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EDITORIAL

Dear readers!

The recent issue of the journal Corporate Ownership and Control pays attention to issues of risk modelling, stock efficiency, social reporting, loan-corporate governance impact, executive compensation, access to capital etc. Performance accountability, corporate audit and corporate governance disclosure, independent and non-independent directors, impact of ownership structure on default risk of banks are also under the scope of researches. More detailed issues are given below.

Darren O'Connell and Barry O'Grady highlight the importance of probing beyond standard textbook theory which assumes, for risk modelling purposes, that an asset's return should follow a Normal distribution. *Tong Tong, Bin Li and Omar Benkato* use recent daily data and several testing procedures to re-investigate the weak-form efficiency of the Australian stock of the top 50 companies across different industries. *Anna-Lena Kühn, Markus Stiglbauer and Janina Heel* conduct qualitative content analysis based on the Global Reporting Initiative guidelines. *Judy Day, Paul Mather and Peter Taylor* motivated by a paucity of research into the impact of corporate governance from a debtholder perspective examine the impact of corporate governance on loan monitoring decisions. *Hiroshi Ohnuma* examines corporate tax avoidance as a determinant of executive compensation on the basis of equity risk incentives. *Ramzi Benkraiem and Anthony Miloudi* aim at studying the effect of export activity, viewed as a way of estimating small business internationalization, on access to bank capitals during the recent global crisis.

Ichiro Iwasaki explores the corporate audit system in transition Russia. *Chen-Chin Wang, Fan-Hua Kung and Kai-Hsun Lin* investigate whether the Big N audit firms in emerging markets can provide audits of high quality and mitigate information risk, by comparing the audit quality of Big N audit firms in Taiwan with those in China. *Mark Mulgrew and Roisin Reynolds* provide exploratory evidence on the levels of corporate governance disclosure quality and compliance in a sample of 40 UK listed firms throughout the period 2002 to 2009.

Hooy Chee-Wooi, Tee Chwee-Ming examines the monitoring effectiveness of independent and non independent directors on a CEO pay-performance of Malaysian financial firms from 2002-2009. It is based on the agency and managerial power theory. *Khadija Ashfaq, Zahid Irshad Younas and Bilal Mehmood* empirically investigate the impact of ownership structure on default risk of banks by using the panel data of commercial banks of Pakistan over the period of 2005-2011.

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

CORPORATE OWNERSHIP & CONTROL

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CONTENTS

SECTION 2. CORPORATE REPORTING AND AUDIT

This study investigated whether the Big N audit firms in emerging markets can provide audits of high quality and mitigate information risk, by comparing the audit quality of Big N audit firms in Taiwan with those in China. The two countries share a similar cultural background and engage in frequent economic exchange; however, they have different legal systems and institutional environments. This study followed previous research in the use of bid-ask spread and discretionary accruals as proxy variables for information asymmetry and audit quality.

A fundamental aspect of good corporate governance is the protection of shareholders and their investments. These stakeholders are now demanding increasing levels of transparency in all aspects of business with a greater emphasis being placed on non-financial information for investment decision making. While the majority prior research has examined the corporate governance practices of the firm, research investigating the actual disclosure of corporate governance practice is scarce. This study contributes to this debate by providing exploratory evidence on the levels of corporate governance disclosure quality and compliance in a sample of 40 UK listed firms throughout the period 2002 to 2009.

SECTION 3. CORPORATE GOVERNANCE IN ASIA

This paper examines the monitoring effectiveness of independent and non independent directors on a CEO pay-performance of Malaysian financial firms from 2002-2009. It is based on the agency and managerial power theory. The former states that under optimal contract pay should be aligned to performance, while the latter postulates that powerfully entrenched CEO can influence captive directors to award generous compensation package. Our empirical results show (1) a high CEO pay-dividend sensitivity while market measurement plays no part in influencing CEO pay; (2) both the independent and non independent directors have failed in their fiduciary role as internal monitor, suggesting the dominance of managerial power in the board; (3) the appointment of independent directors is merely a move to fulfill the minimum standards of the best practices of corporate governance.

This study empirically investigates the impact of ownership structure on default risk of banks by using the panel data of commercial banks of Pakistan over the period of 2005-2011. The study considers two dimensions of ownership structure: categories of owners and ownership concentration. The study further splits the categories of owners into seven categories (managers/directors, families/individuals, foreigners, public owners, banks, non-banking financial institutions, and non-financial institutions), having different risk taking incentives. Controlling for various factors, the results of the study reveal that the ownership structure is significantly related with default risk of banks.

РАЗДЕЛ 1
НАУЧНЫЕ ИССЛЕДОВАНИЯ И КОНЦЕПЦИИ

SECTION 1
ACADEMIC INVESTIGATIONS & CONCEPTS

THE IMPORTANCE OF ACCURATE RISK MODELLING TECHNIQUES FOR CORPORATE OWNERS AND MANAGERS: AN APPLICATION OF DISTRIBUTION FITTING TO ILLIQUID SECURITIES

Darren O'Connell*, Barry O'Grady**

Abstract

The Normal distribution is both the most commonly cited and highly parameterised of all the known probability distribution functions. This research highlights the importance of probing beyond standard textbook theory which assumes, for risk modelling purposes, that an asset's return should follow a Normal distribution. Methods of modelling the stochastic price process of two illiquid securities, in order to manage price risk within a simple GARCH Value-at-Risk framework are examined. This analysis was developed using Microsoft Excel, IHS's EVIews and Palisade's Decision Tools Suite. These widely used tools are chosen to allow for ease of replication of this analysis for any interested market participant and can be expanded to portfolios of liquid and illiquid assets. By ensuring a strict and efficient risk modelling template owners and managers alike are in turn held accountable to all company stakeholders.

Keywords: Illiquid Securities, Risk Modelling, Corporate Accountability, GARCH, Monte Carlo Simulation, Value-At-Risk (VAR), Basel AMA Framework

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1. Introduction

The purpose of this paper is to highlight the importance of going beyond standard textbook theory and assuming for risk modelling purposes that an asset's return should follow the Normal distribution simply because it is the most well-known and best parameterised of all the known probability distribution functions. Company managers and owners are sometimes divorced from the reality of methodologies applied by quantitative risk modellers. This paper addresses key foundations assumed by risk modellers which if

questioned and understood may lead to more efficient outcomes for the corporate entity.

According to Tan and Chu (2012) the normal distribution is one of the most widely applied distributions. From the late 1960's it became apparent that empirical studies failed to find confidence in the normality assumption when calculating returns distributions for financial data. Rachev (2003) notes that modern finance theory puts a strong emphasis on the idea that observed random variables are represented by a normal distribution. The distributional assumption is crucial to risk managers. Observable time series in finance often do not follow a Gaussian process. Distributions are often characterised by being fat-tailed and asymmetric. Thus financial modellers would be prudent to question the common assumption of normality. Agrawal (2009) stated that when examining test statistics based on the normality assumption erroneous inferences can eventuate if this assumption fails. This occurs when data which does not follow a normal distribution results in incorrect standard errors.

Anecdotal evidence from risk managers suggests that participants in the Australian financial services and utilities sectors continue to apply this assumption despite basic evidence provided by summary statistics (skewness, kurtosis, Jarque-Bera etc.) clearly indicating some type of non-Normal distribution being representative of returns. This practice possibly persists in these sectors due to the widespread use of Microsoft Excel as a development environment for risk modelling as it conveniently has up to 12 probability distributions to choose from in any analysis. Directly testing whether the empirical data fits a theoretical distribution is, however, problematic, time consuming and prone to error. Without any speciality third-party add-ins, perhaps the best that can be hoped for with Excel is to be able to comprehensively test the data against departures from Normality.

Palisade's @Risk add-in to Excel, a part of the Decision Tools Suite, has over 40 in-built distribution functions[1] and allows the user to fit these to a selected data set and rank the fit according to a statistical test (e.g. Chi-square, Kolmogorov-Smirnoff, and Anderson-Darling). IHS's EVIews is a stand-alone econometric package and doesn't necessarily offer any advantages in terms of the number of probability distributions available for analytical use. Nonetheless its value lies in being able to apply the Empirical Distribution Test in combination with a null hypothesis which posits that the data follows a user-specified theoretical distribution. This is chosen from a palette of 10 distributions according to both a selection of best fit criteria (Anderson-Darling, Lilliefors, Watson and Cramer-von Mises) and confidence level. What is important to note is that even if the null hypothesis is rejected, it is still useful to adopt the better fitting theoretical distribution suggested by @Risk because simulation results will be far more accurate than falling back on the Normality assumptions in the absence of these complimentary tools.

Implementation of such packages, some of which are integrated with Excel, do not require a large outlay in capital or training, nor do they require a PhD in the mathematical sciences to set up and interpret results but they do provide the means to easily achieve a much higher degree of precision within the risk modelling framework. This leads to better understanding of the risk profile of a portfolio of financial and energy assets that is more sensitive to changes in external volatility, better able to anticipate variations in risk profile, and be more acceptable under the market risk stream of the Basel framework potentially resulting in capital charge relief.

This research road-tests Palisade's @Risk, which performs risk analysis using high precision Monte Carlo simulation, to show the possible outcomes and their respective likelihood, on two illiquid securities within a VaR framework using Bollerslev's (1986) Generalised Auto Regressive Conditional Heteroscedacity (GARCH) model. The absence of an active options market precludes the use of implied volatility in the modelling process so any VaR framework must rely on a volatility input derived from historical returns only. The addition of Monte Carlo techniques within the analyses ensures these models, rather than being deterministic, capture the uncertainty in future prices (Alexander, 2008a). This research makes no distributional assumptions – these are determined by the chosen software algorithms.

It is shown that by selecting a probability density function (PDF) more aligned to the portfolio's true but unknown distribution and according to some predefined "best-fit" criteria that the number and independence of violations correspond to the expected level at some significance level. Indeed, the extra precision achieved in terms of violations obtained from choosing better fitting distributions as opposed to relying on the Normal distribution present a compelling case for the rejection of standard textbook theory.

This introduction is followed by a précis on the reasoning behind asset selection. A description of the chosen assets under examination and the data sampling process follows. A modelling approach employing a GARCH methodology is then presented. A model examination process using Coverage Testing is then shown. This leads to an empirical discussion of results followed by relevant conclusions.

[1] Appendix 1 presents a table that lists all the distributions available for analysis in each of the three packages.

2. Asset Selection

One of the defining characteristics of the recent global financial crisis (GFC) was the almost instantaneous evaporation of liquidity and the convergence of correlations across asset classes (Super Review, 2010). Even now current troubles affecting European sovereign debt, significant residual volatility remains and liquidity concerns persist and widespread positive asset price correlations are still present within the global financial system (Citibank, 2010).

This research has been directed towards key issues facing the Australian financial and utilities sectors. The authors have personally observed the persistence of the Normality assumption in practice around the risk modelling of certain illiquid securities. The Australian market for equity, in particular, is small by global standards, representing a mere 2 per cent of global market capitalisation (Trading Economics 2011). Time and again, when financial crises occur no matter where they originate in the world, the illiquidity of the Australian securities market becomes painfully apparent.

Liquidity, or lack thereof, heavily influences the shape and structure of financial asset prices and returns, and understanding this influence is the key to developing and optimising risk models so that they continue to supply relevant early warning signals that facilitate the decision making process. As such the authors have chosen two highly illiquid, some might argue obscure, securities to demonstrate the hypothesis that it is more beneficial to model price risk when one chooses a PDF better suited to the actual returns rather than relying on the Normal distribution simply for computational ease.

The two securities examined in this paper are the "penny" stock PIE Networks traded on the Australian Stock Exchange (ASX) and the renewable energy certificate (REC), the unit of currency underpinning the amended Renewable Energy (Electricity) Act 2000 (Commonwealth) and traded through over-the-counter (OTC) channels. Whilst both assets share no common correlation or are related in any way, they do share some purely technical similarities concerning liquidity: both came into being around the same time and their price histories show long periods of time when prices didn't change or volume rose above zero. Their shared *illiquidity* makes then ideal candidates for this study.

2.1 PIE Networks

Australia possesses an embryonic information technology & communications (IT&C) sector that is growing, in fits and starts, but lacks the scale and scope of Europe and the US, with most effort focussed on domestic market solutions by replicating overseas trends (IDG, 2011). The ASX lists a number of GICS (general industry classification standard) dedicated to the IT sector, these include: Semiconductors & Semiconductor Equipment; Software & Services; Technology Hardware & Equipment; and Telecommunication Services.

PIE Networks, nestled in the Hardware & Equipment sector of the ASX, describes itself as a manager of WiFi services and public Internet solutions, marketed to a wide range of customers, from small business through to large corporates across many industry sectors including government (PIE Networks, 2011). The company is led by experienced telecommunications industry professionals, whose vision is to significantly expand the growth of wireless Internet, enabled by the take-up of smart wireless devices that can then be leveraged by businesses to deliver better customer experiences (PIE Networks, 2011).

The company's key product is the Hotspot Webphone – a 21st Century payphone that also provides internet access and WiFi Hotspot connectivity. It is designed to be a "telco" gateway with customer access (WiFi & fixed), 3G network offload, a retail, payment and advertising channels. The product is envisaged as a replacement for traditional indoor payphones in high traffic retail locations, such as shopping malls, airports and banks. PIE is currently partnered with Telstra – the government-owned, dominant Australian telco – to conduct a trial deployment of Webphones into Australian airports, with a view to a more comprehensive rollout. The revenue model is based on hardware sales (i.e. the Webphone), recurring software and service fees (PIE Networks, 2011).

PIE's official stock market listing date was 7 April 2000: the market low and high prices since then respectively are $0.007 and $0.118. The daily turnover of shares transacted has averaged 35,000 during this period and there have been numerous periods of its history when no shares have traded particularly in the earlier years. PIE is also one of the only small capitalisation, or 'penny' stocks listed on the ASX that has not had a reconstruction of capital since its original listing date (ASX, 2011).

2.1.1 Data

The PIE Networks weekly price and volume data was sourced from SIRCA for the period 27 November 2002 to 6 January 2011, and is aligned to the data for the second asset, discussed below. It is interesting to note that the period chosen saw the bulk of volume in traded shares. Prior to this period, share turnover was low even by small capitalisation standards. Figure 1 shows how the price of PIE has varied since November 2002. In

terms of liquidity, on 5 September 2007 when the stock hit a high of $0.118, 1,188,863 shares traded hands equating to a marketable parcel of just AUD$140,285.

Figure 1. PIE Price Chart

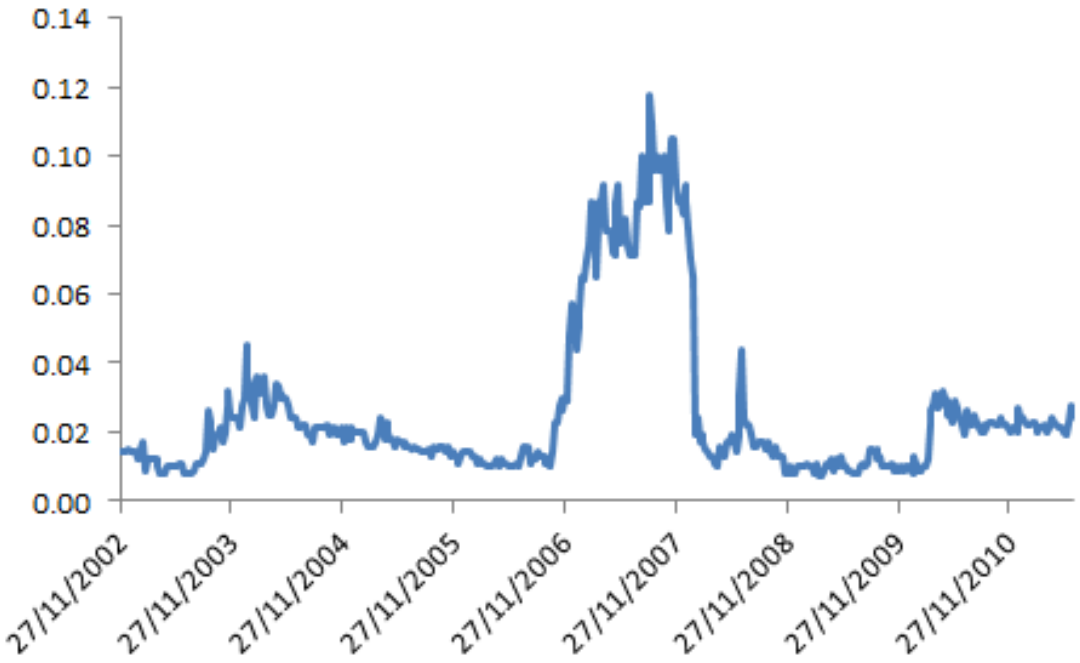
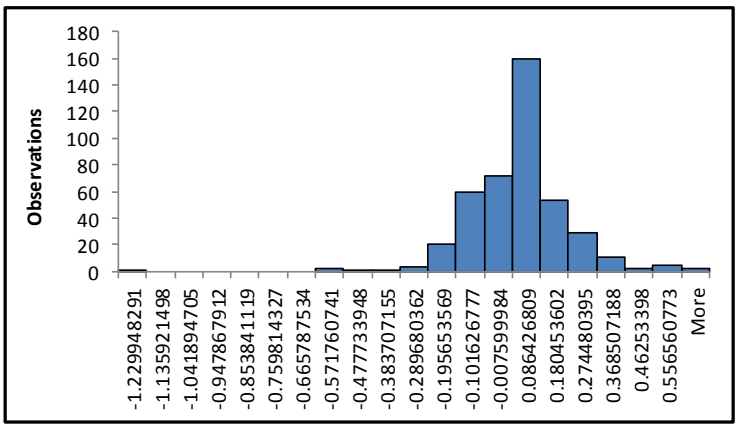


Figure 2 displays the descriptive statistics for PIE price returns over the period November 2002 to 29 June 2011. The average price of PIE was $0.17 with a mean return of 0.13 per cent which, whilst not shown here, is statistically insignificant from zero. The weekly return volatility was 16.16 per cent - high compared to many Australian small capitalised stocks.

Figure 2. PIE Summary Statistics & Histogram

Sample	27/11/2002	6/01/2011
Observations	423	
Mean	0.001274	
Median	0.000000	
Maximum	0.650588	
Minimum	-1.229948	
Std Dev	0.165118	
Skew ness	-0.637587	
Excess Kurt	8.918274	
% Returns < 0	37.8251%	
% Returns > 0	32.1513%	
% Returns = 0	30.0236%	
Jarque-Bera	1598.144000	
Probability	0.000000	



As can be seen from the histogram in Figure 2, the majority of observations are clustered about the mean, the body of the distribution curve is fairly well represented but of interest to the risk manager are those extreme returns in the left hand tail representing a significant loss event. Other summary statistics such as the skew and kurtosis tend to reject the assumption of normality, which is subsequently confirmed by the Jarque-Bera test.

Palisade's @Risk add-in for Excel is employed to estimate the most likely distribution from the sample data. Ranking the efficiency of the fitted distribution by the Anderson-Darling test statistic which attempts to fit the tails (Heiat 2005, 6) it is found that the Logistic distribution (appendix 2) provides the better fit, in terms of tail coverage, to the underlying population as per Table 1 below. It is clear that the fit of the Logistic

distribution is superior to the standard Normality assumption by a clear margin.

Table 1. @Risk Distribution Fit Statistics

Distribution	A-D Statistic
Logistic	5.6212
Normal	10.0630
Weibull	18.0036

Using the Empirical Distribution Test in EVIews the null hypothesis that the underlying data follows the Logistic distribution is tested. As can be observed from Figure 3, the p-values for the three best fit criteria are quite small, less that 0.5 per cent, which would ordinarily result in a rejection using any standard confidence level measurement.

Figure 3. Empirical Distribution Test Results for PIE

Empirical Distribution Test for RESID
Hypothesis: Logistic
Date: 06/20/12 Time: 02:43
Sample (adjusted): 12/04/2002 1/05/2011
Included observations: 423 after adjustments

Method	Value	Adj. Value	Probability
Cramer-von Mises (W2)	1.235268	1.238006	< 0.005
Watson (U2)	1.235268	1.238006	< 0.005
Anderson-Darling (A2)	5.621165	5.624488	< 0.005

2.2 Renewable Energy Certificates

In 2009, the Australian Mandatory Renewable Energy Target (MRET) scheme was amended calling for the amount of renewable energy to represent a minimum of 20 per cent of the total energy mix, the equivalent of 45,000 GWh, by 2020. The intent behind the legislation is to encourage more investment in sustainable energy technologies and to cut the total carbon output from the energy sector (Anderson and Strate, 2009).

The financial means to achieve the increased MRET target is to be through, at least in the short-term, the interchange between producers and obligors, of renewable energy certificates (RECs). Entities that produce renewable energy are eligible to create one REC for each MWh of output which they can sell to energy retailers and large energy consumers (say a steelworks), who are obligated to surrender RECs in accordance with their total energy purchases made each calendar year (ORER, 2011). This exchange of certificates occurs on the primary market. The event of failure to surrender the correct number of certificates can result in federally mandated fines and reputational damage[2].

Within each calendar year, RECs can be traded in the secondary market through OTC networks, dominated by the major energy utilities and a few specialised financial intermediaries. The lack of liquidity is a key characteristic of the RECs market but since 2001 anecdotal evidence suggests that because of increases in the number of participants, the volume of RECs traded in both the spot and forward years has increased significantly.

The price of RECs is directly correlated to the cost of supplying renewable generation, and it is well known that the differential cost between fossil fuel energy and that produced through renewable channels has always been large, hence the apathy with developing sustainable potential, i.e. the argument exists that if something needs a subsidy to develop then clearly it is not profitable to begin with. Other significant factors that, in Australia in particular, impact on the REC price are the structure of the wholesale energy market, the climate[3], the exercise of market power, regulatory uncertainty[4] and secondary market liquidity which manifest themselves in relatively large swings in both spot and forward prices (IES, 2002). There are two additional features of the MRET scheme that exert some influence on price but whose effects have not been thoroughly studied either academically or by industry[5]. The first is the ability to bank excess certificates from one year to the next (and beyond) and the second feature is the fact that

[2] The Federal government can and does name and shame non-compliance in parliament each year.

[3] Drought in particular has made its presence known in the REC market particularly during 2007.

[4] This existed for a long time surrounding the passage of a carbon pollution reduction scheme (tax) and the very state of the MRET market.

[5] At least nothing that has appeared to be made public.

the non-compliance penalty is refundable (IES, 2002) and non-indexed, creating an incentive to 'game' the system.

Overall there are a number of factors that impact on the price and availability of RECs, and the fact that the amount of renewable energy in the system must increase by 2020 means that managing the risk of renewable portfolios demands greater analytical resources by industry participants.

2.2.1 Data

Price data for RECs is collected from industry participants and published, via subscription, by the Australian Financial Markets Association (The authors gratefully acknowledge AFMA's generosity in supplying the data to us without cost for research purposes in 2011. In particularly, Jacinta Lee went above and beyond the call of duty in providing to us a complete set of prices dating back to 27/11/2002, more than is generally made available via subscription) ("AFMA"). AFMA polls its members each week requesting disclosure as to what they judge to be the prevailing offer and bid prices for the relevant environmental instrument, for the calendar years from spot to five years forward. The survey participants encompass various types of organisations on both sides of the market, citing not firm, but indicative prices only.

As per the PLATTS pricing benchmark most commonly used in the energy industry, it is deemed that the 'Median of Mids' to be the best statistical representation of the data. The Median of Mid is calculated from the midpoint of each bid and offer pair submitted to AFMA. Of the distribution describing all these resulting midpoints, one standard deviation is calculated both sides of the median and data points lying outside of this range are deemed outliers and are removed. Given that the Median of Mids has unrealistic prices removed, the resulting time series data handles skewness better than otherwise would be expected from the raw data collected by poll. Figure 4 shows how the price of RECs has varied since November 2002 when AFMA began publishing weekly prices.

The price of RECs has a financial impact on those that produce them and those that discharge compliance obligations. Certificates confer a revenue stream on those that produce renewable energy and are adversely impacted by falling REC prices. On the other hand, energy consumers, those that surrender RECs, incur an expense and are hurt by rising prices. Therefore, as with fund managers in the financial sector, there is a need to manage the price risk associated with the RECs portfolio and the principles of VaR and portfolio risk management techniques become important within an integrated firm-wide framework for reporting energy market risks.

Figure 4. REC Price Chart

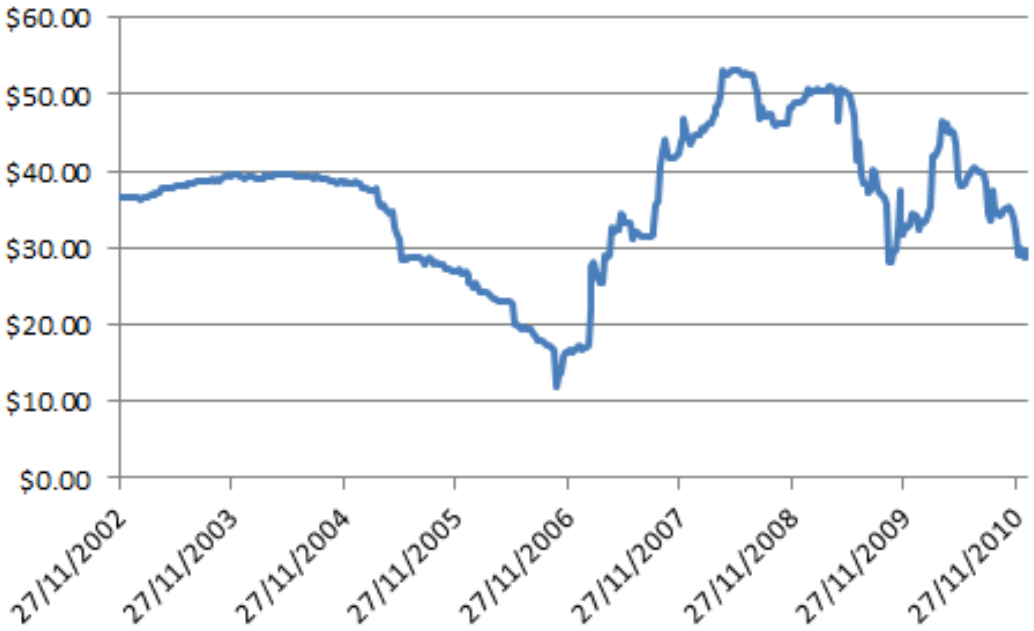


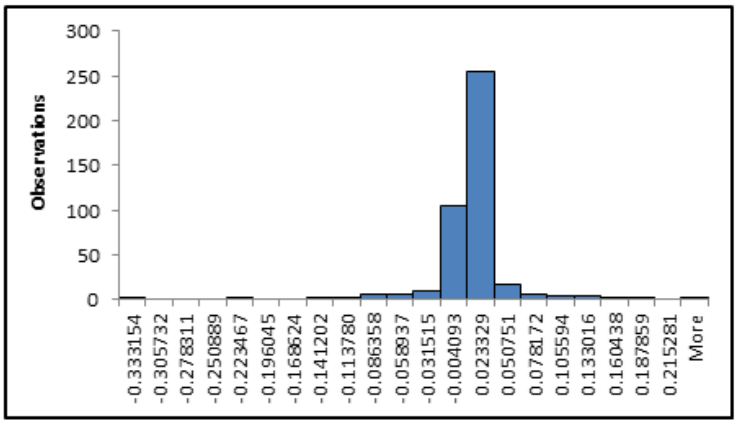
Figure 5 sets out the descriptive statistics for REC price returns over the period 27 November 2002 to 6 January 2011 (Note that four weekly observations are missing. This is due to the polling day falling on a public holiday, usually around the Christmas period, and as such no data was collected). The average price per REC was $36.21 with a mean return of -0.05 per cent which, whilst not shown here, is statistically insignificant from zero. The weekly return volatility was 4.02 per

cent. The price of RECs fell to a low of $11.94 on 19 October 2006 after a large-scale hydro-electric generator released a large number of certificates onto the market. The price rebounded strongly on the back of the drought in eastern Australia to reach a peak of $53.21 on 25 May 2008 before settling to a price of $29.78, $6.82 below its initial "listing" price, at the end of its life in January 2011.

As can be seen from the histogram in Figure 5, the majority of observations are clustered about the mean, the body of the distribution curve is fairly bare of returns but there are extreme returns evident in both tails, each representing an eight standard deviation event. As with PIE, the skew and kurtosis tend to reject the assumption of normality, which is subsequently confirmed by the Jarque-Bera test.

Figure 5. REC Summary Statistics & Histogram

Sample	27/11/2002	6/01/2011
Observations	419	
Mean	-0.000492	
Median	-0.000314	
Maximum	0.242703	
Minimum	-0.333154	
Std Dev	0.040173	
Skewness	-0.640477	
Excess Kurt	21.325131	
% Returns < 0	52.7446%	
% Returns > 0	47.0167%	
% Returns = 0	0.2387%	
Jarque-Bera	7769.579	
Probability	0.000000	



In 2011, the original renewable energy certificate (REC) was split into two component parts to reflect the disparities in scale of renewable plant that create certificates (ORER, 2011): the large-scale generation certificates (LGCs) and the small-scale technology certificates (STC) have subsequently replaced the original REC. As a result, a disconnect now exists between the original certificate price series and the new certificate price series. As there is insufficient history for the new scheme, it has been elected to focus the analysis on the original certificate scheme. This results in a time series of 418 data points for the period 27 November 2002 to 6 January 2011. Thus no further times-series data on this security is available and as a consequence further research analysis on this security is not possible.

As with PIE, the rates of change in the REC prices are determined and @Risk is employed to estimate the most likely distribution of returns. Not surprisingly, the Logistic distribution provides a better fit than the Normal distribution according to the A-D test statistic, as per Table 2 below, although the fit isn't as efficient as the one for PIE (5.9769 (PIE) versus 22.3093 (REC)). This is expected though given the description of the histogram of REC returns above.

Table 2. @Risk Distribution Fit Statistics for REC

Distribution	**A-D Statistic**
Logistic	22.3093
Normal	46.7965
Weibull	63.9391

Again the hypothesis that the sample of REC returns tested is drawn from the Logistic distribution is applied and as can be seen from Figure 6 the p-value for the Anderson Darling (A-D) test is between zero and 0.5 per cent leading to the conclusion that the true distribution is something other than Logistic (When the authors tested whether the PIE and REC data came from the Normal distribution in EVIews, the p-values were both zero). This exercise is an important part of the data analysis and consequently highlights the limitations of @Risk: it can only choose from the distributions available in its library and on this basis the Logistic is the best choice but not necessarily the true fit.

Figure 6. Empirical Distribution Test Results for REC

Empirical Distribution Test for RESID
Hypothesis: Logistic
Date: 06/20/12 Time: 02:52
Sample (adjusted): 12/04/2002 12/08/2010
Included observations: 419 after adjustments

Method	Value	Adj. Value	Probability
Cramer-von Mises (W2)	4.178212	4.188017	< 0.005
Watson (U2)	4.178212	4.188017	< 0.005
Anderson-Darling (A2)	22.30926	22.32257	< 0.005

3. Data Sampling

The lack of long-term price history will lead to calibration issues during the modelling phase and the lack of 'organic' data may result in unstable VaR estimates. On the other hand a plausible industry scenario exists that many risk managers faced in the asset-backed securities market leading up to the GFC: how do financial sector enterprises (FSEs) manage the price risk of newly created assets / derivatives effectively where there is little or no history? With the help of the tools employed in this study, options exist to synthetically create additional history to aid in the risk analysis of illiquid securities but the effectiveness of this 'aid' depends on the ability to select a distribution more closely aligned to the true distribution.

The mean and variance parameters of the original PIE return data are examined to generate an additional 500 weekly samples from the Normal and Logistic distributions. Next a simulation based on 100,000 iterations is put in place to derive an expected outcome. Figure 6 compares the original return data with the samples drawn from the two distributions. As can be seen from the left hand panel, the Normal distribution simulates the 'average' returns quite well but fails to account for any extreme, or tail, moves that have occurred in the historical data. Indeed, the sample statistics, in Table 3, bear this out. The minimum and maximum samples generated by the Normal distribution lie *within* those from the historical data. Other statistics from the sample don't match the historical data either indicating its generally poor fit for risk management purposes.

Figure 7. PIE return data vs. hypothetical sampled returns

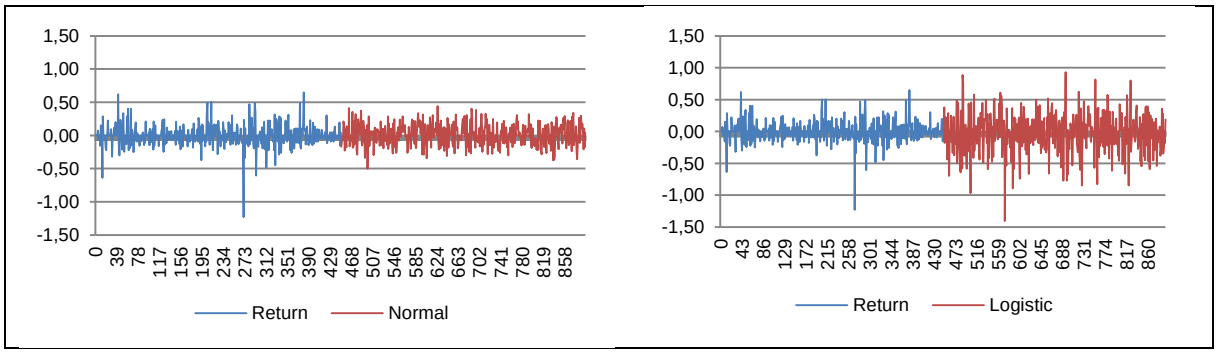


Table 3. Summary Statistics for Samples

Statistic	Historical Returns	Normal samples	Logistic samples
Mean Return	0.0012942	0.0107271	-0.0324313
Standard Deviation	0.1615584	0.1629046	0.3080174
Skewness	-0.6370697	-0.0141445	-0.299767
Kurtosis	9.281909	-0.342546	1.0396698
Minimum Value	-1.2299483	-0.5015656	-1.4060219
Maximum Value	0.6505876	0.4428324	0.9292129

The Logistic sample also has its issues: whilst it accounts for extreme observations present in the historical data, there are perhaps too many tail samples that occur at the expense of more average

returns. This would lead to excessive VaR violations than would be generally expected. Table 3 demonstrates that the Logistic distribution overstates the mean and variance. The extreme values, this time, lie *outside* those from the historical distribution.

This exercise is repeated with the REC data by generating 418 hypothetical future returns from the Normal and Logistic distributions. Figure 8 compares the original RECs data with samples drawn from the two theoretical distributions. As with the PIE example, the Normal distribution tends to generate sample returns clustered about the mean and does not tend to produce any extreme moves as present in the historical returns. On the other hand, the Logistic distribution generates too many extreme and average returns. The summary statistics for the sample distributions are illustrated in Table 4 and indicate that whilst neither distribution appears to be an exact match to the underlying distribution, the Logistic is most appropriate representation from a risk management perspective due to the propensity for tail events to occur more frequently.

Figure 8. REC return data vs. hypothetical sampled returns

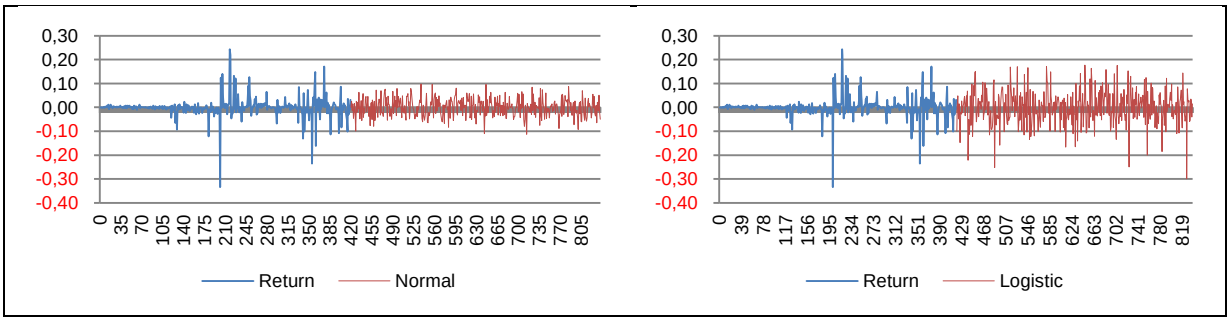


Table 4. Summary Statistics for Samples

Statistic	Historical Returns	Normal samples	Logistic samples
Mean Return	-0.000492	0.000235	-0.002133
Standard Deviation	0.0401726	0.037572	0.0709011
Skewness	-0.6404766	-0.0298851	-0.2496016
Kurtosis	21.325131	-0.1428352	1.187132
Minimum Value	-0.333154	-0.112075	-0.298536
Maximum Value	0.242703	0.097249	0.176529

Given that both PIE and REC return data appears to be best represented by a Logistic rather than a Normal distribution, according to the Anderson-Darling test statistic, the next step of the evaluation is to compare how each distribution performs within the VaR framework in terms of generating the expected number, and independence, of violations.

4. Modelling Approach

Risk managers are charged with understanding the empirical characteristics of financial asset prices, especially volatility clustering because if sustained high volatility is not anticipated and mitigated this increases the probability of an extreme tail event that could fatally impact on the availability of capital reserves to cushion losses (Kousky and Cooke 2010, 1).

Advanced models, such as a GARCH-type, have been shown empirically to be more successful in this regard (Engle, Focardi and Fabozzi 2007, 5), although non-parametric models are easier to implement. Realistically, there will never be a perfect market risk model, which helps explain why stress testing has become a popular complement (Aragones, Blanco and Dowd 2001, 44). Taken together, this approach helps to mitigate the high level of model risk that was prevalent throughout the global financial sector during the lead up to the GFC (Avgouleas 2010, 392).

This research chose the GARCH framework of (Bollerslev, 1986) due to its widespread acceptance for VaR modelling. The illiquidity of both securities and absence of an active options market precludes the use of implied volatility in the modelling process so any VaR framework must rely on a volatility input derived from historical returns only. The addition of Monte Carlo techniques within the analyses ensures these models, rather than being deterministic, help to capture future price uncertainty.

The data from both series was subjected to a number of diagnostic tests (in EVIews) and, whilst not shown here due to brevity, the squared returns exhibits Auto Regressive Conditional Heteroscedacity (ARCH-LM test) making this class

of model an ideal medium in which to test our hypothesis.

4.1 GARCH Specification

As Jorion (2003, 363) explains, a GARCH model is a more sophisticated approach to estimating future volatility because it assumes that today's variance is dependent upon the latest 'innovation' in price and on the previous conditional (non-constant) variance. Given that a GARCH model is relatively simple to estimate and computationally straight forward for fixed weight portfolios the GARCH model is considered (Jorion 2000, 170) more precise compared to other models, principally in cases where there is volatility clustering (shown to exist in the actual return series).

Given that both securities display minimal skewness, this research chooses to present the basic GARCH incarnation as shown below.

$$\sigma_t^2 = \omega + \alpha\varepsilon_{t-1}^2 + \beta\sigma_{t-1}^2 \qquad (1)$$

The term $\varepsilon_i = (z_i - \mu)$ where z_i represents a random draw taken from the Normal distribution for the Normal GARCH and then from the Logistic distribution for the Logistic GARCH, such that:

$$\varepsilon_t^2 \mid I_{t-1} \sim N(\mu, \sigma_t^2) \text{ and}$$
$$\varepsilon_t^2 \mid I_{t-1} \sim LF(\alpha, \beta) \qquad (2)$$

Where in (2), $\propto = \mu$ and $\beta = \frac{\sqrt{3\sigma}}{\pi}$ represent the parameters of the Logistic distribution. Restrictions are placed on the parameter estimates to ensure that the conditional variance will always be positive.

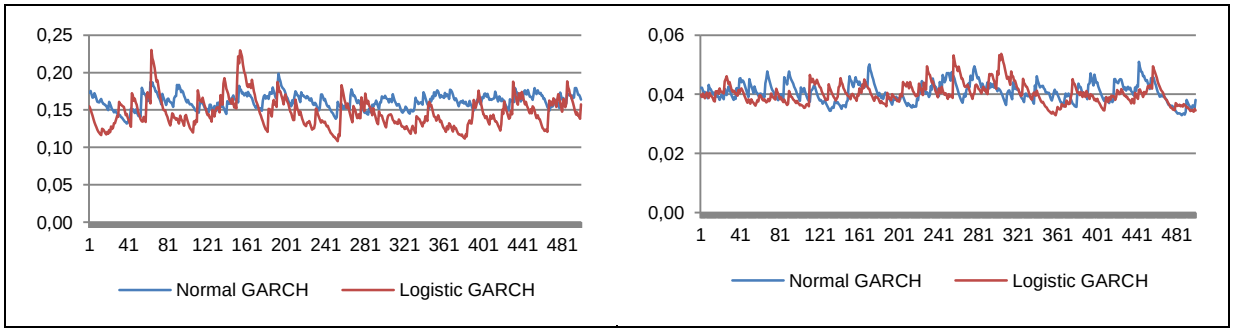
$$\omega > 0,\ \alpha, \beta \geq 0,\ \alpha + \beta < 1 \qquad (3)$$

For the model, this paper sets the value of the parameters to near zero and constructs a time series for the conditional variance in (1) and calculates the likelihood of each observation. Summing these 500 values gives the log likelihood value which, in turn, is maximised using Palisade's RiskOptimizer as per the constraints in (3).

With the initial parameters estimated from the historical data, the mean and conditional variance for the first estimate of the series (simulation 0) are set to the long term mean and standard deviation derived from the historical data. Future estimates for conditional variance are then generated from (1) for simulations 1 to 500. The value-at-risk figure is simply the product of the conditional standard deviation and the level of significance chosen, in this case, at 90 per cent.

Figure 9 compares the week-ahead VaR estimate produced by each distribution for PIE and RECs respectively. Whilst at first glance there appears little difference between the GARCH estimates, the use of the Logistic distribution in the GARCH process appears better suited to capturing the stylised facts concerning volatility - mainly its reaction and persistence. It also better placed to account for the heavier tails present in both securities.

Figure 9. Comparison of GARCH estimates for PIE and RECs



5. Model Validation

Back testing is the process of testing the accuracy of the VaR model using out-of-sample data. Failure of the back test indicates that the model may be mis-specified and that large estimation errors may exist (Alexander 2008b, 332).

With both models, if the next week's actual return exceeds the forecast VaR a violation is recorded. This process is repeated until the entire sample data is exhausted and the total number of VaR violations is recorded.

The *Conditional Coverage* test is employed to validate the models. The process of recording the VaR violations over 500 samples as representative of one trial which is repeated 100,000 times, using the Monte Carlo capabilities of @Risk, to arrive at a consistent number of VaR limit violations and test statistics for each model.

5.1 Coverage Tests

The conditional coverage test, introduced by Kupiec (1995) and extended by Christoffersen (1998), is a sophisticated and flexible backtesting

methodology. The test consists of an unconditional coverage test, based on the actual number of the violations of the previous day's VaR estimate in the out-of-sample test compared to the expected number of violations, and an independence test to see whether the VaR violations cluster.

The null hypothesis under an unconditional coverage test examines whether the observed violations follow an i.i.d. Bernouli process that are statistically similar to the significance level of the VaR, α, that is, the expected number. The test is a likelihood ratio whose value of $-2\ln LR_{uc}$ is asymptotically distributed with one degree of freedom (Alexander 2008b, 337).

If the model passes the unconditional test, it could still be rejected because the VaR violations are not independent. This study follows Alexander (2008a, 359) by adopting expressions such as 'good' returns where a non-VaR violation was preceded by either a violation or a non-violation. A 'bad' return in contrast is where a VaR violation immediately follows the previous violation. Again, Christoffersen (1998) describes a test of the likelihood ratio whose value of $-2\ln LR_{ind}$ is chi-squared with one degree of freedom.

The conditional coverage test combines the unconditional and independent tests, in which the asymptotic distribution of $-2\ln LR_{cc}$ is chi-squared with two degrees of freedom. In order for these models to be valid, they should pass the conditional coverage test.

6. Results

The tests are implemented in Excel, and results are displayed in Table 5. At the 10% level of significance both distributions produce approximately the same number of violations over 100,000 runs and neither model fails the conditional coverage test. The 10% critical value of the chi-squared distribution with two degrees of freedom is 4.61 and both conditional coverage statistics are less than this.

In terms of violations both models are very similar: an average of 54 for the Normal GARCH and 60 for the Logistic GARCH models for PIE, and 50 and 57 respectively for RECs. For both securities, the standard deviation for the Normal distribution is larger than for the Logistic. Indeed for PIE, the Normal distribution had a standard deviation of 11 versus 8 and approximately 90 per cent of simulations fell between 44 and 73 whereas for the Logistic the range of violations was 45 to 52. Similarly for RECs, the standard deviation of the Normal distribution was 13 but only 7 for the Logistic distribution. The respective range of violations determined that approximately 90% of simulations fall between 38 and 63 violations for the Normal model and 47 and 70 for the Logistic model.

Table 5. Backtesting Results & Coverage Tests for PIE and RECs

After 100,000 Iterations	Normal	Logistic
Number of observations	500	500
Number of VaR violations	60	53
Number of non-VaR violations	440	447
Percentage of VaR violations	12.0000%	10.6000%
Percentage of expected violations	10.0000%	10.0000%
Unconditional coverage test	-262.06223	-233.8327
Independence test	1.444688	-1518.1045
Percentage of stand-alone violations	12.5000%	10.2908%
Percentage of consecutive violations	8.3333%	13.2075%
Conditional coverage test	-260.61754	-1751.9372

After 1,000,000 Iterations	Normal	Logistic
Nnumber of observations	500	500
Number of VaR violations	52	54
Number of non-VaR violations	448	446
Percentage of VaR violations	10.4000%	10.8000%
Percentage of expected violations	10.0000%	10.0000%
Unconditional coverage test	-229.568196	-237.1459986
Independence test	1.689488304	-2181.018436
Percentage of stand-alone violations	10.0446%	11.4350%
Percentage of consecutive violations	13.4615%	5.5556%
Conditional coverage test	-227.878708	-2418.164434

Chi-squared critical values

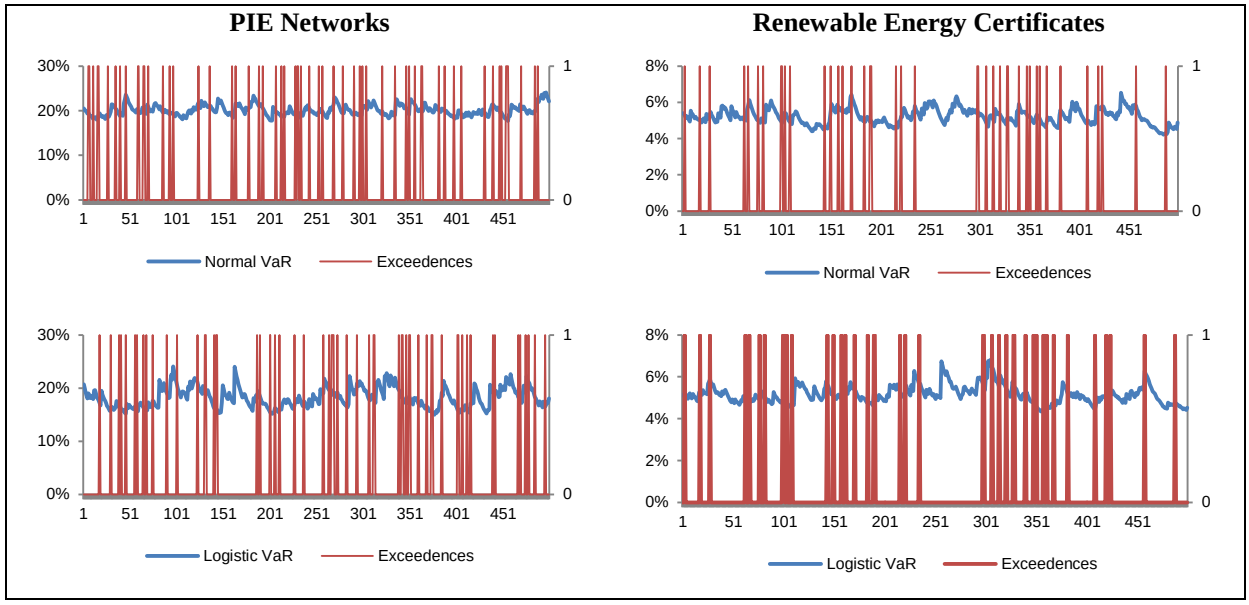
	1%	5%	10%
1 degree of freedom	6.63	3.84	2.71
2 degrees of freedom	9.21	5.99	4.61

For PIE, the unconditional coverage test will reject below 38 and above 73 violations for the Normal distribution, and will reject below 41 and above 66 for the Logistic. For RECs, the rejection zones for the Normal and Logistic models are below 38 and above 75, and below 33 and above 63 respectively. Any values within these ranges are statistically insignificant from 50 – the expected number of violations at the 10% level. Regardless of the distribution employed, for both securities, the resulting VaR model will tend to generate more violations than the expectation due to the persistent level of high volatility resulting from illiquidity.

In addition, over 90% of all trials resulted in independent violations i.e. they tended not to cluster meaning that a sudden spike in volatility will not produce a string of VaR violations. Figure 8 compares the violation profiles for the Normal and Logistic GARCH models for both securities over the course of 500 samples drawn from 100,000th iteration. The thin vertical line represents

a standalone violation whereas thicker lines denote two or more consecutive violations.

Figure 10. Week-ahead VaR Estimates and Violations



For PIE in this particular representation, the total number of consecutive violations for the Normal model was 13.11 per cent versus 15.00 per cent for the Logistic model, a difference of 1.89 per cent. For RECs, the Normal model had consecutive violations totalling 11.86 per cent of all observations against 9.76 per cent for the Logistic model, for a wider difference of 2.10 per cent which is a more significant difference for RECs as opposed to PIE. Overall employing the Normal distribution in the VaR the GARCH model does tend to result in a higher percentage of independence violations across a simulation composed of 100,000 iterations.

7. Conclusion

This research evaluates a more suitable probability distribution, or one better aligned to the underlying process rather than the standard assumption of normality, to model the price risk. This methodology is then applied to the illiquid securities PIE and RECS using a simple GARCH VaR framework. The hypothesis is evaluated by comparing the Normal and Logistic distributions (as chosen by @Risk as first and second best respectively) in forecasting the future volatility of each security. The resulting stochastic volatility forecast is used to determine the number and independence of VaR violations against what would be expected.

It is found that both distributions produce very similar results in terms of the number and independence of violations. What is significant is how and where the violations occur. Under the Normal distribution, the average number of violations is closer to the expected amount; the average for the Logistic distribution is closer to upper boundary of expectation due to the more frequent occurrences of tail events than described by the historical data. The zone of acceptance, i.e. the upper and lower level of violations that will be accepted, is tighter when the Normal distribution is used. However, the Normal distribution tends to produce more clustered and dependent violations although not significant enough for the Normal GARCH model to fail the Conditional Coverage test. Whilst the results are similar, it is believed that implementing a Logistic GARCH model is more favourable from a theoretical perspective. This appears to better capture the extreme volatility dynamics present in illiquid securities.

The importance of constantly reviewing the underlying returns distribution cannot be understated. Securities markets are constantly evolving, reacting to new information and innovations which have the potential to deflect the path of a security in one of many competing directions. Asset price returns rarely, if ever, conform to neatly described and known PDFs. Therefore risk managers need to constantly review the historical data to pick up these subtle changes and alter the assumptions upon which their models are based. This can now comfortably be done through the use of easy-to-use software routines that integrate neatly into the Excel development environment. Such a modelling process described in this article would satisfy the Basel Advanced Measurement Approach. Finally the risk management function is carried out more accurately by not relying on common traditional assumptions applied by many corporates. Corporate owners and

managers secure greater confidence in the firms risk management function.

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REVISITING THE WEAK-FORM EFFICIENCY OF THE AUSTRALIAN STOCK MARKET

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Abstract

We use recent daily data and several testing procedures to re-investigate the weak-form efficiency of the Australian stock of the top 50 companies across different industries. Contrary to most prior studies, our results suggest that the Australian market is weak-form efficient with little or no evidence for short-term return predictability.

JEL Classification: G14

Keywords: Australian Stock Market, Weak-Form Market Efficiency, Short-Term Predictability, Filter-Rules Test

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1. Introduction

The stock market efficiency hypothesis of Fama (1970) and others is an important milestone for understanding the working of capital markets. Among different types of market efficiencies, the literature classifies a given market as weak-form efficient when current stock prices fully reflect all information contained in past prices, thus preventing investors from gain abnormal returns based on historical market information. There are two groups of procedures for testing weak-form market efficiency. The first group conducts statistical tests to check independence between rates of returns. The second group compares investments which are based on trading rules relative to those that are based on simple buy-and-hold strategies (Reilly and Brown, 2009).

Prior studies like Praetz (1969), Officer (1975) and Gaunt and Gray (2003) have examined the weak-form efficiency of the Australian stock market, but with conflicting results. We revisit this issue using updated data that reflect the recent advances in information and communication technologies that have undoubtedly altered the nature and dynamics of stock trading. Therefore, we offer new evidence on the efficiency of the Australian stock market. Moreover, our results are derived from a multitude of testing procedures (autocorrelation, runs, and filter-rules tests). To foreshadow what follow, all three tests unambiguously suggest that the Australian stock market is weak-form efficient and that short-term returns in this market are unpredictable.

Section 2 reviews the germane literature on testing market efficiency. Section 3 describes the data and its summary statistics. Section 4 discusses the testing methods and the empirical findings. Section 5 concludes.

2. Literature Review

We briefly review the literature on the weak-form market efficiency tests with emphasis on the Australian market. A large volume of literature has been dedicated to testing the weak-form market efficiency ever since Fama (1970) introduced the concept of market efficiency. Research on testing market efficiency may trace back to Lo and MacKinlay (1988) who report some evidence against the efficiency of the US stock market. Test results in Harvey (1993) also too indicate that stock returns in emerging markets are highly predictable. However, Urritia (1995) suggests that several Latin American stock markets are weak-form efficient, although evidence lacks consistency across different testing procedures.

For the Australian stock market, Praetz (1969) uses the autocorrelation and runs tests to examine returns dependencies finding only a frail indication of return predictability. However, Officer (1975) finds results supporting the presence of large negative or positive autocorrelations in most of lagged stock returns. Brown *et al.* (1983) as well as Gaunt and Gray (2003) report similar evidence

against weak-form efficiency in the Australian market. In summary, prior empirical studies generally conclude that stock returns in the Australian market are predictable and that the market is not weak-form efficient.

3. Data and Summary Statistics

Our daily data, sourced from *DataStream*, are closing stock prices representing the top 50 companies traded on the Australian Stock Exchange (ASX) over the period from January 4, 2000 to December 31, 2012 (3390 observations). The prices are adjusted by dividend distributions, new equity issuances and share buybacks. We select the top 50 companies based on their market capitalization as of December 6, 2012. Table 1 contains detailed descriptions of the companies and their associated industry categories.

