CORPORATE OWNERSHIP & CONTROL

Postal Address:

Postal Box 36
Sumy 40014
Ukraine

Tel: +380-542-611025
Fax: +380-542-611025
e-mail: alex_kostyuk@mail.ru
alex_kostyuk@virtusinterpress.org
www.virtusinterpress.org

Journal Corporate Ownership & Control is published four times a year, in September-November, December-February, March-May and June-August, by Publishing House "Virtus Interpress", Kirova Str. 146/1, office 20, Sumy, 40021, Ukraine.

Information for subscribers: New orders requests should be addressed to the Editor by e-mail. See the section "Subscription details".

Back issues: Single issues are available from the Editor. Details, including prices, are available upon request.

Advertising: For details, please, contact the Editor of the journal.

Corporate Ownership & Control

ISSN 1727-9232 (printed version)
1810-0368 (CD version)
1810-3057 (online version)

Certificate № 7881

КОРПОРАТИВНАЯ СОБСТВЕННОСТЬ И КОНТРОЛЬ

Почтовый адрес редакции:

Почтовый ящик 36
г. Сумы, 40014
Украина

Тел.: 38-542-611025
Факс: 38-542-611025
эл. почта: alex_kostyuk@mail.ru
alex_kostyuk@virtusinterpress.org
www.virtusinterpress.org

Журнал "Корпоративная собственность и контроль" издается четыре раза в год в сентябре, декабре, марте, июне издательским домом Виртус Интерпресс, ул. Кирова 146/1, г. Сумы, 40021, Украина.

Информация для подписчиков: заказ на подписку следует адресовать Редактору журнала по электронной почте.

Отдельные номера: заказ на приобретение отдельных номеров следует направлять Редактору журнала.

Размещение рекламы: за информацией обращайтесь к Редактору.

Корпоративная собственность и контроль

ISSN 1727-9232 (печатная версия)
1810-0368 (версия на компакт-диске)
1810-3057 (электронная версия)

Свидетельство КВ 7881 от 11.09.2003 г.

CORPORATE OWNERSHIP & CONTROL

Volume 9, Issue 2, 2012, Continued - 5

CONTENTS

PERCEPTIONS OF KNOWLEDGE TRANSFER OF FOREIGN AFRICAN DOCTORS PRACTICING IN SOUTH AFRICAN PROVINCIAL HOSPITALS 463

Joly N. Lutakwa, Sanjana Brijball Parumasur

THE DETERMINANTS OF RISK TOLERANCE: A BEHAVIOURAL ANALYSIS 476

Everton Anger Cavalheiro, Kelmara Mendes Vieira, Paulo Sérgio Ceretta

DIFFERENT LEVELS OF CORPORATE GOVERNANCE AND THE OHLSON VALUATION FRAMEWORK: THE CASE OF BRAZIL 486

Talles Vianna Brugni, Alfredo Sarlo Neto, Patrícia Maria Bortolon, Antônio Oscar Santos Góes

INSIDERS OWNERSHIP AND FIRM VALUE IN SOUTHERN EUROPE 498

Rebeca García-Ramos, Myriam García Olalla

A REVIEW OF THE EMPIRICAL DETERMINANTS OF AUDIT DELAY 511

Salem Eghlaiow, Guneratne Wickremasinghe, Stella Sofocleous

PUBLIC-PRIVATE PARTNERSHIP: WORLD PRACTICE AND UKRAINIAN PERSPECTIVES 515

Larysa Hrytsenko

AN ANALYSIS OF CAPITAL BUDGETING METHODS, THE COST OF CAPITAL AND DECISION-MAKERS IN LISTED SOUTH AFRICAN FIRMS 519

John H Hall

CHARTERED ACCOUNTANT AND PUBLIC ACCOUNTING EXPERIENCE NON-EXECUTIVE DIRECTORS ON UK BOARDS: SIGNALS OF QUALITY EARNINGS REPORTING TO INVESTORS PROMPTING PRICE-TO-EARNINGS GROWTH 530

Kevin A. Diehl

PERCEPTIONS OF KNOWLEDGE TRANSFER OF FOREIGN AFRICAN DOCTORS PRACTICING IN SOUTH AFRICAN PROVINCIAL HOSPITALS

Joly N. Lutakwa, Sanjana Brijball Parumasur*

Abstract

This study assesses the perceptions of knowledge transfer of foreign African doctors, practicing in South African provincial hospitals relating to the process, barriers, channels and importance of knowledge transfer practices in the organization. A sample of 62 foreign African doctors practicing in South African provincial hospitals was drawn using snowball sampling. Data was collected using a self-developed questionnaire whose psychometric properties were statistically determined. Data was analyzed using descriptive and inferential statistics. The results indicate that foreign African doctors believe that in their hospital environments there are different barriers to knowledge transfer. Whilst the biographical profiles of these doctors do not significantly influence their perceptions of knowledge transfer, the latter is significantly impacted upon by the importance given to knowledge transfer practices in the organization and the different barriers to knowledge transfer. Strategies for enhancing knowledge sharing are recommended.

Keywords: Knowledge Transfer, Knowledge Transfer Process, Importance of Knowledge Transfer Practices, Barriers to Knowledge Transfer, Channels of Knowledge Transfer

*Corresponding author; School of Management, Faculty of Management Studies, University of KwaZulu-Natal (Westville Campus), Private Bag X54001, Durban, 4000, South Africa
Tel: +27 31 260 7176
Email: brijballs@ukzn.ac.za

Introduction

The brain drain in South Africa has perpetuated the shortage of medical doctors. The saving grace for the South African citizenship has been the continuous migration of medical doctors from developing and developed countries into the country. The true benefit, however, can only be realized if local and foreign doctors are able to effectively share knowledge with one another. In order to replace doctors that have emigrated and ensure the smooth running of public hospitals in South Africa, the country is relying on the remaining doctors' willingness to transfer their skills and competences to their fellow African foreign doctors who are willing to practice in South African public hospitals. This will enable the local hospitals to lever their core competencies and gain competitive and strategic advantages (Gold, Malthotra & Segars, 2001; Walczak, 2005).

Hence, local hospitals wanting to capitalize effectively on the influx of doctors from other African countries must be able to overcome the challenge of transferring knowledge to these doctors. Whether in the public or private sector, today's competitive business environment requires members of an organization to share knowledge with one another (Nevis, Anthony & Gould, 1995; Davenport & Prusak, 1998; Chow, Deng & Ho, 2000). Many organizations have concluded that effective knowledge sharing is the crucial way to lever their core competencies and gain competitive advantage (Gold, Malthotra & Segars, 2001). In this context, knowledge identification, sharing and application within and beyond the local provincial hospitals becomes crucial for success.

Based on the views of a select number of African foreign doctors trained in other African countries and currently practicing in South African public hospitals, this study investigates their perceptions of knowledge transfer relating to the knowledge transfer process, barriers, channels and importance of knowledge transfer practices and, the influence of their biographical profiles on these perceptions.

Knowledge transfer as a central component of knowledge management

Davenport and Prusak (1998) classify knowledge management into three main components, namely, knowledge production, knowledge codification and coordination, and knowledge transfer. Among these three, knowledge transfer is considered to be the central aspect as it enables an organization to distribute information, which is its most valuable

resource, to its employees. Knowledge transfer benefits the organization as it enables employees to take informed decisions (Davenport & Prusak, 1998). As opposed to material assets that shrink as they are utilized, knowledge resources are improved as they are used. This implies that sharing ideas/knowledge within the organization will allow the organization to increase its own knowledge without the additional costs associated with creating, codifying, or capturing more knowledge (Catarino, 2009). Knowledge transfer is believed to be a wider concept than technology transfer as it includes other transfer channels, such as enhancing the potential of workers. In today's information economy, knowledge is recognised as an organization's competitive asset (Teece, 1998). Therefore, knowledge transfer has become a very important element in determining the strength of an organization.

Knowledge transfer comprises of a range of activities that aim to accumulate and convey knowledge (either explicit, such as in patents or tacit such as know-how), skills and competence from those who create them to those who will convert them into profitable results. By allowing a two-way process of transferring ideas, research, results, experience, or skills between two different parties, knowledge transfer enables the organization to create new knowledge and to make use thereof (RCUK, 2006).

The literature divides knowledge transfer into tacit and explicit knowledge. Researchers agree that explicit knowledge can pass more easily from one person to another than tacit knowledge. However, an organization that needs to easily transfer tacit knowledge must ensure the development of individuals'/groups' tacit knowledge. The development of individual/group knowledge will enable the individual/group to understand themselves. This understanding, in turn, is considered to be an important aspect of tacit knowledge transfer. Both knowledge giver and receiver need to understand their knowledge well, understand themselves as unique individuals and carefully assess their environment, and one another's values and beliefs before tacit and explicit knowledge can be transferred. The implication for South African provincial hospitals is that transferring knowledge to African foreign doctors practicing in these hospitals is a basic step for sustaining competitive advantage. However, success in knowledge transfer depends on employees' absorption capacities, the organizational learning climate, and the willingness of South African local doctors in these organizations to transfer knowledge (Ladd & Herminges, 2003).

Benefits of knowledge transfer

As the above analyses demonstrate, the term "knowledge" deals with certain activities that attempt to pass on knowledge from one unit(s) of the organization to another unit(s). Knowledge transfer provides a cheaper substitute for the conception and codification of new knowledge. This is true given that the more people share their knowledge or their effective ways of doing an organizational task, the more likely they will be to promote the organization's performance levels. This leads to an improvement in the organization's overall performance without having to invest more energy or money to create, codify, or capture new knowledge (Catarino, 2009). By ensuring that staff across the organization possesses the required skills and knowledge to effectively perform their job, the organization is able to be successful. Hence, effective knowledge transfer constitutes a key mechanism for organizational success. Furthermore, for an organization, the transfer of practicable knowledge will support the initiative to commonly seek solutions to problems encountered when working with one another. Transferring knowledge among organizational departments and people can produce considerable learning profit and significantly enhance the organization's productivity and boost its chance of surviving in this competitive and ever changing environment (Argote, 1999).

The key dimensions of knowledge transfer

This study assesses the perceptions of knowledge transfer of foreign African doctors, practicing in South African provincial hospitals relating to four key dimensions, namely, knowledge transfer process, importance of knowledge transfer practices in the organization, different barriers to knowledge transfer and channels of knowledge transfer.

Knowledge transfer process

Within the organizational setting, knowledge transfer can occur at different levels of the organization including during day-to-day organizational activities, between the departments of the same organization as well as between allied organizations that engage in joint venture relationships or between independent organizations. Knowledge transfer within and among allied organizations can be perceived as a dynamic practice that includes numerous steps from the individual(s) or department(s) starting with spotting the needed knowledge to pass on and ending with the understanding of how this knowledge is going to be used by other individual(s)/department(s) who receive it (Minbaeva, Pedersen, Bjorkman, Frey & Park, 2003). An increase in the amount of knowledge transferred within an organization has the potential to save an organization money while positioning it to face future challenges more effectively (Catarino, 2009). Undoubtedly, knowledge is a crucial resource of business, which when shared and transferred effectively between individuals/units could enable the organization to gain competitive and strategic

advantages (Walczak, 2005). The implication is that the process of knowledge transfers must be actively facilitated across the organization. This means that employees must be:

- free to express a lot of opinions and thinking towards discussion topics in organizational meetings,
- encouraged to transfer professional knowledge, experience and expertise to others,
- motivated to transfer methodologies of task performance to others,
- able to modify their own work activities to incorporate what they learn from others for better work performance,
- supported in making significant improvements in their work performance through knowledge gained from colleagues,
- encouraged to continuously adapt work methods to make them more effective, and thereby achieve optimum levels of performance.

Importance of knowledge transfer practices in the organization

Some knowledge transfer practices can be useful in both allied people/organizations and independent people/organizations and if well dealt with, knowledge transfer can give significant economic payback and competitive advantages for organizations/people engaged in it (Argote, 1999). Organizations that place a high level of importance on knowledge transfer within the organization, intentionally allocate fixed time for knowledge transfer, for example, setting one hour per week where people within the department come together to exchange their knowledge and work experience. Such organizations fully acknowledge that their competitive advantages are not only dependent on their possession of knowledge but also on its capability to exploit the knowledge resources effectively (Nelson & Winter, 1982). Organizations that recognize the importance of knowledge transfer practices implement them within and across the organization in order to:

- Improve the competitive advantage of the organization.
- Help integrate knowledge within and across the organization.
- Improve the capture and use of knowledge from sources outside the organization.
- Increase efficiency by using knowledge to improve work performance.
- Increase staff acceptance of innovations.
- Improve staff retention.
- Ease collaborative work of project or teams that are separated (that is, at different departments).
- Identify and/or protect strategic knowledge present in the organization.
- Promote the transfer of knowledge to other staff across the organization.

Different barriers to knowledge transfer

Although organizations recognise the importance of transferring knowledge, numerous challenges such as funding, the organizational culture and climate, interpersonal relationships, language and communication and lack of time pose as barriers to knowledge transfer. A lack of incentives and motivation for those who have knowledge to pass on to others who require it is also a well known barrier to knowledge transfer. Most organizations do not pay their staff proportionately to the work done in solving problems or transferring knowledge to new employees or their co-worker(s). In their attempt to enhance knowledge transfer within the organization, Orvill & Hicks (2000) believe that genuine and concrete incentives should be offered to people who share their knowledge. Another obstacle to successful knowledge transfer is dealing with ambiguity. This refers to the fact that there are certain difficulties associated with transferring one's knowledge/know-how. Many people do not know how to impart a detailed and specific set of processes required to achieve a particular outcome.

Knowledge transfer is difficult, especially because for most people knowledge is understood in its original context (Zollo & Winter, 2002). It is hard to recreate the original context and this obstructs knowledge transfer. In addition, people take most of their knowledge for granted and there are certain procedures that they will not mention when transferring knowledge because they assume that the other person knows it; this obstructs knowledge transfer between individuals. This can be understood using Peter Senge's (1990) concept of the Mental Model, that postulates that individual knowledge (understanding) is determined by their own experience, education and training. Depending on an individual's background he/she will understand certain things in certain ways. This will influence the way people perform certain actions or tasks, and they might not think it necessary to share this information with others at the point of knowledge transfer.

Furthermore, Husted and Michailova (2002) list six reasons behind knowledge transfer resentment:

- The possibility of losing the worthiness of their own knowledge, the power associated with it, and preserving oneself from losing the brand that makes him or her more attractive in the job market;
- When people see their knowledge as the fruits of their hard work it results in strong feelings of personal ownership that one will protect at any cost.
- Lack of eagerness to devote their time to knowledge sharing. Lack of commitment in knowledge sharing on the part of individuals who

possess knowledge, since the individual does not see the benefit that he/she will get from sharing his/her knowledge. The knowledge holder may be reserved about sharing his/her knowledge with someone he/she perceives to be lazy or who is not making much effort to learn or to develop him/herself.

- Avoidance of exposure. Individuals may be unenthusiastic about sharing their knowledge for fear that by sharing their knowledge other people might discover inadequacies in their knowledge.
- Individuals are not sure how the person to whom they are transferring their knowledge will receive and interpret that knowledge.
- Organizational promotions are usually associated with individual skills; hence, some individuals resist sharing their expertise for fear of losing the benefits and authority linked with their knowledge.

Other factors that hinder knowledge transfer include ineffective communication, different frames of reference, lack of trust, status and rewards given to knowledge owners, intolerance for mistakes or need for help, not well defined/identified persons who have knowledge that is needed, little commitment of head of department to the knowledge transfer process, the influence of individual culture, social power relations, resistance to change and lack of time.

In order to overcome barriers to knowledge transfer, it is imperative to create and shape an organization setting where members are not afraid to exchange their knowledge with one another in its approach to grow its business and simultaneously stay ahead of their competition. This is true because knowledge exchange among individuals with different capabilities is believed to be at the heart of the continuous knowledge innovation as it is a prerequisite step for knowledge transfer (Nonaka & Takeuchi, 1995).

Channels of knowledge transfer

Numerous channels of knowledge transfer exist, for example, staff induction programmes, professional development programmes, social networks, reflective practices, organizational communities, project or collaborative work teams. In addition, people gain expertise as a result of teamwork and collaboration. The day-to-day sharing of know-how, knowledge and expertise may also be transferred through mentoring, training and discussions or face-to-face interactions.

RESEARCH DESIGN

Respondents

The population comprised of foreign African doctors who obtained their degrees at medical schools outside South Africa and are living and practicing in South Africa. The population size is estimated at 5277 foreign qualifying doctors. However, it was not possible to determine exactly how many were from overseas and how many were from other African countries. Hence, the exact population size of foreign, African doctors cannot be deduced. Roscoe (1975), cited in Sekaran (2003), advises that as rule of thumb a minimum sample size of 30 is acceptable for statistical analysis. In line with this, the sample size of 62 relevant respondents is viewed as being adequate and appropriate for this study.

In this research, a non-probability sampling technique called snowball sampling was chosen. This was due to the fact that, firstly, the known number of the population of foreign African doctors in South Africa has not been determined. Secondly, this population is not easily accessible and is spread all over the country. The researcher was not able to access lists of foreign African doctors practicing in South African provincial hospitals due to the lack of authorisation from the South African Department of Health. This meant that the researcher had to choose a sample that would be representative of doctors from different parts of the African continent practicing in South African provincial hospitals and draw the sample based on referrals or links. First, the researcher obtained a pool of potential participants from diverse contacts who represent people from different African countries and meet the criteria for inclusion in the study. They were then asked to recommend others who they may know who also meet the criteria. The referral process continued until the researcher was continuously being referred to the same sample subjects. A sample of 62 foreign doctors was thus drawn. The adequacy of the sample was determined using the Kaiser-Meyer-Olkin Measure of Sampling Adequacy (0.450) and the Barlet's Test of Spherecity (1923.330, $p = 0.000$), which respectively indicated suitability and significance. The results indicate that the normality and homoscedasticity preconditions are satisfied. In terms of the composition, 75.8% were male doctors and 24.2% were female, the majority were between the ages of 31 and 50 years (85.5%) with almost equivalent occupational tenure representation (1-3 years: 17.7%, 4-6 years: 25.8%, 7-9 years: 25.8%, 10 years and over: 30.6%). In terms of tenure in South Africa, the majority (50%) were in service for 1-3 years followed by 4.6 years (35.5%), thereby indicating that the majority of the foreign doctors sampled were in service for 1-6 years in South Africa. Whilst 30.6% of the doctors had work contract permits for 2 years and above, 19.4% had permanent work permits. The doctors varied in terms of country of graduation (such as Democratic Republic of Congo, Rwanda, Tanzania, Nigeria, Zimbabwe, Botswana) and worked in different departments/units (acute assessment, emergency, intensive care, neonatal, paediatric).

Measuring Instrument

Data was collected using a self-developed, pre-coded, self-administered questionnaire consisting of two sections. The first section (Section A) related to biographical information (gender, age, occupational tenure, tenure in South Africa, nature of work permit, country of graduation and deparment/unit of employment. The second section (Section B) comprised of 16 items relating to the process, barriers, channels and importance of knowledge transfer practices in the organization. Whilst Section A was nominally scaled with precoded option categories, Section B required the respondents to rate each item using a Likert Scale ranging from strongly disagree (1) to strongly agree (5). The questionnaire was formulated on the basis of identifying recurring themes that surfaced while conducting the literature review. This ensured face, content and construct validity. Furthermore, in-house pretesting was adopted to assess the suitability of the instrument. Pilot testing was also carried out using 8 subjects, selected using the same procedures and protocols adopted for the larger sample. The feedback from the pilot testing enabled the rephrasing of one ambiguous question and contributed to ensuring that the final questionnaire was appropriate in terms of relevance and construction.

Research procedure

The research was only conducted after ethical clearance was obtained for the study and upon completion of the pilot study.

Measures/statistical analysis of the questionnaire

The validity of the questionnaire was assessed using Factor Analysis. A principal component analysis was used to extract initial factors and an iterated principal factor analysis was performed using SPSS with an Orthogonal Varimax Rotation. In terms of the validity, four key dimensions of knowledge transfer with latent roots greater than unity (Eigenvalues: 6.038, 5.525, 4.936, 3.264) were identified. The items were also reflected as having a very high level of internal consistency and reliability, with the Cronbach's Coefficient Alpha being 0.879 with item reliabilities ranging from 0.871 to 0.883.

Administration of the measuring instrument

The questionnaires were sent out to the participants both personally by the researcher and by e-mail. The first round of participants were known to the researcher and were asked to provide names, phone numbers, and e-mail addresses of other possible participants. The researcher sent information about the study to these candidates by e-mail or by hand, depending on where about the candidate was located and the participants returned the completed questionnaires to the researcher by e-mail or by hand. Informed consent was obtained by means of an information leaflet and an authorisation letter that accompanied the questionnaire. The responders received a phone call a week letter after receiving the questionnaire to return it, if they had not already done so. All participation was voluntary.

Statistical analysis of the data

Descriptive statistics (means, standard deviations) and inferential statistics (t-test, Analysis of Variance, multiple regression) were used to evaluate the objectives and hypothesis of the study.

RESULTS

Descriptive statistics

The perceptions of respondents regarding knowledge transfer was assessed by asking respondents to respond to various items using a 1 to 5 point Likert scale. The results were processed using descriptive statistics (Table 1).

Table 1. Descriptive statistics: key dimensions of knowledge transfer

Dimension	Mean	95% Confidence Interval		Variance	Std. dev.	Min.	Max.
		Lower Bound	Upper Bound				
Knowledge transfer process	3.70	3.57	3.84	0.289	0.538	2	5
Importance of knowledge transfer practices in the organization	3.37	3.16	3.58	0.683	0.827	1	5
Different barriers to knowledge transfer	3.74	3.58	3.91	0.416	0.645	1	5
Channel of knowledge transfer	3.68	3.53	3.84	0.370	0.608	1	5

Table 1 indicates that the medical doctors perceive the dimensions of knowledge transfer differently, which in decreasingly level in terms of mean score values are: different barriers to knowledge

transfer (Mean = 3.74), the knowledge transfer process (Mean = 3.70), the channel of knowledge transfer process (Mean = 3.68) and lastly, the importance of knowledge transfer practices in the organization (Mean = 3.37). A comparison of the mean score values against a maximum attainable score of 5 indicates that there is room for improvement in each of the sub-dimensions of knowledge transfer. In order to gain further insight into these sub-dimensions of knowledge transfer, frequency analyses were conducted.

With regard to the knowledge transfer process, 89.2% of the respondents have a positive perception as they either agreed or strongly agreed that they have modified their own work activities to incorporate what they have learnt from others to better their performance. In addition, 84.9% of respondents also agreed or strongly agreed that they have made significant improvements in their work performance through knowledge gained from their colleagues. Furthermore, 77.4% of respondents agreed or strongly agreed that their method of work performance is more effective as a result of their experience gained in transferring knowledge. However, 22.6% of the respondents indicate that they do not express their opinions and thinking during discussions in meetings.

With regard to the importance of knowledge transfer practices in the organization, 74.2% of participants positively agreed that the overall transfer of knowledge within the organization will increase efficiency by using knowledge to improve work performance, as opposed to 9.7% of people who disagreed with this statement.

Regarding different barriers to knowledge transfer, 74.2% of respondents positively agreed that the intolerance for mistakes or need for help do constitute barriers for knowledge transfer, as opposed to 13.1% of respondents who disagreed with the statement.

With regard to the channels of knowledge transfer, 75% of respondents positively perceive the induction programme to be a most useful channel to transfer knowledge. In addition, 83.9% of the respondents also positively perceive the professional development programme to be a useful channel of knowledge transfer as opposed to 9.7% who did not believe so. Furthermore, a significant percentage of the respondents also had a positive perception about reflective practices (80.7%), project or collaborative work teams (77.4%) and networking (75%) as channels of knowledge transfer.

Inferential statistics

The influence of the biographical variables (gender, age, length of service as a medical doctor, country of graduation, length of service in South Africa, Department, length of working in own country, nature of work permit) on the dimensions of knowledge transfer respectively were evaluated using tests of differences (t-test and ANOVA).

Hypotheses 1

There is a significant difference in the perception of employees varying in biographical profiles (gender, age, length of service as a medical doctor, length of service in South Africa, Department, nature of work permit) regarding the dimensions of knowledge transfer (knowledge transfer process, importance of knowledge transfer practices in the organization, different barriers to knowledge transfer, and channels of knowledge transfer) respectively (Table 2 and Table 3).

Table 2. T-test: dimensions of knowledge transfer and gender

Knowledge transfer categories	Gender	N	Mean	Std. Deviation	t	df	p
Knowledge transfer process	Female	15	3.79	0.584			
	Male	47	3.68	0.526	0.687	21.739	0.499
Importance of knowledge transfer practices in the organization	Female	15	3.28	0.704			
	Male	47	3.40	0.867	-0.522	28.793	0.605
Different barriers to knowledge transfer	Female	15	3.57	0.725			
	Male	47	3.80	0.616	-1.114	20.854	0.278
Channels of knowledge transfer	Female	15	3.59	0.368			
	Male	47	3.71	0.668	-0.836	44.017	0.408

Table 3. Anova: dimensions of knowledge transfer and each biographical variable

Dimension	Age		Occupational tenure		Tenure in South Africa		Department or Unit		Nature of work permit	
	F	p	F	p	F	p	F	p	F	p
Knowledge transfer process	2.124	0.107	0.277	0.842	2.103	0.092	1.207	0.318	0.738	0.534
Importance of knowledge transfer practices in the organization	0.143	0.934	1.621	0.194	1.745	0.153	0.476	0.792	0.615	0.608
Different barriers to knowledge transfer	0.276	0.842	1.619	0.195	0.869	0.488	0.867	0.509	0.763	0.519
Channels of knowledge transfer	0.549	0.651	0.607	0.613	1.563	0.197	1.099	0.371	1.559	0.209

Tables 2 and 3 reflect that there is no significant difference in the perception of employees varying in biographical profiles (gender, age, length of service as a medical doctor, length of service in South Africa, Department, nature of work permit) regarding the dimensions of knowledge transfer (knowledge transfer process, importance of knowledge transfer practices in the organization, different barriers to knowledge transfer, and channels of knowledge transfer) respectively. Hence, hypothesis 1 may be rejected.

Hypothesis 2

The four dimensions of knowledge transfer (knowledge transfer process, importance of knowledge transfer practices in the organization, different barriers to knowledge transfer, channels of knowledge transfer) significantly account for the variance in determining knowledge transfer (Table 4).

Table 4. Multiple regression: knowledge transfer and its dimensions

Model	R	R Squares	Adjusted R Square	Std. Error of the Estimate
1	0.771	0.594	0.587	0.281
2	0.898	0.806	0.799	0.196
3	0.960	0.921	0.917	0.126
4	1.000	1.000	1.000	0.000

Coefficient					
Model	Unstandardised coefficients		Standardised Coefficients	t	Sig
	B	Std. Error	Beta		
4 (constant)	0.000	0.000		0.000	1.000
Importance of knowledge transfer practices in the orgisation	0.250	0.000	0.473	2.039E8	0.000
Knowledge transfer process	0.250	0.000	0.308	1.370E8	0.000
Different barriers to knowledge transfer	0.250	0.000	0.369	1.821E8	0.000
Channels of knowledge transfer	0.250	0.000	0.348	1.418E8	0.000

Table 4 indicates that the four dimensions of knowledge transfer (importance of knowledge transfer practices in the organization, knowledge transfer process, different barriers to knowledge transfer, channels of knowledge transfer) significantly account for 100% of variance in determining knowledge transfer. Beta analyses were conducted in order to determine the extent to which these four dimensions impact on knowledge transfer. The result of the Beta analyses indicate that the four dimensions impact on knowledge transfer in varying degrees which in decreasing level of impact are:

- Importance of knowledge transfer practices in the organization (Beta = 0.473)
- Different barriers to knowledge transfer (Beta = 0.369)
- Channels of knowledge transfer (Beta = 0.348)
- Knowledge transfer process (Beta = 0.308)

DISCUSSION OF RESULTS

Dimensions of Knowledge Transfer

The results indicate that the African foreign doctors perceive the dimensions of knowledge transfer differently, which in decreasingly level of impact, based on beta values, relate to the importance of knowledge transfer practices in the organization (Beta = 0.473), different barriers to knowledge transfer (Beta = 0.369), channels of knowledge transfer (Beta = 0.348) and knowledge transfer process (Beta = 0.308):

Importance of knowledge transfer practices in the organization

The importance of knowledge transfer practices in the organization was found to have the greatest influence on knowledge transfer (Beta = 0.473). Informational resources take on particular importance for the transfer of good practices. Lucas and Ogilvie (2006) conclude that behavioural-based incentives are designed to motivate employees to share information with colleagues about practices that can be adapted to their needs. Similarly, Ndlela and du Toit (2001) agree that knowledge transfer practices can bring a great deal of benefits to an organization. They pointed out that through sharing and capturing of experiences and information, a better exploitation and collection of knowledge of individuals, organizations and professional bodies can be accomplished. By sharing information and knowledge, individual employees can learn from the work experience and know-how of others in the organization (Kang, Kim & Chang, 2008). In addition, to this Kang et al. (2008) maintain that the sharing of knowledge should not only be viewed as a cost effective learning strategy but can also validate individual employees' accumulated knowledge.

Different barriers to knowledge transfer

Having the second largest impact on knowledge transfer, based on beta values, is different barriers to knowledge transfer (Beta = 0.369). Researchers indicate that, knowledge sharing is influenced by factors both at the individual and organizational level (Szulanski, 1995, 1996; Jensen & Szulanski, 2007; Bratianu & Orzea, 2010). At the individual level, one of the most important factors affecting the knowledge transfer process is trust. Most people are unlikely to share their knowledge and experience without a feeling of trust. People must have the feeling of trust that others will not misuse their knowledge, and that the information that one receives is accurate and credible due to the source of information. The level of trust that exists between the organization, its subunits, and its employees greatly influences the amount of knowledge that flows both between individuals and from individuals into the firm's databases, best practices achieved and other records (De Long & Fahey, 2000).

De Long and Fahey (2000) also suggested that culture influences behaviour central to knowledge creation, sharing, and use in several ways. Culture shapes assumptions about what knowledge is worth exchanging and also defines relationships between individual and organizational knowledge, determining who is expected to control specific knowledge, as well as who must share it. Also, culture creates the context for social interaction that determines how knowledge will be shared in particular situations shaping the processes by which new knowledge is created, legitimated, and distributed in organizations. Rigid, formal and command-and-control structures, for example, can promote functional efficiency at the expense of collaborative and innovative activities.

Szulanski (2000) agreed that the incapacity of the organization to identify key people who possess the knowledge needed to be transferred may also pose as a barrier to knowledge transfer. This happens because not knowing those who have the 'useful knowledge' makes it impossible for those who could benefit from it to access it.

In addition, Szulanski (2000) identifies lack of money, time, and management resources to pursue and study the knowledge in enough detail to make it useful as barriers to knowledge transfer. In a study undergone in eight companies, Szulanski (1995, 1996) analysed the internal stickiness of knowledge transfer. Stickiness refers to the difficulty of transferring knowledge. The study revealed that the most important barriers to the internal transfer of knowledge within a company are recipient's lack of absorptive capacity, causal ambiguity, and arduous relationship (Szulanski, 1995, 1996).

Furthermore, lack of interpersonal relationships is also a barrier to knowledge transfer because people absorb knowledge and practice from other people they know, respect, and often like. If two managers have no personal bond, no tie or link which pre-establishes trust, they are less likely to incorporate each other's experiences into their own work.

Lastly, lack of motivation has also been viewed as a barrier to knowledge transfer as people may not perceive a clear business reason for pursuing the transfer of knowledge of best practices if they lack motivation.

Channels of knowledge transfer practices

The channels of knowledge transfer practices in the organization were perceived as being third out of the four dimensions influencing knowledge transfer (Beta = 0.348). A distinction, which is often applied regarding knowledge transfer channels, is between informal and formal. The communality between informal and formal channels is that they both collaborate to allow individuals or organization(s) involved to share task-specific knowledge with a partner. Accordingly, research revealed that formal channels, such as consultancy, joint research projects, community of practice (Wenger, 1999), social network, project/collaborative teams, mentoring, training, collaborative research and development are among the most used channels for knowledge transfer with public research institutes and universities in the chemical industry (Arundel & Geuna, 2004) and has the potential to unite practitioners by shared practice and a shared sense of belonging (Kislov, Harvey & Walshe, 2011).

The Informal channels include informal interactions, observation, informal seminar,

communication process (Alavi & Leidner, 2001) and informal network (Johnson, 1992). In some cases, the informal channels of knowledge transfer allow knowledge transfer to occur when one is performing his his/her everyday work. Informal contacts are mainly considered to be useful for transferring knowledge between individuals. However, organizations still prefer a formal collaboration to prevent unwanted leaking or infiltration of firm specific knowledge/information. Furthermore, researchers have revealed that the informal channels are relatively simple, uncomplicated and more flexible (Hakansson & Johanson, 1988). Von Hippel (1994) found that informal know-how trading is a voluntary exchange of technical information and by nature it is a process which initiates technological spill-overs.

Knowledge transfer process

Knowledge transfer process was perceived as having the least, though significant, influence on knowledge transfer (Beta = 0.308). The knowledge transfer process involves the transmission of knowledge from the initial location to where it is needed and is applied. It is considered as an important facet of knowledge management. Some researchers have argued that knowledge transfer process provides a firm basis for developing a sustainable competitive edge especially in an unstable business environment (Argote & Ingram, 2000). Similarly, Davenport and Prusak (2000) suggested that the knowledge transfer process involves two actions: (i) transmission of knowledge to potential recipient; and (ii) absorption of the knowledge by that recipient that could eventually lead to changes in behaviour or the development of new knowledge. Knowledge processes (knowledge management activities) are considered as a structured coordination for managing knowledge effectively (Gold, Malthotra & Segars, 2001). Typically, knowledge processes include activities such as creation, sharing, storage, and usage. Knowledge processes represent the basic operations of knowledge, and enablers provide the infrastructure necessary for the organization to increase the efficiency of knowledge processes. Several empirical researchers investigated the relationship between knowledge characteristic (tacit versus explicit) and knowledge transfer processes, finding that the higher the tacit level of the knowledge, the more difficult the knowledge transfer process is (Simonin, 1999). Several contextual factors including the organizational culture, organizational structure, incentive system and information technology are seen as factors that most influence the knowledge transfer process (Al-Alawi, Al-Morzooqi & Mohammed, 2007; Cabrera, Collins & Salgado, 2006; Chen & Huang, 2007).

