	15%
Increase settled on	11% plus 1% once-off on annual salary	10% plus R1000 once-off.	10%
Period of Strike	17 days	13 days	8 days
Annual salary after settlement (A) (Note 1)	R139 545	R141 970	R140 151
Annual salary adjusted for initial offer (B)	R144 300	R136 500	R139 100
Difference A - B Nominal benefit / (loss)	(R4 755)	R5 470	R1 051
Net present value of benefit / loss (Note 2)	(R4 675)	R5 102	R909

Note 1

This annual salary not only includes the increase settled on, but also the wages not earned because of the strike.

Note 2

For the purpose of calculating the net benefit or loss of the strike action from a worker's perspective, the difference between what was settled on and what was offered initially was first determined on a monthly basis for one year. Using the current bank rate of 9% (adjusted for a period of one month), these differences were then discounted to take into account the time value of money and added together in order to determine the present value of the net benefit or loss.

From Table 1 one can deduce the following:
TRANSNET

- The workers made a loss due to the length of the strike period and the low premium negotiated of 1%. The nominal loss was R4 755 and the present value of the loss amounted to R4 675 per worker.

PRASA

- The 2% premium negotiated, coupled with the R1000 once-off payment resulted in a nominal net gain of R5 470, and in terms of present value there was a gain of R5 102 per worker.

MAMEO

- In nominal terms workers had a gain of R1 051 and when the time value of money is taken into account, a net gain of R909 per worker is calculated.

One could argue that the success or failure of a strike should be determined by a comparison between what percentage increase was eventually settled for and the inflation rate at the time. For 2010 the average

CPI inflation rate amounted to 4.36%, meaning if the increase settled for was more than this the employee would at least be able to maintain his/her living standard. However, the increase percentage relative to the inflation rate is a result of both the offer made by the employer and the negotiation and strike process.

So in order to isolate the effects of the strike it makes sense to compare only the difference between what is initially offered and what is settled on eventually after the strike. It is acknowledged that in each of the scenarios considered there are other benefits, for instance better maternity leave benefits in the case of Transnet that are not easily translated into monetary values and for the purposes of comparison and simplicity, have not been taken into account.

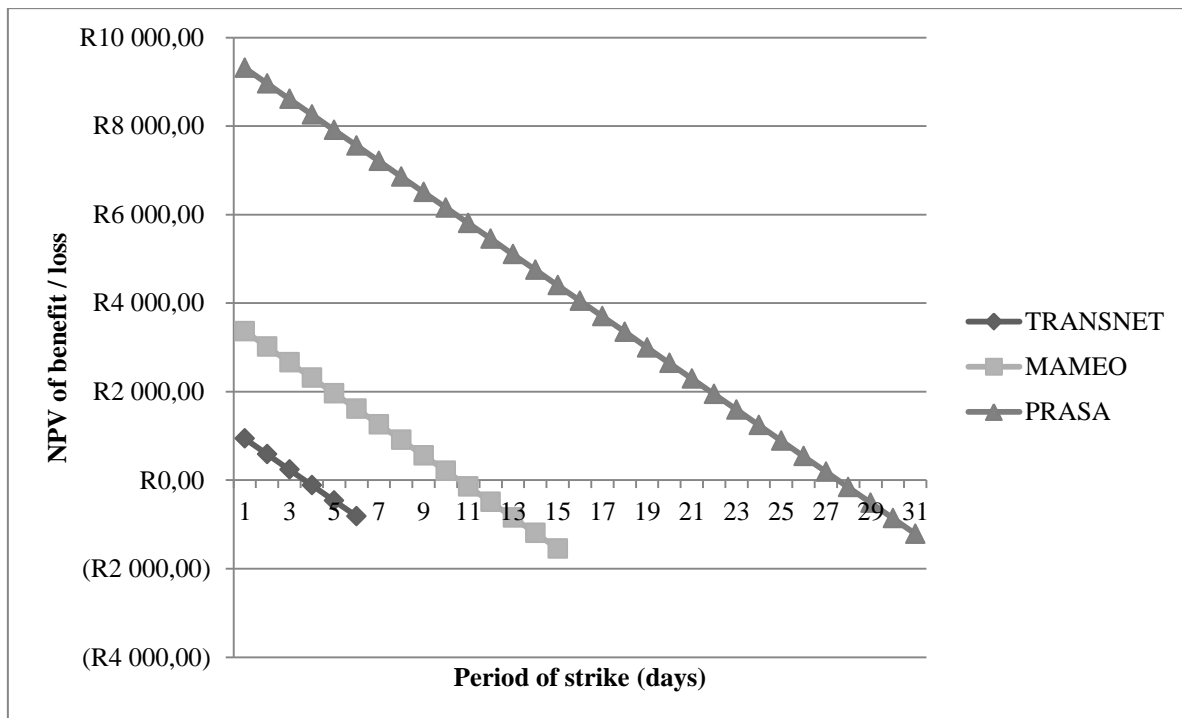
6. Duration of strikes and breakeven strike days

From the calculations contained in Table 1 it is clear that the number of strike days plays an important role in the financial outcome for the worker. If the strike period is short enough, the present value of the benefits would most likely outweigh the present value of the pay lost and therefore yield a net benefit. The longer the strike is prolonged, the heavier the penalty of the no pay and the greater the likelihood of a net loss from the worker's perspective. Ndungu (2009:91) points out that the majority of strikes in South Africa since 1996 have been of short duration because of lockouts and the 'no work, no pay' principle.

By importing the available data for a given scenario, one can determine the breakeven number of strike days that would lead to no net benefit or loss. The results for the three case studies are presented in

Figure 1. It indicates clearly what the net result for each strike would be per worker for different levels of the duration of each strike. For instance, for the PRASA strike, the net gain would have been just below R10 000 if the strike lasted for only one day. As the duration of the strike lengthens, the net gain diminishes, until it translates into a net loss after about 27 days. The graph also shows that the breakeven strike days are approximately 3 for TRANSNET, 27 for PRASA and 10 for MAMEO (rounded to the nearest full day). It also transpires that the greater the percentage difference gained by the strike, the longer the strike can continue before breakeven is reached. In summary, the graph demonstrates that there are net gains for strike periods shorter than the breakeven days and net losses for longer strike periods.

Figure 1. Net present value of benefit / loss relative to the number of strike days



7. Main drivers of net gain or loss per worker

The analysis done reveals that the nature and order size of the financial result of a strike for a worker is dependent on a number of variables. These variables are:

- Base salary at time of strike – the higher the salary, the greater the impact up or down;
- Difference between % increase settled on and employer's offer – the greater the difference the more the benefit to the employee;

- Length of the strike in days – the longer the strike duration, the more negative the impact for the worker because of no-work-no-pay;

- Interest rate used as a proxy for the cost of money – the higher the rate, the greater the negative impact on the present value of the net gain or loss for the worker. Because of the relative short time lag of the cash flow implications of the strike, the impact of the interest rate and the time value of money proved to be not that significant.

8. Conclusions

When it comes to strike action and economic unrest, South Africa has been no exception compared to its international counterpart countries (Thomas 2002:242). In fact, our country has had its fair share of industrial action as well as the inevitable concomitant repercussions that flow from such action. It is virtually impossible to make an accurate assessment of the impact of strike action. However, if one focuses in on a specific strike and break down the data for a specific case study, perspectives, perhaps not observed before, may surface.

A perusal of recent research in South Africa on strike action reveals that very little evidence exists that ventures to determine the financial impact of the strike on employees. This article uses an employee perspective and analyses the wage increases and relevant strike data for three South African trade unions that embarked on strike action during 2010, namely TRANSNET, PRASA and MAMEO.

Based on certain stated assumptions, the financial analysis incorporating the time value of money, yielded different results for the three strikes investigated. For TRANSNET, the present value of the net benefits and costs were negative. This result can be interpreted as indicating that from a financial point of view, the workers would have made a better choice if they accepted the initial offer and did not strike. For PRASA and MAMEO, the strikes did result in net gains for the workers and this was brought about, to a large extent by the relative short durations of the strikes.

It became clear that the longer the strike carries on, the smaller the net benefits become in terms of present value. A breakeven point in terms of strike days is reached when the net benefits are zero. If the strike is prolonged past the number of breakeven days the negative impact of losing wages causes the present value of the net loss to increase in size, constituting financial value destroyed for the worker. The analysis of the three case studies also highlighted the main drivers that determine the net financial outcome of a strike for a worker. These were the base salary at the time of the strike, the difference between % increase settled on and employer's offer, the length of the strike in days, and the interest rate used as a proxy for the cost of money.

References

- Alegi, P. (2008), 'A nation to be reckoned with': The politics of World Cup stadium construction in Cape Town and Durban, South Africa. *African Studies*, Vol. 67 No. 3, pp. 397-422.
- Annual Industrial Action Report. (2010), Available at http://www.labour.gov.za/.../2010/Industrial%20Action%20Report%202011_revised.pdf (accessed on 16 May 2012).
- Asiedu, E. (2002), On the determinants of foreign direct investment to developing countries: Is Africa

- different? *World Development*, Vol. 30 No. 1, pp. 107-119.
- Banjo, A. & Balkaran, S. (2009), A descriptive analysis of the 2007 public sector strike in South Africa. *South African Journal of Labour Relations*, Vol. 33 No. 2, pp. 120-131.
- Basset, C. & Clarke, M. (2008), The Zuma affair, labour and the future of democracy in South Africa. *Third World Quarterly*, Vol. 29 No. 4, pp. 787-803.
- Becker, B. E. & Olson, G. A. (1986), The impact of strikes on shareholder equity. *Industrial and Labor Relations Review*, Vol. 39 No. 3, pp. 425-438.
- Bekker, I. & Van der Walt, L. (2010), The 2010 mass strike in the state sector, South Africa: positive achievements, but serious problems. *Sozial.Geschichte Online 4*, pp. 138-152.
- Beresford, A. (2009), Comrades back on track? The durability of the Tripartite Alliance in South Africa. *African Affairs*, Vol. 108 No. 432, pp. 391-412.
- Bohrat, H., Van der Westhuizen, C. & Goga, S. (2010), Analysing wage formation in the South African labour market: The role of bargaining councils. *Development Policy Research Unit Working Paper 09/135*.
- Bond, P. (2011), South African splinters: from 'elite transition' to 'small-a alliances'. *Review of African Political Economy*, Vol. 38 No. 127, pp. 113-121.
- Carmody, P. (2002), Between globalisation and (post) apartheid: The political economy of restructuring in South Africa. *Journal of South African Studies*, Vol. 28 No. 2, pp. 255-275.
- Dividson III, W. N., Worrell, D. L. & Garrison, S. H. (1988), Effect of strike activity on firm value. *The Academy of Management Journal*, Vol. 31 No. 2, pp. 387-394.
- Ferguson, J. (2007), Formalities of poverty: Thinking about social assistance in neo-liberal South Africa. *African Studies Review*, Vol. 50 No. 2, pp. 71-86.
- Gill, C. (2008), Union impact on the effective adoption of High Performance Work Practices. *Human Resource Management Review*.
- GINI Index of South Africa. (2012), Available at <http://www.tradingeconomics.com/south-africa/gini-index-wb-data.html> (accessed on 4 May 2012).
- Gitman, L.J. (2010), Principles of Managerial Finance: Global and South African Perspectives. First edition, Cape Town: Pearson.
- Handley, A. (2005), Business, government and economic policymaking in the new South Africa. *The Journal of Modern African Studies*, Vol. 43 No. 2, pp. 211-239.
- Hirschsohn, P. (2003), Global competitiveness through cooperative strategies. *South African Journal of Labour Relations*, Winter.
- Hodge, D. (2009), Growth, employment and unemployment in South Africa. *South African Journal of Economics*, Vol. 77 No. 4, pp. 488-504.
- Jordaan, C. & Ukpere, W.I. (2011), South African Industrial Conciliation Act of 1924 and current affirmative action: An analysis of labour economic history. *African Journal of Business Management*, Vol. 5 No. 4, pp. 1093-1101.
- Ndungu, S.K. (2009), Perspectives on collective bargaining in the global south. The case of South Africa. *International Journal of Labour Research*. Vol. 1 No. 2, pp. 81-97.
- Nevin, T. (2007), South Africa: Was the strike political muscle flexing? *African Business*. Aug/Sep, pp. 62-64.

23. Parker, K. (2012), Government and the economy: Student perspectives from South Africa. *International Business & Economics Research Journal*, Vol. 11 No. 4, pp. 443-450.
24. Piazza, J.A. (2005), Globalizing quiescence: Globalization, union density and strikes in 15 industrialized countries. *Economic and Industrial Democracy*, Vol. 26, pp. 289-314.
25. Robertson, G.B. (2007), Strikes and labor organization in hybrid regimes. *American Political Science Review*, Vol. 101 No. 4, pp. 781-798.
26. Rosenfeld, J. (2006), Strikes and wages in post-agreement America. *Social Forces*, Vol. 85 No. 1, pp. 235-265.
27. Sitas, A. (2004), Thirty years since the Durban strikes: Black working-class leadership and the South African transition. *Current Sociology*, Vol. 52 No. 5, pp. 830-849.
28. The Economist Intelligence Unit, (2009), South Africa: Risk ratings. *Country Monitor*. July, pp. 11.
29. Thomas, A. (2002), Employment equity in South Africa: lessons from the global school. *International Journal of Manpower*, Vol. 23 No. 3, pp. 237-255.
30. Trimikliniotis, N., Gordon, S. & Zondo, B. (2008), Globalisation and migrant labour in a 'rainbow nation': a fortress South Africa? *Third World Quarterly*, Vol. 29 No. 7, pp. 1323-1339.
31. Von Holdt, K. (2002), Social movement unionism: the case of South Africa. *Work, employment and society*, Vol. 16 No. 2, pp. 283-304.
32. Von Holdt, K. & Webster, E. (2008), Organising on the periphery: new sources of power in the South African workplace. *Employee Relations*, Vol. 30 No. 4, pp. 333-354.

THE VALUE RELEVANCE OF FAIR VALUE ACCOUNTING: EVIDENCE FROM THE REAL ESTATE INDUSTRY

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Abstract

This study examines whether investors use the fair value of real estate investments in the balance sheet, and unrealized fair value gains and losses in the income statement, in their price setting process. Drawing on sample firms from the real estate development industry in New Zealand, the results of the current study suggest that: (1) unrealized fair value gains and losses on real estate investments have incremental value relevance compared to historical cost earnings, controlling for the method of recognition of the fair value gain or loss; and (2) current fair value of real estate investments has incremental value over historical book value of real estate investments. Such investigation is important given the current international debate concerning fair value accounting.

Keywords: Workplace Flexibility, Stress Reduction, Administrative Employees, Organizational Performance, Biographical Factors

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1. Introduction

Fair value accounting is a topical and a controversial issue in accounting standard setting at both national and international levels.¹ For example, in November 2006 the International Accounting Standards Board (IASB) issued for public comment Discussion Paper: *Fair Value Measurements* (IASB, 2006a). At the release of the discussion paper, the Chairman of the IASB commented that fair value accounting is of great interest to preparers, auditors, regulators, and users including investors (Tweedie, 2006).

Given that the objective of financial reporting is “to provide information that is useful to present and potential investors and creditors and others in making investment, credit, and, similar resource allocation decisions” (IASB, 2006b), a pertinent question is to what extent investors rely on fair value of balance sheet and income statement items in their price setting process. This is consistent with prior research that suggests consideration must be given to whether fair value accounting is relevant and reliable (Landsman, 2007).

In an efficient market, stock prices are set using relevant and reliable information on underlying asset values, the predicted future cash flows, and the earning potential of the firm. The residual income and

growth valuation models developed by Ohlson (1995), Feltham and Ohlson (1995), and Ohlson and Juettner-Nauroth (2005) show how prices are set based on analyst earnings forecasts, growth and the cost of equity capital. More specifically, studies by Gebhardt, Lee and Swaminathan (2001), Claus and Thomas (2001) and Gode and Mohanram (2003), as adapted by Ogneva, Subramanyam and Raghunandan (2007), employ earnings based valuation models with differing assumptions, but all rely on earnings, growth and required rates of return.

Because security analysts employ fair value information as one input in their price setting process, stock valuation would be facilitated if firms employed fair value accounting in their financial reports. However, capital market research provides inconclusive evidence on whether fair values are incrementally informative to investors. For example, Easton, Eddey and Harris (1993) provide evidence that aggregate revaluation reserve increments have significant explanatory power for firms’ market values, while Barth and Clinch (1996) do not find evidence supporting that assertion. Furthermore, Barth and Clinch (1998) examine the value relevance of various components of total asset revaluations across industries and find that, while the revaluation of investments and intangibles support the positive association between stock prices and revaluation increments, the results for property plant and equipment (PPE) are inconclusive. Aboody, Barth and Kasznik (1999), however, find that the revaluation

¹ Ronen (2008) and Whittington (2008) provide a detailed discussion of the current controversies surrounding fair value measurement.

increment of PPE is positively related to firms' stock returns.

Studies that focus on certain types of assets of specific industries have consistently found fair values to be value relevant. For example, Barth (1994), Bernard et al. (1995), Barth et al. (1996), Eccher et al. (1996), Nelson (1996), and Venkatachalan (1996) have all consistently reported results suggesting that the market perceives fair value measurements of investments by the banking and thrift industry as value relevant. The single-industry research design allows the incorporation of industry-specific controls for other (non-hypothesized) value-drivers in order to isolate the valuation effect of historical cost earnings and fair value gains and losses. While the use of a single-industry model adds to the robustness of the results of these studies, it limits the generalizability of the results.

More recently, prior literature examines the value relevance of fair values in the real estate industry. Danbolt and Rees (2008) find that, for a sample of British real estate firms, earnings containing property gains or losses, both realized and unrealized, are more value relevant than earnings containing only realized gains or losses. For a sample of New Zealand firms, Owusu-Ansah and Yeoh (2006) find that the recognition of unrealized gains from investment properties as earnings in the income statement is not relatively more value relevant than recognition as equity in revaluation reserve. Our study, however, examines whether investors perceive real estate investments at fair value in the balance sheet as value relevant, an issue not addressed by the above studies. Controlling for the method of recognition, our study also examines whether investors perceive fair value gains and losses as value relevant, which is distinct from Owusu-Ansah and Yeoh (2006) who test whether the method of recognition itself affects investor perceptions of value relevance. These aspects of our study are important in gaining further insight into market perceptions about fair value accounting, both in relation to balance sheet and income statement items.