Table 1. Summary Statistics

ASX Code	Industry	Mean (×100)	Std. Dev. (×100)	Median (×100)	Min (×100)	Max (×100)	Skewness	Kurtosis	Jarque-Bera	ρ(1)	Starting Day
AGK	Utilities	0.04	1.36	0.02	-18.18	7.07	-0.80	12.67	23042	-0.012	Jan 4, 2000
AIO†	Transportation	-0.10	4.74	0.00	-91.12	51.29	-3.30	110.34	739709	-0.109	Jun 7, 2007
AMC	Materials	0.03	1.52	0.02	-10.75	13.69	0.11	4.87	3361	-0.015	Jan 4, 2000
AMP	Insurance	-0.01	2.01	0.02	-44.36	20.98	-2.92	75.00	799408	0.025	Jan 4, 2000
ANZ	Banks	0.05	1.59	0.02	-11.54	13.68	0.06	8.28	9694	0.037	Jan 4, 2000
ASX	Diversified Financials	0.05	1.65	0.00	-14.07	17.75	0.36	10.88	16789	-0.023	Jan 4, 2000
AZJ	Transportation	0.07	1.59	0.00	-4.05	5.94	0.21	0.55	11	-0.102	Nov 23, 2010
BHP	Materials	0.05	1.96	0.01	-14.07	11.48	-0.20	3.96	2239	-0.028	Jan 4, 2000
BXB	Commercial Service	0.00	1.97	0.01	-35.23	13.96	-1.99	35.51	180302	0.011	Jan 4, 2000
CBA	Banks	0.05	1.41	0.00	-9.53	11.79	0.05	6.29	5594	0.013	Jan 4, 2000
CCL	Food Beverage	0.05	1.62	0.01	-11.89	12.44	0.08	5.40	4115	-0.076	Jan 4, 2000
CFX	Real Estate	0.04	1.49	0.03	-12.76	14.53	-0.13	9.56	12927	-0.094	Jan 4, 2000
CPU	Software & Services	0.01	2.37	0.01	-41.64	22.32	-1.38	34.33	167572	0.002	Jan 4, 2000
CSL	Pharmaceuticals, Biotechnology & Life Sciences	0.06	1.99	0.01	-12.01	26.76	0.88	14.93	31906	0.066	Jan 4, 2000
CWN†	Consumer Services	-0.01	2.03	0.02	-13.32	12.65	0.00	5.05	1410	-0.054	Dec 4, 2007
DXS	Real Estate	0.02	1.94	0.02	-26.14	10.69	-1.21	17.52	44160	-0.014	Jan 4, 2000
FMG	Materials	0.18	5.66	0.00	-69.33	69.33	0.50	24.11	82225	-0.030	Jan 4, 2000
GMG	Real Estate	0.07	3.25	0.01	-29.70	29.05	-0.41	14.69	30580	0.099	Jan 4, 2000
GPT	Real Estate	0.00	2.33	0.03	-39.16	18.40	-1.76	41.76	248106	0.113	Jan 4, 2000
IAG	Insurance	0.03	1.66	0.00	-16.15	11.57	-0.34	5.73	4483	-0.053	Aug 9, 2000
ILU	Materials	0.04	2.40	0.01	-27.55	17.02	-0.31	8.38	9980	-0.015	Jan 4, 2000
IPL	Materials	0.08	2.56	0.01	-36.27	20.62	-1.29	23.02	54990	0.033	Jul 29, 2003
LEI	Capital Goods	0.05	2.32	0.02	-25.63	14.43	-0.44	8.29	9815	0.028	Jan 4, 2000
LLC	Real Estate	-0.01	1.88	0.01	-17.71	8.66	-0.96	8.77	11397	0.016	Jan 4, 2000
MGR	Real Estate	0.01	2.20	0.03	-26.45	30.04	-0.16	27.70	108384	0.109	Jan 4, 2000
MQG	Diversified Financials	0.03	2.34	0.02	-26.38	32.11	0.26	20.01	56608	0.011	Jan 4, 2000
NAB	Banks	0.02	1.65	0.02	-14.46	16.03	-0.38	9.72	13427	0.041	Jan 4, 2000
NCM	Materials	0.05	2.52	0.00	-18.37	14.05	-0.11	3.80	2045	0.036	Jan 4, 2000
NWS	Media	0.00	2.12	0.00	-24.06	24.57	0.01	13.31	25013	-0.012	Jan 4, 2000
ORG	Energy	0.07	1.83	0.01	-11.08	28.70	1.28	21.76	67798	-0.036	Jan 4, 2000
ORI	Materials	0.05	1.83	0.01	-16.59	18.34	0.03	8.17	9424	0.030	Jan 4, 2000
OSH	Energy	0.04	2.59	0.00	-28.77	19.57	-0.41	10.66	16140	0.014	Jan 4, 2000
QAN	Transportation	-0.01	2.10	0.02	-20.66	23.45	-0.16	14.02	27797	0.009	Jan 4, 2000
QBE	Insurance	0.03	2.32	0.02	-52.59	41.88	-4.06	157.26	3502610	-0.072	Jan 4, 2000
RIO	Materials	0.04	2.31	0.02	-41.93	14.36	-2.06	36.74	193062	-0.004	Jan 4, 2000
SGP	Real Estate	0.03	1.84	0.03	-11.32	11.66	-0.26	8.12	9356	0.051	Jan 4, 2000
SHL	Health Care Equipment & Services	0.03	1.68	0.01	-22.55	9.40	-0.83	14.68	30831	-0.054	Jan 4, 2000
STO	Energy	0.05	1.95	0.00	-16.85	11.33	-0.22	5.13	3746	-0.003	Jan 4, 2000
SUN	Insurance	0.03	1.85	0.00	-29.47	11.43	-1.36	24.24	84040	0.015	Jan 4, 2000
SYD	Transportation	0.05	2.12	0.00	-25.17	9.94	-0.97	11.73	15074	-0.042	Mar 10, 2003

TCL	Transportation	0.04	1.71	0.02	-15.74	19.93	0.46	13.36	25337	-0.049	Jan 4, 2000
TLS	Telecommunication Service	0.01	1.36	0.02	-12.33	8.35	-0.64	6.14	5549	0.038	Jan 4, 2000
TOL	Transportation	0.07	2.04	0.01	-19.73	12.92	-0.25	8.40	9998	0.050	Jan 4, 2000
WBC	Banks	0.05	1.52	0.02	-11.79	8.61	-0.08	4.61	3004	0.007	Jan 4, 2000
WDC	Real Estate	0.03	1.74	0.01	-13.20	20.92	0.46	10.91	16926	-0.042	Jan 4, 2000
WES	Food & Stapling Retailing	0.06	1.68	0.02	-14.39	12.62	-0.40	8.69	10761	0.001	Jan 4, 2000
WOR	Energy	0.11	2.49	0.01	-16.25	20.74	0.20	7.12	5573	0.079	Nov 29, 2002
WOW	Food & Stapling Retailing	0.06	1.28	0.00	-11.33	6.38	-0.20	4.42	2786	-0.037	Jan 4, 2000
WPL	Energy	0.04	1.84	0.01	-11.93	12.09	-0.06	4.51	2880	0.023	Jan 4, 2000
WRT†	Real Estate	0.04	1.32	0.00	-4.53	5.31	0.29	1.29	44	-0.117	Dec 14, 2010

Notes: The firms are: AGK-AGL Energy, AIO-Asciano Group, AMC-Amcor, AMP, ANZ-ANZ Bank, ASX,AZJ-Aurizon Holdings Ltd, BHP-BHP BLT, BXB-Bramble Ltd, CBA-Commonwealth Bank, CCL-Coca Cola Amatil, CFX-CFS Retail Property Trust, CPU-Cshare, CSL, CWN-Crown, DXS-Dexux property Group, FMG-Fortescue, GMG-Goodman Group, GPT, IAG-Insurance Australia,ILU-Iluka Resources Ltd, IPL-Incitec PV, LEI-Leighton, LLC-Lend Lease Group, MGR-Mirvac Group, MQG-Macquarie Group, NAB-National Australian Bank, NCM-Newcrest, NWS-News Corporation, ORG-Origin Energy, ORI-Orica, OSH-Oil Search, QAN-Qantas, QBE-QBE Insurance, RIO-Rio Tinto, SGP-Stockland, SHL-Sonic Health, Sun-Sun Metway, SYD-Sydney Airport, TCL-Transurban, TLS-Telstra, TOL-Tollholdings, WBC-Westpac, WDC-Westfield, WES-Wesfarmer, WOR-Worleypars, WOW-Woolworths, WPL-Woodside, and WRT-Westfield Retail Trust. Jarque-Bera statistics for normality test are all significant at the 1% level. The ASX code of the firm that does not have more than 5 years' data is denoted with †. The data are daily starting from January 4, 2000 for most firms and end on 31 December 2012 for all firms. An † denotes firms with smaller data size (5 years or less).

The daily market return at day *t* is calculated as:

$$R_{i,t} = \ln(P_{i,t} / P_{i,t-1}) \quad (1)$$

where $P_{i,t}$ is the price of stock *i* at day *t*.

Table 1 reports the summary statistics of the daily returns on the top 50 Australian stocks. The sample means, standard deviations, medians, minimums, maximums, skewness, kurtosis, Jacaque-Bera statistics, and the first-order autocorrelation coefficients are presented. The median returns for most companies are close to zero, and all are less than 40 basis points. The return distributions for all the companies are non-normal. The Jarque-Bera statistics for normality are significant at the 1% level, suggesting the rejection of the null hypothesis. Furthermore, the kurtosis for most return series is significantly larger than 3, implying fat-tail distributions. Finally, the first-order autocorrelation coefficients for most companies are negative with absolute values lower than 0.1.

4. Testing Strategies and Results

The short-term predictability test examines whether returns in past trading days can predict today's returns. To do that, we use three procedures; namely, the correlation test, the runs test, and filter-rules test. We briefly explain below each of these procedures.

4.1 The Correlation Test

This test investigates the linear relationship between today's returns with past returns. The testing regression takes the following form:

$$r_{i,t} = \alpha_i + \beta_i r_{i,t-1-T} + \varepsilon_{i,t} \quad (2)$$

where α_i is the expected return of stock *i*, which is unrelated to past return; β_i measures the relationship between today's return with past return; $r_{i,t-1-T}$ represents past return of stock *i* , and $\varepsilon_{i,t}$ is the error term.

Table 2 presents the correlations estimates between current and past returns (where past returns are yesterday's return, returns two days ago, three days ago, four days ago, five days ago, and ten days ago). For most of the top 50 stocks, column 1 suggests that there is no relationship between today's return and yesterday's return. For example, for the big four banks, ANZ, CBA, NAB, and WBC, yesterdays' return cannot predict today's return at the 5% significance level. However, only for 12 out of these 50 stocks do the correlation coefficients prove significant at the 5% level. However, judged by the low values of the squared correlation coefficients (see Elton *et al*., 2010), past returns exhibit very weak power for predicting current returns. Moreover, the correlation coefficients for most of these 12 stocks lose significance at longer horizons. Taken together, results in Table 2 suggest that return the correlations for the top 50 stocks prove feeble at best.

Table 2. Daily Correlation Coefficients

	1		2		3		4		5		10	
ASX Code	β_i	*t-stat*	β_i	*t-stat*	β_i	*t-stat*	β_i	*t-stat*	β_i	*t-stat*	β_i	*t-stat*
AGK	-0.01	(-0.56)	-0.05**	(-2.55)	0.00	(0.17)	-0.01	(-0.45)	-0.05**	(-2.35)	-0.01	(-0.31)
AIO†	-0.11	(-1.28)	-0.09	(-1.58)	-0.05	(-0.84)	-0.09	(-1.56)	0.09**	(2.34)	-0.02	(-0.44)
AMC	-0.01	(-0.67)	-0.05**	(-2.02)	-0.03	(-1.44)	0.01	(0.23)	-0.05**	(-2.52)	0.02	(0.67)
AMP	0.02	(0.98)	0.01	(0.33)	-0.05**	(-2.20)	-0.02	(-0.77)	0.00	(0.22)	0.03*	(1.75)
ANZ	0.04	(1.31)	-0.06**	(-2.23)	-0.08**	(-2.61)	-0.02	(-0.72)	0.05*	(1.77)	0.03	(0.99)
ASX	-0.02	(-0.95)	-0.06**	(-2.04)	0.01	(0.48)	0.00	(0.11)	0.01	(0.35)	-0.01	(-0.41)
AZJ	-0.10**	(-2.22)	-0.02	(-0.47)	-0.06	(-1.25)	-0.05	(-1.11)	-0.09	(-1.64)	0.01	(0.16)
BHP	-0.03	(-1.10)	-0.03	(-1.05)	-0.03	(-0.91)	0.01	(0.23)	-0.02	(-0.55)	-0.02	(-0.94)
BXB	0.01	(0.45)	-0.09**	(-4.42)	-0.03	(-1.32)	0.00	(0.03)	0.00	(-0.06)	-0.01	(-0.63)
CBA	0.01	(0.46)	-0.02	(-0.69)	-0.04	(-1.19)	0.01	(0.30)	0.01	(0.34)	-0.01	(-0.26)
CCL	-0.08**	(-3.41)	-0.05**	(-2.27)	-0.01	(-0.47)	-0.03	(-1.31)	0.00	(-0.02)	-0.02	(-1.02)
CFX	-0.09**	(-3.01)	-0.08**	(-2.49)	-0.01	(-0.27)	-0.04*	(-1.65)	-0.08**	(-2.32)	0.07**	(2.07)
CPU	0.00	(0.08)	-0.04*	(-1.87)	-0.01	(-0.40)	-0.01	(-0.62)	0.00	(0.05)	0.00	(0.02)
CSL	0.07**	(3.15)	-0.06**	(-2.74)	-0.04**	(-2.33)	0.01	(0.49)	-0.03*	(-1.78)	-0.01	(-0.35)
CWN†	-0.05	(-1.16)	0.04	(0.96)	0.02	(0.69)	0.00	(-0.06)	0.01	(0.18)	0.03	(0.78)
DXS	-0.01	(-0.45)	-0.02	(-0.52)	-0.07**	(-1.96)	-0.03	(-0.85)	-0.03	(-0.76)	0.02	(0.35)
FMG	-0.03	(-0.82)	-0.03	(-1.23)	-0.05	(-1.06)	0.01	(0.22)	0.01	(0.26)	-0.01	(-0.52)
GMG	0.10**	(2.15)	-0.03	(-0.82)	-0.01	(-0.47)	0.00	(-0.01)	0.04	(1.00)	0.01	(0.39)
GPT	0.11**	(2.00)	0.01	(0.23)	-0.03	(-0.50)	-0.08	(-1.52)	-0.09*	(-1.78)	0.03	(0.62)
IAG	-0.05**	(-2.57)	-0.03	(-1.32)	-0.02	(-0.98)	-0.02	(-0.82)	0.01	(0.66)	0.02	(1.02)
ILU	-0.01	(-0.61)	0.00	(0.14)	-0.03	(-1.41)	0.00	(-0.06)	0.02	(0.92)	-0.03	(-1.49)
IPL	0.03	(1.13)	-0.02	(-0.73)	-0.05*	(-1.84)	-0.03	(-0.93)	-0.01	(-0.24)	0.02	(0.86)
LEI	0.03	(1.28)	-0.07**	(-2.26)	-0.03	(-1.08)	-0.02	(-0.61)	0.04	(1.41)	0.00	(-0.02)
LLC	0.02	(0.56)	-0.04*	(-1.84)	-0.05**	(-2.45)	0.00	(-0.11)	-0.01	(-0.23)	0.00	(0.04)
MGR	0.11**	(2.05)	0.06	(1.10)	-0.06	(-1.09)	-0.01	(-0.30)	-0.06	(-1.62)	0.00	(0.04)
MQG	0.01	(0.28)	-0.01	(-0.38)	-0.03	(-0.78)	-0.04	(-1.12)	0.00	(0.12)	0.03	(1.11)
NAB	0.04*	(1.76)	-0.04	(-1.42)	-0.07**	(-2.18)	-0.05*	(-1.69)	0.01	(0.48)	0.02	(0.49)
NCM	0.04	(1.60)	-0.03	(-1.57)	-0.02	(-0.83)	0.00	(-0.11)	-0.01	(-0.72)	-0.02	(-0.78)
NWS	-0.01	(-0.46)	-0.01	(-0.58)	-0.04	(-1.37)	-0.02	(-0.67)	0.01	(0.57)	0.02	(0.68)
ORG	-0.04	(-1.27)	-0.05**	(-2.25)	-0.02	(-1.09)	-0.02	(-0.77)	0.00	(0.05)	-0.03	(-1.13)
ORI	0.03	(1.16)	-0.03	(-1.23)	-0.04*	(-1.66)	-0.04	(-1.39)	0.01	(0.29)	0.01	(0.40)
OSH	0.01	(0.53)	-0.04*	(-1.65)	-0.04**	(-2.10)	0.01	(0.17)	-0.01	(-0.26)	0.01	(0.27)
QAN	0.01	(0.35)	-0.02	(-0.82)	0.04	(1.39)	-0.04	(-1.61)	-0.02	(-1.02)	0.01	(0.27)
QBE	-0.07	(-0.61)	-0.05	(-1.28)	0.13	(1.15)	-0.11	(-1.33)	-0.03	(-0.77)	0.02	(0.83)
RIO	0.00	(-0.12)	-0.04	(-1.26)	-0.04	(-0.94)	0.05	(1.09)	0.00	(0.09)	-0.01	(-0.23)
SGP	0.05	(1.52)	-0.07*	(-1.94)	-0.11**	(-3.27)	0.00	(0.12)	-0.04	(-0.94)	0.00	(0.01)
SHL	-0.05**	(-2.61)	0.00	(-0.15)	-0.04**	(-1.98)	0.01	(0.42)	-0.01	(-0.75)	0.01	(0.30)
STO	0.00	(-0.13)	-0.05	(-1.52)	-0.02	(-0.96)	0.02	(0.57)	-0.01	(-0.34)	-0.01	(-0.37)
SUN	0.02	(0.58)	-0.06**	(-2.22)	-0.03	(-1.00)	0.00	(-0.11)	-0.02	(-0.77)	0.03	(0.93)
SYD	-0.04	(-1.46)	-0.03	(-1.12)	-0.02	(-0.68)	0.01	(0.36)	0.00	(-0.19)	-0.02	(-0.62)
TCL	-0.05*	(-1.90)	0.01	(0.29)	-0.02	(-1.02)	0.01	(0.45)	0.00	(0.07)	0.01	(0.40)
TLS	0.04*	(1.72)	-0.06**	(-2.88)	-0.05**	(-2.32)	0.00	(-0.20)	0.00	(-0.03)	-0.04**	(-2.44)
TOL	0.05**	(2.09)	-0.02	(-0.94)	-0.01	(-0.67)	-0.02	(-1.22)	0.01	(0.51)	0.03*	(1.92)
WBC	0.01	(0.31)	-0.06*	(-1.90)	-0.02	(-0.60)	0.01	(0.26)	-0.01	(-0.39)	0.00	(-0.15)
WDC	-0.04	(-1.45)	-0.05*	(-1.89)	-0.07**	(-2.31)	-0.04*	(-1.69)	-0.07**	(-2.19)	0.05*	(1.76)
WES	0.00	(0.02)	-0.02	(-0.68)	-0.03	(-1.31)	-0.04	(-1.25)	0.01	(0.55)	-0.01	(-0.43)
WOR	0.08**	(2.69)	0.02	(0.85)	-0.09**	(-3.09)	-0.03	(-1.02)	0.00	(0.05)	0.03	(0.96)
WOW	-0.04	(-1.45)	0.00	(-0.22)	-0.07**	(-3.39)	-0.02	(-0.86)	0.01	(0.29)	-0.01	(-0.32)
WPL	0.02	(0.95)	-0.02	(-0.93)	-0.04*	(-1.88)	-0.02	(-0.72)	0.00	(0.10)	0.00	(-0.10)
WRT†	-0.12**	(-2.08)	-0.06	(-1.47)	0.10	(1.50)	-0.12**	(-2.23)	-0.10**	(-2.31)	-0.07	(-1.38)

Notes: See notes to Table 1. The ** and * denote statistical significance at the 5% and 10% levels, respectively.

4.2 The Runs Test

Some might object to the above correlation test on the grounds that it may be seriously driven by some extreme observations (Elton *et al.*, 2010). To address this objection, we supplement the above results by using the correlation test which is based on sign changes of prices and can thus remove this outlier noise. Runs test tabulates the number of sequence of consecutive positive (+) and negative

(−) returns. For example, a sequence of returns such as + − − − + + + 0 has four runs: a run of one +, a run of three −, and a run of three +, and a run of no change. The actual number of runs is calculated by counting the number of runs in the sequence of returns. The expected number of runs is calculated as:

$$Expected\ Runs = \left[N \times (N+1) - (N_1^2 + N_2^2 + N_3^2) \right] / N \quad (3)$$

where N is the number of total returns, N_1 is the number of positive returns, N_2 is the number of no changes in prices, and N_3 is the number of negative returns. Table 3 presents the results.

Table 3. Total Actual and Expected Numbers of Runs for One-, Four-, Nine-, and Sixteen-Day Differencing Intervals

	Daily		Four-Day		Nine-Day		Sixteen-Day	
ASX Code	Actual	Expected	Actual	Expected	Actual	Expected	Actual	Expected
AGK	1714	1684.0	447	418.7	198	186.2	109	103.6
AIO†	798	810.4	185	191.2	81	83.8	47	46.5
AMC	1703	1686.3	438	423.9	197	189.0	116	106.4
AMP	1778	1716.8	454	424.3	201	191.7	104	106.1
ANZ	1648	1686.0	441	416.4	178	185.9	106	103.6
ASX	1764	1864.0	430	432.9	191	188.8	97	103.3
AZJ	347	339.7	86	73.3	36	33.5	21	20.6
BHP	1688	1683.8	429	421.7	191	186.4	108	104.5
BXB	1711	1686.9	474	424.5	184	187.6	114	106.0
CBA	1779	1840.6	453	422.1	179	183.7	102	102.5
CCL	1737	1679.7	462	423.1	187	187.5	116	104.8
CFX	1648	1600.2	455	412.1	211	185.9	110	104.5
CPU	1682	1685.2	428	424.0	192	188.9	106	106.1
CSL	1604	1691.7	437	421.4	201	187.8	103	103.9
CWN†	687	671.4	176	166.8	72	73.5	46	41.4
DXS	1640	1593.4	456	413.7	211	185.4	114	102.9
FMG	1787	2205.3	476	502.4	205	207.2	108	113.0
GMG	1717	1812.2	446	425.3	185	184.4	112	105.2
GPT	1627	1644.3	456	420.4	204	185.7	108	103.6
IAG	1967	1907.6	468	439.1	189	189.6	105	106.6
ILU	1736	1748.1	453	429.2	198	189.9	119	106.9
IPL	1231	1307.5	320	310.2	146	133.9	77	75.1
LEI	1653	1689.0	431	420.6	192	187.1	94	103.3
LLC	1637	1687.5	432	424.1	200	188.0	108	105.8
MGR	1625	1667.4	450	422.6	175	186.7	108	103.9
MQG	1577	1687.8	446	420.8	176	186.9	104	105.0
NAB	1659	1689.0	424	419.4	192	185.4	100	102.9
NCM	1696	1772.5	450	423.2	196	188.2	111	105.5
NWS	1695	1694.9	430	424.4	193	188.9	105	106.1
ORG	1725	1682.9	443	421.2	205	184.2	109	105.5
ORI	1675	1687.9	431	420.2	182	184.8	112	105.2
OSH	1993	2036.0	483	458.3	193	195.5	107	109.7
QAN	1714	1777.0	446	434.0	201	190.0	102	107.3
QBE	1679	1690.0	473	420.8	211	186.9	98	104.5
RIO	1674	1686.5	427	421.2	202	185.9	122	105.0
SGP	1657	1662.9	450	420.2	206	185.7	108	102.5
SHL	1761	1689.6	446	422.8	192	186.2	116	106.0
STO	1913	1877.6	474	435.3	201	189.0	112	107.4
SUN	1926	1895.9	457	438.9	183	188.2	110	104.8
SYD	1533	1541.0	353	351.6	144	145.5	79	82.8
TCL	1762	1731.6	455	428.6	203	188.1	98	105.6
TLS	1637	1681.5	444	423.9	199	188.2	112	106.4
TOL	1599	1683.9	410	422.0	189	185.9	103	103.9
WBC	1653	1685.6	439	417.2	196	185.9	102	102.5
WDC	1717	1691.3	476	423.9	199	186.9	104	105.6
WES	1681	1680.1	436	418.7	189	184.5	104	105.2
WOR	1288	1379.3	326	330.9	139	144.4	82	77.1
WOW	1834	1864.2	453	429.2	177	189.9	112	100.8
WPL	1681	1689.3	465	422.6	190	188.4	113	106.2
WRT†	345	332.2	76	74.8	43	34.7	19	18.6

Notes: See notes to Tables 1 and 2.

The runs results displayed in Table 3 are for one, four, nine, and sixteen days intervals. As seen in the table, the relationships between today's stock return and yesterday's stock return for the vast majority of stocks are generally weak as the actual number of runs in each case is quite close to the expected number of runs. As Fama (1965) points out, if the number of actual runs is less than the expected number, this implies a positive relationship between the returns. Take GPT for one-day interval as an example. The actual number of runs is 1627, which is less than the expected number of 1644.3, suggesting a positive relationship. Indeed, as shown in Table 1, the correlation coefficients between today's return and yesterday's return for most companies are very small and most are statistically insignificant at the conventional level.

Therefore, similar to the verdict from the correlation test, the results we obtain from the correlation test indicate that the prices of the top 50 stocks in the Australian market generally follow a random-walk path. Although a few prices appear to divert from this path, the evidence is too weak to support the possibility of gaining trading benefits net of transaction costs. We further discuss this issue below.

4.3 The Filter-Rules Test

We devote this sub-section to testing whether a trading rule based on a particular return pattern can be used to gain excess profit. One example of a trading rule is the filter rule pioneered by Alexander (1961). According to this rule, a stock is purchased when it rises by X% from the previous price and held until its price drops by X% at which the stock will be (short) sold. Another simpler trading rule is the buy-and-hold strategy. Following Fama and Blume (1966), we compare the performance of the filter rule relative to the buy-and-hold rule for the top 50 Australian stocks. Table 4 reports the results.

Table 4. Return Comparisons using the Filter Rule versus the Simple Buy-and-Hold Rile

ASX Code	Filter Size:															
	0.5%		1%		1.5%		2%		2.5%		3%		4%		5%	
	F	B	F	B	F	B	F	B	F	B	F	B	F	B	F	B
AGK	-0.139	0.112	-0.134	0.111	-0.128	0.111	-0.127	0.115	-0.145	0.115	-0.158	0.113	-0.173	0.118	-0.185	0.140
AIO†	-0.459	-0.244	-0.389	-0.244	-0.321	-0.244	-0.272	-0.248	-0.234	-0.264	-0.241	-0.264	-0.069	-0.283	-0.268	-0.328
AMC	-0.134	0.077	-0.145	0.077	-0.110	0.076	-0.173	0.075	-0.129	0.072	-0.114	0.072	-0.092	0.071	-0.087	0.048
AMP	-0.059	-0.019	-0.019	-0.020	0.025	-0.021	0.033	-0.021	0.052	-0.029	0.057	-0.029	0.017	-0.029	-0.082	-0.015
ANZ	-0.056	0.115	-0.034	0.114	-0.085	0.116	-0.118	0.116	-0.134	0.116	-0.105	0.105	-0.119	0.105	-0.167	0.101
ASX	0.060	0.119	-0.035	0.118	-0.151	0.121	-0.196	0.125	-0.208	0.123	-0.264	0.123	-0.289	0.147	-0.281	0.152
AZJ	-0.433	0.179	-0.498	0.179	-0.372	0.178	-0.382	0.185	-0.369	0.185	-0.411	0.185	-0.315	0.185	-0.247	0.185
BHP	-0.187	0.128	-0.117	0.128	-0.208	0.125	-0.205	0.126	-0.216	0.126	-0.234	0.126	-0.220	0.134	-0.290	0.170
BXB	-0.084	0.009	-0.089	0.008	-0.062	0.006	-0.064	0.006	0.002	0.006	-0.036	0.006	-0.089	-0.005	-0.122	-0.005
CBA	-0.004	0.118	-0.079	0.116	-0.125	0.116	-0.150	0.105	-0.159	0.104	-0.136	0.101	-0.163	0.100	-0.193	0.121
CCL	-0.286	0.128	-0.257	0.130	-0.273	0.128	-0.281	0.133	-0.214	0.132	-0.214	0.123	-0.248	0.137	-0.272	0.124
CFX	-0.375	0.104	-0.325	0.104	-0.308	0.104	-0.252	0.104	-0.207	0.107	-0.173	0.100	-0.183	0.100	-0.180	0.100
CPU	-0.122	0.031	-0.217	0.032	-0.097	0.028	-0.111	0.030	-0.090	0.030	-0.084	0.030	-0.092	0.025	-0.130	0.025
CSL	0.097	0.163	0.049	0.164	-0.003	0.164	-0.076	0.164	-0.128	0.164	-0.181	0.159	-0.251	0.159	-0.275	0.159
CWN†	-0.395	-0.013	-0.334	-0.016	-0.320	-0.015	-0.286	-0.021	-0.255	-0.032	-0.167	-0.028	-0.106	-0.207	-0.166	-0.183
DXS	-0.239	0.061	-0.145	0.060	-0.128	0.059	-0.102	0.059	-0.077	0.059	-0.090	0.059	-0.102	0.059	-0.073	0.041
FMG	n/a	0.442	n/a	0.442	n/a	0.442	n/a	0.442	n/a	0.442	n/a	0.442	n/a	0.442	n/a	0.436
GMG	-0.031	0.174	-0.040	0.174	-0.080	0.174	-0.077	0.180	-0.127	0.180	-0.201	0.176	-0.290	0.155	-0.281	0.155
GPT	-0.045	0.006	0.000	0.005	0.005	0.005	-0.015	0.004	-0.005	0.000	-0.007	0.002	0.007	0.002	0.034	-0.027
IAG	-0.224	0.079	-0.248	0.079	-0.194	0.077	-0.162	0.075	-0.163	0.075	-0.164	0.066	-0.127	0.048	-0.140	0.048
ILU	-0.092	0.101	-0.087	0.101	-0.130	0.101	-0.113	0.101	-0.150	0.101	-0.146	0.101	-0.257	0.099	-0.260	0.095
IPL	0.043	0.196	-0.101	0.196	-0.218	0.196	-0.223	0.195	-0.226	0.195	-0.340	0.192	-0.418	0.200	-0.476	0.225
LEI	-0.050	0.124	-0.082	0.124	-0.110	0.124	-0.163	0.124	-0.225	0.121	-0.236	0.121	-0.182	0.121	-0.243	0.121
LLC	0.037	-0.019	-0.019	-0.019	-0.044	-0.022	-0.051	-0.022	-0.059	-0.025	-0.039	-0.025	-0.034	-0.025	-0.077	-0.037
MGR	0.090	0.029	0.040	0.029	-0.013	0.028	-0.021	0.028	-0.036	0.028	-0.051	0.024	-0.027	0.008	-0.052	-0.001
MQG	0.200	0.064	0.124	0.064	-0.053	0.064	-0.123	0.063	-0.156	0.059	-0.177	0.054	-0.133	0.040	-0.154	0.035
NAB	-0.001	0.059	0.003	0.058	0.004	0.060	0.009	0.053	-0.017	0.052	-0.024	0.052	-0.039	0.052	-0.072	0.054
NCM	0.119	0.121	0.133	0.121	0.041	0.131	-0.089	0.134	-0.210	0.139	-0.241	0.139	-0.279	0.142	-0.302	0.142
NWS	-0.026	-0.009	0.041	-0.009	0.055	-0.009	0.062	-0.009	0.040	-0.011	-0.038	-0.011	-0.077	-0.018	-0.082	-0.046
ORG	-0.217	0.172	-0.208	0.173	-0.197	0.173	-0.266	0.173	-0.257	0.173	-0.233	0.173	-0.215	0.166	-0.263	0.203
ORI	-0.059	0.133	-0.076	0.133	-0.103	0.133	-0.171	0.133	-0.201	0.136	-0.202	0.144	-0.233	0.144	-0.195	0.144
OSH	-0.189	0.107	-0.178	0.109	-0.188	0.108	-0.186	0.108	-0.202	0.108	-0.224	0.117	-0.221	0.109	-0.203	0.117
QAN	-0.017	-0.023	-0.008	-0.024	-0.002	-0.025	-0.017	-0.025	-0.041	-0.025	-0.018	-0.036	-0.032	-0.036	-0.040	-0.036
QBE	-0.120	0.078	-0.112	0.078	-0.193	0.078	-0.195	0.075	-0.226	0.091	-0.232	0.091	-0.236	0.092	-0.247	0.092

Table 4. continued

RIO	-0.060	0.092	-0.109	0.092	-0.179	0.092	-0.249	0.084	-0.228	0.084	-0.264	0.085	-0.280	0.085	-0.348	0.102
SGP	-0.048	0.080	-0.112	0.079	-0.174	0.080	-0.193	0.079	-0.176	0.079	-0.182	0.079	-0.163	0.075	-0.101	0.065
SHL	-0.159	0.080	-0.188	0.080	-0.201	0.079	-0.235	0.079	-0.210	0.079	-0.171	0.072	-0.158	0.072	-0.159	0.071
STO	-0.137	0.117	-0.171	0.116	-0.190	0.116	-0.210	0.119	-0.223	0.119	-0.213	0.119	-0.262	0.116	-0.218	0.116
SUN	-0.094	0.075	-0.057	0.075	-0.097	0.075	-0.071	0.075	-0.112	0.070	-0.049	0.060	-0.047	0.057	-0.069	0.054
SYD	-0.150	0.118	-0.262	0.118	-0.190	0.118	-0.226	0.119	-0.234	0.110	-0.231	0.110	-0.276	0.139	-0.285	0.152
TCL	-0.260	0.090	-0.239	0.092	-0.286	0.090	-0.257	0.088	-0.213	0.088	-0.172	0.088	-0.174	0.094	-0.175	0.094
TLS	0.031	0.013	0.005	0.012	-0.019	0.012	-0.033	0.005	-0.015	0.002	0.008	-0.025	0.003	-0.025	-0.010	-0.025
TOL	0.022	0.164	-0.015	0.166	-0.081	0.166	-0.153	0.166	-0.229	0.166	-0.222	0.166	-0.226	0.156	-0.261	0.156
WBC	-0.018	0.118	-0.086	0.117	-0.107	0.118	-0.133	0.102	-0.186	0.103	-0.173	0.105	-0.128	0.106	-0.144	0.104
WDC	-0.070	0.069	-0.144	0.069	-0.197	0.069	-0.188	0.061	-0.187	0.061	-0.223	0.063	-0.199	0.055	-0.164	0.055
WES	-0.073	0.144	-0.094	0.143	-0.110	0.140	-0.159	0.142	-0.150	0.142	-0.183	0.142	-0.216	0.142	-0.221	0.152
WOR	0.154	0.276	0.014	0.277	-0.025	0.275	-0.131	0.277	-0.192	0.277	-0.299	0.299	-0.321	0.299	-0.350	0.322
WOW	-0.165	0.162	-0.135	0.163	-0.199	0.166	-0.192	0.161	-0.199	0.161	-0.181	0.161	-0.238	0.188	-0.232	0.188
WPL	0.006	0.109	-0.046	0.110	-0.105	0.110	-0.152	0.113	-0.154	0.113	-0.155	0.109	-0.190	0.109	-0.202	0.109
WRT†	-0.341	0.108	-0.356	0.112	-0.322	0.113	-0.308	0.133	-0.137	0.133	0.058	-0.005	0.017	-0.005	-0.031	-0.005

Notes: See notes to tables 1and 2. "F" denotes returns using the filter rule while "B" denote returns obtained using the buy-and- hold strategy. The percentages X% in the filter rule are alternatively set at 0.5%, 1%, 1.5%, 2%, 2.5%, 3%, 4%, and 5%.The "n/a" denotes that the returns under the strategy is unusually large (compared to others) due to some extreme price movements in the return series.

These results show that for some negatively correlating stocks such as CCL and CFX, the simple buy-and-hold strategy performs better than the filter rule for all filters ranging from 0.5% to 5%. For example, under the filter size of 0.5%, the CCL has a negative return of -0.286 under the filter rule, but a positive return of 0.128 under the buy-and-hold rule. Even for some positively correlated stocks (at 1 day lag) the filter rule does not outperform the buy-and-hold strategy. For example, the GPT with the filter size of 0.5% has a negative return under the filter technique but a positive return using the buy-and-hold rule.

In sum, the simple buy-and-hold strategy generally outperforms the filter rule, an outcome pointing again to the random-walk behavior in the Australian stock market.

5. Conclusion

This paper uses alternative procedures to test the weak-form efficiency hypothesis in the Australian market as represented by the top 50 stocks across different sectors. The results based on daily data from January 2000 to December 2012 indicate that there are no noticeable autocorrelations between the returns in most of the stocks with very limited ability to forecast current short-term returns using past return information. Moreover, simple buy-and-hold routines generally outperform the filter-rule trading strategy for most of the Australian stocks. Therefore, results from alternative tests generally suggest that prices of the top 50 Australian stocks behave in a random-walk fashion and that the Australian market is weak-form efficient.

From a practical standpoint, these results imply that investors and fund managers cannot gain abnormal returns in the Australian market from trading strategies based on historical stock prices. However, from the policy makers' perspective, our evidence of an efficient Australian market could be a testimony for prudent regulations and competent market administrators.

This paper can be extended in several fruitful directions. In particular, our data comprise of the top 50 Australian companies which, given their size and might, generally tend to perform more efficiently relative to small firms. Therefore, it seems useful to investigate the weak-form efficiency in Australia when the market is represented by small and medium size firms. In addition, the linear correlation test may be inappropriate for testing market efficiency since changes in stock prices tend to follow non-linear paths. Non-linear correlation tests such as those discussed in Hinich (1996) may provide interesting insights into the behavior of the Australian market.

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DOES MANDATORY CSR REPORTING LEAD TO HIGHER CSR TRANSPARENCY? THE CASE OF FRANCE

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Abstract

Expedited by the financial crisis and increased stakeholder activism, the demand for reliable and accountable business practices and transparency has gained momentum in the current corporate social responsibility (CSR) debate. Consequently, companies have started to become aware of the increasing importance of conveying increased transparency and accountability to stakeholders, gaining their legitimacy and establishing a positive public image through adequate CSR reporting. Since it is obligatory to disclose information on corporate financial performance and on companies' environmental and social impact in France, this paper addresses how transparent French listed companies of the CAC 40 communicate their CSR engagement externally. To turn the latent construct 'transparency of CSR reporting' into a measurable value, we conduct qualitative content analysis based on the Global Reporting Initiative (GRI) guidelines. Assuming mandatory CSR reporting to increase companies' CSR transparency in general, most of the companies communicate their corporate profile, strategy and management broadly. Whereas companies report the environmental dimension most frequently, they refer only marginally to the economic and social dimensions.

Keywords: Corporate Social Responsibility, Mandatory Reporting, Transparency, France

JEL Classifications: M1, M14, M16, F23, F64

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1 Introduction

Although Milton Friedman (1962) regarded corporate responsibility solely as the quest for profit maximization in the 1960s, companies have nowadays adopted further responsibilities toward society in general and stakeholders in particular. In doing so, companies have increasingly acknowledged the need to conduct business responsibly and accountably (Moneva et al., 2006; Gjølberg, 2009). Especially in the context of the recent financial crisis, corporate social responsibility (CSR) has come to the forefront of management practices. The criticism of corporate fraud, short-termism, abuse of management power, the excess of management remuneration and environmental scandals (Sun et al., 2010) has revealed ever more clearly the negative impact of corporate activity on society and the environment (Kilian and Hennigs, 2011). Moreover, the increased amount of business scandals, growing media coverage and the consequences of the global financial crisis induce increased information needs (Güler and Crowther, 2009) and raise stakeholders' demand for corporate transparency and complete information coverage on corporate conduct (Kolk, 2008). Companies are able to tackle these demands by changing their reporting practice and offering transparency, accountability and compliance with certain disclosure obligations (Stiglbauer, 2010). Hence, the traditional disclosure of financial data has been amplified with supplements reporting on environmental and social impacts of business activities (Ballou et al., 2006). The disclosure of CSR information is becoming the norm instead of the exception across industries and regions (Vurro and Perrini, 2011).

Contrary to the voluntariness principle of CSR proclaimed by the European Commission and most countries, French CSR approach is characterized by

strong political influence (Antal and Sobczak, 2007; Harribey, 2009) and understood as a "regulatory approach, in line with the apparently more centralist orientation of the French state" (Albareda et al., 2007: 403). With the introduction of the "Nouvelles Régulations Economiques" (NRE) in 2001, the French legislator is considered a pioneer of mandatory CSR reporting in Europe (Crawford and Williams, 2010). However, only few studies focus on the French CSR reporting approach (Delbard, 2008; Lassaad and Khamoussi, 2012a; 2012b) and the French reporting practice is barely considered in cross-national studies (Roberts, 1991; Meek et al., 1995; Adams et al., 1998; Maignan and Ralston, 2002; Cormier and Magnan, 2003; Kolk, 2003; Cormier et al., 2004; Saida, 2009; Crawford and Williams, 2010; Kolk and Pinkse, 2010; Young and Marais, 2012).

Since the mandatory reporting of non-financial information has been established since more than ten years, it might be assumed that CSR reporting has become an integral part of French business conduct. Yet the few current studies of French CSR reporting provide only limited insight on this (Laassad and Khamoussi, 2012a; Young and Marais, 2012). Studies following the introduction of the NRE law demonstrate, however, that there is no uniform practice of CSR reporting despite the legal obligation. Groupe Alpha (2012) even found that less than 25% of the biggest French companies comply with their reporting obligations in the first year after the introduction of the mandatory reporting and that the quality of CSR reporting still depicts severe deficits. Due to strong skepticism toward CSR reporting, French companies and business associations show little acceptance of the Global Reporting Initiative (GRI) (Blasco and Zølner, 2010). The aim of this study is therefore to shed light on the current state of CSR reporting in the national context of France. Moreover, by generating empirical insights regarding the practice of CSR reporting of French listed companies of the CAC 40, we further intend to analyze whether the legal duty to publish non-financial information fosters more transparent and accountable CSR reporting. Since the variable 'transparency of CSR reporting' is a latent construct, we design an instrument based on a qualitative content analysis of corporate CSR information in line with the GRI guidelines G3.1 to turn it into a measurable variable. With a scoring model, the general publication level of the studied CSR reports is determined in order to separately discuss the reporting intensity with respect to the company profile and the three dimensions of the triple bottom line.

2 Theoretical concepts and principles of CSR and CSR reporting

2.1 Theoretical basis of CSR and CSR reporting

Although the concept of CSR has already been discussed in the academic and business realm since the 1970s (Lee, 2008), there is still little definitional consensus on the conceptual idea of CSR (Freeman and Hasnaoui, 2011). Since the CSR concept and its implementation have remained voluntary and vague with fuzzy boundaries and debatable legitimacy (Lantos, 2001), CSR represents a complex construct of legal, ethical and economic aspects (Carroll and Schwartz, 2003) as well as social concerns, human rights and environmental protection (Valand and Heide, 2005). According to the European Commission (2011), CSR is understood as "the responsibility of enterprises for their impacts on society […] to integrate social, environmental, ethical, human rights and consumer concerns into their business operations and core strategy in close collaboration with their stakeholders" (European Commission, 2011: 6). If companies meet their responsibilities, they are able to maximize shared value for the benefit of their shareholders, other internal and external stakeholders and for society. In addition, companies are able to identify, prevent and mitigate potential adverse impacts (European Commission, 2011). Due to the inexact definition of CSR and the voluntariness principle, each company interprets CSR differently in line with its own social and moral perspective. The understanding of the triple bottom line goes beyond pure economic success and strives for social justice and environmental sustainability, too. Consequently, CSR embraces the economic, environmental and social dimension, which should all be taken into account in companies' accounting (Elkington, 1997).

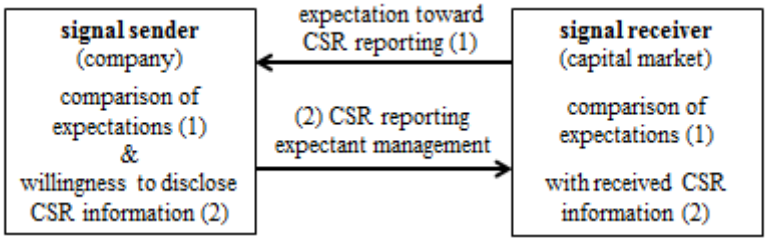
Nowadays, the sole implementation of CSR initiatives is not enough anymore. As a result of diverse business scandals, the global financial crisis, and increased stakeholder activism, the demand for reliable, accountable and transparent CSR reporting has grown globally. Since current CSR reporting practice is primarily of voluntary nature, companies individually interpret their reporting duties (Chen and Bouvain, 2009) and label their reports differently: corporate citizenship report, CSR report, sustainable development report, sustainable value report, and sustainability report, etc. By considering this diversity, we find a conceptual congruence between CSR and the three dimensions of sustainability. Hence, this article regards sustainability reporting and CSR reporting as two consistent concepts. According to Gray (2002) and the World Business Council for Sustainable Development (WBCSD) (2000), CSR

reporting is defined as a generic term of reporting that goes far beyond the disclosure of pure financial information. This broad understanding of CSR reporting also embraces ethical issues and corporate governance (Kolk, 2008). Moreover, we understanding CSR reporting based on the definition of the GRI as: "the practice of measuring, disclosing, and being accountable to internal and external stakeholders for organizational performance towards the goal of sustainable development" (GRI, 2011a: 3).

Through the provision of information on CSR activities, approaches, and processes, companies are able to make their roles in society public and to convey internal corporate values in order to promulgate transparency and accountability. Owing to this open communication, they are further able to improve their public image, to gain trust and legitimacy and to differentiate from competitors (Esrock and Leichty, 1998; Loew et al., 2004). Thus, investing in companies with effective CSR reporting can lead to economic and social returns (Dorfleitner and Utz, 2012). However, CSR reporting only positively affects corporate reputation and financial performance, when it is implemented strategically and mirrors a long-term commitment to CSR. If CSR reporting is only superficially exercised, companies are likely to be accused of greenwash and cannot close the promise-performance gap (Robinson, 2004; Van de Ven, 2008; Burritt and Schaltegger, 2010). It is therefore crucial for companies to realize that stakeholders expect companies to maintain or increase their level of corporate involvement once stakeholders notice CSR activities. Moreover, CSR reporting is only trustworthy and effective if it pursues a continuous interplay between corporate behavior, CSR reporting, and public perception (Schlegelmilch and Pollach, 2005).

In the theory-based discussion of CSR reporting, *legitimacy theory*, *stakeholder theory* as well as *principal-agent theory* play vital roles (Gray et al., 1995a; Hooghiemstra, 2000; Deegan, 2002). *Legitimacy theory* implies an implicit social contract between business and society (Lantos, 2001). This contract indicates society's implicit expectations of business or corporations' indirect societal responsibilities. Since companies receive a 'license to operate' from society (Deegan, 2002), they obtain a justification for their economic activity. However, this social contract theory only holds true if corporate values and business activities conform to social norms, values and approaches (Suchman, 1995). In this context, CSR reporting is aimed at communicating companies' compliant behavior to external stakeholders which secures the corporate legitimacy in the long run (Branco and Rodrigues, 2008; Amran and Haniffa, 2011). As companies are no isolated actors in the business environment, they act in an internal and external environment and interact with different stakeholders. These stakeholders comprise any group or individual who is affected by or can influence the corporate conduct (Freeman, 1984; Freeman and McVea, 2001). With respect to CSR reporting, there are two types of *stakeholder approaches*: 1) companies equally report financial, social and environmental information to all stakeholders (Gray et al., 1996). 2) companies employ CSR reporting strategically to manage their stakeholder relationships (Ullmann, 1985). Another element of the theoretical framework of this empirical study is *principal-agent theory*. By assuming asymmetric distribution of information on capital markets, it assumes an incomplete market (Lackmann, 2010). In the scenario of the CSR reporting, the capital market equals the principal and the company represents the agent. By definition of the principal-agent theory, the actions of the agent also affect the principal. Because the principal does not hold direct control over the agent, the principal possibly faces problems in case of diverging interests of the principal and the agent. Such problems increase with asymmetric information. Signaling represents a solution to the problem of asymmetric information and the therefrom-resulting risk of moral hazard or adverse selection (Spence, 1973). *Signaling theory* recommends the party with an information advantage (company) to send visible or explicitly communicated signals (CSR information) with the aim of minimizing information asymmetries. These signals are expected to change the expectations of the principal (capital market) with respect to the transaction object (Spence, 1973; Spence, 2002). As illustrated in Figure 1, the theoretical mode of action applies the principal-agent and signaling theory to the research question.

Figure 1. Theoretical mode of action



The first string of Figure 1 depicts the expectation toward CSR reporting of the capital market toward the company. Although this relationship is worth being investigated, it is not part of this study. The focus of the study lies on the second string, which illustrates the willingness to disclose CSR information by the company and how this CSR information is received by the capital market. Research by Fieseler (2008) found that the capital market increasingly requests future- and value-orientated, non-financial information and transparent representation of internal processes. Transparent CSR reporting is able to fulfill both demands. Moreover, by reporting non-financial or CSR-related information, companies are able to produce a positive public CSR image and to improve their overall reputation (Fieseler, 2008).

2.2 Current state of the art of CSR reporting

In recent years, the quantity of CSR reports has greatly increased at both European and international level (Corporate Register, 2011; KPMG, 2011). However, CSR reporting shows strong divergences between companies, industry sectors and countries due to CSR reporting remaining a voluntary initiative of companies that are not bound to legislation in most countries (Daub, 2007; Hartman et al., 2007; Vormedal and Ruud, 2009; Chen and Bouvain, 2009; Morhardt, 2010). Under current EU law, only Directive 2003/51/EC contains certain reporting requirements on firms (European Union, 2003). However, it is at the discretion of each individual member state how CSR reporting and the Directive are implemented and enforced by national law (European Commission, 2011). Within Europe, France and Great Britain demand non-financial and CSR-related information by law, and Denmark, Norway and Sweden require reporting on environmental impacts (Khan, 2006). Usually, companies either disclose CSR information in a separate CSR report or include it in their annual report (Kolk, 2008). Although most companies prefer to publish CSR reports nowadays, integrated reporting, which includes CSR information in annual reports, increasingly comes to the forefront of current reporting practices (KPMG, 2011).

With respect to the quality of reporting, CSR reports are often criticized for representing image and reputation improvement tools that are aimed to omit negative information coverage and do not succeed in accountable reporting on corporate CSR achievements (Meffert and Münstermann, 2005; Banerjee, 2007; Archel et al., 2008; Kuruppu and Milne, 2010). In order to facilitate the preparation and disclosure of voluntary and mandatory CSR reports, the following reporting standards were developed: the UN Global Compact, the Eco-Management and Audit Scheme (EMAS), the Greenhouse Gas Protocol (GHG Protocol) and the Global Reporting Initiative (GRI). Owing to the consideration of relevant stakeholders and the three dimensions of the triple bottom line, GRI has become the most commonly accepted reporting standard internationally (KPMG, 2011). The aim of GRI is to tackle the criticism with respect to the credibility and quality of CSR reporting (Corporate Register, 2011; KPMG, 2011) and to harmonize and standardize CSR reporting across organizational and national boundaries (GRI, 2011a). In this study, we employ the GRI guidelines G3.1 to measure the transparency of the sample CSR reports (GRI, 2011a).

Current research on CSR reporting encompasses the following three research categories (Haniffa and Cooke, 2005): 1) motives and drivers of CSR reporting, 2) factors influencing CSR reporting, and 3) the report content and quality of CSR reports. There are different reasons to implement CSR reporting (Idowu and Papasolomou, 2007): increase in reputation, pressure from corporate stakeholders, expected positive effects on the company's performance or socio-cultural reasons. Further studies based on the legitimacy and stakeholder theory conclude that companies publish CSR information to gain or secure their legitimacy, to influence the public opinion and to establish or maintain mutually beneficial relationships with their stakeholders (Neu et al., 1998; O'Donovan, 2002). Hess and Dunfee (2007: 8) even state that "the driving force behind social reports is not a simple, profit-based cost-benefit analysis, but a response to socio-political factors". Adams (2002) reveals corporate characteristics, general contextual factors and the internal context impact on CSR reporting. For instance, empirical studies ascertained positive correlations and relationships between CSR reporting and industry affiliation (Kolk, 2003; Martin and Hadley, 2008; Tagesson et al., 2009), company size (Prado-Lorenzo et al., 2009; Da Silva Monteiro and Aibar-Guzman, 2010) or country of origin (Meek et al., 1995; Luna Sotorrío and Fernández Sánchez, 2008; Chen and Bouvain, 2009; Fifka and Drabble, 2012). We focus on the third research category, namely the content and quality of CSR reporting by addressing the question of what companies specifically report in their CSR reports (Livesey and Kearins, 2002; Vuontisjärvi, 2006; Daub, 2007; Holcomb et al., 2007; Lassaad and Khamoussi, 2012a).

2.3 Current state of the art of CSR reporting in France

CSR reporting in France finds its roots in the 1977 when France firstly introduced the *bilan social* (social account). The disclosure of the social account has required companies with more than 300

employees to disclose information on 134 standardized indicators about working conditions, remuneration, etc. (Christophe and Bebbington, 1992). Nowadays, France still pursues its rather regulatory approach toward CSR reporting due to its strong political influence on CSR (Antal and Sobczak, 2007; Harribey, 2009) and the more centralist orientation of the French state (Albareda et al., 2007). Cormier and Magnan (2003) found that reporting on environmental activities has already emerged from 1992 on in France. After having enacted the "Nouvelles Régulations Economiques" (NRE) in 2001, the French state is regarded a pioneer of mandatory CSR reporting in Europe (Crawford and Williams, 2010). Article 116 of the NRE obliges companies listed on the primary market of the Paris stock exchange to disclose information on CSR in their annual reports (Code de Commerce, 2010; Delbard, 2008). A decree passed in 2002 specifies the required information disclosure by referring to 40 quantitative and qualitative indicators classified in three categories: 1) social information to employees (e.g. working hours, wage staggering, employee dismissal, health and safety conditions, equality of men and women, employment of mentally or physically disabled persons), 2) information on companies' regional impact on suppliers and stakeholders, 3) information on the business impact on the environment (e.g. usage of natural resources, improved energy efficiency or waste disposal measures, compliance costs) (Décret n° 2002-221, 2002). In 2010, an extension of article 116 was passed, which requires companies that are not listed on the Paris stock exchange but exceed a certain threshold with respect to the number of employees and turnover to report their social and environmental impacts. Furthermore, article 225 of the second "law of Grenelle" imposes reporting requirements for subsidiaries of listed companies and state-owned companies. Finally, French legislation also regulates the external assurance of CSR disclosure (Code of Commerce, 2010). However, there are no detailed requirements with respect to scope or presentation of CSR information. Consequently, French companies can individually decide on the level of transparency and the design of their CSR reports.

In a comparative study of the content and extent of CSR communication, Maignan and Ralston (2002) reveal that French companies disclose less information on general CSR principles, processes, codes of conduct, health and safety measures as well as stakeholder-related issues, such as product quality, equity and environmental protection than the examined British, U.S and Dutch companies (Maignan and Ralston, 2002). Despite the legal obligation to report environmental and social impacts of corporate activities in France, a current analysis of corporate communications of 128 companies of the 250 SBF index by Lassaad and Khamoussi (2012a) detect that French companies show a low CSR publication level. However, Lassaad and Khamoussi (2012a) have a positive impression of the content of French CSR reports by stating that French companies take environmental matters seriously and show interest in bylaws and regulations about pollution and environmental management (Lassaad and Khamoussi, 2012a). In a further study, they determine factors influencing the publication level of CSR information and ascertained positive correlations between the amount of CSR coverage and company size and industry affiliation (Lassaad and Khamoussi, 2012b). Young and Marais (2012) find that French listed companies show increased CSR reporting intensity on topics related to labor and the environment. Furthermore, the issues of community, governance and ethics are increasingly prevalent in French CSR coverage. To a lesser extent, the subject of business behavior, such as information on responsible procurement management and fair corporate practices as well as information on CSR practices at the local level is reported (Young and Marais, 2012).

3. Methodology

3.1 Research objective and sample selection

Our first research objective is to ascertain the content, quality and extent to which French companies report their CSR practices and whether their reporting approach complies with the GRI reporting guidelines G3.1. Our second objective addresses whether mandatory reporting and the affiliation to an industry sector affects the transparency level of CSR reporting. Although French listed companies are legally obliged to disclose CSR information in their annual reports (Code of Commerce, 2010), they often opt for publishing separate CSR reports. A study by KPMG (2008) finds that 47% of the 100 largest French companies publish such a stand-alone CSR report. Since it is difficult to evaluate the CSR reporting of French companies on a large-scale quantitative basis, we concentrate on corporate stand-alone CSR reports. In doing so, it serves as a good proxy to qualitatively assess the sample companies' CSR approach, commitment and reporting. The rationale for investigating the content, quality and extent of French companies' CSR reports is that CSR reports target a wide variety of stakeholders and are publicly available in printed versions or accessible online. Hence, we do not take into consideration CSR reporting included in annual reports, pure financial documents and in integrated reporting.