Impact of biographical variables on knowledge transfer

Gender

The results (Table 2) indicate that indicate that gender does not significantly influence foreign African doctors' perceptions of knowledge transfer. This result is in line with previous studies by Ojha (2005) who studied the impact of team demography on knowledge sharing in software project teams and Watson and Hewett (2006) who did a multi-theorical model of knowledge transfer in organizations and reported that gender had no significant impact on knowledge transfer. However, a study by Miller and Karakowsky (2005) indicated that there are significant differences between men and women in their effort to seek knowledge. Also, women gained more benefits from knowledge sharing (Irmer, Bordia & Karakowsks, 2002). A study by Lin (2006) indicated that women are more willing to share knowledge because they are more sensitive to instrumental ties and have a need to overcome traditional occupational challenges. Pangil and Nasrudin (2008) found that there is a significant difference between men and women in terms of tacit knowledge sharing behaviour.

Age

The results of the study (Table 3) indicate that age does not significantly influence foreign African doctors' perceptions of knowledge transfer. These findings are supported by that of Ojha (2005) and Watson and Hewett (2006) who showed that age does not affect knowledge sharing behaviour. However, Reige (2005) suggested that difference of age could be also a potential factor for knowledge sharing behaviour. Furthermore, Gumus (2007) found that there were significant differences between age groups concerning knowledge collecting and not knowledge donating; people with the age between 36 to 40 are poor on collecting knowledge. A study by Keyes (2008) uncovered a more definite relationship between age and knowledge sharing.

Length of service

The results of the study (Table 3) indicate that tenure does not significantly influence foreign African doctors' perceptions of knowledge transfer. However, contrary to our finding, in a research study undertaken by Chow, Harrison and McKinnon & Wu (1999) where the authors compared Chinese to the Anglo American culture, they established that employees with long work experience (7 years and over) displayed an unwillingness to share knowledge by not sharing their own errors made in an organization. The difference in the results obtained in the current study regarding length of service and that

of Chow et al. (1999) may be attributed to the fact that Chow et al. (1999) compared the Chinese and Anglo American cultures which is different from the African culture in this study.

Length of service in South Africa/Departments/Types of work permits

The results of the study (Table 5.7) indicates that there is no significant difference in the perceptions of medical doctors varying in the remaining demographic variables (length of service in south Africa, departments, types of work permits) regarding the dimensions of knowledge transfer. Due to the paucity of research that specifically assesses the influence of these demographic variables comparative findings could not be cited.

RECOMMENDATIONS

From the findings of the research carried out among African foreign doctors practicing in South African provincial hospitals, the following recommendations can be made:

Dimensions of knowledge transfer

In order to overcome different barriers to knowledge transfer:

- It is imperative to create and nurture an environment of **trust** among employees and between employees and management within the provincial hospitals; as trust is believed to be the emotional glue that binds followers and leaders together (Bennis & Nanus, 1985). In order to build trust among doctors in South African provincial hospitals an environment of fairness and consistency, mutual respect, accountability, cooperation and honesty with open communication must be created and shaped.
- It is also important to create a supportive culture that is collaborative, open and innovative; hence, conducive to knowledge sharing. To reinforce this culture, rewarding and recognising systems that support knowledge sharing is imperative. Strategies include rewarding group achievement rather than individual achievement, encouraging team-work, recognising individuals who share knowledge, encouraging social networking (community of practice, professional development programmes, social networks, reflective practices, organizational communities, project collaborative teams, promoting mentoring programmes, training, and discussion rooms). Introducing these formal and informal professional networks in the organization will encourage individual doctors to exchange their experiences, and knowledge. Overall, the adoption of these collaborative cultures will help the provincial hospitals to improve cooperation based on dialogue and mutual respect among peers (Ahmed & Hafez, 2010) and will also enable individual employees to learn from each other. It will also foster an open and innovative culture within the organization because an individual who is able to work well with others is essential for such a culture. The more interaction an individual has with peers and colleagues, the more the level of the interaction will improve.
- There is a need to locate subject-matter experts within the hospitals. The hospitals should also implement 'skills databases' in order to 'identify people with the right knowledge'. Skills databases will depend on individual doctors manually updating their profiles as their competencies and job functions change. A database administrator needs to be assigned to continually update the database as new employees are hired and existing employees leave or move within the organization. A knowledge directory will enable employees to locate subject-matter experts in order to share tacit knowledge, and their experiences, 'know-how and insights. After a user specifies the expertise she/he seeks, a knowledge directory returns a list of ranked subject-matter experts and their contact information based on the explicit knowledge assets those employees contribute to the knowledge management system. While a knowledge directory should eliminate the bulk of manual updating, it should also provide a way for administrators to modify the results returned.
- Time, money and management resources and support are success factors in knowledge management. It is, therefore, important for the hospitals to set aside periods of the workday for learning and practicing knowledge management. Employees with time for knowledge management also need coaching.
- The provincial hospitals should introduce an incentive system to motivate and encourage employees to share knowledge. This could be either extrinsically motivated, that is, achieve goals that are apart from the work itself, or intrinsically motivated, that is, gain personal satisfaction from doing the job (Amabile, 1997). Increased salaries, bonuses and promotions are included in the former, while organizations apply more "soft" instruments like acknowledgement and personal development to the latter. Researchers like Osterloh and Frey (2000) and Mudambi and Navarra (2004) note the importance of intrinsic motivation mechanisms to support knowledge creation and sharing in an organization. Neither incentives nor the type of incentives normally assumed effective, such as bonuses or promotions, are most effective at motivating knowledge sharing. Instead,

employees favour intrinsically motivated incentives, such as colleagues' acknowledgement and respect, improved reputation, and the possibility of professional or personal development.

In order to improve the process of knowledge transfer within the provincial hospitals:

- It is imperative that these organizations are able to create, share, store and use knowledge. This can be easily achieved by using methods such as Critical Incident Interviews or questionnaires. This will enable these organizations to tape the lessons of experience. By documenting the lessons of experience of the organization's most experienced performers, the organization can capture the fruits of experience. This can include, for example, the documentation of 'difficult cases' and how they were handled in order to lay the foundation for the development of their own knowledge that can be captured in a manual for employee reference.
- Information technology (IT) infrastructure is important for knowledge sharing and facilitates knowledge creation, knowledge storage, and knowledge sharing through better internal communication flows within an organization (Alavi & Leinder, 2001; Hsu, 2008). Knowledge sharing among project team members within the provincial hospitals could be increased through the use of IT, such as group decision support systems and networks, e-mail, chat sessions, online discussions, video conferencing, virtual classes, presentations, and reflective meetings (Song, 2009).

In order to enhance the channels of knowledge transfer in the organization:

- The provincial hospitals should introduce informal channels like job-shadowing programmes. A job-shadowing programme is one strategy by which to transfer knowledge from one person or group to another. A less-experienced performer is paired up with a veteran performer. The veteran is asked to share knowledge (and perhaps hands-on practice) in dealing with the most difficult situations which he or she has faced on the job.
- Communities of Practice: This would involve doctors within the hospital forming a group that comes together to share information about a common problem, issue or topic. Such communities of doctors may meet in person or online. This will allow the organization to store and transmit knowledge from one person (or group) to another person or group.
- Mentoring Programmes: A mentor is an experienced performer; a mentee is a less-experienced one. Mentors offer advice on what to do, how to do it and why it is worth doing in a particular situation. Such programmes will facilitate knowledge transfer among doctors.
- Information Exchanges: This strategy will require experienced doctors to sit at booths and dispense wisdom to less-experienced performers who visit them.
- Best Practice Studies or Meetings: One way to capture the lessons of experience is for the organization's decision makers to do better than they have historically done, by tapping into their retiree base. Individuals with valuable knowledge can be placed on retainer to provide one-on-one phone guidance or even online or video-conference advice to less-experienced workers as they face problems.
- Investing in research and development programmes will ensure that the provincial hospitals are abreast of trends in the field of medicine.

In order to maximise knowledge transfer in the organization, the organization needs to:

- Encourage knowledge transfer by introducing behavioural base incentives to motivate individual doctors to share information with their colleagues about the best practice that applies to their departmental needs. Hence, management should encourage individual doctors to attend and participate in the department's weekly meetings, which will give each doctor a platform to discuss different cases and complications. This will allow the hospital to capture experiences that can then be collected and exploited to improve the individual's performance.

CONCLUSION

Knowledge transfer plays a crucial role in the ever-changing organization where the success of the organization is significantly dependent on its ability to transfer its knowledge. The success of transferring knowledge is significantly dependent on the ability of the organization to create and shape an environment of knowledge sharing. The recommendations made, based on the results of this study, when dedicatedly and effectively implemented, can assist in this regard.

LIMITATIONS AND RECOMMENDATIONS FOR FUTURE RESEARCH

Time and resource limitations resulted in a data being collected from a sample of only 62 foreign doctors practicing in provincial hospitals in South African. Future studies may embark on drawing a larger sample comprising of foreign doctors in both the private and provincial sectors.

References

1. Ahmed, M. and Hafez, S. (2010), "Creating a culture of learning and knowledge sharing", Knowledge and Information Management (KIM) Workshop, 19-20 May 2010, *Workshop Report*, Cairo: CIDA-Egypt Program Support Unit, pp. 1-33.
2. Alavi, M. and Leidner, D.E. (2001), "Review: Knowledge management and knowledge management systems: Conceptual foundations and research issues*", MIS Quarterly,* Vol. 25, No. 1, pp. 105–136.
3. Al-Alawi, A.I., Al-Marzooqi, N.Y. and Mohammed, Y.F. (2007), "Organizational culture and knowledge sharing: Critical success factors", *Journal of Knowledge Management*, Vol. 11, No. 2, pp. 22-42.
4. Amabile, T. (1997), "Motivating creativity in organizations: On doing what you love and loving what you do", *California Management Review*, Vol. 40, No. 1, pp. 39-57.
5. Argote, L. (1999), *Organizational learning: Creating, retaining, and transferring knowledge*, Kluwer Academic, Norwell, MA.
6. Argote, L. and Ingram, P. (2000), "Knowledge Transfer: A basis for competitive advantage in firms", *Organization Behaviour and Human Decision Processes*, Vol. 82, No. 1, pp. 150-169.
7. Arundel, A. and Geuna, A. (2004), "Proximity and the use of public science by innovative European firms", *Economics, Innovations and New Technology*, Vol. 13, pp. 559-80.
8. Bennis, W.G. and Nanus, B. (1985), *Leaders: The strategies for taking charge*, Harper and Row, New York.
9. Bratianu, C. and Orzea, I. (2010), "Tacit knowledge sharing in organizational knowledge dynamics", *Journal of Knowledge Management Practice*, Vol. 11, No. 2, June 2010.
10. Cabrera, A., Collins, W.C. and Salgado, J.F. (2006), "Determinants of individual engagement in knowledge sharing", *International Journal of Human Resource Management*, Vol. 17, No. 2, pp. 245-65.
11. Catarino, M.T. (2009), *The role of patents technology transfer: Regional forum on the role of patents and the PCT in research in developing countries*, Techno/University of Minho, Portugal.
12. Chow, C., Deng, F. and Ho, J. (2000), "The openness of knowledge sharing within organizations: A comparative study of the United States and the People's Republic of China", *Journal of Management Accounting Research*, Vol. 12, No. 1, pp. 65-95.
13. Chow, C., Harrison, G., McKinnon, J. and Wu, A. (1999), "Cultural influences on information sharing in Chinese and Anglo-American organizations: An exploratory study", *Accounting, Organizations and Society*, Vol. 21, No. 2-3, pp. 175-192.
14. Davenport, T.H. and Prusak, L. (1998), *Working knowledge: How organizations manage what they know*, Harvard Business School Press, Boston, MA.
15. De Long, D.W. and Fahey, L. (2000), "Diagnosing cultural barriers to knowledge management", *Academy of Management Executive*, Vol. 14, No. 4, pp. 113-127.
16. Gold, A., Malthotra, A. and Segars, A. (2001), "Knowledge Management: An organizational capabilities perspective", *Journal of Management Information Systems*, Vol. 18, No. 1, pp. 185-214.
17. Gumus, M. (2007), "The Effect of Communication on Knowledge Sharing In Organizations", *Journal of Knowledge Management Practice*, (8), Retrieved 10 July 2011, From://www.tlainc.com/ articl133.htm.
18. Hakansson, H. and Johanson, J. (1988), Formal and informal cooperation strategies in International Industrial Networks, in Contractor, F.J., & Lorange, P. (Eds.), *Cooperative Strategies in International Business*, Lexington Books, Lexington, Mass, pp. 279-379.
19. Husted, K. and Michailova, S. (2002), "Diagnosing and Fighting Knowledge Sharing Hostility", *Organizational Dynamics*, Vol. 31, No. 1, pp. 60-73.
20. Hsu, I. (2008), "Knowledge sharing practices as a facilitating factor for improving organizational performance through human capital: A preliminary test", *Expert Systems with Applications*, Vol. 35, No. 3, pp. 1316-1326.
21. Irmer, B.E., Bordia, P. and Abusah, D. (2002), "Evaluation apprehension and perceived benefits in interpersonal and database knowledge sharing", *Academy of Management Proceedings*, 2002, pp. OCIS: B1-OCIS: B6.
22. Jensen, R. and Szulanski, G. (2007), "Template Use and the Effectiveness of Knowledge Transfer", *Management Science*, Vol. 53, No. 11, pp. 1716-1730.
23. Johnson, J.D. (1992), "Approaches to organisational communication structure", *Journal of Business Research*, Vol. 25, pp. 99-113.
24. Kang, Y.J., Kim, S.E. and Chang, G.W. (2008), "The Impact of knowledge sharing on Work Performance: An Empirical Analysis of Public Employees' Perception in South Korea", *International Journal of Public Administration*, Vol. 31, pp. 1548-1568.
25. Keyes, J. (2008), "Identifying the barriers to knowledge sharing in knowledge intensive organizations", *Journal of Management*, Vol. 10, pp. 244–256.
26. Kislov, R., Harvey, G. and Walshe, K. (2011), "Collaborations for Leadership in Applied Health Research and Care: Lessons from the theory of communities of practice", *Implementation Science*, Vol. 6, No. 64, pp. 1-10.
27. Ladd, D.A. and Herminges, A.R. (2003), *An investigation of organizational culture factors that may influence knowledge transfer*, IEEE Computer Society Washington, DC, USA.
28. Lin, C.P. (2006), "Gender differs: Modeling knowledge sharing from a perspective of social network ties", *Asian Journal of Social Psychology*, Vol. 9, pp. 236-241.
29. Lucas, L.M. and Ogilvie, D.T. (2006), "Things are not always what they seem: how reputations, culture, and incentives influence knowledge transfer", *The Learning Organization*, Vol. 13, No. 1, pp. 7-24.
30. Miller, D.L. and Karakowsky, L. (2005), "Gender influences as an impediment to knowledge sharing: When men and women fail to seek peer feedback", *Journal of Psychology*, Vol. 139, pp. 101-118.
31. Minbaeva, D., Pedersen, T., Bjorkman, I., Frey, C. and Park, H.J. (2003), "MNC knowledge transfer subsidiary absorptive capacity, and HRM", *Journal of International Business Studies*, Vol. 34, No. 6, pp. 586-599.
32. Mudambi, R. and Navarra, P. (2004), "Is knowledge power? Knowledge flows, subsidiary power and rent-

seeking within MNC", *Journal of International Business Studies*, Vol. 35, No. 5, pp. 385-406.
33. Ndlela, L.T. and du Toit, A.S.A. (2001), "Establishing a knowledge management programme for competitive advantage in an enterprise", *International Journal of Information Management*, Vol. 21, pp. 151-165.
34. Nelson, R.R. and Winter, S.G. (1982), *An evolutionary theory of economic change*, The Belkanap Press of Harvard University, Cambridge, MA.
35. Nevis, E., Anthony, D. and Gould, J. (1995), "Understanding Organizations as Learning Systems", *Sloan Management Review*, Vol. 36, No. 3, pp. 73-85.
36. Nonaka, I. and Takeuchi, H. (1995), *The knowledge creating company: How Japanese companies create the dynasties of innovation*, Oxford University Press, Oxford.
37. Ojha, A.K. (2005), "Impact of team demography on knowledge sharing in software project teams", *South* Asian *Journal of Management*, Vol. 12, pp. 67-78.
38. Orvill, A. and Hicks, V. (2000), "Pay and non-pay incentives, performance and motivation. Prepared for WHO, Global Health Workforce Strategy", Group, Geneva. Retrieved August 2011 from the world wide web: www.moph.go.th/ops/hrdj/hrdj11/pdf11/ Pay43.pdf
39. Osterloh, M. and Frey, B.S. (2000), "Motivation, knowledge transfer and organizational forms", *Organization Science*, Vol. 11, No. 5, pp. 538-550.
40. Pangil, F. and Nasrudin, A.M. (2008), *Demographic factors and knowledge sharing behaviours among R&D employees*, Knowledge Management International Conference *(KMICE)*, Langkawi, 2008, pp.128-133, Prepared for *OBHDP, Special issue on Knowledge Transfer*, June 14.
41. RCUK. (2006), *Independent External Challenge Report to Research Councils UK "Knowledge Transfer in the Eight Research Councils"*, Research Councils UK, London.
42. Reige, A. (2005), "Three-dozen knowledge-sharing barriers managers must consider", *Journal of Knowledge Management*, Vol. 9, No. 3, pp. 18-35.
43. Sekaran, U. (2003), *Research methods for business: A skill building approach*, 4th Edition, John Wiley & Sons Inc., New York.
44. Senge, P.M. (1990), *The Fifth Discipline: The Art and Practice of the Learning Organization*, Doubleday Currency, New York.
45. Simonin, B. (1999), "Ambiguity and the process of knowledge transfer in strategic alliances", *Strategic Management Journal*, Vol. 20, No. 7, pp. 595–624.
46. Szulanski, G. (1995), "Unpacking stickiness: An empirical investigation of the barriers to transfer best practices inside the firm", *Academy of Management Journal*, Best Paper Proceeding, pp. 437-441.
47. Szulanski, G. (1996), "Exploring internal stickiness: Impediments to the transfer of best practice within the firm", *Strategic Management Journal*, Vol. 17, pp. 27–43.
48. Szulanski, G. (2000), "The process of knowledge transfer: A diachronic analysis of stickiness", *Organisational Behaviour and Human Decision Process*, Vol. 82, No. 1, pp. 9–27.
49. Teece, D.J. (1998), "Capturing Value from Knowledge Assets", *California Management Review*, Vol. 40, No. 3, pp. 55-78.
50. Von Hippel, E. (1994), "Sticky information and the locus of problem solving – implications for innovation", *Management Science*, Vol. 40, No. 4, pp. 42-439.
51. Walczak, S. (2005), "Organizational knowledge management structure", *The Learning Organization*, Vol. 12, No. 4, pp. 330-339.
52. Watson, S. and Hewett, K. (2006), "A multi-theoretical model of knowledge transfer in organizations: Determinants of knowledge contribution and knowledge reuse", *Journal of Management Studies*, Vol. 43, No. 2, pp. 141-173.
53. Wenger, E. (1999), *Communities of Practice: Learning, Meaning and Identity*, Cambridge University Press, Cambridge.
54. Zollo, M. and Winter, S. (2002), "Deliberate learning and the evolution of dynamic capabilities", *Organization Science*, Vol. 13, pp. 339-351.

THE DETERMINANTS OF RISK TOLERANCE: A BEHAVIOURAL ANALYSIS

Everton Anger Cavalheiro*, Kelmara Mendes Vieira**, Paulo Sérgio Ceretta***

Abstract

The traditional perspective of financial theory suggests an implicit rationality on decision making. Historically, researches have revolved around demographic, social and economic heuristics, thus neglecting the emotional, cognitive and behavioral suppositions, related to financial decision making. In this sense, this study aims to evaluate which are the determining factors for risk tolerance. So, we carried out a survey on 815 individuals residing in Santa Maria, Julio de Castilhos and Cruz Alta, Brazil. Afterwards, we performed a CFA and, eventually, a regression analysis. Generally and consistently, the suppositions for rationality were refuted, though consistent to the Prospect Theory, validating the numerous studies that demonstrate the violation of the rationality suppositions. The heuristics which are traditionally used in order to determine the level of risk tolerance have not shown to be significant in this research. The cognitive, emotional and behavioral dimensions of decision making have shown to be significant.

Keywords: Risk, Risk Tolerance, Behavioral Finance

**University of Cruz Alta, Street Jacob Della Méa, Km 5.6 - Parada Benito, Campus Universitário, Cruz Alta, Rio Grande do Sul, Brazil, Zip code: 98.020-290*
Tel: +55-055-91018865
Email: eacavalheiro@hotmail.com
***Federal University of Santa Maria, Street Roraima nº. 1000, Prédio 74C, sala 4303 – Cidade Universitária – CCSH – UFSM, Santa Maria, Rio Grande do Sul, Brazil, Zip Code: 97105-900*
Tel: +55 055 3220 9258
Email: kelmara@terra.com.br
****Federal University of Santa Maria, Street Roraima nº. 1000, Prédio 74C, sala 4303 – Cidade Universitária – CCSH – UFSM, Santa Maria, Rio Grande do Sul, Brazil, Zip Code: 97105-900*
Tel: +55 055 3220 9258
Email: ceretta10@gmail.com

1. Introduction

The premise that currently supports most of the modern economic and financial theory is based on the rationality held by the economical agents. This conceptual aspect suggests that all economical agents are completely rational and that they use all the available information in the best way possible. As a consequence, individuals will choose their optimal option that will in turn maximize their satisfaction (Mosca, 2009).

We can find in this context of rationality for financial decision the Expected Utility Theory (EUT) that was shaped by Von Neumann and Morgenstern (1944). EUT is an axiomatic theory that is based in the premise that the rational human being makes decisions by comparing the promised utility for each alternative (multiplying the expected utility for each option by the respective probability and choosing the highest value).

One of the main axioms in EUT is the one on rationality, which subsidizes the one on utility and suggests that individuals will make their choices based in expected utility, so as to maximize their wealth. However, Allais (1953), as well as Edwards (1961), Quiggin (1982), Segal (1989), Quiggin and Wakker (1994), demonstrated that human beings often violate the rationality axiom, as suggested by EUT.

Among financial decisions, behavior facing risk is one of the central themes. Risk tolerance is a determining factor when it comes to choosing how to allocate assets and, as a consequence, it directly influences the creation of products and the definition of investment and funding strategies. In this context, several studies seek to identify factors that influence risk tolerance, but many questions are yet to be answered, especially regarding its determinants.

Several heuristics are used in order to determine the level of risk tolerance in individuals, which suppose a strong correlation between the demographical and social/economical characteristics. However, few studies demonstrate the influence of

the cognitive, behavioral end emotional dimensions on financial decision making.

Considering the importance of risk tolerance, the setback of financial theories that approach rationality, the discrepancy of results when compared to determining factors and the scarcity of studies that demonstrate the influence on cognitive, emotional and behavioral dimensions in risk tolerance, this research sought to answer the following question: *which are the determining factors in risk tolerance for financial decisions*?

2. Review

2.1 The traditional perspective on risk and the Expected Utility Theory

Risk, according to the traditional conception, is objective and of a quantitative nature. It is based in past information (occurrence of an event followed by a statistical evaluation) so as to make a decision in order to increase the safety of results. In this sense, risk definition, according to EUT, supposes that the investor evaluates the investment risk according to the change that it carries as far as wealth is concerned.

Ricciardi (2004) states that according to EUT, risk is analyzed by relating the expected return in terms of utility. Another relevant point to be highlighted is that EUT works with the concept that the investor is perfectly rational when making decisions, always preferring the alternative that presents a greater increase of his expected wealth.

Moore (1968) described it as objective risk: the word "risk" commonly denotes only future events where the probabilities for the alternative results are known. Probability is a measure for the relative frequency for an event and is strictly applicable to events that are repeated in nature. Thus, it shows distribution, and such observations can be analyzed and statistical inferences can be carried out. When there are a great number of observations available, the highest frequency observed, bias-free, gets closer to the objective risk, via the probability for the event to happen.

The Expected Utility Theory (EUT) is the main theory to process – a in a statistical manner – the problems regarding economical decision. It was initially launched by Von Neumann and Morgenstern (1944), although there is evidence, in the case of Baron (2008), e.g., that the first scientific work on EUT was developed by Daniel Bernoulli, in 1738, as an attempt to solve the Saint Petersburg Paradox.

Utility can be defined as "the level of satisfaction that somebody has when consuming a good or performing an activity". The terms "utility" or "preference" are frequently used in order to define the decision maker's attitude facing the choice. They basically refer to the relationship between alternatives, in which the decision maker prefers one instead of the other always choosing the one that offers more "expected utility", as quoted by Pindyck and Rubinfeld (2005).

According to EUT, a rational individual always needs to have imperative preferences, i.e., one must never abstain from acting rationally. In this concept, a rationally acting individual must agree and act consistently to the presented axioms. Meanwhile, some evidence for inconsistencies was found in some of these axioms.

2.2 The cognitive and behavioral perspective on risk

The basic assumption of modern finance states that man is a rational being and a maximizer for expected utility. However, literature on markets' irrationality is fertile. The idea that markets could behave in an irrational manner was against the principles of expected utility.

However, according to Kahnemann and Riepe (1998), financial decisions are made in times of high complexity and great uncertainty. Often, the moment's emotional stress at the moment of financial decision is huge. This ambiance makes the investor trust intuition which often plays a crucial role in financial decisions. This is the context where the prejudices that push them away from rationality come up.

In this sense, discussion on human rationality and, as a consequence, the validity of EUT, has opened a new path for a new area in Finance that is currently being developed and called Behavioral Finance. This area is commonly defined as the application of Psychology to Finance, in an attempt to explain the financial decision of individuals.

For Behavioral Finance, decisions made according to a problem follow, in some cases, an identifiable pattern that can and should be contemplated by an economical and financial model. The field of Behavioral Finance is precisely the identification of how emotions and cognitive mistakes may influence the decision making process and of how such behavioral patterns can determine changes in the market.

2.2.1. Excessive confidence bias

Excessive confidence, or overrating personal skills, is maybe the behavioral bias that has a greater number of studies confirming its existence. For some researchers it gets to be the element with the strongest influence on the decision making process. It is vastly observed in individuals who imagine they own a decision making skill that is superior to the average population. Biais, Hilton, Mazurier and Pouget (2002) created an experimental market to study the influence of excessive confidence on the performance of investment portfolios. In this study, researchers demonstrate that, the more an individual suffers from excessive confidence, the worse the performance for

his investment portfolio is, when compared to other investors.

Pompiam (2006) quotes that, in its most basic form, excessive confidence maybe summarized as unjustified faith in an intuitive reasoning, in judgments or cognitive skills. The concept of excessive confidence bias is based in the set of cognitive and psychological experiences that directly influence the decision making process, overestimating both the anticipating skills and the precision of the information that underlies them. Fallaciously, they tend to compare the amount of information to its quality, making an individual believe that the more information he has, the more prepared he will be, without even analyzing its validity.

Another perverted consequence of excessive confidence is the reluctance in assuming a mistake. This feeling of aversion to regret shapes another bias that is commonly studied in Behavioral Finance: cognitive dissonance.

2.2.2. Cognitive Dissonance

When a new piece of information starts conflict with pre-existent perceptions, individuals often feel a mental discomfort, which is a phenomenon known as cognitive dissonance. In Psychology, cognitions represent attitudes, emotions, beliefs and values, and cognitive dissonance corresponds to an unbalanced condition that takes place when contradictory cognitions collide. According to Pompain (2006), the concept of cognitive dissonance inscapes the answer of individuals when trying to harmonize cognitions and, thus, to relief their mental discomfort.

Pompain (2006) quotes that the difficulty to accept the mistake in a decision is perceived as a contestation of such decision and this becomes an emotional threat. Most people avoid dissonant situations or even ignore potentially relevant information so as to avoid psychological conflicts.

Scholars have identified different aspects of the cognitive dissonance and that participate in the decision making process: selective perception and selective decision making.

Individuals who suffer from selective perception only register information that confirms the path chosen, thus producing an incomplete vision of reality and, as a consequence, imprecise. Since they are unable to objectively analyze the available evidence, they become more and more likely to make calculation and prejudiced mistakes in their future decisions.

On the other hand, selective decision making takes place when the commitment to the decision is high, thus forcing the individual to rationalize his actions in such a way that they do not enter a conflict with his decision, even when there is an exorbitant economical cost to it. Many studies show that individuals will subjectively and continuously reinforce decisions or commitments made or taken in the past.

In order to weather the dissonance that comes from recognizing mistakes in the past, investors often associate their failures to external events opposite to assuming a bad decision. Naturally, people who lose the opportunity of learning from their past will be prone to new calculation mistakes, thus renewing the anxiety cycle, discomfort, dissonance and denial. Another bias that is associated to cognitive dissonance is the self-attribution bias.

2.2.3. Self-attribution bias

Self-attribution bias refers to the tendency individuals have to attribute their success to innate features, such as talent for anticipating or their own intelligence, although their failures are often attributed to external influences, such as bad luck. Pompian (2006) quotes that the self attribution bias is a cognitive phenomenon that makes individuals attribute their negative results to situational factors and their gains to innate factors of their own nature. This bias can be divided into analysis forms: *self-enhancing bias*, which represents how prone individuals are to claim an irrational degree of credit for their success; *self-protecting bias*, represents the corollary to the irrational denial of responsibility for failure.

The author concludes that the self-enhancing bias may be explained by a cognitive approach, because individuals are naturally more biased to credit their success rather than their failures, since they intend to have success, instead of failing. Self-protecting bias can be explained from an emotional point of view. Psychologists argue the human being's need to keep their self-esteem by instigating psychological protection, so as to decrease the psychological pain of assuming guilt for wrong decision.

The irrational attribution of success and failure can harm an investor in two primary ways. First, people who are not able to understand their own mistakes are, as a consequence, unable to learn from their own mistakes. Second, investors grant a disproportional credit to the positive results of their investments, making them excessively confident about their future decisions.

2.2.4. Excessive Optimism Bias

Investors may be excessively optimistic about markets, economy and the potential value increase of assets they have invested in. According to Pompian (2006), many investors believe a bad investment will not happen to them, but only to others. These neglects may harm the profitability of their investment portfolios, because individuals may not recognize the potential consequences of their investment decisions.

Daniel Kahneman and Daniel Lovallo describe the excessive optimism bias in a more technical way.

Researchers marked a tendency of investors to adopt an internal vision, with a clear personal involvement, instead of an external vision, without personal involvements. The external vision, not passionate, evaluates the current situation regarding results obtained in the past, relating and analyzing them in the most unbiased way possible. The process of external vision replaced by internal vision is the one that distinguishes excessive optimism, thus harming the rational decision and implying in predictions that are too "pink", influenced by feelings that are related to present situations in a biased manner.

Pompian (2006), quotes that most investors are inclined towards an internal vision, influenced by their feelings. This approach, according to the author, is traditional and rooted, and it comes in an intuitive way. Since the path to think about an investment is complex, due to the need to analyze the available data and to pay special attention to unique or uncommon details, the perception of the need to gather stats about a case rarely comes up in an investor's mind.

2.2.5. The fear of missing a gain opportunity

Mosca (2009) comments that the fear of missing a gain opportunity in a specific investment that others are participating in is a stronger motivator for the acquisition of a specific asset, when compared to the fear a financial loss, as long as most of his peers have made the same mistake. Such fear of being left out is the main fuel that drives the herd movements and, consequently, the forming of bubbles.

Research led by DeMarzo, Kremer and Keniel, Stanford and Duke Universities, confirm that most fear, not the loss itself, but the risk of seeing their investments having a worse performance when compared to other investors. These researchers demonstrate that individuals care first about the wealth – compared to other people or members of their community. So, for these authors, fear #1, regarding managing their property, is to be poor while other get richer.

Generally, people and companies follow the behavioral pattern of their peers because, by acting in such a way, they are fighting the risk that other might be investing in the next big winner, while they are out (MOSCA, 2009). There is, hence, a strong influence or pressure exerted by the observed or assumed behavior of our peers, where the final decision to allocate assets ends being determined by the perception of the evolution of wealth when compared to the other members of the group.

2.3. The emotional and social perspective on risk

Nofsinger (2005) quotes that finances have followed modern economy quite a lot, which seems to be seen as a branch of exact sciences. To that respect, neoclassical finance theory tends to ignore the influence of social factors in the finance decision context, and a great part of the Traditional Finance is modeled in a Robinson Crusoe-like economy, i.e., isolated from the social system to which it belongs to. For the author, economy is not a physical system, but yet a complex system of human interactions.

Humor affects the way investors analyze judgments (Nofsinger, 2002). People in a good mood make more optimistic judgments than people in a bad mood. Being in a bad mood makes investors more critical; it helps them exercise a more detailed analysis. As an alternative, people in a good mood will tend to use less critical ways to process information. That aspect particularly affects relatively abstract decisions, about which people do not have complete or exact information. Naturally, this situation perfectly describes the investment context. According to the author, bad mood causes a more critical analysis of judgments and good mood tends to cause decisions taken without much analysis. So, investment decision making is directly influenced by the individual's mood.

Nofsinger (2005) comments that conversation is important for stock market. Brokers interact with clients and other brokers. Analysts communicate with executives. Individual investors talk to their families, neighbors, colleagues and friends about investments. Shiller (1995) perform their research in institutions and on individual investors about their communication patterns. Authors conclude that the directing of interpersonal communications is very important in investments decisions. Hong, Kubik, and Stein (2005) analyze portfolio managers so as to test the premise that fund managers that work in the same city are more prone to exchanging investment ideas by word of mouth. Authors demonstrate that managers in the same city are more prone to exchange the same type of stocks and conclude that investments are consistent to the information that is being distributed by these interactions.

3. Method

This research was carried out with the inhabitants of Santa Maria, Julio de Castilhos and Cruz Alta (Brazil). A total of 815 questionnaires were applied. The main technique to define the determining factors for risk tolerance was the Exploratory Factorial Analysis. In order to answer the problem of this research "we used the multivariate technique, called multiple regression analysis.