Real estate investments are the major assets held by real estate development firms. Compared to investment securities in the banking and thrift industry, the market prices for real estate investments in the real estate industry are readily available for a charge through independent valuation firms. Also, valuations by government agencies for all real estate are released annually and are available freely. Because these firms are able to draw on several valuations, their own valuation of real estate items becomes more accurate and reliable. Therefore, compared to specialized assets held by banks (investment securities) the fair value system of valuation in the real estate industry is likely to be efficient in that the system, *ex ante*, provides an accurate estimate of the price at which an asset could be sold, using reliable information.

The likelihood of manipulation of fair value information by management, as discussed in prior research (see Bartov, 1993; Watts, 2003), is remote in the real estate industry because of the various external sources of information on the market price of these assets. Barth and Clinch (1998) argue that external appraisal estimates may be relatively more accurate than internal appraisals, as external appraisers have greater expertise and are independent of the firm. Muller and Riedl (2002) find that, for a sample of firms in the UK investment property industry, market makers differentiate between the reliability of external and internal appraisals of fair value by setting lower bid-ask spreads for firms using external appraisers, relative to those using internal appraisers. In a similar vein, we address whether the externally appraised market prices of real estate investment are more value relevant than historical book value.

In addition to reporting current fair value and historical book value of real estate investments, firms must also report any fair value gains and losses on such investments. In the real estate development industry, earnings components include: (1) realized income from the sale of real estate; (2) realized income from leased real estate; and (3) fair value (unrealized) gains or losses resulting from the difference between historical book value and current fair value of real estate investment holdings. Our study extends prior research by examining: (1) the value relevance of fair value (unrealized) gains or losses relative to historical cost (realized) income; (2) the value relevance of current fair value relative to historical book value of investments recognized in the balance sheet; and (3) the value relevance of fair value gains or losses relative to historical cost income, after controlling for whether the fair value gain or loss is recognized in the income statement or revaluation reserve.

Such analyses differentiate our study from prior research on several dimensions. First, our study examines the incremental value relevance of fair value accounting for both income statement and balance sheet items. Whilst Danbolt and Rees (2008) examine the value relevance of fair value income relative to historical cost income, it fails to establish whether investors attach value to the recognition of real estate investments at fair value. This study examines the value relevance of accounting for both income statement and balance sheet items at fair value.

Second, our study examines the incremental value relevance of fair value gains or losses, controlling for their method of recognition. Whilst Owusu-Ansah and Yeoh (2006) test for whether the method of recognition of fair value gains or losses alters their relevance to investors, it does not directly test whether the fair value gain or loss is itself value relevant. This study establishes, firstly, whether fair value gains or losses are value relevant and, secondly, whether such value relevance is altered by the gain or

loss being recognized in the income statement or revaluation reserve.

Results from Model (1) indicate that the fair value real estate gain or loss of a firm is significantly related to stock returns, whereas historical cost earnings are not significant. These results hold after controlling for the method of recognizing the fair value gain or loss (see Model 3). The results from Model (2) indicate that fair value of real estate investments is significant, supporting the notion that investors perceive fair value information to be more value relevant than historical cost in the real estate industry.

The remainder of this paper is organized as follows. Section 2 provides a background of the New Zealand Statement of Standard Accounting Practice (SSAP No. 17 *Accounting for Investment Properties by Property Investment Companies*). Section 3 describes the methodology and data used in the paper. Empirical results are discussed in Section 4 and section 5 concludes the paper.

2. Background

Prior to 1983, financial accounting and reporting practices for investment properties varied across companies in New Zealand. Some firms revalued properties periodically, while others carried properties at historical cost. Of those that revalued, some firms recognized fair value gains and losses (the difference between current fair value and historical book value of real estate investments) in the income statement, while others recognized the difference in the balance sheet as an adjustment to reserves.

In July 1983, the New Zealand Institute of Chartered Accountants (NZICA), formerly the New Zealand Society of Accountants (NZSA), issued Exposure Draft 29 *Accounting for Investment Properties (ED 29)* proposing that investments in real estate be recognized at their current fair values as determined annually by professionally qualified valuation firms. *ED 29* also suggested that real estate investments should not be subject to depreciation charges and that any unrealized gains or losses on revaluation of these assets should be reported in the annual financial reports of real estate developers.

Under *ED 29*, two possible reporting treatments for unrealized real estate gains or losses were discussed. First was the “flow-through” method, which reports any unrealized fair value gains or losses in the income statement. The second was the “reserve” method, which recognizes unrealized fair value gains or losses in revaluation reserve. *ED 29* proposed that real estate developers be required to use the “flow-through” method.

Keenan (1992) reports that, while real estate developers lobbied in favor of the “flow-through” method, the major accounting firms lobbied against it. *SSAP No. 17 Accounting for Investment Properties by Property Investment Companies* (hereafter referred to

as *SSAP 17(a)*) was eventually issued by NZICA in 1985, and mandated the use of the “flow-through” method for accounting periods ending on or after March 31, 1986.

After a period of controversy surrounding the mandated use of the “flow-through” method and non-compliance by some real estate development firms, *SSAP 17(a)* was withdrawn in 1988 and a revised version *SSAP No. 17 Accounting for Investment Properties and Properties Intended for Sale* (hereafter referred to as *SSAP 17(b)*) was issued in 1989. The withdrawal of *SSAP 17(a)* was primarily due to the October 1987 share market crash, when property prices fell and unrealized gains were replaced by unrealized losses. Many companies failed to follow *SSAP 17(a)* after the crash to avoid reporting unrealized losses in the income statement (Myers, 1988). Therefore, *SSAP 17(b)* was a direct consequence of the non-acceptance by firms of *SSAP 17(a)* (Rahman, Ng and Tower, 1994). The revised version allowed real estate development firms to choose either the “flow-through” or the “reserve” method. Thus, both methods have been observed in practice for some time.

New Zealand equivalent to International Accounting Standard 40 *Investment Property* (hereafter referred to as *NZ IAS 40*) was issued in November 2004 and, upon adoption, supersedes *SSAP 17(b)*. The adoption of New Zealand equivalent to International Accounting Standards (including *NZ IAS 40*) is mandatory for periods commencing on or after 1 January 2007, with early adoption permitted for periods commencing on or after 1 January 2005. Such mandatory adoption, however, has been delayed for small entities that continue to use *SSAP 17(b)*.

3. Methodology and Data Collection

3.1 Data Collection

The sample consists of 40 New Zealand real estate development firms identified during the 1980 to 1999 sample period. Due to the unavailability of data because of delisting, the final sample ranges from 158 firm-years in 1980 to 185 firm-years in 1999. Data for accounting variables are hand-collected from the financial statements of the sample firms. Stock prices are obtained from New Zealand DATEX Financial Services.

3.2 Methodology

We employ three cross-sectional regression models to examine investor perceptions of the value relevance of the historical cost and fair value measurement systems. Model (1) is employed to test the relationship between stock returns and income statement items (Our calculation of stock return is a change specification in that we measure the change in stock prices from beginning to end of year, scaled by

beginning of year stock price. Such a price change, which corresponds to the entire year, is linked to reported earnings (For more information about such equations see Lipe (1986), Barth et al. (1990), Barth et al. (1992), Barth (1994), and Jennings et al. (1996).), which also relates to the entire year, thereby creating a relevant match between the dependent variable (change in stock price for the year) and the independent variable (earnings for the year). We also modified the measurement of the dependent variable to the change in stock return, which required us to use the change in earnings as an independent variable, and the results from that regression were qualitatively similar to the results reported in the paper.). This is an earnings-based equation (also called earnings capitalization model), which assesses the incremental information content of the components of earnings. Annual stock returns (RET) are regressed on earnings from the core real estate development activities (income from sales and leasing of real estate

investments ($EBIT$)) and on unrealized gains and losses ($FVREGL$) (We, however, agree that the use of $EBIT$ could be subject to managerial discretion.). To obtain $EBIT$ when firms use the “flow through” method, the reported earnings are adjusted for unrealized gains or losses. No adjustments, however, are required when firms use the “reserve” method because the reported earnings are not affected by the market valuation of the real estate investments.

To ensure that the results are not biased due to variations in size and growth across sample firms, the natural logarithm of total assets ($SIZE$) and the ratio of book value to market value of equity ($GROWTH$) are included in the model as control variables. Fama and French (1993) identify firm size as a stock market risk factor, and Fama and French (1995) suggest that firm size proxies for sensitivity to risk factors. Therefore, $SIZE$ has been included to also proxy for risk:

$$RET_{it} = \alpha + \beta_1 EBIT_{it} + \beta_2 FVREGL_{it} + \beta_3 SIZE_{it} + \beta_4 GROWTH_{it} + \varepsilon_{it} \quad (1)$$

Where RET_{it} is annual stock return per share for firm i in time t ; $EBIT_{it}$ is historical cost-based earnings before interest and tax for firm i in time t , scaled by the number of outstanding shares at beginning of year; $FVREGL_{it}$ is fair value real estate gain (loss) for firm i in time t , scaled by the number of outstanding shares at beginning of year; $SIZE_{it}$ is the natural logarithm of total assets for firm i in time t ; and $GROWTH_{it}$ is measured as book to market value of equity for firm i in time t . If equity valuation in the real estate development industry is influenced more by fair value of real estate gains and losses than historical cost earnings, then β_2 will be more significant than β_1 .

Barth and Kallapur (1996) suggest deflating regression variables by a scale proxy as a remedy to scale-related econometric problems. Consistent with Barth (1994), and utilizing the superior performance of share-deflated models (Barth and Clinch, 2009), all variables have been deflated by number of shares outstanding, after adjusting for stock splits and dividends, to mitigate the effects of heteroscedasticity.

Model (2) investigates whether users of financial statements rely more on historical book value compared to current fair value of real estate

investments. Model (2) is an asset-based equation which assesses the incremental information content of balance sheet items (For more information about such equations see studies such as Barth (1994), Jennings et al. (1996), Schneider et al. (1999), and Owusu-Ansah and Yeoh (2006).). The historical book value of real estate investments can be reconstructed by adjusting them for the fair value real estate gains and losses recognized, in the current year, in either the income statement or revaluation reserve. Doing so derives the previous year's closing fair values, which proxy the historical cost (net of depreciation) of real estate investments. Model (2) regresses market value of equity on historical book value ($BINV$) and current fair value of real estate investments ($FINV$). To control for firm size, the natural logarithm of total assets ($SIZE$) is also used in this model (Given our unique research setting the difference between the two independent variables in Model 2 (that is, $BINV$ and $FINV$) for almost all sample firms mirrored their reported performance. The inclusion of earnings in Model 2, therefore, created very high (beyond 10) variance inflation factor (VIF), which caused concerns about the validity of the results due to multicollinearity among the independent variables (Kennedy, 2003).):

$$MVE_{it} = \alpha + \beta_1 BINV_{it} + \beta_2 FINV_{it} + \beta_3 SIZE_{it} + \varepsilon_{it} \quad (2)$$

Where MVE_{it} is market value of equity for firm i in time t , scaled by the number of shares outstanding at beginning of year; $BINV_{it}$ is real estate investments at historical book value for firm i in time t , scaled by the number of shares outstanding at beginning of year; $FINV_{it}$ is current fair value of real estate investments for firm i in time t , scaled by the number of shares outstanding at beginning of year; and $SIZE_{it}$

is the natural logarithm of total assets for firm i in time t . If the market value of equity in real estate firms is influenced more by the current fair value of real estate investments than historical book value, β_2 will be more significant than β_1 .

In the price model (Model 2), the use of current earnings is assumed to provide a sound basis for predicting future earnings and balance sheet variables

such as book value of assets. Price models provide better estimators of the coefficient for profit variables than return models (Kothari and Zimmerman, 1995), but have issues related to heteroscedasticity, model misspecification, and correlation between error terms. As such, we use a returns model (Models 1 and 3) because, econometrically, it is less problematic than the price model (Christie, 1987). Since both models have its own limitations and strengths, we decided to use both the models in our study.

Model (3) examines the value relevance of fair value income relative to historical cost income, after controlling for whether firms recognized the fair value

gain or loss in the income statement or balance sheet. Owusu-Ansah and Yeoh (2006) find no difference in the relative value relevance of either method. Similar to Model (1), Model (3) is also an earnings-based equation used to assess the incremental information of the components of earnings, controlling for the method of recognition of the unrealized gain or loss. This is achieved by including a dummy variable (*CHOICE*) in the model, where *CHOICE* is a dummy variable that equals 1 if a firm adopts the “flow-through” accounting method and zero if a firm adopts the “reserve” method. All other variables are defined as before:

$$RET_{it} = \alpha + \beta_1 EBIT_{it} + \beta_2 FVREGL_{it} + \beta_3 SIZE_{it} + \beta_4 GROWTH_{it} + \beta_5 CHOICE_{it} + \varepsilon_{it} \quad (3)$$

4. Results

4.1. Descriptive Statistics

Table 1 reports descriptive statistics on historical-cost-based earnings before interest and tax (*EBIT*),

fair value real estate gain or loss (*FVREGL*), fair value earnings, including both realized and unrealized earnings (*FVE*), market value of equity (*MVE*) and total assets (*SIZE*).

Table 1. Descriptive Statistics

	<i>EBIT</i> (per share)	<i>FVREGL</i> (per share)	<i>FVE</i> (per share)	<i>MVE</i> (\$m)	<i>SIZE</i> (\$m)
Mean	0.3258	0.1573	0.5039	83.0661	208.9918
Median	0.1768	0.0271	0.2264	39.7000	92.2500
Std. dev.	0.7286	0.8537	1.3041	120.8692	282.7844
Minimum	0.0014	-1.2871	-0.6793	2.4600	1.1900
Maximum	6.0444	8.9020	11.3333	813.5100	1455.9630

The sample is 185 firm-year observations over the period 1980-1999.

EBIT is historical-cost-based earnings before interest and tax; *FVREGL* is fair value real estate gain or loss; *FVE* is fair value earnings, including both realized and unrealized earnings and is equal to *EBIT* + (-) *FVREGL* where there is a fair value real estate gain (loss); *MVE* is market value of equity; *TA* is natural logarithm of total assets.

The pooled mean (median) realized income from the core business activities of real estate development firms (*EBIT*) is 0.3258 (0.1768) compared to the pooled mean (median) of fair value gain or loss (*FVREGL*) of 0.1573 (0.0271). The positive mean (median) sign indicates real estate development firms made gains on their investments during the sample period. Further, as the mean *FVREGL* is almost half the mean *EBIT*, real estate development firms derive a large portion of their earnings from fair value real estate gains. The pooled mean (median) fair value earnings (*FVE*) which includes both realized and unrealized earnings is 0.5039 (0.2264). Lastly, the

pooled mean *MVE* is \$83.06m and ranges from \$2.46m to \$813.51m, while the pooled mean (median) of total assets (*SIZE*) is \$208.99m (\$92.25m).

4.2. Empirical Results

Table 2 reports the results of Model (1), which tests the value relevance of historical cost earnings (*EBIT*) against the value relevance of fair value real estate gains and losses (*FVREGL*). *FVREGL* is the figure that is reported either in revaluation reserve (“reserve” method) or the income statement (“flow-through” method).

Table 2. Value Relevance of Fair Value Gains and Losses and Historical-Based Earnings

	Parameter Estimates	Std. error	t-statistic	p-value
α	-7.1705	5.7922	-1.2400	0.2176
<i>EBIT</i>	0.6996	3.5869	0.2000	0.8456
<i>FVREGL</i>	16.1741	4.0544	3.9900	0.0001
<i>SIZE</i>	1.3174	1.2680	1.0400	0.3004
<i>GROWTH</i>	2.0880	2.0226	1.0300	0.3035
F- statistic (p-value)	7.1100 (0.0001)			
Adjusted R^2	0.1290			

The sample is 166 firm-year observations over the period 1980-1999.

Model

$$RET_{it} = \alpha + \beta_1 EBIT_{it} + \beta_2 FVREGL_{it} + \beta_3 SIZE_{it} + \beta_4 GROWTH_{it} + \varepsilon_{it}$$

RET_{it} is annual stock return per share for firm i in time t ; $EBIT_{it}$ is historical cost-based earnings before interest and tax for firm i in time t , scaled by the number of outstanding shares at beginning of year; $FVREGL_{it}$ is fair value real estate gain and loss for firm i in time t , scaled by the number of outstanding shares at beginning of year; $SIZE_{it}$ is the natural logarithm of total assets for firm i in time t ; $GROWTH_{it}$ is the book to market value of equity for firm i in time t ; α , β_1 , β_2 , β_3 and β_4 are regression coefficients; and ε_{it} is error term for firm i in time t .

The results indicate that *FVREGL* is significantly related to stock returns (p -value = 0.0001) whereas *EBIT* is not (p -value = 0.8456). *SIZE* (p -value = 0.3004) and *GROWTH* (p -value = 0.3035) are likewise not significant. The adjusted R^2 for the model is 0.1290. These results support the notion that investors in the real estate industry perceive fair value information to be more value relevant than historical cost in their valuation process. It appears that where *FVREGL* is available to investors they would prefer using such information in their pricing rather than historical earnings. For robustness, we measure annual stock returns ending three months after financial year-end (RET_{it+3}), and the results (not reported here) were qualitatively the same as those reported in Table 2. We also examined the potential effect of time on results, by assigning a dummy variable to each year and replicating the tests. The

results (not reported here) indicate a similar significance level for *FVREGL*, while *EBIT* and the control variables remain insignificant.