Our original sample covers the 40 companies listed on the CAC 40 index as of 1 July 2012. Our sample is restricted to publicly listed, mostly multinational companies, because these companies are faced with increased pressure from corporate stakeholders to report on CSR initiatives (Kolk and Pinkse, 2010). Since similar studies also analyze the CSR reporting of listed and multinational companies, there is a comparative basis and reasoning in choosing these sample companies (Hartman et al., 2007; Kotonen, 2009; Tagesson et al., 2009; Luna Sotorrío and Fernández Sánchez, 2010; Kilian and Hennigs, 2011; Laassad and Khamoussi, 2012a). Furthermore, this selection is based on the recognition that bigger companies tend to make information easier accessible compared to small or medium sized companies (Gray et al., 1995b) and publish more frequently CSR-related information and CSR reports on their corporate websites (Freedman and Jaggi, 2005; Morhardt, 2010). Since our research approach is to conduct a qualitative content analysis of corporate CSR reports, we reduce the sample to French listed companies of the CAC 40 that publish CSR reports in the fiscal year 2011. We downloaded all CSR reports of the year 2011 independently from the companies' websites between 24 July 2012 and 24 August 2012. Due to the predominant importance of electronic channels for modern corporate reporting (Meckel et al., 2008), we excluded those companies which did not publish their CSR reports online. Owing to the research focus on French companies, we excluded those companies that do not have their headquarters in France. Only 24 of the 40 companies listed on the CAC 40, published their 2011 CSR reports online and have their headquarter in France (Table 2).

Table 1. Final sample of French listed companies of the CAC 40 index

	Company	Industry sector		Company	Industry sector
1	Air Liquide S.A.	Material	13	L'Oréal S.A.	Consumer goods
2	Alcatel-Lucent	Technology	14	Michelin S.A.	Consumer goods
3	Alstom S.A.	Industry	15	PSA Peugeot Citroën	Consumer goods
4	AXA S.A.	Financial services	16	Publicis Groupe S.A.	Consumer services
5	BNP Paribas S.A.	Financial services	17	Saint-Gobain S.A.	Industry
6	Carrefour S.A.	Consumer services	18	Sanofi S.A.	Health
7	Crédit Agricole S.A.	Financial services	19	Technip S.A.	Oil & gas
8	Danone S.A.	Consumer goods	20	Total S.A.	Oil & gas
9	EDF	Utilities	21	Unibail-Rodamco S.E.	Financial services
10	France Télécom S.A.	Telecommunication	22	Vallourec S.A.	Industry
11	GDF Suez S.A.	Utilities	23	Veolia Environment S.A.	Utilities
12	Lafarge S.A.	Industry	24	Vivendi S.A.	Consumer services

3.2 Research design

To scrutinize French companies' CSR reporting, we conduct a qualitative content analysis (Wiseman, 1982; Stemler, 2001; Branco and Rodrigues, 2008; Archel et al., 2008; Kolk and Pinkse, 2010; Mayring, 2010). We follow a systematic process, in which text data is coded and categorized into groups of words in order to turn the qualitative text data into quantitative data (Mayring, 2010). We use a directed content analysis that is based on existing theory or prior research to develop the research categories and criteria (Mayring, 2010). The development of the category system is closely aligned with the predetermined criteria of the GRI reporting guidelines G3.1 (GRI, 2006a; GRI, 2006b; GRI, 2006c; GRI, 2011a).

The final instrument of the directed content analysis contained eight major categories and 163 criteria and was divided into two parts. Part I lists all criteria defining the company profile. Part II covers the categories with respect to the triple bottom line. Table 2 summarizes the five categories of the first part of the investigation as well as the three pillars of the second part of the investigation. To develop a deeper understanding of the variety of possible sub-criteria within the eight major research categories included in the GRI guidelines, see the GRI guidelines G3.1 and GRI Performance Indicator Protocols (GRI, 2006a; GRI, 2006b; GRI, 2006c; GRI, 2011a).

Table 2. Aspects of the evaluation of the transparency of CSR reporting

Part I	Categories with respect to the presentation of the company profile				
	Category I Strategy and analysis	*Category II* Organizational profile	*Category III* Report Parameters	*Category IV* Governance, commitments, and engagement	*Category V* Management approach
Part II	Categories with respect to the triple bottom line				
	Category VI Economic performance indicators		*Category VII* Environmental performance indicators	*Category VIII* Social performance Indicators	
	• Economic performance • Market presence • Indirect economic impacts		• Materials • Energy • Water • Biodiversity • Emissions, effluents, waste • Products and services • Compliance • Transport • Overall	• Labor/Management relations (6 aspects) • Human rights (9 aspects) • Society (5 aspects) • Product responsibility (5 aspects)	

To generate accurate insights with respect to the content, quality and extent of French CSR reporting, the coding of the results is not based on a binary coding (0 and 1; yes and no) but uses a Likert-Scale containing 0, 0.5 and 1 (Campbell and Swinscow, 2009). More precisely, we check the 24 CSR reports for complete information (1), incomplete information (0.5), or no information (0) based on the following classifications:

0 = no information available

The CSR report does not address the criteria or in a manner not in accordance with the requirements of the GRI Performance Indicator Protocols. The CSR report explicitly states that there is a lack of data or lack of reporting with respect to the specific criteria.

0.5 = incomplete information

The CSR report addresses the criteria only sketchy and publishes incomplete information. Information that must be quantified is only described qualitatively, without disclosing ratios or figures on the CSR performance. Quantitative data does not cover the whole category and/or is not further differentiated by gender, employee category or regional scope.

1 = full information

The CSR report covers the subject of the criteria completely. All conditions of the GRI Indicator Protocols are sufficiently discussed, and the CSR reporting does not exhibit gaps in reporting. The CSR report explicitly states that this criteria is not essential to the company and therefore reasons to not publish information in this regard.

Whereas some empirical studies weight the individual categories, criteria and indicators (Morhardt et al., 2002; Quick and Knocinski, 2006; Daub, 2007), this study omits weighting, because the GRI guidelines do not recommend this approach. A company that fully reports on its company profile (part I) and the triple bottom line (part II) can reach a maximum of 163 points. This value is composed of 79 achievable points of part I and 84 points of part II. In order to guarantee the validity and reliability of the research results, the three assumptions hold: 1) all CSR reports are independent of each other, 2) the research criteria and categories of the GRI guidelines G3.1 are mutually exclusive and exhaustive and 3) the coding scheme is mutually exclusive and exhaustive (Stemler, 2001). We further ensure the reliability of the results by applying intercoder reliability (Mayring, 2010). Consequently, two persons independently coded the CSR reports. Although the second coder coded the categories slightly different, we attuned both codes to each other and combined them in a final version. Hence, we obtained a certain stability of the final coding scheme.

4 Empirical findings and discussion

4.1 CSR reporting of French companies

A comparison of all 24 CSR reports shows that the majority of the sample French CAC 40 companies has deficits in their CSR reporting and only partly complies with the reporting guidelines of GRI. At first, there are differences observable in the report title ranging from “Corporate Social Responsibility (Development) Report”, “Sustainable Development Report", “Sustainability Report”, “Society and Environment Report” to “Corporate Citizenship Report”. In addition, the 24 CSR reports vary considerably with respect to their scope. Whereas the smallest CSR report of the Publicis Groupe S.A. counts 37 pages, the largest CSR report published by Sanofi S.A. amounts to 737 pages. However, it

would be wrong to assume that there is a direct link between the scope of CSR reports and their quality. As an illustration, the two CSR reports with the most and least page numbers only diverge by 1.53% in their CSR reporting level, and both rank among the eight most complete CSR reports.

With respect to external assurance of CSR reports, there is a considerable tendency to obtain external assurance by an independent auditor. In the aim of counteracting the accusation of greenwashing and of increasing the credibility and acceptance of the CSR reports (Delmas and Burbano, 2011; Kolk and Perego, 2010), KPMG (2011) attests a positive trend toward external assurance of French companies' CSR reports. Whereas only 28% of the CAC 40 companies obtained external assurance in 2008 (Delbard, 2008), 83% of the sample companies' CSR reports went through an external audit. However, this trend toward external assurance is only partly voluntary, because the Code of Commerce (2010) obliges most sample companies to obtain external assurance. Since the four non-audited CSR reports were published by companies of four different industries (Alstom S.A./industry, Crédit Agricole S.A./financial services, Publicis Groupe S.A./consumer services, Technip S.A./oil and gas), we do not conclude a correlation between industry affiliation and the lack of external assurance.

On average, the analyzed CSR reports reach less than half of the possible rating points by achieving a CSR reporting level of 46.59%. As shown in Table 3, the CSR report of PSA Peugeot Citroën is the most complete CSR report with a CSR transparency level of 88.04%. The second most transparent CSR report is published by Saint-Gobain S.A. with a transparency level of 71.47% (Table 3). However, more than two third of the CSR reports do not achieve a CSR transparency level above 50%. The range of variation between the most complete and the least complete CSR report equals 65.03%.

These initial results already show a significant discrepancy between the recommendations of adequate and balanced CSR reporting by the GRI and the current managerial practice that is expressed in the sample CSR reports. Although the 0.75 quartile in Table 4 explains that 25% of the examined CSR reports obtain an achievement level of at least 54.14%, another 25% of the sample companies (0.25 quartile) only reaches a CSR publication level of 36.74%. Since the median equals 44.17%, it becomes evident that the majority of the French sample companies does not fully report on the categories of the GRI guidelines, which leads to weaknesses in the quality of the CSR reporting practice.

Table 3. CSR transparency level of the 24 sample companies of the CAC 40

	Part I		Part II		Total Part I & II	%
Maximal points	79.00	100%	84.00	100%	163.00	100%
PSA Peugeot Citroën	73.50	93.04%	70.00	83.33%	143.50	88.04%
Saint-Gobain S.A.	68.50	86.71%	48.00	57.14%	116.50	71.47%
Danone S.A.	57.50	72.78%	56.00	66.67%	113.50	69.63%
Alcatel-Lucent	71.00	89.87%	40.50	48.21%	111.50	68.40%
Sanofi S.A.	60.00	75.95%	30.00	35.71%	90.00	55.21%
France Telecom-Orange S.A.	56.50	71.52%	32.00	38.10%	88.50	54.29%
Publicis Groupe S.A.	34.00	43.04%	53.50	63.69%	87.50	53.68%
Lafarge S.A.	52.00	65.82%	33.50	39.88%	85.50	52.45%
Unibail-Rodamco S.E.	52.00	65.82%	23.50	27.98%	75.50	46.32%
Vallourec S.A.	48.50	61.39%	24.50	29.17%	73.00	44.79%
Crédit Agricole S.A.	51.00	64.56%	21.50	25.60%	72.50	44.48%
Carrefour S.A.	53.00	67.09%	19.50	23.21%	72.50	44.48%
Veolia Environment S.A.	49.00	62.03%	22.50	26.79%	71.50	43.87%
GDF Suez S.A.	47.00	62.03%	21.50	25.60%	68.50	42.02%
Total S.A.	42.00	53.16%	26.00	30.95%	68.00	41.72%
Vivendi S.A.	40.00	50.63%	23.50	27.98%	63.50	38.96%
BNP Paribas S.A.	44.00	55.70%	19.00	22.62%	63.00	38.65%
Technip S.A.	42.50	53.80%	20.00	23.81%	62.50	38.34%
Alstom S.A.	42.50	53.80%	16.50	19.64%	59.00	36.20%
Air Liquide S.A.	37.00	46.84%	18.00	21.43%	55.00	33.74%
AXA S.A.	37.50	47.47%	16.50	19.64%	54.00	33.13%
EDF	28.50	36.08%	19.50	23.21%	48.00	29.45%
Michelin S.A.	26.00	32.91%	16.00	19.05%	42.00	25.77%
L'Oréal S.A.	26.00	32.91%	11.50	13.69%	37.50	23.01%
Sum of all sample companies	1139.50	60.10%	683.00	33.88%	1822.50	46.59%

The instrument developed for the content analysis based on the GRI reporting guidelines G3.1 enables an analysis and evaluation of the sample CSR reports in two parts. This separate examination of the findings reveals further differences in the quality of the CSR reporting. Table 4 summarizes the CSR transparency levels of all sample companies with respect to all eight categories. The quality of the CSR reporting of part I (category I-V) achieves an average CSR transparency level of 60.10%. Moreover, the first five categories have mean values of above 48% indicating that all French sample companies consider the reporting of their business conduct. Especially, category I "strategy and analysis" and category V "management approach" are frequently communicated with 71.88% and 66.61% on average. We interpret the high average values in these two categories as a strategic focus of the companies on CSR and the implementation of CSR-related issues at the management level. The category that is relatively less completely disclosed within part I is category IV "governance, commitments and engagement". Within this category, the two subcategories "stakeholder engagement" and "documentation of governance structures" are least often referred to. Although stakeholder management plays a vital role for the implemenation of CSR initiatives and CSR reporting, the sample companies do not consider the importance of their stakeholders in their CSR reports. Consequently, most CSR reports only refer to "our stakeholders" without precisely naming the stakeholders of interest (Alstom S.A., BNP Paribas S.A., EDF, France-Télécom-Orange S.A., L'Oréal S.A., Michelin S.A.). We conclude the first part of the analysis by stating that the company profile, governance and management approach of the companies has on average a relatively high CSR transparency level of 60.10%. However, still a quarter of the companies publishes CSR reports with CSR transparency levels below 50% and therefore exhibit significant weaknesses. PSA Peugeot Citroën, Alcatel-Lucent and Saint-Gobain provide above-average transparency achievement levels of up to 93.04% in part I and rather represent exceptions than the norm.

Table 4. Overall CSR transparency levels of all sample companies and all categories

	Category	Maximum points	Mean		Standard deviation	Median		Quartile 0.25	Quartile 0.75
I	Strategy and analysis	2.00	1.44	71.88%	0.70	1.50	75.00%	50.00%	100.00%
II	Organizational profile	10.00	5.94	59.38%	2.02	6.00	60.00%	46.25%	73.75%
III	Report parameters	13.00	7.23	55.61%	3.70	7.50	57.69%	32.69%	82.70%
IV	Governance, commitments, engagement	17.00	8.23	48.41%	3.92	8.25	48.53%	26.47%	58.09%
V	Management approach	37.00	24.65	66.61%	5.78	24.50	66.22%	56.76%	75.68%
	Results of Part I	79.00	47.48	60.10%	5.78	47.75	60.44%	48.26%	70.41%
VI	Economic performance indicators	9.00	2.98	33.10%	1.48	2.50	27.78%	22.22%	38.89%
VII	Environmental performance indicators	30.00	12.79	42.64%	5.46	10.75	35.84%	31.67%	52.50%
VIII	Social performance indicators	45.00	12.69	28.19%	8.59	9.25	20.56%	14.72%	33.33%
	Results of part II	84.00	28.46	33.88%	14.81	23.00	27.38%	22.77%	39.44%
	Results of part I & II	163.00	75.94	46.59%	25.33	72.00	44.17%	36.74%	54.14%

In contrast, part II only achieves a CSR transparency level of 33.88%. Whereas the environmental dimension is the dimension most completely disclosed (42.64%), the economic dimension (33.10%) and the social dimension are less communicated (28.19%). Our findings confirm the findings of Lassaad and Khamoussi (2012a) that equally reveal that French CSR reporting does not

primarily focus the economic and social dimension of the triple bottom line. Moreover, it becomes evident that the triple bottom line model only has a marginal practical relevance for French companies.

With respect to the *economic performance indicators*, the subcategory "indirect economic impact" is the one most often referred to with 48.98% and therefore represents the economic subcategory of greatest relevance for the sample companies. Although 96% of the examined sample CSR reports contained information on "development and impact of investments in the infrastructure and services" (EC8) and 75% information on "indirect economic impact" (EC9), this disclosure was limited to qualitative statements amd incomplete due to missing quantifications of these aspects. The low average CSR transparency level of the economic dimension can also be explained by some companies only publishing financial figures in this category (AXA S.A., BNP Paribas S.A., L'Oréal S.A., Publicis Groupe S.A.), which do not meet the requirements of the GRI guidelines. Moreover, the investigated CSR reports frequently reference to further information in the traditional financial reporting documents (Alcatel-Lucent, Danone S.A., Total S.A.). From this low publication level of economic performance indicators, we conclude that the economic dimension does not represent an integral part in French understanding of CSR reporting. The sample French companies rather tend to publish information on the economic dimension in separate financial publications. Due to incomplete information on the economic dimentions, current French CSR reporting practice contradicts the idea of balanced triple bottom line reporting.

The *environmental dimension* is the dimension most frequently and most completely reported (42.64%). Due to this relatively high transparency level, the reporting of the environmental dimension is assumed to be more important for companies than the economic or social dimension. This tendency to publish more information on environmental performance indicators can partly be explained by the regulations of the NRE that requires French companies to publish specific information on their environmental impact. Despite relatively high average transparency for the environmental dimension, the reporting of some aspects within the environemtal dimension also exhibits severe quality deficits. Whereas "energy" is mentioned in 59.17% of the CSR reports "water" is only reported in 27.08% of all cases.

The dimension of the triple bottom line that is least completely disclosed is the *social dimension* (28.19%). The social dimension includes internal social performance indicators, such as work practices and decent working conditions (LA1-LA15), and external social performance indicators, like human rights (HR1-HR11), society (SO1-SO10) and product responsibility (PR1-PR9). The criterion most completely reported on within the social dimension is "equality and diversity" (43.75%). In contrast, the subcategory with the highest reporting deficit is "safety practices" (4.17%). When comparing the findings of the individual criteria, we notice that the criteria of internal social performance are more completely disclosed than the ones of the external social performance. This indicates that French companies assign more importance to the internal stakeholders, and specifically their staff, than to external stakeholders. With respect to internal social performance indicators, the criterion "diversity and equal opportunity" is reported with a CSR transparency level of 43.75%, whereas "general information about the employees" is only reported by 29.17%. Regarding the reporting of external social performance indicators, the criterion that achieves highest information coverage encompass "investment and procurement practices" (40.28%). The biggest deficiency in the external social performance indicators is found in "human rights" (14.67%). In general, we observe that the performance indicators referring to "human rights" are by most sample companies only superficially communicated by refering to the membership in the United Nations Global Compact. However, low CSR transparency levels in the social dimension reveal that most companies are not aware of possible reputational risks involved in inadequate reporting on these issues.

4.2 CSR reporting with respect to the industry affiliation

Table 5 gives an overview of the findings with respect to the eight categories according to the seven different industry sectors. By having a closer look on the first part of the analysis, the industry sector that reports most completely on the first five categories is the industry sector 'others'. This sector achieves a CSR transparency level of 71.04%. However, these general findings of part I cannot be generalized, because all five categories depict big deviations within the single values of each category. The category that is averagely least often referred to among all sectors is "governance, commitments, engagement", which affirms the above-mentioned findings. The subcategory that is on average most completely disclosed is the category I "strategy and analysis". We explain this result by its fundamental importance for the identity of the company and the easiness of reporting on it.

The second part of analysis focusses on the findings with respect to the three dimensions of the triple bottom line. The sectors with the highest average levels of CSR information on the *economic dimension* include the consumer goods sector with 45.83% and the oil and gas sector with 41.67%.

Hence, we do not detect a relationship between the affiliation to an industry and the economic dimension. Although empirical studies have shown that companies working within more polluting industry sectors like the chemistry, pharmaceutical, oil and gas as well as construction industry tend to pursue a more complete CSR reporting approach (Kolk et al., 2001; Branco and Rodrigues, 2008; Delmas and Blass, 2010), the sample companies of this study do not support this argument. A comparison of the average CSR transparency levels per industry shows that the utilities sector with 35% or the oil and gas sector with 35.83% do not provide more complete information on the *environmental dimension* than the remaining sample companies do. In contrast, the two sectors that disclose their environmental performance indicators most transparently are the consumer goods sector (with 50.42%) and the consumer services sector (with 47.22%). Consequently, we cannot state that the sample companies belonging to a certain sector take a homogeneous reporting approach with respect to the environmental dimension. The sector that publishes the least complete information on the social dimension is the financial services sector (16.67%). The best quality reports with respect to the social dimension are disclosed by the companies of the consumer goods sector (with 42.50%). A comparison of the diverging CSR reporting levels between the different industry sectors reveals that the social performance indicators are not uniformly covered by certain industry sectors and that each company individually emphasizes certain aspects in their CSR reporting. Although Lassaad and Khamoussi (2012a) detect a relationship between the CSR reporting and the affiliation to an industry sector, our findings cannot approve such a relationship between the industry affiliation and any of the eight research categories.

Table 5. Transparency achievements according to industry affiliation

	Category	Financial services	Consumer services	Consumer goods	Industry	Utilities	Oil & gas	Others
I	Strategy and analysis	81.25%	33.33%	75.00%	93.75%	50.00%	87.50%	75.00%
II	Organizational profile	72.50%	45.00%	55.00%	71.25%	46.67%	67.50%	55.00%
III	Report parameters	50.96%	61.54%	51.92%	60.58%	47.44%	40.38%	68.27%
IV	Governance, commitments, engagement	54.41%	32.35%	45.59%	55.88%	41.18%	35.29%	61.76%
V	Management approach	57.77%	63.96%	65.54%	71.62%	61.26%	60.81%	80.41%
	Result of part I	58.39%	53.59%	57.91%	66.93%	52.53%	53.48%	71.04%
VI	Economic performance indicators	26.39%	37.04%	45.83%	33.33%	24.07%	41.67%	26.39%
VII	Environmental performance indicators	34.17%	47.22%	50.42%	44.58%	35.00%	35.83%	47.08%
VIII	Social performance indicators	16.67%	32.59%	42.50%	31.67%	18.89%	18.89%	30.28%
	Results of part II	23.96%	38.29%	45.68%	36.46%	25.20%	27.38%	35.86%
	Results of part I & II	40.64%	45.71%	51.61%	51.23%	38.45%	40.03%	52.91%

4.3 CSR reporting with respect to critical performance indicators

CSR reports are often accused of being communication tools that greenwash public perception and manipulate stakeholder's perception of corporate CSR activities (Kuruppu and Milne, 2010). In this context, companies are suspected of deliberately leaving out negative information in their CSR reporting and only providing selective CSR reporting of positive aspects of corporate performance. To counteract this accusation, the GRI guidelines provide a set of performance indicators that includes information on potentially negative impacts of business activities on the environment (EN23, EN25, EN28), employees (LA7), or the local society (SO9-10). Further critical aspects comprise fines, sanctions or violations of regulations (SO6-8, PR2, PR4, PR7, PR9), customer complaints (PR8), or risks related

to the compliance with human rights (HR4-7, HR9, HR11). With respect to the examined sample CSR reports, the aforementioned critical performance indicators were only scarcely fully reported. This lack of transparent CSR information disclosure reveals further vulnerabilities in the CSR reporting practice of the French sample companies. Especially the reporting of the aspects of the social dimension show severe deficiencies. Compared across all aspects of the GRI reporting guidelines, the aspects "protection of customer data" (PR8) and "human rights violations" (HR11) were the two aspects least often fully reported with an information coverage of 8.33%. In addition, the aspects "operations with significant potential or actual negative impacts on local communities" (SO9) and "prevention and mitigation measures of negative impacts on local communities" (SO10) are hardly mentioned in the sample companies' CSR reports (2.23%). Whereas information on child labor (HR6) and on forced or compulsory labor (HR7) have an average CSR transparency level of 29.17% and 27.08%, incidents of discrimination (HR4) and information on business activities that affect the freedom of association and the right to collective bargaining (HR5) are less often mentioned with 20.83%, respectively. Hence, the majority of the examined CSR reports does not cover critical aspects with respect to corporate conduct or within the supply chain. This is especially true for companies in the sectors financial services, utilities as well as oil and gas.

Moreover, French companies only disclose information on violations of existing legislation in exceptional cases. Thus, the aspect "incidents of anti-competitive behavior" (SO7) has a low publication level of 14.58%, "monetary fines and penalties" (SO8) of 18.75%, and "fines and violations rules against proposed legislation in the context of products and services" (PR9) of 20.83%. Only the criterion "legal compliance with environmental legislation" (EN28) achieves a CSR transparency level of 31.25%. Overall, the examined CAC 40 companies seem to refer to the voluntariness principle of the GRI guidelines when it comes to the critical performance indicators. In doing so, they omit the transparent reporting of critical business issues and do not draw a complete picture of all relevant aspects of their impact on the social and environmental business context. Moreover, the sample companies refuse to make this critical information accessible to their stakeholders and thereby deliberately put up with less reliable and incomplete CSR reporting quality.

5. Conclusion

The GRI were initiated in the aim of creating a standardized framework of CSR reporting and of making the CSR reporting process as publicly accepted and common as financial reporting (GRI, 2011b). An increasing number of CSR reports that apply the GRI guidelines reflects a positive trend toward the acceptance and compliance with the GRI guidelines (KPMG, 2011). In our study, the GRI guidelines G3.1 served as the basis of the qualitative instrument by which we analyzed the CSR reports of 24 French companies listed on the CAC 40 index. Although a few companies closely complied with the reporting guidelines of the GRI (Danone S.A. and Publicis Groupe S.A.), the majority of the French sample companies did not report their CSR information in accordance with the GRI reporting guidelines. Hence, the qualitative investigation of the CSR reports did not prove the French CSR reporting approach to be standardized or harmonized according to GRI.

60.1% of the sample companies disclosed complete information on the criteria of the first part of the analysis that concentrated on the reporting of the company profile. Whereas information on the subcategories strategy and analysis as well as management approach was most frequently published, the reporting on the governance structures, dialogue with stakeholders, and report parameters showed some deficiencies. With respect to the second part of the analysis that focused on the triple bottom line of CSR reporting, the environmental dimension was the dimension most often referred to (with 42.64% fully reporting on this dimension) compared to the economic and social dimension (with 33.1% and 28.19%, respectively). Despite the mandatory reporting proclaimed in the NRE, the environmental, economic as well as social dimension of the triple bottom line are published on a non-uniform and deficient level. Only the relatively high average of 42.64% with respect to the reporting of the environmental dimension can partly be explained by the regulations of the NRE. The partial results of the three dimensions of the triple bottom line were converted to an average triple bottom line score of 33.88%. This indicates that averagely 33.88% of the French sample companies fully report on the three sustainability dimensions. Thus, it becomes evident that all three dimensions should receive more consideration in the CSR reporting of French companies. The analysis of the non-publication of critical aspects revealed further weaknesses in the CSR reports that significantly affect the quality of the French CSR reporting. The majority of the sample companies does not transparently communicate critical issues, such as human rights violations, risks in the supply chain, or violations of laws. Referring to the first research question, our study concludes that the French sample companies take different CSR reporting approaches and show strong deficiencies in their overall reporting coverage and quality. As each company individually decides on the emphasis of specific

aspects of the GRI guidelines, no clear picture can be drawn with respect to a generalizable French reporting approach.

In addition, our empirical results do not prove a link between the quality of CSR reports and the affiliation to an industry sector. We can only partly answer whether the mandatory reporting affects the CSR reporting practice of French companies. Despite the legal obligation to report on certain aspects, French companies still individually decide whether they publish the relevant information on most aspects or not. The regulations of the NRE only positively affect the reporting of the environmental dimension whose criteria are more strictly outlined in the NRE and are more easily measurable. Yet the general French CSR reporting approach still shows severe deficiencies in the overall CSR reporting practice after the introduction of the NRE. Although the aim of the GRI is to increase the comparability between CSR reports and the communicated CSR performance of companies (GRI, 2011b), the sample companies' CSR reports only marginally fulfilled this goal. This is not only a result of the individual CSR reporting practices but also due to the vague legal obligation and diverging performance metrics. It is thus crucial to define the regulations of the NRE more explicitly and to introduce performance metrics that ensure more reliebale, consistent and accurate information for comparing CSR reporting.

In conclusion, our study reveals that French CSR reporting still shows deficiencies in compliance with the GRI guidelines and that companies leading in the CSR reporting rather represent exceptions than the norm. Still one should interpret these results with caution, because they entail some minor limitations. Since the sample only contains 24 companies listed on the CAC 40, future studies should analyze a bigger sample that does not only include big, global listed companies but also small and medium sized enterprises (SMEs). Against the background that little research has investigated CSR activities and CSR reporting of SMEs (Lepoutre and Heene, 2006; Hamann et al., 2009; Spence and Perrini, 2011; Vázquez-Carrasco and López-Pérez, 2012; Gueben and Skerratt, 2007; Borga et al., 2009; Nielsen and Thomsen, 2009), it is necessary to close this research gap in future studies. Moreover, it is recommendable to scrutinize different CSR communication media besides CSR stand-alone reports in order to affirm the findings with respect to CSR information published in annual reports or on corporate websites. In order to cross-validate our findings, one might interview the managers, employees and customers of the respective companies to assess the emphasis put on CSR reporting by each stakeholder group. By performing a longitudinal study of the development of the French CSR reporting before and after the introduction of the mandatory reporting and the financial crisis, the study would not be limited to the CSR reports of the fiscal year 2011 but also compare the CSR reports from the year 1995 to 2012. In doing so, one might any potential changes to CSR transparency, as well as to content, quality and extent of CSR reporting. Due to the introduction of the new GRI reporting guidelines G4 at the end of May 2013, future research should focus on compliance with the new reporting guidelines and the application of integrated reporting.

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THE EFFECT OF CORPORATE BOARD CHARACTERISTICS ON LOAN MONITORING DECISIONS

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Abstract

Motivated by a paucity of research into the impact of corporate governance from a debtholder perspective, we examine the impact of corporate governance on loan monitoring decisions. The active and close involvement of a major UK bank facilitated the development of extremely realistic experimental scenarios with a great deal of accurate institutional detail. The results show that the likelihood of loan officers increasing the level of monitoring in the context of a debt covenant breach is associated with board independence, director financial expertise and the presence of a blockholder. A two-way interaction between financial expertise and board independence is also documented. Since likelihood of debt covenant breaches continues to be an important variable in studies of accounting choice and corporate finance the paper provides insights into associated debt contracting costs and their determinants. Apart from extending the academic literature, this study provides additional evidence on the efficacy of good corporate governance in reducing debt contracting costs that should also be of interest to regulators and practitioners. ****

Keywords: Corporate Governance; Loan Monitoring; Debt Covenants

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1. Introduction

Corporate governance has been defined as "the mechanisms that have evolved to mitigate incentive problems created by the separation of management and financing of business entities" (Sloan, 2001, p. 336). This agency approach to corporate governance considers it to be a series of contractual and control mechanisms to monitor and control management behaviour when ownership and control are separated. Recent instances of corporate failures and accounting and other scandals ensure that corporate governance remains the subject of much debate. Associated with this is a growing body of empirical research in accounting and corporate finance examining the relationship between corporate governance and a range of issues including firm performance, valuation, cost of equity, earnings quality, earnings management and incidence of fraud (for surveys see, Bushman and Smith, 2001; Gillan, 2006).

Most of the literature, empirical and theoretical, on corporate governance takes a shareholder perspective despite creditors being important stakeholders in the firm and debt contracting and corporate governance both being concerned with monitoring management to mitigate agency costs. Research into the role of debtholders in corporate governance is limited as are examinations of the impact of quality of borrowers' corporate governance on various lending decisions. Two theoretical papers (Day and Taylor, 1998; Baird and Rasmussen, 2005) highlight the nexus between corporate governance and debt contracting, arguing that creditors, especially banks, play an important governance role by establishing contractual sanctions through debt covenants, regular covenant monitoring, and responses to covenant breaches. Some empirical research has examined the impact of corporate governance on bond yields and cost of debt (Bhojraj and Sengupta, 2003; Anderson et al., 2004; Schauten and Blom, 2008), credit ratings (Ashbaugh-Skaife, et al. 2006) and initial lending decisions (Holder-Webb and Sharma, 2010). We extend this limited literature by examining associations between aspects of quality of a borrower's corporate governance and lenders' decisions relating to the monitoring and management of debt covenant breaches using an

experimental study based in a major lender operating in the UK private debt market.

We focus on private debt for several reasons. First, although prior research on the impact of corporate governance on debt has concentrated on public debt markets, private debt markets are significantly larger than public debt markets in terms of both volume and value, a characteristic of corporate lending in most countries.1 Second, while restrictive covenants, debt contract monitoring, and post-covenant violation renegotiation are integral to alleviating potential conflicts between debtholders and shareholders (Smith and Warner; 1979), theory and empirical research has shown covenants and renegotiation to be more important in private debt than in public debt. For debt covenants to be effective periodic monitoring is necessary. Private lenders have comparative advantage (including economies of scale) over holders of public debt or their agents, in producing and evaluating information on borrower risk for monitoring purposes and in facilitating renegotiation (Boyd and Prescott, 1986; Diamond, 1984) and hence tend to offer debt contracts with both restrictive covenants and renegotiation options. The development of performance pricing covenants shows private lenders to be innovative in managing renegotiation in the presence of agency costs (Asquith *et. al*.; 2005).2 Incentives to maintain a reputation for reasonableness in renegotiation may give private lenders an advantage over holders of public debt in offering contracts that facilitate renegotiation. Private lenders may have stronger incentives to consider granting covenant waivers or the option of a closely monitored "work out" than an individual investor.3 Holders of public debt, who may not expect to make regular loans in the future, may perceive little benefit in granting waivers and/or may not have the skills to monitor problem loans, whereas established private lenders may profit from a reputation for being flexible in a constructive manner (Leftwich, 1983).4

A third reason for our focus on UK private lenders' decisions relating to monitoring and management of debt covenant breaches relates to the balance of prior research. There exists a large body of literature showing the importance of accounting in debt contracting which emphasises the role of accounting numbers and measurement in bonding and monitoring and hence in triggering the contractual rights of lenders in cases of technical default (see for example, Beneish and Press, 1995a; Ball et al 2008). This literature is motivated by the assumption that technical default on covenants is costly and that lenders and borrowers will react rationally to those costs. Although there is a significant literature on lenders' reactions to technical default (for example Chen and Wei, 1993; Smith, 1993; and Beneish and Press; 1995a) it is largely US in origin with little reported research into monitoring and technical default on covenants in UK private debt contracts.5 In the UK, unlike the US, there has been little publicly available information on technical default and information on private debt contracts has been. Our research provides timely insights into these issues for the UK.

Fourthly, the accounting-based literature on technical default has tended to consider reaction to technical default from a borrower perspective. Hence, researchers have examined the propensity of management of indebted firms to manipulate accounting numbers opportunistically to avoid technical covenant violations and associated contracting costs (see DeFond and Jiambalvo, 1994; DeAngelo et al 1994; Sweeney, 1994; Beneish and Press; 1995a and 1995b; Al-Jifri and Taylor, 2002; Beneish *et al*.; 2012). In addition to observing some evidence of opportunistic accounting adjustment, researchers have noted the moderating influence of aspects of borrower's governance context on such behaviour (eg auditor changes and management changes in violating companies). Indirect of the relevance of corporate governance characteristics is provided by the finding of Beneish *et al*. (2012) who conclude *inter alia* that upwardly managed accruals can be successful in avoiding technical default and provide evidence that insider trading by managers of financially distressed firms can benefit them and that such insider trading is informative about firms' expected costs of default. One implication of this may be that corporate governance in indebted firms may be of relevance to lenders as an indicator of

[1] Indicative data supports this assertion: gross corporate bond issues in the UK in January 2010 totalled £29.9 billion compared with financial institutions' lending to UK business organisations of £290 billion (Bank of England Bankstats, tables E3.1 and C1.2 respectively).

[2] Performance pricing in private debt contracts is a recent innovaton to monitoring and renegotiation allowing *ex ante* contract terms trigger automatic changes in interest rate as borrower credit quality changes in advance of covenant breaches. Asquith *et al.* (2005) conclude that performance pricing responds to adverse selection arising from asymmetric information between lender and borrower which has caused misclassification of credit risk, and also deals with adverse selection and moral hazard associated with *ex post* settling up and negotiation.

[3] Whilst a trustee acts on behalf of the individual investors in public debt individual investors have to approve any course of action ensuing from a technical breach. Unanimity or majority rules for approval together with other sources of transactions costs, may make waivers or work-outs less likely in public markets than private.

[4] Leftwich (1983) pointed out that whilst there is a potential bilateral monopoly problem when private debt contracts are renegotiated, "Lenders who exercise this monopoly power risk the value of their reputation".

[5] For an exception see Citron *et al*.(1999).

potential management behaviour towards both accruals management and insider trading.

Researchers have also noted the presence of differential consequences to technical default. Beneish and Press (1993, 1995a) observed some instances of default being waived at no cost with no stock market consequences and other cases of costly renegotiation, adverse stock market effects, and subsequent more serious financial distress. Sweeney (1994) also found varying costs of default, with only 52% of her sample of violating firms making concessions to lenders after covenant violation. Dichev and Skinner (2002) found the consequences of violation to vary considerably in their sample with outcome depending on borrowers' economic circumstances. This shows clearly the variability of lenders reactions to technical default and although the influence of other aspects of borrower characteristics on the outcome of technical default has also been considered (see Hassan, 2006) there remains scope to explore further influences on technical default. Thus, we argue that a broadening of the consideration of the corporate governance context in which covenant violation takes place and is evaluated by lenders is helpful in understanding technical default *per se*, and by extension is important to accounting researchers.

The present research reports the results of two experiments which were developed to test for causal association between certain borrower corporate governance mechanisms and lender loan monitoring decisions. The research was conducted in close collaboration with a major UK bank as part of a long term research relationship. The bank provided direct access to senior managers for advice and discussion of the research, as well as sample credit papers and other material. The close involvement of this institution allowed us to develop extremely realistic case material for the two experimental tasks thereby enhancing internal validity. In addition the bank provided access to a sample of loan officers to whom the experiments were applied.

The results of the first experiment support the proposition that loan officers expect independent directors and boards with strong financial expertise to help protect their interests in the context of financial distress. The two-way interaction between financial expertise and board independence is also significant and shows that the likelihood of loan officers increasing the level of monitoring when financial expertise is low is more pronounced when board independence is high. The results of the second experiment suggest that lenders are more likely to increase the level of monitoring in the presence of a blockholder on the borrower's board. This is consistent with lenders perceiving that, in the context of potential financial distress, blockholders will share incentives with managers and other shareholders that may conflict with those of debtholders.

We contribute to the academic literature in several ways. First, we extend the very limited empirical research into the impact of corporate governance on debt by demonstrating a relation between some borrowers' board characteristics and lenders' decisions relating to the monitoring and management of loans in breach of debt covenants in the private debt market. Second, researchers point out that there is an endogeneity problem inherent in conventional archival analysis of corporate governance data that makes establishing and explaining causal links difficult.[6] The experimental methodology circumvents this problem and also allows triangulation and comparisons with findings of related research into corporate governance and debt from a new perspective. Third, the active and close involvement of the cooperating bank has facilitated the development of extremely realistic experimental scenarios with a great deal of accurate institutional detail which has enhanced the internal validity of the experiments. Thus, this research reflects actual bank documentation and monitoring processes and was conducted with loan officers who were used to such material and processes. Fourth, we argue that the research is broadly representative of practice in UK bank lending. The cooperating bank has a national branch network and is represented in lending to all business sectors in the UK. Interviews with bank staff at various seniority levels on several research projects over an extended period, some involving other comparable banks, indicates that although in-house terminology and detailed operating practices naturally vary, the bank is broadly representative of practice in major UK banks (Day and Taylor, 1996, and 2011). Additional research at other banks is of course necessary to validate our findings.

The remainder of the paper is structured as follows. Section 2 reviews prior research whilst section 3 develops several hypotheses to be tested. Section 4 provides some institutional detail about the UK bank's loan management processes and discusses the research method used to test these hypotheses. The results of the experiments are analysed in section 5 and the final section draws conclusions and discusses limitations.

[6] See Larcker and Rusticus (2010) and Brown, Beekes and Verhoeven (2011) for a discussion of endogeneity issues in the context of corporate governance and the accounting literature.

2. Prior Research and the Institutional Context

2.1 Corporate governance and debtholders

In contrast with research on corporate governance from a shareholder perspective, research into the impact of corporate governance on debtholders is very limited and largely confined to publicly traded debt. In an early study, Bhojraj and Sengupta (2003) hypothesise that institutional ownership and outside directors lower default risk by reducing information asymmetry and agency problems and in turn reduces bond yields and increases credit ratings. Their results were consistent with these propositions.

Similarly, Ashbaugh-Skaife, et al. (2006), examine the effects of a range of governance mechanisms on firms' credit ratings. They find that credit ratings are positively affected by board independence, ownership, expertise, takeover defences as a proxy for weaker shareholder rights, and by the quality of financial transparency. They also find that credit ratings are negatively related to the number of block holders and CEO duality.

Anderson et al., (2004) and Schauten and Blom (2008) investigate the effect of corporate governance on the cost of debt. Anderson et al., (2004) argue that debtholders value the board characteristics that enhance the integrity and credibility of financial reports. Consistent with this argument, they report that board and audit committee independence as well as board size are inversely related to the cost of debt. Schauten and Blom (2008) use the Deminor rating to examine the overall corporate governance quality of a sample of European firms and show that corporate governance performance and the cost of debt are inversely related.

The one prior study conducted in an experimental setting examines Singaporean lenders' assessment of board strength on initial lending decisions and the reliability of financial reports (Holder-Webb and Sharma, 2010). They find that potential borrowers with strong financial performance were more likely to have loans sanctioned when governance was strong but governance made no difference when financial performance was poor. They also find that the perceived reliability of financial reports is a factor in lending decisions.

The foregoing research suggests that lenders may view borrower corporate governance characteristics as signals of management's likely actions in certain circumstances relevant to lenders and that lenders may adjust their decisions accordingly with economic consequences to borrowers. In light of the empirical evidence on the variability of lenders reactions to technical default and the paucity of research evidence on the influence of aspects of borrower characteristics on the outcome of technical default it is appropriate to seek evidence on the factors considered relevant to lenders' decisions in cases of technical default. Hence, in this paper we test whether lenders may react similarly to signals of corporate governance quality likely management actions by adjusting their reactions after covenant violations.

3. Hypothesis Development

The hypotheses relate to loan officers' decisions on whether or not to change the monitoring status of loans following technical default on financial covenants in bank loan contracts and borrower-specific corporate governance characteristics which may influence these decisions.

A technical default would result in lenders re-evaluating borrower risk with a view to changing the loan status and exercising one or more options available to protect their position. Even where borrower risk has increased, lenders have a trade-off to make. On the one hand they would wish to protect their position against further deterioration. However, they would also need to trade this off against the associated costs. Such costs could range from loan losses through precipitous action, the loss of a client and a potential medium to long term profitable lending relationship, as well as the loss of reputation for reasonableness in private debt markets. This reputation for reasonableness is of particular importance to lenders in private as opposed to public debt markets. As such, it is argued that, in the event of technical default, lenders in private debt markets will give serious consideration to increased monitoring rather than intervention. We examine four dimensions of borrower corporate governance in relation to decisions to increase monitoring as follows.

3.1 Board independence

The board of directors is the apex of the internal governance system and assists in reducing agency problems (Fama and Jensen, 1983). Boards play a critical role in corporate governance through the monitoring of top management and establishing various other mechanisms that mitigate the incentives for managers to act opportunistically (Fama and Jensen, 1983). Primary responsibility for monitoring falls on independent directors, who are in a position to use their appointments to advance shareholder interests. Independent directors act as monitoring experts and signal their expertise to the labour market by acting in shareholders' interests (Coulton and Taylor, 2004). There is considerable evidence supporting these propositions in the academic literature to illustrate that independent directors protect shareholders when there are

agency problems (see for example, Weisbach 1988; Byrd and Hickman, 1992; Xie et al, 2003; Peasnell et al, 2005). Potential reputation effects in the managerial labour market are shown by Gilson (1990) who finds that directors who leave distressed firms tend to hold fewer directorships in the future. Additionally, Johnson et al., (1993) argue that independent directors may play a major role in board involvement in strategic actions, particularly actions to restructure the firm.

Regulators appear to value board independence also. The UK Financial Reporting Council Combined Code on Corporate Governance l (2010), as with other regulators' pronouncements, identifies an important governance role for independent directors by recommending that for large listed companies at least half the board, excluding the chairman, should comprise independent non-executive directors, with the responsibility to " ... constructively challenge and help develop proposals on strategy ... [and] ... scrutinise the performance of management ...".

Moreover, Anderson et al., (2004) argue that debtholders value board independence and report that board and audit committee independence are inversely related to the cost of debt. Similarly, Standard and Poor's (2006) stresses the importance of corporate governance in credit assessments.

In sum, it is argued that independent directors have incentives to build a reputation as expert monitors, as performing poorly in this area would diminish the value of their human capital. It is therefore expected that loan officers will expect independent directors to help constrain any managerial opportunism.

Accordingly, the following hypothesis is proposed:

Hypothesis 1: *Ceteris paribus,* loan officers will be less likely to increase the level of monitoring in response to a covenant breach when the board of the borrower is independent.

3.2 Financial expertise

Anderson *et al* (2004) argue that as monitoring expertise increases, managerial opportunism decreases thereby increasing the value of the firm. Related to this, there is a growing body of corporate governance literature reporting a positive association between director financial expertise and various financial reporting attributes. For example, it has been found that that the presence of financial experts on the boards reduces the likelihood of accounting restatements (Agrawal and Chandha, 2005). Similarly, Dhaliwal, Naiker, and Navissi (2010) show that increased financial expertise on audit committees' is associated with higher earnings quality.

We argue that, in a debt contracting context, a board's ability to manage potential financial distress following technical default on covenants and monitor effectively will be enhanced by strong financial expertise on the board. Thus, if boards comprise directors with financial expertise, debt holders are expected to benefit through a reduction in opportunistic wealth expropriation as well as being better able to financially restructure in order to deal with financial distress.

Accordingly, the following hypothesis is proposed:

Hypothesis 2: *Ceteris paribus,* loan officers will be less likely to increase the level of monitoring in response to a covenant breach when the board of the borrower has strong financial expertise.

3.3 Managerial Share Ownership (MSO)

Seminal theory suggests that a manager who owns a fraction of a firm's shares bears the consequences of managerial actions, thus aligning their incentives with other shareholders (Jensen and Meckling, 1976). However, relatively high levels of MSO may result in managers becoming entrenched (Demsetz, 1983). The argument is that the extra voting power enables managers to secure their position in the firm, thereby insulating them from certain disciplining mechanisms such as the managerial labour market which in turn is likely to have an adverse effect on firm performance. Hence the initial theory developed in an ownership-performance context would suggest a non-monotonic relation; more specifically, a positive relation between MSO and performance consistent with incentive alignment up to some turning point followed by a negative relation when the costs associated with entrenchment exceed the incentive benefits of managerial ownership (see for example, Morck et al., 1988; McConnell and Servaes, 1990).

MSO often represents a sizeable proportion of the managers' wealth that is inherently undiversified. It may be argued that, *ceteris paribus,* rational managers should prefer to hold a diversified portfolio of assets but as MSO increases they become increasingly exposed to firm-specific risk. Such high MSO is likely to make a manager more risk averse as their decisions will impact on a relatively high proportion of their personal wealth (Demsetz, 1983). *Prima facie,* it would appear that such risk-aversion would be congruent with the goals of debtholders. However, in a debt contracting context, incentive alignment between management and shareholders may have a detrimental effect on debt holders through shared incentives to engage in opportunistic behaviour such as under-or over investing. Managers risk aversion may only partially mitigate the aforementioned under-and over investment problems (Begley and Feltham, 1999).

Some empirical support is provided by Bagnani et al (1994) who find that the association between bond returns and MSO is non-monotonic. Specifically, they find a positive association at lower levels of MSO and a negative association at higher levels of MSO. Similarly, Begley and Feltham (1999) show that debt covenant utilisation is positively associated with CEO share ownership.

Accordingly, the following hypothesis is proposed:

Hypothesis 3: *Ceteris paribus*, loan officers will be less likely to increase the level of monitoring in response to a covenant breach when the level of MSO is low.

3.4 Blockholders

It has been argued that outside blockholders on the board play a significant monitoring role that mitigates agency problems relating to equity as their large investments provide incentives to monitor management (Jensen, 1993). There is empirical evidence to support this contention. For example, Chung et al (2002) demonstrate that institutional investors with significant shareholdings monitor managers' accounting choices and assist in reducing earnings management. Koh (2003), however, draws an important distinction, illustrating that short-term institutional investors create incentives for managers to engage in earnings management, whereas long-term institutional investors actively participate in their firm's corporate governance and limit managers' discretion to engage in earnings management. If blockholders reduce managerial opportunism by performing the role of disciplining management, then all stakeholders including debtholders will benefit.

A competing argument is that outside blockholders may exacerbate debtholder-shareholder conflicts by influencing management to secure wealth transfers in their favour at the expense of debtholders and other shareholders (Shleifer and Vishny, 1997). Ashbaugh-Skaife et al (2006) test both the "management disciplining" and "wealth redistribution" hypotheses and find that, consistent with the wealth redistribution hypothesis, borrower credit ratings are negatively associated with the number of blockholders. We argue that, particularly in the context of potential financial distress, blockholders will share the incentives managers and other shareholders may have to engage in ex-post opportunism such as asset substitution at the expense of debtholders and this will be anticipated by lenders.

Accordingly, the following hypothesis is proposed:

Hypothesis 4: *Ceteris paribus*, loan officers will be less likely to change the level of monitoring in response to a covenant breach when the board of the borrower has no block holder representation.

4. Methodology

As noted above, two experiments were conducted with a sample of loan officers from a major UK bank using case material developed with the close cooperation of the bank to ensure consistency with the bank's loan management processes and forms of monitoring information familiar to the loan officers. A mixed factorial design was used in both the experiments. Prior studies of loan officers' behaviour have used such mixed designs (see, for example, Mather, 1999 and Holder-Webb and Sharma, 2010).

4.1 Subjects

Thirty-four loan officers from a business unit of a major UK bank participated in the study. The subjects were very experienced with 88% having over 10 years lending experience, 9% had 5-10 years lending experience and 3% had 2-5 years lending experience. In addition, 89% of the subjects indicated that they typically dealt with facilities between £3-30 million and 11% with facilities greater than £30 million. Accordingly, the subjects are appropriate for the experimental tasks involving a loan facility of £22 million.

4.2 The bank's loan management processes

The bank has a standardised reporting and monitoring structure. A key feature of this system involves a database referred to as Facility Manager (FM) on which details of all lending cases are routinely entered. This system provides a common database, encourages uniform collection and recording of data and it enables standardised monitoring. The bank had a fairly typical hierarchical loan approval process with clear ceilings on amounts different levels of management and credit committees could sanction. As part of approval (at whatever level), monitoring frequencies would be specified and information provision covenants inserted accordingly into loan documentation. Also, regular reviews of the borrower's general condition and performance would be scheduled.

The bank had a tiered approach to monitoring. Cases which were graded 'uncriticised' would continue to be monitored at their regular frequency by the relationship manager, subject to satisfactory completion and sign-off of the routine FM reports. In the event of a problem, the bank's process involved the setting of what was known as an 'alert level' (AL). Three levels were used: AL1, AL2 and AL3, with AL1 the preliminary (less serious)

grade. The process of determining this setting was essentially subjective and took into consideration the overall impact of any new data contained in the latest FM report. However another interpretation of it could be that decisions had already been taken about action on the case, and that these were then reflected in the AL grade assigned. The grade indicates the future frequency of monitoring that would apply to the case, and also where/by whom such monitoring would take place. Once a case had been put on AL1 the frequency of FM reports would be increased, and informal (i.e., uncovenanted) monitoring triggers might be notified to the relationship manager. These triggers tend to depend on the nature of the problem that had led to an AL grading. The next stage would be reached with a decision to take the case out of the hands of the relationship manager and transfer its control to a regional Customer Advisory Unit (CAU). CAU staff dealt only with these cases and their role is to exercise a combination of skills to advise and monitor customers. The final stage would be to transfer a 'failed' loan to one of the regional units responsible for recovering as much as possible of the bank's exposure through receiverships or liquidations, as appropriate.

4.3 Research Instruments

The research instruments comprised the various cases which included background information describing the borrowing company, management, the industry, markets, products, suppliers and distributors. Experiments I and II were set within the pharmaceutical and retail industries, respectively. The original loan facility, debt servicing, the current covenant breach (which had placed the company at AL1) and details of an independent due diligence review were also provided. The task was to review the current AL1 status following a breach of the interest cover covenant and indicate the likelihood of the status being changed to AL2. A summary of the information contained in the instruments is set out in appendix I. An example of the contextual information surrounding the breach of covenant and details of the independent due diligence review is set out in appendix II.

All information was presented in the form and sequence of the bank's internal credit papers as set out in the loan facility management system. This was facilitated by confidential access to the credit papers relating to six actual facilities that had previously been monitored by the bank as they were experiencing the sorts of potential debt service issues simulated in the instruments. Several preliminary versions of the research instruments were reviewed by the head of the business unit and another senior lender at the bank who provided considerable technical and other input to enhance the realism and representativeness of the instruments and task. They specifically confirmed that the corporate governance variables being tested are appropriate for the medium sized borrowers developed in the case material.[7] The instruments were also pilot tested on several loan officers.

The final instruments were administered as an internet-based experiment in March 2007. The order in which the two experiments, and the cases within each experiment, were presented to the subjects was randomised. The primary concern with an internet-based experiment is the potential for browser compatibility issues resulting in visual and other variations in the way the information is viewed (Bryant, Hunton and Stone, 2004). Whilst we paid particular attention to these issues when developing the experiments and during the pilot study, the potential problems were minimised by the fact that all subjects use the same web browser.

4.4 Dependent Variables

In both experiments the subjects were asked to indicate the likelihood of recommending that the account status is changed from AL1 to AL2. A 11-point Likert scale was used ranging from 1 (definitely no change) to 11 (definitely change to AL2).

4.5 Independent Variables

The borrower specific characteristics manipulated as factors in experiment I were board independence and financial expertise of the board directors. Similarly, MSO and a blockholder were the factors manipulated in experiment II. The two factors in each experiment were manipulated in a 2 x 2 fully crossed factorial design.

4.6 Between-Subjects Factor

Independence and MSO were analysed between-subjects in experiments I and II, respectively. Analysing this factor between subjects halved the number of cases that the subjects had to process. Subject variables (for example, personal differences and biases) are not controlled in a between-subjects design.[8] This meant that these factors were given the greatest possible chance of being insignificant in both experiments.

[7] They also advised that, while there was increasing awareness about corporate governance among the loan officers in this unit, training and manuals focussed on the more traditional "quality of management" rather than corporate governance issues.

[8] Unlike a within-subjects design where subjects act as their own controls in the comparison among treatment effects.

4.7 Within-Subjects Factors

Financial expertise and blockholder were analysed within-subjects in experiments I and II, respectively resulting in an 'efficient' use of subjects. However, a potential problem associated with a within-subjects design is that the sequential appearance of the treatments may induce demand effects (Harsha and Knapp, 1990). Prior research suggests that a necessary condition for a demand effect to occur is the subject's willingness to cooperate with the researcher so that the experimental data support the latter's hypotheses (Harsha and Knapp, 1990). As the subjects were senior loan officers, with strong personal views on most technical issues, this was considered to be less likely to occur than say in an experiment involving student surrogates. The potential for order and practice effects was recognised (Keppel, 1991) hence the order in which the experiments and the cases were presented to the subjects was randomised.

4.8 Factor Levels

4.8.1 Independence - Experiment I

Two levels of the independence factor (high and low) were used in the instruments. The chair of both boards was a former CEO of the firm who had retired over 10 years ago and was a non-executive director. Three of the remaining six members of the more independent board were non-executive directors with no discernible doubts as to their independence whilst one of the remaining six members of the less independent board was non-executive.

4.8.2 Financial Expertise - Experiment I

Two levels of the financial expertise factor were used in the instruments. The biographical details of directors in the high (low) level indicated that four (one) of the seven directors had a relatively strong financial background such as professional accounting training and/or experience as a CFO.

4.8.3 MSO - Experiment II

Two levels of the MSO factor were used in the instruments. The chairmen and the executive directors owned 45% (5%) of the shares in the borrowing company representing the high (low) level of this factor. Empirical studies of MSO would classify MSO levels of 45% and 5% as high and low, respectively (see for example, McConnell and Servaes, 1990; Bagnani et al,1994).

4.8.4 Blockholder-Experiment II

The presence or absence of a blockholder was the factor used in the instruments. The block holder was portrayed as a private equity firm that owned 22% of the shares of the borrowing company which was a medium term investment in the company. This stake was said to have been acquired by purchasing shares from several shareholders and retired directors and an executive of the private equity firm has been on the board of the borrowing company since that date.

Apart from the block holder and the manipulation of the MSO factor referred to in section 4.8.3, the remaining shares were said to be divided approximately equally amongst ten individual shareholders and their families who played no active role in the operations or management of the business.

Several senior loan officers were able to satisfactorily discriminate between the levels of these factors during the pre-pilot and pilot stages of the study.

5. Results

5.1 Statistical Techniques and Tests of Assumptions

The analysis of variance (ANOVA) technique was used to analyse and test the data. Some descriptive statistics in respect of experiment I are set out in table 1 and the means represent likelihood of a change to the loan status with a range from 1 (definitely no change) to 11 (definitely change to AL 2) As table 1 indicates the means for the factors in experiment I are in the hypothesised direction. It also appears that loan officers are least likely to change the status of the loan when board independence and financial expertise are both high (5.06) and they are most likely to change the status to AL2 when both board independence and financial expertise are low (10.41).