Risk tolerance is a concept that has implications for individual investors, as well as managers in finance, or investment managers, for example. Droms and Strauss (2003) quotes that, for individual investors, risk tolerance will determine the adequate composition of assets in an optimized portfolio, as far as risk and return are concerned regarding each individual's needs. The tool for collecting data was

adapted from Droms and Strauss (2003) so as to determine the level of the individuals' risk tolerance.

The tool for collecting data was adapted from Droms and Strauss (2003)so as to determine the level of the individuals' risk tolerance. In order to make this measure more quantitative, the participant was given the possibility of assigning a score (0-10), depending on how much he/she agreed with each one of the six questions. When assigning a zero score, the participant showed not to agree to the statement and when assigning ten, he/she utterly agreed. With the new scale, the sum of the values pointed out by the participants for each of the six questions could range from zero (totally intolerant to risk) to sixty points (totally tolerant to risk).

4. RESULTS

In order to find the determining factors for risk tolerance, we initially performed a factorial analysis.

Adequacy and specificity tests performed on the sample were considered satisfactory, because the results from the Kaiser-Meyer-Olkin (KMO) equals 0,828 and the Bartlett's test showed a qui-square equal to 6.447,219 and significance equal to 0,000. Table 1 shows variance explained by factors with eigenvalues superior to 1.

Table 1. Extracted Factors and respective eigenvalues and explained variance

		Explained variance	
Factor	Eigenvalue	Percentual	Accumulated
1	5,913	25,709	25,709
2	2,221	9,655	35,364
3	1,972	8,574	43,938
4	1,371	5,96	49,898
5	1,339	5,82	55,718
6	1,177	5,116	60,834
7	1,047	4,553	65,387

Table 1 shows that the seven selected factors (with eigenvalues bigger than 1) explain, altogether, 65.39% of the data total variance, excluding other 16 factors that showed eigenvalues smaller than or equal to 1. On Table 2 we show the factorial cargo on each of these seven factors, as well as the variables for each factor.

Table 2. Factorial cargo obtained for each factor and respective variable

	Factors						
Variable	1	2	3	4	5	6	7
Enjoys a lot of luxury in life	0,77						
Enjoys owning things that impress people	0,74						
Better life if had many things that does not have now	0,73						
Would be much happier if could buy more things	0,65						
Upset if unable to buy all desired things	0,60						
Money means pleasure	0,50						
Afraid of losing an opportunity everyone takes		0,78					
Relieved because own mistake is the same as everyone else's		0,75					
Afraid of having worse results than others		0,71					
Make same decisions as most people		0,61					
Tranquility / peace			0,82				
Enthusiasm			0,79				
Happiness			0,75				
Able to identify the best moment to invest				0,79			
Gains are a direct result of his/her competence				0,78			
Instincts contribute for choosing investments				0,71			
Prefers spread payments even if total is more expensive					0,77		
Buys on spread payments instead of waiting to have money					0,71		
Finds it normal to get into debt so as to buy things					0,66		
Comments if there is loss						0,86	
Comments if there is profit						0,83	
Cognitive disonance							0,80
Losses are caused by invisible factors							0,79

All factors presented satisfactory factorial cargo (bigger or smaller than 0.50) and hence we kept them for this study, such as suggested by Hair *et al.* (1998) – cargo greater than 0.30 is significant.

After estimating the factorial cargo, we named the factors. The first factor was called "materialism" for the interest in material goods and emotional association, whether by acquisition, or by the impossibility of acquiring such goods. Fournier and Richins (1991) quote that society nowadays lives an era of compulsive materialism. Authors have studied materialism in several different countries and concluded that the popular meaning of materialism involves notions of possessing or achieving the best, and wishing for wealth as an objective itself. For these authors, this notion is associated to objectives, such as the search for happiness, demonstration of social status, self-affirmation and feeling of superiority.

The second factor was called the "left out effect", because a common way to simplify the decision making process is simply to follow the pack; to do what everyone else is doing. We have the innate necessity to act according to the other members of the group in which we are in. Mosca (2009) quotes that acting in such a way brings comfort and security, even because making a mistake along with others is less awkward.

Pompain (2006) quotes that when we act differently from our social group, our subconscious enters a conflict with pre-existent perceptions and individuals often feel a mental discomfort – a phenomenon known as cognitive dissonance. Cognitions, in Psychology, represent attitudes, emotions, beliefs and values, and cognitive dissonance is an unbalanced condition that takes place when contradictory cognitions cross. Psychologists conclude that individuals perform pseudo-rationalizations so as to synchronize their cognitions and keep their psychological stability. Thus, individuals modify their behaviors or cognitions in order to reach a new cognitive harmony. However, such changes are not always made in a rational way. Such pseudo-rationalizations can make individuals ignore potentially relevant information so as to avoid psychological conflicts, thus elevating their risk tolerance level.

The third factor was called "emotion", because both the psychologists and the economists that analyzed the role of emotion in decision making realized that feelings and emotions that are unattached to the subject can affect decisions (Loewenstein, Weber, Hsee, & Welch, 2001). The term "unattached", in this context, means that emotions are not related to the decision to be made. Nofsinger (2001) quotes that emotions interact with the evaluation's cognitive process and end up leading to a decision. Sometimes, emotional reactions diverge from reasoning and logic so as to determine the decision making process. In fact, the more complex and uncertain the situation is, the more emotions influence the decision (Forgas, 1995). Cavalheiro et al. (2011) quotes that financial decisions are complex and include uncertainty and can be influenced by feelings, emotions or mood. That is called misattribution bias, i.e., people generally let themselves being unduly influenced by feelings when making a financial decision.

The fourth factor is called self-attribution bias via self-enhancement. Self-attribution bias is a cognitive phenomenon that makes an individual associate their negative results to situational factors and their gains to innate factors of their nature (Pompian, 2006). This bias can be divided into analysis forms: a) self-enhancing bias, that represents how prone individuals are to claim an irrational degree of credit to their success and b) self-protecting bias, representing the corollary effect to the irrational denial of responsibility for failure. The fifth factor is called "indebtedness".

The sixth factor is called "talking about investments". People learn from interacting with each other. The human-being observes other people's behavior because he wants to interpret what they are thinking, but what he really likes is to take the most of the conversation's social interaction. People talk about subjects that they are enthusiastic about, topics that they are interested in and even about what upsets them. Conversation is an important way to get information and detect emotional reactions, and this helps to make an opinion.

The last factor was called self-attribution bias by self-protection. Self-protection bias is taken as the attribution of personal failure to external influences, such as bad luck (Pompiam, 2006). Self-protection bias can be explained from an emotional point of view, for the human need to keep self-esteem. This effect is connected to the difficulty humans have in recognizing their mistakes, because this recognition takes the individual to a level of unwanted psychological pain, directly influencing financial decisions.

In order to evaluate the liability of factors generated from the factorial analysis, we used Cronbach's Alpha. According to Hair *et al*. (1998), *Cronbach's alpha* should be bigger than 0.6 (because it is considered to be an exploratory factorial analysis). On Table 3, we show the variables that make up each factor and their respective results for *Cronbach's alpha*.

Table 3. Variables and *Cronbach's alpha* for each factor

Factor	Variables	*Cronbach's alpha*
Materialisme	88, 86, 80, 84, 90 e 74	0,8282
Being left out effect	60, 59, 61 e 58	0,7911
Emotion	44, 45 e 43	0,7429
Self-enhancement	32, 34 e 35	0,7188
Indebtedement	87, 83 e 81	0,6487
Talk about investments	36 e 38	0,7584
Self-protection	31 e 33	0,4813

On Table 3 self-protection stands out with a *Cronbach's alpha* smaller to the one established by Hair *et al*. (1998) and, since it is no longer possible to exclude any variable because there are only two, we calculated the variables' average for each factor.

In order to check the influence of variables and factors on risk tolerance, we performed a multiple regression analysis. Risk tolerance was considered as an exogenous variable. Results of the chosen model, via stepwise, are shown on Table 4.

Table 4. Regressors, weights and coefficient significance of the OLS regression model in order to explain the exogenous variable – risk tolerance

Regressors	Coef.	std. deviation	*t* test	*t* test sig.	FIV
Emotion factor	0,698272	0,14154	4,9330	0,0000	1,2060
Being left out effect factor	0,397497	0,14311	2,7770	0,0056	1,5880
Cash-on.stock effect	0,295800	0,09810	3,0150	0,0026	1,2710
Cognitive disonance	0,399484	0,10626	3,7600	0,0002	1,2000
Self-protection	0,446919	0,10104	4,4230	0,0000	1,2710
Excessive confidence bias	0,509397	0,11599	4,3920	0,0000	1,4820
Risk as an opportunity	0,438070	0,10048	4,3600	0,0000	1,1650
Self-attribution factor	0,676986	0,13476	5,0240	0,0000	1,3940
Save before you spend	0,331377	0,10160	3,2620	0,0012	1,2640
Already incurred in cost	0,346609	0,09310	3,7230	0,0002	1,2540
Spending on expensive things	0,270591	0,10385	2,6060	0,0093	1,3700
Excessive confidence	0,210590	0,09934	2,1200	0,0343	1,2230
Excessive optimisme	0,338406	0,13329	2,5390	0,0113	1,4080

The *Stepwise* model selected 13 regressors, 3 factors of which were used (emotion, self-attribution and being left out effect) and 10 variables. The determination coefficient (adjusted R^2) was 0.93. We can observe on Table 4 that all values for the t test were significant, as well as the ones for the f test (811,634 and sig. 000). The Akaike Information Criteria was equal to 5.713,168 and the Schwarz Criteria was equal to 5.774,309.

On the other hand, the White test for heterocedasticity rejected the null hypothesis Qui-square = 381,476245 with sig. 0,000), indicating the existence of heterocedascity, of a specification error, or both, although the FIV index suggests the inexistence of multicollinearity.

In order to correct the heterocedascity effect, we performed a new estimate for the parameters, now with variances and standard deviation with a corrected heterocedascity according to White (Gujarati, 1995).

Table 5. Regressors, weights and coefficients significance of the minimum square model with corrected heterocedascity in order to explain the exogenous variable – risk tolerance

Regressors	Coef.	std. deviation	*T* test	*T* test sig.	FIV
Emotion factor	0,949704	0,107794	8,8100	0,0000	1,1230
Being left out effect	0,459063	0,140252	3,2730	0,0011	1,5590
Cash on stock effect	0,253982	0,096049	2,6440	0,0083	1,2280
Cognitive disonance	0,386345	0,118740	3,2540	0,0012	1,1940
Self-protection	0,703214	0,097752	7,1940	0,0000	1,1870
Excessive confidence	0,492706	0,125111	3,9380	0,0001	1,4670
Risk as opportunity	0,459499	0,097596	4,7080	0,0000	1,1420
Self-attribution bias	0,751971	0,115600	6,5050	0,0000	1,3410
Save before you spend	0,358285	0,088313	4,0570	0,0001	1,1600
Already incurred in cost	0,360764	0,091277	3,9520	0,0001	1,2400
Spending on expensive things	0,276512	0,107104	2,5820	0,0100	1,3110

On Table 5 we can observe that all t test values were significant (the variables for "excessive optimism" and "excessive confidence bias" were excluded from the model because they were not significant at the t test).

The sample determination coefficient (adjusted R^2) was 0.3492. Although the sample determination coefficient had been inferior to the previous mode, the Akaike Information Criteria and the Schwartz Criteria were 3.380,183 and 3.431,918, respectively. All FIV indicators were close to one, indicating the absence of multicollinearity in this model.

The Qui-square test (0.651 and sig 0.72220), for residual normality (Doornik-Hansen test), accepted the null hypothesis for equal distribution of data with normal distribution.

5. Final considerations

The basis that supports most of the financial theories is founded upon the utter rationality of economical agents. This approach suggests that all economical agents are totally rational and use all available information in the best possible way. The heuristics used so as to determine the risk tolerance level of individuals and that suppose a strong correlation between demographic, social and economical features have not shown to be significant in this research. The cognitive and emotional dimension of the decision making process has shown to be significant.

Emotion and cognitive bias such as: self-attribution, excessive trust, cognitive dissonance, being left out effect, cash on stock effect and already incurred in costs have shown to be significant in this research, thus showing cognitive and emotional features during the decision making process, that are traditionally neglected in risk tolerance studies.

Considering that the regression estimated model attends to the basic presuppositions, it is possible to state that, for the selected sample, emotion have a direct and positive association to an individual's risk tolerance. This association – that can be understood as the misattribution bias – validates Nofsinger (2001), who demonstrates that this bias generally makes people permeable to being influenced by feelings when making a financial decision. Via this result, it is possible to conclude that people in a good mood make more optimistic judgments than people in a bad mood, and tend to use less critical ways to process information, thus elevating their tolerance level.

Humans show a natural tendency to follow the decisions made by the group. This behavioral effect can be observed by the "being left out effect". The factor, in the selected sample, showed a positive association to risk tolerance, and it was possible to conclude that the bigger the effect, the bigger the risk tolerance is. This result contributes to what DeMarzo, Kremer and Keniel at Stanford and Duke Universities, suggest – they confirmed that most individuals do not fear loss itself, they are afraid of watching their applications having a worse performance than other investors. People and companies tend to follow their peers' behavior, because when acting that way they are fighting the fear that other people may be investing in the next big investor, whereas others would be out. The "being left out effect" is potentially harming because it makes people assume more risks in their financial decisions and, hence, they would tend to neglect their ability to assume risks, which can lead to damage to their patrimony, by unduly exposing it to risk.

Empirical international literature demonstrates that, after having profit or loss, people feel inclined to assuming greater risks. People who gamble call it "cash in stock" and, after making some money, amateurs do not consider it their money. Regression showed that, for the selected sample, the increase of this effect is associated to an increase of risk tolerance which could generate an increase in markets negotiations, since investors could believe that they would be risking something that does not belong to them.

The Cognitive Dissonance variable has shown to be directly and positively associated to risk tolerance. This result can be understood as human nature – to dissociate the acknowledgement of guilt for one's mistakes in decisions made by individuals. Assuming guilt for one's own negative results is to assume that the wrong decisions were made and that generates a mental discomfort that in turn leads to psychological pain. In order to balance or even avoid such discomfort, it is easier to associate negative results in

decisions to external aspects. It was possible to observe in this research that, for the selected sample, the lack of acknowledgement was directly and positively associated to a greater risk tolerance level. This result tends to be harming, since when avoiding acknowledgement for one's mistakes, one cannot learn from those mistakes, which can lead to the same mistakes and recurrent negative results in their investments portfolios.

The misattribution bias shows two sides: self-enhancement and self-protection. Self-protection has a similar origin to the previous variable, since one avoids the association between the error's guilt and the decision-maker. The basic difference is that the mistake is associated to unpredictable circumstances, which would decrease the psychological pain coming from making the wrong decision. This variable showed to be positively associated to risk; so, we can conclude that, for the selected sample, a greater effect is associated to a greater risk tolerance and - just like in the previous effect - assuming new risks without even learning from previous mistakes could lead to persistent negative results.

The self-attribution bias showed a positive relation to risk tolerance, thus indicating that the bigger the effect of this bias, the bigger the risk tolerance is. This bias might be the most harming one, because it makes individuals believe they have a superior capacity than they really have. This belief leads to a greater level of self-confidence, less attention to details and, as demonstrated in our research, a greater risk tolerance, which is particularly concerning, because it could lead to wrong decision when allocating assets.

The excessive confidence bias showed a significant and positive relationship to risk tolerance in this research. This result validates Nofsinger (2001) demonstrating that individuals who show excessive confidence underestimate the risk they are taking. Underestimating risks can lead to choices that carry an unwanted risk level, thus not considering the capacity one has to take them, as well as a possible psychological pain of seeing that the obtained results are inferior to what was expected. This bias should, preferably have minimal influence when managing wealth, because of the loss coming from potentially biased decisions.

Materialism, due to the need for consuming expensive objects, has shown to be positively and significantly associated to risk tolerance. Empirical literature demonstrates that the popular meaning of materialism involves notions of owning or achieving the best. Damage associated to this factor takes place when one loses track of the objective for which one is taking a risk. Taking a risk exclusively for the wish of a new standard of wealth, without parameters or final objective may make individuals assume more and more risks without realizing the potential damage associated to their decisions. On the other hand, aversion to debts, for the need to save before you spend, has shown to be positively related to risk tolerance; this fact, along with other quoted variables, may also be harmful by restricting opportunities for investments.

According to traditional economical theories, people should consider present and future costs and benefits when making a decision, not considering past costs. However, we have the natural tendency to avoid this dissociation, especially when there is a need to acknowledge mistakes in the past. This bias has shown to be associated to risk tolerance, that can generate unwanted results while investing time and assets that have consistently shown to be harmful. The decision to keep assets with loss has shown to be a natural protection against the pain associated to acknowledging wrong decisions, but it is inconsistent with the assets' wealth.

When looking for the answer to the research problem, it was possible to observe that the financial decision is influenced by biases that positively influence risk tolerance. Perhaps the most significant message to take from this research can be interpreted by the need of self-knowledge, in order to minimize such effects when making a financial decision, o as to avoid potentially harmful risks, for not answering the capacity to take risks.

References

1. Allais, M. (1953). Le comportement de l'homme rationnel devant le risque: Critique des postulats et axiomes de l'école Américaine. *Econometrica: Journal of the Econometric Society*, 503-546.
2. Baron, J. (2008). *Thinking and deciding*: Cambridge Univ Pr.
3. Biais, B., Hilton, D., Mazurier, K., & Pouget, S. (2002). Psychological Traits and Trading Strategies. *SSRN eLibrary*.
4. Cavalheiro, E. A., Vieira, K. M., Ceretta, P. S., Trindade, L. L., & Tavares, C. E. M. (2011). Misattribution Bias: The Role of Emotion in Risk Tolerance. *The IUP Journal of Behavioral Finance, Vol. VIII, No. 3, pp. 25-44, September*.
5. Droms, W. G., & Strauss, S. N. (2003). Assessing risk tolerance for asset allocation. *Journal of Financial Planning, 16*(3), 72-77.
6. Edwards, W. (1961). Behavioral decision theory. *Annual review of psychology, 12*(1), 473-498.
7. Forgas, J. P. (1995). Mood and judgment: The affect infusion model (AIM). *Psychological bulletin, 117*(1), 39.
8. Fournier, S., & Richins, M. L. (1991). Some theoretical and popular notions concerning materialism. *Journal of Social Behavior & Personality*.
9. Gujarati, D. N. (1995). Basic econometrics.
10. Hair, J. F., Black, W. C., Babin, B. J., Anderson, R. E., & Tatham, R. L. (1998). *Multivariate data analysis* (Vol. 5): Prentice hall New Jersey.
11. Hong, H., Kubik, J. D., & Stein, J. C. (2005). Thy Neighbor's Portfolio: Word-of-Mouth Effects in the Holdings and Trades of Money Managers. *The journal of Finance, 60*(6), 2801-2824.

12. Kahneman, D., & Riepe, M. W. (1998). Aspects of investor psychology. *The Journal of Portfolio Management*, *24*(4), 52-65.
13. Loewenstein, G. F., Weber, E. U., Hsee, C. K., & Welch, N. (2001). Risk as feelings. *Psychological bulletin*, *127*(2), 267.
14. Moore, B. J. (1968). *An introduction to the theory of finance: Assetholder behavior under uncertainty*: Free Press.
15. Mosca, A. (2009). Finanças comportamentais: gerencie suas emoções e alcance sucesso nos investimentos. *Coleção Expo Money. Rio de Janeiro: Elsevier*.
16. Nofsinger, J. R. (2002). Do optimists make the best investors? *Corporate Finance Review*, *6*(4), 11-17.
17. Nofsinger, J. R. (2005). Social mood and financial economics. *The Journal of Behavioral Finance*, *6*(3), 144-160.
18. Pindyck, R., & Rubinfeld, D. (2005). Microeconomics (6th edn): Upper Saddle River, NJ: Pearson Prentice Hall.
19. Pompian, M. M. (2006). Behavioral finance and wealth management. *How to build optimalportfoliosforprivate clients*.
20. Quiggin, J. (1982). A theory of anticipated utility. *Journal of Economic Behavior & Organization*, *3*(4), 323-343.
21. Quiggin, J., & Wakker, P. P. (1994). The axiomatic basis of anticipated utility: A clarification. *Journal of Economic Theory*, *64*(2), 486-499.
22. Segal, U. (1989). Axiomatic representation of expected utility with rank-dependent probabilities. *Annals of Operations Research*, *19*, 359-373.
23. Von Neumann, J., & Morgenstern., O. (1944). Theory of Games and Economic Behavior: Princeton University Press, Princeton, NJ.

DIFFERENT LEVELS OF CORPORATE GOVERNANCE AND THE OHLSON VALUATION FRAMEWORK: THE CASE OF BRAZIL

Talles Vianna Brugni*, Alfredo Sarlo Neto*, Patrícia Maria Bortolon*, António Oscar Santos Góes**

Abstract

We examine whether Brazilian companies with enhanced corporate governance levels have higher market values according to the model of Ohlson (1995), modified to include variables such as governance level, type of control and shareholding structure. This study produces empirical results based on information taken from the Economática® and Brazilian Securities Commission (CVM) databases, in the period from 2004 to 2010. Multiple linear regression on panel data is used to analyze a sample of 90 firms through 630 observations. The findings indicate that the addition of governance measures to the model increased its explanatory power, suggesting that nonfinancial information about governance practices and ownership structure also can explain the market value of stocks. The results also indicate that firms with shares traded on the Level 2 and New Market trading segments of the BM&FBovespa, which require enhanced governance practices, are important signals of good governance and consequently increase firms' market value. The type of control was also positively related to the market value, suggesting that firms under family control and government control are more valuable than companies without concentrated control.

Keywords: Corporate Governance, Value, Ohlson, Family Control

**Espírito Santo Federal University, Accounting Department, Av. Fernando Ferrari, n°514, Goiabeiras., Zip Code: 29.065-910, Vitória – ES, Brazil*
Email: tallesbrugni@hotmail.com
*** Lisboa Technical University – ISEG, Rua do Quelhas, 6 1200-781, Lisboa, Portugal*

1. Introduction

The world in recent years has been passing through various cultural, social, economic and political transformations. Accounting, along with other sciences, has been facing pressures to adjust to the new perspectives and new demands from society, such as changes in the ways to compensate stockholders and executives and the emergence of more complex organizational models, in an economy increasingly based on information (Hopwood, 2007:1369). Just at Ball and Brown (1968) pioneered understanding the behavior of earnings in the capital market, the importance of corporate governance to firm value has been documented since the seminal work of Jensen and Meckling (1976), considered a watershed in research on corporate governance, which has prompted many other empirical studies and theoretical models (Saito and Silveira, 2008:79).

As in the majority of works on corporate governance, there is a need to mention the seminal work of Berle and Means (1932), who through statements like "...there are no dominant owners, and control is maintained in large measure apart from ownership" (Berle and Means, 1932:110) started the discussions about the separation of ownership and control in large companies in the United States and contributed to the future development of research on corporate governance.

There are many interesting points that can be discussed regarding corporate governance as an instrument to reduce agency conflicts and increase information transparency. The management of conflicts and reduction of information asymmetry can – or at least should – help increase a firm's efficiency and also its market value (Lee, Lin and Chang, 2011:420, Sampaio, Lima and De Paula, 2011:2). However, there have been few studies of these issues in the Brazilian market.

During the past decade Brazil has undergone many transformations, resulting in a more liquid capital market, greater transparency and better corporate governance. An example of this is the creation by the BM&FBovespa[1] of special trading segments requiring higher levels of corporate governance, called Level 1, Level 2 and New Market (detailed in Section 2), which in theory can increase the market value of the firms listed in these segments.

[1] The BM&FBovespa was created in 2008 through the merger of the BM&F (Mercantile and Futures Exchange) and Bovespa (São Paulo Stock Exchange).

Various studies have examined the relationship between corporate governance and the value of firms. These studies have often presented diverging results regarding the characteristics for identifying the outcome of these practices in the Brazilian capital market. Neves and Lemes (2009) studied the effect on stock price and liquidity of Brazilian firms with ADRs traded on the New York Stock Exchange (subject to the Sarbanes-Oxley Act among other rules) in comparison with those adhering to the New Market. The authors did not identify any significant differences between the average stock prices of the 10 firms listed in the New Market and the 24 with ADRs traded in the American market.

In a more recent study, Sampaio, Lima and De Paula (2011), through difference of means tests and correlation studies, did not find significant differences for the stock returns of firms under family control and those not under family control, and also did not find any differences in the returns of family firms with and without family members holding senior management positions.

According to Terra and Lima (2006:35) "...investors react differently to some signals of good corporate governance practices," such as to firms that are faster versus slower in disclosing their financial statements and privately owned versus government-controlled firms. However, these authors did not find a statistically significant difference in the returns for companies listed on the BM&FBovespa with different governance levels (Terra and Lima, 2006:44).

In contrast, according to Dalmácio et al. (2005:14), "corporate governance characteristics can significantly affect the valuation models, mainly in countries with different characteristics than those found in the more developed countries." Two features of the Brazilian market that differ from those of more developed countries are that credit is mainly obtained through banks rather than the bond market and shareholding is highly concentrated (Lopes, 2002:77). Based on the statement of Hopwood (2007:1370-71) that accounting "...can be and indeed should be constantly examined, re-examined, interrogated, and criticized within the world of knowledge", this paper examines the following research question: **From the perspective of the Ohlson valuation model, does enhanced corporate governance increase the value of firms in the Brazilian capital market?**

To respond to this question, we made some adjustments to the model as originally proposed by Ohlson (1995) to capture the influences of differentiated corporate governance on the market value of Brazilian firms, through the addition of governance proxies in the model.

The model of Ohlson (1995) is a "...model of a firm's market value as it relates to contemporaneous and future earnings, book values, and dividends" (Ohlson, 1995:661). Based on the dividend discount model, he constructed a model that reflects a firm's market value in terms of its book value, abnormal earnings (residual income) and other information (Ohlson, 1995, pp. 665-672; 679). The adaptation of this model in the present study consists of including characteristics of corporate governance within the scope of this "other information", which can increase the explanatory value of the model in the sense of evidencing the importance the market gives to the corporate governance characteristics captured by the proxies employed in this work.

The paper is organized into five sections including this introduction. The next section reviews the concepts and characteristics of corporate governance and the model of Ohlson (1995), as well as their importance to accounting research, to serve as a foundation for the model. The third section explains the methodological procedures and econometric considerations, while the fourth presents and discusses the results and the fifth section contains the conclusions and suggestions for future research.

2. Theoretical Framework

2.1. The Residual Income Valuation of Ohlson (1995) and Corporate Governance

Ohlson's valuation model is very popular in the accounting literature (Kothari, 2001:76). Indeed, it has "...become the basis for empirical work in financial accounting" (Lopes, 2001:49). Its importance to the academic community is unquestionable (Lopes, 2001:49-51), and although many articles have applied the model in a wide range of settings and for varied purposes, the article of Ohlson (1995) contains all the structure to serve as a theoretical foundation for statistical modeling of firm value.

Based on the dividend discount model (Ohlson, 1995:666), in which firm value is explained by the present value of future dividend flow, Ohlson (1995) presented in his seminal work "Earnings, book values, and dividends in equity valuation" a model in which the value can be explained only by accounting variables[2], according to the equation below:

[2] Ohlson (1995) presents in his model a to value firms by their book value and future residual income adjusted by the risk-free rate of return.

$$P_{it} = BV_{it} + \sum_{t=1}^{\infty} R^{-t} E_t(RI_{it+\tau}) \quad (1)$$

Where: P_t is the stock price of firm i at time t, BV is the book value of firm i at time t, R is the risk-free rate of return plus one, and $E_t(RI_{t+\tau})$ is the expected residual income of firm i in period $t+\tau$, where τ = 1, 2, 3... This model is also known as the residual income valuation (RIV) model.

By this approach, the firm is valued by its book value and residual income, in contrast to the attention paid to dividends in other valuation models. Ohlson's (1995) model also assumes that the information dynamics makes the connection between current and future information from abnormal earnings in an autoregressive process according to equations (2) and (3).

$$RI_{it+1} = \omega RI_{it} + v_{it} + \varepsilon_{1t+1} \quad (2)$$

$$v_{it+1} = \gamma v_{it} + \varepsilon_{2t+1} \quad (3)$$

Where: v_{it} is other information besides residual income, ε_{1t+1} and ε_{2t+1} are error terms, and ω and γ are the angular coefficients between the explanatory and dependent variables (non-negative coefficients less than 1).

Based on the assumption that abnormal earnings tend to zero and do not last for long periods of time and that a four-year period for predicting abnormal earnings is sufficient to increase the model's explanatory power, Bernard (1995) argued that this model forecasts and explains stock prices better than models based on short-term dividend predictions and discounted cash flow. Starting from this context, the model here is based on Dechow, Hutton and Sloan (1999) and Hand and Landsman (2005), modifying the model so that the "other information", represented by v_{it} in equation (2), contains corporate governance characteristics, which in turn can increase the model's explanatory power in the sense of explaining firms' stock prices. Equation (1), when combined with equations (2) and (3), produces the following equation:

$$P_{it} = BV_{it} + \alpha_1 RI_{it} + \beta_1 CG_{it} \quad (4)$$

Where: CG represents the corporate governance of firm i in period t, measured by the proxies presented in section 3.3.2, Table 1.

In this sense, equation (4) assumes that the market value of the stock (P_{it}) depends on the book value (BV_{it}) adjusted by current residual income (RI_{it}) and corporate governance (GC_{it}), allowing response to the research question because the variable (GC_{it}) captures part of the "other information" originating from "non-accounting" variables (Ohlson, 1995:668) reflecting corporate governance.

It should be pointed out that my aim here is not to evaluate the quality of Ohlson's model to value companies. My objective is to apply the model as a tool to estimate to what extent the value of firms is connected to corporate governance mechanisms, within the approach of Ohlson's model.

2.2. Corporate governance and differentiated levels in Brazil

The concept of corporate governance started to be coined in the 1930s. With the seminal work of Berle and Means (1932), *The Modern Corporation ad Private Property*, a perspective was introduced regarding the ownership structure of firms. This served as the basis for many other studies over the ensuing decades (with the emergence of the concept of "company government" by Jensen and Meckling (1976)) that contributed to what is today known as corporate governance.

Corporate governance within the accounting approach can be understood as a set of practices that seek to mitigate the costs related to agency problems. For Lopes (2008:171), "... corporate governance mechanisms arise as instruments to correct the flaws in markets." These flaws involve agency conflicts and the related problem of asymmetric information. Agency conflicts generate information asymmetry, which at high levels can erode investor confidence in a given situation. In this respect, Shleifer and Vishny (1997:737) argue for a broad definition of corporate governance: "Corporate governance deals with the ways in which suppliers of finance to corporations assure themselves of getting a return on their investment."

To encourage higher levels of corporate governance in Brazil, the BM&FBovespa created three special trading segments requiring rising levels of governance: Level 1, Level 2 and the New Market (*Novo Mercado*), with the idea of giving greater visibility to firms that achieve determined governance standards and thus make them more attractive to investors because of the greater security in terms of information, and in theory, lower agency costs. In the New Market segment, the firms may not make

distinctions over rights (voting rights and preferential call on cash flows) and can only issue common voting shares. Besides this characteristic of the ownership structure, others can also be highlighted for their importance in enhancing transparency and governance, according to the New Market Listing Rules issued by the BM&FBovespa, in force since May 2011:

- 100% tag-along right, meaning that in case of sale of control, the minority shareholders have the right to sell all their shares for the same price negotiated with the controlling shareholder or group;
- If a decision is reached to delist a company, it must make a public offer to repurchase all the shares for at least the economic value;
- The board of directors must have at least five members, of whom at least 20% must be independent directors (this is only a recommendation in the other segments);
- Minimum free float[3] of 25%;
- Mandatory arbitration of corporate disputes;
- Detailed monthly disclosure of the securities trading of the directors, officers and controlling shareholder.

The other two special listing segments, Level 1 and Level 2, are intermediate between the traditional trading venue and the New Market. Basically, Level 1 requires a minimum free float of 25% and disclosure of additional information than that required by legislation, such as more complete accounting reports and disclosure of securities traded by directors, officers and controlling shareholders. Level 2, in turn, demands the characteristics of Level 1 plus others, such as use of a committee to resolve conflicts of interest rather than the judiciary. In fact, most of the features of Level 2 are the same as those of the New Market, except that companies in this segment can issue preferred shares[4] and the tag-along right is only 80% rather than 100% of the price paid to the controlling shareholder in case of sale of control.

The legal environment also affects corporate governance characteristics. According to Watson (1974), the laws of countries are not written from scratch, but rather are transplanted from a few legal traditions. In this context, two blocks of countries stand out, those following the common law tradition and those in the civil law (or code law) tradition. La Porta et al. (1998:1116) state that countries that follow the common law tradition tend to offer greater protection to creditors and shareholders than those that follow the civil law tradition, irrespective of the country's per capita income.

Brazil, although it is not predominantly market oriented and follows the code law tradition, also has adopted many legal features of the Anglo-Saxon common law model and the Nippo-German model, and its corporate rules can be considered more flexible than those found in Germany, for example (Lopes, 2009:192).

3. Methodology

This article has a positive characteristic because it tries to explain phenomena based on their relations, and also has "... its roots in empiricism..." (Martins and Theóphilo, 2007:41). In this sense, the methodology is empirical-analytic, normal in studies in the positive tradition, since it seeks to explain the relationship between proxies for corporate governance and the value of companies in the Brazilian capital market. Studies with this approach use techniques of data collection, treatment and analysis that are generally quantitative, besides tending to address practical issues with concern for causal relations between variables (Martins, 2002:34).

This study is explanatory because the purpose is to deepen knowledge and explain aspects. For Gil, (2009:42), this type of research "... has the main concern of identifying the factors that determine or contribute to the occurrence of a phenomenon."

In terms of the technical procedures utilized, this study can be classified as bibliographical because it relies on concepts developed by other authors in academic books and articles, and is also ex-post-facto, which according to Gil (2010:54) is characterized by "...systematic and empirical investigation in which the investigator does not have direct control over the independent variables...".