Tests of the relation between market value of equity and various balance sheet items are reported in Table 3. Model (2) regresses the market value of equity (*MVE*) on historical book value of real estate investments (*BINV*) and current fair value of real estate investments (*FINV*), and finds that, while *BINV* is not significant (p -value = 0.802), *FINV* is significant (p -value = 0.0002). The adjusted R^2 for the model is 0.4501. These results are consistent with the results of regressing annual stock returns on income statement items (Table 2) and confirm that investors in the real estate industry rely more heavily on current fair value information than they do on historical numbers.

Table 3. Value relevance of current fair value and historical book value of investments in real estate

	Parameter Estimates	Std. error	t-statistic	p-value
α	-106.4062	27.3549	-3.8900	0.0001
<i>BINV</i>	1.4464	5.7754	0.2500	0.8025
<i>FINV</i>	0.1443	0.0373	3.8600	0.0002
<i>SIZE</i>	36.8826	6.8168	5.4100	0.0001
F- statistic (p-value)	51.2100 (0.0001)			
Adjusted R^2	0.4501			

The sample is 185 firm-year observations over the period 1980-1999.

Model

$$MVE_{it} = \alpha + \beta_1 BINV_{it} + \beta_2 FINV_{it} + \beta_3 SIZE_{it} + \varepsilon_{it}$$

MVE_{it} is market value of equity for firm i in time t scaled by the number of shares outstanding at beginning of year; $BINV_{it}$ is historical book value of real estate investments for firm i in time t , scaled by the number of shares outstanding at beginning of year; $FINV_{it}$ is current fair value of real estate investments for firm i in time t , scaled by the number of shares outstanding at beginning of year; $SIZE_{it}$ is the natural logarithm of total assets for firm i in time t ; α , β_1 , β_2 , and β_3 are regression coefficients; and ε_{it} is error term for firm i in time t .

To test whether adopting the “reserve” method compared to the “flow-through” method would influence results, Model (3) regresses annual stock returns on, amongst other things, a dummy variable

(*CHOICE*) coded as 1 (0) if the “flow-through” (“reserve”) method is adopted. The results are reported in Table 4.

Table 4. Value relevance of the flow through and reserve method for recognizing fair value gains and losses

	Parameter estimates	Std. error	t-statistic	p-value
α	-4.3012	6.5060	-0.6600	0.5095
<i>EBIT</i>	0.8315	3.5902	0.2300	0.8171
<i>FVREGL</i>	16.5429	4.0729	4.0600	0.0001
<i>SIZE</i>	1.2673	1.2693	1.0000	0.3196
<i>GROWTH</i>	1.7868	2.0467	0.8700	0.3840
<i>CHOICE</i>	3.4391	3.5489	0.9700	0.3344
F- statistic	5.8700			
(p-value)	(0.0001)			
Adjusted R^2	0.1287			

The sample is 158 firm-year observations over the period 1980-1999.

Model

$$RET_{it} = \alpha + \beta_1 EBIT_{it} + \beta_2 FVREGL_{it} + \beta_3 SIZE_{it} + \beta_4 GROWTH_{it} + \beta_5 CHOICE_{it} + \varepsilon_{it}$$

RET_{it} is stock returns for firm i in time t ; $EBIT_{it}$ is historical cost-based earnings before interest and tax for firm i in time t , scaled by the number of outstanding shares at beginning of year; $FVREGL_{it}$ is fair value real estate gain (loss) for firm i in time t , scaled by the number of outstanding shares at beginning of year; $SIZE_{it}$ is the natural logarithm of total assets for firm i in time t ; $GROWTH_{it}$ is the book to market value of equity for firm i in time t ; $CHOICE$ is a dummy variable that equals 1 if the firm adopts the “flow-through” method, and equals zero if the firm adopts the “reserve” method; α , β_1 , β_2 , β_3 , β_4 and β_5 are regression coefficients; and ε_{it} is error term for firm i in time t .

Table 4 indicates that the choice of reporting fair value gains and losses does not influence the previously reported results. *FVREGL* remains significant at the 0.0001 level, while *EBIT* remains insignificant. Both of these results are consistent with the results of Model (1). Importantly, *CHOICE* is not significant indicating that investors are not influenced by accounting choice when valuing firms. These results are to some extent expected. If the market is efficient, relevant information for valuation purposes

is used regardless of where it is reported in the financial statements. We find that recognition of unrealized gains (losses) in the income statement is not superior to (or significantly different from) recognition of unrealized gains (losses) in revaluation reserve in terms of their value relevance. Extending the findings of Owusu-Ansah and Yeoh (2006), these results indicate that fair value (unrealized) gains and losses are value relevant, irrespective of whether

recognized in the income statement or revaluation reserve.

Overall, the results throughout our study support the notion that current fair value accounting has more influence than historical cost on the stock price-setting process. It is interesting to observe that in the real estate industry historical values are insignificant across all tests. These results are after controlling for size and growth differences among sample firms. The results, which are consistent with those previously reported from the banking and thrift industry, suggest that in an environment driven by market price that can be reliably determined current fair value accounting is perceived as value relevant by investors, while historical values not. This evidence contributes to the current global debate on the measurement of fair value by supporting the recognition of fair value, rather than historical cost, in firms' financial statements when an observable market price is reliably measurable.

As a limitation, the results of the study cannot be generalized to other industries where fair value gains (losses) are not a major component of firm earnings. The generalizability of our results is also limited due to the size of the New Zealand real estate development industry, given our sample is only 40 firms. Finally, whilst value relevance of fair value accounting exists, these results could be due to the incremental informativeness of current fair values, investor perceptions of the reliability of independent valuations, or a combination of the two.

5. Conclusion

Fair value accounting is currently a topical issue in the international accounting standard setting environment. As the objective of financial reporting is, amongst other things, to provide information that is value relevant to users of financial statements in making investment decisions, an important question is whether fair value accounting is value relevant to investors. This study examined the incremental value relevance of fair value, relative to historical-based, accounting in the real estate development industry in New Zealand. Market price is relevant in the real estate industry, as real estate developers hold assets both for sale as well as for use to derive rental income. Moreover, as market price is obtainable from independent valuation firms and government agencies, fair value measurement is reliable within this industry.

Results of our study show that firms' stock return is significantly related to fair value measurement. In particular, firms' stock returns are significantly associated with their fair value real estate gains (losses) and the current fair value of their real estate investments. These results hold irrespective of whether firms recognize the gain (loss) in the income statement or revaluation reserve. Our results also indicate that firms' stock returns are not significantly

associated with their historical earnings or the historical book value of their real estate investments. These results extend prior literature by finding that fair value measures of investments beyond the banking and thrift industry are value relevant. This is important in the current global debate on fair value measurement, including the deliberations on fair value accounting for investment properties currently taking place in the US, as it indicates that investors perceive the recognition of current fair value, rather than historical values, in firms' financial statements as value relevant when fair value is reliably measured.

References

1. Aboody, D., Barth, M.E. and Kasznik, R. (1999), "Revaluations of fixed assets and future firm performance", *Journal of Accounting and Economics*, Vol. 26, pp. 149-178.
2. Barth, M. E. (1994), "Fair value accounting: Evidence from investment securities and the market valuation of banks", *The Accounting Review*, Vol. 69(1), pp. 1-25.
3. Barth, M. E., Beaver, W. H. and Landsman, W. R. (2001), "The relevance of the value relevance literature for financial accounting standard setting: Another view", *Journal of Accounting and Economics*, Vol. 31(1-3), pp. 77-104.
4. Barth M. E., Beaver, W. H. and Landsman, W. R. (1992), "The market valuation implication of net periodic pension cost components", *Journal of Accounting and Economics*, Vol. 15(1), pp. 27-62.
5. Barth, M. E., Beaver, W. H. and Wolfson, M. A. (1990), "Components of earnings and the structure of bank share prices", *Financial Analysts Journal*, Vol. 46(3), pp. 1-9.
6. Barth, M. E. and Clinch, G. (1998), "Revalued financial, tangible, and intangible assets: Associations with share prices and non-market-based value estimates", *Journal of Accounting Research*, Vol. 36(3), pp. 199-233.
7. Barth, M. E. and Clinch, G. (1996), "International accounting differences and their relation to share prices: Evidence from U.K., Australian, and Canadian Firms", *Contemporary Accounting Research*, Vol. 13(1), pp. 135-170.
8. Barth, M. E. and Clinch, G. (2009), "Scale effects in capital markets-based research", *Journal of Business, Finance & Accounting*, Vol. 36(3-4), pp. 253-288.
9. Barth, M. E. and Kallapur, S. (1996), "The effects of cross-sectional scale differences on regression results in empirical accounting research", *Contemporary Accounting Research*, Vol. 13(2), pp. 527-567.
10. Bartov, E. (1993), "The timing of asset sales and earnings manipulation", *The Accounting Review*, Vol. 68(4), pp. 840-855.
11. Beaver, W.H. and Landsman, W.R. (1983), "Incremental information content of Statement 33 disclosures", Financial Accounting Standards Board, Stamford, Connecticut.
12. Bernard, V. L., Merton R. C. and Palepu, K. G. (1995), "Mark-to-market accounting for banks and thrifts: Lessons from the Danish experience", *Journal of Accounting Research*, Vol. 33(1), pp. 1-32.
13. Bublitz, B., Frecka, T. J. and Mckeown, J. C. (1985), "Market association tests and FASB Statement No. 33

- disclosures: A reexamination”, *Journal of Accounting Research*, Vol. 23(3) (Supplement), pp. 1-23.
14. Christie, A. (1987), “On cross-sectional analysis in accounting research”, *Journal of Accounting and Economics*, Vol. 9(3), pp. 231–258.
 15. Claus, J., and Thomas, J. (2001), “Equity premia as low as three percent? Evidence from analysts' earnings forecasts for domestic and international stock markets”, *The Journal of Finance*, Vol. 56(5), pp. 1629-1666.
 16. Danbolt, J., and Rees, W. (2008), “An experiment in fair value accounting: UK investment vehicles”, *European Accounting Review*, Vol. 17(2), pp. 271-303.
 17. Easton, P.D., Edey, P.H. and Harris, T.S. (1993), “An investigation of revaluations of tangible long-lived assets”, *Journal of Accounting Research*, Vol. 31(2), pp. 1-38.
 18. Eccher, A., Ramesh K., and Thiagarajan, S. R. (1996), “Fair value disclosures bank holding companies”, *Journal of Accounting and Economics*, Vol. 22(1-3), pp. 79–117.
 19. Hopwood, W. and Schaefer, T. (1989), “Firm specific responsiveness to input price changes and the incremental information content in current cost income”, *The Accounting Review*, Vol. 64(2), pp. 313-328.
 20. Fama, E. F. and French K. R. (1995), “Size and book to market factors in earnings and returns”, *The Journal of Finance*, Vol. 50(1), pp. 131-155.
 21. Fama, E. F. and French, K.R. (1993), “Common risk factors in the returns on stocks and bonds”, *Journal of Financial Economics*, Vol. 33(1), pp. 3–56.
 22. FASB. 2010, “Project update: Investment properties”, available at: http://www.fasb.org/cs/ContentServer?c=FASBContent_C&pagename=FASB%2FFASBContent_C%2FProjectUpdatePage&cid=1176156713837 (accessed 7 July 2010).
 23. Feltham, G. A., and Ohlson, J. A. (1995), “Valuation and clean surplus accounting for operating and financial activities”, *Contemporary Accounting Research*, Vol. 11(2), pp. 689-731.
 24. Gebhardt, W. R., Lee, C. M. C. and Swaminathan, B. (2001), “Toward an implied cost of capital”, *Journal of Accounting Research*, Vol. 39(1), pp. 135-176.
 25. Gode, D., and Mohanram, P. (2001), “What affects the implied cost of equity capital?” *SSRN eLibrary*.
 26. IASB, (2006a), Discussion Paper, *Fair Value Measurements*, International Accounting Standards Board: London, UK.
 - a. -----, (2006b), Discussion Paper, *Preliminary Views on an Improved Conceptual Framework for Financial Reporting*, International Accounting Standards Board: London, UK.
 27. Jennings, R. Robinson, J., Thompson, R. B. III, and Duvall, L. (1996), “The relation between accounting goodwill numbers and equity values”, *Journal of Business Finance and Accounting*, Vol. 23(4), pp. 513-533.
 28. Keenan, M. G. (2000), “Between anarchy and authority: The New Zealand society of accountants' management of crisis, 1989-1993”, *Accounting History*, Vol. 5(2), pp. 93-118.
 29. Keenan, M.G. (1992), “Interest group lobbying on accounting standards: Some international evidence for a unifying hypothesis”, *Pacific Accounting Review*, Vol. 4(1), pp. 97-114.
 30. Kennedy, P. (2003), *A Guide to Econometrics*, 5th edition, Blackwell Publishing Ltd: Oxford, UK.
 31. Kothari, S. and Zimmerman, J. (1995), “Price and return models”, *Journal of Accounting and Economics*, Vol. 20(2), pp. 155–192
 32. Landsman W. R. (2007), “Is fair value accounting information relevant and reliable?: Evidence from capital market research”, *Accounting and Business Research*, Special Issue: International Accounting Policy Forum, pp. 19-30.
 33. Lipe, R. C. (1986), “The information contained in the components of earnings” *Journal of Accounting Research*, Vol. 24(3) (Supplement), pp. 37-64.
 34. Lobo, G. J. and Song, I. M. (1989), “The incremental information in SFAS No. 33 income disclosure over historical cost income and its cash and accruals components”, *The Accounting Review*, Vol. 64(2), pp. 329-343.
 35. Muller, K. and Riedl, E. (2002), “External monitoring of property appraisal estimates and information asymmetry”, *Journal of Accounting Research*, Vol. 40(3), pp. 865-881.
 36. Murdoch, B. (1986), “The information content of FAS 33 returns on equity”, *The Accounting Review*, Vol. 61(2), pp. 273-287.
 37. Myers, V. (1988), “Standard takes equivocal approach”, *National Business Review*, (0110-6813), Vol. 6, December 6.
 38. Nelson, K. (1996), “Fair value accounting for commercial banks: An empirical analysis of SFAS No. 107”, *The Accounting Review*, Vol. 71(2), pp. 161–182.
 39. NZSA, (1983), Exposure Draft 29, *Accounting for Investment Properties*, Wellington, New Zealand Society of Accountants.
 - a. -----, (1985), Statement of Standard Accounting Practice 17 [SSAP 17(a)], *Accounting for Investment Properties by Property Investment Companies*, Wellington, New Zealand Society of Accountants.
 - b. -----, (1989), Statement of Standard Accounting Practice 17 [SSAP 17(b)], *Accounting for Investment Properties and Properties Intended for Sale*, Wellington, New Zealand Society of Accountants.
 40. NZICA, (2004), New Zealand Equivalent to International Accounting Standard 40 *Investment Property*, Wellington, New Zealand Institute of Chartered Accountants.
 41. Ogneva, M., Subramanyam, K. R. and Raghunandan, K. (2007), “Internal control weakness and cost of equity: Evidence from SOX section 404 disclosures”, *The Accounting Review*, Vol. 82 (5), pp. 1255-1297.
 42. Ohlson, J. A. (1995), “Earnings, book values, and dividends in equity valuation”, *Contemporary Accounting Research*, Vol. 11, pp. 661-687.
 43. -----, and Juettner-Nauroth, B. E. (2005), “Expected EPS and EPS Growth as Determinants of Value”, *Review of Accounting Studies*, Vol. 10(2), pp. 349-365.
 44. Owusu-Ansah, S. and Yeoh, J. (2006), “Relative value relevance of alternative accounting treatments for unrealized gains: Implications for the IASB”, *Journal of International Financial Management and Accounting*, Vol. 17(3), pp. 228-255.
 45. Rahman, A.R., Ng, L.W. and Tower, G.D. (1994), “Public choice and accounting standard setting in New Zealand: An exploratory study”, *Abacus*, Vol. 30(1), pp. 98-117.

46. Ronen, J. (2008), "To fair value or not to fair value: A broader perspective", *Abacus*, Vol. 44(2), pp. 181-208.
47. Schneider, D. K., McCarthy, M. G. and Wertheim, P. (1999), "The market perception of convertible debt versus straight debt: Some empirical evidence from U.S. firms and non-U.S. firms listed in the U.S." *Journal of International Financial Management and Accounting*, Vol. 10(1), pp. 25-32.
48. Tweedie, D. (2006), "Discussion paper on fair value measurement", available at: [http://www.iasb.org/Current+Projects/IASB+Projects/Fair+Value+Measurement/Discussion+Paper+on+fair+value+measurements.htm](http://www.iasb.org/Current+Projects/IASB+Projects/Fair+Value+Measurement/Discussion+Paper+on+fair+value+measurements/Discussion+Paper+on+fair+value+measurements.htm) (accessed 13 May 2008).
49. Venkatachalam, M. (1996), "Value-relevance of banks' derivatives disclosures", *Journal of Accounting and Economics*, Vol. 22(1-3), pp. 327-55.
50. Watts, R. L. (2003), "Conservatism in accounting Part I: Explanations and implications", *Accounting Horizons*, Vol. 17(3), pp. 207-221.
51. Whittington, G. (2008), "Fair value and the IASB/FASB conceptual framework project: An alternative view", *Abacus*, Vol. 44(2), pp. 139-168.

SHAREHOLDER PROTECTION AND BANK BOARD QUALITY - AN INTERNATIONAL PERSPECTIVE

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Abstract

This study analyzes the quality of banks' boards of directors across Europe and the United States (US). We investigate the interactions between the legal protection of investors and ownership concentration to explain the quality of boards at 190 of the largest publicly-traded US and European banks in 2005, well before the unraveling of the financial crisis in 2008. Overall, our results show that in Europe, where legal protection of shareholders is lower than the US, the quality of boards is lower when ownership is more concentrated. Since there are lower expected costs of conflicts with minority shareholders in Europe, the controlling shareholders maximize their own interests by promoting a board of lower quality. In contrast, since there are higher expected costs of conflicts with minority shareholders in the US, the controlling shareholders promote a board of higher quality, thereby limiting their legal responsibility in case of conflicts. Thus, the quality of the board depends upon the interaction between institutional factors (investor protection) and firm-specific characteristics (ownership concentration).