Table 1. Experiment I: Factor Means and Standard Deviations

Factors and factor levels	Board Independence Low			Board Independence High		
	N	Mean	Std Dev	N	Mean	Std Dev
Financial Expertise						
i Low	17	10.41	0.51	17	9.41	1.00
ii High	17	8.18	1.51	17	5.06	1.71

Notes: (1) The Likert scale ranged from 1 (definitely no change) to 11 (definitely change to AL 2.)

The descriptive statistics in respect of experiment II are set out in table 2 and once again the means represent likelihood of a change to the loan status with a range from 1 (definitely no change) to 11 (definitely change to AL 2.) Whilst there is only a slight difference in means for the MSO factor (the high levels are greater) in experiment II, there are markedly higher means for the blockholder factor. This suggests the presence or absence of a blockholder influences the loan officers' decisions to change the status of the loan whilst MSO does not. It also appears that loan officers are least likely to change the status of the loan in the absence of a blockholder when MSO is low (5.06) and they are most likely to change the status to AL2 in the presence of a blockholder and MSO is high (10.00).

Table 2. Experiment II: Factor Means and Standard Deviations

Factors and factor levels	MSO (Low)			MSO (High)		
	N	Mean	Std Dev	N	Mean	Std Dev
Block Holder						
i No	16	5.06	2.54	17	6.00	2.81
ii Yes	16	9.81	1.05	17	10.00	1.17

Notes: (1) The Likert scale ranged from 1 (definitely no change) to 11 (definitely change to AL 2.)

Notwithstanding the fact that the model, especially with a balanced design, is considered to be robust to violations of the assumptions of normality and homogeneity of variance, the validity of these assumptions were examined. We reviewed standardised indices of skewness and kurtosis and the Levene's test was used to test the homogeneity of variances. The only problem noted was an outlier in the presence of a blockholder factor in experiment II that resulted in the distribution being negatively skewed (Manipulation checks were also carried out on both factors in each experiment. All subjects correctly classified all factors with the exception of the aforementioned outlier (a blockholder factor). Whilst removal of the outlier results in the assumptions of normality and homogeneity of variance being satisfied, all subsequent ANOVA was run with and without this outlier with no qualitative difference to the results.

5.2 Financial Experience and Board Independence (Experiment I)

The overall ANOVA summary is presented in table 3.

Hypotheses 1 and 2 proposed that, in response to a covenant breach, loan officers will be less likely to change the loan status to AL2 when the board of the borrower was more independent and had greater financial expertise, respectively. Table 3 shows that the main effect for board independence is significant (p=.000). Thus, the results support the proposition that loan officers expect independent directors to help constrain any managerial opportunism and add value in the context of financial distress. Table 3 also shows that the main effect for financial expertise is also significant (p=.000) supporting hypothesis 2. This is consistent with the proposition that lenders perceive that a board's ability to manage potential financial distress and monitor effectively will be enhanced by strong financial expertise on the board.

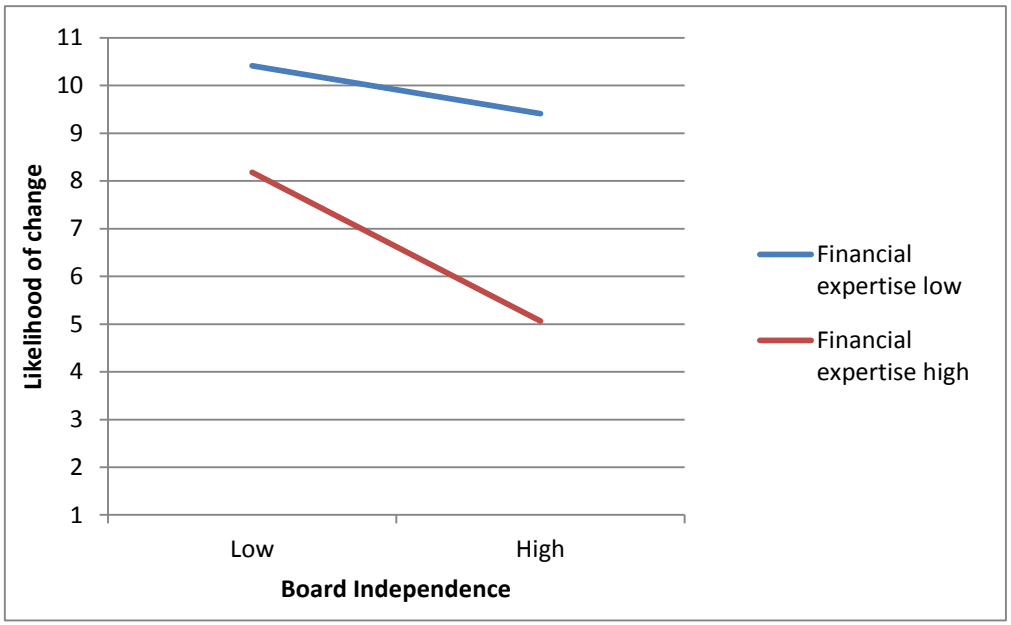
Table 3. Experiment I - Analysis of Variance Summary: Financial Expertise and Board Independence on Loan Monitoring Decisions

Source	**df**	**MS**	**F**	**Significance**	***η2***
Main effects					
Financial Expertise (FE)	1,32	368.94	153.44	.000	.83
Board Independence (BI)	1,32	36.03	35.38	.000	.53
Two-way interaction					
FE × BI	1,32	38.12	15.85	.000	.33
Simple Main effects					
FE within BI (low)	1,32	42.46	35.33	.000	.53
FE within BI (high)	1,32	161.03	133.97	.000	.81
BI within FE (low)	1,32	8.50	13.44	.001	.30
BI within FE (high)	1,32	82.62	31.70	.000	.50

Interactions are specifically concerned with the joint effects of two or more independent variables and are unique to the factorial design. The two-way interaction between financial expertise and board independence is also significant. The relevant interaction means are plotted in figure 1. It is apparent from figure 1 that the difference in factor means for the financial expertise condition is greater when board independence is high as opposed to low. Whilst all the simple main effects in table 3 are significant, the F value as well as the effect size (partial eta squared) is greatest when the two levels of financial expertise is tested within the high board independence condition.

This analysis shows that the financial expertise effect is driven by borrowers with high board independence. In other words, the likelihood of loan officers increasing the level of monitoring when financial expertise is low is more pronounced when board independence is high. This appears rational as the cell means suggest that the likelihood of increasing the level of monitoring when board independence is low is high notwithstanding the level of financial expertise on the board. Accordingly, the main effect for financial expertise discussed earlier requires some qualification to recognise this interaction with board independence.

Figure 1. Experiment I – Interaction means for loan officers' assessments of the likelihood of increased monitoring: Interaction of Financial Expertise and Board Independence



5.3 Block holder and Managerial Share Ownership (Experiment II)

The overall ANOVA summary is presented in table 4.

Table 4. Experiment II – Analysis of Variance Summary: Managerial Share Holding and Blockholder on Loan Monitoring Decisions

Source	df	MS	F	Significance	$\eta 2$
Main effects					
Block Holder (BH)	1,31	631.06	74.95	.000	.71
MSO	1,31	2.61	1.24	.275	.04
Two-way interaction					
BH × MSO	1,31	4.64	.55	.464	.02

Hypotheses 3 and 4 proposed that, in response to a covenant breach, loan officers will be less likely to change the loan status to AL2 when there is a no block holder on the board and MSO is low, respectively. Table 4 shows that the main effect for the block holder factor is significant (p=.000)

showing that lenders are less inclined to change the loan status to increase monitoring in the absence, rather than presence, of a blockholder. This is consistent with lenders perceiving that in the context of potential financial distress, blockholders will share the incentives managers and other shareholders may have to engage in ex-post opportunism such as asset substitution at the expense of debtholders. Neither the main effect for MSO nor the interaction between the blockholder and MSO factor was significant.

6. Conclusions

This is the first study to examine the impact of corporate governance on loan monitoring decisions. Access to senior lenders and credit papers at a major UK bank facilitated the design of realistic research instruments and two context specific behavioural experiments.

In experiment I, the main effects for the factors board independence and financial expertise were significant. Thus, the results support the proposition that loan officers will expect independent directors and boards with strong financial expertise to help constrain any managerial opportunism and add value in the context of financial distress. The two-way interaction between financial expertise and board independence is also significant and shows the likelihood of loan officers increasing the level of monitoring when financial expertise is low is more pronounced when board independence is high.

In experiment II, the main effect for the blockholder factor was also significant suggesting that lenders are more likely to increase the level of monitoring in the presence of a blockholder on the borrower's board. This is consistent with lenders perceiving that, in the context of potential financial distress, blockholders will share incentives with managers and other shareholders that may conflict with those of debtholders.

As is the case with most experiments, one has to be cautious in generalising these results beyond the subjects or the specific context of the study. There are two limitations specific to this research. Direct access to senior managers at the bank as well as sample credit papers allowed us to develop very realistic instruments and experimental scenarios with a great deal of detail specific to the institution. As a result, however, we were limited to 34 subjects in the one bank. Nevertheless the effect size (partial eta squared) associated with all of the significant main effects reported in the ANOVA summaries suggest the power of the tests was strong. Second, we studied loan officers' behaviour over a specific period in time: more specifically, when the debt market was quite competitive and during a period of economic growth. There is anecdotal evidence to suggest that such behaviour may vary. For example, a relatively inflexible attitude towards technical default is likely during times of high debt service default. Similarly, the choice of corporate governance variables tested was necessarily limited. Accordingly, replication and/or longitudinal studies are desirable to support the generalisability, or otherwise, of these results.

This study adds to the very limited research into the impact of corporate governance in debt markets and the experimental method helps circumvent the endogeneity problem inherent in conventional archival analysis of corporate governance data. The research also has implications for regulators and practitioners. Corporate governance regulations such as the Sarbanes-Oxley Act (2002) in the US and the Combined Code on Corporate Governance (FRC, 2010) in the UK impose non-trivial compliance costs on companies. This study provides further evidence on the efficacy of good corporate governance in reducing debt contracting costs that should be of interest to regulators. Moreover, the evidence on the importance of a number of corporate governance variables in the default risk assessment of distressed/criticised loans has implications for practitioners.

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Appendix 1. Summary of the Information Given to Subjects

All information was presented in the form and sequence of the bank's internal credit papers as set out in the loan facility management system. In summary:

a) Background information about the borrower including industry, markets, suppliers and distributors;
b) Information about the facility that was originally approved and subsequent debt servicing;
c) The contextual information surrounding the breach of covenant and details of the independent due diligence reviews;
d) Standard historic and forecast financial information;
d) Information about the borrower's board of directors and senior management;
e) SWOT Analysis; and,
f) Task questionnaire including manipulation checks and demographics.

Appendix 2. An example of the contextual information surrounding the breach of covenant and details of the independent due diligence reviews-Experiment I

"Purpose of Application

Review of current A.L. 1 status following latest breach of the interest cover covenant.

Amcal is a major contract producer of over-the-counter codeine based pharmaceuticals for Joe's Pharmaceuticals (Joes's). In January 2005, Joe's did not renew its contract with Amcal. This was a result of a major strategic repositioning of Joe's business and not as a result of any problems with Amcal. The net result is a loss of approximately 25% of Amcal's annual sales and a significant decline in profitability. The bulk of Amcal's codeine based products were retailed through Joe's chain of pharmacies in the West Country. To date, Amcal has been unable to forge a similar arrangement with another group of pharmacies to replace the business lost. As a result of the decline in profitability, the first breach occurred in the June 2005 quarter and subsequent breaches in September 2005 as well as the year ended 31 December 2005. Following a review in July 2005, the bank agreed to reschedule repayments of the loan principal during 2005-2007 (2005-interest only, 2006-£1 million + interest, 2007-£1.25 million + interest). The revised repayments are being made on schedule.

Due Diligence Review

Following the latest covenant breach and as a precursor to the present review, PricewaterhouseCoopers (PwC) conducted a due diligence review of Amcal (at the bank's request). PwC were of the opinion that the remaining (ie. excluding Joe's) customer base and levels of contract production and sales were extremely stable but significant growth, over the next 3-4 years, was likely to be quite difficult. Accordingly, in order to get profitability and cash flows to the pre-2005 levels, overheads and related costs need to be reduced significantly. PwC, in close consultation with the board of Amcal, has developed a plan to rationalise the firm's operations and cut costs. The plan includes the discontinuation of the codeine based product line as well as closing down a warehouse and related distribution infrastructure in Devon. In the opinion of PwC adherence to this plan is likely to result in the bank's debt servicing and covenant requirements being met. However, they indicate that this would require rigorous operational and financial control on the part of management.

The table below sets out the company's current position together with the planned position in two years time as anticipated in the due diligence report prepared by PwC.

	Current Position	Anticipated Position (2007) – Due Diligence Report produced by PwC
Sales (£ pa)	£49.7m	Most Likely: £52.6m Low: £ 48.9m High: £58.8m
PBIT	£1.9m	Most Likely: £5.3m Low: £2.1m High: £6.5m
Net Income after interest and tax	£0.25m	Most Likely: £2.3m Low: £0.3m High: £2.9m
Active Markets	• Home Counties • Somerset • Devon	Ceased operating in Devon. Slight expansion in other areas. Growth potential in OTC pharmaceuticals is limited as the market is fairly saturated.
Product Range (based on active chemical)	• Psuedo-ephedrine • Paracetemol • Codeine	Codeine based product line discontinued. Other OTC lines to continue with a slight expansion of the psuedo-ephedrine based products.

The most likely scenario assumes a 5%-6% increase in sales in all but the now discontinued range of codeine based products and that all remaining strategic partnerships remain in place. A set of detailed assumptions underlying the forecast sales and profits are set out in appendix A of the PwC report."

DOES EXECUTIVE COMPENSATION REFLECT EQUITY RISK INCENTIVES AND CORPORATE TAX AVOIDANCE? A JAPANESE PERSPECTIVE

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Abstract

This study examines corporate tax avoidance as a determinant of executive compensation on the basis of equity risk incentives. Previous research shows that equity risk incentives motivate managers to make more risky—but positive net present value—investment decisions. Through correlation analyses, this study demonstrates that the tax risk measures adopted in this study are negatively associated with both the adoption of stock options and tax aggressive measures. Through multivariate analyses, this study demonstrates that executive compensations are significantly associated with our measures of tax risk positions despite the inclusion of several control variables. Moreover, this study finds consistent evidence that executive equity risk incentives are significantly associated with aggressive tax positions, regardless of the estimation method and the strength of the corporate governance function, and across several tax risk measures.

Keywords: Tax Avoidance; Executive Compensation; Risk Incentive; Corporate Governance

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1 Introduction

During 1990s and 2000s, despite the increase in aggressive tax shelter strategies, little was known about the relationship between CEO compensation practices and aggressive tax avoidance, if any. In terms of such a corporate practice, prior accounting research shows that corporate tax avoidance is systematically associated with certain firm attributes, such as profitability, extent of foreign operations, intangible assets, research and development (R&D) expenditures, leverage, the attribute of corporate governance, and financial reporting aggressiveness (e.g., Gupta and Newberry [1997]; Rego [2003]; Graham and Tucker [2006]; Desai and Dharmapala [2006]; Frank, Lynch, and Rego [2009]; Desai and Dharmapala [2009]; Wilson [2009]; Rego and Wilson [2012]). Shevlin [2007] suggests that individuals, such as accounting academics, practitioners, and regulators, have an incomplete understanding of why and how some firms are more tax aggressive than others.

This study examines the relationship between equity risk incentives and executive compensation as a determinant of corporate tax avoidance. Dyreng, Hanlon, and Maydew [2010] conclude that individual managers influence their firms' tax avoidance even after controlling for several firm characteristics. Previous research examine the association of income tax avoidance with corporate compensation practices, however, yielding mixed results (e.g., Phillips [2003]; Hanlon, Mills, and Slemrod [2005]; Desai and Dharmapala [2006]; Armstrong, Blouin, and Larcker [2010]). I argue that tax avoidance is a risky activity that imposes costs on both firms and managers. Therefore, managers must be motivated to engage in tax avoidance that involves uncertain outcomes.

Equity risk incentives capture the relationship convexity between a manager's wealth and stock price, measured as the change in value of a manager's stock option portfolio for a given change in stock return volatility (e.g., Guay [1999]). In short, equity risk incentives reflect how changes in stock return volatility affect managerial wealth. Previous research shows that equity risk incentives motivate managers to make more risky—but positive net present value (NPV)—investment decisions (e.g., Guay [1999]; Rajgopal and Shevlin [2002]; Coles, Daniel, and Naveen [2006]). However, these studies do not examine the relationship between equity risk incentives and risky tax planning.[14] In this regard, Rego and Wilson [2012] argue that just as equity risk incentives motivate managers to make more risky

[14] "Risky tax planning," is also referred to as "risky tax avoidance" and/or "aggressive tax positions." This study uses these terms interchangeably.

investment decisions, they also motivate managers to undertake more aggressive (i.e., risky) tax positions, thereby accounting for some variation in tax aggressiveness across firms.

The benefits of aggressive tax positions are apparent. They reduce tax liabilities, thereby increasing cash flows and net income after tax, consequently increasing corporate value. However, aggressive tax positions impose significant costs on firm and management. Stakeholders primarily require managers to invest substantial resources in the form of fees paid to accountants and attorneys; moreover, they require their employees to devote time toward planning for and resolving audits with tax authorities. Associated costs can significantly increase if tax authorities successfully challenge an aggressive tax position.

Therefore, in the absence of equity risk incentives, risk-averse managers are likely to undertake less risky tax planning, while risk-neutral shareholders are likely to want managers to undertake every positive NPV tax strategy, regardless of risk. Consistent with previous research (Jensen and Meckling [1976]; Smith and Stulz [1985]), I assume that firms are dependent on equity-based compensation to align managerial incentives with those of shareholders. Therefore, I predict that equity risk incentives motivate managers to undertake risky but positive NPV tax strategies. Few previous studies examine the relationship between corporate tax avoidance and executive compensation practices. Using compensation data obtained in a survey of corporate executives, Phillips [2003] finds that compensating division managers (business-unit (BU) managers, but not CEOs) on an after-tax basis results in greater tax-planning effectiveness. Hanlon, Mills, and Slemrod [2005] find a positive relationship between various equity incentive measures (pay-for-performance sensitivity) and proposed IRS (Internal Revenue Service) deficiencies. In contrast, Desai and Dharmapala [2006] find that increases in the ratio of incentive compensation to total compensation for the five highest-paid executives led to a reduction in tax avoidance at firms with weak corporate governance. Nevertheless, the relationship between changes in stock return volatility and determination of executive compensation is still unclear.

Armstrong, Blouin, and Larcker [2010] find an association of tax director compensation with lower GAAP effective tax rates (ETR); however, they find no association of CEO or CFO compensation with any measure of corporate tax avoidance. In this regard, this study considers a previously overlooked determinant of corporate tax avoidance—equity risk incentives via stock options.

If equity risk incentives are known to mitigate the risk-related incentive problem by motivating managers to undertake risky but positive NPV tax strategies, then one would expect a positive association between equity risk incentives and measures of risky tax avoidance over a large sample of firms. Because equity risk incentives and risk-taking behaviors are likely to be endogenously related (e.g., Rajgopal and Shevlin [2002]; Hanlon, Rajgopal, and Shevlin [2003]; Coles et al. [2006]), I use a system of simultaneous equations to model the relationship between equity risk incentives and managerial tax choices. Furthermore, this study focuses on whether the sample firms adopt equity risk incentives via stock options.

The study's empirical results are consistent with expectations. Through a correlation analyses, I demonstrate that this study's tax risk measures are negatively associated with both the adoption of stock options and tax aggressive measures, consistent with equity risk incentives that motivate managers to undertake risky tax strategies, which decrease their tax burden. Through multivariate analyses, I find that executive compensation remains positively associated with our tax risk measures, namely book tax differences (BTD), and negatively associated with ETR and cash ETR despite the inclusion of several control variables, such as firm performance measures, stock option proxies, size, future growth possibility, corporate governance measures, investment opportunities, leverage, and Tobin's Q. Moreover, larger firms with greater investment opportunities and higher CEO cash compensation rely on more equity risk incentives than other firms.

The results of this analysis are robust to the supplemental analyses, including alternative estimation methods of the positive relationship between equity risk incentives and risky tax avoidance that vary by strength of corporate governance. In short, I find consistent evidence that executive equity risk incentives are significantly associated with aggressive tax positions, regardless of estimation method and corporate governance strength, and across several tax risk measures.

The study proceeds as follows. Section 2 discusses prior research and develops hypotheses. Section 3 explains the research design, while Section 4 discusses the sample selection method and empirical results. Section 5 presents supplemental analyses and Section 6 concludes.

2 Literature Review and Hypothesis Development

Prior accounting research identifies several firm characteristics as sources of variation in ETR and other tax avoidance measures across firms. Many studies investigate the relationship between ETRs and firm size, resulting in conflicting results, based on the method of ETR measurement, the analyzed time period, and the model specification (Zimmerman [1983]; Shevlin and Porter [1992];

Rego [2003]). Gupta and Newberry [1997] provide evidence that lower ETRs are associated with lower profitability, but higher leverage and capital intensity. Recent accounting research also investigates the relationship between different ownership structures and corporate tax avoidance. Chen, Chen, Cheng, and Shevlin [2010] provide evidence that family firms are less tax-aggressive than their non-family counterparts. They argue that the difference between family and non-family firms in terms of tax aggressiveness depends on the impact of the differential characteristics of family owners versus managers in non-family firms on the benefits and costs of tax aggressiveness. Because family owners have significantly higher holdings, they benefit more from tax savings or rent extraction that can be concealed by tax aggressive activities; however, the corresponding potential price discount is more costly for them. In addition, because of their much larger equity ownership and their much longer investment horizons, family owners are more concerned with the potential penalty imposed by the IRS and the reputation damage from being involved in a tax-related lawsuit. Thus, they suggest that both the benefits and costs appear to be higher for family owners than for managers in non-family firms.

McGuire, Wang, and Wilson [2011] find that firms with dual class stock ownership engage in less tax avoidance than other firms, consistent with managers insulated from takeovers, thereby avoiding the costly effort associated with increased tax avoidance.

Despite all of these previous research findings, I still do not fully understand the factors that encourage tax avoidance among firms. A possible determinant of corporate tax avoidance that has not been fully explored involves managers and corporate compensation practices. Therefore, this study focuses on executive compensation practices.

Relatively few studies have examined the relationship between executive compensation practices and corporate tax avoidance. Crocker and Slemrod [2005] develop an analytical model of the contractual relationship between shareholders of a firm and the tax director, and examine how compensation contracts affect tax avoidance. They demonstrate that a CFO's incentives to engage in tax avoidance are influenced by the nature of his/her compensation arrangement. In addition, they describe how the board of directors, acting on behalf of shareholders, structure tax directors' compensation contract to align their incentives with those of the shareholders. It is in the shareholders' interest for the tax director to reduce the firm's tax liabilities, net costs of doing so, which would include any expected penalties incurred due to detected tax evasion. To align incentives, Crocker and Slemrod [2005] suggest that it may be appropriate for the tax officer's salary to depend (inversely) on the ETR achieved.

Phillips [2003] investigates whether compensating CEOs and BU managers using after-tax accounting-based performance measures results in lower ETRs—the empirical proxy used for tax-planning effectiveness. Based on a surveyed sample of 209 corporate executives, Phillips [2003] shows that compensating BU managers, but not CEOs, on an after-tax basis directly results in lower ETRs. However, he also notes that after-tax CEO performance measures may have an indirect effect on ETRs, because CEOs that are compensated on an after-tax basis are more likely to compensate their BU managers on an after-tax basis.

Henderson et al. [2010] examine the association between layoffs and CEO compensation. Due to the public scrutiny and political pressures associated with both CEO compensation and layoffs, they expect firms to alter CEO compensation by reducing bonuses and increasing equity-based compensation with an increase in the magnitude of layoffs. Consistent with the predicted substitution, Henderson et al. [2010] find that as layoffs intensify, bonus compensation to CEOs decreases, while their equity-based compensation increases. On considering whether these compensation adjustments vary with CEO power, they find that with an increase in the layoff magnitude, relatively more powerful CEOs experience smaller reductions in bonus payments, a higher likelihood of receiving a bonus, and comparable increases in equity compensation. Finally, Henderson et al. [2010] report evidence that post-layoff market performance of firms led by more powerful CEOs is not superior to that of firms led by less powerful CEOs.

Cheng et al.[2012] examines the impact of hedge fund activism on corporate tax avoidance. They find that relative to matched control firms, businesses targeted by hedge fund activists' exhibit lower tax avoidance levels prior to hedge fund intervention, but experience of hedge fund intervention increases in tax avoidance after the intervention. Moreover, their findings suggest that the increase in tax avoidance is greater when activists have a successful track record of implementing tax changes and possess tax interest or knowledge as indicated by their Securities and Exchange Commission (SEC) 13D filings. Besides, they also find that these greater tax savings do not seem to result from an increased use of high-risk and potentially illegal tax strategies, such as sheltering. In total, the results suggest that shareholder monitoring of firms, in the form of hedge fund activism, improves tax efficiency.

In terms of incentive compensation, Desai and Dharmapala [2006] examine how stock-based compensation influences tax sheltering decisions.

They depend on two competing theories on how incentive compensation should influence tax sheltering. The first theory predicts a positive relationship between incentive compensation and tax sheltering, because the former ought to align managerial incentives with those of shareholders, inducing managers to execute a tax avoidance strategy, thereby increasing firm value. The second theory argues that tax sheltering facilitates managerial rent extraction. In this case, corporate governance structure should moderate the relationship between incentive compensation and tax sheltering, because weak corporate governance should allow greater managerial rent extraction through tax sheltering. Taken together, these two theories generate an ambiguous prediction of the net impact of incentive compensation on tax sheltering (i.e., increasing incentive compensation should increase tax sheltering, thereby increasing the firm value, however, decreasing the tax sheltering associated with managerial rent extraction). Desai and Dharmapala [2006] examine their model across well-governed and weaker-governed firms and find that increases in incentive compensation for the five highest-paid executives reduce the level of tax sheltering, and that this negative effect is driven by weaker-governed firms. They conclude that incentive compensation aligns managers' incentives with those of shareholders and reduces opportunistic tax sheltering. Besides, the results in Desai and Dharmapala [2006] are contrary to those in Hanlon, Mills, and Slemrod [2005], who find that pay-for-performance sensitivities for the five highest-paid executives are positively associated with proposed IRS audit deficiencies.[15]

The reason why this study focuses on Japanese settings is because of the uncertainty of whether weakness of corporate governance in Japanese companies triggers corporate tax avoidance. Recently, some Japanese companies have been in the radar because of corporate governance scandals involving ex-executive officers (e.g., Daiou paper Inc., Olympus Corporation). The Japanese business community on the whole is weary of the spread of a negative reputation that most Japanese corporations indulge in serious governance concerns. Therefore, this study mainly investigates the role of corporate governance on the determinants of executive compensation, especially in Japanese settings.

Executive compensation plays a key role in the constraints of corporate practice, thereby motivating managers to execute appropriate business strategies and disincentivizing unethical practices, among others. I propose that a potential missing relationship between executive compensation and corporate tax avoidance depends on equity risk incentives incorporated with the extent of corporate governance. Previous research shows how stock options provide managers with incentives that mitigate the risk-related incentive problem between managers and shareholders (Jensen and Meckling [1976]; Smith and Stulz [1985]; Guay [1999], Core et al.[1999]). In particular, stock options motivate managers to undertake risky but positive NPV projects because option value increases with both stock price (Rego and Wilson [2012] refer to this as the slope effect)[16] and stock return (Rego and Wilson [2012] also refer to this as the risk incentive effect) volatilities.[17] While the slope effect motivates managers to undertake positive NPV projects, the risk incentive effect motivates managers to increase stock return volatility by undertaking risky projects. Keeping the slope effect constant, managers with larger equity risk incentives have greater incentive to undertake actions that increase firm risk, because option values increase with stock return volatility. Previous studies find that greater equity risk incentives are associated with greater managerial risk-taking, particularly in terms of investment decisions (Guay [1999]).

Rajgopal and Shevlin [2002] find evidence consistent with greater equity risk incentives resulting in higher future exploration risk-taking in the oil and gas industry. Coles et al. [2006] show that higher equity risk incentives are associated with riskier corporate policy choices, such as greater R&D investment, lower capital expenditures, higher leverage, more concentrated market, and industry focus. Cohen, Dey, and Lys [2007] show that equity risk incentives are associated with greater managerial risk taking; however, they conclude that the magnitude of that association has declined since the passing of the Sarbanes-Oxley Act of 2002, perhaps because of a decrease in option compensation over the same time period.

This study examines the impact of equity risk incentives on managers' choices with respect to risky tax strategies. Consistent with previous research, I assume that firms utilize equity-based compensation to align managerial incentives with

[15] However, the results in Desai and Dharmapala [2006] and Hanlon, Mills, and Slemrod [2005] are not directly comparable because they use different data sets (Compustat vs. IRS data), different tax avoidance measures (discretionary book-tax differences vs. proposed IRS audit deficiencies), and different compensation variables (the ratio of the value of stock option grants to total compensation vs. pay-for-performance sensitivities), among other differences.

[16] "Slope effect" refers to the slope of the relationship between a manager's wealth and stock price. It is also referred to as a manager's pay-for-performance sensitivity and/or "delta."

[17] "Risk incentive effect" refers to the convexity (or curvature) of the relationship between a manager's wealth and stock price; it is also referred to as the sensitivity of a manager's wealth to stock return volatility and/or "vega."

those of shareholders (Jensen and Meckling [1976]; Smith and Stulz [1985]). Hence, I estimate that greater equity risk incentives motivate managers to undertake more risky tax strategies to increase stock return volatility.

Risky tax avoidance strategies should be positively related to stock return volatility because more risky tax planning increases the uncertainty surrounding future tax outcomes. This greater uncertainty should increase a firm's stock return volatility, as investor expectations span a broader range of possible outcomes. This study chooses ETR as a primary measure of risky tax positions to enable higher-risk positions to translate into lower ETRs. Thus, the formal hypothesis posits that greater equity risk incentives motivate managers to adopt risky tax strategies.

H1: Executive compensation is significantly related to risk avoidance activity.

Moreover, I consider the possibility that the strength of a corporate governance structure affects the attitude toward tax avoidance. Desai and Dharmapala [2006] conclude that well-governed firms provide less scope than weaker-governed firms for rent diversion reductions, and hence for offsetting reductions in sheltering (as initial diversion levels are lower, by definition, for well-governed firms). Consequently, the impact of higher-powered incentives toward tax avoidance resulting in greater tax evasion should be greater in well-governed firms than in weaker-governed firms. Their model is thus consistent with either a positive or negative relationship between high-powered incentives and tax avoidance, but is clear about the role of the governance environment in mediating those effects. The next hypothesis shows that the determination of executive compensation interacts with the extent of the governance environment.

H2: Executive Compensation is significantly related to the strength and weakness of the state of corporate governance.

H3: The more aggressive the tax avoidance activity, the more significantly is executive compensation related to the strength and weakness of the state of corporate governance.

3 Research design

3.1 Proxies for risky tax avoidance

This study uses several measures of tax avoidance as no single measure perfectly captures the underlying construct (i.e., risky tax planning). I employ three existing tax avoidance measures to measure the tax avoidance magnitude: ETR, cash ETR (Cash_ETR), and Manzon–Plesko BTD (MPBT) (Manzon and Plesko, [2002]). cash_ETR captures a broad range of tax planning activities with both certain and uncertain outcomes; however, it is widely used in the tax literature and thus should provide insights into the consistency of our results across several measures of tax risk. See Appendix A for details on the calculation of each of these tax avoidance measures.[18]

With regard to MPBT, it is difficult to compute taxable income correctly; therefore, I estimate it by using corporate ETRs. While these measures of tax risk are theoretically similar to the underlying construct of interest (i.e., risky tax positions), they also may contain measurement errors. Therefore, to the extent that I obtain similar results across these three measures of tax risk, they should be confident that this result is robust.[19]

3.2 Designing executive compensation with risky tax avoidance

H1 predicts that executive compensation is associated with risky tax avoidance. Executive compensation includes cash payment and equity-based compensation. Recently, this type of equity-based compensation (e.g., stock options) has played an important role in executive compensation, making executive compensation more subject to equity risk taking. Similar to other studies that examine the relationship between equity risk incentives and managerial risk taking (e.g., Rajgopal and Shevlin [2002]; Coles et al. [2006]), this study argues that equity risk incentives and risky tax avoidance are likely to be endogenously related. In particular, not only should equity risk incentives motivate managers to undertake risky tax strategies, but current tax strategies also may be associated with equity risk incentives imposed on managers.

In particular, previous studies, especially Rego and Wilson [2012], suggest that tax risk is endogenous in an equity risk incentives regression because compensation based on equity risk incentives can motivate managers to undertake risky but positive NPV projects. Thus, I test H1 by adapting the models of equity risk incentives and managerial risk used by Rajgopal and Shevlin [2002] and Coles et al. [2006]. I demonstrate the

[18] In Japan, there are three types of taxes imposed directly or indirectly on corporate taxable income. First, corporation tax is a national income tax on corporations, and is imposed on corporate taxable income. Second, corporation inhabitants' tax, which includes a prefecture tax and a municipality tax on corporations, is a local tax imposed on a corporation. Third, corporation enterprise tax is also a local tax imposed on corporate taxable income. Income tax expense in Japan comprises these three taxes. For example, in the simplest case, current tax expense is calculated as follows: Current tax expense = {(1 + corporation tax rate)* corporation inhabitants' tax rate + corporation enterprise tax rate}* corporate taxable income.

[19] In this research, I assume that firms with no income have no incentive to employ risky tax planning. I also Winsorize ETR and Current_ETR to fit between 0 and 1 to minimize outliers.

following simultaneous system of equations, where executive compensation (*Total_comp*) and equity risk incentives (*TAX*) are the endogenous dependent variables. This study estimates the parameters for our system of equations using two-stage least squares (2SLSs) (where firm and time subscripts are omitted for convenience):

$$\begin{aligned} Total\ compi = {} & \alpha_0 + \alpha_1\, TAXi + \alpha_2 SOi \\ & + \alpha_3 Insti + \alpha_4\, idrtoi \\ & + \alpha_5\, epsi + \alpha_6\, Ln\_TAi \\ & + \alpha_7\, Setsubii + \alpha_8\, levi \\ & + \alpha_9 tobin\_q_i + \alpha_{10} PBR_i \\ & + \varepsilon i \end{aligned} \quad (1)$$

$$\begin{aligned} \mathrm{TAX}i = {} & \beta_0 + \beta_1 Total\ Compi + \beta_2 Soi \\ & + \beta_3\, Insti + \beta_4 idrtoi \\ & + \beta_5 epsi + \beta_6 Ln\_TA\, i \\ & + \beta_7 Setsubii + \beta_8 levi \\ & + \beta_9 tobin\_q_i + \alpha_{10} PBR_i \\ & + \beta_{11} Ctrdummyi \\ & + \beta_{12} Taxcarryforward \\ & + \varepsilon i \end{aligned} \quad (2)$$

As previously indicated, the proxies for risky tax avoidance in this study are ETR, Cash_ETR, and MPBT. A negative coefficient (α_1) on Tax_i with ETR and Cash_ETR, and a positive coefficient (α_1) on Tax_i with MPBT in the *Total_Comp* regressions, support our hypothesis that equity risk incentives motivate managers to engage in risky tax strategies that increase stock return as well as the stock option portfolio and firm values.

Equation (1) models executive compensation (*Total_comp*) as a function of equity risk incentives (*SO*), the number of shares held by institutional investors (*Inst*), and the number of outside directors on the board of directors *(Idrto*) as corporate governance variables. It models earnings per share (*eps*), the natural log of total assets (*ln_TA*), R&D and capital expenditures (*Setsubi*), leverage *(Lev*), and Tobin's Q (*tobin_q*) as a market index, and price–book ratio (*PBR*) as an indicator of growth possibility.[20]

A 2SLS estimation requires each equation in the system to have at least one unique instrument that is not related to other endogenous variables. In my research setting, it is difficult to identify firm characteristics that are significantly associated with tax risk but not equity risk incentives, and vice versa. Hence, this paper adopts *Ctrdummy* and *Taxlosscarryforward* as instrumental variables in equation (2), because they should exhibit little if any correlation with the other endogenous variable in our system of equations. *Ctrdummy* is an indicator variable that takes unity if the company chooses the consolidated tax return system, and 0 otherwise. *Taxlosscarryforward* controls only for the determination of tax payment, which exhibits the amount of net operating loss carry-forwards in previous years.

Results in Guay [1999] and Coles et al. [2006] show that equity risk incentives and pay-for-performance sensitivity are positively related. Thus, I include *SO* in equation (1) to control for the association between tax risk and the performance incentive that *Total_comp* might otherwise capture. Equation (3) is based on models of equity risk incentives in Rajgopal and Shevlin [2002], Coles et al. [2006], Cohen et al. [2009], and Rego and Wilson [2012]. This model includes *Total_comp* in equation (3) due to the endogenous relationship between managerial risk-taking, in this case, risky tax avoidance, and equity risk incentives.

Finally, in this model I expect firms whose managers are sensitive to wealth change to have greater risk incentives (Rajgopal and Shevlin [2002]), so equation (1) includes *SO* to reflect the managers' attitudes toward risk incentives.

4 Data and Empirical Results

4.1 Sample selection

I obtain data from several sources to empirically test H1. Data on CEO compensation and corporate governance is obtained from Nikkei Needs C-ges, and financial statement data[21] and non-narrative information from Nikkei Needs Financial Quest 2.0. In terms of corporate governance data, I focus especially on CEO and executive compensation and on the percentage of outside directors on the board of directors. For a firm-year observation to be included in our sample, it must contain all data necessary to calculate the variables included in equations (1) and (2). In addition, this research requires firms to have positive pre-tax income over the five-year period ending in year *t*. Firms with negative pre-tax income are not included because I expect the association between equity risk incentives and risky tax avoidance to be attenuated for firms that are not profitable. As a result, my analysis focuses on firms where tax planning is likely to be a priority. The sample for the first set of tests consists of 16,895 year-observations from 2006 to 2010.

Table 1 provides a summary of descriptive statistics. Equation (1) includes the year effects and industry effects to show the transitional consequence on the sample. With respect to *TAX* variables, Table 1 provides ETR and Cash_ETR as measures of tax aggressiveness. Furthermore, I calculate MPBT using Nikkei FQ firm-years data

[20] I intentionally scale all variables by beginning-of-the-year total assets to control for heteroscedasticity.

[21] In this research, I collect the consolidated financial statements data. In terms of estimation of the taxable income, ideally the individual financial statements data should have been utilized.

from 2005 to 2010 that have the requisite data. Table 1 shows several tax attributes including ETR and Cash_ETR. This table shows a 35% average ETR of firms in Japan. This indicates that average Japanese firms work hard to reduce their tax burden.

Table 1. Descriptive Statistics

Variable	Mean	SD	Min	25%	Median	75%	Max
Total_comp	0.00803	0.01781	0	0	0.001118	0.008884	0.385113
SO	0.36287	0.480842	0	0	0	1	1
Inst	13.14617	14.90421	0	1.02	7.325	21.12	85.6
Idrto	9.605185	14.26629	0	0	0	16.66667	86.66667
eps	758.407	14656.92	−116691	3.82	33.36	106.18	1395521
ln_TA	10.31935	1.732011	4.234107	9.156306	10.17053	11.30898	17.29905
Setsubi	0.045314	0.102794	0	0.009997	0.026791	0.055678	6.202214
Lev	0.543872	1.053429	0	0.33477	0.511481	0.67779	78.37471
aveq	1.070052	0.757424	0	0.78792	0.94013	1.14384	23.75101
PBR	1.275096	3.520076	0	0.54249	0.840015	1.36721	314.496
Ctrdummy	0.012852	0.11264	0	0	0	0	1
Taxlosscarryforward	0.04317	0.276321	0	0	0.003391	0.020967	17.38556
ETR	0.356018	0.241227	0	0.173251	0.405063	0.466987	1
Cash_ETR	0.333107	0.250041	0	0.09375	0.369794	0.467213	1
MPBT	−0.0214	0.121448	−8.64346	−0.02529	−0.00626	0.005944	1.83594

Table 2 presents univariate correlations for the aggregate sample with Pearson (Spearman) correlations reported below (above) the diagonal.

Table 2. Correlation Matrix

	totalcomp	so	inst	idrto	eps	ln_TA	setsubi	lev	aveq	pbr	ctrdummy	taxlosscarry	etr	current_etr	mpbt
totalcomp	1	0.0821	-0.3187	-0.0903	0.0774	-0.5413	-0.0781	-0.1007	-0.0075	0.0073	-0.0728	-0.1122	0.0557	0.0632	-0.1236
so	0.1672	1	0.0602	0.142	0.0991	-0.1562	0.0624	-0.067	0.2196	0.2243	-0.0164	0.132	-0.0444	-0.019	-0.1381
inst	-0.2198	0.073	1	0.0952	0.2031	0.6659	0.2068	-0.1097	0.2621	0.2841	0.0461	-0.0387	0.0308	0.0861	0.1259
idrto	0.0039	0.1663	0.1067	1	0.0026	0.047	0.0432	0.0047	0.1513	0.154	0.046	0.1121	-0.056	-0.0464	-0.0154
eps	0.0446	-0.0217	0.0041	-0.0181	1	0.0341	0.155	-0.0406	0.2348	0.2575	-0.0242	-0.4196	0.28	0.4322	0.3454
ln_TA	-0.5176	-0.1387	0.6509	0.0333	-0.0235	1	0.1643	0.1385	0.0839	0.0663	0.074	-0.0122	0.0527	0.0558	0.2301
setsubi	0.0724	0.0553	0.0612	0.0283	0.0161	-0.0179	1	0.0915	0.1979	0.2141	-0.0186	-0.0822	0.084	0.1155	0.0274
lev	0.0196	-0.0179	-0.0079	0.0114	0.0184	0.0116	0.6887	1	0.2216	0.1244	0.0578	0.1037	0.0225	0.0313	0.0095
aveq	0.1607	0.2072	0.1454	0.1193	0.004	-0.0701	0.0782	0.01	1	0.9408	0.0234	0.0419	-0.0203	0.06	-0.0016
pbr	0.0945	0.1014	0.0416	0.057	-0.0072	-0.0532	0.0545	0.029	0.3744	1	0.0232	0.0173	0.0024	0.0796	0.0204
ctrdummy	-0.0257	-0.0164	0.0491	0.0423	-0.0035	0.0846	-0.0107	0.0183	-0.0052	-0.002	1	0.0835	-0.0411	-0.0316	0.0475
taxlosscarry	0.1767	0.079	-0.07	0.0637	-0.0297	-0.1555	0.0416	0.0196	0.0999	0.1006	0.0428	1	-0.385	-0.4483	-0.1195
etr	-0.0427	-0.0516	0.0605	-0.0662	0.073	0.0997	0.032	0.0058	-0.0077	-0.0433	-0.0297	-0.1626	1	0.704	0.0427
current_etr	-0.0105	-0.0214	0.0855	-0.0564	0.0937	0.0819	0.049	0.0163	0.0271	-0.0253	-0.0235	-0.1499	0.7024	1	-0.1172
mpbt	-0.2507	-0.148	0.0974	-0.082	0.1327	0.2087	-0.037	-0.0731	-0.1827	-0.1162	0.021	-0.2621	0.2053	0.13461	1

Table 2 exhibits the correlation among test variables. Note the positive association between total compensation and the indicator variable regarding adoption of stock options. This indicator variable for the introduction of stock options also negatively relates to my tax measures. This result implies that lower tax rate firms adopt stock options because of their attitude toward tax aggressiveness. However, according to Table 2, no serious correlation among variables is visible.

4.2 Results for 2SLS estimations

I predict that the risk incentive effect associated with stock option compensation motivates managers to increase the firm's stock return by undertaking risky projects, including risky tax strategies. I evaluate H1 by solving a two-equation system of equations, with risky tax avoidance and equity risk incentives as the endogenous dependent variables. I estimate that the coefficients of *TAX* in

the tax risk regression indicators of ETR, Cash_ETR, and MPBT are positive and significant.

Table 3 shows the results for the estimated system of equations based on the CEO sample, indicating that the coefficients of *TAX* are all significant in the predicted sign, consistent with equity risk incentives motivating CEOs to undertake risky tax strategies. This result implies that risky projects related to tax payments encourage firms to boost CEO compensation. The result in Table 3 supports H1, suggesting that CEO equity risk incentives cause managers to avoid more income taxes; however, greater tax avoidance is not necessarily associated with higher CEO equity risk incentives. The result in Table 3 reflects the fact that a system of performance-based payment for CEOs is introduced to a number of Japanese firms.

Table 3. Results for 2SLS Regressions for CEO Compensation Sample

Total_comp	Coef.	z	Coef.	z	Coef.	z
ETR	−0.0424	−10.64***				
Cash_ETR			−0.0451	−10.21***		
MPBT					0.2582	5.39***
SO	0.0014	4.48***	0.0016	5***	0.0037	4.04***
Inst	0.0002	14.03***	0.0002	15.74***	0.0001	4.61***
Idrto	−0.0001	−5.73***	−0.0001	−5.77***	0.0000	−0.74
eps	0.0000	8.23***	0.0000	8.85***	0.0000	−4.22***
ln_TA	−0.0056	−44.49***	−0.0058	−47.53***	−0.0088	−22.23***
Setsubi	0.0153	7.1***	0.0165	7.35***	−0.0059	−1.33
Lev	−0.0006	−2.4**	−0.0005	−2.16**	0.0030	4.04***
aveq	0.0021	9.99***	0.0023	10.43***	0.0021	5.38***
PBR	0.0000	−0.35	0.0000	−0.21	0.0002	3.42***
_cons	0.0755	53.19***	0.0774	48.74***	0.0979	22.59***
Observations	16895		16895		16922	
Adjusted R^2	0.1434		0.1228		0.014	

Analyzing the relationship between corporate governance factors (CG) and compensation determinations, the coefficients of *Inst* and *Idrto* are significant with the predicted signs (In addition, the coefficients of SO is significant and this suggests adoption of stock option is positively associated with the CEO payment in general, therefore, this result suggests that stock option compensation scheme motivates the management to increase their efforts for performance improvement), indicating that smaller firms (*ln_TA*) with more institutional investors (*Inst*), greater current period investment activities (*Setsubi*), and high growth opportunities (*aveq*) provide CEOs with more compensation, consistent with the outside governance function hypothesis. Moreover, smaller firms (*ln_TA*) with more outside directors on their boards of directors provide CEOs with less compensation, suggesting that more institutional investors motivate management to boost their performance, and more outside directors restrain them from overpayment. From the management control perspective, it seems that outside directors play the moderate role of controlling management's arbitrary activities through the compensation scheme.

Nonetheless, some coefficients of control variables are not significant for this regression. Equations (1) and (2) weakly suggest that management compensation reflects the circumstances of corporate governance in firms.

5 Supplemental analysis

5.1 Model development

As previously mentioned, a tax risk incentive motivates managers to increase their compensation. However, previous research does not reveal that a tax risk incentive impacts corporate governance structure. Thus, I predict that in tax aggressive firms that undertake risky tax projects, executive compensation is significantly associated with the extent of corporate governance, based on H2 and H3 (Rego and Wilson [2012]).

To test H3, I interact *Inst* or *Idrto* with the tax aggressiveness level, and compute the following model:

$$Total\ compi=\alpha_0+\alpha_1\ TAXi+\alpha_2 SOi+\alpha_3 Insti+\alpha_4+\alpha_{10} d\_TAXi+\alpha_{11} d\_TAXi*Insti+\alpha_{12} d\_TAXi*Idrtoi+\varepsilon i Idrtoi+\alpha_5\ epsi+\alpha_6\ Ln\_TAi+\alpha_7\ Setsubii+\alpha_8\ levi+\alpha_9 \sum Marketi \quad (3)$$

I investigate the interaction among tax aggressiveness, strength of corporate governance, and determination of executive compensation. To examine whether certain firms take risky tax positions, I set *d_TAX* as an indicator variable that takes 1 when their tax positions are below average and 0 otherwise (To observe the magnitude of tax aggressiveness, only ETR and Current_ETR are chosen as tax risk variables, because I hope to see comparable results). The variable definitions are the same as previously defined.

In terms of governance variables, Carcello et al. (2002) recognize that the association between audit fees and board characteristics, such as independence (percentage of non-management board members), diligence (number of board meetings), and expertise (average number of outside directorships in other firms held by outside directors) could be either positive or negative. Moreover, they posit a counterargument that more independent, diligent, and expert stakeholders could reduce the auditor's assessment of control risk and the extent of audit procedures performed. They posit that a vigilant, independent board may place higher expectations on the auditor, demanding a high-quality audit. Thus, I focus on the number of independent directors and rigorous outside institutional investors.

This research setting adopts 2SLS estimation to clarify the association, requiring each equation in this system to have at least one unique instrument that is not related to other endogenous variables. I select *Ctrdummy* and *Taxlosscarryforward* as instrumental variables in equations (3) and (1) because these variables should exhibit little if any correlation with the other endogenous variables in our system of equations.

5.2 Results for supplemental analysis

Table 4 reports the results of equation (3) for the panel data model.

Table 4. Results for 2SLS Regressions for Tax Aggressive Samples

	(1)		(2)		(3)		(4)	
Total_comp	Coef.	z	Coef.	z	Coef.	z	Coef.	z
ETR	−0.173	−4.69***	−0.207	−3.49***				
Cash_ETR					−0.187	−4.77***	−0.236	−4.03***
So	0.003	5.13***	0.003	4.68***	0.003	4.96***	0.003	4.5***
Inst	0.000	2.38**	0.000	−2.21**	0.000	3.15***	0.000	−2.67***
Idrto	0.000	−1.6	0.000	−2.23**	0.000	−0.11	0.000	−1.66*
ln_tat1	−0.004	−9.25***	−0.004	−6.27***	−0.004	−10.65***	−0.004	−7.37***
Setsubi	0.008	2.38**	0.006	1.45	0.008	2.27**	0.006	1.5
Lev	0.000	0.35	0.000	0.89	0.001	1.43	0.001	1.7*
PBR	0.000	−0.2	0.000	−0.12	0.000	−0.17	0.000	−0.29
aveq	0.000	0.92	0.000	0.84	0.001	1.24	0.001	1.18
eps	0.000	3.34***	0.000	2.57**	0.000	4.33***	0.000	3.61***
d_ETR	−0.068	−4.74***	−0.094	−3.54***				
d_Cash_ETR					−0.076	−4.83***	−0.108	−4.1***
d_ETR*Idrto	0.000	−0.31						
d_ETR*Inst			0.001	3.66***				
d_Cash_ETR*Idrto					0.000	−1.47		
d_Cash_ETR*Inst							0.001	4.37***
_cons	0.137	9.07***	0.157	6.06***	0.146	8.73***	0.174	6.54***
observations	16895		16895		16895		16895	
adjusted R^2	0.0294		0.0331		0.03155		0.03755	

In sum, the results in Table 4 provide a positive relationship between equity risk incentives and risky tax avoidance that systematically varies by strength of corporate governance. Aggressive tax avoidance is assumed as a highly risky project; therefore, it is reflected as a positive NPV project. Thus, a coefficient of these proxies consistently shows a positive relationship with determination of executive compensation. This result indicates that the coefficients of *d_TAX* are significant.

While the extent of tax aggressiveness is significantly positively and negatively related to determination of executive compensation, strength of corporate governance structure is weakly associated with executive compensation, not all being significant, and with the predicted sign. In

short, I find that the percentage of shareholdings by institutional investors (*Inst*) is significantly positively associated with the amount of executive compensation because of stress from outside monitoring, while the number of outside directors (*Idrto*) is not necessarily associated with constraints of executives' overpayment.

Overall, the results in Tables 3 and 4 provide a strong basis for my prediction that equity risk incentives motivate top executives to increase or decrease their compensation by undertaking risky tax strategies. Specifically, institutional investors play an important role in monitoring management, although outside directors on the board of directors play a limited role in corporate governance. In sum, firms with risky tax incentives have more institutional investors, consistent with the theory of Desai and Dharmapala [2006, 2009].

6 Conclusions

This article investigates whether executive compensation of tax aggressive firms reflects their risky attitude. In this respect, despite the increase in aggressive tax shelter strategies during the 1990s and early 2000s in Japan, little is known about the relationship (if any) between CEO compensation practices and aggressive tax avoidance. Based on Guay's [1999] theory of equity risk incentives, it is predicted that equity risk incentives motivate managers to undertake risky tax strategies. Three existing measures of tax avoidance are used (ETR, Current_ETR, and MPBT). To evaluate the relationship between tax aggressiveness and executive compensation, I apply 2SLSs to control for the risk sensitivity of tax aggressiveness.

These results consistently indicate that greater equity risk incentives are associated with higher tax risk. These findings are robust to alternate tax aggressive measures. I find little evidence that the relationship between equity risk incentives and risky tax avoidance varies by strength of corporate governance because the association between tax aggressive attitudes and the roles of outside directors is still unclear despite my research. Overall, I suggest that equity risk incentives induce managers to undertake risky tax strategies in an effort to increase CEO compensation, and thus the value of their option portfolios.

This study follows previous researches that investigate whether equity risk incentives motivate managers to undertake risky projects, including investment decisions (Guay [1999]; Rajgopal and Shevlin [2002]). Moreover, it extends studies that investigate the relationship between ETR, tax sheltering, and executive compensation practices (Phillips [2003]; Desai and Dharmapala [2006]; Armstrong et al. [2010]) in Japan. My results suggest the need for future research that directly investigates whether tax avoidance is conducive to managers extracting rents from the firm. But the theory of rent extraction based on the results in Table 4 posited by Desai and Dharmapala (2006) does not seem applicable in the Japanese context.

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Appendix A. Proxy for tax risk variables

ETR is defined as total tax expense divided by pre-tax income. Subscripts *i* and *t* represent a firm and a year, respectively.

$$ETR_{i,t} = \frac{\text{Total Tax Expense}_{i,t}}{\text{Pretax Income}_{i,t}} \quad (1)$$

Cash_ETR is defined as current tax expense divided by pre-tax income.

$$Current\_ETR_{i,t} = \frac{\text{Current Tax Expense}_{i,t}}{\text{Pretax Income}_{i,t}} \quad (2)$$

ETR and Cash_ETR are set as missing when the denominator is 0 or negative, and are truncated to 0 when the calculation result is 0 or negative, or 1 when it is 1 or more.

MPBT is defined as the difference between pre-tax book income and taxable income divided by the beginning-of-the-year total assets.

$$MPBT_{i,t} = \frac{\text{Pretax Income}_{i,t} - \text{Taxable Income}_{i,t}}{\text{Total Assets}_{i,t-1}} \quad (3)$$

HOW DID EXPORT ACTIVITY AFFECT SMALL BUSINESS ACCESS TO BANK CAPITALS DURING THE GLOBAL CRISIS?

Ramzi Benkraiem*, Anthony Miloudi**

Abstract

This article aims at studying the effect of export activity, viewed as a way of estimating small business internationalization, on access to bank capitals during the recent global crisis. The empirical analysis leads to several interesting results. In particular, the existence and intensity of exports are negatively related to bank capitals, demonstrating the difficulties of small businesses to rely on financial leverage when they wish to explore new markets. Conversely, indicators of solvency and liquidity are positively related to this same source of financing. They are more important than those of profitability and growth opportunities in explaining the financial leverage level, attesting the primary need of small businesses to provide sufficient guarantees when they wish to incur new bank loans in times of crisis. These findings may interest policy makers, financiers and researchers and contribute to enriching the debate on the relationship between small business internationalization and access to leverage.

Keywords: Bank Capitals; Internationalization; Export Activity; Small Businesses; Global Crisis

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1. Introduction

Small and medium-sized enterprises (SMEs) are key players in the European Union (EU) economy in terms of their contribution to growth and innovation. One of the vectors for SME growth and sustainability is opening internationally (Lee et al., 2012). The survey conducted in 2008 by the European SME Observatory on the theme of European firm internationalization provides us with two interesting results. The first concerns the export activity rate, traditionally considered as a relevant criterion for measuring a firm degree of internationalization (Pacitto, 2006). Less than one in ten SMEs exports within the EU. Indeed, SMEs in some of the larger EU countries are relatively uninterested in cross-border trade (Spain 3%, France 6%, and Italy 7%). The second observation concerns their international presence. Only 5% of European SMEs have reported having at least one subsidiary or joint venture abroad. Consequently, it seems that the vast majority of SMEs rarely reach this advanced stage of internationalization, clearly satisfied with simple export strategies especially in times of crisis. Several barriers to internationalization are frequently put forth by researchers and practitioners to explain this situation. Indeed, the internationalization process requires adapting the firm business model. This strategic development requires applying knowledge regarding the new targeted markets and deploying new (particularly financial) resources. In this direction, Hollenstein (2005) argues that the desire to go international for SMEs is likely to condition their access to various financing sources. Therefore, in their internationalization projects, SMEs are dependent on capital providers, particularly banks which are both the primary financial backers and the informed partners, notably regarding the international risk management (Beck et al., 2008; Benkraiem and Gurau, 2011).