3.1. Some econometric considerations

The data are treated in two dimensions: temporal and spatial. In this context, we employ regression[5] with panel data to consider the effects of unobservable variables in cross-section data[6], such as changes in accounting policies or economic perspectives from one year to the next, reducing the possible collinearity of the variables (the reason autocorrelation tests are not necessary) in function of the larger number of observations studied, producing more informative and efficient data. The use of panel data involves a combination of cross-section and time-series techniques, allowing more than one type of company

[3] The free float is the portion of shares available in the market (not in the hands of the controllers or held in treasury by the company).

[4] Besides preference in receiving dividends, the preferred shares issued by firms listed in the Level 2 segment confer voting rights in certain situations such as mergers and acquisitions.

[5] All the regressions were carried out with White's correction for problems of heteroskedasticity, as covered in section 4.

[6] Cross-section data consider a set of observations (such as firms or groups of firms) during a period of time, such as a quarter or year).

to be analyzed over a time period (Brugni et al., 2011:11).

According to Gujarati (2006:514), the repeated study of a sample of firms over a time series is more suitable when applied under the technique of estimating panel data because it explicitly takes into consideration specific individual variables, making it more "suitable to the study of the dynamics of change." The panel here is balanced because the number of observations is the same in each unit of time.

The three most common approaches to analyze panel data are pooled ordinary least squares (POLS), which is the most conventional form of data analysis, fixed effects and random effects (Fávero et al., 2009:382). To define which of these three approaches to use in this article, we applied two tests: the Hausman test, to define the best model between fixed effects and random effects; and the Breusch-Pagan test, to define the best approach between POLS and random effects. The results are reported in the fourth section.

3.2. Sample selection and data treatment

The sample is drawn from the information on listed Brazilian firms in two databases: that of Economática and that maintained by the Brazilian Securities Commission (CVM), as well as the information released to investors by the companies studied.

Of the total of 791 securities listed in the Economática database and traded up to the date of this writing, we only considered shares issued by companies, thus disregarding other types, such as ADRs and investment fund shares. The sample covered the most liquid common and preferred shares of each firm in each year, to eliminate repeated observations. Of the 670 stocks, we removed those of firms with negative equity, since positive abnormal earnings based on negative equity values do not have an obvious economic interpretation (Frankel and Lee; 1988:29; Gregory et al., 2005:503). We also excluded financial institutions and insurance companies from the sample, due to various factors, such as the difficulty of estimating the cash flow from financial services and the differentiated regulatory rules applicable to banks and insurers as opposed to other listed companies. We then removed firms with zero stock exchange presence[7] in any year of the study (2004 to 2010), as well as firms without any information on the main shareholder in all the years, to eliminate part of the estimation and sample selection problems that can occur from having an unbalanced panel (Wooldridge, 2001:250). After applying these selection criteria, the final sample was composed of 90 firms over a time period of seven years, for a total of 630 observations in a balanced panel.

3.3. Definition of the variables

The model used here is the RIV model of Ohlson (1995). This choice is justified because of the important role that net equity (book value) plays in valuation of companies in Brazil (Dalmácio et al., 2005:14) and its possibility of being modified to capture the effects of other variables to explain the market value (Dalmácio et al., 2005:10). To capture the influences of the corporate governance proxies on the firms' valuation, we modified the residual income model of Ohlson (1995) to include as "other information" the measures of governance and their relations with the stock prices. The resulting empirical model can be represented by the following equation:

$$P_{it} = \alpha_0 + \beta_1 BV_{it} + \beta_2 RI_{it} + \gamma_1 CG_{it} + e_{it} \quad (5)$$

Where: P_{it} is the stock price of firm i in year t; BV_{it} is the book value of firm i in year t; RI_{it} is the residual income (abnormal earnings) of firm i in year t; and CG represents the corporate governance proxies of firm i in year t, with all the variables except governance scaled as price per share[8].

3.3.1. Dependent variable

As mentioned, the aim of this article is to identify the relationship between adhesion to enhanced corporate governance standards and other governance proxies with firms' stock prices. In this context, we did not change the dependent variable of the original model (P_{it}), with this value being the stock price on the last trading day of each year.

3.3.2. Explanatory variables

The original model seeks to explain the stock price by two variables: book value and residual income. Besides these two measures, we added three governance proxies and their interactions with book value, as described in Table 1, to identify not only the relations between governance and value, but also the interactions between the characteristics of corporate governance and book value.

[7] Stock exchange presence here is the ratio of the number of days the stock of firm i in year t was traded and the total number of trading days in that year.

[8] Both types of measurement – general and per share – have limitations, which in turn caused research limitations here. Other potential limitations of this study are the fact we assumed Brazilian GAAP satisfy the clean surplus premises, which may not be the case, and also the assumption of no stock splits in the study period. For more details, see Ohlson (2000).

Table 1. Variables included in the model

ariables	Description
	Price per share
V	Book value, or stockholders' equity
I	Residual income, or abnormal earnings
1	Dummy for companies with shares listed for trading in the Level 1 segment of the BM&FBovespa. Assumes a value of 1 if the firm is listed in this segment and 0 otherwise.
2	Dummy for companies with shares listed for trading in the Level 2 segment of the BM&FBovespa. Assumes a value of 1 if the firm is listed in this segment and 0 otherwise.
M	Dummy for companies with shares listed for trading in the New Market segment of the BM&FBovespa. Assumes a value of 1 if the firm is listed in this segment and 0 otherwise.
FAM	Dummy for companies under family control (value of 1, 0 otherwise).
GOV	Dummy for companies under government control (value of 1, 0 otherwise).
VC	% holding of the largest holder of common (voting) shares with voting rights.
NVC	% holding of the largest holder of preferred (non-voting) shares with voting rights
FAM*BV	Interaction variable between the ownership structure characteristics (family control) and the book value
GOV*BV	Interaction variable between the ownership structure characteristics (government control) and book value
VC*BV	Interaction variable between the percentage holding of the largest holder of voting capital and book value
NVC*BV	Interaction variable between the percentage holding of the largest holder of non-voting capital and book value

Source: Authors.

- **Market value per share (P)**: Represented by the closing stock price on the last trading day of year t.
- **Book value (BV)**: Represented by the book value per share of firm in year t.
- **Residual income (RI)**: **The residual income was obtained as follows**:

$$RI_{it} = EPS_{it} - (E)EPS_{it} \qquad (6)$$

Where: RI_{it} is the residual income of firm i in year t; EPS_{it} is the earnings per share of firm i in year t; and $(E)EPS_{it}$ is the expected earnings per share of firm i in year t.

The expected earnings per share ($(E)EPS_{it}$) was obtained by the following equation:

$$(E)EPS_{it} = BV_{it-1} * (1 + r_t) \qquad (7)$$

Where: BV_{it-1} is the book value per share of firm i in year t-1; and r_t is the risk-free rate of return in year t. The risk-free rate of return in this work is the interest rate paid on passbook savings accounts in year t, as set by the Central Bank of Brazil.

- **Enhanced corporate governance levels (L1, L2 and NM):** This variable was determined by observing the information disclosed by the firms to investors during the study period, supported by consulting the investor relations pages of the firms' websites to identify possible migration between governance levels.
- **Family control (cfam)**: The criteria for classifying firms as family controlled were based on those of La Porta et al. (1999) with some modifications: to be considered a family firm, the level of concentration of common shares held by the main shareholder was changed from 10% to 35% of the shares with voting rights, since the characteristics of the firms studied by those authors do not apply to Brazil in the same way. We also observed up to four levels of equity participation with pyramidal structure, and classified as family firms those controlled by a single shareholder, the same as done by La Porta et al. (1999:481).
- **Percent holding of the largest holder of voting capital (pvc):** Represented by the ratio between the total common shares held by the main shareholder and the total common shares of firm i in year t.
- **Percent holding of the largest holder of non-voting capital (pnvc):** Represented by the ratio between the total preferred shares held by the

main shareholder and the total preferred shares of firm i in year t.

- **Government control (cgov)**: Companies were considered to be government controlled when the majority of the voting shares are held either by the federal or a state government, or subsidiaries thereof.
- Two control variables were added to the model: one for size, since this can have a direct influence on the variables of interest, and one for level of indebtedness, because debt as well as size can influence the flow of resources to the firm and its profit and return.
- **Size (size)**: The proxy for size was the natural logarithm of total assets, as reflected in the equation below:

$$SIZE_{it} = \ln(TA_{it})$$

- **Indebtedness (ind)**: The proxy for indebtedness also took into consideration the operational liabilities of the firms, which in Brazil have relative expression within total liabilities. The debt level was given by the ratio of debt capital over total liabilities:

$$IND_{it} = \frac{DC_{it}}{TL_{it}}$$

Where: IND_{it} = indebtedness of firm i in year t; DC_{it} = debt capital (current + long-term liabilities) of firm i in year t; and TL_{it} = total liabilities (current + long-term liabilities plus stockholders' equity) of firm i in year t.

Additionally, we analyzed the corporate governance measures through their interactions with book value to observe if there were any relations between them.

3.4. Metric Utilized

The modification of the Ohlson (1995) model resulted in the following empirical multiple linear regression model:

$$\begin{aligned} P_{it} = {} & \alpha_0 + \beta_1 BV_{it} + \beta_2 RI_{it} + \phi_1 L1_{it} + \phi_2 L2_{it} + \phi_3 NM_{it} + \gamma_1 CFAM_{it} + \gamma_2 CGOV_{it} + \gamma_3 PVC_{it} + \\ & \gamma_4 PNVC_{it} + \omega_1 CFAM_{it} * BV_{it} + \omega_2 CGOV_{it} * BV_{it} + \omega_3 PVC_{it} * BV_{it} + \\ & \omega_4 PNVC_{it} * BV_{it} + \lambda_1 SIZE_{it} + \lambda_2 IND_{it} + e_{it} \end{aligned} \quad (8)$$

Where: α_0 = intercept; β_1 and β_2 = angular coefficients between the original variables of the Ohlson model and the stock price; ϕ_1, ϕ_2 and ϕ_3 = angular coefficients between the variables representing adherence to enhanced corporate governance levels and the stock price; γ_1, γ_2, γ_3 and γ_4 = angular coefficients of the corporate governance variables and the stock price; ω_1, ω_2, ω_3 and ω_4 = angular coefficients between the interaction variables and the stock price; λ_1 and λ_2 = angular coefficients between the control variables $SIZE_{it}$ and IND_{it}, respectively, and the stock price.

4. Results and Discussions

Before formulating the model described in item 3.4, we performed econometric tests with various variables to identify potential problems that could result in inconsistencies of parameters and biased estimates.

The aim of these tests was to detect possible problems of multicollinearity and heteroscedasticity as well as to define the pest approach among regression with pooled ordinary least squares (POLS), fixed effects or random effects. To detect multicollinearity, we used the variance inflation factor (VIF), which measures how much the variance of a coefficient is inflated by its collinearity. The VIF values were less than 5, suggesting no evidence of multicollinearity.

To identify heteroscedasticity, we used the Breusch-Pagan / Cook-Weisberg test, which indicated problems of heteroscedasticity due to rejection of the null hypothesis that the error terms are homoscedastic. It was thus necessary to use robust Huber-White estimators, which according to Baum (2006:136) are useful in cases where the null hypothesis of homoscedasticity is rejected.

After conducting the tests for multicollinearity, heteroscedasticity and variance of the residuals, we obtained the variables and the model described in item 3.4. Table 2 presents the descriptive statistics of the variables utilized.

Table 2. Descriptive statistics of the modified Ohlson model

Variable	Obs	Mean	Std. Dev.	Q1	Median	Q3
p	630	15.78133	26.79377	2.70010	8.79399	21.20194
bv	630	21.88477	56.69977	1.06771	7.86255	20.25762
ri	630	2.12129	17.57050	0.00809	0.63105	2.72783
l1	630	0.16984	0.37591	0.00000	0.00000	0.00000
l2	630	0.06190	0.24117	0.00000	0.00000	0.00000
nm	630	0.06667	0.24964	0.00000	0.00000	0.00000
cfam	630	0.61111	0.48789	0.00000	1.00000	1.00000
cgov	630	0.14603	0.35342	0.00000	0.00000	0.00000
pvc	630	0.62872	0.25705	0.46890	0.60910	0.88170
pnvc	630	0.04035	0.14354	0.00000	0.00000	0.00000

Source: Authors.

Nearly 40% of the firms in the sample are listed in one of the three special trading segments, with 17% in the Level 1 segment, 6% in Level 2 and 7% in the New Market.

The mean value per share of R$ 21.88 indicated by the model was higher than the average of market value of R$ 15.78. The difference in volatility between the book value and market value of the stocks (represented by the difference between the standard deviations) also was much greater than the difference between the average market value and book value of the stocks.

The average residual income was about 10% of the average book value of the shares. Its standard deviation of 17.57 suggests that the variation in stock prices does not accompany the variation in earnings with the same magnitude, a possibility that requires confirmation by other techniques and evaluation of other variables as well as their explanatory relations with the market value of the shares.

The ownership structure characteristics were measured by the holding of the main shareholder, based on La Porta et al. (1999). The 62.87% average holding of the main shareholder in the voting capital (common shares) versus the 4.03% participation in the non-voting capital (preferred shares) suggests there is considerable dispersion of the non-voting capital and a large portion of the capital is required to establish control.

Another characteristic of the ownership structure is that the concentration remains high in Brazil in comparison with countries like the United States, where ownership of firms is typically dispersed, but is relatively normal in comparison with the great majority of countries. This is in line with the idea of La Porta et al. (1999:474) that the great majority of firms to not fit the description of Berle and Means (1932). Of the 630 observations in the sample, 69.84% were firms where the principal shareholder owns more than 50% of the voting shares, while 38.89% of the observations consisted of firms where the main shareholder owns more than half the total capital. The average of the total shares (common and preferred) held by the main shareholder was 45.03% and the total of common shares held by the main shareholder was 62.87%. During the period studied, there were no substantial changes in the ownership structure of the firms in the sample, as shown in Table 3.

Table 3. Description of the ownership structure of the firms in the sample

Year	Obs	Total shares held by the main shareholder	Standard deviation	Q1	Median	Q3
2010	90	45.75%	23.88	29.18	42.50	59.28
2009	90	46.18%	23.96	28.98	42.73	63.52
2008	90	46.41%	23.86	28.82	43.75	63.52
2007	90	45.13%	23.15	28.73	42.97	58.44
2006	90	43.81%	22.99	27.98	41.85	58.35
2005	90	44.00%	23.17	26.95	40.15	57.77
2004	90	43.96%	23.42	27.17	39.61	58.44
TOTAL	630			28.48	41.24	58.44
MEAN		45.03%				

Ano	Obs	Total of common shares held by the main shareholder	Standard deviation	Q1	Median	Q3
2010	90	61.36%	26.33	43.53	58.32	87.76
2009	90	62.66%	25.91	46.2	60.14	88.17
2008	90	63.79%	25.91	46.98	62.91	88.72
2007	90	63.05%	25.31	46.01	62.17	87.54
2006	90	62.80%	25.72	46.89	59.87	88.14
2005	90	63.33%	25.74	46.98	60.66	88.95
2004	90	63.11%	25.78	46.48	60.67	88.45
TOTAL	630			46.89	60.91	88.17
MEAN		62.87%				

Source: Authors.

The Pearson correlation coefficients indicate a weak correlation between the book value and the corporate governance variables as well as between the abnormal earnings and the governance variables. In this sense, if the governance proxies capture the price variations of the shares, P_{it}, they tend to explain the part of the market value that is not reflected in the performance indicators (BV and RI).

Table 4. Pearson correlations for the modified Ohlson model

Pearson Correlations							
	p	bv	ri	cfam	cgov	pvc	pnvc
p	1.0000						
bv	0.5867	1.0000					
ri	0.5315	0.5138	1.0000				
cfam	0.0432	0.1440	0.0041	1.0000			
cgov	0.0468	-0.0313	0.0107	-0.5184	1.0000		
pvc	0.0036	0.0066	0.0107	0.1576	-0.0970	1.0000	
pnvc	0.0184	0.0442	0.0196	0.028	-0.0461	0.0755	1.0000

Source: Authors.

The correlations of 58.67% and 53.15% between the stock price on the one hand and book value and residual income, respectively, on the other indicate the possibility of high explanatory power of accounting variables for the market value of the shares. The pairwise correlations of the governance variables are weak. Only the correlation between family control and government control is strongly negative, as expected. These weak pairwise correlations indicate that the proxies utilized capture different information about corporate governance practices.

We analyzed the model of equation (8) and the regressions modeled only with the proxies for family control, government control and participations of the main shareholder in the voting and non-voting capital, and also the original Ohlson model. The results are reported in columns 1 to 6 of Table 5.

To define the approach of the regressions with panel data utilized in this article, we applied two tests: the Hausman test and the Breusch-Pagan test. The results of the Hausman test showed that the random-effects approach is more appropriate than the fixed-effects one for the model, since the null hypothesis that the error correction model is adequate was not rejected. The multiplier test for random effects of Breusch and Pagan rejected the null hypothesis that the variance of the residuals, which reflect individual differences, is equal to zero, confirming that the best approach for the model was random effects. Therefore, all the evidence and results of the regressions are presented under the perspective of the random-effects approach.

The R^2 of the original model of Ohlson (1995) (column 6) was 0.42, which can be considered good explanatory power for the market price of the shares. The addition of the governance measures to the model increased the explanatory power, suggesting that non-financial information regarding governance practices can help explain the market value.

Column 1 of Table 5 shows that book value and abnormal earnings are not the only important variables to explain the market value of firms; adhesion to enhanced governance levels, type of control and level of holding of the main shareholder in the capital are also important in this respect, since these variables are all positively related to the market value. The governance measures are statistically significant at 5% (family control and government control are significant at 1%) and are positively related to the dependent variable (with the exception of Level 1 listing, which is not statistically significant).

For the sample analyzed, the results suggest that adhesion to Level 2 or the New Market trading segments sends important signals of good governance and thus increases firms' market value.

The type of control – government or family – also had a positive influence on market value. Unlike in countries with dispersed ownership characteristics, in Brazil firms controlled by families or the state are on average more valuable than those with diffuse control. The figures in column 2 corroborate this, indicating a slightly stronger influence of family control than government control over the dependent variable, both at 1% significance.

Columns 3, 4 and 5 report the effects as measured by the Ohlson model including the percentage holding of the main shareholder in the voting capital (pvc), the original model including the percentage held in the non-voting capital (pnvc), and the original mode with both these variables included and the non-voting capital, respectively. In all cases the results demonstrate that both variables are positively related to the stock price, indicating that firms controlled by a single shareholder (state or individual) or by a family are more valuable than firms with dispersed capital.

Table 5. Regression analysis of Ohlson and corporate governance factors

Exp. Var.	1	2	3	4	5	6
intercept	-42.7469***	-35.0776***	-40.7302***	-28.3233***	-39.0738***	10.2120***
	(11.2311)	12.5971	(9.8686)	(10.1423)	(9.8862)	(1.2097)
bv	0.83831***	0.6119***	0.5556***	0.2286**	0.5132***	0.2042**
	(0.2298)	(0.2042)	(0.2001)	(0.1031)	(0.1814)	(0.0992)
ri	0.4948***	0.5022***	0.4941***	0.4975***	0.4948***	0.5102***
	(0.1626)	(0.1791)	(0.1613)	(0.1642)	(0.1590)	(0.1730)
l1	-1.3750					
	(2.0469)					
l2	11.3860***					
	(3.3952)					
nm	6.2920**					
	(2.7079)					
cfam	4.9892***	7.0743***				
	(2.2995)	(2.0612)				
cgov	5.4648***	6.4602***				
	(2.0987)	(2.0734)				
pvc	10.0925***		9.2980**		7.9362**	
	(3.7609)		(3.8549)		(3.5159)	
pnvc	8.0762**			9.1841***	7.8913**	
	(3.3684)			(3.6121)	(3.4395)	
cfam*bv	-0.3326	-0.4107*				
	(0.2246)	(0.2147)				
cgov*bv	-0.3901	-0.3997*				
	(0.2098)	(0.2093)				
pvc*bv	-0.4170**		-0.5011***		-0.4248***	
	(0.1833)		('0.1962)		(0.1717)	
pnvc*bv	-11.8312			-20.6433**	-11.6965	
	(8.4998)			(10.56579)	(8.3631)	
size	1.9046***	1.8502***	2.0905***	1.7865***	2.0391***	
	(0.5286)	(0.5813)	(0.4528)	(0.4837)	(0.4535)	
ind	-0.0043*	-0.0038*	-0.0037*	-0.0039*	-0.0035*	
	(0.0081)	(0.0084)	(0.0086)	(0.0084)	(0.0086)	
Adjusted R^2	0.4855	0.4393	0.463	0.4391	0.4641	0.4159
N	630	630	630	630	630	630

Notes: This table presents the results of the regression for stock price on book value, residual income and corporate governance factors. The standard errors are reported in parentheses and the asterisks (*, ** and ***) represent significance levels of 10%, 5% and 1%, respectively.

Source: Authors.

Additionally, the findings show that book value, although having an important role in the valuation of companies in Brazil, is not very informative when interacted with the corporate governance measures, indicating that governance practices can influence the stock price without altering the book value, helping to explain the part of the price that is not related to financial variables. Moreover, just a few characteristics of good governance manage to explain a good portion of the market value of firms, suggesting that the type of control and participation of the main shareholders appear to be adequate to capture part of the remaining variations in stock price.

5. Final Considerations

In this work we sought to examine the role of corporate governance and to estimate its contribution to the value of Brazilian companies from the perspective of the model developed by Ohlson (1995). In considering that the book value and market value tended to be different in the period studied – in function of questions such as market inefficiency, for example – we tried to find a realistic approach that took into consideration a time horizon of seven years. The results of the descriptive statistics corroborate this affirmation, since they demonstrate that on average the book value per share is higher than the market value per share in Brazil.

The findings indicate that the R^2 value of the Ohlson model increases when it is modified to capture corporate governance characteristics. This means that book value and abnormal earnings are not the only important variables for firm valuation.

The empirical results suggest that corporate governance is also important to determine firms' market value. A possible mechanism behind this result is that investors tend to place more trust in firms with enhanced governance levels than in firms without any special governance features. Adhesion to the Level 2 and New Market trading segments, for the sample analyzed, are important signals of good governance and consequently increase the market value of those firms. The results also provide evidence that the ownership structure plays a large role in stock values in Brazil. In this respect, firms under family control and government control tend to be more valuable than those without concentrated control, suggesting that the proxies for type of control are adequate to measure governance characteristics.

Book value, although recognized as important for valuation in Brazil, is not very informative when interacted with corporate governance measures. These results signal that governance practices can influence the stock price without altering the book value of companies, helping to explain the portion of the stock price not related to financial variables.

Although the results point to the importance of corporate governance measures, the Ohlson model was able to explain a large portion of the stock price, demonstrating the relevance of book value and residual income in the valuation of firms in Brazil.

Given that firm size can influence the corporate governance model (Alves and Barbot, 2007:119-120), future studies could incorporate new measures of characteristics of boards of directors, such as composition and size, to try to identify if those characteristics have any upward or downward influence on the valuation of firms in Brazil.

References

1. ALVES, Carlos F.; BARBOT, Cristina., (2007), Do low cost carriers have different corporate governance models? *Journal of Air Transport Management*, 13.
2. BALL, Ray; BROWN, Philip., (1968), An empirical evaluation of accounting income numbers. *Journal of Accounting Research*, v. 6, pp. 159-178.
3. BAUM, Christopher F., (2006), *An Introduction to Modern Econometrics Using Stata*. Stata Press.
4. BERLE, Adolf A.; MEANS, Gardiner C., (1932), *The Modern Corporation and Private Property*. New York: MacMillan. Available at: <http://books.google.com.br/books?id=KbxhFrNr4IAC&printsec=frontcover&dq=the+modern+corporation+and+private+property&sig=5PJNd0Q8fUk9NeUK7Q-ngnNvkQ> Consulted on June 13, 2008.
5. BERNARD, Victor L., (1995), The Feltham-Ohlson Framework: implications for empiricists. *Contemporary Accounting Research*, Spring, 11, 2, p.733-747.
6. BRUGNI, Talles V.; SARLO NETO, Alfredo; PARIS, Patrícia. K. S.; BASTIANELLO, Ricardo. F., (2011), Influência dos dividendos sobre a informatividade dos lucros contábeis divulgados pelas empresas listadas na BOVESPA In: V Congresso ANPCont. *Anais em CD-ROM*, Vitória.
7. CARVALHAL-DA-SILVA, André L., (2006), *Governança corporativa e sucesso empresarial*: melhores práticas para aumentar o valor da firma. São Paulo: Saraiva.
8. DALMÁCIO, Flávia Z.; DE SANTANNA, Dimitri P.; LOUZADA, Luiz C.; COSTA, Fábio M., (2005), Modelo de avaliação propostos por Ohlson e suas aplicações no mercado de capitais no Brasil. In: 5º Congresso USP de Controladoria e Contabilidade, *Anais em CD-ROM*, São Paulo.
9. DECHOW, Patricia M.; HUTTON, Amy P.; SLOAN, Richard G., (1999), An empirical assessment of the residual income valuation model. *Journal of Accounting and Economics*. 26, pp. 1-34.
10. FÁVERO, Luiz P.; BELFIORE, Patrícia;SILVA, Fabiana; CHAN, Betty L., (2009), *Análise de dados: modelagem multivariada para tomada de decisões*. Rio de Janeiro: Elsevier.
11. FRANKEL, R. LEE, C. M. C., (1988), Accounting valuation, market expectations, and cross-sectional stock returns. *Journal of Accounting and Economics*, V. 25, pp. 283-319.
12. GIL, Antônio C., (2009), *Como elaborar projetos de pesquisa*. 4th ed. São Paulo: Atlas.
13. GIL, Antônio C., (2010), *Como elaborar projetos de pesquisa*. 5th ed. São Paulo: Atlas.
14. GREGORY, Alan.; SALEH, Walid.; TUCKER, Jon., (2005), A UK test of an inflation-adjusted Ohlson

model. *Journal of Business Finance & Accounting*, V. 32, n. 3-4, pp. 487-534.
15. GUJARATI, Damodar N., (2006), *Econometria Básica*. São Paulo: Makron Books.
16. HAND, John R. M.; LANDSMAN, Wayne R., (2005), The pricing of dividends in equity valuation. *Journal of Business Finance & Accounting*, 32 (3) & (4).
17. HOPWOOD, A. G., (2007), Whither accounting research? *The Accounting Review*, v. 82, pp. 1365-1374.
18. JENSEN, Michael C.; MECKLING, William H., (1976), Theory of the firm: Managerial behavior, agency costs and ownership structure. *Journal of Financial Economics*, v. 3, n. 4, pp. 305-360.
19. KOTHARI, S. P., (2001), *Capital Markets Research in Accounting*.
20. LA PORTA, Rafael; LOPEZ-DE-SILANES, Florencio; SHLEIFER, Andrei., (1999), Corporate ownership around the world. *Journal of Finance*, v. 54, pp. 471-517.
21. _____. Rafael; LOPEZ-DE-SILANES, Florencio; SHLEIFER, Andrei. VISHNY, Robert W., (1998), Law and Finance. *Journal of Political Economy*. V. 6, n. 6.
22. LEE, S.; LIN, C.; CHANG, P., (2011), An Ohlson valuation framework for valuing corporate governance: the case of Taiwan. *Pacific-Basin Finance Journal*, v.19, issue 4, pp. 420-434.
23. LETHBRIDGE, Eric., (1997), Governança corporativa. *Revista do BNDES*, Rio de Janeiro, n.8, p.209-232. Available at <http://www.bndes.gov.br/SiteBNDES/export/sites/default/bndes_pt/Galerias/Arquivos/conhecimento/revista/rev809.pdf>. Consulted on July 18, 2011.
24. LOPES, Alexandro. B., (2002), *A informação contábil e o mercado de capitais*. São Paulo: Thomson Learning.
25. _____., (2001), *A relevância da informação contábil para o mercado de capitais: o modelo de Ohlson aplicado á Bovespa*. *308f*. Tese de doutorado – Faculdade de Economia, Administração e Contabilidade da USP. São Paulo.
26. _____., (2009), *The relationship between firm-specific corporate governance, cross-listing and the informativeness of accounting numbers in Brazil*. 236f. PhD Thesis – University of Manchester.
27. MARTINS, Gilberto de Andrade., (2002), *Manual de elaboração de monografias e dissertações*. 3rd ed. São Paulo: Atlas.
28. MARTINS, Gilberto de Andrade; THEÓPHILO, Carlos Renato., (2007), *Metodologia da investigação científica para ciências sociais aplicadas*. São Paulo: Atlas.
29. NEVES Lóren C.; LEMES, Sirlei., (2009), Efeito no retorno e na liquidez média das ações de empresas que emitiram ADRs na NYSE e das que aderiram ao novo mercado. *Revista Universo Contábil*, v. 5, n. 3, pp. 22-42.
30. OHLSON, James A., (1995), Earnings, book values, and dividends in equity valuation. *Contemporary Accounting Research*, vol. 11, No.2, pp. 661-687.
31. _____., (2000), *Residual income valuation*: the problems. Available at http://dx.doi.org/10.2139/ssrn.218748. Consulted on January 4, 2012.
32. SAITO, Richard; SILVEIRA, Alexandre Di M., (2008), Governança corporativa: custos de agência e estrutura de propriedade. *Revista de Administração de Empresas*, São Paulo, v. 48, n. 2, pp. 79-86.
33. SAMPAIO, Ricardo B. Q.; LIMA, Bruno C. C.; DE PAULA, Alvaro L. B., (2011), O retorno das ações de empresas de controle familiar e de controle não-familiar no Brasil. In: 11º Congresso USP de Controladoria e Contabilidade, *anais em CD-ROM*, São Paulo.
34. SENHORAS, Eloi M.; TAKEUCHI, Kelly P.; TAKEUCHI, K. P., (2006), A importância estratégica da governança corporativa no mercado de capitais: um estudo internacional comparado. In: III Seget. *Anais do III Seget*.
35. SHLEIFER, Andrei. VISHNY, Robert., (1997), A survey of corporate governance. *Journal of Finance*, V. 52, n. 2, pp.737-783.
36. SILVEIRA, Alexandre Di M., (2002), *Governança corporativa, desempenho e valor da empresa no Brasil*. 152p. Master's Dissertation – Faculdade de Economia, Administração e Contabilidade da USP. São Paulo.
37. TERRA, Paulo R. S.; LIMA, João B. N., (2006), Governança Corporativa e a reação do mercado de capitais à divulgação das informações contábeis. *Revista Contabilidade & Finanças*, USP, vol.17, n. 42, pp. 35-49, Sept.-Dec., São Paulo.
38. WATSON, Alan., (1974), *Legal Transplants: An Approach to Comparative Law*. Virginia-Press.
39. WOOLDRIDGE, Jeffrey M., (2001), *Econometric Analysis of Cross Section and Panel Data*. The MIT Press, London.

INSIDERS OWNERSHIP AND FIRM VALUE IN SOUTHERN EUROPE

Rebeca García-Ramos*, Myriam García Olalla**

Abstract

The effectiveness of the insider ownership as an internal governance mechanism is addressed in the Southern European context using a sample of publicly traded firms during the 2001-2007 period. A cross country and panel data design is used, taking into account the endogeneity problem arising in studies of corporate governance. The results provide new evidence of the influence of the insider ownership on firm value by testing a non-linear relationship. Our study supports both the convergence of interests and the entrenchment effect. It also shows whether there are significant differences in the estimated relationship between family and non family firms. We find that when the large shareholder has not a family nature, firm value initially declines with insider ownership, then increases, and, finally, increases again. However, when the large shareholder has a family nature, firm value initially increases with insider ownership and then decreases.

Keywords: Corporate Governance, Insider Ownership, Large Family Shareholder, Firm Value, Endogeneity, Listed Firms

**Corresponding Author; University of Cantabria, Departament of Business Administration, Facultad de Ciencias Económicas y Empresariales, Avda. de los Castros s/n, 39005Santander, Cantabria (Spain)*
Tel: +34942203922
Fax: +34942201890
Email: garciarr@unican.es
***University of Cantabria, Department of Business Administration*

1. Introduction

During last decades, a large body of studies has analyzed the effect of ownership structure or board of directors on firm value (Baysinger and Butler, 1985; Demsetz and Lehn, 1985; Hermalin and Weisbach, 1991;Jensen and Meckling, 1976). There has been a large body of literature that has examined both the empirical and theoretical effects of different ownership and control structures on firm value. Most empirical evidence in this regard has traditionally focused on companies with dispersed ownership structures, typical of the models of corporate control of USA and UK (Finegold et al., 2007). Throughout recent years, several studies have shown how dispersed ownership structures do not dominate as much as suggested by the arguments of Berle and Means (1932), revealing the importance of concentrated ownership structures in most part of the business world.

The presence of shareholders holding a high proportion of the firm's capital constitutes a way to mitigate the effects of the separation of ownership and control on firm value. As Berle and Means (1932) asserted, the manager of a firm in which each shareholder holds only a small fraction of the firm's capital can engage in value reducing activities. A minority shareholder has weak incentives to engage in monitoring of managers because he or she supports all the costs of monitoring while getting only a small fraction of the benefits (the typical free rider problem). In contrast, a concentrated ownership structure in which one or more shareholders own a large block of equity has the potential for refuting the managers from engaging in moral hazard behaviour. A large shareholder may also be actively involved on the board of directors or nominate a person to represent him or her there, in order to ensure that management is acting in the interests of shareholders (Jensen, 1993). The relationship between directors´ ownership and firm value has been the focus of empirical research since Jensen and Meckling (1976) hypothesize that insider ownership[9] is an important mechanism for aligning the interests of managers and shareholders.

Whether directors´ ownership is beneficial or detrimental to firm value is an empirical question. Related empirical evidence is mixed and inconclusive. On the one hand, some studies are consistent with the Jensen and Meckling(1976) convergence of interest hypothesis, which suggests that a uniformly positive relationship exists between insider ownership and

[9] Insider ownership can be divided into managers' ownership (managers' shareholdings) and directors' ownership (directors' shareholdings).

firm value. On the other hand, other studies give support to the Demsetz (1983) and Fama and Jensen (1983) entrenchment hypothesis, which suggest that at high levels of insider ownership a negative relationship exists between insider ownership and firm value. Moreover, some authors do not find any significant relationship between both variables, while others found non-linear relationships supporting both the convergence of interest and entrenchment hypotheses.