Keywords: Board of Directors; Banks; Cross-Country; Investor Protection; Ownership Concentration

JEL classification: G21, G38

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1. Introduction

Several studies have attempted to determine whether the corporate governance of banks was related to the causes and the consequences of the recent global financial crisis (Beltratti & Stulz, 2009; Erkens, Hung & Matos, 2009; Grove, Patelli, Xu, & Victoravich, 2011) and also whether corporate governance explained the financial crisis that occurred a decade earlier in Asia (Johnson, Boone, Breach & Friedman, 2000; Mitton, 2002). For example, Erkens et al. (2009) examine this issue at 296 of the world's largest financial firms. They find that firms with more independent boards and institutional ownership suffered larger losses and were not more likely to replace their CEOs for poor performance during the crisis period. Beltratti and Stulz (2009) analyze the cross-section of stock returns of 98 large banks across the world from July 2007 to December 2008. Using conventional indicators of governance, they find that banks with a board structure that promotes minority shareholder interests performed worse during the crisis. Grove et al. (2011) report that US banks, which

were more leveraged and had a CEO who also held the role of chairman, performed worse during the crisis period.

While interesting, these studies assume that corporate governance is exogenous, which is not necessarily the case. In fact, in their survey of the economic literature on boards of directors, which is a key mechanism of corporate governance, Hermalin and Weisbach (2003) point out that board of directors are endogenously determined governance mechanisms for addressing agency problems inherent to many organizations². Linck, Netter and Yang (2008) confirm that board structure across US firms is consistent with the costs and benefits of the board's monitoring and advising roles. Guest (2008) concludes that UK boards play a weaker monitoring role than US ones, and that board structure determinants differ in predictable ways across different institutional settings.

² Sometimes, the researchers try to solve this endogeneity problem by testing the role of board on firm outcomes (see, for example, De Andres & Vallelado (2008), who use a sample of large international commercial banks).

Our work enriches this literature by studying the impact of institutional factors on board quality at US and European banks. We are particularly concerned about the relationship between institutional characteristics, especially the degree of legal protection of investors, and firm-specific characteristics, especially the degree of the ownership concentration of banks, to explain the quality of the board of directors. We postulate that in the US where legal protection of minority shareholders is important, the quality of the board is not linked to ownership concentration. The main reason is the motivation of managers and controlling shareholders to limit conflicts of interest with minority shareholders since the expected costs (lawsuits, etc.) are potentially high. Blockholders are especially interested in promoting the presence of independent members to the board in order to exempt their responsibilities in case of future problems³. In the contrast of Europe, where legal protection of minority shareholders is generally lower, we hypothesize that the quality of the board is lower when ownership is more concentrated. The expected costs resulting from conflicts with the minority shareholders are weak (low probability of lawsuits). Thus, the controlling shareholders do not hesitate to control the board of directors in order to protect their own interests.

Kim, Kitsabunnarat-Chatjuthamard and Nofsinger (2007), also examine the relation between minority shareholder protection laws, ownership concentration, and board independence. Using a sample of large firms from 14 European countries, they find that countries with stronger shareholder protection rights have firms with lower ownership concentration and with more independent directors, and that ownership concentration and board independence are negatively related. Our approach is different given that we consider, first, that board independence depends on ownership concentration and second, that the interaction between legal protection and ownership concentration is crucial to explain the quality of the board.

To test our hypothesis, we investigate board quality by employing ten conventional variables which measure board quality (Larcker, Richardson & Tuna, 2007): board size (number of directors), proportion of independent members, number of meetings of the board, duality (CEO is Chairman of the board), presence of an audit committee (AC), proportion of independent members in the AC, number of meetings of the AC, presence of an compensation committee (CC), proportion of independent members in the CC, and number of

meetings of the CC. We also construct an index, which measures the overall quality of the board. Our sample includes 190 large banks in 2005, before the financial crises: 125 US banks and 65 European banks from 12 countries. Each country in our sample has at least three banks, with a minimum of 2 billion dollars of total assets. We examine the period before the financial crisis unraveled because it is possible that the board structure at banks may have since changed or may be in a transitory state as a reactionary measure to poor performance and the possibility of a bank's failure.

Our results confirm our hypothesis. The degree of concentration does not impact the quality of the board of US banks because managers and blockholders are trying to limit the expected costs of conflicts by encouraging the emergence of high-quality boards. In contrast, a significant difference exists between European banks with a low and a high ownership concentration. The quality of the boards is lower when ownership is more concentrated. This result shows that the weak protection of shareholders in Europe encourages controlling shareholders to prefer a lower-quality board in order to extract private benefits. This result confirms that the interaction between legal protection and ownership structure is a key factor in explaining board quality.

Our study contributes to the literature in two main ways. First, it enriches the legal and finance literature, developed by LaPorta, Lopez-de-Silanes, Shleifer and Vishny (1997, 2000) by showing that the quality of the board depends upon the interaction between institutional factors (investor protection) and firm-specific characteristics (ownership concentration). Also, our study complements a recent study (Haw, Ho, & Wu, 2010), which investigates the relations among concentrated control, legal and regulatory regimes, and a set of bank operating characteristics. However, that study focuses upon the impact of ownership concentration and legal institutions on bank performance, not board quality, and uses a sample of commercial banks in East Asia and Western Europe, similar to two other studies (Doidge, Karolyi, & Stulz, 2007; Chhaochharia & Laeven, 2009). Our study contributes to this debate about whether governance attributes are determined by country factors or firm characteristics by showing that the interaction between country factors and firm characteristics is important in determining board quality.

Second, our study complements the literature on the determinants of the board's composition in the banking sector. Pathan and Skully (2010) analyze the trends and endogenous determinants of boards of directors for a sample of 212 US bank holding companies from 1997 to 2004, but all the other previous studies on the determinants of boards had focused only on non-financial firms. Our results should be of interest for regulators in the banking industry.

³ Other advantages of using independent directors in companies with concentrated shareholding have already been discussed by Dahya, Dimitrov and McConnell (2008). They analyze the relation between corporate value and the proportion of the board made up of independent directors in 799 firms with a dominant shareholder across 22 countries. They conclude that a dominant shareholder could offset, at least in part, the documented value discount associated with weak country-level shareholder protection by appointing an independent board.

The remainder of the paper is divided into four sections. Section 2 describes the sample selection and the variables used in the study. Section 3 presents the characteristics of the board's quality in the 190 banks. Section 4 presents our study's analysis of board quality across countries. A summary of the results and the conclusions are presented in Section 5.

2. Sample and variables

Initially, we identified all US and European banks with the following characteristics: 1) they had no mutual or cooperative status, 2) their shares were listed on a stock exchange, and 3) their data was available on Datastream in 2005 (before the financial crisis). Then, we reduced the 2005 sample to large banks with a minimum of \$2 billion dollars of total assets and with 2005 annual reports available on their website. Finally, only countries in which at least three banks were available were selected. These criteria allowed us to conduct a study of 190 banks: 125 in the US and 65 in 12 European countries. Our sample is very interesting in comparison of other recent studies

in the financial industry. For example, Erkens et al. (2009) use a larger sample of 296 financial firms (125 US firms, 131 European firms, and 40 firms from other regions) but our sample is bigger than that of Beltratti and Stulz (2009), who study 98 banks around the world.

Table 1 provides some indications on the characteristics of these banks. We show that European banks in our sample were significantly larger than their US counterparts. The mean value of total assets at US banks is about \$38.4 million (SD = \$5.1 million) while the mean value of total assets at European banks is about \$318.5 million (SD = \$60.9 million). The same pattern emerges in terms of total shareholders' equity with average total equity of about \$3.4 million (SD = \$501 thousand) and \$11.7 million (\$3.7 million), at US banks and European banks, respectively. Moreover, among European countries, significant differences exist. In particular, French and UK banks are significantly bigger than Greek, Portuguese and Austrian banks.

Table 1. Sample Description

	N	Mean	Median	SD	Min	Max
Panel A. Total Assets (in millions)						
Austria	3	\$80,897	\$48,065	\$87,590	\$14,466	\$180,160
Belgium	3	329,863	384,545	302,204	4,052	600,993
Denmark	4	107,623	19,027	185,125	7,280	385,156
France	5	832,882	1,001,872	589,707	198,429	1,485,919
Germany	6	347,053	167,612	440,453	9,964	1,167,800
Greece	9	27,736	23,365	25,255	2,611	71,169
Ireland	3	126,314	157,164	59,286	57,964	163,814
Italy	7	212,341	24,863	334,943	7,502	922,791
Portugal	4	46,824	47,364	37,040	2,529	90,039
Spain	9	194,609	60,943	313,847	8,490	945,858
Switzerland	6	439,906	21,108	679,026	8,215	1,562,254
UK	6	1,016,167	1,131,909	555,863	214,598	1,587,061
Europe	65	318,456	60,943	468,671	2,529	1,587,061
US	125	38,421	5,134	160,031	2,022	1,269,892
All	190	134,223	8,474	330,038	2,022	1,587,061
Panel B. Equity (in millions)						
Austria	3	\$3,003	\$3,311	\$2,048	\$819	\$4,881
Belgium	3	12,980	16,648	7,918	3,893	18,399
Denmark	4	3,629	1,119	5,459	481	11,795
France	5	25,150	27,837	18,274	6,332	48,130
Germany	6	10,384	4,593	13,285	574	35,385
Greece	9	1,536	1,268	1,306	134	3,692
Ireland	3	5,711	6,119	2,989	2,539	8,474
Italy	7	10,612	1,497	15,341	542	41,611
Portugal	4	2,036	2,072	1,600	160	3,839
Spain	9	9,443	4,126	15,231	516	47,019
Switzerland	6	11,877	1,843	16,235	804	33,655
UK	6	40,166	29,867	30,131	11,880	91,027
Europe	65	11,710	3,692	17,384	134	91,027
US	125	3,390	501	13,485	149	105,507
All	190	6,237	782	15,405	134	105,507

2.1 Board quality

We assess the quality of the board with ten conventional variables concerning the composition and functioning of the board: size, proportion of independent members, number of meetings of the board, duality, presence of an audit committee (AC), proportion of independent members in the AC, number of meetings of the AC, presence of a compensation committee (CC), proportion of independent members in the CC, and number of meetings of the CC. We also use an aggregate variable which considers these ten variables in order to measure the overall quality of the board. All such board data were hand-collected in the banks' annual reports or proxy statements.

- **SIZE** is equal to 1, if the size of the board is lower than the median size of the board for the 190 banks of our sample (good quality), and 0 otherwise (low quality). As argued by Jensen (1993) and Hermalin and Weisbach (2003), as board size increases, boards' ability to monitor management decreases due to a greater ability to shirk and an increase in decision-making time which may impair board monitoring. Although a bank board is often larger at banks due to the complex organizational structure and the need for special committees such as a risk committee (Adams & Mehran, 2003), there is a point at which a board becomes too large (Andres & Vallelado, 2008) and impairs board performance.

- **INDEP** is equal to 1 if the board is composed of at least 50% of independent members (high quality) and 0 otherwise (low quality). Independent members serving on the board must not be current or former employees of the bank nor are they members who have business or personal (family) relationships. In the agency theory framework, the decision-making of independent directors is likely to be affected by inside directors which might increase managerial entrenchment.

- **B_MEET** is equal to 1 if the number of meetings of the board exceeds the median number of meetings for the 190 banks (good quality) and 0 otherwise (low quality). In the agency theory framework, frequency of board meetings may indicate active monitoring by the board (Conger, Finegolda, & Lawler, 1998). More frequent meetings indicates increased supervision of the top management in a more effective monitoring role which may mitigate agency costs and subsequently improve firm performance.

- **DUAL** is equal to 1 if two different persons are in charge of the company (high quality), and equal to 0 if the CEO is also the chairman of the board (low quality for this duality factor). Agency theory argues that separating the roles of CEO and chairman of the board can mitigate agency costs. As a leader of the board, the chairman of the board is responsible for monitoring the CEO's decision-making and overseeing the process of CEO hiring, firing,

evaluation and compensation. The combination or duality of these two leadership roles would constrain the chairman from taking on an effective and objective monitoring role, thus promoting CEO entrenchment and intensifying agency conflicts. This argument is consistent with the findings of Grove et al. (2011) that duality impairs performance at US banks.

- **AC** is equal to 1 if there is an audit committee (good quality) and 0 otherwise (low quality). Financial control related to auditor monitoring, credible financial reporting, and monitoring over internal control is assumed to be stronger when such a committee exists. This is supported by the requirement of all major US stock exchanges and the Sarbanes-Oxley Act that all listed firms must have an audit committee.

AC_INDEP is equal to 1 if the percentage of independent members serving on the audit committee is at least 50% (high quality) and 0 otherwise (low quality). Based on agency theory, we argue that the monitoring ability of both the audit and the compensation committees will be significantly compromised if such a committee has a large percentage of non-independent directors and/or the chair of the committee is not independent. Non-independent directors on the audit committee will reduce the objectiveness and effectiveness of their monitoring over financial reporting and directly affect earnings quality (Klein, 2002; Vafeas, 1999). As well, all major US stock exchanges prohibit executive (inside) directors from sitting on the audit committee. This rule however does not preclude prior employees who have been separated from the firm for a stipulated period of time and other non-compensated related parties from sitting on the audit committee.

- **AC_MEET** is equal to 1 if the number of meetings of the AC exceeds the median number of meetings for the 190 banks (good quality) and 0 otherwise (low quality). A higher frequency of meetings among audit committee members is representative of a committee that is more active in monitoring the bank's financial reporting and internal control system.

- **CC** is equal to 1 if there is a compensation committee (good quality) and 0 otherwise (low quality). CEO incentives are assumed to be better defined when such a committee exists since the board committee is assigned the specific responsibility of designing a compensation package that promotes actions that drive positive performance without excessive risk taking.

- **CC_INDEP** is equal to 1 if the percentage of independent members serving on the compensation committee is at least 50% (high quality) and 0 otherwise (low quality). Non-independent directors on the compensation committee are more likely to side with executives, resulting in excessive or misaligned compensation packages (Sun & Cahan, 2009; Newman & Mozes, 1998).

- CC_MEET is equal to 1 if the number of meetings of the CC exceeds the median number of meetings for the 190 banks (good quality) and 0 otherwise (low quality). A compensation committee that meets more frequently is evidence that the committee is taking on an active role in designing and reviewing the CEO and other key executives' compensation packages.

- OVERALL is a measure of the overall quality of the board. It is between 0 and 10 (an unweighted sum of the ten previous variables); 10 means that the quality of the board is high (more than 50% independent members on the board, the AC and the CC, no duality factor for the CEO, a small board, presence of an audit committee and a compensation committee, a high number of meetings of the board, the AC and the CC) and 0 means that none of these variables are present and, thus, the quality of the board is low. OVERALL is a dummy variable equal to 1 if the measure exceeds the median overall quality for the 190 banks in the sample (good quality) and 0 otherwise (low quality).

2.2 Shareholder legal protection

The idea that investors' legal protection affects the behavior of executives and investors has been developed by La Porta et al. (1997, 2000). In this paper, we use the measures developed by Choi and Wong (2007), who studied the impact of legal protection on the choice of auditors made by firms around the world. They determine the quality of the national legal environments by using a combined index, which is composed of a law enforcement index and an investor protection index provided by La Porta et al. (1997). Their combined index equals the sum of 100 percent of the investor protection index value plus 50 percent of the enforcement index value. This value is between 0 and 10; the higher it is, the greater the legal protection of shareholders. In order to distinguish countries with weak or strong investor protection, we use the classification of Choi and Wong (2007) as follows: if the index is lower than 7.2 out of 10, the protection is weak.

2.3 Ownership concentration

To assess the concentration of ownership, we use two variables. The first is the percentage of shares held by the main shareholder who holds more than 5% of the shares (FIRST_BLOCK). The second is the percentage of shares held by all blockholders (shareholders) who hold more than 5% of the shares (ALL_BLOCK). Higher values indicate higher ownership concentration.

2.4 Other variables

We also investigate the presence of three other variables that are related to board quality. CEO tenure (number of years the current CEO has held the position) which is expected to influence the quality of the board of directors. More entrenched CEOs have an incentive to favor the presence of non-independent directors in order to limit the pressure exerted by such a board and to limit the probability of board turnover (Huson, Parrino & Starks, 2001).

We also include banks' financial analyst following for each respective bank included in the sample. Lang, Lins and Miller (2004) investigate the relation between analyst following, ownership structure, investor protection and valuation. Their findings suggest that corporate governance plays an important role in analysts' willingness to follow firms and that increased analyst following is associated with higher valuations, particularly for firms not likely to have governance problems. We consider that monitoring by financial analysts means more pressure for managers. If there are numerous analysts following a bank, then the pressure is higher; it should lead to encouraging the emergence of a high quality board, thereby limiting the risk perceived by analysts and the adverse impact on the value of the bank.

Lastly, we examine whether the bank is cross listed in the US and Europe. Several studies have highlighted that cross listing of foreign companies in the US constitutes a "bonding" mechanism (Reese & Weisbach, 2002; Doidge, Karolyi, & Stulz, 2004; Siegel, 2005). That is, when a European bank takes the decision to cross-list on an US market, it should result in an increase of the quality of the board in order to limit the (increasing) expected costs of conflicts with minority shareholders.

3. Results

We analyze the quality of the boards of directors in US and European banks. Table 2 shows that 43% of the 190 banks in our sample have made a separation of CEO and Chairman of the board (the duality factor). This figure is significantly higher in the US, where 54% of banks made such a choice versus Europe where only 20% of the banks decided to separate the two functions ($t = 5.74$; $p < 0.01$; one tailed). Among European banks, the separation is more pronounced. In countries where legal protection of shareholders is higher (strong regime), significantly more banks have made such a separation at 30% versus 13% in countries with a weak regime or shareholder protection ($t = 4.78$; $p < 0.01$; one tailed). These results are consistent with the hypothesis of a higher quality of boards in countries where shareholder protection is stronger.