Both theoretical (Chaney, 2005; Manova, 2012) and empirical (Greenaway et al 2007; Bridges and Guariglia, 2008; Bellone et al., 2010; Silva, 2011; Minetti and Zhu, 2011) previous research has taken an interest in studying the relationship between internationalization and financial constraints. The conclusions of previous papers mainly before the recent crisis occurrence seem quite mixed. An initial category of studies suggests that exporting reduces financial constraints borne by firms and facilitates their access to financing. Exporting acts as an element of risk reduction by diversifying customers (Bridges and Guariglia, 2008). It sends a positive signal in terms of efficiency and competitiveness translating into better financial performance (Urionabarrenetxea and Castellanos, 2010). Opening to international markets is perceived as a factor that reduces information asymmetry (Ganesh-Kumar et al, 2001). In contrast, a second category of studies leads to opposing conclusions. For example, Chaney (2005)

argues that a firm wishing to export faces substantial related fixed costs. These costs are likely to aggravate difficulties of accessing financial resources. In the end, only firms that have sufficient internal financial resources may be able to export.

Therefore, SME internationalization appears to be a key determinant of access to bank loans. In this context, this article aims at studying the relationship between access to bank loans and a set of economic and financial variables in a sample of 1,655 observations of French SMEs during the recent crisis period, i.e. from 2008 to 2011. Among these relationships, we specifically focus on the link between SME internationalization and the access to bank loans. To do so, we consider that the main form of SME internationalization concerns the export activity (Pacitto, 2006). Indeed, it seems difficult for small businesses to open up to international markets considering other forms of internationalization (joint venture, establishing subsidiaries abroad, etc.) because they do not have sufficient financial and human resources. Consequently, we intend to analyze the relationship between export activity viewed as a way of estimating SME internationalization and bank financing.

This paper contributes to the existing literature mainly in two respects. First, it extends previous research by investigating the specific case of SMEs in a European context, i.e. France, during the recent global crisis, i.e. from 2008 to 2011. Second, it deepens the analysis by focusing on a particular source of funding: bank loans which constitute a major source of external financing for SMEs (Beck et al, 2008; Benkraiem and Gurau, 2011). Our research deploys an econometric methodology providing for directly testing the relationship between exports and bank financing, integrating an additional set of control variables (solvency, liquidity, profitability and growth opportunities).

The empirical analysis leads to several interesting results. In particular, the existence and intensity of exports are negatively related to bank capitals, demonstrating the difficulties of small businesses to rely on financial leverage when they wish to explore new markets. Conversely, indicators of solvency and liquidity are positively related to this same source of financing. They are more important than those of profitability and growth in explaining the financial leverage level, attesting the primary need of small businesses to provide sufficient guarantees when they wish to incur new loans in times of crisis.

The remainder of this paper consists of four sections. Section 2 presents the theoretical framework. Section 3 explains the methodology. Section 4 presents and discusses the results and Section 5 serves as a conclusion.

2. Theoretical Framework

2.1. SME access to bank loans during the global crisis

One of the primary roles of a commercial bank is to grant loans to firms, particularly the smallest among them, SMEs. Various types of resources are offered by these credit institutions according to the investment project nature and characteristics in terms of risk, cost, and duration. Long-term loans are typically granted to finance fixed assets, while short-term loans are used to finance increased working capital requirements. When firms suffer from insufficient cash flows, the bank may grant overdrafts at higher interest rates, reflecting the increased risk. Whatever the debt maturity, the bank establishes a strict process for granting loans based on the collected information regarding the nature of investment, the level of risk, etc. All this information allows the credit institution to assess the firm creditworthiness, i.e. the ability to honor its commitments. Consequently, banks often ask corporate managers for a series of documents reflecting the firm past, present and future activity (tax returns, off balance sheet items, financial prospects, etc.) in order to conduct a meaningful assessment of the project risk/return ratio. Several authors such as Beck et al. (2008) and Benkraiem and Gurau (2011) emphasize the uniqueness and importance of this type of financing in reducing the asymmetry of information between the various parties. Banks, through their resources and means, have the ability to access internal corporate information and therefore limit manager informational advantage specified by agency theory (Jensen, 1986). These arguments help understanding why banks are one of the primary financial backers for SMEs. Nevertheless, in practice, even though banks are more effective auditors than other capital providers (Foe example, individual investors), they may encounter difficulties implementing such audits, especially in times of crisis.

In a context of crisis, the accentuation of SME difficulties to rely on financial leverage could be mainly explained by two factors: the unfavorable evolution of credit supply and demand mechanisms and the aggravation of firm default risk. According to the Bank of France (2012, Bulletin No. 188), the 2008 global crisis has led for most of the European countries, including France to a slowdown in funding approval and disbursement to applicant businesses. The annual growth rate of credits has significantly decreased during the crisis period. This rate fell brutally to become negative for certain categories of firms, primarily SMEs. Despite a slower deceleration of credits granted to firms in France in comparison with some other European countries, the situation reflects a sharp deterioration in access to loans.

Credit institutions, particularly banks which have accepted high levels of firm risk before the

crisis, experienced substantial losses during the economic downturn. Henceforth, these losses forced them to reduce their lending activity until restoring a proportion of equity considered as sufficient in the meaning of Basle standards. Following the crisis, credit institutions have therefore tried to reduce their exposure to risk by reducing the availability of credit or restricting its access. Consequently, the 2008 global crisis appears to aggravate the financing conditions of SMEs, deemed risky by nature. Moreover, it simultaneously worsens their default risk. In this regard, Fougère et al. (2012) investigate the effect of the 2008 financial crisis on firm failures in the French context. They base their analysis on a wide sample of firms created between January 1, 2000 and December 31, 2007. First, they note that failures of companies during the period 2008 to 2010 were preceded by an increase in business creations during the period 2003 to 2004. Therefore, they decide to distinguish among the failures from 2008 to 2010, those arising from the global crisis of those resulting mechanically from the business demography since many disappear during their first years of existence. This distinction is interesting because it allows identifying and isolating the only impact of the financial crisis. Finally, they find significant proportions of crisis-related failures. These proportions vary according to the industry and amount to 27% in the retail trade sector, 35% in the transport sector, 43% in the manufacturing sector and 46% in the construction sector. Hence, these difficulties to rely on financial leverage during the global crisis are likely to intensify the effect of internationalization studied through exporting activity on small business access to bank capitals.

2.2. The effect of export activity on access to bank capitals

Exploring new international markets requires additional sources of financing. In this regard, banks seem to be firm preferred partners. In addition to providing funds required for export projects, banks guarantee the smooth running of business operations by pledging compensation to foreign buyers should the exporter fail in its obligations. The conclusions provided so far by the theoretical and empirical literature regarding the relationship between export activity and access to financial resources seem mitigated. Particularly, little is known about this relationship for small businesses during the recent crisis period.

An initial category of studies suggests that export activity reduces financial constraints borne by firms and facilitates access to bank financing. At this level, two main reasons are usually put forth. First, exporting reduces risk by diversifying customers. Second, exporting sends a positive signal in terms of efficiency and competitiveness supposedly translating into a better financial performance (Urionabarrenetxea and Castellanos, 2010). Empirically, Campa and Shaver (2002) examine the relationship between firm ability to export and financial constraints. Their analysis is based on a sample of Spanish enterprises. This sample is divided into two groups according to the existence or absence of an export activity during the studied period. Their results demonstrate that the group of non-exporting firms faces relatively severe financial constraints. More recently, Greenaway et al. (2007) find that English exporting firms have a comparative advantage in terms of access to financial resources compared to non-exporters. Also in this direction, Bridges and Guariglia (2008) point out that firm internationalization may reduce the cost of financial constraints. Exporting firms appear to have an easier time obtaining financing funds. Therefore, exporting appears reducing the information asymmetry between borrowers and capital providers to the extent that exporting is seen as a guarantee of firm efficiency. Moreover, opening to international markets provides for diversifying the exporting firm sales, which tends to reduce business vulnerability. The virtues attributed to exporting should, according to this first point of view, result in a positive relationship between the ability to export and access to bank loans during the recent global crisis period, i.e. in times of high uncertainty. This reasoning leads to the first following hypothesis:

H1a: The export activity is positively related to access to bank loans during the global crisis.

A second category of studies highlights the difficulties faced by SMEs when opening to international markets. Several hindrances are discussed such as the rigidity of the labor market, the unsuitable governance models, and the lack of financial resources. The theoretical studies of Chaney (2005) and Manova (2012) analyze, among other things, the financial implications of firm export decisions. They lead to two essential conclusions. First, a firm wishing to export faces fixed costs associated with exporting. This implies that in order to become an exporter, the firm must have sufficient internal resources. Otherwise, the company must turn to external financing sources. Those who are facing difficulties raising funds will be hampered in their efforts to export. Only businesses that have sufficient liquidity may be able to open up to international markets. Second, the firm cannot fully guarantee to its financial backers a return on investment associated with revenues from exports. In this regard, Chaney (2005) argues that it is not always easy, both for the firm and for the bank to obtain specific information about foreign markets. In addition, export activity does not offer any contractual guarantee to lenders. This translates, in the case of non-repayment, into difficulties for creditors to seize firm revenues from foreign markets. All of the above arguments are consistent with limited access to bank loans associated with exports. Empirically, Minetti and Zhu

(2011) demonstrate, based on a sample of 4,680 Italian firms, that small firms have a lower probability of exporting than large corporations. This is due to the fact that large firms are not highly affected by bank financing access problems. Silva (2011) arrives at similar results for a sample of 4,500 Portuguese firms over the period 1996-2003. The difficulties of small businesses in accessing financing capitals posed by exports should, according to this second point of view, lead to anticipating a negative relationship between export activity and access to bank loans during the recent global crisis period. This reasoning results in the alternative following hypothesis:

H1b: The export activity is negatively related to access to bank loans during the global crisis.

3. Methodology

3.1. Data Collection

Table 1 summarizes the sample selection. The financial information used in this article is available on DIANE, which is managed and commercialized by Van Dijk Electronic Publishing Office. This database provides financial information of French firms listed on the Euronext Paris stock exchange. In this study, the initial sample is composed of all non-financial French SMEs available on DIANE over the four-year period between 2008 and 2011. Financial, insurance and holding firms (65.00-70.99 and 74.15 NACE codes (The NACE code is a European industry classification chart which is comparable to the US or UK SIC)) are excluded because of their specific accounting rules. The studied period is of a particular importance. It offers the possibility to study the effect of small business internationalization through export activity on access to bank capitals during the recent global crisis. The initial sample represents 1,766 SME-years. Then, 111 observations have been eliminated because of insufficient data. Hence, the final sample consists of 1,655 small business-years employing less than 250 people, with sales under €50 million, and whose balance sheet does not exceed €43 million (European Commission criteria).

Table 1. Sample selection

Panel A: Selection Procedure	SME-years
Non-financial firms or similar (2008-2011)	1,766
- Firms with missing information or undergoing reorganization proceedings	- 111
Final sample	1,655
Panel B: Distribution by Year	
2011	343
2010	415
2009	438
2008	459
Total	1,655

3.2. Regression specification

For the purposes of our study, we use a fixed effect regression model controlling for heteroskedasticity. This model provides for studying the influence of export activity on small business access to bank loans. Evidently, it takes into account other control variables inspired by previous studies (Cassar and Holmes, 2003; Benkraiem and Gurau, 2011 etc.) and related to solvency, liquidity, profitability and growth opportunities (see descriptions and explanations of variables below).

$$BL_{it} = \alpha_0 + \alpha_1 SI_{it} + \alpha_2 TA_{it} + \alpha_3 PR_{it} + \alpha_4 GO_{it} + \alpha_5 LI_{it} + \alpha_6 EXE\ [or\ EXI]_{it} + \lambda + \mu + \nu + \varepsilon_{it}$$

The dependent variable is, for each small business *i*, year *t*, defined as follows:

- BL = Bank loans divided by total assets.

The independent variables are, for each small business *i*, year *t*, defined as follows:

- SI = Ln (total assets);
- TA = Fixed tangible assets divided by total assets;
- PR = Profitability, Return on assets (ROA);
- GO = Growth opportunities, Tobin's Q = firm capital market value / accounting value);
- LI = Liquidity, current ratio = current assets / current liabilities;
- EXE = Exporting existence measured by a binary variable (1 if the SME exports, 0 otherwise);
- EXI = Exporting intensity measured by a continuous variable (exports / sales);
- λ = A set of dichotomous variables controlling for time effect of each year of the studied period;
- μ = A set of dichotomous variables controlling for industry effect (at NACE 2-digit level);
- ν = Individual effect of each firm in the sample;
- ε = Error term.

Regarding the independent variables, two measurements of the export activity are introduced at the end of the model in order to highlight them. In this study, we consider that exporting is the main form of internationalization for SMEs. Indeed, it seems difficult for these firms to open up to international markets considering other forms of internationalization as they generally do not have sufficient resources. For the first measurement, the binary variable (EXE) takes the value 1 if the SME is an exporter and 0 otherwise. For the second measurement, the export ratio (EXI) is calculated as the ratio between the value of exports and firm total sales. These two measurements are complementary, as they allow us to study the effects of the existence and intensity of export activity on access to bank loans. As stated above, the conclusions of previous studies seem quite mixed. Some of them suggest that exports reduce the financial constraints borne by enterprises (Bridges and Guariglia, 2008; Ganesh-Kumar et al, 2001). While others go in the opposite direction and argue that only firms with sufficient internal financial resources may be able to export. Therefore, both an alternately positive and negative link is expected between bank loans and exports.

Additionally, it is generally established in the empirical literature that informational issues are more important for SMEs (Cleary, 2006, Beck et al, 2005 and 2006). Therefore, bank lending may be conditioned by firm size (Sheikh and Wang, 2011). Indeed, size may constitute an approximation of information quality held by financial backers. As well, creditors require guarantees that take the form of pledges on firm tangible assets. These assets may be sold by creditors in the event of insolvency. Therefore, the composition of firm total assets may be considered as a significant driver of the financial leverage ratio. Accordingly, at this stage, the selected variables are the logarithm of total assets (TA), used as a factor limiting financial constraints, and asset tangibility (TN), measured as the ratio of fixed tangible assets divided by total assets (Bellone et al., 2010; Silva, 2011). The latter serves as physical collateral and allows banks to cover, in whole or in part, the eventual risk of the borrower filing for bankruptcy. Indeed, asset tangibility may increase the firm liquidation value thereby reducing the risk for creditors. In this respect, Manova (2012) uses the tangibility variable to estimate financial strength. A positive relationship is expected between bank loans and, at the same time, the firm size and asset tangibility.

SMEs with high profitability, in principle, have a low risk of bankruptcy, which is supposed to facilitate their access to bank financing (Storey, 1994). According to Ooi (2000), profitable firms are more attractive to banks. We approximate SME profitability with return on assets (Cassar and Holems, 2003). A positive relationship is expected between bank loans and SME profitability.

The firm growth opportunities (GO) play a role in bank lending. Following Gugler et al. (2004), we measure the growth opportunities using Tobin's Q ratio for our sample of listed SMEs. In this manner, we take into consideration the importance of creating value perceived by shareholders. Tobin's Q is relevant because it is a measurement of future opportunities. It is defined as the ratio between firm capital market value and accounting value. An average of this ratio > 1 means that the firm is showing strong growth opportunities, and vice versa. A high level of this ratio may reveal significant financing needs. In France, Aubier and Cherbonnier (2007) argue that SME access to bank loans for financing their growth is problematic, especially for the smallest firms. Empirically, Benkraiem and Gurau (2011) find a negative relationship between bank loans and growth opportunities. Consequently, a negative relationship is expected between these variables.

Finally, in our regression model we introduce a liquidity variable (LR). This variable is interpreted as a ratio of the capacity for covering short-term liabilities – inherently quickly payable – with current assets. This ratio reflects firm predisposition to fulfill its impending obligations with respect to its creditors with short-term assets such as cash holdings (Greenavay et al., 2007 and Silva, 2011). A positive relationship is expected between bank loans and liquidity.

4. Empirical results

4.1. Descriptive Statistics

Table 2, presented below, describes the descriptive statistics for the different variables. The dependent variable is composed of bank loans. This variable shows an average 41.1% of total assets. The average level of bank loans for SMEs in our sample is comparable to that obtained by Degryse et al. (2012) for a sample of Dutch SMEs. This average varies from 8.8% to 71.4% of total assets depending on the reference quartile, marking a disparity between firms in terms of access to bank financing.

Regarding the independent export variables, i.e. EXE and EXI, we obtain for the first an average of 50.1%. Because this variable is binary, the average is analyzed as a frequency. Therefore, more than half of our sample of SMEs has export activities. We find for the second variable an export percentage of 15.1% for all firms. This percentage is up to 20% for firms with the most important export ratios. The firm size (TA) measured by the logarithm of total assets, reports an average of more than 10. Asset Tangibility (TN) is, on average, greater than 6%. Profitability (PR) reflects an average of -1.8%. Nevertheless, this average is around 7% for the third quartile. Growth opportunities (GO), as measured by Tobin's Q, has an average of 1.081. This value is greater than 1, indicating that, on

average, French SMEs have high growth opportunities. The liquidity (LI) ratio shows an average of 5.6. Firms in our sample appear to be able to honor their commitments to their creditors. Nevertheless, the standard deviations observed for this variable is high, making it necessary to pay special attention to the value of these ratios by quartile. The wide disparity in values for liquidity indicates that a large proportion of SMEs in our sample appear to be facing solvency issues. A current ratio < 3 is traditionally regarded by analysts as critical. These results corroborate a significant disparity in average bank debt levels obtained by quartile.

Table 2. Descriptive statistics for the dependent and independent variables

Variables	Average	Standard Deviation	Quartile		
			25	50	75
BD	0.411	0.337	0.088	0.351	0.714
SI	10.337	1.946	9.051	10.048	11.283
TA	0.061	0.131	0.003	0.015	0.056
PR	-0.018	0.277	-0.017	0.026	0.070
GO	1.081	2.314	0.338	0.657	1.280
LI	5.697	15.766	1.461	2.453	4.708
EXE	0.501	0.500	0.000	1.000	1.000
EXI (%)	15.100	0.257	0.000	0.017	19.800

Table 3 presents the Pearson correlation matrix between the independent variables. It allows us to investigate a possible degree of multicolinearity between these variables. As expected, it shows certain statistically significant correlations. In particular, firm size is negatively and significantly related to asset tangibility. Also, size is positively and significantly related to the liquidity ratio, which shows that firms whose asset size is important are those that easily honor their commitments to their creditors. Overall, the correlation coefficients do not seem high enough to cause problems of multicolinearity.

Table 3. Pearson correlations between independent variables

	SI	TA	PR	GO	LI	EXE	EXI
SI	1	-0.146	0.136	-0.070	0.280	-0.269	-0.120
		(0.000)	(0.000)	(0.016)	(0.000)	(0.000)	(0.000)
TA		**1**	0.005	-0.022	-0.084	0.020	0.041
			(0.840)	(0.457)	(0.001)	(0.423)	(0.092)
PR			**1**	-0.038	0.059	0.028	-0.035
				(0.185)	(0.017)	(0.257)	(0.153)
GO				**1**	-0.001	-0.010	0.035
					(0.985)	(0.720)	(0.234)
LI					**1**	-0.138	-0.069
						(0.000)	(0.005)
EXE						**1**	0.602
							(0.000)
EXI							**1**

4.2. Regression Analysis

Table 4 presents the empirical results of our fixed effect regression model controlling for heteroskedasticity. The three specifications for this model present adjusted R^2 ranging from 34.50% to 35.60%.

The initial result to be highlighted is the negative correlation between export activity and bank loans. Variable EXE shows a negative and significant regression coefficient at the 1% level. Exporting SMEs appear to have more difficulty accessing bank loans than non-exporters. Coherently, variable EXI shows a negative and significant regression coefficient at the 1% level. The more intense export activity is, the more SMEs have difficulties to rely on bank financing. Overall, these results are consistent with studies connecting export activity to the existence of financial constraints (Bellone et al, 2010; Silva, 2011; Minetti and Zhu, 2011). Thus, the findings validate our second hypothesis. They demonstrate that costs associated with exporting make access to bank loans difficult in France. Indeed, banks seem to feel they cannot gather enough information regarding firm guarantees and international markets (Chaney, 2005). Simultaneously, a small business cannot guarantee a return on investment from export projects, i.e. the share of its operating income from

exports. All these constraints generate a high risk associated with export activity. Banks are reluctant to finance such projects. In other words, the observed negative relationship between export activity and bank loans highlights SME difficulties in financing their investment projects when they want to open to international markets. Overall, these results reveal that the existence and intensity of firm internationalization are negatively related to financial leverage, demonstrating the difficulties of small businesses to rely on bank loans when they wish to explore new markets.

Furthermore, we obtain a positive relationship between firm size (TA) and bank loans. This finding is coherent with that of previous empirical studies on SMEs (Degryse et al, 2012; Bougheas et al, 2006). Effectively, a high accounting value of the firm measured by its total assets provide creditors an interesting reimbursement guarantee with respect to an asset-based approach to solvency. This variable behaves as an approximation of physical guarantees available for creditors. The explanation of this phenomenon can be found in bank perception of project risk. Banks are more inclined to finance tangible asset renewal or growth projects than projects aimed at establishing an R&D process or purchasing a patent. Consistently, asset tangibility (TA) positively affects bank loans for French SMEs. This result is consistent with that obtained for the size variable. The presence of collateral is an important factor for SME access to external financing resources. These physical guarantees help decrease information asymmetries between a firm and its creditors (Steijvers and Voordeckers, 2009). Their presence also provides for reducing exposure to bankruptcy risk for banks. Likewise, the liquidity ratio (LR) is positively correlated with bank debt. This result, in line with our expectations, demonstrates that a positive value of this ratio reflects, for creditors, the firm ability to fulfill its payable obligations.

On the other hand, we obtain negative, not always statistically significant regression coefficients for profitability (PR), measured by return on assets and growth opportunities (GO) measured by Tobin's Q. These variables, especially the profitability one, increase agency costs and impel managers not to use bank debt, or even decrease it, which would explain the obtained negative relationship. This result is consistent with that observed in France by Benkraiem and Gurau (2011). On the whole, these findings show that indicators of solvency and liquidity are positively related to bank loans. They are more important than those of profitability and growth opportunities in explaining firm financial leverage level, attesting the primary need of small businesses to provide sufficient guarantees when they wish to incur new loans in times of crisis.

Table 4. Regression results

Variables	(1) B. (P.)	(2) B. (P.)	(3) B. (P.)
Intercept	-0.667	-0.535	-.604
	(0.000)	(0.000)	(0.000)
SI	0.101	0.096	0.101
	(0.000)	(0.000)	(0.000)
TA	0.245	0.223	0.240
	(0.000)	(0.000)	(0.000)
PR	-0.058	-0.046	-0.058
	(0.092)	(0.178)	(0.091)
GO	-0.004	-0.004	-0.003
	(0.255)	(0.225)	(0.337)
LI	0.002	0.002	0.002
	(0.000)	(0.000)	(0.000)
EXE	-	-0.078	-
		(0.000)	
EXI	-		-0.117
			(0.000)
Adj. R^2	0.345	0.356	0.352
Observations	1,655	1,655	1,655
Fixed effects	Yes	Yes	Yes

The p-values in parentheses are based on standard errors that are heteroskedasticity-consistent and allow for clustering at the firm level.

5. Conclusion

Bank financing is of paramount importance for small businesses because these firms are more than large corporations, vectors for innovation and employment in Europe and particularly in France. Their growth and sustainability depend on the way they obtain financing for their growth phase, especially in times of crisis. One of the drivers of SME growth and sustainability is opening internationally. Consequently, this article goal has been to study the relationship between access to bank capitals and a set of corporate characteristics in a sample of 1,655 French SMEs over the 2008 to 2011 period, i.e. during the recent crisis period. Among the analyzed relationships, we specifically focused on the effect of export activity, viewed as a way of estimating small business internationalization, on access to bank loans. Several interesting results have to be put into perspective. In particular, the existence and intensity of export activity are negatively related to bank loans, demonstrating the difficulties of small businesses to rely on financial leverage when they wish to explore new markets. Conversely, indicators of solvency and liquidity are positively related to this same source of financing. They are more important than those of profitability and growth in explaining the financial leverage level, attesting the primary need of small businesses to provide sufficient guarantees when they wish to incur new loans in times of crisis. Given the importance of the role played by SMEs in creating added value and employment, these findings have implications for governments, researchers, and professionals in the financial arena and contribute to the debate on SME financing during the recent global crisis.

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РАЗДЕЛ 2
КОРПОРАТИВНАЯ ОТЧЕТНОСТЬ И АУДИТ

SECTION 2
CORPORATE REPORTING AND AUDIT

WHAT DETERMINES AUDIT INDEPENDENCE AND EXPERTISE IN RUSSIA? FIRM-LEVEL EVIDENCE

Ichiro Iwasaki *

Abstract

Using a unique dataset of joint-stock companies, we explore the corporate audit system in transition Russia. In comparison with companies in Western and Asian Pacific states, Russian firms have a weaker audit system in terms of the independence and expertise of the audit committee and the external auditor. Board composition, foreign investment, and affiliation with a business group are highly important factors determining audit committee composition and audit firm choice as well as a combination of the two auditing bodies. However, each of these factors has a clearly distinct impact. Moreover, empirical evidence suggests that government ownership, company size, fund procurement activities, and overseas advancement significantly affect audit independence and expertise in Russia.**

Keywords: Audit Independence and Expertise, Board Composition, Business Integration, Foreign Investment, Russia

JEL: G34, K22, L22, M42, P31, P34

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1. Introduction

In the achievement of sound company management, the role of auditing cannot be overemphasized. In fact, it has been repeatedly verified that high-quality independent auditing mitigates agency conflict between owners and managers through the

enhancement of management discipline.[22] If thorough corporate auditing is highly valued even in the developed market economies of the United States and Western Europe, the significance of well-performing audit systems is certain to increase from the viewpoint of ensuring the transparency of corporate management and the rights of shareholders in countries where security markets are undeveloped and the concentration of property rights is noteworthy (Méndez and García, 2007).

Transition economies, such as those in Russia and Central and Eastern Europe, are not exceptions. In these economies, although 20 or more years have passed since the breakdown of the Communist Bloc, their security markets and banking systems are still taking shape, and, consequently, the market for corporate control and financial institutions have limited potential influence on managerial discipline of domestic companies. Under such circumstances, there is a growing tendency in the transition economies to give more attention to the role of corporate auditing. In fact, the Russian federal government recognizes that the establishment of an effective audit system is one of the critical policy issues that will make a great contribution to improving corporate governance in Russian firms; hence, investigation into the actual state of corporate activities in this field is strongly desirable for policy makers (National Council on Corporate Governance, 2010). However, to the best of our knowledge, there have been no firm-level empirical studies of this subject, although some studies have addressed corporate auditing in Russia (Sweetman et al., 1999; Sucher and Bychkova, 2001; McGee and Preobragenskaya, 2005; Samsonova, 2007; 2009). To fill this void, in this paper, we empirically analyze the firm-level determinants of audit independence and expertise in Russia.

Besides the novelty of research, we make contributions to the auditing literature in the following manner: First, emerging markets with notably different political and economic circumstances from those of developed economies provide valuable research opportunities to redefine the significance and role of corporate auditing (Lin and Liu, 2009).[23] Moreover, studies of Russia and other former socialist transitional countries, in which government regulations on corporate governance are relatively moderate in comparison to those in developed economies and, accordingly, firms have a wide range of discretionary powers over their audit systems, are very useful for discovering the firm-level determinants of audit activities. In this paper, we examine the manner in which political and economic forces and incentives emerging in a transition economy with significantly different settings from those in advanced states influence corporate auditing.

Furthermore, with Russia as a target country, we study the factors affecting audit independence and expertise in greatly different legal settings from the U.S. and European common law countries on which the vast majority of empirical literature focuses. In Russia, the joint-stock company is the most accepted legal form of incorporation among middle-sized and large companies (Iwasaki, 2007a). According to the law, Russian joint-stock companies should establish an audit committee (*revizionnaya komissiya* in Russian) as the statutory company body of corporate auditors. Unlike in the U.S. and many other European countries, however, the Russian audit committee is not a board subcommittee comprised of members of the board of directors. In addition, Russian law prohibits board directors to concurrently hold a post in their company's audit committee. In this sense, the audit committee in Russian firms is rather closely related to the board of corporate auditors in Japan and the board of statutory auditors in Italy.[24] Therefore, we attempt to develop and empirically verify a testable hypothesis regarding the determinants of independence and expertise of the Russian audit committee, taking the above unique legal conditions into account along with specific political and economic factors in transition Russia.

In addition, in contrast to preceding studies, we examine both the audit committee and the external auditor (audit firm) in combination to provide a comprehensive assessment of the audit system in Russian corporations. Here, we deal with not only audit committee composition and audit firm choice individually but also the possible combination of these auditing bodies. To this end, using a multinomial Logit model, we propose a new empirical methodology in order to examine the determinants of comprehensive choice of the audit system by Russian firms.

The main questions of this study are as follows: As discussed later, a general shareholder meeting in a Russian joint-stock company has the exclusive right to appoint auditors. Under certain conditions, however, the board of directors is allowed to propose auditor candidates at its discretion to a general shareholder meeting. Moreover, the board of directors is granted the right of pre-negotiation with external auditor candidates (accountants or audit firms).

[22] For instance, see Watts and Zimmerman (1983), Francis and Wilson (1988), Craswell et al. (1995), Fan and Wong (2005), and Abbott et al. (2010). In addition, Fields et al. (2001) and Turley and Zaman (2004) provide an excellent overview of this research area.

[23] In addition, see Ball et al. (2000) and Wang et al. (2008) for their presentations on the importance of the comparative study of corporate accounting in different institutional settings.

[24] The mission of these auditing bodies in Japan, Italy and Russia are not greatly different from the audit committee in the US, the role of which includes monitoring the integrity of company's financial statements, overseeing the company's relationship with and monitoring the independence of the external auditors, and monitoring the internal controls and the compliance with the legal and regulatory requirements, and so forth.

Therefore, it is presumed that the board of directors has the right to select and propose external auditors to a general shareholder meeting. In earlier research (Iwasaki, 2008; 2009), we examined the determinants of the composition of the board of directors and found the power balance in a general shareholder meeting of a company, or, in other words, the company ownership structure, is clearly reflected in the composition of the corporate board. In such a case, any proposal by the board of directors for the selection of a corporate auditor or an external auditor is highly likely to be adopted as a resolution at a general shareholder meeting without any difficulty. If this statement is true, the composition of the board of directors will be clearly evident as a highly important element in the corporate audit system in Russia. Thus, testing this hypothesis is a focal point of the empirical analysis in this paper.

Along with the board of directors, specific shareholders may also have a substantial influence on the audit system of the companies in which they invested. As stressed in preceding studies (Citoron and Manalis, 2001; Wang et al., 2008), also in Russia, large shareholders, foreign investors, and the government are noteworthy outsider owners who may strongly demand transparency of their company financial activities as well as reliability of the accounting statements. In addition, business groups that emerged as a result of intensive business integrations across the federation in recent years are also considered to play an important role in the corporate governance of affiliated firms in Russia (Iwasaki, 2007b). Estimating the influence of these four types of shareholders on the audit system is also an important issue in the empirical analysis in this paper.

Furthermore, the audit system of a Russian joint-stock company can be affected by other factors, including organizational structure and business activities of the company as well as the development and market structure of the domestic audit industry. As noted later, many studies of developed economies have demonstrated that a series of factors, including company size, business diversification, internationalization, reliance on market financing, and the use of bank credits, significantly influences the audit system and its activities. In our empirical analysis, the impact of these potential determinants will also be examined to assess whether or not the empirical findings from developed economies are applicable to Russia.

To achieve these goals, we conduct an empirical analysis based on a unique dataset of joint-stock companies obtained from a nation-wide enterprise survey in 2005.

Our empirical evidence strongly suggests that, when compared to companies operating in Western and Asian Pacific states, Russian firms compose a questionable audit system in terms of the independence and expertise of the audit committee and the external auditor. Our empirical analysis suggests that the board composition, foreign investment, and affiliation with a business group through stock ownership are highly important factors determining the audit committee composition and the audit firm choice as well as a combination of the two auditing bodies. At the same time, however, it is also apparent that the scope of the impact of these three factors differed greatly. In addition, we found that government ownership, company size, fund procurement activities, and business internationalization have significant impacts on the audit system of Russian firms. To sum up this empirical evidence, we have seen that audit independence and expertise in Russia are greatly affected by the political and economic factors characterizing a country's transition economy (e.g., the role of the federal government and emergence of business groups) as well as the elements, the statistically significant effect of which previous studies of developed economies have repeatedly verified (e.g., board composition and foreign investment).

The remainder of this paper is organized as follows. Section 2 examines the legal framework and market environment of the corporate audit in Russia. Section 3 describes the data used in this study and overviews the actual state of the audit system in joint-stock companies. Section 4 presents the testable hypotheses regarding the determinants of audit independence and expertise in the context of a Russian transition economy, and Section 5 conducts empirical analysis. Section 6 summarizes the major findings and concludes the paper.

2. Legal Framework and Market Environment of the Corporate Audit in Russia

In Russia, the foundation of the legal framework for the corporate audit of joint-stock companies is made up of the Civil Code, the Federal Law on Joint-Stock Companies (Law on JSCs), and the Corporate Governance Code (CG Code).[25] The Civil Code and the Law on JSCs do not make companies with board committees, such as those established in the U.S. and many European countries. Rather, as reported in the Introduction, the Russian corporate law adopts an institutional design in which an audit committee is established under the general shareholder meeting as a statutory company body of corporate auditors.

[25] These provisions refer to Part I, Chapter 4 (Art. 96 to 104) of the Civil Code of November 30, 1994, the Federal Law on Joint-Stock Companies of December 26, 1995, and the Resolution of the Federal Commission for the Securities Market dated April 4, 2002, regarding the recommendation of the adoption of the Corporate Governance Code. The description of this section reflects the contents of the laws and regulations that were in effect in Russia during the period of the joint enterprise survey that was the basis of the empirical analysis.

Regardless of their form of incorporation, company size, and public stock offering, all joint-stock companies in Russia are required to establish an audit committee. The number of members composing the audit committee is not regulated by law. The appointment of auditors is an exclusive right exercised at the general shareholder meeting, and it is an ordinary resolution matter that cannot be delegated to the board of directors or an executive body. Although there is no special provision concerning outsider auditors, the independence of the audit committee in terms of personnel composition within the company is secured by prohibiting auditors from concurrently holding the position in the board of directors or other executive organs. Moreover, the Law on JSCs of Russia simultaneously prohibits directors and other executive officers from exercising their voting rights when electing audit committee members.

A shareholder who possesses 2% or more voting shares has the right to propose auditor candidates at a general shareholder meeting. Meanwhile, when no shareholder proposes auditor candidates or the number of auditor candidates necessary for the resolution of the general shareholder meeting cannot be ensured, the Law on JSCs allows the board of directors to propose auditor candidates selected at their discretion to a general shareholder meeting.

Following developed countries, also in Russia, the external auditor and the audit committee are regarded as the two mainstays of corporate audit (Bulgakova, 2005; Iwasaki, 2007a).[26] In accordance with the provisions of the Civil Code and Audit Activity Law,[27] a legal external audit by a certified public accountant or an audit firm is mandated to an open joint-stock company[28] in which stocks are freely transferable to third parties and open to public stock offerings as well as to a company in which annual sales are 500,000 times or more than the official minimum wage or the asset balance at the end of the term on the balance sheet exceeds the wages by 200,000 times or more. Generally, the vast majority of middle-sized and large enterprises in the industrial and communications sectors are in this category. The firms we surveyed were no exception.

The Law on JSCs stipulates that the external auditor is approved (not "selected") at the general shareholder meeting and the compensation for this duty is determined by the board of directors. Although the Law on JSCs does not clearly specify who has the right of submitting a proposal for the selection of an external auditor to the general shareholder meeting, it is obvious from this provision that the board of directors is delegated the right of pre-negotiation with nominee external auditors for the sake of its company. Therefore, it is presumed that the board of directors has such power.[29]

The selection of an external auditor is greatly affected by the development and structure of the audit industry as the supply side. Interaudit, which was established in 1987 on the basis of the resolution of the Cabinet of Ministers of the USSR, was the first audit firm in modern Russian history and a sort of national policy corporation solely engaged in the mandated audit of foreign joint venture companies (McGee and Preobragenskaya, 2005). Since then, amid ongoing drastic market-oriented economic reform and the denationalization of business activities triggered by the end of the socialist system, the needs of external audits have also expanded dramatically. As a consequence, in 2005, the number of certified public accountants and audit firms reached approximately 30,000 and 3,000, respectively.[30]

[26] Now, in Russia, leading listed firms classified into the A-class quotation list are required to prepare financial statements in strict compliance with International Financial Reporting Standards and submit them to the securities authority. In addition, all other listed firms and specific unlisted firms that meet certain conditions are required to prepare statutory financial statements based on the domestic accounting rules. The financial statements of Russian corporations, not only those of the listed firms but also those of many unlisted firms, are broadly available through the Internet, commercial databases, or other sources, and investors as well as counterpart companies make extensive use of these disclosed statements for making business decisions. As a consequence, the accountability of external audits that endorse the reliability of these financial statements has been thoroughly examined. In fact, it has often been reported that the prosecutor's office or shareholders have indicted certified public accountants or audit firms for their involvement in misrepresentations or false statements about the financial results of their clients (For relatively recent cases, see the articles dated April 1, 2010, and October 21, 2010, in the Russian daily newspaper "Kommersant," among others). In a court case over audit reporting on the major petroleum company Yukos, its audit firm, PricewaterhouseCoopers, was convicted and fined 16.8 million rubles in March 2007. This has been recognized as a symbolic episode (Anon., 2007).

[27] The Federal Law on Audit Activity of August 7, 2001.

[28] According to the Civil Code and the Law on JSCs, an individual who intends to set up a joint-stock company in the territory of Russia must choose as a legal form of incorporation either an open joint-stock company or a closed joint-stock company in which a preferential acquisition right for the transferred stocks is granted to other shareholders and the company (Civil Code, Art. 97 and Law on JSCs, Art. 7). In terms of minimum capital, number of shareholders, and information disclosure obligation, a certain difference is established between the two types of companies. For more details on this point, see Iwasaki (2007a; 2007c).

[29] In fact, in almost all cases that we investigated, the general shareholder meeting approved the external auditor based on a proposal of the board of directors.

[30] According to the American Institute of Certified Public Accountants (http://www.aicpa.org/) and the European Federation of Accountants (http://www.fee.be/), the number of certified accountants per one million population in the same period is about 1,100 in the United States (total 330,000 accountants and 298,000,000 population) and about 930 in the 32 European countries (total 500,000 accountants and 540,000,000 population). In contrast, the

During this period, international audit firms entered Russia one after another after Ernst & Young's advance in 1989. By 2005, approximately 25 foreign audit firms opened branch offices or established subsidiaries in Russia (Bulgakova, 2005; Smirnov, 2005; Samsonova, 2009). In this way, the Russian audit industry was created in a shorter period of time than that in Western countries.

The presence of foreign-affiliated companies in the Russian audit market is prominent. Most of them are at the top of the sales ranking of audit firms, from PricewaterhouseCoopers down (Iwasaki, 2007a). Reports indicate that these foreign audit firms are performing an enlightening and educational role in the industry. They have established a reputation for their work quality and independence from clients. In particular, the strategic advantage of hiring a leading international audit firm as an external auditor is widely acknowledged among Russian investors and management executives. Meanwhile, the major clients of international audit firms are limited to the subsidiaries of multinational enterprises coming from developed economies and Russian big businesses (Sucher and Bychkova, 2001; Samsonova, 2009).

Among domestic audit firms, there are more than a dozen national major firms that have head offices in the capital of Moscow and in Saint Petersburg. They are engaged in fierce competition for customer acquisition with one another or with the local small and medium-sized audit firms. However, the market evaluations of Russian audit firms are generally low irrespectively of the company size and business scale (McGee and Preobragenskaya, 2005; Guttsait, 2007). Therefore, at least in the first half of 2005, when our survey was implemented, it was hard to say that these national major audit firms had established a good reputation and were evidently superior to the local small and middle-sized audit firms in terms of expertise and independence from client companies. The insufficiency of market selection and differentiation in the audit industry clearly reflect the short history of external auditing in Russia.

3. The Audit System of Russian Firms from Information Obtained In the 2005 Enterprise Survey

As reported in the previous section, the legal framework and market environment surrounding the corporate audit in Russia are very different from those in advanced countries. With this in mind, in the present section, we describe the data used for this study and review the actual state of the audit system in Russian companies.

The data in our empirical analysis are based on the results of an enterprise survey sponsored by Hitotsubashi University and the Higher School of Economics.[31] Between February and June 2005, professional interviewers from the Yuri Levada Analytical Center (the former All-USSR Public Opinion Poll Center) spoke with 859 industrial and communications enterprises from 64 federal districts. The survey team received 822 responses from high-ranking company managers. Of these, 94.8% were company presidents, CEOs, general directors, or vice presidents. The remaining respondents were board chairmen (1.6%) or senior managers responsible for corporate governance affairs (3.6%).[32]

All firms are JSCs. The average number of workers for each surveyed firm was 1,884 (median: 465), and the total number of workers of the 822 firms was 1,549,008, which accounted for 10.3% of the total workforce in both the industrial and the communication sectors through 2004 according to official statistics (Rosstat, 2005). The sample is representative of the national population of middle-sized and large firms in its regional and sectoral composition.[33]

Of the 822 executives in the companies surveyed, 690 officers (83.9%) gave detailed answers to our questions concerning the audit committee of their companies in terms of the number of audit committee members and their basic attributes. As shown in Table 1, the audit committee of a Russian joint-stock company is composed of an average number of 3.5 corporate auditors (median: 3). According to the survey results of the preceding 22 studies on the composition of the auditing body of 5,052 companies in 25 countries around the world (Table 2), these companies set up an audit committee or a board of corporate/statutory auditors averaging 3 to 4 auditors. In this sense, Russian joint-stock companies organize an audit committee that meets the international practices in terms of its personnel size.

The above 690 companies have appointed a total of 2,438 corporate auditors. In this paper, audit committee members selected from among rank-and-file employees, labor union members, and management staff, excluding executive officers, who are prohibited from concurrently holding a position in

same figure in Russia with a total population of 143,000,000 in 2005 is only about 210, suggesting the underdevelopment of the audit industry in this country.

[31] See Dolgopyatova and Iwasaki (2006) and Dologopyatova et al. (2009, Appendix) about the details of the survey.

[32] The questionnaire used for the joint survey was carefully designed by the project members and experts of the Levada Center based on similar surveys conducted in the past, although it is impossible to completely avoid bias and moral hazard problems with respect to self-reporting. In addition, the fact that one of three companies that we initially contacted refused to participate in the survey may have a potential bias of initial non-response.

[33] The detailed sectoral breakdown of the 822 companies is as follows: (1) Fuel and energy (66 firms; 8.0%), (2) Metallurgy (36 firms; 4.4%), (3) Machine-building and metal working (255 firms; 31.0%), (4) Chemical and petroleum (33 firms; 4.0%), (5) Wood, paper, and paper products (63 firms; 7.7%), (6) Light industry (51 firms; 6.2%), (7) Food industry (169 firms; 20.6%), (8) Construction materials (78 firms; 9.5%), and (9) Communications (71 firms; 8.6%).

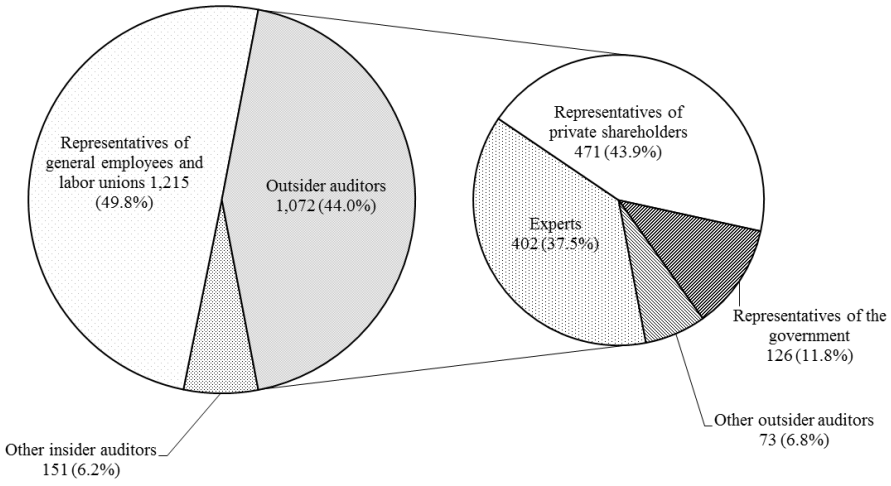
the audit committee, are defined as "insider auditors," and those selected from individuals other than those reported above are defined as "outsider auditors" (Due to constraints of the methodology used in the joint survey, no distinction was made between affiliated and non-affiliated individuals with regard to outsider audit committee members. In addition, we acknowledge that there may be other unobserved connections that do not permit these individuals to be independent of the managerial and/or controlling owner power). Table 1 and Figure 1 report the breakdown of the 2,438 audit committee members classified according to six attributes as well as basic statistics of their attributes. As shown in Figure 1, insider auditors account for the majority of auditors (56.0%). In addition, most of the insider auditors are selected from those who represent the interests of rank-and-file employees and the labor union. On the other hand, the most prominent group among outsider auditors is composed of representatives of private shareholders and accounts for 43.9% of outsider auditors. The expert auditors selected from specialist occupations, including lawyers, accountants, and other professionals, form the second group with a difference of 6.4%. Auditors sent from the government account for only 5.1% of all audit committee members and 11.8% of outsider auditors.

Table 1. Descriptive statistics on the total number of audit committee members and the number of corporate auditors by their attributes in 690 joint-stock companies

	Mean	S. D.	Median	Min.	Max.	25 percentile	75 percentile
Total number of audit committee members	3.53	2.14	3	1	40	3	4
Insider auditors	1.98	1.97	2	0	30	1	3
Auditors representing rank-and-file employees and labor unions	1.76	1.97	2	0	30	0	3
Other insider auditors	0.22	0.78	0	0	5	0	0
Outsider auditors	1.55	1.77	1	0	12	0	3
Auditors representing private shareholders	0.68	1.28	0	0	9	0	1
Expert auditors	0.58	1.18	0	0	10	0	1
Auditors representing the government	0.18	0.58	0	0	5	0	0
Other outsider auditors	0.11	0.56	0	0	7	0	0

Notes: This table contains descriptive statistics on the total number of audit committee members and the number of corporate auditors by their attributes of 690 Russian joint-stock companies that participated in a Japan-Russia joint enterprise survey conducted in 2005. Sample companies were randomly selected among firms with more than 100 workers in the industrial and communications sectors. For more details, see Section 3 of the paper.

Figure 1. Classification of 2,438 corporate auditors of 690 companies by their attributes



Notes: The samples are Russian joint-stock companies that participated in the Japan-Russia joint enterprise survey conducted in 2005. "Insider auditor" denotes an auditor selected from among rank-and-file employees, labor union members, and management staff, and "outsider director" denotes an auditor selected from among persons other than the above-mentioned ones defined as insider auditors.

From the above results, we can ascertain that, among the companies surveyed, the means (median) of the proportion of outsider auditors and that of expert auditors to all audit committee members, which are typical indices measuring the independence and expertise of an audit committee, are 42.8% (33.0%) and 16.7% (0.0%), respectively. As described in the previous section, in Russia, the Law on JSCs prohibits corporate auditors from concurrently holding the position of board member or other

company executive. It also prohibits directors and other executive officers from exercising their voting rights when electing audit committee members. Nevertheless, according to the international comparison on the proportion of outsider auditors shown in Table 2, the audit committee in Russian joint-stock companies is notably inferior not only to North American and European enterprises but also to Asian Pacific enterprises in terms of its independence. However, the matter does not end here. As illustrated in Figure 2, the remarkable feature of the audit committee of Russian joint-stock companies is the polarization of its composition due to the proportion of outsider auditors. This polarization phenomenon is also evident in the composition of the board of directors (Iwasaki, 2008) and is a distinctive characteristic of the Russian corporate governance not present in other former socialist economies.

The survey results comprise information on audit firms with which 771 surveyed companies had made a contract to implement an external audit. As described in the previous section, among nearly 3,000 audit firms operating in Russia, there is no question that the international audit firms pride themselves in having the highest reputation in terms of the quality of their auditing work and independence from clients. With regard to domestic audit firms, unlike researchers of such issues in developed countries, specialists have not reached a consensus, either currently or at the time of the survey, with regard to whether the selection of a national major audit firm clearly reflects the will of the clients to seek a better external audit.

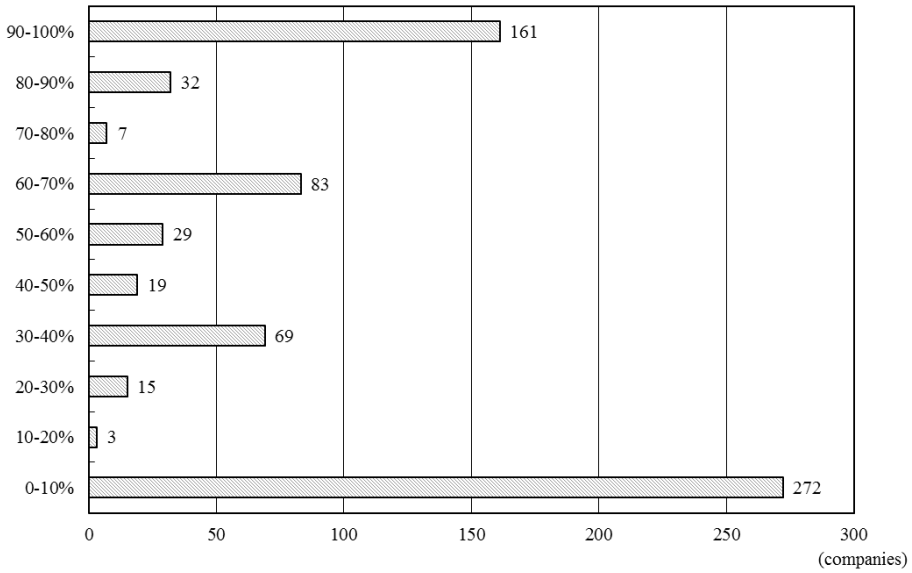
Table 2. International comparison of the total number of corporate auditors and proportion of outsider auditors

	Analysis period	Sample size	Total number of corporate auditors			Proportion of outsider auditors (%)		
			Mean	S. D.	Median	Mean	S. D.	Median
North America								
U.S. listed firms [1]	1992-93	692				79.6		
U.S. major firms [2]	1992-96	282	4.53			85		
U.S. listed firms [3]	2000	167	4.48		4			
U.S. commercial banks [4]	2000-01	989	4.31	1.47	4	88.0	16.8	100.0
Canadian non-financial firms [5]	1993-97	66				86.6	16.2	100.0
Canadian major firms [6]	1994	627	3.5	0.98	3	82.3	15.7	75.0
Canadian listed firms [7 a]	1997-2003	72	3.56		3	91.1		100.0
Europe								
Listed firms in 15 EU countries [8]	2008	270				73		
U.K. non-financial listed firms [9 a]	2001-02	259	3.12	0.05	3	34.7	34.1	33.0
U.K. major firms [10]	2006	71	4.11	2.75				
German listed firms [11]	2007	150	4.0					
Austrian listed firms [11]	2007	56	4.13					
Belgian listed firms [12 b]	2001-02	29	3.69			83		
Spanish non-financial listed firms [13]	1998-2001	75	3.47	0.99	3	90	18	100
Spanish listed firms [14 b c]	2003	69				91		100
Swiss listed firms [15 a]	2004	167	3.3			67		
Russian joint-stock companies [16]	2005	690	3.53	2.14	3	42.8	40.7	33.0
Asian-Pacific								
Japanese listed firms [17]	2009	215	4.2			72.7		
Chinese IPO firms [18]	2001-04	184	4.41	2.08	3			
Chinese Hong Kong listed firms [19 a]	2007	46	3.63	1.00	3	83.2	17.1	81.7
Singaporean and Malaysian listed firms [20 a]	2000	252				69.7	10.4	66.7
Australian listed firms [21 a]	1997	109	3.6	0.99	3	65.9	27.4	66.7
Australian firms [22 a]	2001	81	4.58	2.14		57.2	40.8	
New Zealand firms [22 a]	2001	28	4.61	1.50		62.7	39.0	
New Zealand listed firms [23 b]	2004-05	96	3.46	0.94	3	94.1	13.6	100

Notes: This table lists the total number of corporate auditors and the proportion of outsider auditors in North-American, European, and Asian-Pacific companies based on the following 23 studies: 1: Klein (2002b); 2: Xie et al. (2003); 3: Chan and Li (2008); 4: Zhou and Chen (2004); 5: Erickson et al. (2005); 6: Beasley and Salterio (2001); 7: Charitou et al. (2007); 8: RiskMetrics Group (2009); 9: Mangena and Tautingana (2007); 10: Adelopo and Jallow (2008); 11: Velte (2010); l2: Willekens et al. (2004); 13: Ruiz-Barbadillo et al. (2003); 14: Méndez and García (2007); 15: Canepa and Ruigrok (2005); 16: this study; 17: Fujishima (2010); 18: Lin and Liu (2009); 19: Lin et al. (2009); 20: Bradbury et al. (2004); 21: Cotter and Silvester (2003); 22: Goodwin (2003); 23: Sharma et al. (2009).

[a] Proportion of independent auditors.
[b] Proportion of non-executive officers.
[c] The proportion of outsider auditors is calculated using the data of the proportion of executive officers.

Figure 2. Proportion of outsider auditors in the audit committee of 690 Russian joint-stock companies



Notes: The samples are Russian joint-stock companies that participated in the Japan-Russia joint enterprise survey conducted in 2005. The proportion of outsider auditors is measured by dividing the number of outsider auditors by the total members of the audit committee for each sample firm. The basic statistics of the proportion of outsider auditors are as follows: mean: 42.82; standard deviation: 40.70; median: 33; skewness: 0.25; kurtosis: 1.45.

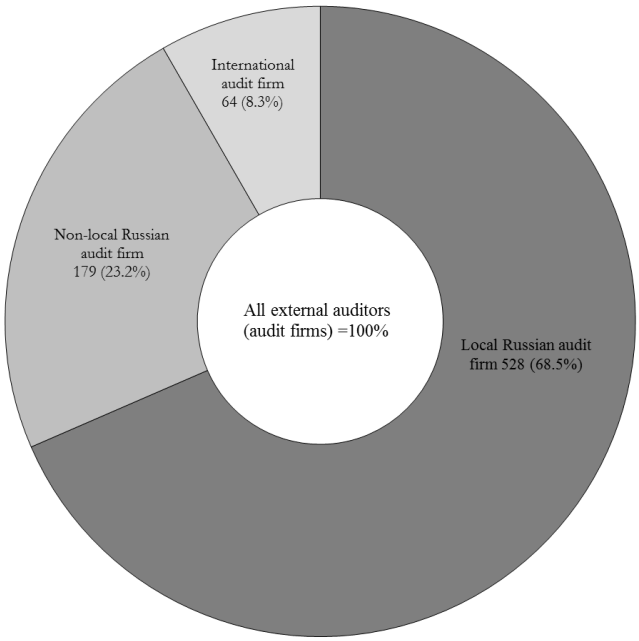
With attention to these facts, we asked the surveyed companies the following questions about their audit firm as the second-best way to objectively measure their needs for the quality of external audits: (1) Is it an international audit firm? (2) Is it a Russian audit firm with its head office separate from the company location? (3) Is it a local Russian audit firm? In our opinion and in that of Russian experts, the action of a company boldly appointing an international audit firm or a non-local Russian audit firm as its external auditor could, in many cases, be regarded as the expression of its management attitude of seeking a better external audit.[34] The survey results are shown in Figure 3. Of 771 surveyed companies, 64, or 8.3% of the total, appoint an international audit firm as their external auditor, and 179, or 23.2%, enter into an external audit contract with a non-local Russian audit firm. Thus, as expected, most of the surveyed companies choose a local Russian audit firm, even though such firms are reported to have problems from the viewpoint of the quality of their auditing work and independence from clients (McGee and Preobragenskaya, 2005).