A key aspect of firm governance is not only the quantitative dimension of ownership structure, that is, the level of ownership concentration, but also its qualitative dimension, that is, the typology of the firm's shareholders (Bammens et al., 2010). The governance practices of family businesses (FBs) differ from those of non-FBs (NFBs), because not all large shareholders have the same incentives (Bartholomeusz and Tanewski, 2006). Values and objectives vary across contexts and actors and this needs to be taken into account when designing and interpreting empirical studies (Huse et al., 2011). Thus, a contingency and contextual perspective is needed to test the relationship between corporate governance and firm value in order to show that in some contexts certain corporate designs may be recommended, but in other contexts other designs may be more important (Huse et al., 2011).

Considering these prospective connections, our two main aims are to highlight the importance of suitably contextualising any assessment of ownership structure as a business governance mechanism, and to test whether the optimal level of directors´ shareholdings is different for FBs and NFBs. Thus, we adopt a contingency approach wherein the impact of directors´ shareholdings on firm vale is seen as a relationship that varies depending on context under analysis, in particular on the qualitative dimension of ownership structure (whether the firm is a FB). To that end, we address an empirical analysis for a sample of listed firms from Southern Europe during the 2001-2007 period.

This study is expected to contribute to existing corporate governance literature in three main ways. Firstly, the Southern European business sector enables us to analyze the impact of directors' shareholdings on firm value in a context characterized by high ownership concentration and the presence of family groups in the control of a significant number of firms. While in the US the main issue is managers' opportunistic behavior (Type I agency problem owner-manager, Villalonga and Amit, 2006), in Southern Europe the focus is on the divergence of interests between large and minority shareholders (Type II agency problem owner-owner, Villalonga and Amit, 2006). Unlike most existing studies, which have usually compared widely dispersed NFBs with very closely held FBs, in this study both types of firms, FBs and NFBs, have a concentrated ownership structure, that is, all firms in our sample have a large shareholder[10]. The monitoring role by owners and its effect on firm performance are not as important in US as in Southern European countries, where ownership concentration is higher, the level of investor protection is lower, and large blockholders have greater power and stronger incentives to ensure shareholder value maximization (Díaz and García, 2004; Maury, 2006; Sánchez-Ballesta and García-Meca, 2007). Given the theoretical and empirical gap in this knowledge, it seems important to examine whether within an environment of concentrated ownership the relationship between directors´ shareholdings as an insider corporate governance mechanism and firm value depends on the family nature of the large shareholder. Secondly, we control for nonlinearities to be consistent with both the convergence of interest and the entrenchment hypotheses. Finally, and in contrast with most prior studies, which have usually used cross-section samples and treated ownership as exogenous, we used a panel data design and consider the potential endogeneity of ownership structures (Demsetz, 1983; Demsetz and Villalonga, 2001; Himmelberg et al., 1999; Palia, 2001) when estimating the relationship between directors' shareholding and firm value.

The study is structured as follows. Section 2 reviews the theoretical and empirical literature on insider ownership and firm value and posits the hypotheses to be verified. Section 3 describes the sample of firms and the methodological approach adopted. Section 4 offers the main empirical results to emerge and, finally, Section 5 rounds off the paper with the main conclusions and implications.

2. The relationship between insider ownership and firm value

Theoretical and empirical literature considers insider ownership as one of the main mechanisms that affect firm value. Several papers examine the benefits and costs of insider ownership on the basis of two competing hypotheses. On the one hand, Jensen and Meckling (1976) convergence of interest hypothesis contends that, as insider ownership in a firm increases, agency costs decrease because insiders become less inclined to divert resources away from value maximisation or to engage in other sub-optimal activities and therefore their interests and those of shareholders are aligned. Consistent with this hypothesis, several studies argue that stock ownership by board members gives them an incentive to ensure that the firm is run efficiently and to monitor managers carefully (e.g., Brickley et al., 1988). When board members have considerable holdings in a company's stock (either direct holdings of stocks or

[10] As we further explain in the methodological section of this paper, the large shareholder is a family in the case of FBs, and e.g. holding companies, banks and so on in the case of NFBs.

options on the firm's stock), their decisions impact their own wealth. Further, the impact of the directors' decisions on their wealth is compounded when the receipt of stock or options is a component of their compensation package. Consequently, they are less likely to take actions that would reduce shareholder wealth. According to this hypothesis, a positive relationship between insider ownership and firm value exists.

On the other hand, Demsetz (1983) and Fama and Jensen (1983) point out that a rise in the insiders´ ownership stakes may also have adverse effects in reconciling agency conflicts and these can lead to an increase in insiders´ opportunism. They contend that market discipline will force insiders to adhere to value maximisation at very small levels of insider ownership, but high levels of insider ownership could lead to entrenchment, because passive shareholders find it difficult to monitor and control the actions of such insiders. In this sense, it is possible that insiders have sufficient control to follow their own objectives without taking into account the interest of all shareholders. According to the entrenchment hypothesis, at high levels of insider ownership, firm value may be affected adversely. The entrenchment effect implies that high levels of insider ownership create incentives for the large active shareholder to expropriate wealth from minority investors (Fama and Jensen, 1983; Shleifer and Visnhy, 1997; Stulz, 1988).

Given these two opposing forces (*convergence* and entrenchment), as Morck et al. (1988) and McConnell and Servaes (1990), among others suggest, the relation between director ownership and performance depends on which force dominates with any particular degree of director's equity ownership. Insiders are faced with both positive and negative incentives to ensure that they follow objectives which maximize shareholder wealth. The effectiveness of these incentives is potentially a function of the level of insider ownership in the firm. Therefore, we expect a nonlinear relationship between directors' shareholdings and firm value to exit. Prior studies show that there is great disparity in the functional form of such a relation. While some studies found a quadratic relationship (e.g. Adams and Santos, 2006; Barnhart and Rosenstein, 1998; Faleye, 2007; Mc Connell and Servaes, 1990), others evidenced that a cubic relationship exists (e.g. Miguel et al., 2004; Morck et al., 1988; Holderness et al., 1999). A meta-analytical study by Sánchez-Ballesta and García-Meca (2007) on the insider ownership/firm value relationship provides both evidence of the convergence of interests and support for the entrenchment hypothesis. Although they offer evidence of the nonlinear relationship between ownership structure and firm value, they cannot account for the different inflection points found, which may also vary according to the system of corporate governance. Bearing in mind the above arguments, and following Morck et al. (1988) and Miguel et al. (2004), we propose that there is a cubic relationship between firm value and insider ownership. More specifically, we expect that firm value increases with insider ownership at low and high levels (as a result of the convergence of interest effect) and decreases with insider ownership at intermediate levels (as a consequence of the insiders' entrenchment effect).

2.1. Family and non-family large shareholders

Previous empirical research ignore the diverse identities of various types of investors, such as large family shareholders, who may have different interests, time horizons, and strategies from typical public investors (Aguilera and Jackson, 2003). In this paper, we adopt a contextual approach and propose the propensity of insiders to maximise/expropriate shareholder wealth to be a function not only of the level of insider ownership in the firm but also of the identity of the large shareholder. The effect of insider ownership on firm value depends on the agency problem it is supposed to solve and agency problems in FBs are different from those in NFBs. Agency theorists acknowledge that directors and boards vary in their incentives to monitor in order to protect shareholder interests; as a result, incentives are an important precursor to effective monitoring (Fama, 1980; Jensen and Meckling, 1976). For family owners it is natural to have a board presence and they are usually managers as well (Lane et al., 2006). Therefore, directors´ ownership is greater when the controlling shareholder is a family, as there is a high degree of convergence between insider and family ownership (Block et al., 2011; Demsetz and Villalonga, 2001). In publicly traded FBs, family controlling shareholders have strong incentives to monitor management, in order to protect family wealth (Anderson and Reeb, 2003; Barontini and Caprio, 2006; McVey and Draho, 2005), thereby mitigating the classical agency problem between owners and managers (Agency Problem I, Villalonga and Amit, 2006). FBs are characterized by involvement-oriented management philosophies, strong firm identification, low reliance on institutional powers, and personal and social fulfilment (Anderson and Reeb, 2003; Corbetta and Salvato 2004; Miller and Le Breton-Miller, 2006). The purpose of investment of large family shareholders is not to produce short-term gains, as with others shareholders (Shleifer and Vishny, 1997); rather, particularly for FBs, the shareholders tend to maintain a long term perspective on their investment that benefits current, as well as future, generations. FBs are institutions in which family owners, freed from short-term financial market demands, are emotionally committed to the long-run survival and reputation of their firms as their fortunes, careers, and their personal honour, as well as

that of their children and ancestors, are at stake (Miller and Le Breton-Miller 2006).

Another type of agency cost, however, can be higher within publicly trade FBs with respect to their nonfamily counterparts. Concentrated family ownership brings about the risk of power abuse and extraction of private benefits at the expense of non-family minority shareholders (Agency Problem II, Villalonga and Amit 2006). If the large shareholder is not a family (e.g. holding companies, banks), the private benefits of control are diluted among several independent owners. As a result, the large shareholder's incentives for expropriating minority shareholders are small, but so are its incentives for monitoring the manager, and thus we revert to Agency Problem I. By contrast, if the large shareholder is an individual or a family, it has greater incentives for both expropriation and monitoring, which are thereby likely to lead Agency Problem II to overshadow Agency Problem I. Therefore, family influence needs to be balanced with corporate structures which limit the family's discretion over firm resources and the danger of expropriation of firm wealth (Anderson and Reeb, 2003). Furthermore, within the setting of FBs, three another sources of moral hazard can be identified, which set them apart from their non-family counterparts (Bammens et al., 2010; Mazzi, 2011): (1) the owning-family's pursuit of its own non-economic interests, which refers to the threat of owning-families pursuing non-economic family objectives (keeping the control of the company, firm survival, financial independence and/or family harmony) to the detriment of non-family stakeholders' interests (Block et al., 2011;McVey et al., 2005); (2) the parental tendency to act upon altruistic motives, which concerns the risk of self-control problems exacerbated by parental altruism (Schulze et al., 2001); and (3) the different nuclear family units' pursuit of their own interests, which refers to moral hazard problems that may arise from intrafamily divergence of interests. When family control is very high, unorthodox methods, such as favoritism of family members, for determining board composition can emerge, which can be detrimental to minority shareholders.Thus, the coincidence between owners and managers/directors in FBs can lead to family entrenchment and delays in the succession to lead the company (Lane et al., 2006).This often results in family shareholders having control rights significantly in excess of their cash-flow rights.

Summing up, family ties can also explain non-linearities in the relationship between insider ownership and firm value in terms of potential benefits and costs of family ownership. Both effects of insider ownership on firm value, positive and negative, are expected to be more pronounced in family organizations. The positive relationship will be enhanced by altruistic effects generated as result of their longer investment horizons (Schulze et al., 2001), while the negative relationship will do so for the greater likelihood of expropriation of minority shareholders (Gómez-Mejía et al., 2001). The disadvantages of having a family member as the principal shareholder of the company are more likely to arise when his stake in the company is too high. It will contribute to improved firm value as family ownership increases up to a certain level, beyond which it will have the opposite effect. Therefore, we expect lower free-rider agency costs and superior convergence of interest in FBs as compared with NFBs for low levels of director ownership, whereas at higher levels we expect the entrenchment effect to prevail over the convergence one. Consistently, we postulate that the point at which the likelihood of minority shareholder expropriation will begin to dominate the convergence of interest will be higher in FBs than in NFBs.

3. Methodological Issues: Sample, variables and econometric methodology

3.1. Sample

The sample used in our analysis comprises a panel of non-financial, publicly traded firms from Spain, Portugal and Italy during the 2001-2007 period. We chose these countries because of the origin of their legal systems. The latter were developed within the tradition of French Civil Law, and thus, both the ownership concentration and the proportion of family controlling shareholders tend to be higher than in countries whose legal systems originated from Common Law due to the lower level of protection of shareholder interests in the former (La Porta et al., 1999).

Our starting point was the construction of a database of FBs and NFBs operating in the three selected European countries. This database was drawn up manually based on information provided by the supplier Bureau Van Dyjk on ownership structures and public information on significant shareholders available from stock market regulators and/or on company websites. Information on management and boards was collected from firms' financial and corporate reports. For financial and market data, we used the Amadeus Database, the financial reports released by firms and the data from the stock exchanges of the three countries.

Following La Porta et al. (1999), we used control chain methodology to identify firms´ owners. Because our aim was to obtain a sample that was as homogeneous as possible and would thus allow us to link the differences found to the identity of the controlling shareholder and not to the level of concentration of property rights, we only included firms with an ultimate owner. We considered a company to have an ultimate owner if the main shareholder directly or indirectly held a percentage of the company greater than or equal to 25% (García-

Ramos and Olalla, 2011)[11]. On the basis of these criteria, all of the firms in our sample have a concentrated ownership structure. For a business to qualify as a FB, we required family members not only to control at least 25% of property rights together but also to be actively involved in the control and/or management of the firm. Correspondingly, we divided the sample into two groups, FBs and NFBs. Moreover, we only included those firms for which information was available on all of the variables considered for a sufficient number of years according to the econometric technique used[12]. After we had applied these filters, the number of companies included in the sample was 215, 34.42 % were classified as FBs.

3.2. Variables

Variables may be classified into three groups: a dependent variable measuring firm value, explicative variables measuring insider ownership and control variables.

We used Tobin´s q as measure of firm value. We approximated this variable using each firm's ratio of market to book value ratio (Q), which we calculated as the book value of total assets minus the book value of common equity plus the market value of common equity divided by the book value of total assets. Many other studies use either this measure or a similar one as the dependent variable in research on the effectiveness of corporate governance mechanisms for both financial and non-financial firms (e.g., Alonso-Bonis and Andrés-Alonso, 2007; Andrés et al., 2005; Chen et al., 2008; Miguel et al., 2004).

With regard to the explicative variables representing insider ownership we used directors´ ownership, which we calculated as the proportion of shares owned by directors of the board of each company. We also included directors´ownership^2, which is the square of the variable directors´ownership, and directors´ownership^3, which is the cube of the variable directors´ ownership.

Finally, control variables that influence firm value were included to avoid any bias in the results, consistent with prior studies of corporate governance and firm value (e.g., Alonso-Bonis and Andrés-Alonso, 2007; Andrés et al., 2005;Chen et al., 2008; Miguel et al., 2004). First we included the lag value of Tobin´s q (lag firm value) to control for dynamic endogeneity (Wintoki et al., 2011). Although most studies of the relation between governance and performance ignore dynamic endogeneity (the idea that a firm's current performance affects both future governance and future performance), theory suggests that a firm's characteristics and its contracting environment affect both performance and governance, and, therefore, ignoring dynamic endogeneity may introduce bias into estimates of the relation between governance and performance. The size of the company was approached by the natural logarithm of book value of total assets (firm size), because the inclusion of the variable in absolute terms might lead to heteroskedasticity and spurious correlation problems. Previous studies have found that organisation size is related to organisation performance for various reasons, including diversification, economies of scale, access to less expensive sources of funds, and so forth, suggesting that size should be included as a control variable. Degree of financial leverage was calculated as the ratio of total firm debt to total assets (firm debt). This figure was included because firm debt provides a mechanism for curbing agency costs. The age of the firm, which was proxied by the natural logarithm of the number of years since the firm was founded (firm age), was included to control for the company's life cycle and its growth options.

Industrial allocation of companies[13]was performed through a set of 7 dummies (sector$_z$: with z ranging from 1 to 7, which takes a value of 1 when the firm belongs to sector z and a value of 0 otherwise). These variables were included to monitor industry-level factors such as economies of scale and competitive intensity, which may account for variation in firm value across industries. Year allocation of observations was performed through a set of 6dummies (year$_x$: with x ranging from 1 to 6, which takes a value of 1 when the sample observation corresponds to year x and a value of 0 otherwise). These variables were included to take into account macroeconomics effects. Country allocation of companies was performed through a set of 2 dummies (country$_y$: with y ranging from 1 to 2, which takes a value of 1 when the firm belongs to country y and 0 otherwise). They were included to take into account differences among countries because there is evidence to suggest that there are country-specific factors that may affect corporate governance relationships.

[11] We chose this threshold for two reasons. First, whereas the existing literature on the USA used levels of 10% and 20%, we tried to adjust to the more concentrated ownership structures of most European countries. Second, we sought to maintain consistency with the official definition of a family business in Europe as approved in 2008 by two international institutions representing FBs, the European Group of Owner Managed and Family Enterprises (GEEF) and the Board of the Family Business Network.

[12] We needed available data for at least five consecutive years within the 2001-2007 period to test the second-order serial correlation (Blundell and Bond, 1998), which is fundamental to guaranteeing the robustness of the estimations made via the GMM System methodology.

[13]We adopted the SIC classification (2003) (Standard Industrial Classification of Economic Activities). We excluded the financial sector because its corporate governance is highly specific and because it has its own regulations.

Table 1sums up the descriptive statistics for our two subsamples.

Table1. Descriptive statistics NFBs and FBs

Variable	Mean		Median	
	NFBs	FBs	NFBs	FBs
Firm value	1.48	1.41	1.13	1.20
Directors´ ownership	0.19	0.40	0.04	0.53
Firm size	13.50	12.91	13.19	12.58
Firm debt	0.58	0.59	0.63	0.63
Firm age	3.20	3.30	3.18	3.31

As shown in Table 2, the correlation coefficients are weak and do not violate the assumption of independence between the variables. To test for multicollinearity, the Variance Inflation Factor (VIF) was calculated for each independent variable. The results indicate that all of the independent variables had VIF values of less than 10 and that there are therefore not problems of multicollinearity (Myers, 1990).

Table 2. Correlation matrix

Correlation	1	2	3	4	FIV
1Firm value	1.00				
2Directors´ ownership	0.03	1.00			1.08
3 Firm size	-0.15 ***	-0.29 ***	1.00		1.28
4Firm debt	-0.03	-0.13 ***	0.33 ***	1.00	1.17
5 Firm age	-0.13 ***	-0.00	0.16 ***	0.01	1.03

*** denotes signification at the 1%; ** at 5%; and * at 10% level

3.3. Econometric methodology

The methodology employedis closely linked to having observations of the same firm at different points in time. Thus, the econometric approach used to test our hypotheses is panel data, which allows us to account for individual unobservable heterogeneities between different companies and to eliminate the risk of obtaining biased resultsthrough the breakdown of the error term into several components[14].This issue is particularly important when comparing FBs to NFBs and when analysing corporate governance structures. It should be taken into account that all firms and, more specifically, those owned and controlled by families, have their own particularities (McVey et al., 2005) giving rise to specific behaviours closely linked to firm culture, which in FBs is instilled by the controlling family and manifests itself in the decision-making process and consequently in firm value.

The potential endogeneity of ownership structure may seriously affect the ownership-value relation (Demsetz and Villalonga, 2001; Demsetz, 1983; Himmelberget al., 1999; Palia, 2001)[15]. Thus, to address the endogeneity problem that arises in our analysis, we used the generalised method of moments system estimator[16](Blundell and Bond, 1998).

Using the above methodology, we proposed a model that explained firm valuein accordance with the explicative variables related to insider ownership and the control variables considered. To test whether there were any significant differences between the sub-samples of FBs and NFBs, separate models were estimated for each of them, where subscripts *i* and *t* referred to the firm and time period, respectively. The steps undertaken in running the regressions are as follows. First, we entered the explicative variable *insider ownership*. In step two, we entered also the quadratic term *insider ownership*^{2}. In the third step, we included the cubic term *insider ownership*^{3}. Finally, we showed the model with all explicative variables and the control variables:

[14] $uit = YEAR_x + COUNTRY_y + SECTOR_z + \eta_t + v_{it}$ where ηi is the specific error of individual i (unobserved heterogeneity) and which lists the unobservable effects that only affect the company i; v_{it} is the random disturbance; $YEAR_t$ represents those shocks that occur at time t and affect all individuals equally; $COUNTRY_y$ *and* $SECTOR_z$ represent country and sector specific effects respectively.

[15] See Demsetz (1983) and Demsetz and Villalonga (2001) for the endogeneity of ownership concentration, and Himmelberg et al. (1999) and Palia (2001) for the endogeneity of insider ownership.

[16] The parameters were calculated in two steps, as this method is robust to heteroskedasticity.Using the Wald test of heteroskedasticity, we found that our sample suffered from this problem.

$$FIRM\ VALUE_{it} = \beta_0 + \beta_1 DIRECTORS'\ OWNERSHIP_{it} + \beta_2\ DIRECTORS'\ OWNERSHIP_{it}^2 + \beta_3\ DIRECTORS'\ OWNERSHIP_{it}^3 + \beta_4 FIRM\ SIZE_{it} + \beta_5 FIRM\ DEBT_{it} + \beta_6\ FIRM\ AGE_{it} + (\ YEAR_x + COUNTRY_y + SECTOR_z + \eta_t + \nu_{it})$$

Additionally, and in order to identify the optimal level of insider ownership for each subsample, we derive the optimal levels of insider ownership at which the firm values are maximized. To that end and according to Miguel et al. (2004), we solve for the first derivative of firm value with respect to insider ownership. Note that these cut-off points are the inflection points at which the relation between insider ownership and firm value turns from positive to negative or from negative to positive.

4. Results and discussion

The results of the models´ estimations are reported in Tables 3 and 4 for NFBs and FBs respectively. For each model, we have presented estimated coefficients and indicated whether they are statistically different from zero (p-value). The joint F tests of the overall statistical significance confirm the validity of our two final models IV and VIII for NFBs and FBs respectively (57.76 for NFBs and 9.42 for FBs,with p-values < 0.001). The AR2 tests confirm the absence of second-order serial correlation[17] (-1.03for NFBs and 0.05 for FBs,with p-values> 0.1). Finally, the Hansen tests confirm the validity of the instruments we used to avoid the endogeneity problem (22.80for NFBs and 7.38 for FBs, with p-values> 0.1).

4.1. Results for NFBs

According to Table 3, the contribution of insider ownership to firm value in NFBs is non-linear. More specifically, our empirical results show a significant cubic relationship between insider ownership and firm value. In particular, the relationship is negative for low levels of insider ownership, as the coefficient of *directors´ ownership* shows (-1.647 and p-value < 0.05), positive for intermediate levels of insider ownership, as the coefficient of *directors´ ownership*^{2} shows (4.226 and p-value < 0.05), and negative for high levels of insider ownership, as the coefficient of *directors´ ownership*^{3} shows (-2.654 and p-value < 0.1).

With the estimated coefficients we optimally derive the inflection points at which the relationship between insider ownership and firm value in NFBs turns firstly from negative to positive and lastly from positive to negative[18] (see Figure 1). Results show that if directors´ ownership is between 0 and 25.72%, increases in directors´ ownership will result in lower firm value. If directors´ ownership ranges from 25.72 to 77.59%, increases in directors´ ownership will result in higher firm value. Finally, when directors´ ownership is above 77.59%, increases in directors´ ownership will result in lower firm value. We interpret this evidence as consistent with both the convergence of interest and the entrenchment hypotheses.

These results point out that, in NFBs, for high levels of insider ownership the entrenchment hypothesis prevails. In these contexts, insiders are looking out for their own welfare rather than that of all firm's shareholders (Stulz, 1988). The finding that firm value decreases for the very highest insider ownership levels-above 77.59%-compared to previous studies is consistent with the argument that the entrenchment effect for firms with a large nonfamily shareholder in Southern Europe requires higher ownership than for firms in USA[19] (e.g., Holderness et al. (1999) or Morck et al. (1988) show that insiders get entrenched when ownership ranges from 5 to 25%; Adams and Santos (2006), Barnhart and Rosenstein (1998), Faleye (2007) or McConnell and Servaes (1990) show that insiders get entrenched when ownership is above 10, 34, 5 and 40% respectively).This may be due to greater institutional ownership in these firms, reducing the ability of insiders to entrench themselves.

However, for intermediate levels of insider ownership-ranging from 25.72 to 77.59%-the convergence of interest hypothesis dominates. In this situation, insiders have greater incentives to maximize firm value as their equity holding grows. Consistent with Morck et al. (1988), Short and Keasey (1999) at above a certain level of ownership, corporate directors are faced with such severe financial penalties for failing to maximise the value of their companies that they are forced to make decisions which will maximise firm value, regardless of how this affects their private benefits of control.

[17] Given the use of first-difference transformations, we expected some degree of first-order serial correlation (test AR1), and this correlation does not invalidate our results. However, the presence of second-order serial correlation does signal omitted variables.

[18] These cut-off points are calculated as follows:

$$IP(directors'ownership) = \frac{-2\beta_1 \pm \sqrt{(2\beta_2)^2 - 12\beta_1\beta_3}}{6\beta_3}$$

[19] Miguel et al. (2004) show that in Spain insiders get entrenched when ownership ranges from 35 to 70%, although their sample includes all quoted companies' for the period ranging from 1990 to 1999 and therefore they are considering both firms with and without a large shareholder.

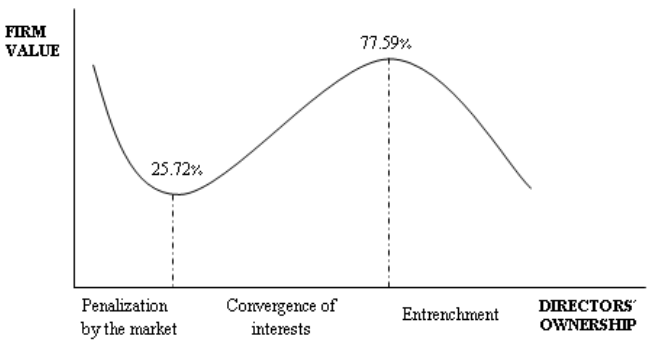
Table 3. GMM Estimations for NFBs

Coefficients from the System GMM regression are reported. Yes: inclusion of dummy variables. Wald-test year dums: Wald test of the joint significance of the year's dummy variables; Wald–test country dums: Wald test of the joint significance of the countries' dummy variables; Wald–test sector dums: Wald test of the joint significance of the sector's dummy variables. JOINT F-test: F test of the joint significance of the variables in the model, under the null hypothesis of lack of relationship. Hansen: over-identifying restriction test, distributed as a chi-square under the null hypothesis of no relation between the instruments and the error term. AR(1) is the first order serial correlation statistic using residuals in first differences, under the null hypothesis of non-serial correlation.AR(2) is the second order serial correlation statistic using residuals in first differences, under the null hypothesis of non-serial correlation.

	Model I	**Model II**	**Model III**	**Model IV**
Dependent variable Firm value (Q)	**Coef.** **p-value**	**Coef.** **p-value**	**Coef.** **p-value**	**Coef.** **p-value**
Constant	1.187 *** (0.000)	1.015 *** (0.000)	0.935 *** (0.000)	0.425 (0.114)
Lag firm value	0.229 * (0.063)	0.428 *** (0.000)	0.459 *** (0.000)	0.771 *** (0.000)
Directors´ ownership	-0.639 ** (0.036)	-1.981 *** (0.000)	-4.448 ** (0.023)	-1.647 ** (0.041)
Directors´ ownership^2		1.889 ** (0.023)	10.240 ** (0.048)	4.226 ** (0.040)
Directors´ ownership^3			-6.133 * (0.077)	-2.654 ** (0.049)
Firm size				-0.004 ** (0.046)
Firm debt				0.125 (0.301)
Firm age				-0.017 (0.459)
year				YES
country				YES
sector				YES
Inflection points				25.72% 77.59%
Tests of significance:				
Wald-test year dums				7.22 *** (0.000)
Wald-test country dums				3.35 ** (0.038)
Wald-test sector dums				0.74 (0.641)
F-test of join significance	4.94 *** (0.008)	12.04 *** (0.000)	14.82 *** (0.000)	57.76 *** (0.000)
Instruments validity test:				
Hansen test	9.02 (0.251)	15.67 (0.154)	10.83 (0.544)	22.80 (0.472)
Autocorrelation test:				
AR(1)		-1.26 (0.207)	-1.44 (0.149)	-2.24 ** (0.025)
AR(2)	-0.92 (0.360)	-1.07 (0.286)	-1.18 (0.236)	-1.03 (0.303)

*** denotes signification at the 1%; ** at 5%; and * at 10% level

Figure 1. Relationship between firm value and directors´ ownership in NFBs



The finding that firm value increases at an intermediate level of insider ownership range of 25.72–77.59% compared to previous studies is consistent with the argument that interest alignment for firms with a large nonfamily shareholder requires higher ownership than for firms in USA (e.g. Holderness et al. (1999) or Morck et al. (1988) show that the convergence of interests prevails when ownership ranges from 0 to 5%; Adams and Santos (2006), Barnhart and Rosenstein (1998), Faleye (2007) or McConnell and Servaes (1990) show that the convergence of interests prevails when ownership ranges from 0 to 10, 34, 5 and 40% respectively). The initial decline in Q as ownership increases from 0% to 25.72% is puzzling as directors´ entrenchment is unlikely to occur at such a low level of ownership except for very large firms with very highly diversified ownership (Cui and Mark, 2002). It is possibly that in these firms low insider ownership (below25.72%) is insufficient to align managers and shareholders interests to overcome the control of the board by insiders. In fact, increases in ownership at low levels would merely serve to provide more control by insiders. Another reason may be that these increases of ownership at low levels result from generous awards of stock and stock options by insider-dominated boards that are viewed negatively by the market.

As for the remainder of the variables included in the model, our results are robust to the inclusion of control variables. We have found that *lag firm value* has a positive and significant effect on firm value, confirming the dynamic endogeneity. The effect of *firm size* on firm value is negative, while the contribution of firm debt is not significant. Finally, year and country effects are significant, while sector effects are not.

4.2. Results for FBs

According to Table 4, the contribution of insider ownership to firm value in FBs is non-linear. More specifically, our empirical results show a significant U-shaped[20] relationship between insider ownership and firm value, as the positive coefficient of *directors´ ownership* (1.292 and p-value < 0.01) and the negative coefficient of *directors´ ownership*^{2} (-0.790 and p-value < 0.01) indicate.

With the estimated coefficients we optimally derive the inflection point at which the relationship between insider ownership and firm value in FBs turns from positive to negative[21] (see Figure 2). Results show that if directors´ ownership is between 0 and 81.74%, increases in directors´ ownership will result in higher firm value. If directors´ ownership is above 81.74% increases in directors´ ownership will result in lower firm value. These results point out that, in FBs, for directors´ ownership up to 81.74% insiders have greater incentives to maximize firm value as their equity holding grows and, thus, the convergence of interest hypothesis prevails. However, for very high levels of directors´ ownership the entrenchment hypothesis dominates, because benefits deriving from the alignment of interests will be offset by drawbacks resulting from family entrenchment and then by the expropriation of non-family minority shareholders´ value.

This result is consistent with Miguel et al. (2004), who found that the value of Spanish firms rises as ownership concentration increases from 0 to 87%. Although we are considering not the level of ownership concentration, but the insider ownership, as we have stated in the theoretical section of the paper there is a high convergence between ownership concentration and insider ownership in FBs (Block et al., 2011).

As for the remainder of the variables included in the model, our results are robust to the inclusion of control variables. We found that *lag firm value* has a positive and significant effect on firm value, confirming the dynamic endogeneity. *Firm size* had not a significant effect on firm value, while the effect of firm debt is negative. Finally, year, country and sector effects are significant.

[20] As it is shown in Table 4, the coefficient of directors´ ownership^3 is positive but non-significant. Therefore, we have not included the cubic form of insider ownership in the final model VIII, but we have model it as a quadratic relationship. Moreover, when modelling the relationship between firm value and insider ownership in FBs as a cubic relationship, one of the inflection points indicate an insider ownership above 100% of property rights and total control rights are, reasonably, required to sum to 100%.

[21] This cut-off pointis calculated as follows:

$$IP(directors´ownership) = \frac{-\beta_1}{\beta_2}$$

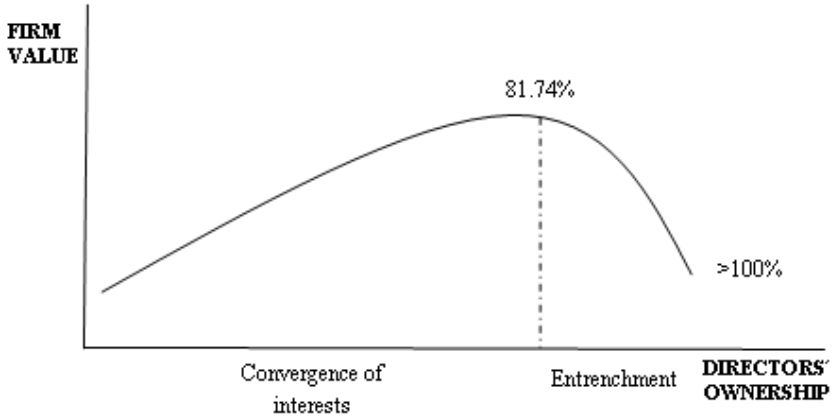
Table 4. GMM Estimations for FBs

Coefficients from the System GMM regression are reported. Yes: inclusion of dummy variables. Wald-test year dums: Wald test of the joint significance of the year's dummy variables; Wald–test country dums: Wald test of the joint significance of the countries' dummy variables; Wald–test sector dums: Wald test of the joint significance of the sector's dummy variables. JOINT F-test: F test of the joint significance of the variables in the model, under the null hypothesis of lack of relationship. Hansen: over-identifying restriction test, distributed as a chi-square under the null hypothesis of no relation between the instruments and the error term. AR(1) is the first order serial correlation statistic using residuals in first differences, under the null hypothesis of non-serial correlation.AR(2) is the second order serial correlation statistic using residuals in first differences, under the null hypothesis of non-serial correlation.