Table 2. Separation of CEO and Chairman of the Board

	% SEPARATION	N
All banks	43%	190
US banks	54%	125
European banks	20%	65
Weak (Choi & Wong, 2007)	13%	38
Strong (Choi & Wong, 2007)	30%	27

The results in Table 3 confirm this view. The mean number of board members at US banks is significantly lower at 12.7 members versus that at European banks with a mean of 14.6 members ($t = 2.89$; $p < 0.01$; one-tailed). In addition, the percentage of independent members is significantly higher in the US, with a mean of 70% against a mean of 50% in Europe ($t = 6.51$; $p < 0.01$; one-tailed). Finally, the number of meetings is slightly higher in European banks than in US banks, but the difference is small and insignificant with a mean of 10.5 meetings versus a mean of 9.5 meetings, respectively ($t = 1.25$; $p = 0.11$; one-tailed).

Concerning the audit committee, large differences are also found since the presence of such a committee is required in the US, which is not the case in Europe. Only 60 European banks showed the existence of such a committee while all 125 banks in the US had such a committee. In the US, the average number of members on the audit committee is 4.1 with an average number of members on the audit committee of 4.5 in Europe ($t = 2.05$; $p < 0.05$; one-tailed). The percentage of independent members is also significantly greater in the US, as on average 90% of the members are independent versus an average of only 70% independent members at

European banks ($t = 5.35$; $p < 0.01$; one-tailed). Further, this committee meets significantly more frequently in the US as compared to Europe with average meetings of 9.9 times and 6.3 times per year, respectively ($t = 5.49$; $p < 0.01$; one-tailed). Similar results exist for the compensation committee which is required in the US. The US compensation committees are significantly larger with an average size of 4.4 members as compared to Europe with an average size of 3.5 members ($t = 3.92$; $p < 0.01$; two-tailed). There is also a significantly higher proportion of independent members at US banks versus European banks with a mean of 90% and 70%, respectively ($t = 4.96$; $p < 0.01$; one-tailed). The committee also meets moderately more frequently at US banks with a mean of 5.7 times versus a mean of 4.5 times ($t = 1.66$; $p < 0.05$; one-tailed). European banks only have such a committee in 44 out of 65 banks.

Thus, we find that the overall quality of boards is significantly greater in the US. For the 125 banks, the average score is 7.6 while the average score of the 65 European banks is only 4.8 ($t = 5.49$; $p < 0.01$; one-tailed). This result reflects significant differences in the governance exerted by the board on managers in US versus European banks.

Table 3. Board Characteristics

		Mean	Median	SD	N
Panel A. All banks					
Board of Directors	BOARD_SIZE	13.4	13.0	4.4	190
	%BOARD_INDEP	0.6	0.6	0.2	189
	BOARD_MEET	9.8	9.0	4.8	176
Audit Committee	AC_SIZE	4.3	4.0	1.3	185
	%AC_INDEP	0.8	1.0	0.3	184
	AC_MEET	8.8	8.0	4.3	172
Compensation Committee	CC_SIZE	4.2	4.0	1.3	169
	%AC_INDEP	0.8	1.0	0.3	169
	NB_MEET_CC	5.5	5.0	3.4	154
Board Quality	SCORE	6.7	7.0	2.2	190

		Mean	Median	SD	N
Panel B. European banks					
Board of Directors	BOARD_SIZE	14.6	15.0	5.1	65
	%BOARD_INDEP	0.5	0.5	0.2	64
	BOARD_MEET	10.5	10.0	6.1	51
Audit Committee	AC_SIZE	4.1	4.0	1.3	60
	%AC_INDEP	0.7	0.8	0.3	59
	AC_MEET	6.3	5.0	3.8	59
Compensation Committee	CC_SIZE	3.5	3.0	1.0	44
	%AC_INDEP	0.7	0.9	0.3	44
	NB_MEET_CC	4.6	3.5	3.4	44
Board Quality	SCORE	4.8	5.0	2.3	65
		Mean	Median	SD	N
Panel C. US Banks					
Board of Directors	BOARD_SIZE	12.7	12.0	3.8	125
	%BOARD_INDEP	0.7	0.7	0.2	125
	BOARD_MEET	9.5	9.0	4.2	125
Audit Committee	AC_SIZE	4.5	4.0	1.2	125
	%AC_INDEP	0.9	1.0	0.2	125
	AC_MEET	9.9	10.0	4.0	121
Compensation Committee	CC_SIZE	4.4	4.0	1.4	125
	%AC_INDEP	0.9	1.0	0.2	125
	NB_MEET_CC	5.7	5.0	3.3	125
Board Quality	SCORE	7.6	8.0	1.4	125

Table 4 confirms the existence of some significant differences between European countries where the legal protection of shareholders is weak or strong. For strong protection versus weak protection, the percentage of independent members that sit on the audit committee is not significantly higher (mean of 4.2 versus mean of 4.0; $t = 0.57$; $p = 0.28$; one tailed). However, the strong regime has significantly more independent members (mean of 80%) than the weak regime (mean of 60%) ($t = 2.54$; $p < 0.01$; one tailed). The audit committee in the strong regime also meets more frequently than the weak regime with average meetings of 6.5 versus 5.3 times per year, respectively, but the difference is not significant ($t = 1.13$; $p = 0.13$; one tailed).

A similar result is demonstrated for compensation committees which are generally less prevalent in countries where shareholder protection is weak. In strong regimes the compensation committee is significantly larger than in weak regimes with a size of 3.3 members and 3.7 members, respectively ($t = 3.79$; $p < 0.01$; two tailed). There are significantly more independent members sitting on the compensation committees of banks in the strong regime (mean = 80%) than the weak regime (mean = 60%) ($t = 1.89$; $p < 0.05$; one tailed). Lastly, the compensation committees at banks in the strong regime meet 5.5 times per year while the

compensation committees at banks in the weak regime meet only 2.3 times per year. This difference is significant ($t = 2.59$; $p < 0.01$; one tailed).

Summarizing the quality of the board with the board score index, the quality of the board is higher when banks operate in an environment of strong shareholder legal protection (mean of 6.2) versus when protection is low (mean of 3.8) ($t = 4.94$; $p < 0.01$; one tailed). This result is similar to the classification of Choi & Wong (2007): a cutoff level of low protection is less than 7.2.

The results in Table 5 highlight that the overall quality of the board differs significantly depending on the concentration of ownership. In Panel A, we distinguish two sub-samples of equal size, based on the median ownership concentration, using the percentage of shares held by all blockholders. In Europe, the average overall quality is equal to 4.8, but it is lower when ownership is more concentrated (4.4 when the concentration is high versus 5.3 when the concentration is low; $t = 1.65$; $p < 0.10$; one tailed). In contrast, no differences were found in US banks: the quality is even slightly greater when ownership is concentrated with a mean score of 7.7 versus a mean score of 7.5 when concentration is less concentrated ($t = 0.70$; $p = 0.21$; one tailed). Panel B confirms these results. The distinction between low and high concentrated ownership is based on the median

percentage of shares held by the first shareholder. In Europe and in the US, the gap is slightly larger than before.

Finally, these various results validate our hypothesis. In the US, where legal protection of shareholders is high, the overall quality of boards is higher than in Europe, where legal protection is weaker. However, the relationship between legal protection and concentrated ownership is important. In the US, controlling shareholders are encouraged to have high quality boards in order to limit the expected

costs of conflicts with minority shareholders. It is a way to shift responsibility to the board of directors. In contrast, in Europe, the controlling shareholders have no incentives to have a high quality board because the expected costs of conflict are low. Thus, by choosing a board of low quality, they can promote their own interests. These facts explain why the quality of boards is not different in the US, depending on whether ownership concentration is low or high, while in Europe the quality of boards is significantly lower when ownership is more highly concentrated.

Table 4. Board characteristics in Europe by investor protection

		Mean	Median	SD	N	Mean	Median	SD	N	Mean	Median	SD	N	
		European banks				Weak protection				Strong protection				
Panel A. Weak and Strong protection	Board of Directors	BOARD_SIZE	14.6	15.0	5.1	65	14.3	13.5	5.4	38	15.0	15.0	4.6	27
		%BOARD_INDEP	0.5	0.5	0.2	64	0.5	0.4	0.3	37	0.4	0.5	0.2	27
		BOARD_MEET	10.5	10.0	6.1	51	10.3	11.0	5.2	25	10.7	9.5	6.9	26
Audit Committee		AC_SIZE	4.1	4.0	1.3	60	4.0	3.5	1.5	34	4.2	4.0	1.1	26
		%AC_INDEP	0.7	0.8	0.3	59	0.6	0.6	0.3	33	0.8	0.9	0.3	26
		AC_MEET	6.3	5.0	3.8	51	5.3	4.0	4.3	25	7.2	6.5	3.2	26
Compensation Committee		CC_SIZE	3.5	3.0	1.0	44	3.3	3.0	1.0	18	3.7	4.0	1.0	26
		%AC_INDEP	0.7	0.9	0.3	44	0.6	0.7	0.4	18	0.8	1.0	0.3	26
		NB_MEET_CC	4.6	3.5	3.4	32	2.3	2.0	1.2	9	5.5	5.0	3.6	23
Board Quality		SCORE	4.8	5.0	2.3	65	3.8	4.0	1.8	38	6.2	6.0	2.1	27

Table 5. Bank characteristics

		Mean	Median	SD	N	Mean	Median	SD	N	Mean	Median	SD	N	
		European banks				Low concentration	ownership	High concentration		ownership				
Panel A. Concentration (All Block > 5%)	SCORE	4.8	5.0	2.3	65	5.3	6.0	2.1	33	4.4	4.0	2.3	32	
	DEG_PROT	6.8	7.0	1.4	65	7.0	7.0	1.4	33	6.5	7.0	1.2	32	
	TOTAL_5%	0.4	0.4	0.3	65	0.1	0.1	0.1	33	0.7	0.6	0.2	32	
		US banks				Low concentration	ownership	High concentration		ownership				
	SCORE	7.6	8.0	1.4	125	7.5	8.0	1.4	63	7.7	8.0	1.4	62	
	DEG_PROT	10.0	10.0	0.0	125	10.0	10.0	0.0	63	10.0	10.0	0.0	62	
	TOTAL_5%	0.2	0.1	0.2	125	0.1	0.1	0.0	63	0.3	0.2	0.2	62	
Panel B. Concentration (First shareholder)			European banks				Low concentration	ownership	High concentration		ownership			
		SCORE	4.8	5.0	2.3	65	5.5	6.0	2.1	33	4.1	4.0	2.2	32
		DEG_PROT	6.8	7.0	1.4	65	7.1	7.3	1.4	33	6.4	7.0	1.2	32
	FIRST	0.3	0.2	0.3	65	0.1	0.1	0.1	33	0.5	0.5	0.2	32	
		US banks				Low concentration	ownership	High concentration		ownership				
	SCORE	7.6	8.0	1.4	125	7.4	7.0	1.4	63	7.8	8.0	1.4	62	
	DEG_PROT	1.0	10.0	0.0	125	10.0	10.0	0.0	63	10.0	10.0	0.0	62	
	FIRST	0.1	0.1	0.2	125	0.0	0.1	0.0	63	0.2	0.1	0.2	62	

Panel A of Table 6 shows that several characteristics of European banks are specific to the sample as compared to the sample of US banks. First, ownership is more concentrated in European banks: the largest shareholder holds 29% of shares on average, against 12% in US banks ($t = 5.44$; $p < 0.01$; one tailed). Further, all blockholders, with a 5% or greater ownership interest, possess on average 38% of the shares in Europe versus an average of 18% in the US ($t = 5.38$; $p < 0.01$; one tailed). Second, CEO tenure at US banks is significantly longer than at European banks (9.7 years on average in the US, versus 5.6 years on average in Europe; $t = 3.44$; $p < 0.01$; one tailed). This result is somewhat surprising since it is generally accepted that the legal and investor challenges for CEOs are greater in the US which may lead to greater CEO turnover. Third, nearly three times more analysts follow the European banks (mean of 19.3 analysts) as compared to US banks (mean of 6.6 analysts; $t = 10.68$; $p < 0.01$; one tailed). This result is also surprising since it is well known that the US financial market is more developed than the European markets. The explanation may result in the following of large European banks by US analysts, in addition to European analysts, while the reverse is not true.

For the 65 European banks, significant differences appear, according to the regime of legal protection of shareholders. Where protection is high, ownership is less concentrated with a 30% ownership stake of blockholders in strong regimes versus a 50% ownership stake in weak regimes ($t = 2.63$; $p < 0.01$;

one tailed). CEO tenure is slightly longer at strong regimes with an average CEO tenure of 6.3 years versus 5.1 years at weak regimes although the difference is not significant ($t = 0.80$; $p = 0.21$; one tailed). Notably, more analysts follow banks in strong regimes with a mean of 21.5 versus a mean of 17.2 at weak regimes ($t = 1.59$; $p < 0.05$; one tailed). These results are valid for the weak and strong investor protection regimes of Choi and Wong (2007) in Panel B of Table 6.

5. Conclusions

In investigating the quality of banks' boards of directors in 12 European countries and the US, we analyzed the relationship between the legal protection of investors and ownership concentration to explain the quality of boards of 190 of the largest publicly-traded US and European banks in 2005, well before the unraveling of the financial crisis in 2008. Overall, our results show that in Europe, where legal protection of shareholders is lower, the quality of the board is lower when ownership is more concentrated. This result is probably from the lower expected costs of conflicts with minority shareholders in Europe which enables the controlling shareholders to maximize their own interests by promoting a board of lower quality. In contrast, where the expected costs of conflicts with minority shareholders are higher in the US, the controlling shareholders promote a board of high quality, thereby limiting their responsibility in case of conflicts.

Table 6. Bank characteristics

	Mea n	Media n	SD	N	Mea n	Media n	SD	N	Mea n	Media n	SD	N
Panel A. US and European banks	All banks				European banks				US banks			
% FIRST	0.18	0.09	0.2	19	0.29	0.19	0.2	6	0.12	0.08	0.1	12
Total BH % > 5%	0.25	0.15	0.2	18	0.38	0.39	0.3	6	0.18	0.12	0.2	12
TENURE	8.5	6.0	8.1	7	5.6	4.0	5.3	2	9.7	7.0	8.8	5
ANALYST FOLLOWING 2005	11.6	8.1	10.	13	19.3	19.0	12.	5	6.6	6.1	4.0	84
CROSS-LISTING 2005	0.2	0.0	0.4	65	0.2	0.0	0.4	5	-	-	-	-
Panel B. Weak and Strong regimes (Choi & Wong, 2007)	European banks				Weak regimes				Strong regimes			
% FIRST	0.29	0.19	0.2	7	0.3	0.3	0.3	3	0.2	0.1	0.3	27
Total BH % > 5%	0.39	0.39	0.3	1	0.5	0.5	0.3	3	0.3	0.2	0.3	27
TENURE	5.6	4.0	5.3	52	5.1	4.0	4.7	3	6.3	4.0	6.1	21
ANALYST FOLLOWING 2005	19.3	19.0	12.	1	17.2	14.0	13.	2	21.5	22.8	10.	26
CROSS-LISTING 2005	0.2	0.0	0.4	65	0.1	0.0	0.2	3	0.3	0.0	0.5	27

This evidence indirectly supports the significance of greater legal protection of minority shareholders from controlling shareholders in European countries that lack protective laws in terms of formal law or stock exchange listing requirements. It also suggests that minority shareholders in countries whose laws promote and protect shareholder rights are probably more likely to be able to have the kinds of boards that they prefer. Thus, this research adds an important link to the explanation of the consequences of investor protection for financial market development.

This finding may be more important at banking firms than non-banking firms (i.e., manufacturing firms, technology firms, etc.), given that banks are considered to be extremely complex and opaque which results in information asymmetries that intensify agency problems (Morgan, 2002). Also, the presence of depository insurance creates a form of moral hazard for banking managers, which is not present in other industries. These heightened agency conflicts at banking firms, coupled with many lower quality boards, could be explanatory factors, regarding bank performance during recent global economic problems where risk taking and high leverage have contributed to the ongoing banking crisis in both the US and European Union, particularly in Greece, Ireland, Portugal, and Spain.