Based on the discussion above, our empirical analysis relies on the aforementioned proportions of outsider auditors (*AUDCOM*) and expert auditors (*AUDEXP*) to the total members of the audit committee and an ordinal variable, which takes a value of 0 for companies entrusting their external audit to a local Russian audit firm, 1 for those appointing a non-local Russian audit firm as their external auditor, and 2 for those making an external audit contract with an international audit firm, as the audit firm attribute variable (*AUDFIR*). For brevity, these terms are hereinafter referred to as the "audit system variables."

According to Hotelling's T^2 test, there is a statistically significant difference at the 1% level in the mean vector of the audit system variables between industrial enterprises and communications enterprises (T^2=82.199, F=27.316, p=0.000). The results of a more detailed comparison among industries are shown in Table 3. In terms of the proportion of outsider auditors and the attributes of audit firms, communications enterprises are superior to industrial enterprises at the 1% significance level. Meanwhile, no statistical difference in the proportion of expert auditors is confirmed between the two sectors. A multiple comparison of eight industrial sectors and the communications sector regarding the two variables of *AUDCOM* and *AUDFIR* rejects the null hypothesis that the mean values of these nine sectors are equal at the 1% significance level. These facts strongly suggest that it is necessary to pay attention to the differences among sectors when empirically examining the determinants of audit independence and expertise in Russia.

[34] Although this is true for local companies, it is never applied to the companies operating in the capital and Saint Petersburg, where the national major audit firms are concentrated. Accordingly, if an audit firm is a domestic one, a survey that asks whether such an audit firm is a non-local firm removed from the client company or a local one could lead to an underestimation of the management attitude about the quality and independence of the external audit of companies in large cities. However, we believe that this will not diminish the persuasiveness of the empirical results of this study or substantially distort the implication, although it is a disadvantage of our analysis.

Figure 3. Classification of external auditors (audit firms) of 771 joint-stock companies by their attributes



Notes: This figure classifies the audit firms that conclude an external audit contract with 771 Russian joint-stock companies that participated in a Japan-Russia joint enterprise survey conducted in 2005. "Local Russian audit firm" denotes a domestic audit firm located in the same federal district of the surveyed company.

Table 3. Industry-to-industry comparison of audit independence and expertise

	Audit system variables		
	Proportion of outsider auditors (*AUDCOM*)	Proportion of expert auditors (*AUDEXP*)	Audit firm attributes (*AUDFIR*)
Industrial sector	0.404	0.162	0.337
Fuel and energy	0.707	0.264	0.710
Metallurgy	0.569	0.223	0.735
Machine-building and metal working	0.427	0.166	0.280
Chemical and petrochemical	0.441	0.258	0.290
Wood. paper. and wood products	0.419	0.222	0.356
Light industry	0.211	0.081	0.273
Food industry	0.325	0.119	0.296
Construction materials	0.277	0.095	0.153
Communications sector	0.726	0.230	1.078
N	690	690	771
Comparison between the industrial and communications sectors			
t test on the equality of means	-5.554 ***	-1.456	-9.406 ***
Wilcoxon rank sum test	-5.385 ***	-0.798	-7.436 ***
Multiple comparison among 9 industries			
ANOVA (*F*)	12.480 ***	2.770 ***	18.140 ***
Bartlett test (χ^2)	3.831	38.626 ***	62.954 ***
Kruskal-Wallis test (χ^2)	79.795 ***	12.259	67.303 ***

Notes: This table presents results from an industry-to-industry comparative analysis of audit independence and expertise in Russian joint-stock companies that participated in a Japan-Russia joint enterprise survey conducted in 2005. The proportion of outsider (expert) auditors, *AUDCOM* (*AUDEXP*), is measured by dividing the number of outsider (expert) auditors by the total members of the audit committee for each sample firm, and it is a continuous variable taking values of $0.00 \leq x \leq 1.00$. The audit firm attribute, *AUDFIR*, is the ordinal variable that gives a value of 0 to a company hiring a local Russian audit firm as its external auditor, 1 to a company hiring a non-local Russian audit firm, and 2 to a company hiring an international audit firm. "Local Russian audit firm" denotes a domestic audit firm located in the same federal district of the surveyed company. The result of the Welch test is reported instead of the *t* test when the null hypothesis in which the population variance is equal is rejected by an F test on homoskedasticity. *** denotes statistical significance at the 1% level.

As the notable features of the audit system in Russian joint-stock companies, the four following points have become apparent: first, Russian firms organize their audit committees conforming to international practice in terms of the total number of corporate auditors. Second, the audit committee independence measured by the proportion of outsider auditors, however, falls well below the average of enterprises operating in foreign countries, and, among Russian enterprises, remarkable polarization takes place from this viewpoint. Third, the appointment of an international audit firm as the external auditor is very limited in Russian practice, and most companies lean toward external audit contracts with a local Russian firm. Fourth, regarding the degree of audit independence and expertise, there is a significant difference between the industrial sector and the communications sector as well as among subgroups of the industrial sector.

4. Determinants of Audit Independence and Expertise in Transition Russia: Hypothesis Development

Based on the motivation described in the Introduction, as potential factors greatly affecting audit independence and expertise in Russian firms, we pay special attention to (a) the composition of the board of directors; (b) large shareholding; (c) foreign investment; (d) ownership by the government; and (e) affiliation with a business group through stock ownership. In this section, we present testable hypotheses regarding the causal relationship between these five factors and audit independence and expertise in a Russian joint stock company with the structural features revealed in the previous section. We also present other possible determinants to consider in an empirical analysis.

As reported in Section 2, in Russia, the board of directors has, by law and practice, the exclusive right to submit a proposal for the approval of an external auditor at the general shareholder meeting. However, with some conditions, the board of directors is also able to select candidates at its sole discretion and recommend them as audit committee members. In other words, the board of directors is given the authority to play a highly active role in the organization of the company's audit system. The authority of the board of directors in this function is increasingly strengthened because the top manager (CEO or company president) and other executives in a company, who are forbidden from exercising their voting rights at the general shareholder meeting, will try to influence the decision making on the audit system at the board of directors. Outsider directors are also sure to act similarly to these executive officers. Since the vast majority of outsider directors are the representatives of private shareholders and the government (Iwasaki, 2008), the board of directors becomes a main battlefield for the bargaining game between company managers and major shareholders over the shape of its own audit system (Ruiz-Barbadillo et al., 2007). Accordingly, the board composition becomes the most important internal organizational factor determining audit independence and expertise in the company.

There is persuasive logic demanding an audit system with a high degree of independence and expertise whereby the outsider board directors fulfill a stronger monitoring function than the insider directors. First, it is necessary to reduce the information asymmetry between the outsider directors and the executive officers to achieve effective management supervision (Linck et al., 2008). The realization of high-level audit independence and expertise can become an effective means to achieve this objective through a functional synergy effect with the board of directors (Adams, 1997; Beasley and Petroni, 2001). Second, the board of directors, whose important responsibilities are the evaluation and approval of management strategy, must accept a certain number of employees, who have specialized knowledge and in-house information, as board members. Hence, by improving the effectiveness of the audit committee and the external auditor, the outsider directors can achieve a balance between the necessity of management supervision and the demand for specialized knowledge and information for strategic decision making (Klein, 2002a). Third, the outsider directors have a strong motive to attempt to maintain and improve their reputation as a stockholder agent for their own career development. The revelation of false statements in annual securities reports and other corporate disclosure information and blunders, including the correction and restatement of financial statements, will lead to a reduction in confidence. In the worst-case scenario, it is possible that they will be exposed to a shareholder lawsuit regarding negligence of their duties (Cotter and Silvester, 2003; Ruiz-Barbadillo et al., 2007). To minimize this risk, the outsider directors aim at higher audit quality to improve the possibility that auditors will detect and disclose a breach in the accounting system of their company (Beasley and Petroni, 2001). Accordingly, as Rainsbury et al. (2008), Baxter (2010), and García-Sánchez et al. (2012) affirm, we expect that, in Russia, there is a close relationship between the composition of the board of directors and the independence and expertise of the audit committee and external auditor in the following sense:

H_1: The stronger the presence of outsiders on the board of directors, the higher independence and expertise of the audit committee and external auditor of the company required.

According to the agency theory, large shareholding renders supervision by the statutory organs of the company less necessary because controlling shareholders have a sufficient incentive and capability to effectively monitor and discipline the top management of their companies (Rediker and

Seth, 1995). However, in the countries in which the corporate control market is underdeveloped or in a case in which the exit cost by selling stock is very significant for some reason, major shareholders possibly exert their bargaining power to enhance the monitoring function of company supervisory bodies to improve their ability to collect managerial information or strengthen their authority to dismiss management executives who fail to increase the corporate value (Whidbee, 1997). In fact, Piot (2001), on the basis of his empirical findings from France, maintains that the Anglo-American principal-agent model has little explanatory power in the concentrated ownership framework of corporate governance. It is likely that the "bargaining hypothesis" (Hermalin and Weisbach, 1998) is more appropriate in Russia, where social distrust of company managers is particularly strong.[35]

Regarding the impact of large shareholding on audit firm choice, Rusmin et al. (2009) report a positive relationship between ownership concentration and audit quality from three Asia Pacific stock markets. Furthermore, Beasley and Salterio (2001) propose and verify their hypothesis that stockholders who increase opportunities for effectiveness of the board of directors through the inclusion of greater proportions of outsiders and through the segregation of the board chairperson and CEO positions are more likely to create boards strongly motivated in appointing audit committee members with far-reaching experience in accounting and auditing from outside. Given the high ownership concentration, dominant shareholders, who possess at least 50 percent of shares with voting rights, represent such company owners in Russia. In fact, Dolgopyatova et al. (2009) provide supporting evidence of the positive linkage between dominant shareholding and good corporate governance practices in this country. Thus, we expect that, in Russia, the dominant shareholders tend to promote audit independence and expertise in their companies:

H_2: The presence of a dominant shareholder is positively associated with independence and expertise of the audit committee and external auditor of the company he or she invested in.

The next noteworthy factor in the context of a Russian transition economy is foreign investment. Since the start of the new millennium, Russia's economy has been booming, and the country has become a major emerging market. As a result, Russia is attracting considerable attention from overseas investors. However, the accumulated foreign direct investment per capita from 1989, when the Communist Bloc collapsed, to 2005 was only 459 US dollars, far short of that of Central and Eastern Europe countries that became new EU members during this period (Iwasaki and Suganuma, 2009). Domestic enterprises are closed to foreign investors, whose presence is still weak in the Russian business community. Furthermore, it is not easy for foreign investors to communicate with Russian management executives for several reasons. Consequently, many overseas investors recognize the serious information asymmetry with executive officers more than domestic investors do and deeply fear the damage to the corporate value due to the opportunistic behavior of company managers. Hence, it is natural that foreign stockholders ask their company's supervisory bodies to monitor and check the management more thoroughly than domestic shareholders do. The strong demand for the preparation of financial statements conforming to the international accounting standards and high-quality auditing is a direct reflection of the above. In this respect, Sucher and Bychkova (2001) reported that, in Russia, foreign investors tend to force companies to have an external audit by a leading international audit firm. To sum up, the above arguments lead us to the following hypothesis about the impact of foreign investment on audit independence and expertise of Russian companies:

H_3: The investment by foreigners enhances independence and expertise of the audit committee and external auditor of the company they own.

In the preceding studies, the positive correlation between foreign ownership and the probability of hiring international audit firms has been repeatedly verified (Citron and Manalis, 2001; Guedhami et al., 2009). It is likely that our empirical analysis of Russian firms will yield a similar result.

In Russia, we cannot overlook the role of government in corporate governance. Wang et al. (2008) report a close relationship between government ownership and the probability of hiring small local audit firms in China. Guedhami et al. (2009) find, from an empirical analysis of 176 privatized companies in 32 countries, a significantly negative correlation between government ownership and the probability of hiring big four international audit firms. Meanwhile, according to an empirical study, which examined the role of state representatives on a corporate board in corporate governance, the behavioral pattern of government directors is greatly different depending on whether they have been sent by the federal government or a local one (Frye and Iwasaki, 2011). In this paper, the authors find that the presence of board directors representing the federal government significantly improves the quality of corporate governance measured as the degree of compliance with the CG Code in the company to which such directors have been sent. At the same time, representatives of regional and local governments do not appear to exert the same effect in their companies. Based on the empirical evidence presented above, we propose to test the following hypothesis:

[35] In fact, our empirical evidence on the determinants of board composition strongly indicates the applicability of the bargaining hypothesis in Russia (Iwasaki, 2008; 2009).

H_4: Shareholding by the regional and local governments relaxes independence and expertise of the audit committee and external auditor of the company they own, and, in contrast, that by the federal government strengthens them.

One noteworthy feature of the Russian transition economy is the burgeoning business integration among domestic enterprises. In Russia, through stock acquisitions by commercial banks and major industrial enterprises, the crossholdings of stocks among enterprises, and the hostile takeovers by newly emerged financial cliques led by "oligarchs," many business groups have been formed at both the federal and regional levels (Mizobata, 2004; Avdasheva, 2005). In fact, the results of our survey indicate that 323 (39.3%) of the 822 surveyed companies are affiliated with a certain business group through shareholding. This is accompanied by difficult problems in theoretically forecasting the impact of the affiliation with business groups on the managerial discipline and corporate governance of member companies. However, a series of previous studies has repeatedly verified the relatively good management performance and intensive restructuring activities of Russian group companies relative to those of independent companies not belonging to any business group (Kuznetsov and Muravjev, 2000; Perotti and Gelfer, 2001; Guriev and Rachinsky, 2005). As an explanation of the background of this situation, there is a common understanding among researchers that relatively more sound corporate governance has materialized within the business group of Russia than within independent companies (Iwasaki, 2007b). In addition, from our survey results, evidence supporting this view has been obtained (Avdasheva, 2007; Dolgopyatova et al., 2009). Accordingly, it is highly likely that Russian business groups behave as institutional investors in the U.S. that influence companies in which they invest to improve their reporting quality by using reputable auditors (Velury et al., 2003). Furthermore, a core group company has a strong motive to establish a unified and technologically sophisticated audit network among group companies to effectively perform the auditing of group companies' accounts subject to consolidated accounting. Thus, the following hypothesis can be made about the relationship between the participation in a business group through stock ownership and audit independence and expertise of the member company:

H_5: Affiliation with a business group improves independence and expertise of the audit committee and external auditor of the member company.

As other potential factors affecting audit independence and expertise in Russian firms, we also give attention to the effect of the establishment of an open joint-stock company as a legal form of incorporation, the succession of state assets, company size, business diversification, fund procurement from the capital market, use of bank credits, past financial performance, and business internationalization.

In accordance with our findings concerning the relationship between the above factors and management supervision in Russian firms (Iwasaki, 2007b; 2008) as well as the arguments on the determinants of audit committee composition and audit firm choice in the previously described study and other literature (Abbott and Parker, 2000; Beasley and Salterio, 2001; Deli and Gillan, 2001; Fan and Wong, 2005; Hope et al., 2008; Rainsbury et al., 2008; Baxter, 2010), we expect that the establishment of an open joint-stock company mitigates the need for audit independence and expertise because the high transferability of stocks in an open as opposed to a closed company replaces the governance function by the statutory organs of the company. On the other hand, we predict that all seven factors, namely, company size, business diversification, business internationalization, succession of state assets, fund procurement from the capital market, use of bank credits, and past poor financial performance, are positively correlated with audit independence and expertise. This is due to the fact that the first three factors induce complexity in company management and agency problems and the last four factors tend to raise the monitoring pressure on top management from the governments, general public, shareholders, and external fund providers.

In an empirical analysis, in addition to the factors presented above, we examine the impact of the size of the audit committee on its independence and expertise. We also examine the effects of client demand for consulting services and the physical distance between the capital region and the location of the company on the audit firm choice. If it is reasonable to expect that, as committee size increases, a firm's probability to appoint more independent auditors with relevant knowledge and experiences also increases, the size of the audit committee may positively correlate with its independence and expertise.[36] With regard to the client demand for consulting services, recent studies on whether the provision of non-audit services impairs auditor independence and quality have reached mixed results, depending on the proxy for audit independence and quality used, the country studied, and the period of empirical analysis (Kinney et al., 2004; Hay et al., 2006; Lim and Tan, 2008; Duh et al., 2009; Zaman et al., 2011). Thus, the effect of the need for consulting services is theoretically unpredictable. Further, as described in Section 2, international audit firms and national major audit firms are concentrated in the capital region, and their domestic branch networks were insufficient in the first half of 2005. Therefore, it is expensive, in terms of time and money, for a

[36] See Beasley and Salterio (2001) and García-Sánchez et al. (2012), who discuss the positive relationship between the size of the board of directors and the audit committee independence and expertise in the context of the Canadian and Spanish economies.

Russian company to entrust an external audit to a leading firm because of the vastness of Russia and the 10-hour difference from the westernmost to the easternmost region. Accordingly, the greater the distance between the capital region and a client company, the lesser the likelihood of hiring a non-local Russian audit firm.

The theoretical arguments presented in this section are summarized in Table 4.

Table 4. Theoretical predictions of the impacts of firm organization and business activities on independence and expertise of the audit committee and external auditor in the context of a Russian transition economy

	Predicted sign
Presence of outsiders on the board of directors	+
Presence of a dominant shareholder	+
Foreign investment	+
Shareholding by the federal government	+
Shareholding by the regional and local governments	-
Affiliation with a business group	+
Establishment of an open joint-stock company as the corporate form	-
Succession of state assets	+
Company size	+
Business diversification	+
Fund procurement from the capital market	+
Use of bank credits	+
Poor financial performance	+
Business internationalization	+
Size of the audit committee	+
Demand for consulting services	?
Physical distance between the capital region and the location of the company	-

Notes: This table is a summary of the theoretical predictions of the impact of potential factors on independence and expertise of the audit committee and external auditor in Russia on the basis of the discussion in Section 4 of the paper. The sign '+' denotes a positive correlation between a given factor and audit independence and expertise, '-,' for a negative correlation, and '?' indicates that the effect is unpredictable. The size of the audit committee is regarded as a special factor concerning its independence and expertise, and the demand for consulting services and the physical distance between the capital region and the location of the company are considered as special factors affecting the independence and expertise of the external auditor (audit firm).

5. Empirical Analysis

In this section, we test the hypotheses regarding independence and expertise of the audit committee and external auditor in Russia. First, we select the variables to be used in the empirical analysis and then report the results of our estimation. Finally, we check the overall robustness of the estimation results.

5.1 Variable selection

The focal point of our empirical analysis is the effect on audit independence and expertise of the composition of the board of directors, presence of a dominant shareholder, foreign investment, and shareholding by the government as well as affiliation with a business group. Corresponding to the discussion in the previous section, we estimate the impact of board composition by using the proportion of outsider directors to the total board members (*BOACOM*). The effects of the last four factors are examined with dichotomous dummy variables. Namely, we test the impact of the presence of a dominant shareholder, foreign investment, shareholding by the federal government, shareholding by the regional and local governments, and affiliation with a business group using *DOMSHA* with a value of 1 if the company has a shareholder whose ownership share exceeds 50 percent in total shares with voting rights, *FORFIR* with a value of 1 if the company accepts foreign investment, *FEDGOV* with a value of 1 if the company is owned by the federal government, *REGGOV* with a value of 1 if the company is a municipal enterprise, and *GROFIR* with a value of 1 for firms belonging to a certain business group through stock ownership.

The impacts of the establishment of an open joint-stock company as a legal form of incorporation on audit independence and expertise are examined using a dummy variable that captures open joint-stock companies with 1 (*OPECOM*). The impact of the succession of state assets is captured by the dummy variables, which indicate whether the company is a former state-owned (ex-municipal) privatized company (*PRICOM*) or a newly established company spun off from a state-owned (municipal) company or a privatized company (*SPIOFF*). The company size is measured by the average annual number of employees (*COMSIZ*). The extent of business diversification is represented by the number of business lines of the

company in accordance with the 2-digit industrial classifications in the Russian All-Union Classifier of the National Economy Branches (*BUSLIN*). The impact of the fund procurement from the capital market and the use of bank credits is estimated by using a dummy variable that has a value of 1 if the company issued shares or bonds in the overseas or domestic stock exchange (*MARFIN*) and a variable for the length of the lending period of bank credits borrowed by surveyed firms from 2001 to 2004 (*BANCRE*), respectively. We examine the impact of past financial performance using the industry-adjusted value of the annual average of return on equity for the past four years prior to the survey (*ROAAVE*).[37] As a proxy for the degree of business internationalization, we use the share of exports in total sales (*EXPSHA*).

The effect of the size of the audit committee on its independence and expertise is examined by the total number of audit committee members (*AUDSIZ*). The impact of the demand for consulting services on audit firm choice is estimated using an ordinal variable with a value of 0 for companies that did not conclude a consulting agreement with the audit firm at the time of the survey, a value of 1 for companies with a consulting service agreement and using the services occasionally, and a value of 2 for companies with a consulting service agreement and using the services frequently (*CONSUL*). The impact of the physical distance between the capital region and the company location is estimated by the natural logarithm of the linear distance between Moscow and the capital of the federal district (autonomous republic, territory, and province) where the surveyed company is located (*DISCAP*).

The probability of companies located in the capital or Saint Petersburg entrusting the external audit to a non-local Russian audit firm is inevitably low compared to that of companies operating in other areas for the reason reported in Section 3. To overcome this possible downward bias that companies with their headquarters in these large cities affect the estimation result of the regression model with the variable of audit firm attributes (*AUDFIR*) as a dependent variable, the dummy variable that designates the companies located in the capital or Saint Petersburg with a value of 1 (*CAPITAL*) is added to the right-hand side of the regression equation together with *DISCAP*. As reported in Section 3, there is a remarkable difference among industrial sectors in terms of audit independence and expertise. Although, for the most part, such a difference can be explained by the above variables, the impact of factors unobservable for econometricians remains. Hence, we control the fixed effects in each industry using eight dummy variables with the communications sector as a default category.

Table 5 contains the definition and descriptive statistics of the above selected variables along with the correlation coefficient with the audit system variables. The correlation matrix of these 19 variables is shown in Table 6. As shown in Table 5, among 6 key variables of our empirical test, *BOACOM*, *FORFIR*, *FEDGOV*, and *GROFIR* are positively associated with all three elements of the audit system variables at the 10% significance level or less, and they support the theoretical hypothesis stated in the previous section. The correlation coefficients between *DOMSHA* and the audit system variables also have a positive sign, but only the correlation with *AUDFIR* reaches the 10% significance level. *REGGOV* is also significantly related to the audit system variables. Nevertheless, their signs do not correspond with our prediction.

Among control variables, *COMSIZ*, *BUSLIN*, and *MARFIN* significantly correlate with all three of the audit system variables, and *BANCRE*, *ROAAVE*, and *EXPSHA* are significantly related to some of the audit system variables, in line with our expectations. Although *OPECOM* and *PRICOM* are also significantly associated with the audit system variables, their signs do not support our theoretical prediction. The remaining *SPIOFF* does not significantly correlate with any of the audit system variables, as in the case of *AUDSIZ*, *CONSUL*, *DISCAP*, and *CAPITAL*. The aim of the multivariate regression analysis is to verify whether or not the relationship between the audit structure and its potential determinants can be replicated while simultaneously controlling the latter. In other words, the goal of our empirical analysis is to estimate a regression equation that takes an audit structure variable of the i th firm (y_i) as a dependent variable in the form:

$$y_i = \alpha + \beta \cdot BOACOM_i + \gamma \cdot DOMSHA_i + \delta \cdot FORFIR_i + \theta \cdot FEDGOV_i + \mu \cdot REGGOV_i + \rho \cdot GROFIR_i + \sum_{j=1}^{n} \sigma_j \cdot x_j + \varphi_k + \varepsilon_i,$$

where α is a constant term, β, γ, δ, θ, μ, ρ, and σ are parameters of independent variables to be estimated, x_j is the j th control variable from *OPECOM* through *CAPITAL*, φ_k is the fixed effects of the k th industry, to which the i th firm belongs, and ε_i is an error term.

[37] *ROAAVE* represents the distance from the median performance in each industry computed on the basis of a method proposed by Eisenberg et al. (1998).

Table 5. Definition and descriptive statistics of the variables used in empirical analysis and correlation coefficient with the audit system variables

Definition of variable (variable name)	Descriptive statistics					Correlation coefficient with the audit system variables		
	Mean	S. D.	Median	Min.	Max.	Proportion of outsider auditors (*AUDCOM*)	Proportion of expert auditors (*AUDEXP*)	Audit firm attributes (*AUDFIR*)
Proportion of outsider directors (*BOACOM*)	0.49	0.35	0.56	0.00	1.00	0.493 ***	0.176 ***	0.305 ***
Dummy for firms with a dominant shareholder (*DOMSHA*)	0.87	0.33	1	0	1	0.025	0.037	0.062 *
Dummy for firms with foreign investment (*FORFIR*)	0.14	0.35	0	0	1	0.203 ***	0.118 ***	0.398 ***
Dummy for firms owned by the federal government (*FEDGOV*)	0.13	0.34	0	1	0	0.094 **	0.075 *	0.175 ***
Dummy for firms owned by the regional and local governments (*REGGOV*)	0.09	0.28	0	1	0	0.093 **	0.022	0.063 *
Business group member dummy (*GROFIR*)	0.39	0.49	0	0	1	0.310 ***	0.183 ***	0.367 ***
Open joint-stock company dummy (*OPECOM*)	0.68	0.47	1	0	1	0.061	0.068 *	0.034
Dummy for former state-owned or ex-municipal privatized companies (*PRICOM*)	0.69	0.46	1	0	1	-0.118 ***	-0.056	-0.037
Dummy for firms separated from state-owned or privatized enterprises (*SPIOFF*)	0.10	0.29	0	0	1	0.037	-0.010	-0.043
Total number of employees (*COMSIZ*)	1884.44	5570.00	465	106	74000	0.187 ***	0.076 **	0.346 ***
Number of business lines (*BUSLIN*)	2.15	2.05	1	1	12	0.111 ***	0.080 **	0.101 ***
Dummy for firms that issued shares or bonds in the overseas or domestic stock exchange (*MARFIN*)	0.13	0.34	0	0	1	0.258 ***	0.088 **	0.461 ***
Firms that used bank credits and their average lending period (*BANCRE*)	2.53	1.45	3	0	5	0.037	0.033	0.121 ***
Annual average of ROA in 2001-2004 (*ROAAVE*)	0.12	0.90	0.00	-8.08	4.26	-0.087 **	-0.007	0.033
Share of exports in total sales (*EXPSHA*)	0.88	1.20	0	0	5	0.010	0.049	0.083 **
Size of the audit committee (*AUDSIZ*)	3.53	2.14	3	1	40	0.046	-0.020	-
Firms that conclude consulting agreement with audit firm and frequency of their use of services (*CONSUL*)	1.07	0.78	1	0	2	-	-	-0.044
Linear distance between Moscow and the capital of the federal district where the company is located (*DISCAP*)	1091.17	1242.34	702.86	6773.13	0.00	-	-	0.005
Dummy for firms located in Moscow or Saint Petersburg (*CAPITAL*)	0.08	0.28	0	0	1	-	-	0.046

Notes: This table presents the definition, descriptive statistics, and data source of variables used in the empirical analyses and the correlation coefficients with the audit system variables. See Table 3 for a definition of the audit system variables. The samples are Russian joint-stock companies that participated in a Japan-Russia joint enterprise survey conducted in 2005. The number of business lines (*BUSLIN*) originates in the SKRIN open database. ROA (*ROAAVE*) originates in the SPARK open database. The linear distance between Moscow and the capital of the federal district where the company is located (*DISCAP*) is computed using the materials provided by Kazuhiro Kumo. All other variables were created on the basis of the results of the 2005 joint enterprise survey. The natural logarithm of *COMSIZ*, *AUDSIZ*, and *DISCAP* is used in the regression analysis. ***, **, and * denote statistical significance at the 1%, 5%, and 10% levels, respectively.

The following are the supplementary variable definitions: *BOACOM*, a continuous variable measured by dividing the number of outsider directors by the total number of board members; *GROFIR*, a dichotomous variable that assigns a value of 1 to member firms of a business group; *OPECOM*, a dichotomous variable that equals 1 if the company was established as an open joint-stock company; *BUSLIN*, a proxy for the level of business diversification measured by the Russian All-Union Classifier of the National Economy Branches (OKONKh) two-digit classification; *BANCRE*, "firms that used bank credits and their average lending period" fall under one of the following 6 categories: 0, did not use any bank credits during the period from 2001 to 2004; 1, used bank credits and their average lending period was less than 3 months; 2, used bank credits and their average lending period ranged from 3 months to less than 6 months; 3, used bank credits and their average lending period ranged from 6 months to less than one year; 4, used bank credits and their average lending period ranged from one year to less than 3 years; 5, used bank credits and their average lending period was more than 3 years; *ROAAVE*, industry-adjusted using a method proposed by Eisenberg et al. (1998); *EXPSHA*, "share of exports in total sales" falls under one of the following 6 categories: 0, 0%; 1, 10% or less; 2, 10.1 to 25.0%; 3, 25.1 to 50.0%; 4, 50.1 to 75.0%; 5, more than 75%; *AUDSIZ*: total members of the audit committee; *CONSUL*, "firms that conclude consulting agreement with audit firm and frequency of their use of services" fall under one of the following 3 categories: 0, did not conclude any agreement with the audit firm adopted as the accounting auditor at the time of the survey; 1, concluded a consulting agreement and occasionally used its services; 2, concluded a consulting agreement and frequently used its services; *DISCAP*, the unit is kilometers.

Table 6. Correlation matrix of the variables used in the empirical analyses

		[a]	[b]	[c]	[d]	[e]	[f]	[g]	[h]	[i]	[j]	[k]	[l]	[m]	[n]	[o]	[p]	[q]	[r]	[s]
[a]	*BOACOM*	1.000																		
[b]	*DOMSHA*	0.093 **	1.000																	
[c]	*FORFIR*	0.275 ***	-0.005	1.000																
[d]	*FEDGOV*	0.212 ***	-0.047	0.179 ***	1.000															
[e]	*REGGOV*	0.092 **	0.066 *	0.074 *	0.130 ***	1.000														
[f]	*GROFIR*	0.344 ***	0.080 **	0.193 ***	0.124 ***	0.041	1.000													
[g]	*OPECOM*	0.021	0.067 *	-0.028	0.054	-0.040	0.054	1.000												
[h]	*PRICOM*	-0.045	0.001	0.023	0.047	-0.032	-0.151 ***	-0.008	1.000											
[i]	*SPIOFF*	-0.001	-0.021	-0.051	-0.043	0.067 *	0.042	-0.007	-0.490 ***	1.000										
[j]	*COMSIZ*	0.276 ***	-0.021	0.355 ***	0.227 ***	0.075 **	0.221 ***	-0.100 ***	0.085 **	-0.024	1.000									
[k]	*BUSLIN*	0.165 ***	-0.008	0.156 ***	0.118 ***	0.014	0.109 ***	-0.003	0.064 *	0.010	0.266 ***	1.000								
[l]	*MARFIN*	0.281 ***	0.029	0.455 ***	0.298 ***	0.091 **	0.288 ***	0.019	0.029	-0.016	0.543 ***	0.167 ***	1.000							
[m]	*BANCRE*	0.093 **	0.165 ***	0.128 ***	0.017	0.060	0.093 ***	-0.056	0.008	-0.018	0.302 ***	0.079 **	0.180 ***	1.000						
[n]	*ROAAVE*	-0.114 ***	0.020	0.004	-0.006	-0.009	0.050	0.015	-0.071 *	-0.001	-0.010	-0.036	-0.031	-0.055	1.000					
[o]	*EXPSHA*	0.072 *	0.052	0.148 ***	-0.064 *	0.003	0.033	-0.048	-0.025	0.092 ***	0.223 ***	0.048	-0.004	0.108 ***	0.097 **	1.000				
[p]	*AUDSIZ*	0.175 ***	-0.021	0.172 ***	0.180 ***	0.044	0.095 **	-0.041	0.082 **	-0.074 **	0.332 ***	0.139 ***	0.254 ***	0.026	-0.060	-0.003	1.000			
[q]	*CONSUL*	-0.028	-0.049	-0.057	-0.018	-0.055	-0.038	0.018	0.031	0.037	0.004	0.057	-0.028	0.018	0.037	-0.015	0.029	1.000		
[r]	*DISCAP*	0.073 **	0.005	0.012	-0.012 *	0.029	0.040	0.125 ***	0.003	0.031	-0.019	-0.089 **	0.012	-0.034	-0.033	-0.026	0.019	-0.061	1.000	
[s]	*CAPITAL*	-0.002	-0.012	0.108 ***	0.007	-0.064 *	0.017	0.000	-0.084 **	-0.024	0.027	0.116 ***	0.064 *	0.031	0.096 **	0.049	-0.005	0.039	-0.539 ***	1.000

Notes: This table presents the correlation matrix of 19 independent variables used in the empirical analyses. Table 5 provides the definitions of the variables. ***, **, and * denote statistical significance at the 1%, 5%, and 10% levels, respectively.

5.2 Estimation results

Our empirical analysis is carried out by taking the following four steps. In the first three subsections, we scrutinize the factors affecting the audit committee independence, the audit committee expertise, and the audit firm choice. Then, in the fourth subsection, we examine the determinants of the comprehensive choice of audit system.

5.2.1 Audit committee independence

Table 7 contains the estimation results on the determinants of the audit committee independence.[38] The table reports the Tobit estimation[39] with the proportion of outsider auditors (*AUDCOM*) as a dependent variable and, to check the statistical robustness of each independent variable, the estimation results of the Logit model with dependent variables, such as the dummy variable that specifies companies whose outsider members account for the majority of the audit committee by 1 (*INDAUD*) and the dummy variable that assigns a value of 1 to companies whose audit committee members are all outsiders (*PERIND*). To compute standard errors, we use White's heteroskedasticity-consistent estimator.

As shown in Table 7, the proportion of outsider directors (*BOACOM*) is positively estimated at the 1% significance level in any of these three models, and it verifies that the presence of outsiders on the board of directors is a crucial factor that promotes the independence of the audit committee. In fact, the coefficient of *BOACOM* largely exceeds 1.0 in Model [1], indicating an extremely high elasticity. This result is entirely consistent with the finding stated in Section 3 that both the proportion of outsider directors and that of outsider audit committee members show a noticeable polarization trend. The impact of affiliation with a business group (*GROFIR*) is estimated to be positive and significant at the 10% level in Model [1]. This estimate suggests that affiliation with a business group increases the proportion of outsider auditors by 19.1% on average in member companies, *ceteris paribus*. Meanwhile, the impacts of the presence of a dominant shareholder (*DOMSHA*) and foreign investment (*FORFIR*) do not reach the 10% significance level even though the coefficient is positive, in line with our predictions. Shareholding by the governments (*FEDGOV* and *REGGOV)* does not have significant estimates either on the federal or the regional level.

The estimation result of the variables of reliance on market financing (*MARFIN*) and use of bank credits (*BANCRE*) indicates that the fund procurement from the capital market and banks greatly affects the audit committee independence. Contrary to our prediction, the dummy variable for privatized companies (*PRICOM*) is estimated to be negative and significant at the 5% level in Model [1] in Table 7. This result suggests that, in general, the former state-owned (ex-municipal) privatized enterprises possibly have not achieved sufficient accountability, in the form of the fairness of corporate auditing, to the state and general public even though they are the successors of state assets that were declared as the "common property of the working class" under socialism.

5.2.2 Audit committee expertise

Table 8 contains the results from the regression analysis of the audit committee expertise. Here, in addition to estimating the Tobit model taking the proportion of expert audit committee members (*AUDEXP*) as a dependent variable, we estimated the Poisson model and the Logit model, which have the total number of expert auditors (*NUMEXP*) and the dummy variable for companies that hire one or more expert auditors (*EXPAPP*) in the left-hand side of their estimation equation, respectively. As shown in the table, the proportion of outsider directors on the board has a positive and significant impact not only on the independence but also on the expertise of the audit committee. For instance, the coefficient of the proportion of outsider directors (*BOACOM*) has a value of 0.69 with statistical significance at the 5% level in Model [1]. The business group affiliation dummy variable (*GROFIR*) is estimated with a positive sign at a significance level not less than *BOACOM*, suggesting that experts are more actively appointed by business groups than independent enterprises in order to conduct a high-quality audit for affiliated companies. The estimate of *GROFIR* in Model [1] indicates that the proportion of outsider audit committee members in group companies is 46.8% higher than that of independent firms on average. The dummy variable for firms with foreign investment (*FORFIR*) is estimated to be significant and positive in Model [2]. This result is affirmed to have a certain positive effect on the appointment of expert auditors from the presence of foreign investors as well. The positive and significant estimate of shareholding by the federal government (*FEDGOV*), in contrast with the insignificant estimate of shareholding by the regional and local governments (*REGGOV*), strongly suggests a more active role of

[38] The number of observations used for the estimations reported in Tables 7 to 10 is far less than 690, which is the total number of officers who gave detailed information about the audit system of their companies. This is simply due to the lack of data on some surveyed firms. Nevertheless, in terms of basic attributes, including ownership structure, there is no statistically significant difference between firms that were dropped from the observations and those that were included in the estimations. Therefore, our estimation results are considered to be only modestly biased, if at all, by the partial omission of samples.

[39] The Tobit model, reported in Tables 7 and 8, is the estimation result of the log likelihood function, whose dependent variable has the lower limit (0) and the upper limit (1) as the threshold.

the federal government in the corporate governance of state-owned enterprises than that of regional and local governments. As in the estimation results of the audit committee independence, the coefficient of dominant shareholder dummy variable (*DOMSHA*) shows a positive sign; however, again, it does not reach the 10% significance level.

Table 7. Regression analysis of audit committee independence

Model	[1]	[2]	[3]
Estimator	Tobit	Logit	Logit
Dependent variable	*AUDCOM*	*INDAUD*	*PERIND*
Proportion of outsider directors (*BOACOM*) (+)	1.1636 ***	3.4454 ***	3.3427 ***
	(0.151)	(0.464)	(0.588)
Presence of a dominant shareholder (*DOMSHA*) (+)	0.0573	-0.1171	0.1641
	(0.117)	(0.394)	(0.417)
Foreign investment (*FORFIR*) (+)	0.0116	0.1056	0.1293
	(0.140)	(0.437)	(0.456)
Shareholding by the federal government (*FEDGOV*) (+)	-0.0214	-0.3184	-0.4911
	(0.108)	(0.407)	(0.473)
Shareholding by the regional and local governments (*REGGOV*) (-)	0.0552	0.3916	-0.9053
	(0.113)	(0.487)	(0.605)
Affiliation with a business group (*GROFIR*) (+)	0.1909 *	0.4369	0.4491
	(0.099)	(0.296)	(0.355)
Establishment of an open joint-stock company (*OPECOM*) (-)	0.0361	0.1360	0.1823
	(0.083)	(0.274)	(0.332)
Privatization of a state-owned or municipal enterprise (*PRICOM*) (+)	-0.3362 **	-0.6449	-0.5045
	(0.135)	(0.415)	(0.442)
Separation from a state-owned or privatized enterprise (*SPIOFF*) (+)	-0.1837	-0.3031	-0.2996
	(0.168)	(0.528)	(0.577)
Company size (*COMSIZ*) (+)	-0.0198	-0.0446	0.0597
	(0.044)	(0.160)	(0.176)
Extent of business diversification (*BUSLIN*) (+)	0.0158	-0.0649	0.0432
	(0.018)	(0.063)	(0.075)
Reliance on market financing (*MARFIN*) (+)	0.3735 **	2.1393 ***	0.2709
	(0.151)	(0.614)	(0.589)
Use of bank credits (*BANCRE*) (+)	0.0201	0.2387 **	0.0399
	(0.032)	(0.107)	(0.128)
Past financial performance (*ROAAVE*) (-)	-0.0335	-0.0328	-0.2195
	(0.049)	(0.137)	(0.180)
Degree of business internationalization (*EXPSHA*) (+)	0.0437	0.0242	0.1478
	(0.041)	(0.120)	(0.150)
Size of the audit committee (*AUDSIZ*) (+)	-0.2398	-0.5035	-2.6752 ***
	(0.156)	(0.501)	(0.686)
Const.	0.3144	0.4544	0.4099
	(0.400)	(1.303)	(1.470)
Industry dummies	Yes	Yes	Yes
N	424	424	424
Pseudo R^2	0.20	0.31	0.27
Log likelihood	-354.12	-194.32	-153.03
F test/Wald test (χ^2)	6.27 ***	125.09 ***	85.04 ***

Notes: This table contains the results from the regressions of audit committee independence on the variables reflecting firm organization and business activities. The samples are Russian joint-stock companies that participated in a Japan-Russia joint enterprise survey conducted in 2005. The proportion of outsider auditors *(AUDCOM)*, the dummy variable for firms whose outsider auditors account for the majority of the audit committee *(INDAUD)*, and the dummy variable that gives a value of 1 if a company whose corporate auditors are all outside persons *(PERIND)* are used as dependent variables. Table 5 provides the definitions of the independent variables. The predicted signs are indicated in parentheses following the abbreviation of the independent variables. Standard errors are computed using White's heteroskedasticity-consistent estimator and given in parentheses beneath the regression coefficients. The F and the Wald tests test the null hypothesis in which all coefficients are zero. ***, **, and * denote statistical significance at the 1%, 5%, and 10% levels, respectively.

Table 8. Regression analysis of audit committee expertise

Model	[1]	[2]	[3]
Estimator	Tobit	Poisson	Logit
Dependent variable	*AUDEXP*	*NUMEXP*	*EXPAPP*
Proportion of outsider directors (*BOACOM*) (+)	0.6948 **	1.0600 ***	0.8150 *
	(0.313)	(0.364)	(0.423)
Presence of a dominant shareholder (*DOMSHA*) (+)	0.4361	0.5079	0.5963
	(0.285)	(0.371)	(0.439)
Foreign investment (*FORFIR*) (+)	0.4490	0.4423 *	0.4954
	(0.290)	(0.269)	(0.369)
Shareholding by the federal government (*FEDGOV*) (+)	0.4546 *	0.4616 *	0.7271 *
	(0.251)	(0.249)	(0.384)
Shareholding by the regional and local governments (*REGGOV*) (-)	-0.3372	-0.4997	-0.3829
	(0.303)	(0.376)	(0.499)
Affiliation with a business group (*GROFIR*) (+)	0.4683 **	0.5023 **	0.7221 **
	(0.212)	(0.241)	(0.295)
Establishment of an open joint-stock company (*OPECOM*) (-)	0.0477	0.1582	-0.0517
	(0.188)	(0.219)	(0.278)
Privatization of a state-owned or municipal enterprise (*PRICOM*) (+)	-0.4806 *	-0.5571 **	-0.6946 *
	(0.257)	(0.249)	(0.363)
Separation from a state-owned or privatized enterprise (*SPIOFF*) (+)	-0.5719	-0.9411 **	-0.7014
	(0.355)	(0.412)	(0.523)
Company size (*COMSIZ*) (+)	-0.2123 **	-0.1708 *	-0.2896 *
	(0.102)	(0.104)	(0.152)
Extent of business diversification (*BUSLIN*) (+)	0.0328	0.0536	0.0404
	(0.043)	(0.046)	(0.063)
Reliance on market financing (*MARFIN*) (+)	0.1505	-0.0146	0.2600
	(0.357)	(0.352)	(0.523)
Use of bank credits (*BANCRE*) (+)	0.0511	0.0452	0.0122
	(0.067)	(0.080)	(0.100)
Past financial performance (*ROAAVE*) (-)	-0.0809	-0.0670	-0.1486
	(0.085)	(0.107)	(0.138)
Degree of business internationalization (*EXPSHA*) (+)	0.1663 *	0.2062 **	0.1639
	(0.091)	(0.089)	(0.134)
Size of the audit committee (*AUDSIZ*) (+)	-0.1570	1.3182 ***	0.3157
	(0.329)	(0.243)	(0.478)
Const.	-0.9331	-3.5816 ***	-2.0715
	(0.950)	(1.059)	(1.393)
Industry dummies	Yes	Yes	Yes
N	424	424	424
Pseudo R^2	0.09	0.18	0.10
Log likelihood	-260.00	-372.35	-203.60
F test/Wald test (χ^2)	1.64 **	129.49 ***	43.93 ***

Notes: This table contains the results from the regressions of audit committee expertise on the variables reflecting firm organization and business activities. The samples are Russian joint-stock companies that participated in a Japan-Russia joint enterprise survey conducted in 2005. The proportion of expert auditors *(AUDEXP)*, the total number of expert auditors *(NUMEXP)*, and the dummy variable that assigns a value of 1 if a company that appoints more than one expert auditor from the outside *(EXPAPP)* are used as dependent variables. Table 5 provides the definitions of the independent variables. The predicted signs are indicated in parentheses following the abbreviation of the independent variables. Standard errors are computed using White's heteroskedasticity-consistent estimator and given in parentheses beneath the regression coefficients. The F and the Wald tests test the null hypothesis in which all coefficients are zero. ***, **, and * denote statistical significance at the 1%, 5%, and 10% levels, respectively.

The negative and significant estimate of the dummy variable for privatized companies (*PRICOM*) exposes the unfavorable attitude of former-socialist enterprises toward the establishment of an audit committee equipped with outside experts. A similar trend is evident in the newly established companies spun off from state-owned (municipal) companies or privatized companies. Company size (*COMSIZ*) is negatively estimated in all models with a statistical significance at the 10% level or below. This result suggests that, in Russia, contrary to conventional understanding, the larger the organization of a company, the greater the negative attitude toward the use of experts as audit committee members. The impact of business internationalization (*EXPSHA*) is estimated to be significant and positive in Models [1]

and [2] in Table 8, in line with our expectations, suggesting that overseas business development is a factor urging Russian companies to improve the expertise of their audit committee, which has to address international standardization of finance and accounting.

5.2.3 Audit firm choice

The estimation results regarding the determinants of an audit firm choice are presented in Table 9. Here, in addition to the order Logit estimation with the variable of audit firm attributes (*AUDFIR*) as a dependent variable, we report the estimation result of the Logit model taking *NONLOC*, a dummy variable for companies not using a local Russian audit firm, and *INTAUD*, a dummy variable that is equal to 1 if a company chooses an external auditor from among international firms, as dependent variables.

From the estimation results in Table 9, we find that the presence of outsiders on a corporate board strongly influences their company's decision making when appointing an audit firm for an external audit. The estimate of the proportion of outsider directors (*BOACOM*) demonstrates that, along with an increase in the proportion of outsider directors to all board members, the probability of hiring an audit firm with more preferable attributes as an external auditor significantly increases. Although affiliation with a business group produces the same effects as board composition, this factor is not significantly related to the probability of hiring international audit firms. In contrast to the business group affiliation dummy variable (*GROFIR*), the dummy variable for firms with foreign investment (*FORFIR*) is estimated at the 1% significance level with a positive sign in Model [3]. This evidence empirically supports a finding by Sucher and Bychkova (2001), namely, that foreign investors venturing into Russia have a strong tendency to press the company in which they have invested to perform an external audit by a leading international audit firm. The coefficients of the presence of a dominant shareholder (*DOMSHA*) and shareholding by the federal government (*FEDGOV*) are insignificant. Thus, the assumption that dominant shareholders and the federal government greatly influence decision making by their own companies regarding audit firm choice is not empirically supported. In contrast, the coefficient of shareholding by the regional and local governments (*REGGOV*) is negative and significant at the 5% level in Model [3], indicating an unfavorable attitude of municipal enterprises towards the use of an international audit firm in order to check and control the quality of their financial statements.

According to the estimation results of the variables of company size (*COMSIZ*) and reliance on market financing (*MARFIN*), a company that has a large-scale organization and procures funds from the capital market by issuing shares or bonds has a high probability of entrusting its external auditing to a non-local Russian audit firm. Furthermore, distance from the capital region (*DISCAP*) has a negative and significant coefficient at the 5% level in Models [1] and [2] reported in Table 9. This result suggests that the cost and time burden represented by the physical distance from the capital is a serious factor that inhibits the appointment of non-local Russian audit firms.

5.2.4 Comprehensive choice of audit system

Since the audit committee and the external auditor institutionally complement one another, a person with appointive power must have a deep interest in the combination of the two auditing bodies, in other words, the overall shape of the audit system. The significance of this strategic choice is not inferior to the individual attribute and capability of the members of the audit committee and the audit firm.

In Figure 4, the audit systems of 660 surveyed companies are sorted into four types with reference to the outsider audit committee member proportion of 50% and indicators of whether or not a local Russian firm is used for the external audit. The figure shows that only 17.6% (116 of 660 companies) established an A-type audit system, which is most preferable in terms of both the independence of the audit committee and the attributes of the audit firm. Meanwhile, as many as 300 companies, or 45.5%, chose a D-type audit system, in which the majority of audit committee posts are given to insiders and which relies on local Russian audit firms for the external audit. In terms of the quality of the audit system, 244 companies, or 37.0%, fall between the A- and D-types.

To pinpoint the factors that create the situations demonstrated in Figure 4, we estimate a multinomial Logit model of discrete choice. In this model, a company choosing the D-type audit system of Figure 4 is designated as the base category (j=0), and, similarly, companies belonging to the A-, B-, and C-types are designated as the first, second, and third categories (j=1, 2, 3), respectively. This multinomial Logit model is expressed by the following formula:

$$\mathrm{P}[y_i = j] = \frac{e^{\beta_j' x_i}}{\sum_{k=0}^{3} e^{\beta_k' x_i}}, \; j = 0,1,2,3,$$

where x is the data vector of the independent variables and β is the vector of the parameters.

Table 9. Regression analysis of audit firm choice

Model	[1]	[2]	[3]
Estimator	Ordered Logit	Logit	Logit
Dependent variable	*AUDFIR*	*NONLOC*	*INTAUD*
Proportion of outsider directors (*BOACOM*) (+)	1.0342 ***	1.2181 ***	1.5474 *
	(0.372)	(0.395)	(0.864)
Presence of a dominant shareholder (*DOMSHA*) (+)	0.5012	0.4049	0.6421
	(0.410)	(0.422)	(1.161)
Foreign investment (*FORFIR*) (+)	0.7064 *	0.3519	1.9633 ***
	(0.371)	(0.394)	(0.720)
Shareholding by the federal government (*FEDGOV*) (+)	-0.0605	0.0738	0.1046
	(0.374)	(0.406)	(0.732)
Shareholding by the regional and local governments (*REGGOV*) (-)	-0.1460	0.0725	-1.3958 **
	(0.385)	(0.444)	(0.630)
Affiliation with a business group (*GROFIR*) (+)	0.7141 ***	0.7859 ***	0.7313
	(0.271)	(0.266)	(0.879)
Establishment of an open joint-stock company (*OPECOM*) (-)	-0.0619	-0.0412	0.4926
	(0.260)	(0.274)	(0.597)
Privatization of a state-owned or municipal enterprise (*PRICOM*) (+)	-0.3147	-0.3723	-0.4940
	(0.337)	(0.356)	(0.686)
Separation from a state-owned or privatized enterprise (*SPIOFF*) (+)	0.5376	0.7355	-1.5425
	(0.435)	(0.477)	(0.987)
Company size (*COMSIZ*) (+)	0.4866 ***	0.5537 ***	0.2771
	(0.138)	(0.153)	(0.227)
Extent of business diversification (*BUSLIN*) (+)	-0.0831	-0.1065	0.1470
	(0.068)	(0.070)	(0.181)
Reliance on market financing (*MARFIN*) (+)	1.2127 **	0.9747 **	1.9923 **
	(0.533)	(0.447)	(0.921)
Use of bank credits (*BANCRE*) (+)	0.0423	-0.0173	0.0066
	(0.104)	(0.102)	(0.369)
Past financial performance (*ROAAVE*) (-)	0.1789	0.1488	0.0909
	(0.162)	(0.155)	(0.342)
Degree of business internationalization (*EXPSHA*) (+)	0.0969	0.0634	0.1395
	(0.119)	(0.129)	(0.339)
Demand for consulting services (*CONSUL*) (?)	0.0472	0.0299	0.2048
	(0.160)	(0.166)	(0.339)
Distance from the capital region (*DISCAP*) (-)	-0.2125 **	-0.2029 **	-0.3780
	(0.103)	(0.103)	(0.244)
Location in Moscow or Saint Petersburg (*CAPITAL*) (-)	-0.5793	-1.0991 *	2.5885 *
	(0.686)	(0.624)	(1.429)
Const.	-	-3.1881 **	-2.4953
	(-)	(1.284)	(2.539)
Industry dummies	Yes	Yes	Yes
N	438	438	132
Pseudo R^2	0.24	0.26	0.43
Log likelihood	-260.86	-199.22	-44.42
Wald test (χ^2)	133.61 ***	89.48 ***	38.24 **

Notes: This table contains the results from the regressions of audit firm choice on the variables reflecting firm organization and business activities. The samples are Russian joint-stock companies that participated in a Japan-Russia joint enterprise survey conducted in 2005. The ordinal variable that gives a value of 0 to companies adopting a local Russian audit firm as its accounting auditor, 1 to companies adopting a non-local Russian audit firm, and 2 to companies adopting an international audit firm *(AUDFIR)*, the dummy variable that captures companies not adopting a local Russian audit firm *(NONLOC)*, and the dummy variables for firms that made choice of the company's external auditor from international firms *(INTAUD)* are used as dependent variables. "Local Russian audit firm" denotes a domestic audit firm located in the same federal district of the surveyed company. Table 5 provides the definitions of the independent variables. The predicted signs are indicated in parentheses following the abbreviation of the independent variables. Standard errors are computed using White's heteroskedasticity-consistent estimator and given in parentheses beneath the regression coefficients. The Wald test tests the null hypothesis in which all coefficients are zero. ***, **, and * denote statistical significance at the 1%, 5%, and 10% levels, respectively.

From the estimation results shown in Table 10, we conclude that the expansion of company size promotes the establishment of an audit system that is comprehensively preferable. Business diversification, in contrast, suppresses such firm behavior. Moreover, fund procurement from the capital market and banks has a similar impact to the board composition and increases the probability of choosing an audit system that secures the superiority of outsider audit committee members (As an alternative regression model for the comprehensive choice of the audit system, we also estimated an ordered Logit model in which the dependent variable gives a value of 0, 1, 2, or 3 to a company choosing the D-, C-, B-, or A-type audit system, respectively, assuming that the assurance value/utility of the audit system increases by each step (i.e., D-C-B-A), and we confirmed that, in this model, independent variables estimated with statistical significance at the 10% level or less are limited to *BOACOM*, *GROFIR*, *COMSIZ*, *MARFIN*, *and DISCAP* and the signs of these five variables correspond with those in the multinomial Logit model reported in Table 10).

Figure 4. Classification of the audit system in 660 joint-stock companies by a combination of audit committee composition and audit firm attributes

		Audit committee composition	
		Proportion of outsider auditors, 50% or more	Proportion of outsider auditors, less than 50%
Audit firm attributes	International audit firm or non-local Russian audit firm	Type-A 116 companies (17.6%)	Type-B 88 companies (13.3%)
	Local Russian audit firm	Type-C 156 companies (23.6%)	Type-D 300 companies (45.5%)

Notes: This figure classifies the audit system of 660 Russian joint-stock companies that participated in a Japan-Russia joint enterprise survey conducted in 2005 in accordance with the audit committee composition and the audit firm attributes. The proportion of outsider auditors is measured by dividing the number of outsider auditors by the total members of the audit committee for each sample firm. "Local Russian audit firm" denotes a domestic audit firm located in the same federal district of the surveyed company.

5.3 Robustness check

To check the overall robustness of the empirical results reported in Tables 7 through 10, we conducted a supplemental estimation to impose a variety of sample restrictions on each regression model and confirmed that these restrictions do not cause any major changes in the estimation results. More specifically, supplemental regressions were performed with the following eight settings: (1) limiting the samples to industrial enterprises; (2) excluding companies operating in fuel/energy, metallurgy, and communications sectors, which are subject to unique government regulations regarding firm organization and business activities; (3) limiting the samples to those with a company size within the mean ±1 standard deviation to exclude very large enterprises from observations; (4) limiting the samples to companies in which the size of the audit committee is within the mean ±1 standard deviation; (5) limiting the samples to companies that have not issued securities; (6) limiting the samples to non-group-affiliated firms; (7) dividing the samples into open and closed joint-stock companies; and (8) excluding companies located in Moscow and Saint Petersburg from observations.