	Model V	**Model VI**	**Model VII**	**Model VIII**
Dependent variable Firm value (Q)	**Coef.** **p-value**	**Coef.** **p-value**	**Coef.** **p-value**	**Coef.** **p-value**
Constant	0.360 *** (0.041)	0.448 *** (0.001)	-0.049 (0.846)	-0.726 (0.567)
Lag firm value	0.581 *** (0.000)	0.529 *** (0.000)	0.714 *** (0.000)	0.895 *** (0.000)
Directors´ ownership	0.430 ** (0.046)	3.156 *** (0.000)	3.999 ** (0.024)	1.292 *** (0.002)
Directors´ ownership^2		-3.750 *** (0.000)	-5.746 ** (0.035)	-0.790 *** (0.001)
Directors´ ownership^3			1.241 (0.140)	
Firm size				0.016 (0.784)
Firm debt				-0.308 ** (0.040)
Firm age				0.078 (0.139)
year				YES
country				YES
sector				YES
Inflection points				81.74%
Tests of significance:				
Wald-test year dums				12.89 *** (0.000)
Wald-test country dums				3.17 ** (0.048)
Wald-test sector dums				1.95 * (0.100)
F-test of join significance	4.14 ** (0.046)	49.04 *** (0.000)	2.66 * (0.077)	9.34 *** (0.000)
Instruments validity test:				
Hansen test	18.30 (0.147)	8.14 (0.520)	7.75 (0.458)	5.84 (0.322)
Autocorrelation test:				
AR(1)	-1.14 (0.256)	-1.65 * (0.099)	-0.44 (0.661)	-3.42 *** (0.001)
AR(2)	1.09 (0.278)	0.93 (0.354)	1.09 (0.278)	1.17 (0.240)

*** denotes signification at the 1%; ** at 5%; and * at 10% level

Figure 2. Relationship between firm value and directors´ ownership in FBs



Our empirical analysis shows that the effect of directors´ ownership on firm value changes depending on the identity of the large shareholder. Contrasting findings for FBs and NFBs may suggest that the qualitative dimension of the ownership structure (whether the company is family or not family controlled) is of importance. The positive effect of directors' ownership on firm value (as a result of the convergence of interests) is more prevalent in FBs than in NFBs, due to altruistic effects generated by family ties and the longer time horizons of family shareholders (Block et al., 2011; Le Breton-Miller and Miller, 2006; Schulze et al., 2001). The finding that firm value increases at a higher level of directors´ ownership range of 25.72–77.59% in NFBs as compared with rises from 0% up81.74% of directors´ ownership in FBs is consistent with the argument that interest alignment for NFBs requires higher ownership than for FBs. Whereas the market is penalizing NFBs for low levels of directors´ ownership, because investors are interpreting increases in ownership at low levels would merely serve to provide more control by insiders, FB investors believe in the business's long-term investment philosophy of FBs that creates one of their greatest competitive advantages (Habbershon and Williams, 1999). Family shareholders with controlling power and many shares are more likely to supervise the company to protect their own interests due to the greater linkage between their own wealth and company performance. In a study of continental Europe, Barontini and Caprio (2006) found that only when the family is not represented in the board do FBs seem to perform worse than NFBs. Shleifer and Vishny (1997) have suggested that family ownership and management can add value when a country's political and legal systems do not provide sufficient protection against the expropriation of minority shareholders' value by the majority shareholder. This suggestion has been formalised by Burkart et al. (2003). Their results show that in economies with a strong legal system that prevents expropriation by majority shareholders, a professionally managed firm with widely held stock is optimal. However, where the legal system cannot protect minority shareholders, as in most countries in the European context (La Porta et al., 1999), it is optimal to keep both control and management within the family. Empirical evidence for Western Europe (Maury, 2006) shows that there are benefits to family control with respect to control by other non-family blockholders in non-majority-held firms.

However, although it is possible that FBs may be influenced by family shareholders´ interest other than profit maximization, including family harmony, firm survival or the continuation of family ownership, management and control, the likelihood of expropriation minority shareholders´ wealth does not seem to be more prevalent in FBs than in NFBs in our sample. As it is shown in table 5, the entrenchment effect occurs at a similar level of directors' ownership in both FBs and NFBs. At levels around80% of directors' ownership, insiders become sole owners and have complete control of the company. The Southern European capital markets are relatively illiquid, as compared to those of the United States, the United Kingdom, Germany, and Japan. The expropriation of minority shareholders may be more likely when stockmarkets are illiquid, since the relative low liquidity of capital market would impedeminority shareholders to sell out when they perceive abuses by controlling owners (Maug, 1998; Miguel et al., 2004).

5. Conclusions

This paper investigates the relationship between directors´ shareholdings as an internal governance structure and firm value in the Southern European context. We adopt a contingency approach wherein the impact of directors´ shareholding on firm value is seen as a relationship that varies depending on circumstances. By using a panel data sample and taking into account the endogenous nature of

ownership structure, we found evidence consistent with both the convergence of interest and the entrenchment hypotheses.

Moreover, our research highlights the importance of suitably contextualising any assessment of insider ownership as a business governance mechanism. In this sense, the analysis showed that within a context of high ownership concentration, the identity of the large shareholder influences the relationship between directors´ ownership and firm value.

Overall, the results obtained confirm that insider ownership matters and that the convergence of interests and the entrenchment effects are different for FBs and NFBs. Differences in corporate governance systems could explain different value-ownership relations across different institutional contexts.

We feel that the study findings may be particularly pertinent for FB owners and board members, their advisors, other stakeholders, practitioners, regulatory bodies overseeing corporate governance, and the scientific community in general.

Our research has several limitations that suggest opportunities for future research. First, it must be acknowledged that the analysis is limited to publicly traded FBs and NFBs that also have large shareholders and that we only considered forms operating within the tradition of *French Civil Law*. Further research is needed to test whether the same conclusions can be applied to both different countries and different legal systems. In addition, FBs may have other nonfamily shareholders with controlling shares that can influence the behaviour of shareholders and family directors and the creation of firm value. Future research should analyse the impact of the presence of institutional investors on the relationship between insider ownership and the value of FBs. The analysis carried out here points to the need for researchers to further probe the differences between FBs and NFBs with regard to their practices and governance.

References

1. Adams, R. B. and Santos, J. A. C. (2006): "Identifying the effect of managerial control on firm performance". *Journal of Accounting and Economics*, vol. 41, nº 1–2, pp. 55–85.
2. Aguilera RV and Jackson G (2003): "The cross-national diversity of corporate governance: Dimensions and determinants". *Academy of Management Review*, vol. 28, nº 3, pp. 447–465.
3. Alonso-Bonis, S. and Andrés-Alonso De, P. (2007): "Ownership structure and performance in large Spanish companies: Empirical evidence in the context of an endogenous relation". Corporate Ownership & Control, vol. 4, nº 4, pp. 206-216.
4. Anderson, R.C. and Reeb, D.M. (2003): "Founding-family ownership and firm performance: Evidence from the S&P500". *The Journal of Finance,* vol. 58, nº 3, pp. 1301-1328.
5. Andrés, P., Azofra, V. and López, F. (2005): "Corporate boards in OECD countries: Size, composition, functioning and effectiveness". *Corporate Governance: An International Review,* vol. 13, nº 2, pp. 197-210.
6. Bammens, Y., Voordeckers, W. and Van Gils, A. (2010): "Boards of directors in family businesses: A literature review and research agenda". *International Journal of Management Reviews,* DOI: 10.1111/j.1468-2370.2010.00289.x.
7. Barnhart, S.W. and Rosenstein, S. (1998):"Board composition, managerial ownership and firm performance: An empirical analysis". *Financial Review*,vol. 33, pp. 1-16.
8. Barontini, R. and Caprio, L. (2006):"The effect of family control on firm value and performance: Evidence from Continental Europe". *European Financial Management,*vol. 12, pp. 689–723.
9. Bartholomeusz, S., and Tanewski, G. A. (2006): "The relationship between family firms and corporate governance". *Journal of Small Business Management*, vol. 44, nº 2, pp. 245-267.
10. Baysinger, B.D. and Butler, H.N. (1985):"Corporate governance and the board of directors: Performance effects of changes in board composition". *Journal of Law, Economics, and Organization*, vol. 1, pp.101-124.
11. Berle, A.A. and Means, C.G. (1932), *The Modern Corporation and Private Property*. Macmillan Publishing Co, New York.
12. Block, J.H., Jaskiewicz, P. and Miller, D. (2011): "Ownership versus management effects on performance in family and founder companies: A Bayesian reconciliation". *Journal of Family Business Strategy*, vol. 2, nº 4, pp. 232-245.
13. Blundell, R. and Bond, S. (1998):"Initial conditions and moment restrictions in dynamic panel data models". *Journal of Econometrics*, vol. 87, pp.111-143.
14. Brickley, J.A., Lease, R.C. and Smith, C.W. Jr. (1988):"Ownership structure and voting on antitakeover amendments".*Journal of Financial Economics*, vol. 20, pp. 267-291.
15. Chen, C., Lin, J. B. and Yi, B. (2008):"CEO duality and firm performance - An endogenous issue". *Corporate Ownership & Control*, vol. 6, nº 1, pp. 58-65.
16. Cui, H. and Mak, Y.T. (2002):"The relationship between managerial ownership and firm performance in high R&D firms". *Journal of Corporate Finance*, vol. 8, pp. 313–336.
17. Demsetz, H. (1983): "The structure of ownership and the theory of the firm". *Journal of Law and Economics*,vol. 26, pp.375-390.
18. Demsetz, H. and Lehn, K. (1985): "The structure of corporate ownership: Causes and consequences". *The Journal of Political Economy*, vol. 93, nº 6, pp. 1155-1177.
19. Demsetz, H. and Villalonga, B. (2001): "Ownership structure and corporate performance". *Journal of Corporate Finance,*vol. 7, pp.209-233.
20. Díaz, B. and García, M. (2004): "Asymmetric information and monitoring behaviour in block trades: An empirical analysis for Spain". *Corporate Ownership & Control*, vol. 2, nº 1, pp. 25-37.
21. Faleye, O. (2007): "Does one hat fit all? The case of corporate leadership structure". *Journal of*

Management and Governance, vol. 11, nº 3, pp. 239-259.
22. Finegold, D., Hecht, D. and Benson, G. (2007): "Corporate boards and company performance: Review of research in light of company reforms". *Corporate Governance: An International Review*, vol. 15, pp.865-878.
23. García-Ramos, R. and Olalla, M.G. (2011):"The structure of board of directors in family versus non-family firms: Empirical evidence in Spain". *Revista Española de Financiación y Contabilidad-Spanish Journal of Finance and Accounting*, vol. 40, nº 149, pp. 609-636.
24. Gómez-Mejia, L.R., Nuñez-Nickel, M. and Gutierrez, I. (2001): "The role of family ties in agency contracts". *Academy of Management Journal*, vol. 44, pp. 81-96.
25. Habbershon, T.G. y Williams, M.L. (1999): "A resource-based framework for assessing the strategic advantages of family firms". *Family Business Review*, vol. 12, pp.1-22.
26. Hermalin, B.E. andWeisbach, M.S. (1991): "The effect of board composition and direct incentives on firm performance". *Financial Management*, vol. 20, pp.101-112.
27. Himmelberg, C., Hubbard, R. and Palia, D. (1999): "Understanding the determinants of managerial ownership and the link between ownership and performance". *Journal of Financial Economics*,vol. 53, pp. 353-384.
28. Holderness, C., Kroszner, R. and Sheehan, D. (1999): "Were the good old days that good? Changes in managerial stock ownership since the Great Depression". *Journal of Finance*,vol. 54, pp. 435-469.
29. Huse, M., Hoskisson, R., Zattoni, A. and Viganó, R. (2011): "New perspectives on board research: Changing the research agenda". *Journal of Management and Governance*, vol. 15, pp. 5–28.
30. Fama, E.F. and Jensen, M.C. (1983): "Agency problems and residual claims". *The Journal of Law and Economics*, vol. 26, nº 2, pp. 301-325.
31. Jensen M.C and Meckling, W.H. (1976):"Theory of the firm: Managerial behaviour, agency costs and ownership structure". *Journal of Financial Economics*, vol. 3, nº 4, pp. 305-360.
32. Jensen, M. (1993): "The modern industrial revolution, exit and the failure of internal control systems. *Journal of Finance*, vol. 48, nº 3, pp. 481-531.
33. Lane, S., Astrachan, J., Keyt, A. and McMillan, K. (2006): "Guidelines for family business boards of directors". *Family Business Review*,vol. 19, nº 2, 47-167.
34. La Porta, R., López-de-Silanes, F. and Shleifer, A. (1999): "Corporate ownership around the world". *The Journal of Finance*,vol. 54, nº 2, pp. 471-517.
35. Maug, E. (1998): "Large shareholders as monitors: is there a trade-off between liquidity and control?" *Journal of Finance, vol.* 53, pp. 65-97.
36. Maury, B. (2006): "Family ownership and firm performance: empirical evidence from Western European corporations". *Journal of Corporate Finance*, vol. 12, pp. 321–341.
37. Mazzi, C. (2011):"Family business and financial performance: Current state of knowledge and future research challenges". *Journal of Family Business Strategy*, vo. 2, nº 3, pp. 166– 181.
38. McConnell, J. and Servaes, H. (1990): "Additional evidence on equity ownership and corporate value". *Journal of Financial Economics*, vol. 27, pp. 595-612.
39. McVey, H., Draho, J. and Stanley, M. (2005): "U.S. family-run companies- they may be better than you think". *Journal of Applied Corporate Finance*, vol. 17, nº4, pp. 133-144.
40. Miguel de, A., Pindado, J. and Torre de la, C. (2004): "Ownership structure and firm value: New evidence from the Spanish Corporate Governance System" *Strategic Management Journal*, vol. 25, pp.1199–1207.
41. Miller, D. and Le Breton-Miller, I. (2006): "Family Governance and Firm Performance: Agency, Stewardship and Capabilities". *Family Business Review*, vol. 19, nº 1, pp. 73-87.
42. Morck, R., Shleifer, A. and Vishny, R. (1988): "Management ownership and market valuation: An empirical analysis". *Journal of Financial Economics*,vol. 20, pp. 293-315.
43. Myers, R. H. (1990), *Classical and modern regression with applications*, (2nd ed.). Boston:PWS-Kent.
44. Palia D. (2001): "The endogeneity of managerial compensation in firm valuation: a solution". *Review of Financial Studies*,vol. 14, pp.735-764.
45. Sánchez-Ballesta, J.P. and García-Meca, E. (2007): "A meta-analytic vision of the effect of ownership structure on firm performance". *Corporate Governance: An International Review*, vol. 15, nº 5, pp. 879–893.
46. Schulze, W.S., Lubatkin, M.H., Dino, R.N. and Bucchold, A.K. (2001): "Agency relationship in family firm: Theory and evidence". *Organization Science*,vol. 12, nº 2, pp. 9-116.
47. Shleifer, A. and Vishny, R. (1997): "A survey of corporate governance". *Journal of Finance*, vol. 52, pp. 737-783.
48. Short, H., Keasey, K. (1999): "Managerial ownership and the performance of firms: evidence from the U.K.". *Journal of Corporate Finance*, vol. 5, pp.79-101.
49. Stulz, R.M. (1988):"Managerial control of voting rights: financing policies and the market for corporate control". *Journal of Financial Economics*,vol. 20, pp. 25–54.
50. Villalonga, B. and Amit, R. (2006): "How do family ownership, control and management affect firm value?" *Journal of Financial Economics*, vol. 80, nº 2, pp. 385-417.
51. Wintoki, M.B., Linck, J.S. and Netter, J.M. (2011): "Endogeneity and the dynamics of Corporate Governance". *Journal of Financial Economics*, Forthcoming. Available at SSRN: http://ssrn.com/abstract=970986.

A REVIEW OF THE EMPIRICAL DETERMINANTS OF AUDIT DELAY

Salem Eghlaiow*, Guneratne Wickremasinghe**, Stella Sofocleous*

Abstract

Timeliness in financial reporting is considered to be a significant characteristic of accounting information. Since audit delay has been found to be the single most important factor in determining the timing of financial reports releases, this concept paper discuss the determinants of "audit delay", the number of calendar days from fiscal year-end to the audit report date. The first section sheds some light on the significance of studying the determinants of audit delay. Next, it reviews the literature on audit report delay (ARL) and its determinants.

Keywords: Audit Delay, Timeliness, Company

**Corresponding author; School of Accounting and Finance and Centre for Strategic Economic Studies, Victoria University, Melbourne, Victoria 8001, Australia*
Tel: +61399191477
Email: guneratne.wickremasinghe@vu.edu.au
**School of Accounting and Finance, Faculty of Business and Law, Victoria University*
****School of Accounting and Finance, Faculty of Business and Law, Victoria University*

1. Introduction

The usefulness of published corporate financial reports depends on their accuracy and timeliness. Timeliness is recognized as an important characteristic of accounting information by the accounting profession, the users of accounting information and the regulatory agencies (Zeghal, 1984). The concept of usefulness of published corporate financial reports has been adopted as an important objective by many regulatory bodies such as the Accounting Principles Board (1970), the Canadian Institute of Chartered Accountants (1972), the Institute of Chartered Accountants in England and Wales (1975), and the Financial Accounting Standards Board (1979) (Hossain and Taylor, 1998). Therefore, now than ever before timeliness of financial statements has become the focus of an increasing amount of attention by accounting researchers and regulatory bodies (Leventis et al., 2005).

The significance of a timely audit is due to the fact that publication of the financial reports is linked to the completion of auditing processes (Leventis et al., 2005). Put in another way, it is not possible to release annual financial statements unless they be subjected to external audit. Moreover, it is believed that, timely reporting contributes to the prompt and efficient performance of stock markets in their pricing and evaluation functions (Owusu-Ansah, 2000). Consequently, the delay in the publication of financial reports may lead to an increase in the degree of non-verification that accompany investment decisions and also lead to the appearance of unofficial information that contributes in misleading the decisions makers

Carslaw and Kaplan (1991) have contend that decisions based on the information in financial statement may be affected by the timeliness of information release. Therefore, there is no value in accounting information if it is not available in time for making informed decisions. This means that the information may lose its relevance if there is undue delay in it being reported. This delay has been regarded as the most important determinant of the timeliness of the earnings announcement (Bamber et al., 1993, Chambers and Penman, 1984, Givoly and Palmon, 1982, Han and Wild, 1997, Kinney Jr and McDaniel, 1993, Sinclair and Young, 1991). More specifically, companies wait until at least the annual audit report date before announcing earnings. This demonstrates the vital role of timeliness of audit reports in determining the timing of information release. According to Abdulla (1996) the longer the period between year end and publication of annual report, the higher the chances that the information will be leaked to certain interested investors. In addition, undue delay in releasing financial statements increases uncertainty associated with investment decisions (Ashton et al., 1987b). Audit delay is generally defined as the length of time from a company's fiscal year end to the date of the auditor report.

2. Significance of the study

The significance of this study flows out from the negative impacts that accompany the delay in issuing the auditor's report from delay in issuing the financial reports, the matter that negatively reflects on the published accounting information of which timeliness is considered one of their important characteristics (Ashton, Willingham & Elliott 1987). Further, timeliness is one of the elements of information validity for purposes of taking decisions by investors and lenders and other parties related to the company. Timeliness may have negative repercussions on the public that deals with company's financial reports.

3. Literature review

Existing research on the audit report delay has been conducted in different countries, in different domains, and for different purposes including Australia (Dyer Iv and McHugh, 1975, Davies and Whittred, 1980, Whittred, 1980, Lai and Cheuk, 2005), New Zealand (Courtis, 1976, Gilling, 1977, Carslaw and Kaplan, 1991), Canada (Graul and Newton, 1989, Ashton et al., 1989b, Newton and Ashton, 1989), the US (Garsombke, 1981, Ashton et al., 1987b, Bamber et al., 1993, Schwartz and Soo, 1996, Knechel and Payne, 2001, Knechel and Sharma, 2008), Bangladesh (Ahmed, 2003, Imam et al., 2001, Karim et al., 2006), Spain (Bonsón-Ponte et al., 2008), Greece (Leventis and Weetman, 2004, Leventis et al., 2005, Owusu-Ansah and Leventis, 2006), Zimbabwe (Owusu-Ansah, 2000), Pakistan (Hossain and Taylor, 1998), France (Soltani, 2002). Moreover, the most common variables investigated in these studies are client size, industry, and year-end, reporting a loss, presence of an extraordinary item, client complexity, auditor size and type of audit opinion issued. While these studies on audit delay share many similarities, they also present peculiarities that differentiate them. Studies in the above countries show differences in respect of periods, methodology, variables introduced and conclusions obtained. Interestingly, none of previous studies on audit delay had queried audit practitioners what corporate attributes that they believe are the most likely the causes of audit delay.

4. Determinants of timeliness of audit reporting

4.1 Size of company

The size of company measured by total assets is the most popular factor of audit delay that has been used in previous studies (Ashton et al., 1989b, Courtis, 1976, Davies and Whittred, 1980, Gilling, 1977, Newton and Ashton, 1989, Carslaw and Kaplan, 1991, Abdulla, 1996). Most of these prior studies found a negative association between the audit delay and the company size. This is possibly due to the ability of larger companies to pressure auditors to complete the audit work in a timely manner (Ahmad and Kamarudin). In addition, larger companies may have their audit reports completed earlier than smaller ones because larger companies may have stronger internal controls, which affect the audit work due to the tendency for the auditor being expected to rely more on internal controls and reduce the extent of substantive tests (Almosa and Alabbas).

4.2 Nature of company's activity

It is expected that non-financial firms are more likely to have audit delay compared to financial firms (Ashton et al., 1987b, Bamber et al., 1993, Ahmad and Kamarudin). To justify why the audit delay is expected to be shorter for financial institutions, these studies have argued that the financial services companies appear to have little or no inventory. Inventories are difficult to audit and represent an area where material errors frequently occur. Thus, the lower the proportion of inventory in association to other types of assets, the shorter the audit delay is expected to be (Carslaw and Kaplan, 1991).

4.3 Internal control system in the company

One of the main factors, which is likely to decide the total input required for an external audit is the quality of internal control systems (Givoly and Palmon, 1982). It has been argued that companies which have stronger internal controls, which in turn should reduce the propensity for financial statements errors to occur and enable auditor(s) to rely on controls more extensively and to perform less interim work, are likely to have shorter audit delay (Carslaw and Kaplan, 1991). Ashton et al. (1987b) stated that audit delay is significantly longer for companies that have poorer internal controls.

4.4 Company year-end

Several studies used the timing of company year-end as an independent variable to explain audit delay (Carslaw and Kaplan, 1991, Ashton et al., 1987b, Ashton et al., 1989b, Newton and Ashton, 1989, Ahmad and Kamarudin). A company that has a financial year-end similar to the others is expected to experience longer audit delay (Che-Ahmad and Abidin, 2009). This is due to the fact that a large number of audits with the same financial year-end date may cause scheduling problems for the auditor (Carslaw and Kaplan, 1991). Ashton,Graul & Newton (1989a) found that audits conducted during the "busy season" had shorter delays than those conducted during the other months.

4.5 Audit firm size

Another explanatory variable is the size of audit firm. Several studies have examined empirically the association between the attribute of the audit firm (size of audit firm or international link of the auditing firm) and audit report lag. Whereas Gilling (1977) found a significant positive relationship between the audit delay and the size of the auditing firms. Garsombke (1981), Carslaw and Kaplan (1991), Davies and Whittred (1980), Hossain and Taylor (1998) and Almosa and Alabbas(year) found that there is insignificant relationship between the audit firm size and audit report lag. Moreover, it is expected that larger audit firms may be able to complete audits on a timelier basis because they may have more resources and use more qualified audit staff.

4.6 Extraordinary items

Extraordinary items, by definition, reflect non-recurring events arising from something other than the company's normal operations (Ashton et al., 1989a). Several prior studies have investigated the association of extraordinary items with audit report lag (Ashton et al., 1989b, Newton and Ashton, 1989, Bamber et al., 1993). These extraordinary items are expected to require additional time to audit, discuss and negotiate with the management (Leventis et al., 2005).

4.7 Type of audit opinion

Several authors (Whittred, 1980, Carslaw and Kaplan, 1991, Ashton et al., 1987b, Newton and Ashton, 1989, Ahmad and Kamarudin, Leventis et al., 2005, Bonsón-Ponte et al., 2008) have introduced qualifications or reservations expressed by the auditor as one of the factors that may determine the delays observed in auditing. The qualified opinion is viewed as representing a negative view of the companies' financial affairs and thus slows down the audit process (Che-Ahmad and Abidin, 2009). Bamber, Bamber & Schoderbek (1993) argued that a qualified opinion is not likely to be issued until the auditor has spent considerable time and effort in performing additional audit procedures. Moreover, Leventis et al. (2005) have argued that "auditors are expected to extend tests when they find or suspect irregularities, and partly because auditors might wish to take more time to audit transactions as a defence against any potential future litigation".

4.8 Profitability

Several researchers have used profitability as an explanatory variable for audit delay (Ashton et al., 1987a, Carslaw and Kaplan, 1991, Bamber et al., 1993, Ahmad and Kamarudin, Almosa and Alabbas). They argued that companies reporting a profit for the period are expected to minimize audit delay compared to the ones reporting a loss. Therefore, a negative association is expected between the audit delay and companies reporting a profit. The argument behind this is that companies with a profit are expected to attempt to invite the auditor to complete the audit engagement as quickly as possible to release their audited financial reports (Hossain and Taylor, 1998).

5. Conclusion

Delay in the publication of financial reports, especially, in emerging markets has numerous negative impacts on those who deal with these reports. This is mainly due to the limited availability of financial information beyond the financial statements in these markets. Therefore, a better understanding of factors affecting the timeliness of audit reports will immensely enhance the efficiency of audit work leading to informed decisions. Further, the availability of reliable and timely financial information for decision making reduces the information asymmetry prevailing between corporate entities and their stakeholders in emerging markets.

References

1. ABDULLA, J. (1996) The timeliness of Bahraini annual reports. *Advances in International Accounting,* 9**,** 73-88.
2. AHMAD, R. & KAMARUDIN, K. AUDIT DELAY AND THE TIMELINESS OF CORPORATE REPORTING: MALAYSIAN EVIDENCE.
3. AHMED, K. (2003) The timeliness of corporate reporting: A comparative study of South Asia. *Advances in International Accounting,* 16**,** 17-44.
4. ALMOSA, S. & ALABBAS, M. Audit delay: Evidence from listed joint stock companies in Saudi Arabia.
5. ASHTON, R., GRAUL, P. & NEWTON, J. (1989a) Audit delay and the timeliness of corporate reporting*. *Contemporary Accounting Research,* 5**,** 657-673.
6. ASHTON, R., WILLINGHAM, J. & ELLIOTT, R. (1987a) An empirical analysis of audit delay. *Journal of Accounting Research,* 25**,** 275-292.
7. ASHTON, R. H., GRAUL, P. R. & NEWTON, J. D. (1989b) Audit delay and the timeliness of corporate reporting. *Contemporary Accounting Research,* 5**,** 657-673.
8. ASHTON, R. H., WILLINGHAM, J. J. & ELLIOTT, R. K. (1987b) An Empirical Analysis of Audit Delay. *Journal of Accounting Research,* 25**,** 275-292.
9. BAMBER, E. M., BAMBER, L. S. & SCHODERBEK, M. P. (1993) Audit Structure and Other Determinants of Audit Report Lag: An Empirical Analysis. *Auditing,* 12**,** 1-23.
10. BONSÓN-PONTE, E., ESCOBAR-RODRÍGUEZ, T. & BORRERO-DOMÍNGUEZ, C. (2008) Empirical Analysis of Delays in the Signing of Audit Reports in Spain. *International Journal of Auditing,* 12**,** 129-140.
11. CARSLAW, C. A. P. N. & KAPLAN, S. E. (1991) An Examination of Audit Delay: Further Evidence from New Zealand. *Accounting & Business Research,* 22**,** 21-32.

12. CHAMBERS, A. E. & PENMAN, S. H. (1984) Timeliness of Reporting and the Stock Price Reaction to Earnings Announcements. *Journal of Accounting Research,* 22**,** 21-47.
13. CHE-AHMAD, A. & ABIDIN, S. (2009) Audit Delay of Listed Companies: A Case of Malaysia. *International Business Research,* 1**,** P32.
14. COURTIS, J. (1976) Relationships between timeliness in corporate reporting and corporate attributes. *Accounting and Business Research,* 6**,** 46–56.
15. DAVIES, B. & WHITTRED, G. (1980) The Association Between Selected Corporate: Attributes and Timeliness in Corporate: Reporting: Further Analysis. *Abacus,* 16**,** 48-60.
16. DYER IV, J. C. & MCHUGH, A. J. (1975) The Timeless of the Australian Annual Report. *Journal of Accounting Research,* 13**,** 204-219.
17. GARSOMBKE, H. (1981) The timeliness of corporate financial disclosure. *Communication via Annual Reports***,** 204-218.
18. GILLING, D. (1977) Timeliness in corporate reporting: some further comment. *Accounting and Business Research,* 7**,** 34–36.
19. GIVOLY, D. & PALMON, D. (1982) Timeliness of Annual Earnings Announcements: Some Empirical Evidence. *Accounting Review,* 57**,** 486.
20. GRAUL, P. & NEWTON, J. (1989) Audit delay and the timeliness of corporate reporting. *Contemporary Accounting Research (Spring),* 657**,** 673.
21. HAN, J. & WILD, J. (1997) Timeliness of reporting and earnings information transfers. *Journal of Business Finance & Accounting,* 24**,** 527-540.
22. HOSSAIN, M. & TAYLOR, P. (1998) An examination of audit delay: Evidence from Pakistan. Working Paper, University of Manchester.
23. IMAM, S., AHMED, Z. & KHAN, S. (2001) Association of audit delay and audit firms' international links: evidence from Bangladesh. *Managerial Auditing Journal,* 16**,** 129-134.
24. KARIM, W., AHMED, K. & ISLAM, A. (2006) The effect of regulation on timeliness of corporate financial reporting: Evidence from Bangladesh. *Journal of Administration and Governance,* 1**,** 15-35.
25. KINNEY JR, W. R. & MCDANIEL, L. S. (1993) Audit Delay for Firms Correcting Quarterly Earnings. *Auditing,* 12**,** 135-142.
26. KNECHEL, W. & SHARMA, D. (2008) Auditor-provided non-audit services and audit effectiveness and efficiency: Evidence from pre-and post-SOX audit report lags. Working paper, Florida International University.
27. KNECHEL, W. R. & PAYNE, J. L. (2001) Audit Report Lag. *Journal of Accountancy,* 192**,** 88-88.
28. LAI, K. & CHEUK, L. (2005) Audit Report Lag, Audit Partner Rotation and Audit Firm Rotation: Evidence from Australia.
29. LEVENTIS, S. & WEETMAN, P. (2004) Timeliness of financial reporting: applicability of disclosure theories in an emerging capital market. *Accounting & Business Research,* 34**,** 43-56.
30. LEVENTIS, S., WEETMAN, P. & CARAMANIS, C. (2005) Determinants of Audit Report Lag: Some Evidence from the Athens Stock Exchange. *International Journal of Auditing,* 9**,** 45-58.
31. NEWTON, J. D. & ASHTON, R. H. (1989) The Association Between Audit Technology and Audit Delay. *Auditing,* 8**,** 22.
32. OWUSU-ANSAH, S. (2000) Timeliness of corporate financial reporting in emerging capital markets: empirical evidence from the Zimbabwe Stock Exchange. *Accounting & Business Research,* 30**,** 241-254.
33. OWUSU-ANSAH, S. & LEVENTIS, S. (2006) Timeliness of corporate annual financial reporting in Greece. *European Accounting Review,* 15**,** 273-287.
34. SCHWARTZ, K. B. & SOO, B. S. (1996) The Association Between Auditor Changes and Reporting Lags. *Contemporary Accounting Research,* 13**,** 353-370.
35. SINCLAIR, N. & YOUNG, J. (1991) The timeliness of half yearly earnings announcements and stock returns. *Accounting & Finance,* 31**,** 31-52.
36. SOLTANI, B. (2002) Timeliness of corporate and audit reports:: Some empirical evidence in the French context. *The International Journal of Accounting,* 37**,** 215-246.
37. WHITTRED, G. P. (1980) The Timeliness of the Australian Annual Report: 1972-1977. *Journal of Accounting Research,* 18**,** 623-628.
38. ZEGHAL, D. (1984) Timeliness of accounting reports and their informational content on the capital market. *Journal of Business Finance & Accounting,* 11**,** 367-380.

PUBLIC-PRIVATE PARTNERSHIP: WORLD PRACTICE AND UKRAINIAN PERSPECTIVES

Larysa Hrytsenko*

Abstract

The views of experts about the impact of public-private partnerships at the international image and competitiveness of the country are emphasized. The article reviews European experience of public-private partnership, main problems and perspectives of such cooperation in Ukraine. An importance of improving the mechanisms of public-private partnership for attracting investors to effective cooperation in the form of public-private partnership is grounded.

Keywords: Public-private Partnerships, Investment, Investment Project

**Ph.D, Finance Department, Ukrainian Academy of Banking of the National Bank of Ukraine*

Introduction

Analysis of the current economic situation in Ukraine shows the presence of many problems caused by global financial crisis. The state is concentrating all efforts on going out from recession, long-term loans returning to international financial institutions and its priorities executing. In such circumstances it is difficult to finance priority projects of the national responsibility towards the development of infrastructure, defense, and social services. Also state has to implement preliminary programs to the European Championship final tournament UEFA Euro 2012. Government tries to liquidate the lack of public funds through the involvement of credit or using fiscal measures. But another alternative solution of this problem is public-private partnership. International practice shows that such cooperation of state and private sector is effective and profitable for both sides.

Despite the newness of this problematic in Ukraine, economic science has accumulated enough experience analyzing public-private partnership. Some works about impact of such cooperation between the state and the private sector on the economy and functioning of business entities are present in works by M. Avksentev, who thinks that public-private partnership is a modern tool for infrastructure development. A. Holovinov examines the public-private partnership in the sphere of innovations. V. Tertytsya explores the concept of public-private partnership as an effective form of cooperation between business and government. K. Ratnikov and I. Trofimenko analyze Ukraine's achievements in the field of public-private partnerships and identify possible prospects for its development.

The study of public-private partnership problems deals Andreas Kappeler, Mathieu Nemoz, and Lukas Strauch. For example, both Andreas Kappeler (2010) and Mathieu Nemoz (2010) have explored the development of public-private partnership in Europe during several years. Lukas Strauch (2010) notes that in recent years, public-private partnership was viable with the help of infrastructure development innovative schemes.