References

- Adams, R., and H. Mehran, 2003, Is corporate governance different for bank holding companies? *Economic Policy Review*, April, 123-142.
- Andres, P., and E. Vallelado, 2008, Corporate governance in banking: The role of the board of directors, *Journal of Banking and Finance*, 32, 2570-2580.
- Beltratti, A., and R. Stulz, 2009, Why did some banks perform better during the credit crisis? A Cross-Country Study of the Impact of Governance and Regulation, *working paper*, Bocconi University and The Ohio State University.
- Chhaochharia, V., and L. Laeven, 2009, Corporate governance norms and practices, *Journal of Financial Intermediation*, 18, 3, 405-431.
- Choi, J.H., and T.J. Wong, 2007, Auditors' governance functions and legal environments: An international investigation, *Contemporary Accounting Research*, 24, 1, 13-46.
- Conger, J., D. Finegolda, and E. Lawler, 1998, Appraising boardroom performance, *Harvard Business Review*, 76, 136-148.
- Dahya, J., O. Dimitrov, and J.J. McConnell, 2008, Dominant shareholders, corporate boards, and corporate value: A cross-country analysis, *Journal of Financial Economics*, 87, 1, 73-100.
- De Andres, P., and E. Vallelado, 2008, Corporate governance in banking: The role of the board of directors, *Journal of Banking and Finance*, 32, 12, 2570-2580.
- Doidge, C., G.A. Karolyi, and R. Stulz, 2004, Why are foreign firms listed in the US worth more? *Journal of Financial Economics*, 71, 205-208.
- Doidge, C., Karolyim G. A. and Stulz, R. M. 2007. Why do countries matter so much for corporate governance? *Journal of Financial Economics*, 86, 1, 1-39.
- Erkens, D., M. Hung, and P. Matos, 2009, Corporate governance in the recent financial crisis: Evidence from financial institutions worldwide, *working paper*, University of Southern California.
- Guest, P.M., 2008, The determinants of board size and composition: Evidence from the UK, *Journal of Corporate Finance*, 14, 1, 51-72.
- Grove, H., L. Patelli, L.M. Victoravich, and P. Xu, 2011, Corporate Governance and Performance in the Wake of the Financial Crisis: Evidence from US Commercial Banks, *Corporate Governance: An International Review* 19, 5, 418-436.
- Haw, I.M., S.M. Ho, B. Hu, and D. Wu, 2010, Concentrated control, institutions, and banking sector: An international study, *Journal of Banking and Finance*, 34, 3, 485-497.
- Hermalin, B.E., and M.S. Weisbach, 2003, Boards of directors as an endogenously determined institution: a survey of the economic literature, *Economic Policy Review*, Federal Reserve Bank of New York, April, 7-26.
- Huson, M., R. Parrino, and L. Starks, 2001, Internal monitoring mechanisms and CEO turnover: A long-term perspective, *Journal of Finance*, 56, 22-65.
- Jensen, M., 1993, The modern industrial revolution, exit, and the failure of internal control systems, *Journal of Finance*, 48, 1-80.
- Johnson, S., P. Boone, A. Breach, and E. Friedman, 2000, Corporate governance in the Asian financial crisis 1997-98, *Journal of Financial Economics*, 58, 141-186.
- Kim, K. A., P. Kitsabunnarat-Chatjuthamard, and J.R. Nofsinger, 2007, Large shareholders, board independence, and minority shareholder rights: Evidence from Europe, *Journal of Corporate Finance*, 13, 5, 859-880.
- Klein, A., 2002, Audit committee, board of director characteristics, and earnings management, *Journal of Accounting and Economics*, 33, 375-400.
- Lang, M.H., K.V. Lins, and D.P. Miller, 2004, Concentrated control, analyst following and valuation: Do analysts matter most when investors are protected least? *Journal of Accounting Research*, 42, 3, 589-623.
- Larcker, D., S. Richardson, and I. Tuna, 2007, Corporate governance, accounting outcomes, and organizational performance, *The Accounting Review*, 82, 963-1008.
- La Porta, R., F. Lopez-de-Silanes, A. Shleifer, and R. Vishny, 1997, Legal determinants of external finance, *Journal of Finance*, 52, 1131-1150.
- La Porta, R., F. Lopez-de-Silanes, A. Shleifer, and R. Vishny, 2000, Investor protection and corporate governance, *Journal of Financial Economics*, 58, 3-27.
- Linck J.S., J.M. Netter, and T. Yang, 2008, The determinants of board structure, *Journal of Financial Economics*, 87, 2, 308-328.
- Mitton, T., 2002, A cross-firm Analysis of the impact of corporate governance on the east Asian financial crisis, *Journal of Financial Economics*, 64, 215-241.
- Morgan, D., 2002, Rating banks: Risk and uncertainty in an opaque industry, *American Economic Review*, 92, 874-888.

28. Newman, H., and H. Mozes, 1999, Does the composition of the compensation committee influence CEO compensation practices? *Financial Management*, 28, 41-56.
29. Pathan, S., and M. Skully, 2010, Endogenously structured boards of directors in banks, *Journal of Banking and Finance*, 34, 7, 1590-1606.
30. Reese, W.A., and M.S. Weisbach, 2002, Protection of minority shareholder interests, cross- Listings in the United States, and subsequent equity offerings, *Journal of Financial Economics*, 66, 65-104.
31. Siegel, J., 2005, Can foreign firms bond themselves effectively by renting US securities laws? *Journal of Financial Economics*, 75, 319-350.
32. Sun, J., and S. Cahan, 2009, The effect of compensation committee quality on the association between CEO cash compensation and accounting performance, *Corporate Governance: An International Review*, 17, 193-207.
33. Vafeas, N., 1999, Board meeting frequency and firm performance, *Journal of Financial Economics*, 53, 113-142.

THE ROLE ENVIRONMENT AND BOARDS OF DIRECTORS' CHARACTERISTICS ON INNOVATION: AN EMPIRICAL EVIDENCE OF GREEK LISTED FIRMS

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Abstract

Research on the determinants of innovation practices and their effects on organisational performance have received an enormous attention among academics and business practitioners over the last few decades. Using evidence from a sample of 101 companies listed on the Athens Stock Exchange, the study examines the role of managerial and environmental characteristics on innovation strategies and how they contribute to Greek firms' performance. The findings from linear regression analysis reveal that the functional background of executives and the complexity of the external environment are the key determinants of the innovation practices and thus, on organisational performance. The implications of the findings from the perspective theory and managerial practice are discussed, along with possible directions for future research.

Keywords: Boards of Directors, Innovation Strategies, Performance, Greek Firms

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1. Introduction

In nowadays that organisations face global competition, technological change and fast-changing market situations, innovation is regarded as a life blood of change (Schumpeter, 1950) and as a source of sustainable competitive advantage (e.g. Ekvall and Arvonen, 1994; Howell and Higgins, 1990; Porter, 1985). Both practitioners and academics perceive innovation as the only way for the organisations to be effective or even survive in a world of rapid change. Over the last decades, research on innovation has engaged the attention of scholars in strategic management (Bantel and Jackson, 1989; Damanpour and Schneider, 2006).

The role that organizational leaders play in determining firm performance and in shaping organizational processes and outcomes is under debate among organizational theorists. Upper echelon theory (Hambrick and Mason, 1984) suggests that executives serve as an interface that helps an alignment between the organization and its environment, and thus their decisions and actions are likely to impact the organization (Hambrick, Finkelstein and Mooney, 2005).

According to the *Upper Echelon Theory* and the *strategic choice perspective* (Hambrick, 2007) organisational members take actions in order to adapt to an environment as an explanation to organisational

outcomes. Organisational theorists have examined the relationship between managers' characteristics and perceptions, objective decision criteria and strategic choices (Finkelstein, 1988; Hambrick and Mason, 1984; Nielsen and Nielsen, 2010). Previous studies have investigated the relationship between executives' characteristics and innovation strategies (Barker and Mueller, 2002; Hoskisson, Hitt, Johnson and Grossman, 2002; Zahra, 1996) however there is a gap in our understanding of the set of explanatory variables of innovation (Wolfe, 1994). Researchers agree that predictions about the impact of board demographic characteristics as well as environmental dimensions to organisational choices are not clear (Johnson, Daily and Ellstrand, 1996; Schwenk and Dalton, 1991; Zahra and Pearce, 1989). This study aims to fill this gap and to open the "black box" within Boards of Directors' dynamics and further investigate the impact of the external environment and the Boards of Directors' attributes on the strategic choice of innovation and consequently, on firm's performance. The study will provide access to the "black box" and it will further investigate the processes linking demographic characteristics and organisational outcomes.

The contribution of this paper is twofold: (1) to identify the demographic predictors and the environmental factors that encourage innovation strategies; and (2) to examine whether or not

innovation practices improve organisational performance. To examine these relationships, we adopt the Upper Echelon Theory and the environmental determinism perspective to explain the role of directors' attributes and environmental circumstances upon innovation strategies and thus, organisational performance of Greek listed companies as Greece is a recent industrialised country. By examining one distinctly different national setting, Greece, the study attempts to highlight the differences from more mainstream Western strategic decisions.

This paper is structured as follows. In section two we discuss the literature review behind strategic choice and organisational outcomes and we advance related research hypotheses. Section three explores methodological aspects of the study. In Section four we present and discuss the results of the statistical analysis. Section five elaborates on the key findings; explores the limitations of the study and suggests avenues for future research.

2 Theoretical Background

Academics and practitioners have highlighted the role of innovation for the organisation in order to maintain its competitive advantage and survive (Eisenhardt and Martin, 2000; Tushman and O'Reilly, 2002). The strategic choice perspective introduces the notion of equifinality into examinations of firm performance within similar environments which they might affect organizational strategies (Doty, Glick and Huber, 1993). Firms may thus establish competitive advantage on the basis of different sets of distinctive competencies, which aggregate specific activities that organisations perform especially well relative to other organisations within a similar environment (Snow and Hrebiniak, 1980). Empirical work has shown that competitive success is based on the organisation's management of innovation process and factors associated with successful management of the innovation process (e.g. Balachandra and Friar, 1997; Rothwell, 1992).

Innovation is defined as the creation or adoption of new ideas (Daft, 1978). At the organisational level, innovation is defined as the adoption of new product, production service, technology, policy, structure or administrative system (Damanpour, 1991). The adoption of innovation aims to contribute to the performance and effectiveness of the adopting organisation. Innovation is perceived as a way for an organisation to copy to various internal and external environmental circumstances (Damanpour, 1991) and being proactive (Toulouse, 1980).

According to the strategic choice perspective (Andrews, 1986; Child, 1972) organisational members take actions in order to adapt to changing environment and to provide direction for the future of the firm. Upper echelon theory articulated by Hambrick and Mason (1984) explains that organisational outcomes both strategy and

performance can be considered to reflect the values and cognitive characteristics of top managers (Finkelstein and Hambrick, 1996; Hambrick and Mason, 1984). The Upper Echelon Theory suggests that the observable characteristics of executives are linked to psychological and cognitive traits. It also states that there is a relationship between the executives' demographics and organisational outcomes (Cannella, Pettigrew and Hambrick, 2001; Hambrick and Mason, 1984; Smith et al., 1994). Previous studies have investigated the relationship between CEO characteristics and innovation strategies. Both Kimberly and Evanisko (1981) (studying hospitals) and Bantel and Jackson (1989) claim that the executives' educational background was associated with innovation. More specifically, empirical studies suggest that CEO tenure is positively related to R&D expenditure and/or innovation (Barker and Mueller, 2002), CEO age is negatively related to innovation (Child, 1974; Barker and Mueller, 2002) and inside directors encourage innovation (Baysigner, Kosnik and Turk, 1991; Hoskisson, Hitt, Johnson and Grossman, 2002; Zahra, 1996).

Scholars have examined the relationship between Boards of Directors (composition) and their demographic characteristics (age, gender, tenure, educational background) on firm's innovation by ending up to unclear and controversial results (Damanpour and Schneider, 2006; Eagly and Johnson, 1990; Hooijberg and DiTomaso, 1996; Kimberly and Evanisko, 1981; Zona et al., 2006). This can be explained by the fact that either those studies have not focused on actual leaders (Yulk, 1999) or they have failed to investigate the leadership behaviour and their effect on innovation process (Cannella and Monroe, 1997). Scholars (e.g. Elenkov, 2002; Papadakis, Lioukas and Chambers, 1998) argue that strategic decisions and consequently strategic choices are influenced by top managers and external environment.

Based on the environmental determinism approach, an organisation is regarded as an open system that seeks adaptation and matches the characteristics of the environment with those of the organisation in an attempt to survive and grow (Aldrich, 1979). According to this perspective, strategic decisions and processes show adaptation to opportunities, threats, constraints and other environmental characteristics. Several scholars have examined the influence of environmental and organisational factors on innovation (Damanpour, 1991; Kimberly and Evanisko, 1981; Papadakis and Bourantas, 1998). Based on the environmental determinism, executives play a limited role on innovation outcomes (Meyer and Goes, 1988; Tornatzky et al., 1983). Empirical studies have examined the adoption of various innovation strategies within certain environmental dimensions. In dynamic environments companies are becoming

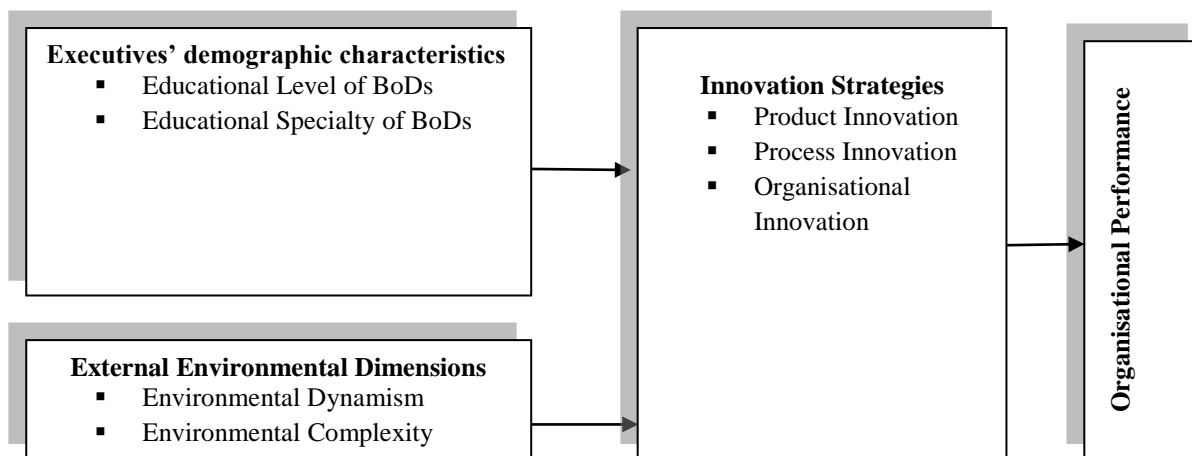
innovative and proactive in pursuing emerging market opportunities (Covin and Covin, 1990). On the other hand, companies operating in complex environments are more proactive in their operations and encourage entrepreneurial risk-taking (Morris and Jones, 1994; Zahra, 1991). Researchers agree that predictions about the impact of board demographic characteristics as well as environmental dimensions to organisational choices are not clear.

Whereas studies recognise that innovation contributes to sustainable competitive advantage (Ireland et al., 2001; Knott, 2003; Mone, McKinley and Barker, 1998; O'Brien, 2003), there is surprisingly little work that explores how firms with different innovation practices differ (Ettlie, Bridges

and O'Keefe, 1984). Our study will address this gap adopting a more process-oriented approach through the examination of specific innovation strategies in a holistic manner. For the purpose of our study, we adopt the Upper Echelon Theory and the environmental determinism approach in order to examine the executives' attributes and the environmental influences upon innovation practices and consequently, on firms' performance.

Figure 1 presents an integrative framework that examines the role of Boards of Directors' characteristics as well as the external environmental influences on innovation practices and how these practices improve the performance of Greek listed firms.

Figure 1. The Role of External Environment and Boards of Directors on Innovation Strategies and Organisational Performance



Hypotheses Development

Executives' demographic characteristics

Executives are regarded as the apex of the organisations and their demographic characteristics and experiences can determine the firm's orientation and strategic choices (Escribá-Esteve, Sánchez-Peinado and Sánchez-Peinado, 2009). Demography refers to the "composition, in terms of basic attributes such as age, sex, educational level, length of service or residence, race, and so forth of the social entity under study" (Pfeffer, 1983, p. 303). In this study, we will examine two demographic characteristics of the executives; educational level and functional background.

Educational Background

The formal educational background of executives is an indicator of the values and cognitive preferences and the cognitive preferences of the individual and his/her openness to change and innovation (Wally and Becerra, 2001). The level of innovation is positively related to receptivity to new ideas, which detects

innovation need and creates a favourable environment for its implementation (Damanpour and Schneider, 2006; Hambrick and Mason, 1984). Therefore, educated managers have the ability to generate solutions and have receptive attitudes toward innovation (Bantel and Jackson, 1989; Kimberly and Evanisko, 1981). Highly educated executives are more likely to use complex and diverse approaches to solve problems (Lee, Wong and Chong, 2005).

Therefore, we expect executives with higher educational level to encourage innovation practices. Thus, we hypothesize that:

Hypothesis 1: The level of formal education of directors will be positively related to firms' innovation.

Functional Background

The functional background of executives influences their strategic choices (Michael and Hambrick, 1992). Hayes and Abernathy (1980) point out that senior manager with backgrounds in finance and law are less committed to innovation. Whereas, executives with backgrounds in production, engineering or R&D are more likely to focus on, and comprehend, the

technical, operational and financial implications of innovation and to initiate *investments* in product innovation and process technologies. Managers with background in sciences and engineering have a clear understanding of the importance of technology and they tend to adopt innovation strategies (Tyler and Steensma, 1998) compared to those with emphasis on management who are risk-averse and reluctant to innovation (Finkelstein and Hambrick, 1996). Additionally, Hambrick and Mason (1984) stated that managers with marketing, sales and product R&D emphasize on growth and seek new domain opportunities. Those opportunities can derive from product extension as well as product innovation. Thus, following the reasoning set forth by Hambrick and Mason (1984) and Hayes and Abernathy (1980) we hypothesize that:

Hypothesis 2: The proportion of executives with functional background management will be positively related to the firm's innovativeness.

External Environmental and Innovation Strategies

Scholars have attempted to investigate the “fit” between strategy and external environment (e.g. Andrews, 1980; Bourgeois, 1980; Festing and Barzantny, 2008; Miller and Friesen, 1982; Venkatraman and Prescott, 1990; Wiersema and Bantel, 1993). More specifically, Romanelli and Tushman (1988, p. 130) claimed that: “...where environments are changing and/or performance outcomes are low or declining, leadership's primary task is to intervene in ongoing patterns of commitment and exchange to redirect the character of an organisation's relationship with its environment”. This indicates that leaders are required to examine the external environment conditions prior to any crucial decision. Firms operating in turbulent environments are likely to be more innovative, risk-taking and proactive (Naman and Slevin, 1993). In dynamic environmental circumstances, companies tend to be more innovative and proactive in pursuing emerging market opportunities (Covin and Covin, 1990; Miller and Friesen, 1982). Hostile environments as described by Khandwalla (1977, p. 335) are “*risky, stressful and dominating*”. Scholars (e.g. Pearce and Zahra, 1992; Zahra, Neubaum and Huse, 2000) argue that hostility leads to intense competition in the industry and destroys any previous structural and competitive equilibrium in the industry. Companies cope with competition by introducing global-scale efficiencies, worldwide learning and local responsiveness (Bartlett and Ghoshal, 1989). The previous section provides ground for the development of the following hypotheses:

Hypothesis 3: Environmental dynamism will be positively associated with innovation.

Hypothesis 4: Environmental complexity will be positively associated with innovation.