Moreover, we re-estimated models in which the percentages of shareholding by foreign investors, the federal government, and regional and local governments are used instead of ownership dummy variables, namely, *FORFIR*, *FEDGOV*, and *REGGOV*, respectively, and obtained no distinctive differences from the estimation results reported in Subsection 5.2 by these variable changes. We also examined the possible impacts of other ownership aspects that may affect demand for auditing, including the presence of large managerial shareholding and a block shareholder(s), imposition of an upper limit on ownership share and voting rights of shareholders, and changes in principal owners in the recent past, and found no statistically significant and systematic correlation between these factors and the audit system variables, as is the case with the presence of a dominant shareholder.

Furthermore, we performed supplemental regressions using the industry-adjusted value of the frequency of dividend payment and the gross profit to sales as the proxy for past financial performance and confirmed that these two alternative indices also have the same sign and statistical significance as an annual average of ROA.

On the basis of the above findings, we confidently report that the results of regression analysis conducted in this paper are robust across the various specifications.

Table 10. Regression analysis of comprehensive choice of the audit system

Estimator	Multinomial Logit		
Dependent variable (type of audit system)	Type-A	Type-B	Type-C
Proportion of outsider directors (*BOACOM*) (+)	4.6823 ***	0.9924 *	3.5474 ***
	(0.875)	(0.542)	(0.570)
Presence of a dominant shareholder (*DOMSHA*) (+)	-0.2412	0.8129	0.0509
	(0.627)	(0.587)	(0.432)
Foreign investment (*FORFIR*) (+)	0.7109	0.8570	0.1842
	(0.641)	(0.653)	(0.545)
Shareholding by the federal government (*FEDGOV*) (+)	-0.6963	0.1302	-0.2512
	(0.550)	(0.566)	(0.574)
Shareholding by the regional and local governments (*REGGOV*) (-)	0.4892	-0.0276	0.3304
	(0.768)	(0.576)	(0.622)
Affiliation with a business group (*GROFIR*) (+)	1.1583 **	0.7966 **	0.4975
	(0.458)	(0.366)	(0.364)
Establishment of an open joint-stock company (*OPECOM*) (-)	0.5977	-0.3359	-0.0204
	(0.472)	(0.354)	(0.318)
Privatization of a state-owned or municipal enterprise (*PRICOM*) (+)	-0.9391	-0.1187	-0.4158
	(0.673)	(0.573)	(0.480)
Separation from a state-owned or privatized enterprise (*SPIOFF*) (+)	0.0352	1.3461 **	0.1218
	(0.860)	(0.687)	(0.612)
Company size (*COMSIZ*) (+)	0.6713 **	0.2434	-0.2943
	(0.273)	(0.216)	(0.209)
Extent of business diversification (*BUSLIN*) (+)	-0.2157 **	-0.0512	-0.0845
	(0.108)	(0.091)	(0.089)
Reliance on market financing (*MARFIN*) (+)	1.9884 ***	-1.0539	1.4884 *
	(0.744)	(1.547)	(0.774)
Use of bank credits (*BANCRE*) (+)	-0.3539 *	-0.0599	-0.2655 **
	(0.194)	(0.128)	(0.119)
Past financial performance (*ROAAVE*) (-)	-0.0709	0.2805	-0.0856
	(0.265)	(0.189)	(0.152)
Degree of business internationalization (*EXPSHA*) (+)	0.1323	-0.0355	-0.0227
	(0.227)	(0.222)	(0.158)
Size of the audit committee (*AUDSIZ*) (+)	0.4945	0.0527	-0.9431
	(0.618)	(0.612)	(0.594)
Demand for consulting services (*CONSUL*) (?)	-0.0699	-0.0489	-0.1357
	(0.269)	(0.229)	(0.191)
Distance from the capital region (*DISCAP*) (-)	-0.2093	-0.3992 **	-0.0527
	(0.157)	(0.191)	(0.115)
Location in Moscow or Saint Petersburg (*CAPITAL*) (-)	0.1141	-36.9535 ***	0.2412
	(0.922)	(1.185)	(0.641)
Const.	-5.0376 **	-0.9751	2.1740
	(2.515)	(2.086)	(1.775)
Industry dummies	Yes	Yes	Yes
N		406	
Pseudo R^2		0.31	
Log likelihood		-347.79	
Wald test (χ^2)		18406.20 ***	

Notes: This table reports the Logit estimation result of the multiple-choice model of the audit system. The samples are Russian joint-stock companies that participated in a Japan-Russia joint enterprise survey conducted in 2005. In this model, a company choosing the D-type audit system of Figure 4 is designated as the base category, and companies belonging to the A-, B-, and C-types are designated as the first, second, and third category, respectively. For details of the estimation methodology, see Subsection 5.2.4 of the paper. Table 5 provides the definitions of the independent variables. The predicted signs are indicated in parentheses following the abbreviation of the independent variables. Standard errors are computed using White's heteroskedasticity-consistent estimator and given in parentheses beneath the regression coefficients. The Wald test tests the null hypothesis in which all coefficients are zero. ***, **, and * denote statistical significance at the 1%, 5%, and 10% levels, respectively.

6. Conclusion

In this paper, we empirically analyze the firm-level determinants of audit independence and expertise as well as the comprehensive choice of corporate audit system in transition Russia using the results of a Japan-Russia enterprise survey conducted throughout the country in 2005.

The survey results show that Russian joint-stock companies, in comparison with those of Western and Asian Pacific countries, have a questionable audit system. More specifically, the independence of the audit committee in Russian firms is well below the average level for companies in the above countries. In addition, the appointment of an international audit firm as an external auditor is very limited, and most Russian companies have a strong tendency to make external audit contracts with local Russian audit firms. Moreover, Russian firms are generally negative about the appointment of outside experts as audit committee members. Furthermore, from the viewpoint of the independence of the audit committee, remarkable polarization among Russian companies is occurred.

The empirical analysis in this paper presents evidence that is consistent with that in past studies regarding the impacts of outsider directorship and foreign investment on corporate auditing in other countries as well as with that in preceding works on business integration and corporate governance of group companies in Russia, referenced in Section 4. In other words, we verified that the following types of Russian companies are more likely to establish a comparatively desirable audit system than other firms: a company in which the outsider directors take a strong initiative within the corporate board; a company that has accepted foreign investment; and a company that performs business integration with a specific business group through stock ownership. From another perspective, we conclude that the less independent and professional audit system of Russian firms than the international practice is deeply rooted in a weak countervailing power of outsider board directors against management executives, low foreign direct investment within the country, and a loose management discipline of independent companies that are operating in isolation in terms of their capital relationship.

As reported above, the composition of the board of directors, foreign investment, and affiliation with a business group through shareholding are highly important determinants of audit independence and expertise of Russian companies. The extent of the impact of these three factors, however, differs greatly between them. Although the presence of outsiders on the corporate board has a significantly positive impact on every aspect concerning the independence and expertise of a corporate audit, there is a tendency for the main emphasis to be focused on the audit committee composition rather than the audit firm choice. Meanwhile, management integration with a business group exerts a noteworthy effect on the assignment of outside experts as audit committee members and the choice of an audit firm from non-local Russian firms by an affiliated company, and foreign investment has a strong promotional effect, especially on the appointment of an international audit firm.

Our empirical evidence also indicated that, consistently with the findings in Frye and Iwasaki (2011) on the role of state representatives on the board of directors in corporate governance, shareholding by the federal government tends to increase the possibility of hiring expert auditors from the outside by state-owned enterprises. We conjecture that the federal government attempts to promote sound corporate auditing in domestic firms. Meanwhile, we could not obtain any supporting evidence of a close relationship between the presence of dominant shareholders and audit independence and expertise in their companies. One possible interpretation of this result is that the audit system in a typical Russian company clearly reflects the intention of the company's dominant shareholder through the board of directors and, hence, the need to exert direct and incremental control over audit activities of a company is very limited in practice. Needless to say, further empirical examination of this point is necessary.

Moreover, from the empirical results of this study, we found that company size, fund procurement from the capital market and banks, and overseas business advancement have significant impacts on audit independence and expertise in Russia. We also found that former state-owned (ex-municipal) privatized enterprises and newly established companies spun off from state-owned (municipal) companies or privatized enterprises tend to have a negative attitude toward the establishment of an open corporate audit system, *ceteris paribus*.[40]

Soundness of company management that sustains the market economy at the firm level is one of the economic endeavors that Russia has to take seriously. As reported above, the establishment of a rigid and fair corporate audit system is an effective measure for overcoming this issue.[41] However, our empirical evidence suggests that it is not an easy task. Persistent efforts of the Russian government and citizenry are required, as well as technical and financial assistance by the international community.

[40] This is probably due to the self-contained and exclusive organizational culture cultivated during the socialist era (Abe and Iwasaki, 2010).

[41] In fact, according to Iwasaki (2013), Russian firms with a sound audit system enjoyed a higher probability of survival before and after the 2008 global financial crisis, suggesting that promotion of corporate auditing may have a positive policy impact in Russia.

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DOES AUDIT FIRM SIZE CONTRIBUTE TO AUDIT QUALITY? EVIDENCE FROM TWO EMERGING MARKETS

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Abstract

This study investigated whether the Big N audit firms in emerging markets can provide audits of high quality and mitigate information risk, by comparing the audit quality of Big N audit firms in Taiwan with those in China. The two countries share a similar cultural background and engage in frequent economic exchange; however, they have different legal systems and institutional environments. This study followed previous research in the use of bid-ask spread and discretionary accruals as proxy variables for information asymmetry and audit quality. Our results indicate that politico-economic differences between Taiwan and China influence the effectiveness of independent auditors when it comes to the mitigation of information asymmetry. Big N audit firms in Taiwan helped to mitigate information asymmetry and provided audit services of higher quality, whereas Big N firms in China were better able to constrain earnings management. Our results indicate that market concentration and market share have a stronger influence on reputation incentive and audit quality than does the size of an audit firm. ****

Keywords: Audit Quality, Information Asymmetric, Big N Audit Firms, Bid-Ask Spread, Emerging Markets

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Introduction

This study explored the relationship between the size of audit firms and audit quality. By investigating the mitigation of asymmetric information, we sought to determine whether the theory that large audit firms (hereafter referred to as Big N audit firms) provide higher audit quality (DeAnglelo, 1981) can be supported in emerging markets. The research sample included companies in emerging markets (Taiwan and China), which share a similar cultural background and engage in frequent economic exchange, yet have different legal systems and institutional environments.

Curbing information asymmetry has long been an objective among regulators seeking to strengthen capital markets. High quality auditing can strengthen the effectiveness of accounting information in mitigating information asymmetry between markets participants and enhance investor protection. According to conventional auditing theory, Big N audit firms provide superior audit quality resulting from an incentive to protect their reputation as well as the benefits of resource sharing through economy of scale. Big N audit firms are believed capable of resisting attempts to manage earnings (Becker et al., 1998; Francis et al., 1999), enhancing earnings quality (Francis and Krishnan, 1999), and reducing the costs of capital (Timan and Tureman, 1986; Teoh and Wong, 1993; Pittman and Fortin, 2004). However, the incentive to protect the reputation of auditors is directly correlated with the investor protection afforded by the legal system (Choi et al., 2008; Franics and Wang, 2008). Currently, there is a lack of empirical evidence to prove that Big N audit firms provide better audit quality in emerging markets.

The socialist market economy of China is becoming increasingly integrated with the global economy. To attract investors and foreign capital, the government of China has broadly reformed capital market regulations,[42] with the aim of reducing information asymmetry and boosting market liquidity. Regulations related to accounting

[42] Following the establishment of the stock exchanges in Shenzhen and Shanghai in 1990s, the regulations governing authorization to audit listed companies have been amended on a regular basis.

and auditing have been included in these reforms. In recent years, Chinese authorities have acted on the assumption that increasing the scale of audit firms can improve audit quality and competitive capacity. Therefore, in 2000 the China Securities Regulatory Commission (CSRC) and MOF established rules stating that only audit firms with at least twenty qualified securities auditors would be authorized to audit listed companies. The annual revenue threshold required was also increased to RMB 8 million. In order to qualify to provide auditing services to banking institutions, audit firms must have more than sixty auditors and generate annual revenue exceeding RMB 1.5 million. In implementing these measures, the government was seeking to leverage the factors conventionally associated with audit quality and emphasized in auditing theory. Recent studies, however, have begun to question whether the quality of audits performed by firms in China could actually be enhanced by authorizing only Big N audit firms (e.g., Chan and Wu, 2011; Chen et al., 2011).

In comparison, Taiwan has long adhered to the accounting and auditing regulations established in the U.S. In addition, the audit market and level of development in this area are similar to those found in the U.S. Nonetheless, the legal environment is closer to that of China, as a system of code law, which affords investors less protection. Taiwan and China are both considered emerging markets and the development of the legal systems varies considerably between the countries. The securities and exchange regulations, accounting practices, and auditing market in Taiwan are more centralized, compared to the socialist legal environment and independent development of accounting observed in China. Therefore, this study compared the audit market in Taiwan with that in China, because we believe that these characteristics make the Taiwanese system an excellent candidate for such an investigation. The issue of whether audit firms in Taiwan (without an insurance function) and audit firms in China (with a low market share) can alleviate the information asymmetry of audited companies and achieve higher audit quality remains a matter on contention. The findings of this study serve as a supplement to those of previous studies in the field of international accounting.

Auditing services are credence goods, making it impossible to observe or determine audit quality directly. Accounting information is used as a tool to mitigate information asymmetry between markets participants. Audit quality is a crucial determinant in the quality of information related to public accounting; therefore, the credibility of auditors can be viewed as an indicator of accuracy in accounting information (Francis et al., 1999; Behn et al., 2008; Francis and Wang, 2008). Moreover, high-quality auditors play a crucial role in mitigating information asymmetry between the preparers and users of financial reports (Dye, 1993). Following the lead of previous studies using bid-ask spread as a proxy variable for information asymmetry (Kim and Verreshia, 2001; Zhou, 2007), this study first tested whether discretionary accruals are correlated with information asymmetry in companies in China and Taiwan.[43] We then categorized audit firms according to size and examined whether the relationship between discretionary accruals and the mitigation of information asymmetry is more pronounced in Big N audit firms.

Our results indicate that differences in the politico-economic environments of Taiwan and China influence the effectiveness of independent audit in the mitigation of information asymmetry. Compared to non-Big N firms in Taiwan and audit firms in China, the Big N audit firms in Taiwan helped to mitigate information asymmetry and provided higher audit quality. Compared to non-Big N firms in China, Big N firms in China were better able to constrain earnings management; however, due to their low market share they were not significantly effective in mitigating information asymmetry. Our results indicate that market concentration and market share are more important than the size of an audit firm with regard to reputation incentive and audit quality.

The remainder of the article is organized as follows. Following the institutional background, we summarize prior research and develops research questions. We then present our research design and sample selection process. Further sections discuss our empirical evidence. The last section contains a brief recap and summarizes the key findings of the study.

Institutional Background

Comparing Chinese and Taiwanese audit markets

In contrast to Taiwan and other mature audit markets (e. g., the United States), China did not readopt a system of certified public accountants until the 1980's, when economic reforms and the emergence of Sino-foreign joint ventures necessitated the tightening of auditing and tax-reporting requirements. An initial shortage of qualified auditors forced local audit firms to affiliate themselves with governmental departments or educational institutions to overcome challenges in the areas of human resources, business operations, and finance. This tended to weaken the competitiveness and independence of audit firms, while obscuring the legal obligations to which they are expected to adhere.

Frequent auditing failures reported during the 1990s prompted the MOF to revoke the licenses of

[43] Many auditing studies have conclude that high audit quality are correlated with low discretionary accruals.

auditors involved in fraudulent acts. In addition, in conjunction with the CSRC, authorities are poised to revoke securities-related licenses in an attempt to reform relevant regulations. In recent years, the CSRC has continued establishing reforms, with the aim of increasing economic demand for independent auditors and improving the quality of audit work. The unique environment of the Chinese audit market can be attributed to the political and economic systems in China with the government playing a key role in the development of the audit market. Table 1 outlines the regulatory development of the audit market in China.

Table 1. The Development of Audit Market in China

Period		Events
Before 1990	1979	Foreign investment enterprises were allowed to operate in China.
	1988	The Chinese Institute of Certified Public Accountants (CICPA) was founded.
	1990	The Shanghai Stock Exchange and the Shenzhen Stock Exchange were established.
1991-2000	1991	The first CPA Examination was held by MOF.
	1992	The audit firm disaffiliation program was introduced and audit practitioners are required to choose to be either a public official auditor or a certified public accountant.
	1993	Auditor firms were required to reorganize their entity to either limited liability companies or partnerships.
	1995	The first set of local auditing standards was established.
	1997	An audit firm and its auditors were required to obtain a qualification of practicing securities and futures to become eligible to audit listed companies. The second set of auditing standards became effective.
	1999	The audit firm disaffiliation program was completed.
	2000	CSRC promoted auditor firms merges to enhance the competitiveness.
2001-2010	2001	Dual attestation system was required by listed companies. Listed companies must disclosure audit fee in their financial reports.
	2002	The CICPA started to announce the auditor firms ranking annually.
	2004	The CICPA required auditors to disclose their personal information and conducted auditor practice review and quality assessment on audit firms.
	2005	The Act of the "Acceptance of Tort Cases Caused by Fraudulent Financial Reporting in Security Market" was stipulated to define auditors be held liable for damages to investors.
	2010	The MOF released the "Measures for Administration on the Service Charges of Accounting Firms" that required audit firms to charge audit fees in accordance with government guidance.

Audit firms were initially affiliated with governmental departments, which imposed numerous measures to monitor and manage these firms. Permits were required for all auditing practitioners and the government continued raising the standards to encourage mergers among audit firms. Audit fees were charged according to costing rules and state-owned enterprises were restricted by government regulations with regard to the audit firms they were permitted to deal with. Following the completion of disaffiliation reforms in 1999, local audit firms began merging in 2000 in efforts to expand their scale of operation. Overall, the audit market in China has proven to be relatively efficient and sound since 2000.

Both Taiwan and China utilize systems of code law, which tend not to provide investors with the degree of protection afforded in most western countries. As a result, very few lawsuits are instigated against auditors in Taiwan or China, unlike common law nations where auditors are subject to higher liability. Between 2000 and 2010, only 35 auditors in Taiwan had their licenses to practice revoked and between 1999 and 2009, a total of 63 audit firms were subject to disciplinary action from regulatory authorities. Most audit firms in China operate under a limited liability scheme, which makes it difficult to address the issue of audit quality.

Table 2 illustrates the broad differences between audit firms in Taiwan and China with regard to operational scale, market concentration, audit opinions, mandatory rotation, and restrictions on state ownership, any one of which could influence the quality of audit work.

Comparing capital markets in China and Taiwan

The securities market of China is characterized by high issue costs, a high price-earnings ratio, and the raising of highly excessive funding. The insider

information situation is so severe that it has attracted public criticism from foreign investors and the media. Market commentators have gone so far as to compare the stock market in China with an enormous gambling den, in which the government is the boss, the CSRC is the floor manager, and securities firms and listed companies are dealers profiting enormously through the manipulation of stock prices, while lesser stakeholders and traders are mere gamblers who find themselves at the mercy of a rigged system.

Table 2. A Comparison between the Audit Markets of China and Taiwan

	China	**Taiwan**
Structure and development of audit firms	Regulations instituted in 1997 allowed only those auditors or audit firms qualified to provide financial advice on securities and futures to audit and attest the financial statements of listed companies. The disaffiliation program was completed in 1999 and in 2000 the government began setting threshold limits to encourage audit firms to merge. As of 2011, there were 7,976 audit firms and 97,510 certified auditors but only 48 audit firms qualified to provide services on securities and futures business. Audit firms are one of two types: partnership firms and limited liability firms, the latter being the more common model. The financial statements of listed companies must be audited and attested by the partner and senior auditors.	Laws were passed in 1983 requiring publicly traded companies to retain joint audit firms to audit financial reports. As of 2011 there were 85 such audit firms and 2,905 auditors registered with the Taiwan CPA Association. Audit firms adopt partnership systems. The financial reports of public companies must be audited and attested by at least two auditors from a joint audit firm.
Market concentration	The four international audit firms show a low degree of market concentration, with their clients comprising only 6-7% of market share and their total revenue from attestation service.	The market concentration of the four leading audit firms exceeds 80%; their revenue from attestation services for approximately 60% of total revenue.
Frequency of auditing	Once yearly, only in exceptional circumstances, is an interim auditing report required; quarterly reports are not required to be reviewed or audited.	Four times a year; quarterly reports are reviewed and half-year and annual reports are audited.
Audit opinion	Regulations were passed in 1995 categorizing audit opinions as unqualified opinion, qualified opinion, adverse opinion and disclaimer of opinion. From 2006 onwards, these were commonly referred to as standard audit reports and non-standard audit reports (including the unqualified opinion expressed in explanatory paragraph and non-standard unqualified opinions).	Audit opinions were categorized as unqualified opinions, modified unqualified opinions (i.e., a going-concern explanatory paragraph), qualified opinion, adverse opinion and disclaimer of opinion.
Monitoring and information disclosure	The CPA association in each province reviews and ranks audit firms on a yearly basis. Every five years, a quality check of each audit firm is conducted. If breaches are identified, various levels of action may be taken such as open warning, suspension of business, order for rectification, etc. As of 2001 every listed company has been required to disclose audit fees on its annual financial statement.	As of 1989 all audit firms have been required to disclose their operational information to regulatory authorities. However, authorities do not reveal information on individual firms and do not publicly rank audit firms. The Securities and Futures Bureau announced that from 2002 onwards, listed companies that meet specific criteria (change of audit firms reducing audit fee by 15%; or non-audit fees reaching 25% of audited fees) must disclose audit fee-related information.
	China	Taiwan
Liability of auditors	The Securities Act articulates various penalties for audit firms that include false representations on audit reports, such as order to rectify, confiscate the audit fee, suspension or withdrawal of securities practicing license, fines and warnings.	The Securities Trading Act stipulates that in the event of errors or misrepresentation in auditing reports, authorities may impose penalties of varying severity based on the circumstances, such as formal warnings or a two-year suspension of the right to practice or to revoke such certification6
Mandatory rotation	Rotation clause introduced in 2004 mandates that an auditor rotate off the audit project every five years or from returning to the engagement after a	Mandatory rotation was implemented in 2003 and violators were added to the watch list of the Taiwan Stock Exchange. In 2004 regulations were

	China	Taiwan
	rotation of two years. However, if two auditors have been jointly auditing the same company for five successive years, one of them may continue in this role for one more year. Companies must report their rotational system to the CSRC by mid-May of each year, as well as record such data in the monitoring database of the accounting evaluation institute. The rotational clauses are checked randomly by the CSRC. Essive years have been auditng f two years.	established stipulating that auditors could not jointly audit the same firm for more than a total of five years. Auditing Standard (46, implemented in July 2009, stipulates that an audit partner must rotate off the audit engagement after a fixed period of time (no more than seven years) and with at least two years not involved in the audit afterwards.
Auditing of state-owned enterprises	When retaining auditors, state-owned enterprises must choose from the registry of the appropriate agency in each province. Audit firms may be retained for a period of 2-4 years and the retainer must be approved by the State-Owned Assets Supervision and Administration Commission. The audit fee must be lower than the average market rate. There are also regulations, based on the contract established, for the payment of audit fees.	Based on the Government Procurement Act, commercial tenders are used when retaining audit firms. The audit firm whose tender is accepted does not need to be approved by any authority and there are no constraints on tenure or audit fees.

1. According to statistics released by the Financial Supervision Commission, there are currently 1,702 audit firms in Taiwan, of which 384 (23%) are joint audit firms (including 83 firms which are authorized to audit and attest the financial data of public companies).
2. For example, in the second half of the year the company must distribute profits, increase share capital, and compensate for loss.
3. An audit firm is a type of intermediary institute in China; applicants who wish to be registered with agencies must meet specific criteria.
4. The Bureau of Commodity Price in each region stipulates the general auditing service fee.

The market value of the securities traded in China ranked second in the world in 2010, with more than 2,000 listed companies and 140 million A-share investor accounts. However, the existing political system continues to shelter the governmental institutions and listed companies that engage in insider trading to the detriment of the general public.

The securities market in Taiwan is also oriented toward individual investors and the trade in insider information is rampant. Individual investors and minority shareholders have long been forced to bear the brunt of investment risk because of their position as uninformed traders. According to Baber et al. (2009), the average annual stock turnover rate on the Taiwan Stock Exchange is nearly 300%, considerably higher than the 97% on the New York Stock Exchange. They also pointed out that individual investors account for roughly 90% of all trading volume in Taiwan, such that stocks are broadly held as an important class of assets in many households. According to the World Federation of Exchanges, the Taiwan securities market ranked twentieth in the world during our research period, despite the diminutive size of the nation. This clearly indicates the importance of the market in Taiwan.

The above considerations underscore the serious problem of information asymmetry and insider trading encountered in cross-strait capital markets. According to our investigation, between 2000 and 2010, the market in China showed better liquidity and market breadth, while the market in Taiwan had a greater bid-ask spread (companies in Taiwan showed higher and more widely differing stock prices). Nonetheless, the market in Taiwan also demonstrated less fluctuation in week-by-week bid-ask spreads.

Prior Research and Research Questions

Reduction of information asymmetry through quality financial reporting

One of the main causes of volatility in stock prices is the existence of informed traders and the extent to which they participate in securities trading (Amilhud and Mendelson, 1986; Easley and O'Hara, 1992). Information obtained privately implies an assessment of the future value of company assets that is not based on real-time market assessments. The difference between the quality of information obtained by insiders and external investors (information asymmetry) affects the liquidity of securities as well as trading costs. When a select group of investors is privy to insider information regarding the future value of a company, the other investors face information risk (Hasbrouck, 1991; Easley and O'Hara, 2004; Lamber et al., 2007).

Financial reports are an important source of information for investors and market observers and the most effective means of ensuring communication between insiders and outsiders.

Transparency in disclosure policy and the reliability of accounting information related to earnings can reduce information asymmetry by making the same information publicly available to all investors. Reliable financial information helps market participants to make informed decisions based on a fair assessment of company value and adverse selection problems as well as the future cash flow of the company (Sutton, 1997; Healy and Palepu, 2001; Francis et al., 2005; Lamber et al., 2007). Enhancing the quality of financial reports is arguably the most effective means of lowering the information risk faced by capital traders (Frankel and Li, 2004).

Financial reporting quality enhanced by audit quality

Agency problems often occur between company insiders (managers) and the providers of external capital. A failure on the part of executive managers to cope with conflicts of interests among stakeholders can increase agency costs. These costs can impair company value and have other economic consequences due to the hindering of fundraising efforts, the closing off of sources of capital, and curtailed financing.[44] The demand for independent auditing is borne of the need to reduce agency costs (Chow, 1982; Watts and Zimmerman, 1986).

High quality auditing services provide assurance that financial reports are free from material misstatement.[45] Accurate accounting information can reduce information asymmetry and reduce the information risk faced by those who place their trust in audit reports. This in turn reduces agency problems and the costs associated with information asymmetry. The independence of auditing is a crucial element of all business transactions and the quality of auditing services is a hot topic among the participants in capital markets as well as regulatory agencies. The quality of auditing is defined by the commitment of auditors to provide independent opinions as well as their professional capacity to identify misstatements in financial reports (DeAngelo, 1981; Watts and Zimmerman, 1986). A core research topic in the field of auditing is the identification of factors (i.e., institutional and environmental factors, as well as incentives) capable of improving or detracting from the quality of auditing.

High quality auditing can improve the earnings quality of financial statements; therefore, previous researchers have commonly used discretionary accruals as a proxy variable for audit quality (e.g., Kinney and Martin, 1994; Becker et al., 1998; Francis et al., 1999). The reasoning behind use of discretionary accruals as a proxy variable is the fact that the adjusted financial figures in the audit report represent a negotiated outcome between the auditor and the client. In reality, the quality of auditing depends largely on the ability of auditors to identify inaccuracies or inconsistencies in entries (better auditing capacity). When negotiating the final adjusted entries, a high-quality auditor will be better able to defend his/her position (remain independent) against the wishes of those seeking to manipulate auditing information. Most adjusted entries are related to accruals (in particular discretionary accruals), such that companies audited by a high-quality auditor will present lower discretionary accruals.

Information risk is a common problem faced by investors engaging in transnational investments. Foreign investors prefer companies that present financial reports prepared by high-quality auditors (e.g., Big N audit firms), in the belief that the financial information they provide will reduce information asymmetry and information risk. Engaging high-quality auditors is believed to improve the credibility of reported earnings (Francis et al., 1999; Balsam et al., 2003; Francis and Wang, 2008) and make investors more likely to invest, which exerts a positive influence on company value.

Audit firm size and audit quality

Current auditing theory stipulates that reputation-based incentives, the benefits of resource sharing, and the scale of audit firms are all positively correlated with the credibility of financial reports (DeAngelo, 1981; Teoh and Wong, 1993; Francis and Wang, 2008). Big N audit firms are capable of detecting improperly adjusted entries and earnings management behavior (through stronger auditing ability) as well as countermanding these actions (through stronger independence), to produce audit reports of higher quality (Becker et al., 1998; Francis et al., 1999). However, legal liability may influence the degree to which auditors are motivated to maintain their reputations by standing up to clients, which can lead to transnational differences in earnings quality (Choi et al., 2008; Franics and Wang, 2008). The soundness of corporate governance directly impacts the security of investors as well as earnings quality and the degree of information asymmetry. Most studies based on the U.S. system have concluded that Big N audit firms provide higher audit quality (e.g., Teoh and Wong, 1993; Becker et al., 1998; Francis et al., 1999); however, studies examining the situation across national boundaries have indicated that in countries with lower standards with regard to the protection of investors, Big N audit firms have

[44] Relevant costs may include government fees and the expenses associated with monitoring, gathering and disseminating information.

[45] Independent auditors are tasked with providing an audit opinion as to whether the accounting information (financial reporting) provided by the company complies with generally accepted accounting principles (GAAP).

less incentive to maintain their business reputations (Francis and Wang, 2008). As a result, the quality of the accounting work provided by the big names does not necessarily exceed that of less known audit firms.

Following a study of 39 nations, Choi and Wang (2007) concluded that companies with greater information asymmetry tend to be concentrated in countries with weaker investor protection and could benefit from the services of Big N audit firms, Wang et al. (2012) showed that Big N audit firms in Taiwan provide higher auditing quality, capable of reducing the degree of information asymmetry. Clearly, this remains an issue of contention.

3.4 Research questions

Investor protection in the market environment has a direct influence on audit quality. Taiwan and China both utilize code law systems and auditors on both sides of the strait enjoy limited liability. This study investigated the theory that audit quality can enhance the reliability of financial information (and reduce information asymmetry), to determine whether it remains applicable, despite the differences between markets in Taiwan and China.

A number of recent studies have also examined whether the Chinese efforts to merge audit firms will actually improve audit quality (e.g., Chan and Wu, 2011; Chen et al., 2011). Previous studies on the audit markets in China have failed to reach a consensus regarding a positive correlation between Big N audit firms and audit quality. Thus, the question of whether Big N firms in China can reduce information asymmetry and provide quality audit work remains open to discussion and exploration. To facilitate a more meaningful comparison of audit quality across the Taiwan Strait, this study examined the following research questions:

1. Does audit quality mitigate information asymmetry?
2. If audit quality mitigates information asymmetry, do Big N audit firms provide audit quality high enough to be capable of achieving this end?

Research Design

Discretionary accruals

Following prior studies, this study uses discretionary accruals as a proxy to measure how much room auditors give managers to manipulate earnings, which in turn indicates the quality of audit work. Referring to the research of Cohen, Deyand Lys (2008), we applied Eq. (1) to the sample data and discretionary accruals as the residual.

$$TAC_{it} = \beta_0 + \beta_1 \left(1/ASSETS_{it\text{-}1}\right) + \beta_2 \left(\Delta REV_{it} - \Delta REC_{it}\right) + \beta_3 PPE_{it} + \varepsilon_{it} \quad (1)$$

where, for firm*i*and year *t*,

TCA	total accruals scaled by thebeginning balance of total assets, calculated as the difference between net income and net cash flow divided by the beginning balance of total assets;
ASSETS	total assets;
⊿REV	changes in operating income divided by the beginning balance of total assets;
⊿REC	changes in accounts receivable divided by the beginning balance of total assets;
PPE	property, plant and equipment divided by the beginning balance of total assets.

This study did not investigate specific instances of earnings management or whether the adjustment of earnings upwards or downwards each year is influenced by factors, such as contracts and rights issue. Rather, we used the absolute value of discretionary accruals (*AbsDA*) to measure how much opportunity auditors give managers to manipulate earnings. Specifically, greater *AbsDA* indicated lower audit quality.

Information asymmetry

This study followed previous research in using bid-ask spread as a proxy variable for information asymmetry. This was calculated on any given day by subtracting the last bid price (purchase price) from the last asking price (selling price) and then dividing them by the mean bid price and mean ask price. The annual mean (*Spread*) was adopted as the measuring variable in this study. A higher spread indicates a higher degree of information asymmetry.

Based on the research of Zhou (2007), this study calculated and estimated the bid-ask spread of companies in Taiwan and China. The companies were clustered into weekly units and then categorized according to quartile stock value. We then divided the bid-ask spread from a single week by average trading price. The estimate was the square root of the covariance of the difference

between return on closing price and return on bid price. A higher estimate indicated greater week-by-week fluctuation in the respective group and thus greater volatility in information asymmetry. These variables were then used to measure the difference in information asymmetry between markets in Taiwan and China.

Regression model

This study used *absDA* as the dependent variable to conduct empirical testing to determine whether a significant positive relationship exists between *absDA* and *Spread*. Based on these results, we compared the audit markets of Taiwan and China to explore the link between audit quality and information asymmetry. Referring to previous research, this study controlled for company scale (*Size*), market to book ratio (*MB*), sales growth (*Growth*), leverage (*LEV*), loss in the prior period (*LagLoss*), the standard deviation of operating cash flow (*S_CFO*), the standard deviation of daily return (*S_RET*), total accruals (*TAC*), and the dummy variables by year and industry, to produce the following model:

$$\begin{aligned} absDA_{it} = {} & \alpha + \beta_1 Spread_{it} + \beta_2 Size_{it} + \beta_3 LEV_{it} + \beta_4 MB_{it} + \beta_5 Growth_{it} + \beta_6 LagLoss_{it} \\ & + \beta_7 S\_CFO_{it} + \beta_8 S\_RET_{it} + \beta_9 TAC_{it} \\ & + Year\ fixed\ effects + Industry\ fixed\ effects + \varepsilon_{it} \end{aligned} \quad (2)$$

where, for firm*i* and year *t*,

absDA	abnormal discretionary accruals, estimated from model (1) and multiplied by 100 for presentation;
Spread	the average of the yearly difference between the daily last bid and ask quotes divided by equally weighted average, and multiplied by 100;
Size	natural log of market capitalization;
LEV	leverage ratio;
MB	market value to book value ratio.
Growth	sales growth ratio
LagLoss	dummy variable, 1 if the firm reported a loss in the previous year, 0 otherwise;
S_CFO	standard deviation of operating cash flows over the last three years;
S_RET	standard deviation of daily returns;
TAC	total accruals.

To fulfill gaps in previous research, this study examined the four largest audit firms in Taiwan, as well as four leading international audit firms and four national audit firms in China to determine whether these firms had better audit quality capable of reducing information asymmetry. To define a leading audit firm in China, we referred to the work of Chen et al. (2011) and selected four international audit firms and the national firms which were ranked as the top four based on annual sales revenue. We categorized the samples into two groups: samples which were audited by Big N firms and samples which were not audited by the leading audit firms (non-Big N). We expected that the regression coefficient of spread would be positive and that the sub-samples audited by Big N firms would have higher levels of significance.

Sample

This study obtained research data from the period following the disaffiliation reform, considering that the growth of the audit market in China became increasingly robust after 2000. The samples in this study were as follows: listed companies in Shenzhen and Shanghai stock exchanges from 2000-2010 and all listed companies in Taiwan stock exchange, eliminating those with incomplete financial data and excessively low trading volume (which would prevent the calculation of bid-ask spread). We excluded firms in the finance and insurance industries because of their special industry environment. The total number of firm-year observations obtained from samples was 15,531 and 11,490, respectively; the data source was the Taiwan Economic Journal (TEJ) China database.

Results

Univariate analysis

As shown in Panel A of Table 3, the mean difference between *absDA* and *Spread* for Big N and non-Big N groups in Taiwan were -0.392 and -0.251 with t-statistics of 1.648 and 5.116, indicating that listed companies audited by Big N firms showed significantly better earnings quality and less information asymmetry compared to companies audited by non-Big N firms. For other control variables, the mean difference between *DRet_σ* and *TAC* for the two groups was not statistically significant. Listed companies audited by Big N firms were larger and had a higher growth ratio with fewer instances of prior yearly losses and higher stability of operating cash flow. Our results are consistent with those of previous studies.

Table 3. Descriptive Statistics of Empirical Variables

Panel A: Taiwan sample		Mean			
Variable	Full sample N=11490	Big N N=9540	Non-Big N N=1950	Difference	t-statistics
absDA	0.100	0.030	0.422	-0.392	1.648
Spread	1.367	1.309	1.560	-0.251	5.116
Size	14.657	14.773	14.123	0.650	18.831
LEV	0.418	0.406	0.471	-0.365	18.165
MB	1.571	1.612	1.379	0.233	8.334
Growth	0.322	0.329	0.295	0.034	1.561
Lagloss	0.246	0.241	0.265	-0.024	3.373
CFO_σ	0.741	0.403	2.259	-1.865	2.568
DRet_σ	0.030	0.030	0.029	0.001	0.548
TAC	0.045	0.057	-0.007	0.064	0.950
Panel B: China sample		Mean			
Variable	Full sample N=13556	Big N N=3315	Non-Big N N=10241	Difference	t-statistics
absDA	0.088	-0.286	0.213	-0.499	3.117
Spread	0.216	0.194	0.223	-0.029	11.910
Size	14.149	14.580	14.007	0.573	28.301
LEV	0.487	0.490	0.486	0.004	1.259
MB	4.074	3.864	4.142	-0.278	3.980
Growth	0.039	0.026	0.043	-0.017	2.593
Lagloss	0.085	0.058	0.093	-0.035	7.572
CFO_σ	0.152	0.103	0.211	-0.108	8.385
DRet_σ	0.061	0.084	0.053	0.031	3.682
TAC	-0.011	-0.012	-0.010	-0.002	0.927

absDA is abnormal discretionary accruals, estimated from Eq. (1) and multiplied by 100 for presentation; *Spread* is the average of the yearly difference between the daily last bid and ask quotes divided by equally weighted average, and multiplied by 100 for presentation. *Size* is natural log of market capitalization; *LEV* is leverage ratio; *MB* is market value to book value ratio; *Growth* is sales growth ratio; *LagLoss* is a dummy variable, 1 if the firm report a loss in the previous year and 0 otherwise; *CFO_σ* is standard deviation of operating cash flows over the last three years; *DRet_σ* is standard deviation of daily returns; *TAC* is total accruals.

Panel B shows that listed companies audited by Big N firms in China also presented a noticeably lower level of information asymmetry (difference -0.029; t-statistics= 11.910) and better earnings quality (difference -0.499; t-statistics=3.117), compared to companies audited by non-Big N firms. Similarly, listed companies audited by Big N audit firms tended to be larger with better growth development and fewer instances of losses incurred in the previous period as well as lower standard deviation in operating cash flow. These results are consistent with those of previous studies, and answer some additional doubts posed in previous studies regarding the audit quality for listed companies in China.

It is worth pointing out samples from both sides of the strait had distinct *DRet_σ* and *LEV* for companies audited by Big N firms, compared to companies audited by non-Big N firms. Listed companies audited by Big N firms in Taiwan showed a lower *LEV*, while listed companies in China tended to employ Big N audit firms in an effort to improve credit terms and the conditions for securing loans. Thus, the mean value of *LEV* for companies audited by Big N firms was higher, although the difference is not statistically significant (t-statistics=1.259).

Listed companies in China prefer debt financing via bank loans (Chen et al., 2010), resulting in higher leverage ratios in the China sample. On the other hand, the mean value of *DRet_σ* in the Chinese sample (0.061) was higher than that of the Taiwanese sample (0.030), indicating a higher market volatility risk in the capital market on the mainland. In the Taiwanese sample, no significant difference was observed in the mean value of *DRet_σ* in companies audited by Big N and non-Big N firms (t-statistics=0.548). In the Chinese sample, the mean value of *DRet_σ* in companies audited by Big N firms was significantly higher (t-statistics=3.682), indicating a higher return on investment for companies audited by Big N firms. These results support the criticisms in the media related to imbalances in China's capital markets.

Multiple regression analysis

Table 4 presents our empirical results. Sample data from Taiwan (the leftmost column) show a significant positive association between *absDA* and *Spread* (coefficient 0.120, p value<0.00), indicating that higher earnings quality (as a representation of audit quality) can reduce information asymmetry. However, multiple regression results from China do not support the expected relationship between audit quality and information asymmetry. Thus, the first question regarding the efficacy of audit quality to reduce information asymmetry is supported in the more mature Taiwanese market.

According to data from both Taiwan and China, the relationships among other control variables and *absDA* complied with our expectations. After controlling for yearly and industry effects, we discovered that earnings quality is significantly correlated with large scale companies, low leverage, low operating cash flow variance, low standard deviation in daily returns, and high accruals. Overall, the empirical model in this study provided greater explanatory capacity (goodness of fit) among the Taiwanese companies.

We also sought to determine whether Big N audit firms can reduce information asymmetry by providing higher auditing quality. This study categorized samples as companies audited by Big N and non-Big N firms to identify any cross-strait differences with regard to the effectiveness of audit quality in reducing information asymmetry.

Empirical results demonstrate that the significantly positive correlation between *absDA* and *Spread* appeared only in the sub-sample of Big N firms in Taiwan (coefficient 0.097, p value<0.05). The correlation was significant for non-Big N firms in Taiwan (coefficient 0.090, p value=0.341) but not for Big N firms in China (coefficient 0.423, p value=0.684). In addition, the Chinese sample showed a significant negative correlation, indicating that non-Big N firms are unable to reduce information asymmetry.

Table 4. Audit Quality and Information Asymmetry

$$absDA_{it}=\alpha+\beta_1 Spread_{it}+\beta_2 Size_{it}+\beta_3 LEV_{it}+\beta_4 MB_{it}+\beta_5 Growth_{it}+\beta_6 LagLoss_{it}+\beta_7 CFO\_\sigma_{it}+\beta_8 DRET\_\sigma_{it}+\beta_9 TAC_{it}+Year\ fixed\ effects+Industry\ fixed\ effects+\varepsilon_{it}$$

	Taiwan sample	China sample	Taiwan		China	
			Big N	Non-Big N	Big N	Non-Big N
Intercept	4.963**	6.451***	5.490***	-0.493	4.525**	7.038***
	(0.011)	(0.000)	(0.001)	(0.891)	(0.013)	(0.000)
Spread	**0.120*** **	**-0.932***	**0.097****	**0.090**	**0.423**	**-1.307****
	(0.002)	**(0.093)**	**(0.026)**	**(0.341)**	**(0.684)**	**(0.048)**
Size	-0.357***	-0.167***	-0.375***	-0.051	-0.016	-0.194**
	(0.000)	(0.007)	(0.000)	(0.762)	(0.873)	(0.015)
LEV	2.294***	3.257***	2.264***	3.710***	3.819***	3.181***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
MB	1.047***	0.124***	1.091***	0.673***	0.149***	0.117***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Growth	1.058***	0.116	1.136***	0.829***	0.439	0.037
	(0.000)	(0.356)	(0.000)	(0.000)	(0.107)	(0.793)
Lagloss	-0.180	0.009	-0.111	-0.463	-0.324	0.077
	(0.314)	(0.956)	(0.574)	(0.250)	(0.379)	(0.683)
CFO_σ	1.089***	0.622***	0.859***	24.892***	1.057***	0.503***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
DRet_σ	19.281***	0.725***	19.249**	13.583	0.441*	0.809***
	(0.006)	(0.000)	(0.010)	(0.486)	(0.087)	(0.000)
TAC	9.911***	12.837***	8.425***	12.845***	14.889***	12.310***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
YEAR	*included*			*included*		
IND	*included*			*included*		
N	11490	13556	9540	1950	3315	10241
R^2	0.196	0.095	0.183	0.351	0.119	0.092

absDA is the absolute value of abnormal discretionary accruals. All other variables are identified previously in Table 3.

* Significant at the 10% level.

** Significant at the 5% level.

*** Significant at the 1% level.

Results show that the audit quality of non-Big N firms in Taiwan is significantly correlated with a reduction in information asymmetry; however, the audit quality of Big N firms in China was not significantly correlated with the mitigation of information asymmetry. Non-Big N firms in China were significantly negatively correlated with a reduction in information asymmetry, indicating that when companies are audited by non-Big N audit firms, their earnings quality is not high enough to influence information asymmetry.

Compared with non-Big N firms in Taiwan, the Big N firms were able to mitigate information asymmetry by maintaining earnings quality. This supports our hypothesis that information asymmetry can be reduced through high quality of auditing. Overall, this hypothesis could not be supported in the Chinese market. Nonetheless, compared to non-Big N firms in China, the Big N firms still appear to provide higher quality of auditing, despite a lack of statistically significant correlations.

Conclusion

The aim of research in the field of auditing is to identify factors and systems capable of enhancing the independent objectivity of auditors as well as the factors that may undermine audit quality and thus impair the function of signal accounting information. We conducted a comparative study of the audit markets in Taiwan and China, comparing levels of information asymmetry to determine whether Big N firms in Taiwan and China provide auditing quality sufficient to countermand information asymmetry. High-quality auditing imply accounting data of higher accuracy, capable of reducing information asymmetry, facilitating more reliable decision making, raising the confidence of external investors, and reducing information risk. Considering that the size and reputation of audit firms can positively influence audit quality, the government of China has instituted regulations to promote the merging of audit firms. Researchers have recently begun investigating whether the induced merging of audit firms can actually enhance audit quality. This study is an extension of previous research seeking to compensate for gaps in this area.

Big N audit firms in Taiwan were shown to play an important role in mitigating information asymmetry by providing higher quality of auditing. The Big N audit firms in China enjoyed relative size advantage but had low market share. Although their audit quality was higher than that of non-Big N firms (audited clients had relatively conservative total accruals), these firms were not significantly effective in mitigating information asymmetry. We infer that this may be related to market share. The findings of this study provide both practitioners and lawmakers with the following valuable information: Market concentration and market share are more important than the size of an audit firm with regard to reputation incentive and audit quality. Future research could seek to expand upon and further verify these findings.

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CORPORATE GOVERNANCE DISCLOSURE QUALITY: EXPLORATORY EVIDENCE FROM THE UK

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Abstract

A fundamental aspect of good corporate governance is the protection of shareholders and their investments. These stakeholders are now demanding increasing levels of transparency in all aspects of business with a greater emphasis being placed on non-financial information for investment decision making. While the majority prior research has examined the corporate governance practices of the firm, research investigating the actual disclosure of corporate governance practice is scarce. This study contributes to this debate by providing exploratory evidence on the levels of corporate governance disclosure quality and compliance in a sample of 40 UK listed firms throughout the period 2002 to 2009. Findings report a notable increase in disclosure quality and compliance over this period with the greatest increase occurring from 2002 to 2004/05 and suggest that firms are responding to calls from investors.

Keywords: UK Corporate Governance, Disclosure Quality, Combined Code, Audit Committees

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Introduction

Previous literature illustrates the increasing importance shareholders are now placing on transparency and accountability within firms (Brennan and McDermott 2003). Investors are attracted by relevant and reliable corporate disclosure and are placing more reliance on non-financial disclosure to make investment decisions (Solomon 2013; Orens and Lybaret 2010). Additionally, shareholders have a role to play in monitoring firm disclosures and enforcing high levels of corporate governance (Heneghan 2006). In order to effectively carry out this role shareholders require reliable, quality information

Despite the increase in the value of corporate disclosure and corporate governance, research investigating the disclosure of corporate governance by firms is scarce. Only recently has research broadened to consider the accountability aspects of corporate governance (Solomon 2013). The lack of research in this area highlights the need for greater discussion and consideration of corporate governance disclosure by academics, regulators and shareholders. A particular focus of this study is the Combined Code on Corporate Governance (2003) which introduced many new recommendations including specific corporate governance disclosures by firms in their annual reports. These disclosures remain in the UK Corporate Governance Code (2012) and vary across different areas of corporate governance.

The main purposes of this study are to provide exploratory evidence on how companies listed in the UK comply with the best practice guidance on corporate governance disclosure, as prescribed in the Combined Code (2003-2008) and to examine how these disclosures have changed over the period 2002 to 2009. Additionally, the study examines whether UK firms have complied with the annual report disclosure recommendations of the Combined Code (1998-2008). This analysis will provide an understanding of what corporate governance disclosure means for governance in general for UK listed firms.

To provide a comprehensive measure of how corporate governance disclosure levels of UK firms have changed from 2002 to 2009, a Corporate Governance Disclosure Score (CGDS) is designed and assigned to each individual firm in each sample period. Using data extracted from the annual reports of a sample of 40 firms, results identify a notable increase in the CGDS throughout the period. Specifically, findings suggest that significant improvements in corporate governance disclosure levels occurred between 2002 and 2009, with the greatest improvement taking place between 2002 and 2004/2005.

This study builds upon prior research by expanding the focus from simply how the corporate governance systems of a firm operate, to examining how they report upon their corporate governance practices in their annual reports as a means of communicating with shareholders. Additionally, this study responds to the call by Holland (1997) for further direct observation research methods to investigate corporate disclosures and disclosure

levels. The findings in this investigation provide a valuable reference point for further research hoping to assess reporting issues in and around corporate governance.

Prior Literature

Transparency in corporate governance is critical. According to Saeed *et al.* (2009) the public expectation of corporate governance is concerned with the transparency of information and the adequate monitoring of information disclosure. Transparency in all business information is becoming increasingly important and demanded by the public in light of recent corporate collapses. Regulation and best practice corporate governance guidance relies on proper disclosure and transparency to operate effectively. UK corporate governance guidance provides flexibility for firms to comply or depart from its provisions as long as any departure is adequately explained in the annual report.

Akerlof (1970) examines how a lack of quality information creates dishonesty within the market and argues that information asymmetry is an inherent risk in the business world which increases agency costs as it is caused by sellers (managers) knowing more information than buyers (investors). The cost of this dishonesty is not just borne by the dishonest company but the entire market, as investors feel uncertain. A lack of valuable, relevant and material disclosure relating to all aspects of companies in the past led to information asymmetry in the market (Moxey and Berendt 2008). Regulation requiring management to fully disclose their private information provides a solution to this problem (Healy and Palepu 2001). Economists often use this theory to justify the existence and need for regulation, as sellers have more information about goods offered than buyers leading to the efficient operation of capital markets which requires the transparency of information to be regulated (Saeed *et al.* 2009). Senior executives publicly disclose information because of external pressures and benchmarks and because they are aware of the benefits in the form of a market response from increased disclosure (Holland 1997). Chung *et al.* (2010) suggest that effective corporate governance can improve stock market liquidity, as it improves financial and operational transparency leading to a decrease in information asymmetries between managers and investors. Further, they report that firms which adopt corporate governance standards that improve transparency and protect shareholder interests may increase the firm value. Increased voluntary disclosure in all aspects of business reduces the information asymmetries between informed and uniformed investors which have been shown to lead to improved stock liquidity and a reduced cost of capital (Healy and Palepu 2001).

The Cadbury Report (1992) argues that the cornerstone of a robust system of corporate governance system would consist of an effective board which drives the business forward, but within a framework of effective accountability (FRC 2006). This suggests that accountability is at the very foundation of good governance, and better disclosure will encourage greater levels of governance by the entire market.

Levitt (1998, p.1), highlighted the importance of meaningful corporate disclosure when he stated "If a company fails to provide meaningful disclosure to investors about where it has been, where it is, and where it is going, a damaging pattern ensues. The bond between shareholders and the company is shaken; investors grow anxious; prices fluctuate for no discernible reasons; and the trust that is the bedrock of our capital markets is severely tested". Prior research suggests that investors perceive a value to corporate disclosure and they are attracted to invest by relevant and reliable disclosure (Solomon 2013). Lang and Lundholm (1996) concluded that by providing more forthcoming disclosures, corporations can attract analysts, improve the accuracy of market expectations, reduce information asymmetry and limit market surprises, which may reduce the cost of capital. Sengupata (2008) similarly found that firms which consistently make timely and informative disclosure are charged a lower risk premium as they are perceived to be less likely of withholding value-relevant unfavourable information. Brennan and McDermott (2003) argue that interest in honesty, transparency and corporate governance rise in proportion to the number of corporate disasters, suggesting that more recently, interest in corporate governance disclosure is increasing.

Spira and Page (2009) recognise disclosure as being beneficial for many reasons including better corporate accountability, securing the exercise of good corporate governance, enabling better investment decisions and achieving the goals of regulators through indirect regulation. Investors are more concerned about quality not quantity and stronger reporting helps the board to consider more carefully about the key corporate governance issues relevant to their firm, thereby making the process of governance less of a compliance issue and more of an integral part of business success (Independent Audit Limited 2006).

The Office for Economic Co-operation and Development (OECD) cites 'Disclosure and Transparency' as one of its main Principles of Corporate Governance (2004). This principle outlines the importance of accurate and timely disclosure of information regarding all material, including governance matters. Such information is required to conform to high quality standards of financial and non-financial disclosure. The OECD Principles of Corporate Governance (2004) emphasise that markets work better when information is freely available and that companies, analysts and rating agencies have a role to play in providing such information. They also

call for an overall increase in independence and transparency (OECD 2011).

The Conceptual Framework for Financial Reporting (2010) identifies relevance and faithful representation as two fundamental characteristics of financial information. Comparability, verifiability, timeliness and understandability are also widely recognised as enhancing qualitative characteristics of financial information. In contrast, characteristics of non-financial information are not as widely considered or defined. However the developments of a knowledge economy, globalisation and new technologies have led to a decrease in the relevance of financial information. Analysts and investors alike increasingly rely on non-financial information to judge firm value and make investment decisions (Orens and Lybaret 2010). Perceived limitations of the annual report by companies include the domination of financial data and variables and the lack of qualitative information on the quality of management (Holland 1997). Thus it seems that these principles and the traditional desire in business to have sound, relevant and reliable financial reporting should also be applied to the increasingly valuable non-financial disclosures.

Corporate governance literature has been dominated by discussions and examinations of the process by which corporate governance operates and is whether or not firms are compliant with regulations/best practice, but there has been little investigation into the application of corporate governance within corporate reporting, and how corporate governance information is reported (Parker, 1997, Saeed *et al*. 2009). Amman *et al*. (2009) found that prior research has focused on examining corporate governance with regard to the board, remuneration and audit committees and the relationship between good corporate governance and firm value. A review by Brennan and Solomon (2008) of previous literature focusing on corporate governance and accountability found the majority of studies were traditionally based on agency theory and were conducted using quantitative methodologies. They also found that previous studies tend to focus on mechanisms of transparency particularly financial reporting and aligning these with corporate governance mechanisms of accountability, including audit committees, internal audit and risk management. They also contend that prior research has focused on the effects of corporate governance procedures and policies on financial reporting. However Brennan and Solomon's (2008) review calls for a consideration of accountability in corporate governance beyond the focus of financial reporting and that more research investigating the levels and quality of non-financial corporate disclosure is needed. Similarly Parker (2007) recognised that governance accountabilities extend beyond financial status and results. Thus a key focus of this study is to expand corporate governance research beyond the traditional mechanisms of accounting mentioned by Brennan and Solomon (2008) to consider non-financial reporting and disclosure as a mechanism of accountability in corporate governance.

Corporate Governance Disclosure Guidance in the UK

In terms of reporting on the corporate governance mechanisms in place within the firm, UK guidance comes from the Financial Reporting Council (FRC). For a decade the Combined Code (1998-2008) represented the benchmark against which a UK company's standards of corporate governance were judged. Most of these provisions were re-applied in the creation of the current best practice guidance, the UK Corporate Governance Code (2010, 2012). Some of the provisions of the Combined Code (2003, 2006 and 2008) and the UK Corporate Governance Code (2012) require disclosures to be made in the annual report in order to comply with them (FRC 2011). Since data for this study is extracted from the annual reports of the sample firms for the period 2002-2009, the focus of this study will be the disclosure provisions in the Combined Code (2003, 2006 and 2008). No corporate governance disclosure provisions were contained in the first Combined Code (1998).