The main goal of any enterprise is profit maximizing, which is often achieved by reducing payments of employees. The state, in turn, should worry about the welfare, promotion and development of the economy. One of the solutions' ways in this case is using the concept of public-private partnership (PPP), which can be defined as a form of cooperation of public authorities and private investors for the purpose of the infrastructure objects financing, construction, reconstruction, administration and maintenance.

In accordance with the Law of Ukraine "About public-private partnership" (2011) key features of this cooperation are: ensuring a high technical and economic indicators; long-term relationship (from 5 till 50 years); risk transferring by the private partner; prohibition on moving the object of PPP during the entire period of such partnership; making private investments.

1. Development of PPP in Europe

It should be noted that this form of cooperation is widely used in international practice, especially in Europe, in the process of socio-economic problems (Table 1).

Table 1. Development of PPP in Europe (1992-2010)

Year	Number of projects, unit	Investment, mln. US $
1992	3	610,0
1993	1	454,0
1994	3	1148,4
1995	12	3264,9
1996	26	8488,2
1997	33	5278,0
1998	66	19972,4
1999	77	9602,6
2000	97	15018,5
2001	79	13325,3
2002	82	17436,2
2003	90	17457,1
2004	125	16879,9
2005	130	26794,3
2006	144	27129,2
2007	136	29597,9
2008	115	24198,0
2009	118	15740,3
2010	112	18300,9
Total	1449	270696,1

Note. Source: European PPP Expertise Centre, 2011.

PPP projects implemented in such spheres as: transport sector, education and health care, housing, telecommunications, recycling, energy sector and others (Tertytsya, 2011). Apparently, the number of PPP projects in Europe is quite large. During 1992-2010 it were realized more than 1400 projects with a total capital cost about 270 billion euro. The activity increase in the implementation of projects observes since 2004, because of joining to the European Union of 10 new members. Also, the volume of investment under the contract is growing (Table 2).

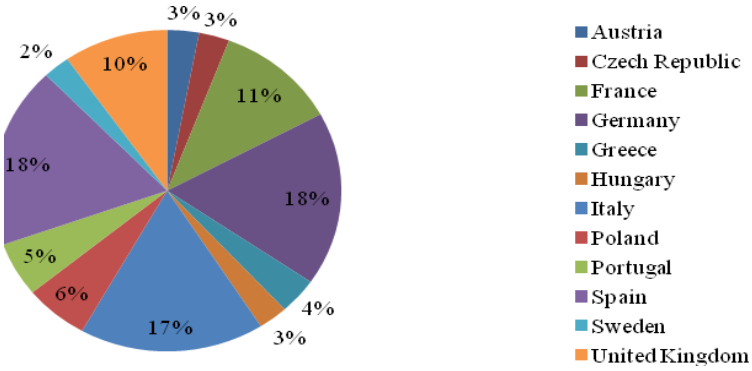
Table 2. Investments under contract in Europe (2000-2011)

Country	Investment (in accordance with the contract), mln. euro
Austria	12784,4
Belgium	9856,9
Bulgaria	2428,5
Cyprus	1892,1
Czech Republic	12342,6
Denmark	6784,7
Estonia	1285,2
Finland	9036,7
France	49452,2
Germany	76464,8
Greece	15775,9
Hungary	11970,1
Ireland	5543,5
Italy	74703,4
Latvia	1782,8
Lithuania	1486,3
Luxembourg	1473,1
Malta	328
The Netherlands	9583,1
Poland	25928
Portugal	23843,4
Romania	6736,7
Slovakia	3288,1
Slovenia	3427
Spain	79687,3
Sweden	10918,1
The United Kingdom	42328,6
Total	501131,5

As can be seen in Figure 1, the largest share of investment under the contract is in Spain and Germany (18%), Italy (17%), France (11%), Britain (10%). It should be noted that the largest proportions

of completed projects were in the UK (67.1%), Estonia (10.1%), France (5.4%), Germany (4.9%), Portugal (3.1%), Italy (2.4%) (Kappeler & Nemoz, 2010).

Figure 1. Investments under contract in Europe, 2000-2011.



2. Investment projects by sectors in European countries

As can be seen from Table 3, mostly projects have been realized in such sectors as roads, mining, marine highways, construction and reconstruction of airports, telecommunications, water supply and sanitation, energy. The largest share of projects and investment in these projects are observed in telecommunications and energy sectors.

Table 3. Number of projects and amount of investments by sectors in European countries (2000-2009)

Sector	Number of projects, unit	The share of projects, %	Investment, mln. US $	The share of investment, %
Road sector (including construction of road, railway traffic, tunnels, bridges)	8	1.12	5841	2.24
Sea motorways	29	4.04	2470	0.95
Airports	29	4.04	8614	3.31
Telecommunications	303	42.26	162979	62.60
Water and wastewater	53	7.39	3853	1.48
Energetic	295	41.14	76576	29.41
Total	717	100.00	260333	100.00

3. Problems and perspectives of public-private partnership in Ukraine.

In general, Ukraine has a high potential for public-private partnership implementation. But at the same time constraining factors are the lack of a coherent government policy in the PPP sphere, the lack of flexibility for project participants in making key decisions, and the indifference of the state to encourage investors. In addition, the adoption of the Law of Ukraine "About public-private partnership" should spur development of such cooperation in the country. But we see that after this the state doesn't do any steps for the PPP development and improvement. In particular, competent authority responsible for PPP's public policy is not clearly established, centers for training in the field of PPP's does not created, information base on this issue between the central and local authorities is not developed.

In the future, the development of the careful planning of projects, creating conditions for rapid attract investors and their capital in the economy, ensuring the state maximum distribution of risks and solving problems of interest in this area will promote the goal of public-private partnership effective development.

The cooperation of the state and private sector in the form of public-private partnership will help to create better conditions for the functioning of economic entities, development strategically important sectors of the economy, funding research and development work, innovation, advanced technologies, their implementation, achieving best technical and economic performance, provided potential for enterprise development, effective using

of available resources in the state, reducing budget expenditures on infrastructure and development priorities. Main areas of projects implementation include housing, water and wastewater, energy services, construction and maintenance of roads, development of health infrastructure. Main advantages of public-private partnership include: long-term relationships, reducing risks by their distribution among team members, combining the financial resources of different ownership forms, providing high quality, cheap and guaranteed services, protection of participants. Disadvantages of public-private partnership are wrong planning, the lack of private sector participation, the impact of state (adverse economic and political status, inadequate or poorly developed legal framework, etc.), the high cost of expenses over the prolonged period (duration of negotiations, contracts, supplies, materials, etc.). For attracting investors to effective cooperation and public-private partnership development, the government should improve the mechanisms of PPP, resolve main problems that hinder its development.

References

1. European PPP Expertise Centre. (2011). *Review of the European PPP Market in 2010*. Retrieved from http://www.eib.org/epec/.
2. Kappeler, A., & Nemoz, M. (2010). *Public-private partnerships in Europe – before and during the recent financial crisis*. EIB: Economic and Financial Report, 1-30.
3. Private Participation in Infrastructure Database. (2011). *Country Snapshots*. Retrieved from http://ppi.worldbank.org
4. Ratnikov, K., & Trofimenko, I. *Business Sense: Progress made in effort to start public-private partnerships*. Retrieved from http://www.magisters.com/publicationfile.php?ua/1248/.
5. Strauch, L. (2010). *Public Private Partnership in European Road Infrastructure: PPP as Investment Asset Following the M6 Road Projectin Hungary*. Moskow: Book on Demand.
6. *Worldwide experience in using Public-Private Partnership.* (2011). Retrieved from www.ibser.org.ua/UserFiles/File/NABs/PPP%20presentation_1_Dec26.pdf.
7. Авксентьєв, М. (2007). Державно-приватне партнерство як сучасний інструмент розбудови інфраструктури. *Финансовые риски,* 4(49), 36-40.
8. *Закон України «Про державно-приватне партнерство»*. (2011). Retrieved from http://zakon.rada.gov.ua/cgi-bin/laws/main.cgi?nreg=2404-17.
9. Тертиця, В. (2011). *Державно-приватні партнерства як форма співробітництва бізнесу і влади*. Retrieved from http://www.magisters.com/publication.php?ua/683/articles.
10. Федосеев, А. (2011). *Государственно-частное партнерство – международный опыт*. Retrieved from http://archive.russia-today.ru/2008/no_15/15_railroads_03.htm.

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

John H Hall*

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

**Department of Financial Management, University of Pretoria, Pretoria, 0001*
Room 3-17, EMS Building, Main Campus, Lynnwood Road, Hatfield, 0001
Tel: +27 12 420 3389
Fax: +27 12 420 3916
Email: john.hall@up.ac.za

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 popularity of the capital budgeting technique and post-graduate decision-makers' choices of these methods. Some of these findings could form a basis for further research.

The article is organised as follows: in the next section, the literature review analyses international and South African findings on capital budgeting practices; next, the research methodology is discussed; thereafter the empirical results are presented and evaluated. Lastly, conclusions are drawn, recommendations are made and ideas for further research are presented.

2 Literature Review

One of the fundamental principles of corporate finance is that a firm must accept projects that have a positive net present value(NPV) or an internal rate of return(IRR) that is higher than the weighted average cost of capital (WACC) in order to create shareholder value. The capital budgeting techniques that firms use to evaluate these projects, as well as the methods used to compute the WACC, are among the most frequently researched topics in the field of corporate finance. The literature review in this study investigated prior research on capital budgeting practices. This was done in order to report on findings, and identify possible trends in capital budgeting practices over time, as well as to identify recent trends in capital budgeting research. Firstly, international studies were analysed and, secondly, South African studies were reviewed. From this discussion, a possible gap in knowledge was identified, which led to the formulation of the research questions and hypotheses that supported the objectives of this study.

2.1 International studies

International studies on capital budgeting practices over four decades show that there has been a definite shift in the capital budgeting evaluation techniques that companies employ (Baker and English, 2011). A study by Ryan and Ryan (2002) indicates that financial managers have never been in full agreement as to the best capital budgeting method. According to Ryan and Ryan (2002), earlier studies by Miller (1960), Schall *et al.*(1978) and Pike (1996) reported the payback technique to be the preferred method and discounted cash flow models to be the least popular. These earlier findings may be attributed to a lack of financial sophistication (and even training or education in corporate finance) and the limited use of computer technology in the era preceding Ryan and Ryan's study.

A detailed analysis of a number of past studies on capital budgeting techniques by Cooper *et al*. (2002) also confirms the shift towards discounted cash flow techniques over time. In their analysis of various research projects, they found that the IRR as a primary capital budgeting method increased in popularity from 10% in 1959 to 41% by 1975 and 57% by 1990. However, the NPV did not enjoy either the same popularity by the time of their study in 2002, nor the same spectacular increase in use over time.

It seems that there are differences between countries regarding the capital budgeting method which is most popular. A study by Baker*et al*. (2011) amongst Canadian firms indicates a strong preference for the NPV above the IRR, which stands in contrast with evidence from the United States (US), where the IRR seems to be the most popular technique (Graham and Harvey, 2001) and European evidence (from France, Germany, the Netherlands and the United Kingdom), which indicates that the payback period is the most popular capital budgeting method (Brounen*et al*., 2004). A survey amongst Scandinavian countries (Brunzell *et al*., 2011) shows a much smaller use of the NPV (41%) than in the US, whilst a study amongst financial managers of the Gulf region (Chazi *et al*.,2010) reports findings similar to those noted in the US. The empirical results from the current South African study indicate not only which capital budgeting method is more popular in South Africa, but also towards which country's preferred method the South African's practitioners lean.

Most firms use a mix of debt and equity to finance their assets, so the appropriate discount rate that they should use is the WACC. McLaney *et al*. (2004) review a number of studies on the use of the WACC: they cite a study by Hodgkinson in 1989 which found that 36% of her sample used the WACC as the discount rate and a study by Arnold and Hatzopoulos in 2000 which found that 54% of their sample used the WACC as the discount rate. Truong *et al*. (2008) found that in Australia 88% of companies used WACC in their investment evaluations. Other studies that report on the use of WACC as the preferred discount rate include those of Graham and Harvey (2001) (59%), Brounen *et al*. (2004) (65%) and Chazi *et al*. (2011) (74%).

If one investigates the popularity of using the capital asset pricing model (CAPM) to determine the cost of equity, a specific trend is identified over time. A study by Al-Ali and Arkwright (2000) found that 85% of their sample of UK companies used the CAPM. Graham and Harvey (2001) report that about 74% of the respondents in their study used the CAPM to estimate the cost of equity. These findings contrasted with those in a study which Graham and Harvey (2001)cite by Gitman and Mercurio in 1982, where only 30% of the respondents used the CAPM.

However, a study in 1998 by Bruner *et al*. found that 85% of their sample used the CAPM. Truong *et al*. (2008) found that in Australia 72% of firms used the CAPM to determine their cost of equity. These results indicate a much higher use of cost of capital than that found by a number of studies in other countries – in a study in four European countries (the United Kingdom, the Netherlands, Germany and France) by Brounen *et al*. (2004)found that the percentage of firms using the CAPM ranged from 34% to 56%;a study amongst financial managers in the Gulf region found that 57% used CAPM (Chazi*et al*., 2010); and a study amongst Canadian firms found the use of CAPM to be only 37% (Baker*et al*., 2011). However, despite differences between countries, it seems that, over time, the CAPM has become more popular, a finding that is noted by Baker and English (2011).

Whilst studies on capital budgeting practices are amongst the most widely researched corporate finance topics, relatively few of these studies report on respondents' characteristics that might influence their choice of capital budgeting method, such as academic qualifications, time (tenure) of employment at the firm or age. Graham and Harvey (2001) found that Chief Executive Officers (CEOs)who have a Master's in Business Administration (MBA) are more likely to use the NPV method than CEOs without MBAs, possibly because the NPV method is regarded as a more sophisticated capital budgeting method than some other methods. Brounen*et al*. (2004) found that firms managed by a CEO with an MBA use the NPV significantly more, but the educational background of a CEO was found to be irrelevant when deciding to use CAPM or not, although tenure with the firm does seem to play a role in this decision. Chazi *et al*. (2010) also found that tenure with the firm plays a role when choosing to use WACC, but age and education play no role in capital budgeting method choices. This contrasts with findings by Moutinho and Lopes (2011), who found that education, tenure and the age of the CEO did play a role in their respondents' CAPEX choices. Brunzell *et al*. (2011) did a comprehensive study amongst Scandinavian firms on the determinants of capital budgeting methods and found that qualifications do matter, as did Hermes*et al*. (2007), who also found that CEOs' ages also play a role. Lastly, a study by Baker *et al*. (2011) indicates that CEOs' education influences capital budgeting decisions.

Although there appear to be inconsistent results regarding the influence of capital budgeting decision-makers' education, tenure and age on their choice of capital budgeting methods, international studies have shown that these factors cannot be ignored in capital budgeting decision-making.

2.2 South African Studies

Research projects undertaken on the use of capital budgeting methods in South Africa include studies (in chronological order) by Lambrechts (1976), Andrews and Butler (1982), Parry and Firer (1990), Hall (2000), Gilbert (2003), Du Toit and Pienaar (2005), and most recently, Correia and Cramer (2008) and Hall and Millard (2010). The findings of these studies all indicate high use of discounted cash flow methods, namely the NPV and IRR. Correia and Cramer (2008) cite a longitudinal study by Correia et al. (2007) on South African firms from 1972 to 1995 which indicates a shift towards the use of the NPV and IRR methods. In addition, whereas the IRR was traditionally more popular than the NPV, it seems that the NPV is gaining ground over the IRR as the preferred method (Hall and Millard, 2010).

Cost of capital practices of South African companies have been investigated by Parry and Firer (1990), who found that 35% of companies used WACC, similar to the results of Pocock *et al*. (1991) (30%), as opposed to the cost of a specific source of financing (such as cost of equity or cost of debt). Correia and Cramer (2008) found that 71% of companies in their survey used the capital asset pricing model (CAPM) to determine the cost of equity. They cite a study by PriceWaterhouseCoopers during 2005 which indicates that the CAPM is the only method used in practice to determine the cost of equity, which is consistent with the results reported by Correia and Cramer (2008).

In summary, prior studies show that as capital budgeting evaluation techniques, the NPV and IRR reign supreme in recent times, but with different levels of popularity in different countries. Most of the participants in these studies used a weighted average cost of funds to determine the discount rate that they used for their capital investment evaluations. The CAPM was the most popular method for determining the cost of equity –its use differs between countries, but its popularity seems to have increased over time. International studies have shown that, in a number of cases, the capital budgeting decision-makers' characteristics, such as academic qualification, age and tenure with the firm, do play a role in their choice of capital budgeting methods. No previous South African studies on the influence of the respondents' academic qualifications or years employment with the company on their capital budgeting technique choice could be found. It was this gap in knowledge in South Africa, especially compared to international studies, that this study wanted to address.

The objective of this study was firstly to report on the capital budgeting practices of a sample of companies that was listed for at least ten years on the JSE. Secondly, the main objective of this study was to investigate whether the respondents' academic qualifications or number of years of employment with the company influence their choice of a capital budgeting technique or use of a discount rate.

In addition to reporting on the capital budgeting practices of the respondents, this paper investigated

the following hypotheses in order to address the stated objectives:

- **Hypothesis 1:** The majority of companies use a discount rate in their capital budgeting process.
- **Hypothesis 2:** The majority of companies use the capital asset pricing model (CAPM) to calculate their cost of equity.
- **Hypothesis 3:** The frequency of re-calculating the cost of capital is not equal for all companies.
- **Hypothesis 4:** The cost of capital is not used for purposes other than project analysis in the company.
- **Hypothesis 5:** The cost of capital is not used differently for different categories of investment.
- **Hypothesis 6:** Respondents who have worked with a company for more than five years choose the NPV as a capital budgeting technique and use a discount rate.
- **Hypothesis 7:** Respondents with at least a postgraduate qualification choose the NPV as a capital budgeting technique and use a discount rate.

The research method followed was instrumental in reaching the objectives of this study.

3 Research Method

In this section various components of the research method are addressed. Firstly, the compilation of the data sample is discussed and justified. Secondly, the composition of the questionnaire is explained. Thirdly, the statistical techniques used are set out. Finally, it is shown how the research method contributed towards achieving the objectives of this study.

The way the sample of this study was constructed from the total population, distinguishes this study from others. The database of the Bureau of Financial Analysis (BFA), a supplier of value added data in South Africa, was used in the compilation of the sample. In order to select the sample of companies, a number of guidelines were set.

Firstly, it was decided to use only industrial companies, as the nature of their activities complies best with the nature and objectives of this study. The study was undertaken during 2006, when a total of 177 industrial companies were listed on the Johannesburg Stock Exchange (JSE). Secondly, in order to obtain more meaningful results and to add more weight to the responses, only companies which had been listed for at least ten consecutive years were included in the sample. The reason for this was that, because capital budgeting projects are normally long-term projects, firms which were listed for at least ten years would have completed projects and would have experienced the results of their choices in capital budgeting techniques and cost of capital for completed projects. This could provide "experienced" or well-informed responses from the participants. Thirdly, companies were also questioned on the discount rate used in the evaluation of the capital budgeting decision. Because the cost of equity can be calculated by means of the CAPM, where the beta (β) plays an important role in the actual calculation, companies whose shares traded fewer than 500 000 shares per year were excluded from the sample, since the beta calculation might be distorted. This left 67 companies in the final sample. At each of these companies, one decision-maker was interviewed, using a structured questionnaire.

The questionnaire used in this study used selected elements of the questionnaires used by Bruner *et al.* (1998) and Graham and Harvey (2001), due to the similarities between their studies and this study. The questionnaire consisted of four sections. The first section dealt with the company and decision-maker's profile, which was necessary to categorise the data in the various responses. It gave an indication of the seniority and level of education of each of the decision-makers surveyed. It also indicated the size of the company and its capital budget. Eight questions were asked in Section One of the questionnaire.

Section Two of the questionnaire dealt with the stages of the capital budgeting process, as well as with the various capital budgeting techniques that the respondents employed for different types of projects. This section consisted of ten questions. Section Three dealt with the incorporation of risk in the capital budgeting decision and consisted of five questions.

The last section of the questionnaire investigated the use and various aspects of a discount rate in the capital budgeting process. More specifically, the questions were structured to determine whether the company used a discount rate in evaluating capital budgeting decisions at all, and if so, how the cost of the various capital components was calculated. The section consisted of 12 questions.

The data were collected by means of a personal interview with the person responsible for the capital budgeting decisions in each of the sample companies. In the end, 40 usable responses were gleaned from the 67 sample companies. The statistical analysis included a basic descriptive analysis, as well as chi-square tests, to determine goodness-of-fit. The normal distribution was used to perform the ratio test, both in the one-sample case and in the two-sample case. The final sample size of 40 usable responses should not be regarded as too small to determine statistically significant relationships between variables, as it was well above the minimum requirement ($\geq$10) necessary to justify a multivariate parametric technique, according to Hair*et al.*(1978).

From the discussion of the various elements of the research method above, it should be clear that the information that was requested from the data sample by means of the questionnaire did address the objectives on the study, once the statistical analysis and tests had been conducted. After the results had been analysed and interpreted, it was possible to test the hypothesis and draw implications from the results.

4 Results, Analysis and Interpretation

In this section, the results from the questionnaires are analysed and discussed, and implications identified. Firstly, the capital budgeting decision-makers' profile, which includes their years' employment with the company, as well as their academic background, was analysed. Thereafter, the respondents' choice of capital budgeting methods is discussed. Lastly, the hypotheses as stated were tested.

The 40 companies were evenly distributed within the 15 industrial sub-sectors of the JSE – 73% of them had assets in excess of R1 billion and 60% of them had an annual capital budget of more than R200 million.

4.1 Decision-makers' Profile

The profile of a decision-maker provides an indication of his or her level of experience and education, which was crucial for testing the seven hypotheses, particularly Hypothesis 6 and Hypothesis 7. This information places in perspective the results of the actual capital budgeting techniques chosen and the choice of the cost of capital methods that individual firms apply in practice.

It was established that 68% of the respondents had been employed by their companies for more than five years, while 18% had been employed for between two and five years. The balance had been employed for less than two years. Of the respondents,40% had been in their current positions for more than five years, 30% had been in their current positions for between two and five years, and 30% had been in their current positions for less than two years. With regard to the academic qualifications of the respondents, it was determined that 65% had a post-graduate qualification (an Honours or a master's degree), 16% had a basic bachelor's degree, and 19% had other qualifications (diplomas, certificates or other training). From these results, one could deduce that the majority of the capital budgeting decision-makers had a good academic grounding and sufficient experience in their decision-making capacity within their firms.

The results of the company and decision-maker profiles for this sample met the researcher's expectations, given the nature of the sample of companies for this study. Industrial companies listed for at least ten years created a sample that gave a significant meaning and weight to the results of the importance of the capital budgeting techniques and cost of capital practices that these firms apply in practice.

4.2 Capital Budgeting Techniques

Determining the type of capital budgeting method used by the respondents is an important finding of this study. It plays a central role in reaching one of the main objectives of this study, namely determining the profile of a respondent who prefers a particular capital budgeting method.

The results in response to the question of what capital budgeting method a respondent prefers show that return on investment (ROI) was the most popular method, with a third of respondents choosing this method. The ROI as a capital budgeting technique is often misunderstood by practitioners. It is a measurement that attracts different definitions in the academic literature and one can safely assume that many practitioners confuse the ROI with the IRR. However, in order to be consistent with other studies, the NPV and IRR as capital budgeting techniques were the focus for the purposes of this study. The NPV was the second most popular capital budgeting technique, with nearly 29% of respondents indicating that they preferred this method. The IRR was the third most popular, with a preference of nearly 24%. Other methods, such as the profitability index, present value payback and accounting payback did not appear to play any significant role in the capital budgeting decision-making process. The findings show that the preference for the NPV as a capital budgeting technique is not significantly (p-value = 0.7165) higher than the preference for the IRR.

This contrasts with previous international studies which indicate that the IRR is more popular than the NPV (Graham and Harvey, 2001; Chazi *et al*., 2010).A survey of capital budgeting practices in South Africa undertaken by Du Toit and Pienaar (2005) indicated that the IRR method was the most popular method to evaluate capital investment projects at that time: 72% of their respondents used the NPV and IRR in their project evaluation. A study by Correia and Cramer (2008), also on South African companies, indicated that whilst the NPV was always used by 82% of companies, the IRR was used by 79% of companies, which is only slightly less. This is very close to the results found by Ryan and Ryan (2002) in a survey amongst companies in the US, where 85% of companies frequently used the NPV and 77% of companies used the IRR frequently.

The preference for the NPV and the IRR as a capital budgeting technique in the current study can possibly be attributed to the fact that the sample companies are large, well-established concerns with well-educated decision-makers.

4.3 Testing the Hypotheses

The first hypothesis states that a majority of companies use a discount rate in the capital budgeting decision. Of the 40 respondents who answered this question, 32 answered in the affirmative, giving a sample ratio of 80%. The appropriate test here is the ratio test to determine whether this ratio is significantly more than 50%, given the sample size of 40 (Schaeffer and McClave, 1982). The test statistic yields $Z = 3.79$ ($p < 0.01$), which is normally

distributed and highly significant. One can therefore conclude that significantly more than 50% of the respondents used a discount rate in the capital budgeting decision. This means that Hypothesis 1 is not rejected: a majority of companies do use a discount rate in their capital budgeting process.

The second hypothesis states that a majority of companies use the CAPM when calculating their cost of equity. Of the 32 respondents who answered this question, 20 (63%) used the CAPM, as is evident from Table 1.

Table 1. Methods used to calculate the cost of equity

Method used	Number of answers	%
Non-quantitative method	1	3
CAPM	20	63
Dividend discount model	2	6
Debt rate + risk premium	5	16
Other	2	6
Cannot say	2	6
Total	**32**	**100**

Using the results shown in Table 1, the ratio test can be applied to determine whether the percentage of respondents using the CAPM was significantly higher than 50%, given the specific sample size. The test statistic for the ratio test yields $Z = 1.41$ ($p = 0.08$), which is significant at a 10% level of significance, but not at a 5% level. There is thus support in the data for Hypothesis 2, namely that the majority of companies use the capital asset pricing model to calculate their cost of capital, but the support is not highly significant. By contrast, Graham and Harvey (2001) found in their study that 74% of respondents used the CAPM; a study by Bruner et al. (1998) found that 85% of firms used the CAPM. The South African study by Correia and Cramer (2008) cites a study by PriceWaterhouseCoopers that found that CAPM is the only method used in practice to determine a firm's cost of equity. The results of this study are is in line with results of other studies. CAPM as a method to calculate the cost of equity is considered superior to and as more accurate than other methods by academics (Baker and English, 2011; Firer *et al.*, 2008).The fact that the CAPM is the method to calculate the cost of equity preferred by the respondents of the current study implies that the decision-makers do make the better choice in comparison to other methods and that this will lead to improved results of their capital budgeting decisions.

Hypothesis 3 states that the frequency of re-calculating the cost of capital is not equal for all companies. Respondents' answers are set out in Table 2.

Table 2. The frequency of recalculating the company's cost of capital

Frequency	Number of answers	%
Monthly	2	6
Semi-annually	9	27
Annually	13	40
Infrequently	5	15
At the time of a new project	4	12
Total	**33**	**100**

The appropriate test for this set of categorical data is Pearson's chi-square goodness of fit test, as discussed by Plackett (1983) and Schaeffer and McClave (1982). In this test, the observed frequencies are compared with the expected frequencies if the categories are equiprobable and the data is therefore uniformly distributed. In performing this test, one should note that the handling of small expected or observed frequencies could be controversial, because statistics textbooks normally require frequencies of at least five. However, Koehler and Larntz (1980) assert that the chi-square approximation is robust enough to be adequate, provided all of the following are true: (1) the total of observed counts (N) is at least ten; (2) the number of classes (c) is at least three; and (3) all expected values are at least 0.25.

The value for the sample test statistic is 11.697, which is chi-square distributed with four degrees of freedom. This allows the calculation of $p = 0.02$, leading to the conclusion that there is a significant difference between the number of respondents who recalculate the company's cost of capital with different frequencies. Hypothesis 3 is thus not rejected, which means that sufficient evidence was found that the frequency of recalculating the cost of capital is not equal for all companies. In contrast,

Bruner et al. (1998) found that 37% of their respondents re-estimated their cost of capital annually whilst Liljeblom and Vaihekosi (2004) found that 60% of their sample changed the discount rate once a year. The cost of capital is a dynamic concept, the value of its inputs changes continuously and one would want a recalculation as frequently as possible. Results from this study indicate that there are room to increase the frequency of recalculation. This could lead to better decision-making with the cost of capital as the discount rate in the capital budgeting decision-making process.

Hypothesis 4 states that the cost of capital is not used for purposes other than project analysis in the company. Respondents were required to answer yes or no to the question of whether the cost of capital wasused for purposes other than project analysis in the company. The results are given in Table 3.

Table 3. Is the cost of capital used for purposes other than project analysis?

Answer	Number of answers	%
Yes	18	51
No	17	49
Total	35	100

From Table 3, it is evident that nearly half (49%) of the respondents answered that they did not use the cost of capital for purposes other than project analysis. From this, a value of Z = -0.118 (p = 0.5478) can be calculated, which means that Hypothesis 4 is rejected. Therefore, a large percentage of respondents (51%) also used the cost of capital for purposes other than project analysis. Although the respondents were not asked to identify those purposes, one can safely assume that it is for uses such as benchmarking divisional performance or to determine individual compensation. Bruner *et al.* (1998) also found that 51% of their respondents used cost of capital for other purposes, such as evaluating divisional performance. One would like to see multiple uses of the cost of capital in a firm, as it represents a cost (WACC) which must be outperformed by a return (IRR) in order to create value, not only for a capital budgeting project, but for the entire firm.

Hypothesis 5 states that the cost of capital is adjusted (upwards or downwards) for different categories of investment. Respondents were required to answer yes or no to the question of whether the firm's cost of capital is adjusted. The results are given in Table 4.

Table 4. Is the cost of capital adjusted for different categories of investment?

Answer	Number of answers	%
Yes	13	37
No	22	63
Total	35	100

From Table 4 it is clear that 63% of the respondents answered that they did not adjust the cost of capital for different categories of investments. From this, a value of Z = 1.538 (p = 0.0618) for the ratio test could be calculated, which means that Hypothesis 5 is rejected at a 5% level of significance, but not rejected at a 10% level of significance. It can thus be concluded that there is evidence that a significant number of respondents adjust the firm's cost of capital for different categories of investment. Adjusting the firm's cost of capital for different categories of investment is a way to differentiate between the riskiness of various projects. Those projects with a higher risk will be evaluated with a higher cost of capital, and vice versa. The results obtained from this study indicate that not a highly significant number of respondents adjust for risk by means of this method. This corresponds with the results reported by Bruner *et al.* (1998), who found that 26% said "Yes", 41% said "No", and 33% said "Sometimes". One of the reasons for the relatively high number of respondents that make no adjustments could be that the cash flows of the project are adjusted instead of the discount rate.

Hypothesis 6 states that respondents who have been working at a company for more than five years tend to use a discount rate more than other employees who have worked there for fewer years. In order to test this hypothesis, information on how many years a respondent has been working at the company and whether he or she uses a discount rate needed to be brought together. A cross-tabulation of this information is given in Table 5.

Table 5. Years' employment with the company and use of a discount rate

	Worked for more than five years with the company			
Use a discount rate	**Yes**	**%**	**No**	**%**
Yes	22	81	11	85
No	5	19	2	15
Total	**27**	**100**	**13**	**100**

From Table 5, it is evident that, whereas 81% of the respondents who had worked for the same company for five years or longer used a discount rate, as many as 85% of the other respondents also did so. To test for differences between the answers of these two groups of respondents, McNemar's test for equal probabilities of the characteristic was used. The test statistic is a chi-square distributed with one degree of freedom.

Performing this test on the data of Table 5 yielded M = 2.25 (p = 0.13), which means that, although it appears as if there could be a slight difference in the answers, this difference is not significant. Respondents with more than five years' experience with the same company thus did not use a discount rate significantly more than the other respondents. Similar findings were reported by Chazi *et al*. (2010) and Moutinho and Lopes (2011).The implication of this is that a corporate culture of using or not using a discount rate does not appear to influence the respondents' decisions to use or not to use a discount rate– the decision-makers' use of a discount rate was not influenced by the length of time employed by the company.

Hypothesis 6 also postulates that respondents with more than five years experience with the same company tend to use the NPV approach more than other respondents do. The cross-tabulation of responses which deal with this issue is given in Table 6.

Table 6. Years' employment with the company and choice of capital budgeting method

	Worked for more than five years with the company			
Capital budgeting technique	**Yes**	**%**	**No**	**%**
IRR	5	19	5	39
NPV	10	37	2	15
Profitability index	2	7	0	0
Present value payback	0	0	1	8
Accounting payback	0	0	0	0
ROI	8	30	5	38
Other	2	7	0	0
Total	**27**	**100**	**13**	**100**

From Table 6, it is clear that as many as 37% of respondents with more than five years' experience with the same company considered NPV the most important capital budgeting method, whereas only 15% of the other respondents shared this view. The test for two ratios was the most appropriate statistical test here, assuming that the difference between the two ratios was approximately normally distributed. The test statistic Z = 1.42 (p = 0.08) can be calculated from the data in Table 6, which means that, although there is an indication that respondents with more than five years' experience with the company tended to favour the NPV as a capital budgeting technique more than the other respondents did, this finding was not highly significant. The implication of this finding is that the length of time employed by a company, therefore the corporate culture or possible practices of superiors or peers do not significantly influence the decision-makers' choice of capital budgeting method, and one can safely assume that other factors, such as academic background, might play a role.

Hypothesis 7 postulates that respondents with at least a postgraduate qualification always use a discount rate. Information on the academic background of a respondent and whether he or she uses a discount rate is cross-tabulated and presented in Table 7.