Innovation Strategies and Firm's Performance

Organisational performance is a complex and multidimensional phenomenon in strategic management literature (Venkatraman and Ramanujan, 1986). Hambrick and Mason (1984) posited that strategic choices contribute to positive organisational outcomes. They argue that a range of influential factors that might influence the impact of Boards of Directors on the firm's performance such the roles of the board, the impact of board demographic characteristics, the environmental conditions and the strategic decisions. Scholars (e.g. Finkelstein and Hambrick, 1990; Hambrick, Cho and Chen, 1996; Smith et al., 1994) have portrayed the upper echelons' characteristics as determinants of strategic choices and their outcome to organisational performance. Based on a longitudinal study, Bertrand and Schoar (2003) have concluded that the strategic choices of cash holdings, advertising investments, acquisitions, R&D have improved the financial position of the firm. Lawless and Anderson (1996) point out that innovation is related to firm performance in dynamic environments. Further, innovation speed improves organisational performance (Lawless and Anderson, 1996) and increases R&D spending which is positively related to firm performance (Chaney and Devinney, 1992). Based on the above arguments, the following hypothesis can be advanced:

Hypothesis 5: There will be a positive relationship between innovation strategies and firm's overall performance.

Cultural Context: Greece

Greece is a developed country, a member of the European Union since 1981 and a member of the Economic and Monetary Union (EMU) of the European Union (EU) since 2001. The majority of Greek firms are small and family owned with limited R&D and market spending. Greek companies lack of technological resources and infrastructure and modern management practices (Bourantas and Papadakis, 1996; Georgas, 1993. Makridakis et al., 1997). Hofstede (1980) describes Greece as a country of high degree of uncertainty and risk. High uncertainty avoidance might be an obstacle of technological innovation with high inherent financial risk that can lead to conservative strategy.

Government regulations, bureaucratic obstacles, and uncooperative labour prevent Greek companies from taking strategic actions and provide them with problems and challenges which are different to those of developed or under developed countries (Makridakis et al., 1997). The innovation practices in Greece are below the average ranking of the European Union (EU), particular in R&D expenditures, in firms' capacity to innovate, and in trademarks and patents is especially low. R&D and marketing

departments as well as public support are not regarded as key sources of innovative ideas in Greece (Giannitsis and Mavri, 1991). Although, Greece is particularly open to new ideas, it lacks a distinctive philosophy and innovation specific strategy. Greek companies in order to improve their innovation performance have to adopt a model that will focus on the adoption and adaptation of proven technologies and solutions through small – incremental innovations, applications in new context, adaptation to consumer needs, customer service and in internal organizational processes (Lioukas, 2009).

3 Methodology

Sample

Our sample frame consists of the Greek organizations listed on the Athens Stock Exchange operating in 12 different economic sectors as in December 2007. Companies that had been recently de-listed are excluded and so the remaining sample frame consists of 270 firms. A questionnaire to the CEO has been distributed as the CEO is the most knowledgeable respondent that can answer questions about the organisation's strategic choices (Escribá-Esteve, Sánchez-Peinado and Sánchez-Peinado, 2009; Tan and Tan, 2005). The questionnaire has been filled in by 101 CEOs of Greek listed firms. It should be noted that the responses to this questionnaire were collected prior to the current economic crisis. The questionnaire, designed in accordance with the 'Total Design Method' of Dillman (1978), was originally developed in English and, on the recommendation of Brislin (1980), was translated through a back translation process into Greek. The questionnaire was then reviewed by academics and board members in order to ensure question efficacy and format completeness while also confirming that its tools were appropriate, reliable and relevant in the Greek cultural context before the launch of the survey.

Measurements

Educational level of top management team is defined as the executives' fields in the highest level of education (Hitt and Tyler, 1991). The educational background of executives measured by using a two-level scale bachelor's degree (1 = for those who hold a BSc degree and 0= for those who have only higher educational degree) and for master's degree (1 = for those who hold a MSc degree and 0=for those who have a higher educational degree).

Executives' functional management background is defined as the area in which the executives had spent most years (Michael and Hambrick, 1992). Hambrick and Mason (1984) classified functional backgrounds into two categories: throughput functions (coded as '0') for marketing, sales, merchandising as well as product research and

development (R&D) and non-throughput functions (coded as '1') such as: productions/operations, engineering, finance and accounting. In this study, respondents were asked to specify their functional background within the following seven categories: finance treasurer, general management, information systems, marketing/sales/customer services, accounting/controller, manufacturing and sales and engineering. In this study, the majority of the respondents were from accounting (coded as '1') and general management (coded as '2').

Environmental dynamism refers to the continuity of changes in the firm's environment (Zahra, Neubaum and Huse, 2000). Three values are used in order to capture environmental dynamism/instability: 1. dynamism in marketing practices, 2. competitor dynamism and 3. customer dynamism. Each scale is measured in a 7-point Likert-scale ($\alpha = .912$) ranging from "1" (no change) to "7" (very frequent changes) (Achrol and Stern, 1988).

Environmental complexity was measured by the following statements developed by Miller, Burke and Glick (1998). Each statement is measured in a 7-point Likert-scale ($\alpha = .677$) ranging from "1" strongly disagree to "7" strongly agree. The following indicators are used to measure complexity: 1. products/services become obsolete very slowly in your firm's principal industry, 2. your firm seldom needs to change its marketing practices to keep up with competitors. 3. consumer demand and preferences are very easy to forecast in your firm's principal industry and 4. your firm must frequently change its production/service technology to keep up with competitors and/or consumer preferences.

Innovation is measured by using 12 items developed by Huse (1994) based on the methodology which has been initially developed by Zahra (1996). Innovation is divided into three categories: product innovation (4 items), process innovation (5 items) and organizational innovation (3 items). Using a 7-point Likert scale ($\alpha = .954$) (beginning from "1" no emphasis to "7" a lot of emphasis), respondents are asked to rate the firm's actual emphasis on each innovation item.

Organisational performance was captured by the following measurements developed by Khandwalla (1976) and Tan and Litschert (1994): after-tax return on total assets, after-tax return on total sales, total sales growth, overall performance and success and competitive positions. The response format was a 5-point Likert scale ($\alpha = .926$) (bottom 20 percent to top 20 percent).

Principal component factor analysis with varimax orthogonal rotation has been employed to produce factor solutions. The purpose of principal component analysis is to decompose the original data into a set of linear variates (Dunteman, 1989). The results of this analysis was the development of four factors; environmental dynamism, environmental complexity, innovation practices and organizational

performance with eigenvalue greater than one, details of which are summarized in Table 1 in the Appendix. All the measures 'loaded' cleanly on separate factors, with all the factors loadings from .614 to .929 a high threshold for acceptance. We also have tested the reliability and the internal consistency of the

constructs by using Cronbach's alpha. Nunnally's (1967) argues that an alpha coefficient of 0.50 or greater is adequate to conclude internal consistency. All scales are found to satisfy this reliability criterion with Cronbach's alpha coefficients ranging from 0.677 to 0.954 as illustrated in Table 1.

Table 1. Measurement Items, Standard Loadings and Reliabilities

Measures	Std. loadings
Environmental Dynamism ($\alpha=.912$)	
Changes in the Competitor's Sales Strategies	.856
Changes in the Competitor's Mix of Products/Brands	.853
Changes in the sales strategies	.842
Changes in the competitors sales promotion and advertising strategies	.824
Change in the sales promotion/advertising strategies	.820
Change in the mix of products/brands carried	.811
Eigenvalue for ENV1	4.179
% variance explained by ENV1	69.656
Environmental Complexity ($\alpha=.677$)	
Hostility in the market activities of your key competitors	.813
Influence of the market activities from your key competitors	.788
Increase in the needed diversity in your production methods and marketing tactics to cater your different customers	.709
Increase in the innovation rate of new operating processes and new products or services in your principal industry	.614
Eigenvalue for ENV2	2.162
% variance explained by ENV2	54.056
Innovation ($\alpha=.954$)	
Being the First Company in the Industry to Introduce Technological Improvements	.902
Creating Innovative Technologies	.886
Being the first company in the industry to introduce new technology	.877
Creating new products for fast market introduction	.834
Being the first company in the industry to introduce new products/services	.805
Developing radical new technology	.794
Investing heavily in cutting edge process technology-oriented R&D	.779
Creating new variations to existing product lines	.773
Developing systems that encourage initiatives and creativity among employees	.759
Increasing the revenue from less than 3 years old products	.757
Supporting an organizational unit that drive innovation	.728
Encouraging innovation in the organisation	.714
Eigenvalue for INN	7.733
% variance explained	64.438
Organisational Performance ($\alpha=.926$)	
Overall Firm Performance and Success	.929
After-Tax Return on Total Sales	.908
Our competitive position	.907
After-Tax Return on Total Assets	.896
Firm's Total Sales Growth	.775
Eigenvalue for ORGPER	3.911
% variance explained	78.230

4 Results and Discussion

Table 2 shows the means, standard deviations and correlations between explanatory variables. As the phenomenon of multicollinearity can exist in multiple regression models when there is more than one

predictor (Hair et al., 1998), we have checked for multicollinearity among predictors by executing a correlation matrix of all predictors and we identify that they are not highly correlated (above .80 or .90) (Field, 2005). Thus, no serious multi-collinearity problems have been identified.

Table 2. Descriptive Statistics and Correlations between Variables

Variables	Mean	SD	1	2	3	4	5	6
1. Educational level (BSc)	.346	.478						
2. Educational level (MSc)	.455	.500	-.666**					
3. Functional background	.353	.481	.036	-.140				
4. Environmental Dynamism	-.035	1.00	-.146	.185	-.083			
5. Environmental Complexity	-.009	1.00	.119	-.026	-.132	.619**		
6. Innovation	-.018	1.00	.068	.144	-.409**	.398**	.563**	
7. Performance	.003	1.01	.113	-.099	-.057	.054	.198	.486**

n=101. * $p < 0.05$ (two-tailed). ** $p < 0.01$ (two-tailed)

Correlation analysis, as shown in Table 2, gives us an insight into the relationships between constructs. Most of the correlations between demographic characteristics of board members, environmental dimensions, innovation and

organisational performance are statistical significant at $p < 0.05$ and $p < 0.01$ and in the expected directions. The results from the linear regression analysis are presented in Table 3.

Table 3. Results of regression analysis of innovation and organizational performance

Variables	Innovation		Performance
	Model 1	Model 2	Model 3
Educational level (BSc)	.246 (1.578)		
Educational level (MSc)	.249 (1.604)		
Functional Background	.380** (3.216)		
Environmental Dynamism		.078 (.643)	
Environmental Complexity		.535** (4.422)	
Innovation			.486** (4.313)
R ²	.209	.342	.237
Adjusted R ²	.168	.323	.224
F	5.101	18.198	18.603
F Sig.	.003	.000	.000

n=101. Numbers are beta coefficients. Associated numbers in parentheses are t-ratios
⁺ $p < 0.10$, * $p < 0.05$, ** $p < 0.01$

Model 1 in Table 3 shows that the educational level (BSc) ($\beta = .246$, $p < 0.05$) as well the educational level (MSc) ($\beta = .249$, $p < 0.05$) do not explain innovation practice. Therefore, Hypothesis 1 is not confirmed. Our findings are in line with previous

studies in the field (Damanpour and Schneider, 2006; Meyer and Goes, 1988). However, the executives' management functional background ($\beta = .380$, $p < 0.01$) exhibit significant relationships to innovation. Therefore, Hypothesis 2 is supported. Although the

effect of managerial characteristics on strategic choices has been supported by the strategic choice paradigm (Bantel and Jackson, 1989; Child, 1972; Finkelstein and Hambrick, 1990; Wiersema and Bantel, 1992), we have found the managerial characteristic of functional background to explain innovation practices. This can be explained by the fact that previous studies have taken place in different cultural contexts and that our sample consist of large Greek organizations where the decisions are not taken by a single individual but by a group of people.

Model 2 in Table 3 demonstrates the impact of environmental dimensions on innovation practices, our findings reveal that Greek companies pursue process innovation practices when they are operating in complex environments ($\beta = .535, p < 0.01$). The findings provide support to Hypothesis 4. Greek executives understand the different environmental dimensions in which their organisations operate and respond accordingly. In case of complex environmental circumstances, Greek executives invest in process innovation mainly in cutting edge process technology oriented R&D and in developing radical new technology. Also, they emphasise on the introduction of new products and services in the market. Other studies have shown that environmental complexity is associated with innovation and risk taking (Naman and Slevin, 1993; Zahra, 1991). Companies facing complex environmental conditions need to explore new business opportunities and to gain and sustain competitive advantage (Hitt et al., 2001). The empirical results from a sample of 101 Greek listed organisations are in accordance with previous studies indicating that companies operating in complex environments pursue product and process innovation practices. Greek executives tend to be proactive and innovative in circumstances of environmental uncertainty in order for their organisations survive and maintain their competitive position in the global market.

Model 3 in Table 3 contains results pertaining to the main effect of innovation practices on firm's performance. Our findings suggest that innovation is an important function of management because it is linked to business performance. The findings uniformly indicate a robust relationship between product, process and organisational innovation and performance in Greek companies ($\beta = .486, p < 0.01$). Thus, our results provided support to the hypothesis 5. Innovation for Greek listed organisations is becoming increasingly important as a means of survival not only growth in an era of intensive competition and environmental uncertainty. Our results are in line with previous studies that also found innovation practices to improve firm's performance (Chaney and Devinney, 1992; Damanpour and Evan, 1984; Lawless and Anderson, 1996). Several scholars (e.g. Bertrand and Schoar, 2003; Covin and Covin, 1990; Escribá-Esteve, Sánchez-Peinado and Sánchez-Peinado, 2008; Lumpkin and Dess, 1996; Morgan and

Strong, 2003) have concluded that certain strategic choices and firms' strategic orientations enhance organisational performance.

5 Conclusions

The study aims to contribute to the literature of strategic management revealing the influential factors of the innovation strategies and how they contribute to the Greek firms' performance. The alignment of managerial characteristics and environmental conditions to innovation practices are considered as key determinants of strategic choices and strategy formulation. However, it does not indicate that all factors have an equal contribution towards explaining innovation practices in Greek firms. The findings suggest that complex environments encourage innovation strategies in Greek companies. Also, innovation is a key determinant of organisational performance and growth of Greek listed organisations. The findings suggest that Greek companies are more responsive to external stimuli and introduce changes in their structures and policies in order to survive. However, when directors perceive the external environment to be complex, they develop a proactive environmental strategy by introducing long-terms guidelines in order to cope with various environmental dimensions. Public policy makers encourage greater proactivity in environmental practices by introducing clear regulations and long-term policies including innovation.

Regarding the effect of executives' characteristics on innovations, the findings indicate that Greek executives disregard the board composition as a significant factor of the strategic choices which can be justified by the fact that managerial characteristics might be heterogeneous and do not allow us to conclude that demographic or composition factors affect strategic decisions. Only the functional background of the executives is significant to innovation practices. Overall, Greek companies, in order to survive and achieve financial prosperity, are forced to adopt a more flexible management style (Bourantas and Papadakis, 1996) that is more like a team-based style of decision making which encourage innovation adoption of products and services.

The study contributes to the research in several ways. First, the paper provides empirical results on the effects of managerial and environmental characteristics on innovation practices and as a result to organisational performance of Greek listed companies on the Athens Stock Exchange. Furthermore, the accessibility to Boards of Directors allowed us to collect really rare and valuable data, since we are not able to attend board meetings and observe how in fact "boards work". The fact that this study was completed allowed us to draw some general overviews on how Greek Boards of Directors affect innovation strategies alongside with the influence of

external environment and the firms' performance is improved. A third contribution to knowledge is that it is the first study to be reported on the innovation practices in Greek listed organisations. The study combines a set of key factors- demographic characteristics and environmental dimensions and examines certain characteristics of innovation practices namely-product, process and organisational innovation and their effect on performance improvement and organisational effectiveness. Finally, the findings of this study contradict previous and recent empirical studies, which make a significant contribution to the existing literature.

The findings of the study have to be examined in the light of their limitations. First, the fact that literature on board of directors is not so extensive and most of the issues are comparatively new to the context, in which we applied our research, might cause inconsistencies or drawbacks in our assumptions and findings. The results that derived from our theoretical model explaining the key determinants of innovation might be different in a different model. Second, the questionnaire has been filled in by a single respondent of each listed in the ASE firms. It will be highly recommended in future research the use of multiple respondents per firm in order to minimize effects of systematic response bias. Third, the sample consists only of listed companies from various industries, a fact that implies that we are not be able to make generalisations at the industry level. Finally, the performance is measured by subjective measurements; future research could combine other objective measurements of performance from secondary data sources.

Based on the current findings, we would like to point out some avenues for future research. Our findings might encourage the continuation of theoretical and empirical research on strategic management. Future research might include different organisational, managerial and environmental contexts that have effect on innovation strategies. Also, we could investigate how other strategic choices such as diversification, mergers and acquisitions contribute to firm's growth and effectiveness. The findings of our study are based on cross-sectional data; a next logical step in this line of research would be to investigate the relationship between innovation strategies and performance outcomes over a period of time, treating contextual variables as potential moderators. A more accurate approach to understand the causal relationships between decision antecedents and process requires the adoption of a longitudinal research design. Studies on boards of directors so far, have been taken place in developed western countries, so future research could have some useful insights if it is implemented in cultural context where board of directors and innovation strategies and other corporate governance practices are in infancy.

References

1. Achrol, R. and Stern, L. (1988) "Environmental determinants of decision-making uncertainty in marketing channels", *Journal of Marketing Research*, Vol. XXV, No. 1, pp. 36-50.
2. Aldrich, H.E. (1979) *Organisations and Environments*, Englewood Cliffs, NJ: Prentice-Hall.
3. Andrews, K. R. (1980) *The Concept of Corporate Strategy*, Irwin, Homewood, IL
4. Andrews, K. R. (1986) *The Concept of Corporate Strategy*, 2nd Ed. Homewood, IL: Irwin.
5. Balachandra, R. and Friar, J. (1997) "Factors for success in R&D projects and new product innovation: A contextual framework", *IEEE Transactions on Engineering Management*, Vol. 44, No. 3, pp. 276-87.
6. Bantel, K. and Jackson, S. (1989) "Top management and innovations in banking: Does the composition of the top management team make a difference?", *Strategic Management Journal*, Vol.10, pp. 107-124.
7. Barker III, V. and Mueller, G. (2002) "CEO characteristics and firm R&D spending", *Management Science*, Vol. 48, No. 6, pp. 782-801.
8. Bartlett, C.A. and Ghoshal, S. (1989) *Managing across borders: Transnational solution*. Boston, MA: Harvard Business School Press.
9. Baysigner, B., Kosnik, R.D. and Turk, T.A. (1991) "Effects of board and ownership structure on corporate R&D strategy", *Academy of Management Journal*, Vol. 34, No.1, pp. 205-214.
10. Bertrand, M. and Schoar, A. (2003) "Managing with style: The effect of managers on firm policies", *Quarterly Journal of Economics*, Vol. 118, No. 4, pp. 1169-1208.
11. Bourantas, D. and Papadakis, V. (1996) "Greek management: Diagnosis and prognosis". *International Studies of Management & Organization*, Vol. 26, No. 3, pp. 13-32.
12. Bourgeois, L. J. III. (1980) Strategy and Environment: A Conceptual Integration. *Academy of Management Review*, 54(1), pp. 25-39.
13. Brislin, R. (1980) Translation and content analysis of oral and written materials, in: Triandis, H., Berry, J., (Eds.). *Handbook of Cross-Cultural Psychology*. Allyn and Bacon, Boston, pp. 389 - 444.
14. Cannella, A. and Monroe, M. J. (1997) "Contrasting Perspectives on Strategic Leaders: Toward a More Realistic View of Top Managers", *Journal of Management*, Vol. 23, No. 3, pp. 213-238.
15. Cannella, A., Pettigrew, A. and Hambrick, D. (2001) "Upper echelons: Donald Hambrick on executives and strategy", *The Academy of Management Executive*, Vol. 15, No. 3, pp. 36-42.
16. Chaney, P. and Devinney, T. (1992) "New product innovations and stock price performance", *Journal of Business Finance and Accounting*, Vol. 19, No. 5, pp. 677-695.
17. Child, J. (1972) "Organisational structure, environment and performance: The role of strategic choice", *Sociology*, Vol. 6, No.1, pp. 1-22.
18. Child, J. (1974) "Managerial and organisational forces associated with company performance", *Journal of Management Studies*, Vol. 11, No. 1, pp. 13-27.
19. Covin, J.G. and Covin, T.J. (1990) "Competitive aggressiveness, environmental context, and small firm performance", *Entrepreneurship Theory and Practice*, Vol. 4, No. 1, pp. 35-50.

20. Daft, R. L. (1978) "A Dual-Core Model of Organization Innovation", *Academy of Management Review*, Vol. 21, No. 2, pp. 193-211.
21. Damanpour, F. (1991) "Organizational innovation: A meta-analysis of effects of determinants and moderators", *Academy of Management Journal*, Vol. 34, No.3, pp. 555-90.
22. Damanpour, F. and Evan, W. (1984) "Organizational innovation and performance: The problem of organizational lag", *Administrative Science Quarterly*, Vol. 29, No. 3, pp. 392-409.
23. Damanpour, F. and Schneider, M. (2006) "Phases of adoption of innovation in organisations: Effects of environment, organisation and top managers", *British Journal of Management*, Vol. 17, No. 3, pp. 215-236.
24. Dillman, D. (1978) *Mail and Telephone Survey, The Total Design Method*, New York: Wiley-Interscience.
25. Doty, H.D., Glick, W.H. and Huber, G.P. (1993) "Fit equifinality and organisational effectiveness: A test of two configurational theories", *Academy of Management Journal*, Vol. 36, pp. 1196-1250.
26. Dunteman, G. (1989) *Principal Components Analysis*, CA: Sage, Thousand Oaks.
27. Eagly, A.H., Johnson, B.T (1990) "Gender and leadership style: A meta-analysis", *Psychological Bulletin*, Vol. 108, No. 2, pp.233-56.
28. Eisenhardt, K.M. and Martin, J.A. (2000) "Dynamic Capabilities: What Are They?", *Strategic Management Journal*, Vol. 21, pp. 1105 – 1121.
29. Ekvall, G. and Arvonen, J. (1994) "Leadership profiles, situation and effectiveness", *Creativity and Innovation Management*, Vol. 3, No.3, pp. 139-61
30. Elenkov, D.S. (2002) "Effects of leadership on organizational performance in Russian companies", *Journal of Business Research*, Vol. 55, No. 6, pp. 467-80.
31. Escribá-Esteve, A., Sánchez-Peinado, L. and Sánchez-Peinado, E. (2009) "The influence of top management teams in the strategic orientation and performance of small and medium-sized enterprises", *British Journal of Management*, Vol. 20, pp. 581-597.
32. Ettlie, J. E., Bridges, W. P. and O'Keefe, R. D. (1984) "Organization strategy and structural differences for radical versus incremental innovation", *Management Science*, Vol. 30, No. 6, pp. 682-695.
33. Festing, M. and Barzantny, C. (2008), "A comparative approach to performance management in France and Germany: the impact of the European and country-specific environment", *European Journal of International Management*, Vol. 2, No. 2, pp. 208-227.
34. Field, A. P. (2005) *Discovering statistics using SPSS*, 2nd Ed., London: Sage.
35. Finkelstein, S. (1988) *Managerial orientations and organisational outcomes: The moderating roles of managerial discretion and power*, Doctoral Dissertation, New York: Columbia University.
36. Finkelstein, S. and Hambrick, D. (1990) "Top management team tenure and organisational outcomes: The moderating role of managerial discretion", *Administrative Science Quarterly*, Vol. 35, No. 3, pp. 484-503.
37. Finkelstein, S. and Hambrick, D. (1996) *Strategic Leadership: Top Executives and their Effects on Organisations*, Minneapolis, St. Paul: West Publishing Company.
38. Georgas, J. (1993) Management in Greece in D.J. Hickson, Ed. *Management in Western Europe: Society, Culture and Organisations in twelve nations*, Berlin: Walter de Gruyter, pp. 109-125.
39. Giannitsis, T. and Mavri, D. (1993) *Technology Structures and Technology Transfer in the Greek Industry* (in Greek). Athens: Gutenberg.
40. Hair, J., Anderson, R., Tatham, R., Black, W. (1998) *Multivariate Data Analysis*, 5th Ed. Upper Saddle River, NJ: Prentice Hall.
41. Hambrick, D. C. (2007) "Upper echelons theory: An update", *Academy of Management Review*, Vol. 32, pp. 334-343.
42. Hambrick, D. C., Finkelstein, S., and Mooney, A. C. (2005) "Executive job demands: new insights for explaining strategic decisions and leader behaviors", *Academy of Management Review*, Vol. 30, pp. 472-491.
43. Hambrick, D.C. and Mason, P.A. (1984) "The Organisation as a Reflection of its Top Managers", *Academy of Management Review*, Vol. 9, No. 2, pp. 193-206.
44. Hambrick, D.C., Cho, S. and Chen, M. (1996) "The influence of top management team heterogeneity on firm's competitive moves", *Administrative Science Quarterly*, Vol. 41, No.4, pp. 659-684.
45. Hayes, R. and Abernathy, W. (1980) "Managing our way to economic decline", *Harvard Business Review*, Vol. 58, pp. 67-77.
46. Hitt, M. A., Bierman, L., Shimizu, K., and Kochhar, R. (2001) "Direct and moderating effects of human capital on strategy and performance in professional service firms: A resource-based perspective", *Academy of Management Journal*, Vol.44, pp. 13–28.
47. Hitt, M. and Tyler, B. (1991) "Strategic decision models: Integrating different perspectives", *Strategic Management Journal*, Vol. 12, No. 5, pp. 327-351.
48. Hofstede, G. (1980) *Culture's Consequences: International Differences in Work-Related Values*, Beverly Hills, CA: Sage.
49. Hooijberg, R. and DiTomaso, N. (1996) "Leadership in and of Demographically Diverse Organisations", *Leadership Quarterly*, Vol. 7, No. 1, pp. 1-19
50. Hoskisson, R.E., Hitt, M.A., Johnson, R.A., and Grossman, W. (2002) "Conflicting voices: The effects of institutional ownership heterogeneity and internal governance on corporate innovation strategies", *Academy of Management Journal*, Vol. 45, No. 4, pp. 697-716.
51. Howell, J. M. and Higgins, C. A. (1990) "Champions of technological innovation", *Administrative Science Quarterly*, Vol. 35, No. 2, pp. 317-341.
52. Huse, M. (1994) *Innovation in the Norwegian Industry*, NF-report no 19/94
53. Ireland, R.D., Hitt, M.A, Camp, S.M. and Sexton, D.L. (2001) "Integrating entrepreneurship and strategic management actions to create firm wealth", *Academy of Management Executive*, Vol. 15, No. 1, pp. 49-63.
54. Johnson, J., Daily, C. and Ellstrand, A. (1996) "Boards of directors: A review and research agenda", *Journal of Management*, Vol. 22, No. 3, pp. 409-438.
55. Khandwalla, P.N. (1977) *The Design of Organisations*. New York: Harcourt Brace Jovanovich.
56. Kimberly, J.R. and Evanisko, M.J. (1981) "Organisational innovation: The influence of individual, organisational and contextual factors on hospital adoption of technological and administrative innovations", *Academy of Management Journal*, Vol. 2, No. 4, pp. 689-713.

57. Knott, A. M. (2003) "Persistent heterogeneity and sustainable innovation", *Strategic Management Journal*, Vol. 24, No. 8, pp. 687-702.
58. Lawless, M.W. and Anderson, P.C. (1996) "Generational technological change: Effects of innovation and local rivalry on performance", *Academy of Management Journal*, Vol. 39, No. 3, pp. 1185-1217.
59. Lee, S., Wong, O. and Chong, C. (2005) "Human and social capital explanations for R&D outcomes", *IEEE Transactions on Engineering Management*, Vol. 52, No.1, pp. 59-68.
60. Lioukas, S. (2009) *Innovation in Greece Comparative Evaluation with International Indicators, Policies, Strategy Recommendations*, Athens: Kokkalis Foundation.
61. Lumpkin, G. T. and Dess, G. G. (1996) "Clarifying the entrepreneurial orientation construct and linking it to performance", *Academy of Management Review*, Vol. 21, No. 1, pp. 135-172.
62. Makridakis, S., Caloghirou, Y., Papagiannakis, L. and Trivellas, P. (1997) "The dualism of Greek firms and management: Present state and future implications", *European Management Journal*, Vol. 15, No. 4, pp. 381-402.
63. Meyer, A., and Goes, J. (1988) "Organizational assimilation of innovations: A multilevel contextual analysis", *Academy of Management Journal*, Vol. 31, No. 4, pp. 897-923.
64. Michael, J.G. and Hambrick, D.C. (1992) "Diversification posture and top management team characteristics", *Academy of Management Journal*, Vol. 35, pp. 9-37.
65. Miller, C.C., Burke, L.M. and Glick, W.H. (1998) "Cognitive diversity among upper-echelon executives: Implications for strategic decision processes". *Strategic Management Journal*, Vol. 19, No. 1, pp.39-58.
66. Miller, D. and Friesen, P.H. (1982) "Innovation in conservative and entrepreneurial firms: Two models of strategic momentum", *Strategic Management Journal*, Vol. 3, No. 1, pp. 1-25.
67. Mone, M.A., McKinley W. and Barker V.L. (1998) "Organizational decline and innovation: A contingency framework", *Academy of Management Review*, Vol. 23, No. 1, pp. 115 - 132.
68. Morgan R. and Strong, C. (2003) "Business performance and dimensions of strategic orientation", *Journal of Business Research*, Vol. 56, No. 3, pp. 163-176.
69. Morris, M. H. and Jones, F. F. (1994) "Relationships among environmental turbulence, human resource management, and corporate entrepreneurship", *Journal of International Business & Entrepreneurship*, Vol. 3, No. 1, pp. 16-43.
70. Naman, J.L. and Slevin, D.P. (1993) "Entrepreneurship and the concept of fit: A model and empirical tests", *Strategic Management Journal*, Vol. 14, No. 1, pp. 137-153.
71. Nielsen, B. and Nielsen, S. (2010) "The role of top management team international orientation in international strategic decision-making: The choice of foreign direct mode". *Journal of World Business*, Vol. 46, No. 2, 185-193.
72. Nunnally, J.C. (1967) *Psychometric Theory*, New York: McGraw-Hill.
73. O'Brien, J.P. (2003) "The capital structure implications of pursuing a strategy of innovation", *Strategic Management Journal*, Vol. 24, No. 5, pp. 415-431.
74. Papadakis, V. and Bourantas, D. (1998) "The CEO as corporate champion of technological innovation", *Technology Analysis and Strategic Management*, Vol. 10, No. 1, pp. 89-109.
75. Papadakis, V.M, Lioukas, S. and Chambers, D. (1998) "Strategic decision-making processes: The role of management and context", *Strategic Management Journal*, Vol. 19, No. 2, pp. 115-147.
76. Pearce, J. A. and Zahra, S. (1992) "Board composition from strategic contingency perspective", *Journal of Management Studies*, Vol. 29, No. 4, pp. 411-438.
77. Pfeffer, J. (1983) *Organisational Demography*. In *Research in Organisational Behaviour*, Ed. L.L. Cummings and B.M. Staw. Vol. 5, pp. 299-357. Greenwich, Conn: JAI Press.
78. Porter, M. E. (1985) *Competitive Advantage*. New York: Free Press.
79. Romanelli, E. and Tushman, M.L. (1988) Executive Leadership and Organisational Outcomes: An Evolutionary Perspective In D. Hambrick (Eds), *The Executive Effect: Concepts and Methods for Studying Top Managers*, pp. 129-140, JAI Press, Greenwich, CT.
80. Rothwell, R. (1992) "Successful industrial innovation: Critical factors for the 1990s", *R&D Management*, Vol. 22, No. 3, pp. 221-39.
81. Schumpeter, J.A. (1950) *Capitalism socialism and democracy*, New York: Harper and Row.
82. Smith, K.G., Smith, K.A., Ollian, J.D., Sims, H.P. and Scully, J.A. (1994) "Top management team demography and process: The role of social integration and communication", *Administrative Science Quarterly*, Vol. 39, No. 3, pp. 412-38.
83. Snow, C.C., and Hrebiniak, L. (1980) "Strategy, distinctive competence, and organizational performance", *Administrative Science Quarterly*, Vol. 25, pp. 317-35.
84. Tan, J. and Litschert, R. (1994) "Environment-strategy relationship and its performance implications: An empirical study of Chinese electronics industry", *Strategic Management Journal*, Vol. 15, No. 1, pp. 1-20.
85. Tan, J. and Tan, D. (2005) "Environment-strategy co-evolution and co-alignment: A staged model of Chinese SOEs under transition", *Strategic Management Journal*, Vol. 26, No. 2, pp. 141-157.
86. Tornatzky, L., Eveland, J., Boylan, M., Hetzner, W., Johnson, E. Roitman, D. and Schneider, D. (1983) *The process of technological innovation: Reviewing the literature*. Washington, DC: National Science Foundation.
87. Toulouse, J. M. (1980) *L'Entrepreneurship au Quebec*, Montreal: Les Presses H. E. C.
88. Tushman, M. L., and O'Reilly, M. (2002) *Winning through innovation: A practical guide to leading organizational change and renewal*. Boston, Mass.: Harvard Business School Press.
89. Tyler, B.A and Steensma, K. (1998) "The effects of Executives' Experience and Perceptions on their assessment of potential technological alliances", *Strategic Management Journal*, Vol. 19, No. 10, pp. 939-965.
90. Venkatraman, N. and Prescott, J. (1990) "Environment-strategy coalignment: An empirical test

- of its performance Implications”, *Strategic Management Journal*, Vol. 11, No. 1, pp. 1-23.
91. Venkatraman, N. and Ramanujam, V. (1986) “Measurements of business performance in strategy research: A comparison of approaches”, *Academy of Management Review*, Vol. 11, No. 4, pp. 801-814.
 92. Wally, S. and Becerra, M. (2001) “Top management team characteristics and strategic changes in international diversification: The case of U.S. multinationals in the European Community”, *Group and Organization Management*, Vol. 26, pp. 165-188.
 93. Wiersema, M.F. and Bantel, K.A. (1992) “Top management team demography and corporate strategic change”, *Academy of Management Journal*, Vol. 35, No. 1, pp. 91-121.
 94. Wiersema, M.F. and Bantel, K.A. (1993) “Top management team turnover as an adaptation mechanism: The role of the environment”, *Strategic Management Journal*, Vol. 14, No. 7, pp. 485-504.
 95. Wolfe, R.A. (1994) “Organizational innovation: Review, critique and suggested research directions”, *Journal of Management Studies*, Vol. 31, No. 3, pp. 405-31.
 96. Yulk, G. (1999) “An evaluation of conceptual weaknesses in transformational and charismatic leadership theories”, *The Leadership Quarterly*, Vol. 10, No. 2, pp. 285-305.
 97. Zahra, S. A. (1996) “Governance, ownership, and corporate entrepreneurship: The moderating impact of industry technological opportunities”, *Academy of Management Journal*, Vol. 39, No. 6, pp. 1713-1735.
 98. Zahra, S.A. (1991) “Predictors and financial outcomes of corporate entrepreneurship: An exploratory study”, *Journal of Business Venturing*, Vol. 6, No. 4, pp. 259-286.
 99. Zahra, S.A., Neubaum, D.O. and Huse, M. (2000) “Entrepreneurship in medium-size companies: Exploring the effects of ownership and governance systems”, *Journal of Management*, Vol. 26, No. 5, pp. 947-976.
 100. Zona, F., Huse, M., Minichilli, A. and Zattoni, A. (2006) The impact of Board of Directors and CEO’s characteristics on firm innovation. In: *Proceedings from the EURAM Conference*, May 2006, Oslo. Track: Board and Governance, pp. 123-141.