Table 7. Academic background and use of a discount rate

	Postgraduate qualification			
Use a discount rate	**Yes**	**%**	**No**	**%**
Yes	26	90	7	64
No	3	10	4	36
Total	**29**	**100**	**11**	**100**

From Table 7 it is evident that 90% of the respondents who had a postgraduate qualification used a discount rate, whereas only 64% of the other respondents did so. To test for differences between

the answers of these two groups of respondents, McNemar's test was again used. Performing this test on the data of Table 7 yielded M = 1.60 (p = 0.21), which means that, although a slight difference could be observed between the answers of the two groups of respondents, this difference is not statistically significant. Respondents with postgraduate qualifications thus did not use a discount rate significantly more than those respondents without postgraduate qualification. The implication of this finding is the reassurance that a discount rate is used consistently by all decision-makers, irrespective of academic background. This means that, by using a discount rate, a capital budgeting technique that uses a discount rate (as opposed to those that do not use a discount rate), must be employed. These discounted capital budgeting techniques are normally superior to other methods in terms of their decision-making traits and use as a value creation indicator (Baker and English, 2011; Firer *et al.*, 2008).

Hypothesis 7 also postulates that respondents with postgraduate qualifications tend to use the NPV approach more than other respondents do. The cross-tabulation of responses on these issues is given in Table 8.

Table 8. Academic background and choice of capital budgeting technique

	Postgraduate qualification			
Capital budgeting technique	**Yes**	**%**	**No**	**%**
IRR	7	24	3	27
NPV	11	39	1	9
Profitability index	1	3	1	9
Present value payback	0	0	1	9
Accounting payback	0	0	0	0
ROI	9	31	4	37
Other	1	3	1	9
Total	**29**	**100**	**11**	**100**

From Table 8 it is clear that as many as 39% of respondents with postgraduate qualifications considered NPV the most important capital budgeting method, whereas only 9% of the other respondents shared this view. The test for two ratios was the most appropriate statistical test here, assuming that the difference between the two ratios was approximately normally distributed. The test statistic Z = 1.85 (p = 0.03) was calculated from the data shown in Table 8, which means that there was a significant difference between the answers of these two groups of respondents. This could be seen as an indication that respondents with post-graduate qualifications compared to those without such qualifications have a significant tendency to prefer the NPV as a capital budgeting technique. Similar findings in this regard were reported by Hermes *et al*. (2007), Brunzell *et al*. (2011) and (Baker *et al*., 2011).This indicates that decision-makers' academic background and education do influence them to choose the NPV, which is the capital budgeting method that is most advocated in academic text books and is claimed to be superior to other methods (Baker and English, 2011; Firer *et al.*, 2008).The implication of this is that academic education can contribute towards the choice of a better capital budgeting method, an improved capital budgeting process and supporting the value creation potential of the firm.

5 Conclusions and Recommendations

The main objective of this study was to report on the capital budgeting practices of listed South African firms. A second objective was to link the length of time for which decision-makers have been employed in the company and their academic qualifications to their choice of capital budgeting methods and cost of capital techniques.

It was found that 68% of the respondents had been employed in their present company for more than five years and that 65% of the total number of respondents had a post-graduate qualification. This is in line with the characteristics of the sample – large industrial companies listed for at least ten years.

The results show that the NPV as a capital budgeting technique is more popular than the IRR, but that the ROI is still the most popular. From this study, it can be concluded that the majority of companies use a discount rate in the capital budgeting decision. Furthermore, the majority of companies in the sample employ the CAPM when calculating their cost of equity. Use of the CAPM in this study is in line with the findings of other South African and international studies in this regard. The recalculation of a company's cost of capital on an annual basis seems significantly more popular than any other frequency.

Decision-makers in the current study did not use the cost of capital only for project analysis, but presumably also for benchmarking or determining of compensation. The cost of capital was not adjusted for different categories of investment. Decision-makers with more than five years' experience with the same company did not use the discount rate significantly more than other respondents did. Those who had been with the same company for more than five years seemed to prefer the NPV as a capital budgeting technique (37%), whereas others preferred the IRR (39%). Respondents with a postgraduate qualification did not prefer to use a discount rate significantly more

than other respondents did. However, they did prefer the NPV as a capital budgeting technique.

The results of this study have a number of implications for management. Firstly, in contrast to previous research findings in this regard, there seems to be a definite shift towards the use of the NPV as the preferred capital budgeting method, as opposed to the IRR. This is reassuring, because academics also favour the NPV method, based on its sound fundamental calculation assumptions. Secondly, the importance of the CAPM as model for the calculation of a discount rate is once again highlighted. In addition, management should take cognizance of the importance of calculating the CAPM's inputs (beta, the risk-free rate and the total market return) correctly.

Thirdly, the most important managerial implication lies in the fact that employees with more than five years experience with the same company do not use a discount rate significantly more than employees with a record of less than five years employment at the company do. Consistent use of the discount rate by all relevant decision-makers can therefore be safely assumed. The same applies to the choice of the capital budgeting technique – irrespective of how long practitioners or academics have been employed, they prefer the NPV method. Lastly, employees with a post-graduate qualification have a significant tendency to prefer the NPV as a capital budgeting technique. For management, this is an indication that relatively highly qualified employees tend to use better decision-making techniques. Recruiting and appointing post-graduate employees should thus bear fruit.

This exploratory study can contribute significantly to an understanding of the choice of capital budgeting methods and cost of capital practices of listed companies in a developing economy. It can also contribute to a better understanding of the link between decision-makers' length of time employed with the company and their academic qualifications to their choice of capital budgeting method and cost of capital techniques.

Possible areas for further study include investigating relationships between capital budgeting practices and important variables indicating the financial success of companies. Group and cultural impacts on investment decision-making should be investigated, as well as the role that cognitive factors such as knowledge structure, cognitive style and affective reactions could play in choice of capital budgeting method. Other issues that could have an influence on capital budgeting practices that could be investigated could be differences in the time horizons of owners, decision-makers and investments. Lastly, specific projects in capital budgeting could be related to requirements of the corporate social responsibility of companies.

References

1. Al-Ali, J. And Arkwright, T. (2000), "An investigation of UK companies practices in the determination, interpretation and usage of cost of capital". *Journal of Interdisciplinary Economics*, Vol.11 Part 3/4, pp. 303-320.
2. Andrews, G.S. and Butler, F. (1986), "Criteria for major investment decisions". *Investment Analysts Journal, Vol. 27, pp. 31-37.*
3. *Ba*ker, H.K., Dutta, S. and Saadi, S. (2011),"Corporate finance practices in Canada: where do we stand?",*Multinational Finance Journal*, Vol.15 No.3/4, pp.157-192.
4. Baker, H.K. and English, P.(2011),*Capital Budgeting Valuation*, Wiley, Hoboken, NJ.
5. Brounen, D., De Jong, A. and Koedijk, K. (2004), "Corporate finance in Europe: confronting theory with practice", *Financial Management*, Vol. 33 No. 4, pp.71-101.
6. Bruner, R.F., Eades, K.M., Harris, R.S. and Higgens, R.C. (1998), "Best practices in estimating the cost of capital: survey and synthesis", *Financial Practice Education*, Vol. 8, pp.13-28.
7. Brunzell, T., Liljeblom, E. and Vaihekoski, M. (2011), "Determinants of capital budgeting methods and hurdle rates in Nordic firms", *Accounting & Finance*. doi: 10.1111/j1467-629X.2011.00462.x.
8. Chazi, A., Terra, P.R.S. and Zanella, F.C. (2010), "Theory versus practice: perspectives of Middle Eastern financial managers", *European Business Review*, Vol. 22 No. 2, pp.195-221.
9. Cooper, W.D., Morgan, R.G., Redman, A. and Smith, M. (2002), "Capital budgeting models: theory vs. practice", *Business Forum*,Vol. 26 No. 1, pp.15-19.
10. Correia, C. and Cramer, P. (2008), "An analysis of cost of capital, capital structure and capital budgeting practices: a survey of South African listed companies", *Meditari Accounting Research*, Vol. 16 No. 2, pp.31-52.
11. Du Toit, M.J. and Pienaar, A. (2005), "A review of capital budgeting behaviour of large South African firms", *Meditari Accounting Research*, Vol. 13 No.1, pp.19-27.
12. Firer, C., Ross, S. A., Westerfield, R. W. and Jordan, B.D. (2008), *Fundamentals of Corporate Finance*, 4th South African Edition, McGraw-Hill, New York, NY.
13. Gilbert, E. (2003), "Do managers of South African manufacturing firms make optimal capital investment decisions?", *South African Journal of Business Management*, Vol. 34 No. 2, pp.11-17.
14. Graham, J.R. and Harvey, C.R. (2001), "The theory and practice of corporate finance: evidence from the field", *Journal of Financial Economics*,Vol. 60 No. 2/3, pp.187-243.
15. Hair, J.F., Anderson, R.E. and Tatham, R.L. (1978), *Multivariate Data Analysis.* 2nd ed., Macmillan,New York, NY.
16. Hall, J.H. (2000), "Investigating aspects of the capital budgeting process used in the evaluation of investment projects", *South African Journal of Economic and Management Sciences*,Vol. 3 No. 3, pp.353-368.
17. Hall, J.H. and Millard, S.M. (2010), "Capital budgeting practices used by selected listed South African firms", *South African Journal of Economic and Management Sciences*, Vol. 13 No. 1, pp. 85-97.

18. Hermes, N., Smid, P., and Yao, L. (2007), "Capital budgeting practices: a comparative study of the Netherlands and China", *International Business Review*, Vol. 16 No. 5, pp.630-654.
19. Koehler, K.J. and Larntz, K. (1980), "An empirical investigation of goodness-of-fit statistics for sparse multinomials", *Journal of the American Statistical Association*,Vol. 75 No. 370, pp.336-344.
20. Lambrechts, I.J. (1976), "The practice of capital investment decision-making in South Africa", *Investment Analysts Journal*,Vol. 8, pp.27-31.
21. Liljeblom, E. and Vaihekosi, M. (2004). "Investment evaluation methods and required rate of return in Finnish publicly listed companies", *Finnish Journal of Business and Economics*, Vol.54, pp.9-24.
22. McLaney, E., Pointon, J., Thomas, M. and Tucker, J. (2004), "Practitioners' perspectives on the UK cost of capital", *European Journal of Finance*, Vol.10, pp.123-138.
23. Moutinho, N. and Lopes, M.D.S. (2011), "Non-financial analysis in project appraisal – an empirical study", Url: http://hdl.handle.net/10198/5685.
24. Parry, H.M.A. and Firer, C. (1990), "Capital budgeting under uncertainty: an empirical study", *South African Journal of Business Management*,Vol. 21 No.3, pp.52-58.
25. Plackett, R.L. (1983), "Karl Pearson and the chi-squared test", *International Statistical Review*,Vol. 51 No.1, pp.59-72.
26. Pocock, A.S., Correia, C. and Wormald, M. (1991), "An analysis of the approaches used by industrial companies listed on the JSE to identify their cost of capital", *South African Journal of Accounting Research(De Ratione)*, Vol. 5 No. 1, pp.27-40.
27. Ryan, A.R. and Ryan, G.P. (2002), "Capital budgeting practices of the Fortune 1000: how have things changed?", *Journal of Business and Management*,Vol. 8 No. 4, pp.355-364.
28. Schaeffer, R.L and McClave, J.T. (1982), *Statistics for Engineers*. Duxbury, Boston, MA.
29. Truong, G., Partington, G. and Peat, M. (2008), "Cost-of-capital estimation and capital-budgeting practice in Australia", *Australian Journal of Management*, Vol. 33 No. 1, pp.95-121.

CHARTERED ACCOUNTANT AND PUBLIC ACCOUNTING EXPERIENCE NON-EXECUTIVE DIRECTORS ON UK BOARDS: SIGNALS OF QUALITY EARNINGS REPORTING TO INVESTORS PROMPTING PRICE-TO-EARNINGS GROWTH

Kevin A. Diehl*

Abstract

This research seeks to determine for the first time whether the presence of non-executive directors with chartered accountant and public accounting financial expertise on UK boards is important to investors in terms of signaling higher reporting quality. If so, investors should be willing to give higher premiums on stock prices over earnings than for companies with boards without these financial expertise characteristics. In this era not so distant from Enron and Parmalat, investors should value these characteristics to be present in evaluating the external and internal audits in financial reporting. The average price-to-earnings growth for companies with these board characteristics is 145.11 percent compared to an average decrease of 99.85 percent for those companies that do not.

Keywords: Accounting, Earnings, Board of Directors, Non-executive Director, Corporate Governance

**JD, CPA, Western Illinois University (US), 3561 60th Street, Moline, IL 61265, (309) 762-3999, Extension 62297*
Email: KA-Diehl@wiu.edu

1. Introduction

The purpose of this research is to determine for the first time whether investors are willing to give premiums on stock where boards include non-executive directors with chartered accountant titles or public accounting experience, who would serve on audit committees. In the wake of financial scandals in the early part of the last decade involving Enron in the US and Parmalat in the EU, investors could give these premiums for companies that signal higher quality earnings through the presence of chartered accountant and public accounting financial expertise that provides at least some background knowledge or experience in the audit engagement process.

While current or former investment bankers and finance directors have some understanding of the process, chartered accountants must evidence this knowledge to pass their series of exams necessary for this title. Also, public accountants have been involved in audits. This understanding would seem necessary for audit committees successfully to review external auditors' engagements. As the financial markets are at least semi-efficient, this skill present on boards would therein seem deserving of stock premiums in terms of higher price to earnings. (Researchers sometimes use earnings to price, but price to earnings is more effective here because of its provision for numbers greater than one to provide greater emphasis on the spread investors are willing to give in price over earnings.) Indeed, investors would have greater trust in any company's reported earnings with those individuals particularly experienced in its nuances involved in reviewing the work of the external and even internal auditors. Surprisingly, no extant research has examined this particular trait of board composition. Despite this lack of inquiry, the importance of this signal to investors still remains extremely worthy of investigation and publication.

The sample for this testing is the FTSE 100. The lowest relevant sample size for statistics usually resides in the 100 elements range. In fact, research involving the composition of the board has even been published utilizing just 75 companies as the data set (Beasley, 1996).

The relevant time range for the study is 2004 through 2009. This time period permits the immediate effects of the 2002 Sarbanes-Oxley Act and its aftershocks throughout the world to have already been felt. Also, this choice also limits the effect of the transition to International Financial Reporting Standards (IFRS) in 2004 through 2005. .

The results include the presence of at least one non-executive director chartered accountant and at least one non-executive director with public accounting experience results in an average price-to-earnings growth over 2004 through 2009 of 145.11 percent compared to an average decrease of 99.85 percent for companies without this set of board characteristics. Regression supports these results.

There is no doubt that some relationship exists between signaling reporting quality to investors (price-to-earnings growth) and the presence of non-executive directors with these chartered accountant

and public accounting characteristics. However, the direction of the causation is difficult to ascertain.

Potentially, individuals with the chartered accountant or public accounting experience would commit to serving on boards of directors only of companies in which they already trust their reported numbers. They have spent many years getting this chartered accountant designation or serving the public in this external accounting role and would not otherwise want to damage their designation or overall reputation serving on boards for companies with questionable earnings management in the past or current time period. Thus, as Klein (2002) would remark based on the results of her study on audit committee independence's effect on earnings management, they are true signals of quality earnings reporting. This aspect results in the investors' willingness to give price premiums over earnings higher than for other companies.

However, the presence of these individuals could directly result in the increased quality of earnings reported, giving investors confidence in the numbers to the extent that they are willing to give more in price premiums over earnings for those companies' stocks.

This question can be debated as this research reaches the more direct application stage. However, for now, the findings stand on their own merits as worthy of publication. The following proceeds through the Literature Review, Hypothesis Development, Methodology, Results, and Implications.

2. Literature Review

Most of the extant research involves the US markets. Research has examined the number of directors on boards and the resulting effects on company value (Yermack, 1996). The typical inquiries before the passage of Sarbanes-Oxley, which required non-executive directors and financial expertise on audit committees, also included whether non-executive directors on the board in general or the audit committee in particular provided positive returns on stock (Klein, 2000).

The current research trend is examining the effects of non-executive directors on voluntary disclosure, Lim *et al.* (2007), and financial expertise required on audit committees under Sarbanes-Oxley (Dhaliwal *et al.*, 2006).

All this research seems to neglect the effect on the UK markets, which can be unique in the different regulatory atmosphere. Beekes *et al.*(2004) inquire into the effect of non-executive directors on accounting quality, timeliness, and conservatism in the UK context. Dedman and Lin (2006) make similar examinations for the UK market. They find that boards with higher proportions of non-executive directors tend to report bad news more quickly than less independent boards. It also largely puts to the side whether external auditors provide the necessary financial expertise more effectively than internal auditors (finance directors and CFOs), finance professionals (investment bankers), or supervisors (CEOs) do. The last category is considered to have financial expertise just from reviewing the activities of CFOs and signing off on the financial statements.

DeFond *et al.* (2005) consider the effect of accountants in general, not public accounting in particular, would have on financial expertise but only in the US market context. They do cumulative abnormal return examination with regard to the dates of newly elected board members to audit committees with accounting experience. DeFond *et al.* (2005) do find positive market reactions to these elections of accountants but no market reaction to the elections of non-accountants to these audit committee roles. However, they do not separate the examination into the selections of public as compared to private accounting background non-executive audit committee members. The research also does not examine whether the non-current accounting background individuals still contain the financial expertise by means of certified public accountant (chartered accountant) designations. It would seem that external accountants as non-executive directors would have some benefits to provide in audit committee review of the activities of other accountants (external and internal auditors) that private accountants would not. The reality is that review of external audits was part of the necessary course of study to pass the chartered accountant exam modules and the essence of what public accountants did in their external auditor careers.

Dhaliwal *et al.* (2006) emphasizes the US market only and encounters similar lack of specificity with regard to accounting certification and what part of accounting (external or internal auditing) financial expertise produces positive effects. This research examines the effect of accounting, finance, and supervisory expertise as qualifying for financial expertise on audit committees. The finding is that accounting expertise and accruals quality are related but only in the presence of sufficient audit committee power.

3. Hypothesis Development

3.1. Boards of Directors

The exponential increase in the scale of businesses resulting from the Industrial Revolution and other causes resulted in greater separation from ownership and day-to-day control of businesses. The development of capital markets advanced the separation. Thus, owners had to determine whether the day-to-day managers of the business entities furthered their interests. This process involved developing boards of directors to represent the many different shareholders interests as they reviewed how managers were running the day-to-day operations. At

the same time, external accountants, known as auditors or assurance providers, entered the fray to determine whether the results that the managers reported to the boards in financial statements were accurate. They could utilize their skills to certify the accuracy and therein help the boards do their jobs of reviewing the activities of management on an annual basis. Non-executive directors are also present on boards of directors to provide advice to executive directors and officers of the company in general.

Because of the increasing complexity of business as time proceeded, boards developed subcommittees to review certain parts of the managers' responsibilities. Typical subcommittees today include the nomination, compensation, audit, and other committees.

3.2. Audit Committees

In the wake of the Enron, audit committees' importance has accelerated dramatically. In fact, in the aftermath of these occurrences, the US enactedSarbanes-Oxleyto impose requirements on the composition of audit committees. In essence, this legislation required at least one member of the committee to be considered as having sufficient financial expertise.

Even before that time, the audit committee was to have non-executive directors meet without executive directors present. Indeed, part of the reason for the audit committee is to review the numbers reported from management and be capable of receiving internal auditors' reports of potential management improprieties that are unheeded within the internal chain of command. Having any executive directors present would largely defeat those purposes. The audit committee is there to challenge management on their financial reporting choices and, if necessary, to take action in hiring decisions to make proper reporting and internal controls part of the company.

The audit committee is there to select external auditors, ascertain the proper auditor compensation, determine the scope of the audit, review internal control procedures, and meet regularly with the external auditors, internal auditors, compliance officers, and other internal parties responsible for financial and risk items. As discussed, the members have to be ready and willing to challenge management's reporting and internal control decisions.

For the FTSE 100, Table 1 shows that the number of members on the audit committee varies from three directors to seven directors. The average is 4.11 directors. The mode is four.

Table 1. Number of the FTSE 100 with 3, 4, 5, 6, or 7 audit committee members

Audit Comm. Members	3	4	5	6	7
FTSE 100	32	39	18	10	1

3.3. Chartered Accountants

To reach the designation of chartered accountant, the following must be completed: 15 modules of study, 450 days worth of work experience, initial professional development, and structured development sessions in ethics.

As to the modules, the following knowledge modules are involved: accounting, assurance, business and finance, regulatory, management information, and taxation. The following application modules are involved: audit and assurance, business strategy, financial accounting, financial management, financial reporting, and taxation. The following advanced stage modules are required: technical integration for business change, technical integration for business reporting, and case study.

The 450 days worth of work experience generally occurs with contractual assurances from an employer to provide for the resources necessary to reach this designation.

The initial professional development involves ethics and professionalism, personal efficacy, technical expertise, business environment awareness, and professional judgment.

The structured development sessions in ethics review confidentiality, integrity, objectivity, and independence.

Relevant to investors here is that the assurance module gets to the process for assurance, internal controls, evidence gathering, and professional ethics. The next level on audit and assurance gets to current issues and the entire life cycle of an audit engagement involving accepting, planning, managing, and reporting. The final level involves looking at external financial and non-financial information on audit and assurance in an integrated fashion (ICAEW, 2010).

While the Institute of Chartered Accountants in England and Wales (ICAEW) mentions that more than 80 percent of boards of directors have chartered accountants as members, that figure includes executive directors (ICAEW, 2010). This research involves looking into non-executive directors with this certification.

The hypotheses involves determining whether the presence of non-executive director audit knowledge (chartered accountant) and experience (public accounting) signals higher quality earnings to investors to the extent that they are willing to give premiums on the stock over the earnings greater than

for companies without this characteristic. This inquiry is measured through the use of price-to-earnings growth.

The hypothesis is that, over the time period of 2004 through 2009, those FTSE 100 companies with at least one chartered accountant non-executive director and at least one non-executive director with public accounting experience on the board should evidence price-to-earnings growth greater than companies without this set of characteristics. The notion is that these non-executive directors would serve on the audit committee or at least play their part in reviewing reports from the audit committee to the general board meetings.

Many would relate that there is overlap between the chartered accountant status and the public accounting experience as 450 days of work experience are required to reach the chartered accountant designation. However, annual reports routinely do not discuss public accounting experience unless the individual referenced reached the level of partner (if not the chair) of the particular public accounting firm referenced. Thus, this combination does not involve so much duplication as would be expected. Also, just having public accounting experience is not pursued separately because public accounting can involve non-audit roles. Thus, the combination of the two statuses relates more toward the quality of reporting.

Current research sometimes utilizes earnings to price. However, price to earnings has been selected as the reference point for this research as it provides for numbers greater than one to provide more emphasis on the spread investors are willing to give for stock price over the reported earnings.

Chartered management accountants are not counted toward chartered accountants. The reason is that this designation is not emblematic of the external auditing experience required to provide this signal to investors in the annual reports.

The time period of 2004 through 2009 is selected because it almost completely removes but certainly limits the effect of the change to International Financial Reporting Standards (IFRS) in the 2004 through 2005 cycle. At the same time, this time period is within close enough proximity of the Enron, Parmalat, Sarbanes-Oxley, and other resulting renewed emphases on financial accounting reporting to measure the effect on investors. Also, having six years in the data set provides greater robustness to the results.

4. Methodology

The annual reports of each of the FTSE 100 companies from 2004 through 2009 are reviewed to determine the composition of the board of directors and the audit committees and to gather pretax earnings figures. Compustat provides the price data and verifies the pretax earnings figures.

Pretax earnings figures are utilized because, though unlikely, the presence of those with chartered accountant or public accounting experience on boards could actually result in lower tax expense through better tax planning. Because of this fact, the use of pretax earnings as the denominator to the price-to-earnings computations seems fitting.

Because the emphasis is on the signal provided to the market from the presence of certain board characteristics, only the discussion of chartered accountant status or public accounting experience within the annual report counts toward these determinations. Whether non-executive board members actually have these characteristics or not does not matter to investors under this series of hypotheses unless the annual report discusses each characteristic. Also, only board member characteristics present during this entire time period count, which is why each of the 2004 through 2009 annual report years is consulted.

The sample size of 100 is usually the minimum required to develop any data set for research purposes. However, because of the difficulty of hand collecting data, many published research inquiries in this area involve only 75 companies or less (Beasley, 1996). Thus, 100 should be sufficiently robust for the testing purposes employed here, especially with six years of data. Other researchers of board composition could utilize more companies in their data set. However, because they spend so much time gathering data on extra companies, these researchers generally utilize fewer years of data than are presented here (Lim *et al.*, 2007). Thus, after this specific trade of more companies for fewer years, they ultimately examine nearly an identical number of company years of data as this immediate research does.

To begin, descriptive statistics are utilized to review these two hypotheses. Also, regression involving the following formula is employed:

$$(1)\ PEGt = \alpha + \beta 1DIRECTORS + \beta 2COMM + \beta 3NON\text{-}EX + \beta 4CHARTERED + \beta 5PUBLIC + \beta 6PRIVATE + \beta 7COMBINATION + \in$$

PEG represents the price-to-earnings growth. t stands for the time period under which the price-to-earnings growth is examined. DIRECTORS represents the total number of directors on the board. This variable controls similarly to market capitalization. COMM stands for the number of directors on the audit committee. This variable controls to ensure that the presence of more members providing more potential for review is not driving these results. NON-EX represents whether the audit committee has more than the standard for representation. CHARTERED stands for the number of non-executive director chartered accountants on the board. PUBLIC represents the number of non-executive directors with public accounting experience are on the board. PRIVATE represents the number of

non-executive director accountants on the board who do not have chartered accountant status or public accounting experience but currently are or previously were finance directors or CFOs. This variable permits for testing whether the variables of interest, chartered accountant status and public accounting experience, are more powerful than just private accounting experience. COMBINATION stands for companies with at least one non-executive director chartered accountant and at least one non-executive director with public accounting experience.

5. Results

The descriptive statistics include extraordinary results. From 2004 through 2009 for the FTSE 100 then, the presence of at least one non-executive director chartered accountant and at least one non-executive director with public accounting experience results in average price-to-earnings growth of 145.11 percent. The lack of this set of characteristics results in an average price-to-earnings decrease of 99.85 percent.

These results are stark. Some would question the sample size as being too small to develop extensive determinations. Others would discuss the possibility of certain industries having greater proportions of these accountant populations, moving these results if these industries were successful over this span of time. Still others would question whether any particular year moved the results for the entire time period. However, through an important series of untabulated results, the industry and the year have no significance to this price-to-earnings growth or decrease.

Table 2 supports these descriptive statistics results at least in many years. The regression finds statistical significance at the .05 level in the relationship between the companies with at least one chartered accountant non-executive director and at least one executive director with public accounting experience and price to earnings growth for the following time periods: 2004 through 2007 [1.478 (4.390)*]; 2005 through 2007 [1.362 (2.744)*]; 2004 through 2008 [1.296 (3.823)*]; and 2005 through 2008 [1.436 (3.016)*].

Table 2. Regression of price-to-earnings growth on board characteristics of the FTSE 100, emphasizing years where combinations of at least one chartered accountant non-executive director and at least one non-executive director with public accounting are statistically significant

PEGt	2004-08	2005-08
DIRECTORS	.344	.649
	(.979)	(1.253)
COMMITTEE	.951	1.761
	(1.582)	(1.974)
NON-EX	-.89	-1.810
	(-1.507)	(-2.051)
CHARTERED	-.789	-1.043
	(-1.415)	(-1.242)
PUBLIC	-.452	.035
	(-1.898)	(.100)
PRIVATE	1.621	2.281
	(2.068)	(1.920)
COMBINATION	1.296*	1.436*
	(3.823)	(3.016)
INTERCEPT		
	(-1.740)	(-2.010)

*Statistically significant at the .05 level
**Statistically significant at the .01 level

The combination of the powerful descriptive statistics finding with some years of price-to-earnings growth statistical significance shows that there is at least some relevance to having non-executive directors with chartered accountant status and public accounting experience on the boards of companies in the UK. The combination of those two variables is necessary to signal the positive price-to-earnings growth as the computations show that, individually, non-executive directors who are chartered accountants without any other public accounting experience on the board provide inverse relationships to price-to-earnings growth. Interestingly enough, public accounting experience without the chartered accountant designation also tends toward an inverse relationship or no measurable relationship at all. More investigation would further support these findings once access to these characteristics is more efficiently accessible.

Private accounting experience should not be minimized despite the lack of statistical significance.The results show that there is some signaling power to this category of non-executive board member experience.

Price-to-earnings growth is not statistically significantly related to the number of board members or audit committee members. This fact shows that the research track toward numbers of members on audit committees as indicative of the effectiveness of signaling to investors of earnings quality should receive less consideration.

The results answer an important question to no small extent. Wherever any important question with regard to relationships of variables can be answered efficiently and sufficiently robustly without extensive complicated mathematical displays, this method should be preferred.

6. Implications

Investors should utilize the presence of chartered accountants and public accounting experience on boards as evidence of an emphasis on higher quality financial reporting. Effective corporate governance results in higher financial disclosure quality (Karamanou and Vafeas, 2005).If officers of companies engage in questionable earnings reporting, external auditors should be able to discover it. However, combining audit knowledge represented through the chartered accountant designation and public accounting experience on the board further signals commitment to reporting quality. At the least here, this combination of knowledge and experience should result in less income-increasing abnormal accruals. If there is some collusion between the chair of the board and the chief executive officer with regard to improperly reported numbers (the chair with powerful sway in the nomination of board members), then only board candidates without sufficient auditing knowledge could be nominated. Klein (2000) discusses this aspect as she shows that having more non-executive board members reduces CEO power. The presence of auditing knowledge and experience on the board would seem to signal the unlikelihood of this collusion as this knowledge and experience on the board then would result in greater opportunity of detection.

What this research tells companies is that they should disclose to investors in their annual reports any chartered accountant designations and public accounting experience of their board members. Through providing the signal of increased emphasis on the quality of reported earnings, this increased disclosure could result in stock price premiums, which would indicate that the board is doing its job in working to increase shareholder value.

Also, this research should indicate that the Institute of Chartered Accountants in England and Wales should provide the opportunity to get some level of chartered accountant status without the 450 days work experience so that current audit committee members without public accounting experience can endeavor toward reaching the requisite knowledge fully to realize their role on that particular committee.

At the same time, this research should encourage chairs of boards without chartered accountants and public accounting experience to seek board nominees with such characteristics to fill at least two places on their audit committees. What the anecdotal evidence shows is that many chairs seek to nominate candidates to the board with chartered accountant designation and public accounting experience who were the top-level leaders of Big Four accounting firms. The chairs seem to be intent on seeking leadership experience to boards over finding sufficient financial accounting expertise, which is why former leaders of the Big Four fill many of the ranks of chartered accountant and public accounting experience on current boards of directors. If chairs would lower the level of management experience within public accounting firms necessary for consideration for the board, they would still get sufficient financial accounting experience. Boards have many important roles to fill, but ensuring integrity in reported earnings would seem to be (if not paramount here) extremely important to the extent of being willing to select chartered accountant designations and public accounting experience to the board.

The extra benefit to including chartered accountants and public accounting experience on the board is that, to the extent it is recent experience, the US standards under Sarbanes-Oxley for having requisite financial expertise on the board would be satisfied. This item then would permit consideration of having stock traded in the US as well, which, at times, proves beneficial for companies in terms of stock prices and financing capabilities.

Private accounting experience should not be relegated from boards in favor of public accounting experience. However, public accounting experience in the auditing role involves understanding of external and internal auditing. To be able to do the external audit requires knowledge and experience of the internal audit process. Thus, purely private accounting experience should not necessarily be considered to carry with it something unreachable from the public accounting experience.

Taking these actions would not necessarily result in stock price premiums and therein price-to-earnings growth. The reason is that chartered accountants and those individuals with public accounting experience would be reluctant to join boards of companies that have questionable earnings reporting in the past or that seem currently to take extreme reporting stances. Chartered accountants must meet significant ethical standards if they want to maintain their designation. Also, public accountants learn through their experience that their reputation for integrity is the real value to the service they provide. If they leave that value at the door in serving on the board of directors, they have nothing left to offer. Thus, always subject to dispute, they would seem to have more at stake than many other nominees to boards would (Srinivasan, 2005). To reach the status necessary to get willingness from these individuals to serve on boards, companies would probably have to emphasize reporting quality even more than they already do for some time (Srinivasan, 2005).

References

1. Beasley, M. (1996),"An empirical analysis of the relation between the board of director composition and financial statement fraud," *The Accounting Review*, 71, pp. 443-465.
2. Beekes, W., Pope, P., and Young, S. (2004),"The link between earnings timeliness, earnings conservatism, and board composition: evidence from the UK," *Corporate Governance: An International Review*, 12, pp. 47-59.
3. Dedman, E. and Lin, S. (2006),"Non-executive independence and quality: do they add firm value in the UK?," Working Paper, Manchester Business School.
4. Defond, M, Hann, R., and Hu, X. (2005),"Does the market value financial expertise on audit committees of boards of directors?,"*Journal of Accounting Research*, 43, pp. 153-193.
5. Dhaliwal, D., Naiker, V., and Navissi, F. (2006),"Audit committee financial expertise, corporate governance, and accruals quality: an empirical analysis," Working Paper, University of Auckland.
6. Institute of Chartered Accountants in England and Wales (ICAEW), http://www.icaew.com.
7. Karamanou, I. and Vafeas, Ni. (2005),"The association between corporate boards, audit committees and management earnings forecasts: an empirical analysis," *Journal of Accounting Research*, 43, pp. 453–486.
8. Klein, A. (2000),"Causes and consequences of variations in audit committee composition," Working Paper, New York University.
9. Klein, A. (2002),"Audit committee, board of director characteristics, and earnings management," *Journal of Accounting and Economics*, 33, pp. 375–400.
10. Lim, S., Matolcsy, Z., and Cho, D. (2007),"The association between board composition and different types of voluntary disclosure," *European Accounting Review*, 16, pp. 555-583.
11. Srinivasan, S. (2005),"Consequences of financial reporting failure for outside directors: evidence from accounting restatements and audit committee members," *Journal of Accounting Research*, 43, pp. 291–342.
12. Yermack, D. (1996),"Higher market valuation of companies with small[er] boards of directors," *Journal of Financial Economics*, 40, pp. 185-211.