It has been claimed that regulation of corporate governance in the UK is light touch and is essentially controlled by three main bodies; the FRC, the Financial Services Authority (FSA), and shareholders (AccountancyAge, 2009). The FRC wrote the Combined Code (1998 - 2008), but have no policing or disciplinary role over compliance with it. From 2001 until 2013 when it was dissolved as part of the UK government's restructuring of financial regulation, the FSA held a disciplinary role by enforcing FSA Listing Rules that required companies to explain how they applied the principles of the Combined Code (1998-2008) and whether or not they complied with the provisions of it. However this Listing Rule was regarded by the FSA just as a disclosure obligation and is not statutory. In addition, this requirement is only a small part of the total disclosure requirements set out in the Combined Code (1998-2008). Therefore the remaining disclosure requirements remain to be regulated and enforced only by shareholders. This reflects the argument made by Bolkestein (2003) that the responsibility of the regulator is to set up the framework and to enable the market to play a disciplinary role.

With such an informal system of monitoring compliance with the Combined Code (1998-2008), it is questionable as to how meaningful governance disclosures made by UK firms actually are. This research aims to shed insight into this issue. The level of compliance with the Combined Code (1998-2008) is further questioned by Dewing and Russell's (2008) argument that enforcing compliance with a 'comply or explain' code is problematic, especially if de-

listing from the stock market is the only regulatory sanction available. In contrast, Bolkestein (2003) argues that a self-regulatory market approach combined with disclosure and transparency obligations is the way forward for corporate governance and that transparency and information are powerful tools for shareholders.

Saeed *et al.* (2009) argue that companies will not voluntarily uphold high principles of transparency, meaning that regulation of a firm's corporate disclosure is required. Moreover, Holland (1997) reports there are many perceived costs and benefits to disclosing voluntary information and that the perceived limitations of financial reporting often leads firms to believe that they must release increased voluntary information rather than simply statutory information for financial reporting purposes. Brennan and McDermott (2003, p.12) question the comprehensiveness of information provided in the annual report and suggested that without specific disclosure requirements, 'the annual report may remain an interesting rather than an influential document'. This highlights the importance and relevance of the specific annual report disclosures recommended by the Combined Code (2003-2008) which identifies the key areas where corporate governance disclosures should be provided: the board, board balance and independence, appointments to the board, performance evaluation, financial reporting, internal control, board subcommittees, dialogue with institutional shareholders and overall compliance.

A further interesting point of note is that while UK best practice corporate governance guidance is built on the premise that it principles based and not rules based, a firm *must* disclose its compliance/non-compliance with the Combined Code (2003-2008) in order to be listed on the stock market, meaning that, paradoxically, compliance with best practice guidance is not mandatory, but disclosure of compliance is compulsory. This highlights the level of importance placed upon corporate governance disclosures within the regulatory environment. As MacNeil and Li (2006) note, the operation and effectiveness of corporate governance in a firm is portrayed to and perceived by the shareholders through these disclosures and shareholders and potential investors base decisions on this information and use the disclosures as a mechanism to observe and monitor compliance with the Combined Code (2003-2008). The main corporate governance disclosure provisions of the Combined Code (2003-2008) and their focus are shown in Table 1 which shows that a primary focus of corporate governance disclosures are those relating to the board of directors and the independence of its members, including the chairman. The board of directors is the main internal control device within the corporation which helps to reduce agency costs by monitoring and ratifying management actions on behalf of the shareholders (Overbeek *et al.* 2007). The role of the board is not to engage in daily management activities, but to delegate these responsibilities and monitor management's performance (Lipman 2007). Brennan and Solomon (2008) report that corporate governance research has been dominated by studies regarding the impact of board effectiveness on profitability and shareholder value, which highlights the importance of the board in corporate governance. However, the Irish Stock Exchange (ISE) and the Irish Association of Investment Managers (IAIM) (2010) contend that unless shareholders are familiar with the board, the only visible evidence of board quality are the disclosures made in the annual report.

Brennan and McDermott (2003) examined the independence of non-executive directors in Irish companies and found that information disclosed in the annual report needs to be more consistent. They found that specific information rather than more information is required on both executive and non-executive directors and that this information should be made explicit to prevent ambiguity. Although the importance of director independence is clear, the concept of independence is difficult to define (Overbeek *et al.* 2007). Non-executive directors are seen as being of societal importance, as they are the link between the company and its shareholders. Recently, it has been suggested that the societal interest in and workload of non-executive directors has intensified and yet society increasingly distrusts both executive and non-executive directors, due to the continuing financial scandals in which they have been complicit (Lückerath-Rovers and De Bos 2011).

Corporate governance guidance and regulation has consistently asserted that the chairman, as the leader of the board, must be independent (Cadbury Report, 1992; Combined Code 1998-2008; the UK Corporate Governance Code 2010, 2012). In the United States the role of chairman and CEO are often combined (Behan 2008). However, the Combined Code (1998-2008) recommends that both roles be separated. There has been notable debate and prior research regarding this issue (Felton and Anderson 2004, Tuggle *et al.* 2008). In the UK it is largely viewed that CEO duality weakens board independence and reduces the board's ability to monitor and control management (Tuggle *et al.* 2008). However research examining the disclosure of this important principle is scarce. This is highlighted by the fact that until 2010, reasons for the appointment of CEO as chairman was not specifically required to be disclosed in the UK.

In terms of performance evaluation, the Combined Code (2003-2008) states that the evaluation be conducted formally and rigorously. Shareholders are now encouraged to demand more informative disclosure with regard to annual board performance evaluation (Aguilar 2013). Disclosures regarding the process itself and resulting outcomes should be more meaningful (FRC 2009). PriceWaterhouseCoopers (2007) reported that less

than 50% of the FTSE 350 disclosed that their boards were operating in an effective manner. In addition, these disclosures were often unhelpful and of a boilerplate nature (Leblanc 2010).

The UK Corporate Governance Code (2010) introduced the requirement that an externally facilitated review is conducted once every three years by FTSE 350 companies. McKenzie (2011) suggests that good external evaluators bring objectivity, insight, challenge and understanding, which may partially explain why the FRC has given these parties a more prominent role. McKenzie (2011) further suggests that despite the numerous debates over the causes of huge corporate collapses in recent years, there are fewer discussions as to whether boards were subjected to effective evaluations, and suggests that perhaps these collapses may not have happened if initial evaluations had been undertaken and monitored correctly. Diereckx (2005) suggests that firms should be committed to their performance evaluation since deriving increased value from the evaluation is more desirable than merely compliance.

In terms of financial reporting disclosures, the going concern basis is fundamental to financial statement preparation, and directors are required to explicitly report whether it is appropriate for the coming year (FRC 2008). The reporting responsibilities of the auditor are presented via the audit report, which often includes a description of the director's responsibilities. The directors have a duty to maintain accounting records and have additional reporting duties depending on the size and status of the company, under the Companies Act 2006 (Institute of Chartered Accountants in England and Wales 2011).

As Table 1 shows, directors must now review and disclose the firm's risk management activities and strategies. Risk management systems, financial, operational, and compliance controls should all be considered in the review, and the annual report must disclose that this has been conducted. The FRC (2009) reports that the financial crisis has led to a greater consideration of the major risks faced by UK firms. Operational risk is considered to be dealt with appropriately whereas further guidance was found to be required for strategic risk. Jones (2010) provides a discussion of how the financial crisis provided the ultimate stress test in risk management and infers that many companies have accordingly reviewed and modified their risk management procedures. Despite these improvements, Jones (2010) calls for more quality disclosures on risk management in the future that provide details of the entire risk management process within the firm. The role of internal control as a corporate governance device has changed from being an integral part of an organisation in achieving goals, to a preventative system designed to minimise obstructions to goal achievement (Spira and Page 2009).

Details regarding the members and work of the audit, nomination and remuneration committees are required to be disclosed under the Combined Code (2003-2008). Board sub-committees are established mechanisms for improving board effectiveness (Brennan and Solomon 2008). The board delegates tasks to these smaller groups which should consist of mainly independent non-executive directors. Audit committees are regarded as a key means of enhancing board accountability (Brennan and Solomon 2008). Indeed past research has found that the mere existence of an audit committee has significant benefits for a company including improvements in the audit process, auditor independence, earnings quality, and reduces the likeliness of manipulation occurring within the firm (Fichtner 2010). The importance of the audit committee is identified by the Sarbanes-Oxley Act (2002), particularly the independence of its members (Overbeek *et al.* 2007). Remuneration committees provide important benefits by facilitating the objective management of executive pay (PriceWaterhouseCoopers 2004). Remuneration has been a recent area of particular focus, largely due to heighted concerns regarding remuneration and remuneration setting in financial institutions FRC (2009). O'Hare (2009) argued the most profound changes from the current crisis will be changes to governance arrangements and in particular in the governance of remuneration. Further, he claims that shareholders are focusing more on the oversight applied by the remuneration committee, and there is a greater demand for transparency and an effective governance framework between shareholders, remuneration committees and management.

Roche-Tarry (2009) provides a discussion of how the nomination committee has in the past had a relatively low profile in comparison to the other sub-committees of the board, despite its highly significant corporate governance role. It is noted that the nomination committee essentially determines the leadership of a company and that the board recruitment process has become a more rigorous and professional exercise, with an external advisor often used. Roche-Tarry (2009) suggests that the increased risk of corporate failure seen recently has forced committees to become more accountable and transparent and the nomination committee must appoint board members with the necessary and wide-ranging skills to survive this difficult business environment, which again serves to reinforce the strategic importance of the nomination committee.

In terms of dialogue with institutional shareholders, Davis and Alogna (2008) state that there is little evidence that boards regularly engage with their shareholders on governance matters. However, they identify certain benefits to this dialogue including understanding the shareholder's interests in long term objectives. Millstein (2008) suggests that boards design shareholder communication procedures

tailored to suit the company considering its size, shareholders and past governance issues.

The Combined Code (2003-2008) states that firms should provide a statement in the annual report of how it has applied the main principles of the Combined Code (2003-2008). Firms must state whether they have complied with the provisions throughout the accounting period, and details of non-compliance must be provided including the provision, the period, and the reasons for non-compliance.

The UK Corporate Governance Code (2010) introduced changes to the disclosure requirements in 2003. These additions required firms to disclose reasons for chief executives being appointed as the chairman of the board, explanations of how the directors generate long-term value for shareholders and the strategy for delivering the firm's long-term objectives and a report that the board has conducted a review of the effectiveness of the company's risk management in addition to the internal controls systems. No disclosure requirements were removed with the introduction of the UK Corporate Governance Code (2010).

Methodology

The central aims of this paper are to investigate how corporate governance disclosure levels within UK firms have changed over time and the extent of compliance with disclosure requirements. This will allow the authors to present exploratory evidence on the implications of disclosure and disclosure compliance for UK corporate governance.

To gauge corporate governance disclosure within UK firms, the Combined Code (2003-2008) was analysed to identify the main areas of corporate governance recommended to be disclosed in the annual report. Changes in these disclosure recommendations between 1998 and 2008 were also identified. Based upon these recommendations, nineteen variables were designed to measure the level of company compliance with the individual disclosure requirements in their annual reports. These variables were applied to the annual reports of a sample of 40 UK listed firms for three periods; 2002, 2004/05 and 2009. These time periods selected as UK corporate governance underwent significant change during this period. Moreover, significant changes in the business and economic environment occurred between each of these three periods including; the Enron collapse, the introduction of the Sarbanes-Oxley Act (2002) which had global governance implications and the global financial crisis. Indeed it has been argued that a failure by firms to adhere to the spirit of good corporate governance was a primary factor in the global credit crunch (Moxey and Berendt, 2008).

Table 1. UK Corporate Governance Disclosure Provisions (Source: Combined Code (2003- 2008)

Corporate Governance Area	Provision
Board Balance and Independence	▪ How the board operates, how decisions are made & how authority is delegated. ▪ The names of the chairman (and changes to his/her commitments), the CEO, the senior independent director, independent non-executive directors (and reasons for independence, where necessary) and the chairman and members of sub-committees of the board. ▪ The number & attendance of board and sub-committee members.
Performance Evaluation	▪ How the annual performance evaluation of the board, its committees and directors has been conducted.
Financial Reporting	▪ An explanation from the directors of their responsibility for preparing accounts. ▪ A statement by the auditors about their reporting responsibilities. ▪ A statement from the directors that the business is/is not a going concern.
Internal Control	▪ A sound system of internal control must be maintained and its effectiveness must be reviewed annually. Risk management systems, financial, operational, and compliance controls should all be considered in the review, and the annual report must disclose that this has been conducted. ▪ The reasons for the absence of an internal audit function if it does not exist. ▪ How the independence and objectivity of the external auditor has been safeguarded in the provision of non-audit services.
Audit Committee	▪ Details regarding members and how the audit committee operates. ▪ The reason(s) why the board does not accept the audit committee recommendation regarding the external auditor, where a disagreement occurs.

Nomination Committee	▪ Details regarding members and how the nominations committee operates.
Remuneration Committee	▪ Details regarding members and how the remuneration committee operates. ▪ Details of earnings received by an executive director where they serve elsewhere as a non-executive director. ▪ Reasons for a failure to use an external search consultancy when appointing a chairman or a non-executive director.
Dialogue with Institutional Shareholders	▪ The steps the board has taken to understand the views of major shareholders.
Overall Compliance	▪ A statement in the firm's annual report of how the main principles of the Combined Code (1998, 2003, 2006 and 2008) have been applied. ▪ A statement in the firm's annual report as to whether the firm has complied with the provisions of the Combined Code (1998, 2003, 2006 and 2008) throughout the accounting period. ▪ In the event of non-compliance, details of non-compliance must be provided including the provision, the period, and the reasons for non-compliance.

An analysis of annual report disclosures on corporate governance in these three periods will provide valuable insights into the changes, if any, occurring in the level of corporate governance disclosures made by firms. UK Best practice corporate governance guidance was updated by the Higgs Report (2003) which focused on the role and effectiveness of non-executive directors, and the Smith Report (2003) which focused the effective role that the audit committee can play in governance. The recommendations made by both reports, while initially negatively received, were endorsed and incorporated into the Combined Code (1998). Indeed, Tassell (2003, p.1) refers to these revisions as "the biggest shake up of the boardroom in more than a decade". In terms of data extracted from the annual reports of the sample firms for 2002, it should be noted that the Combined Code (1998) was the appropriate benchmark to judge standards of corporate governance in the sample firms at this stage and did not contain any specific disclosure recommendations for UK firms. Thus, 2002 may be regarded as the 'Pre' event phase of the analysis when UK guidance had yet to be changed in light of the Higgs Report (2003) and the Smith Report (2003). The variables used to measure corporate governance disclosure designed and applied to the data are based on the recommendations of the Combined Code (2003) and are applied retrospectively to the 2002 data to provide insight into the levels of corporate governance disclosure quality in the sample firms already in existence before such notable changes were made. This may also provide some insight into the affect these specific requirements had on the disclosure of corporate governance.

As mentioned, The Combined Code (1998) was revised in 2003, and introduced many changes, including the introduction of recommended specific corporate governance disclosures in the annual reports of firms. Thus 2004/05 may be regarded in this study as the 'Event phase' when the effects of the major changes made to UK corporate governance in 2003 were first felt. The Combined Code (2003) was subsequently revised in 2006 and 2008 but no changes have been made to the disclosure recommendations of the Combined Code (2003) since their introduction. Hence, the disclosure recommendations of the Combined Code (2003, 2006, and 2008) are identical, meaning that the 2009 period included in the sample may be regarded as the 'Post Event' phase of the study.

Measuring corporate governance disclosure

Table 2 presents the variables applied to the data to assess the level of firms' corporate governance disclosures in the annual report over time. Variables denoted with '*' in Table 2 were not used in the analysis of the 2002 annual report disclosures as the main principles/part of the main principles to which these variables relate were not contained in the Combined Code (1998). These variables were used in the analysis of the 2004/2005 and 2009 annual reports only.

Rating Corporate Governance Disclosure

In recent years corporate governance has become increasingly important and is no longer a compliance exercise but an investment discipline (Sherman 2008). Corporate governance rating agencies are becoming increasingly widespread. For example Governance Metrics International has established itself as a global corporate governance rating agency. Moreover, the Stewardship Code (2012) has called for a stronger link to be created between governance and the investment process. Accordingly a Corporate Governance Disclosure Score (CGDS) was devised and applied to the sample firms. This measure will allow multiple facets of corporate governance disclosure to be aggregated into a single measure for a more concise understanding of corporate governance disclosure and how it has potentially changed over the sample period.

Table 2. Corporate Governance Disclosure Variables

Corporate Governance Area	Variable Definition
Board Balance and Independence	▪ OP = '1' if the firm provides a statement of how the board operates; '0' if otherwise ▪ NAM = '1' if the firm discloses the names of the significant members of the board and its committees; '0' if otherwise. ▪ NED = '1' if the firm discloses the names of the independent non-executive directors (with reasons where necessary); '0' if otherwise. ▪ CHA = '1' if the firm discloses any other commitments of the chairman and changes to them during the year;'0' if otherwise. ▪ ATT ='1' if the firm discloses the director attendance and number of board and committee meetings; '0' if otherwise.
Performance Evaluation	▪ PERF* = '1' if the firm discloses how performance evaluation of the board, its committees and directors has been conducted; '0' if otherwise.
Financial Reporting	▪ 'RES = '1' If the directors and auditors provide a statement of their responsibility for preparing the accounts; '0' if otherwise. ▪ CON ='1' if the directors provide a statement that the business is a going concern; '0' if otherwise.
Internal Control	▪ IC ='1' if the firm provides a report that the board has conducted a review of the effectiveness of the group's system of internal controls; '0' if otherwise. ▪ INTA = '1' if the firm has no internal audit function and provides an explanation for the absence of such; '0' if the firm has no internal audit function and fails to provide an explanation for the absence of such; 'N/A' if the firm has an internal audit function and therefore no explanation is required. ▪ NAS = '1' if the firm discloses how the objectivity and independence of the auditor is safeguarded in the provision of non-audit services; '0' if otherwise.
Audit Committee	▪ AUD = '1' if the firm provides a description of the work of the audit committee; '0' if otherwise. ▪ REC = '1' if the board does not accept the audit committee's recommendation on the appointment, reappointment or removal of an external auditor, and a statement from the audit committee is provided explaining the recommendation and the reasons why the board has taken a different decision; '0' if the board does not accept the audit committee's recommendation on the appointment, reappointment or removal of an external auditor, and no statement of explanation is provided; 'N/A' if the board accepts the audit committee's recommendation and therefore no explanation is required.
Nomination Committee	▪ NOM = '1' if the firm provides a description of the work of the nomination committee; '0' if otherwise.
Remuneration Committee	▪ REM = '1' if the firm provides a description of the work of the remuneration committee; '0' if otherwise.
Dialogue with Institutional Shareholders	▪ SHAR* = '1' if the firm discloses the steps taken by the board to ensure board members understand the views of major shareholders; '0' if otherwise.
Overall Compliance	▪ STMT = '1' if the firm provides a statement of how the Main Principles of Section One of the Combined Code (1998, 2003, 2006 and 2008) have been applied; '0' if otherwise. ▪ COMP = '1' if the firm provides a statement as to whether it has complied or not complied throughout the period with all relevant provisions of Section One of the Combined Code (1998, 2003, 2006 and 2008); '0' if otherwise. ▪ NONC = '1' if the firm has not complied with all of the provisions set out in Section One of the Combined Code (1998, 2003, 2006 and 2008) and has disclosed the provision, period and reason for non-compliance; '0' if the firm has not complied with all of the provisions set out in Section One of the Combined Code (1998, 2003, 2006 and 2008) and has not disclosed the provision, period or reason for non-compliance; 'N/A' if the firm has complied with all of the provisions set out in Section One of the Combined Code (1998, 2003, 2006 and 2008).

The CGDS was calculated by combining the total values for all variables defined in Table 2 for each sample firm, dividing by the maximum score attainable and multiplying by 100. CGDS therefore

provides an indication of company's overall corporate governance disclosure compliance in each of the three periods. CGDS was analysed to identify the overall corporate governance disclosure trend over time between 2002 and 2009 in UK firms. It should be noted that the maximum score is determined for each period by totalling the maximum values available from each of the variables applicable to that period. A higher CGDS is argued to provide better governance and accountability for investors. Therefore, variables which increase due to poorer corporate governance in Table 2 require certain adjustments which are explained in Table 3 below.

As well as examining how the CGDS of the sample firms changes over time, this investigation will employ non-parametric analysis to assess if there have been any statistically significant differences in CGDS between each of the sample periods of focus in the study.

Table 3. Variable Corporate Governance Disclosure Variables adjusted for Computation of CGDS

Corporate Governance Area	Variable Definition
Internal Control	▪ INTA = '1' if the firm has an internal audit function and therefore no explanation is required; '0' if the firm has no internal audit function and provides an explanation for the absence of such; '-1' if otherwise.
Audit Committee	▪ REC = '1' if the board accepts the audit committee's recommendation and therefore no explanation is required; '0' if the board does not accept the audit committee's recommendation on the appointment, reappointment or removal of an external auditor, and a statement from the audit committee is provided explaining the recommendation and the reasons why the board has taken a different decision; '-1' if otherwise.
Overall Compliance	▪ NONC = '1' if the firm has complied with all of the provisions set out in Section One of the Combined Code (1998, 2003, 2006 and 2008); '0' if the firm has not complied with all of the provisions set out in Section One of the Combined Code (1998, 2003, 2006 and 2008) and has disclosed the provision, period and reason for non-compliance; '-1' if otherwise.

Analysis

Table 4 presents the descriptive statistics for the variables defined in Tables 2 and 3 for the sample firms for each time period. As all variables used in the study to measure corporate governance disclosure are dichotomous, the McNemar test is applied to the data to test for statistically significant differences in the data between the three time periods included in the study. Findings from this analysis are presented in Table 5.

As the results in Tables 4 and 5 show, there are notable differences in certain aspects of corporate governance disclosure between the periods investigated. When examining 2002 governance disclosures compared to those in 2004/05, tests reveal evidence of a statistically significant difference in levels of disclosure regarding of the names of the significant members of the board and its committees (NAM); the names of the independent non-executive directors with reasons where necessary (NED); other commitments of the chairman (CHA); director attendance and number of board and committee meetings (ATT); a description of the work of the nomination committee (NOM); a description of the work of the remuneration committee (REM); and how the objectivity and independence of the auditor is safeguarded in the provision of non-audit services (NAS). As Tables 4 and 5 report, all of these variables increased significantly from 2002 to 2004/05.

Table 4. Descriptive Statistics: Corporate Governance Disclosure Variables

	2002			2004/05			2009		
	% yes	**% no**	**% N/A**	**% yes**	**% no**	**% N/A**	**% yes**	**% no**	**% N/A**
OP	60	40	-	75	25	-	90	10	-
NAM	75	25	-	92.5	7.5	-	95	5	-
NED	70	30	-	97.5	2.5	-	97.5	2.5	-
CHA	77.5	22.5	-	95	5	-	100	-	-
ATT	2.5	97.5	-	90	10	-	97.5	2.5	-
PERF	N/A	N/A	N/A	85	15	-	87.5	12.5	-
RES	100	-	-	100	-	-	100	-	-
CON	97.5	2.5	-	100	-	-	100	-	-
IC	100	-	-	100	-	-	100	-	-
INTA	2.5	12.5	85	7.5	2.5	90	2.5	5	92.5
NAS	67.5	32.5	-	100	-	-	100	-	-
AUD	100	-	-	100	-	-	100	-	-
REC	2.5	-	97.5	2.5	-	97.5	-	-	100
NOM	30	70	-	87.5	12.5	-	87.5	12.5	-
REM	5	95	-	70	30	-	82.5	17.5	-
SHAR	N/A	N/A	N/A	80	20	-	92.5	7.5	-
STMT	100	-	-	100	-	-	100	-	-
COMP	100	-	-	100	-	-	100	-	-
NONC	15	50	35	22.5	47.5	30	25	15	60

When comparing corporate governance disclosures between 2004/05 and 2009, the reported differences are considerably less pronounced. Tables 4 and 5 report a statistically significant difference between the number of firms that provided a statement of how the board operates (OP) between 2004/05 and 2009. In terms of comparisons in corporate governance disclosures between 2002 and 2009, there is a statistically significant increase in disclosures on how the board operates (OP); the names of the significant members of the board and its committees (NAM); any other commitments of the chairman (CHA); the director attendance and number of board and committee meetings (ATT); the names of the independent non- executive directors with reasons where necessary (NED); a description of the work of the nomination committee (NOM); a description of the work of the remuneration committee (REM); and how the objectivity and independence of the auditor is safeguarded in the provision of non-audit services (NAS).

Presented below are the results of the McNemar test for statistical differences in the variables used to measure Corporate Governance Disclosure when compared between each time period.

Table 5. Tests of Statistical Difference

	2002 vs 2004/05	2004/05 vs 2009	2002 vs 2009
	P-value	**P-value**	**P-value**
OP	0.180	0.031**	0.000***
NAM	0.039**	1.000	0.008*
NED	0.001***	1.000	0.001***
CHA	0.016**	0.500	0.004**
ATT	0.000***	0.375	0.000***
PERF	N/A	1.000	N/A
RES	1.000	1.000	1.000
CON	1.000	1.000	1.000
IC	1.000	1.000	1.000
INTA	1.000	1.000	1.000
NAS	0.000***	1.000	0.000***
AUD	1.000	1.000	1.000
REC	1.000	N/A	N/A
NOM	0.000***	1.000	0.000***
REM	0.000***	0.227	0.000***
SHAR	N/A	0.125	N/A
STMT	1.000	1.000	1.000
COMP	1.000	1.000	1.000
NONC	1.000	0.219	0.125

'***' denotes significance at the 1% level,
'**' denotes significance at the 5% level and
'*' denotes significance at the 10% level.

Table 6 presents the descriptive statistics for the Corporate Governance Disclosure Score for 2002 ($CGDS_{2002}$), 2004/05 ($CGDS_{2004/05}$) and 2009 ($CGDS_{2009}$).

Table 6. Descriptive statistics for the Corporate Governance Disclosure Score (CGDS)

	$CGDS_{002}$	$CGDS_{2004/05}$	$CGDS_{2009}$
Minimum	0.429	0.563	0.750
Maximum	0.929	1.000	1.000
Mean	0.663	0.890	0.944
Std. Deviation	0.103	0.102	0.063
Variance	0.010	0.010	0.004

Overall, the trends show an improvement in the CGDS achieved by UK firms from 2002 to 2004/2005, with the average CGDS improving in each period from 66.3% (2002), to 89% (2004/2005) and greater still in 2009 (94.4%). A Wilcoxon signed rank test was used to measure the statistical significance of the changes in the CGDSs between each of the three periods. The untabulated results from these tests reveal evidence of statistically significant difference (at 1%) between each of the three time periods. Further analysis of these changes finds that the CGDS of 37 of the 40 firms increased from the 2002 to the 2004/2005 period, while the CGDS of 19 firms increased from the 2004/2005 to the 2009. Finally, all firms report an increase in their CGDS from 2002 to 2009. Applying a McNemar test to the data to analyse these changes (untabulated) indicates a statistically significant higher difference between the CGDS for the sample that increased between the 2002 to 2004/2005 period compared to the number of individual firm scores that increased between the 2004/2005 to 2009 period.

Discussion of Findings

Together these findings yield evidence to suggest that, while certain areas of corporate governance disclosure require improvement, significant improvements have occurred in UK firms between 2002 and 2009 and that a more pronounced improvement occurred from to 2002 to 2004/2005 compared to 2004/2005 to 2009.

It may be inferred that firms are responding to the demand for increased transparency and accountability in corporate governance. Results suggest that certain areas of corporate governance are better disclosed than others, particularly in relation to sub-committees of the board. Findings show that five disclosure recommendations have been fully disclosed by firms throughout the 2002 to 2009 period. UK firms are evidently aware of the importance of disclosures relating to the audit committee, as they have maintained full disclosure regarding its operations since 2002. This makes sense as the importance of the audit committee in improving board effectiveness and accountability has been extensively researched and established in the literature (Weidenbaum, 2003; Lumsden, 2004; Brennan and Solomon 2008; Laux and Laux, 2009), and was a main focus of the Sarbanes-Oxley Act (2002). Internal control and risk management have become an area of focus for firms since the financial crisis (FRC 2009). Consistently, results show that the effectiveness of internal control has been an area of full disclosure by UK firms since 2002. Most recently in 2009, firms fully disclosed any other commitments of the chairman and changes to them, a statement that the business is a going concern and how the independence and objectivity of the auditors had been safeguarded in the provision of non-audit services. In 2009 a total of eight variables were fully disclosed by all firms examined, which yields strong evidence of the commitment by these firms to providing more meaningful non-financial disclosure in their annual reports.

However, the results also show that full compliance with all the disclosure requirements of the Combined Code (2003-2008) was still not present in 2009. Despite recent increased focus by the business community on the corporate governance scandals where the primary issue is executive remuneration (ISE and IAIM 2010), 17.5% of the sample firms failed to fully disclose a description of the work of the remuneration committee (Spira and Bender 2004). O'Hare (2009) asserts that here will be a greater need for clarity in remuneration disclosures, the avoidance of remuneration jargon by firms after the financial crisis and that the focus should be on transparency rather than volumes of information. Findings in this study support this argument as it was found that many of the firms examined disclosed an extensive remuneration report, but the specific items recommended to be disclosed on the remuneration committee by the Combined Code (2003-2008) were not included in their entirety. In addition, 12.5% of firms failed to provide a full description of the work of the nomination committee. The nomination committee has been recognised in prior literature as maintaining a lower profile than the other two subcommittees and yet it has a role which equally as important as it ultimately has a notable say in the future leadership of the firm (Roche-Tarry 2009). Overall, these results suggest that the nomination committee is overlooked in terms of corporate governance disclosures. Although describing the work of the remuneration and nomination committees were two areas where lower levels of compliance were observed, the study still reports that significant improvements have occurred in the number of firms complying with these two disclosures between 2002 and 2009, indicating that some efforts are being made to improve these important aspects of corporate governance.

Disclosure quality concerning performance evaluation of the board appears to be of some concern in the sample. McKenzie (2011) suggested that despite the debates over the causes of huge corporate collapses in recent years, there is little discussion as to whether boards had undergone effective evaluations and suggests that such collapses may not have occurred if director evaluations had been monitored. Results of this study suggest the undertaking of evaluations may not have been monitored, as the related disclosures in the annual reports did not exist for a notable 12.5% of firms in 2009. Previous research reports that more meaningful and informative disclosure regarding board performance is being called for by shareholders (FRC 2009). Findings in this study show that not all firms are disclosing the minimum requirements of the Combined Code (2003-2008) regarding board performance, supporting the argument that more disclosure and transparency.

The results of this research are consistent with those of the ISE and IAIM (2010) who examined Irish listed companies' annual report disclosures with the Combined Code (2006). The study found scope for improvement in the disclosures on the workings of key committees of the board, particularly specific aspects of the work of the nomination committee. It was also noted that the disclosure on the process of performance evaluation of the board was poor across the companies assessed. While this study examined data from the UK and the above report from Ireland, the similarity of findings is striking and may suggest that the reoccurring issues reflect the ineffectiveness of the Combined Code (2003-2008) disclosure requirements in certain areas, the arguably light touch regulation of the Combined Code (2003-2008) or the Anglo-Irish attitudes of firms towards corporate governance disclosure. This is an area of potential by future research.

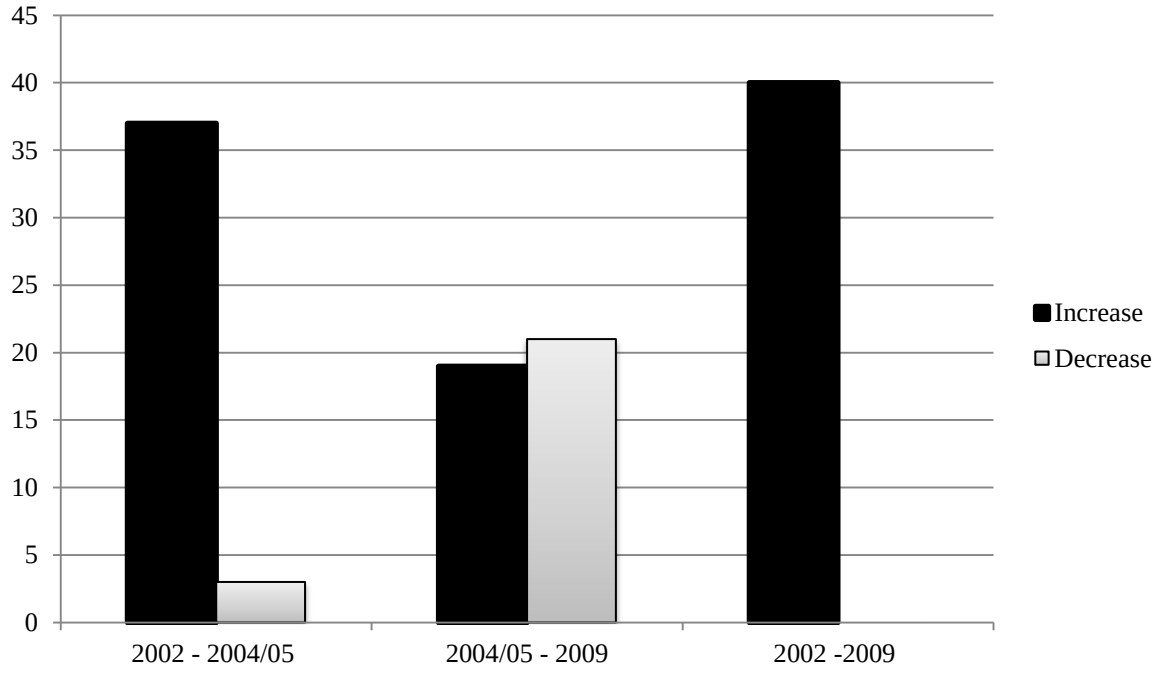
In terms of corporate governance compliance, the study reports that all 40 firms fully disclosed a statement of how the principles of the Combined

Code (2003-2008) had been applied and whether or not they had been fully compliant throughout the period. However, where divergence from specific provisions occurred, complete disclosure was not provided. In 2002, 77% of firms that did not fully comply with all provisions of the Combined Code (1998) failed to provide complete disclosure of the non-compliance. In the 2004/2005 period this decreased 68%, and in 2009 it further decreased to 38%. Although this is a decreasing trend, the overall level of firms failing to comply with this important requirement of the Combined Code (2003-2008) and appropriate listing rules is considerable, particularly in the 2002 and 2004/2005 periods. Compliance with this disclosure requirement should be monitored and enforced and yet it appears that full disclosure by all firms does not exist. This may reflect the inadequacy of the light touch regulatory approach, and the difficulty in enforcing a 'comply or explain' code if the only regulatory sanction is de-listing from the stock market, as suggested by Dewing and Russell (2008). These findings also support the ISE and IAIM (2010) study, which asserts that in circumstances of non-compliance with specific Combined Code (2003-2008) requirements, more meaningful explanation should be provided.

The application of the Corporate Governance Disclosure Score (CGDS) yields interesting insight into the sample. Overall the CGDS shows an increasing trend from one period to the next and that there was a significant increase in the CGDS between each of the three periods, suggesting that overall corporate governance disclosure by UK firms has been increasing significantly from 2002 to 2009 and that firms are accounting more fully for their corporate governance practices. The 2009 average CGDS of 94% suggests that recent corporate governance disclosure is strong.

The authors further analysed the CGDSs by examining the trends of individual firm scores between each period. Findings from this analysis are illustrated in Figure 1 and show that between 2002 and 2009 all of the sample firms' individual CGDSs increased. Between 2002 and 2004/2005 37 of 40 firms (92.5%) experienced an increase in their CGDS. However, between 2004/2005 and 2009, 21 firms (52.5%) experienced a decrease in their CGDS. The below chart depicts the change in the sample firm's Corporate Governance Disclosure Score (CGDS) across the three sample periods. The Y-axis measures the number of firms in the sample. The X-axis measures time changes.

Figure 1. Individual Firm CGDS Trends



This presents a more concerning suggestion, that although corporate governance disclosure has increased significantly since 2002, most of this change occurred between 2002 and 2004/2005. In addition, the decreasing CGDS in a large number of firms between 2004/2005 and 2009 may suggest that firm interest and concern for corporate governance disclosure is decreasing. The dramatic increase in disclosure compliance from 2002-2004/2005 may be due to the major revisions made the Combined Code (1998) following the publication of the Higgs Report (2003) and the Smith Report (2003).

Brennan and McDermott (2003) emphasise the importance of specific disclosure requirements arguing that the annual report requires them in order to become an influential document. This may suggest that specific disclosure recommendations, even if voluntary, are effective. Saeed *et al.* (2009) argues

that firms will not voluntarily provide high levels of transparency without regulation. Thus the findings of this investigation may indicate that transparency in corporate governance dramatically increased with greater regulation in the form of the revised Combined Code (2003) and that specific disclosure requirements introduced in 2003 led to significantly greater disclosure in the firm's annual reports.

The significant positive change in corporate governance disclosure between 2002 and 2004/05 may also have been the response of firms to the huge corporate collapses that occurred around this time such as Enron and Worldcom. Brennan and McDermott (2003) suggest that interest in honesty, transparency and corporate governance rises in proportion to the number of corporate disasters which certainly was the case in between 2002 and 2004/2005. This may have put pressure on firms to significantly increase their transparency surrounding corporate governance matters and practices.

Conclusion

The purpose of this paper is to provide exploratory evidence on the quality of corporate governance disclosure. The results suggest that corporate governance disclosure by UK firms is significantly increasing. A failure by UK firms to adhere to the principles of good corporate governance has been blamed as part of the problem in recent corporate collapses and the global financial crisis (Moxey and Berendt, 2003) and some even argue that corporate governance is broken (AccountancyAge 2009). This study suggests that not all aspects of corporate governance are broken and while there are always methods of improving corporate governance, this paper provides exploratory evidence to suggest that corporate governance disclosure is strong and has improved significantly over an extremely financially turbulent period and that a focus by firms and emphasis by regulatory bodies on the importance of corporate governance disclosure must continue.

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РАЗДЕЛ 3 КОРПОРАТИВНОЕ УПРАВЛЕНИЕ В АЗИИ

SECTION 3 CORPORATE GOVERNANCE IN ASIA

DIRECTOR'S MONITORING EFFECTIVENESS AND CEO COMPENSATION

Chee-Wooi Hooy *, Chwee-Ming Tee**

Abstract

This paper examines the monitoring effectiveness of independent and non independent directors on a CEO pay-performance of Malaysian financial firms from 2002-2009. It is based on the agency and managerial power theory. The former states that under optimal contract pay should be aligned to performance, while the latter postulates that powerfully entrenched CEO can influence captive directors to award generous compensation package. Our empirical results show (1) a high CEO pay-dividend sensitivity while market measurement plays no part in influencing CEO pay; (2) both the independent and non independent directors have failed in their fiduciary role as internal monitor, suggesting the dominance of managerial power in the board; (3) the appointment of independent directors is merely a move to fulfill the minimum standards of the best practices of corporate governance.***

Keywords: Corporate Governance, CEO Pay-Performance, Director's Monitoring, Agency Theory

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1. Introduction

The significant increase in CEO compensation over the past two decades has made CEO compensation practices a controversial global issue. For example, in the 2010 survey done on S&P 500 US companies, average CEO compensation was reported at $11.4 million per year. Bebchuk and Grinstein (2005) reported that CEO compensation has outstripped the growth in firm's performance and size from 1993 till 2003. Thus, excessive CEO's compensation has certainly made CEO compensation practices an important governance issue. The most recent global financial crisis 2009 strongly suggests that CEO compensation has not being tied to performance. What remains controversial and divisive is while shareholders have lost their fortune in the stock market, CEOs were rewarded with huge severance

pay package. For example, the CEO of Merrill Lynch, Stan O'Neal reportedly walked away with $161 million in compensation package while his company lost $2.2 billion in 2007.

The successful implementation of a performance orientated contract is linked to an effective internal monitoring mechanism. To facilitate this objective, regulators have periodically introduced best practices of corporate governance as in the case of Cadbury (1992), Greenbury (1995), Hampel (1998) and Higgs (2003) reports. Among all, the board of director is the most important internal corporate governance mechanism in a public listed company. One of its main duties is the setting of CEO remuneration package. Greenbury Report (1995) proposed the setting up of a remuneration committee, whereby, its majority should be independent directors as they have no direct financial interest in the decision making. Nevertheless, the above recommendation should also be complemented by a proactive board as suggested by Pearce and Zahra (1991). Proactive board is the strongest form of internal monitoring mechanism as the members are motivated by shareholder activism and poses power that exceed the CEO. In addition, majority of the board members are independent and poses unique expertise and experience to complement existing effective decision making mechanism.

Board structure is represented by the ratio non independent directors and independent directors. In Malaysia, the code of corporate governance was introduced by Securities Commission in 2000 which was subsequently revised in 2007. According to Bursa Malaysia listing rules section 4.26, non independent director is defined as a person who represents the interest of significant shareholders in the company. Implicitly, they can collectively influence the appointment of CEO and independent director. However, empirical evidence seems to suggest that independent directors are not effective in discharging their monitoring duties. In fact, Fernandes (2008) finds that a firm with zero independent director has fewer agency problem and better alignment between manager and shareholder interest.

The financial sector is selected as our case study due to two main reasons. First, little attention is being focused on corporate governance research in financial institutions as pointed out by Kose and Qian (2003). Till to this date, there has yet to be any pay-performance research on Malaysian financial sector. Second, not all firms have the same level of internal monitoring mechanism. Internal monitoring mechanism should be rigorous in firms that are subjected to stringent local and international regulatory requirements. Due to its important intermediary role in the economy, financial services industry is heavily regulated by regulator as suggested by Doucouliagos et. al. (2007) and Kose and Qian (2003). In fact, a higher standard of care should be applied on bank directors compare to other industry. For the purpose of our study, we shall focus on the internal monitoring role of independent and non independent directors in regards to pay performance in Malaysian financial sector.

We test our hypotheses on a sample of 168 financial firms listed in Bursa Malaysia by using fixed effect panel model. Our performance measures are expected stock return, abnormal stock return (as short term market measurement), and dividend per share (as long term accounting return). For control variables, we include firm size. Our main focus is on independent director, non independent director and their interaction effect with the performance measures to determine director's monitoring effectiveness (BIND and NIND with all of the performance measures). Our results did not conclusively support agency optimal contract theory. With the exception of significant positive dividend coefficient, all variables are insignificant. Further, the significant negative interactive coefficients suggest independent and non independent directors' failure as internal monitors.

This study is outlined as follows. In section 2, we provide our research objectives and hypotheses. In section 3, we discuss methodology and data, including specification of our empirical model of agency theory, director's monitoring, measurement of the variables and description of our sample. In section 4 we describe and discuss the empirical results, and in section 5 we conclude this paper.

2. Research Objective and Hypotheses

The main objective of this study is to investigate the empirical CEO pay-performance relationship in the Malaysian financial services industry. Just like in Australia and US, Malaysian financial institutions are viewed with great interest by the investors, regulator, financial press and government. Unfortunately, there is a dearth of empirical study on the relationship of CEO pay-performance of financial firms in Malaysia. Our findings can be utilised to design an optimal pay performance contract for CEO in Malaysian financial services sector respectively. Besides, we also investigate the effectiveness of a CEO's pay-internal monitoring mechanism in Malaysian financial industry. Previous studies on corporate governance issue only focus on the role of independent director. However, our study includes non independent director as part of the firm's internal monitoring system. To our best knowledge, there is no empirical research done on the role of non independent director as internal monitors.

This study is distinctive in two ways. First, our research examines the monitoring role of independent and non independent director as internal monitors for the Malaysian financial firms. Second, we segregate total shareholder return into stock return and dividend. Previous studies by Doucouliagos et. al. (2007) defined shareholder return as the aggregate of stock returns and dividends while Duffhues and Kabir (2008) and Merhebi et. al. (2006) use stock returns.

We believe it is essential to disaggregate both components, as stock price is considered a short term market measurement, while dividend represents a long term accounting return.

The development of our hypotheses is based on the agency theory and managerial power literature. From the public listed company's point of view, the principal and agent is represented by the shareholder and manager respectively. Jensen and Meckling (1976) and Jensen and Murphy (1990) suggest that agency costs can be reduced through the implementation of optimal contract, which states that pay should be aligned to the performance of the firm. Three widely cited empirical papers on study done in US, by Jensen and Murphy (1990), Murphy (1999) and Core et. al. (2003) suggest that the pay-performance relationship is positive. Thus, we suggest the following hypothesis:

Hypothesis 1. CEO pay is positively associated with stock returns, abnormal returns and dividend per share.

Bebchuk and Fried (2004) and Bebchuk et. al. (2002) introduced the concept of *fat cat* in their managerial power theory, which was subsequently used by the media to describe over paid top executive directors in the corporate sector. This managerial power theory suggests that an entrenched CEO manipulate its captive board of directors and remuneration committee to award huge remuneration package to him/her at the expense of shareholders. Based on the Malaysian Shareholder Watchdog Group (2008) report on corporate governance in Malaysian public listed companies, Malaysian board structure does not fall under proactive category. Cheng and Firth (2005) and Main (1991) studies found positive significant association between CEO pay and the number of directors. Based on the above evidence and reasoning, the following hypothesis is suggested:

Hypothesis 2a. There is a positive association between CEO pay with the composition of independent directors.

Hypothesis 2b. There is a positive association between CEO pay with the composition of non independent directors.

The effective internal monitoring role by director is crucial in ensuring creation of shareholder value. For example, the board can ingeniously design a compensation contract that rewards the CEO for his/her superior performance. Thus, it is essential to analyse the director's influence on CEO pay-performance. However, to differentiate our study with the rest, we incorporate the monitoring role of non independent as part of the internal monitoring mechanism. This is because non independent directors represent the interest of the significant or controlling shareholders. We also assume that significant shareholder interest is aligned to minority interest. Based on this reasoning, we suggest the following hypothesis:

Hypothesis 3. The interaction coefficient between performance measurement and independent and non independent director composition is predicted to be significantly positive if independent directors and non independent directors are discharging their monitoring role effectively, *vice versa* .

3. Methodology and Data

We adopt panel regression technique to test the above hypotheses. In the presence of unobservable firm-specific variable, fixed effect panel model is robust, whereas simply pooling time series data under OLS framework would have resulted in biased estimates (Cornett et. al., 2008 and Fernandes, 2008). In addition, Fernandes (2008) is of the opinion that fixed model is appropriate for pay-performance regression as the relevant issue is whether compensation fluctuates with the firm's performance.

Our fixed-effect baseline model (1) is presented as follows:

$$\begin{aligned}\log(CEOPay)i,t &= \beta_0 + \beta_1 SR_{i,t-1} + \beta 2 ANR_{i,t-1} + \beta_3 DPS_{i,t-1} + \beta_4 \log(TA)_{i,t-1} + \beta_5 BIND_{it} + \beta_6 NIND_{it} \\ &+ \beta 7\left(SRi,t-1 * BINDi,t\right) + \beta 8\left(ANRi,t-1 * BINDi,t\right) + \beta 9\left(DPSi,t-1 * BINDi,t\right) + \beta 10\left(SRi,t-1 * NINDi,t\right) \\ &+ \beta 11\left(ANRi,t-1 * NINDi,t\right) + \beta 12\left(DPS_{i,t-1} * NIND_{i,t}\right) + \eta_i + v_t + \varepsilon_{it}\end{aligned} \quad (1)$$

where:

$CEOPay_{i,t}$ = log of CEO Pay for firm i, time t;
$TA_{i,t-1}$ = log total asset for firm i, time t-1;
$R_{i,t-1}$ = stock return for firm i, time t-1;
$ANR_{i,t-1}$ = abnormal stock return for firm i, time t-1;
$DPS_{i,t-1}$ = gross dividend per share for firm i, time t-1;
$BIND_{i,t}$ = ratio of independent director for firm i, time t;
$NIND_{i,t}$ = ratio of non independent director for firm i, time t;
$SR_{i,t-1} * BIND_{i,t}$ = the interaction between *SR* and *BIND*;
$ANR_{i,t-1} * BIND_{i,t}$ = the interaction between *ANR* and *BIND*;
$DPS_{i,t-1} * BIND_{i,t}$ = the interaction between *DPS* and *BIND*;
$SR_{i,t-1} * NIND_{i,t}$ = the interaction between *SR* and *NIND*;
$ANR_{i,t-1} * NIND_{i,t}$ = the interaction between *ANR* and *NIND*;
$DPS_{i,t-1} * NIND_{i,t}$ = the interaction between *DPS* and *NIND*;

The coefficients β_1, β_2 and β_3 test hypothesis 1, while β_5 and β_6 test hypothesis 2. In order to study the effectiveness of independent and non independent directors as internal monitors, performance variables are interacted with the ratio of independent and non independent directors in the firm. A significantly positive coefficient implies that these directors are effectively discharging their monitoring role while a significantly negative coefficient suggests that these directors have failed in their monitoring role. Thus β_7 to β_{12} test hypothesis 3.

We also carried out a robustness checking by incorporating dummy variable to see if the CEO pay is significant if regressed with different group of independent directors. The dummy variable is interacted with performance variable as shown below. Under the Malaysian code of corporate governance 2000, board of director should consists of minimum 33% independent director. However, Higgs (2003) propose a minimum ratio of 50%. Our fixed-effect robustness model (2) is presented as follow:

$$\begin{aligned}\log(CEO_{i,t}) &= \beta_0 + \beta_1 SR_{i,t-1} + \beta_2 ANR_{i,t-1} + \beta_3 DPS_{i,t-1} + \beta_4 \log(TA)_{i,t-1} + \beta_5 \left(SR_{i,t-1} * D33_{i,t}\right) \\ &+ \beta_6 \left(ANR_{i,t-1} * D33_{i,t}\right) + \beta_7 \left(DPS_{i,t-1} * D33_{i,t}\right) + \beta_8 \left(SR_{i,t-1} * D50_{i,t}\right) + \beta_9 \left(ANR_{i,t-1} * D50_{i,t}\right) \\ &+ \beta_{10} \left(DPS_{i,t-1} * D50_{i,t}\right) + \eta_i + \nu_t + \varepsilon_{it}\end{aligned} \quad (2)$$

where *D33* is the dummy variable with value 1 if the firm has minimum 33% but less than 50% are independent director, and 0 otherwise; and *D50* is the dummy variable with value 1 if minimum 50% are independent director, and 0 otherwise.

In accordance with the approach underline by Merhebi et. al. (2006) and Firth et. al. (2006), the CEO pay package includes only cash remuneration (basic salary, bonus, allowances, fees, pensions and monetary benefits). Stock options are excluded due to unavailability of data in Malaysian public listed companies. Stock return is used as a market measurement by Duffhues and Kabir (2008) and Merhebi et. al. (2006). The former failed to find significant positive relationship between pay-performance in Netherlands while the latter reported significant positive relationship based on Australian data. The difference in results could be attributed to the different level of shareholder activism in both countries.

Stock return *SR* is computed based on the average movement in daily stock price and is a proxy for short term market measurement. Abnormal return *ANR* represents short term return to shareholder after discounting the effect of overall market movement. Thus, it reflects the true CEO management skills rather than being subjected to overall market fluctuation (Main, 1991). While Kerr and Bettis (1987) supported Main's view, their study found no significant influence of abnormal returns on CEO's compensation. Their results differ from Main (1991) studies which reported positive significant relationship.

The importance of dividend to shareholders in finance literature is discussed from sustainability perspective (Litner, 1956), protection of minority shareholder's rights (La Porta et al., 2000) and enforcement of agency theory (Gugler, 2003). In our study, gross dividend per share comprises of cash dividend declaration by the firm. We prefer gross dividend per share over Battacharrya et. al. (2008) dividend payout ratio and Fenn and Liang (2001) dividend yield approach. First, adopting the dividend payout approach would exclude firms with negative payout ratio. Second, there are firms who pay out dividend from its retained earnings even though it reported negative earnings per share. In addition, dividend yield approach does not project the managerial skills and competence of a CEO as it is subjected to the daily fluctuation of stock prices.

Doucouliagos et. al. (2007) predicts that a CEO's compensation for year t is based on the company's performance of prior years based on two factors. First, lag year approach will produce relatively accurate results as the current CEO's pay in year t will be based on the company's performance in the previous financial reporting year. Empirical studies that do not lag their independent variables assume that pay is based on the expectation of corporate performance for year t. Thus, it is unlikely to capture accurate relationship between pay and performance (Cornett et. al, 2008 and Kerr and Bettis, 1987). Second, there would be delay in adjusting pay to performance if consultant compensation is employed by the financial institution. The practice to engage the services of compensation consultant is common in Malaysian financial sector. Due to the variability of financial firms in Malaysia, we include total asset as control variable.

The data is collected from all public listed financial institution in Bursa Malaysia from 2002 till 2009. To ensure compliance with homogeneity factor, as suggested by Banz (1981), all the selected firms have year-end reporting period 31 December. In addition, the selected firms did not undergo any corporate restructuring exercise during the research period. Using the above stated criteria, 168 public listed financial firms were selected. The data on CEO pay, independent and non independent director is hand collected from the annual report of each of the selected financial firms, while daily stock price, annual cash dividend and total assets are extracted

from Datastream. Since there are no missing values, a balanced sample is presented for analysis.

4. Empirical results

4.1 Descriptive statistics

The summary statistics of all the variables are presented in Table 1. The means (medians) of CEO pay in the financial services sector is RM 1,625,375 (RM 925,500). The highest paid CEO received RM 15.22 million per year while the lowest paid CEO is only compensated with a meager sum of RM 88,400 per year. Financial services firm record poor return in terms of abnormal return and stock return. Abnormal return means (medians) recorded a loss of 0.37% (0.35%) while stock return means (medians) recorded only 0.08% (0.09%). The main reason is attributed to the bearish performance of Bursa Malaysia stock market during the period of study 2002-2009. Nevertheless, the means (medians) of 0.09 (0.004) dividend per share indicate that a large proportion of financial services total shareholder return is contributed by dividend payout. The means (medians) of total asset are RM 27 billion and RM 2.36 billion respectively. In regards to board independence, the means (medians) 0.44 (0.42) suggest that most financial firms met the threshold standard of 33% independent directors in the board. Some boards can have as high as 66% independent directors and as low as 22%. In addition, the composition of independent directors equally matched non independent directors in the board. This is to ensure that minority shareholder's rights are protected. We perform preliminary correlation test (not reported here) among the variables and result shows no multicollinearity issue in our model.

Table 1. Pay, performance and board structure descriptive statistics

Variable	Mean	Median	Maximum	Minimum	Standard Deviation	Number of Observations
CEOPay	1,625,375	925,500	15,221,200	88,400	2,001,702	168
ANR	-0.37	-0.35	1.13	-2.05	0.49	168
SR	0.08	0.09	1.54	-1.29	0.43	168
DPS	0.09	0.04	0.80	0.00	0.16	168
TA	27,148,085	2,361,045	257,000,000	160,0000	4,8109,410	168
BIND	0.44	0.42	0.66	0.22	0.10	168
NIND	0.41	0.42	0.66	0.16	0.12	168

Note: The variable listed in the first column are: CEO pay in cash terms RM; abnormal return *ANR* and stock return *SR* are proxy for market measurement in percentage; dividend per share *DPS* are gross dividend paid in cash RM; total asset *TA* is proxy for firm size RM ('000); *BIND* which is a proxy of board independence is the ratio of independent director in the board of director in % and *NIND* is the ratio of non independent director in the board of director in %.

4.2 Pay-performance, board structure and director's monitoring effectiveness

Table 2 reports the fixed effect panel estimates for our baseline model 2 and robustness model 2. The estimate for model 1 implies that with the exception of DPS, all performance, board composition and firm size variables are insignificant. The CEO pay is predicted to increase by 31% for every cent increase in dividend, suggesting a high degree of sensitivity. However, our study suggests that top manager interest is not align to shareholder from the perspective of stock return and abnormal return. The coefficients of independent and non independent directors are insignificant at either 5% or 10% level. Further, we find that insignificant coefficient of independent and non independent director predicts a negative relationship between the level of CEO pay and ratio of independent director and non independent director. The coefficients of interactive variables between stock return, abnormal return, firm size and independent and non independent directors are insignificant while dividend interaction coefficient is significant but negative. Overall results indicate failure of independent and non independent directors' monitoring role as components of internal monitoring mechanism.

Table 2. Regression results of independent variables on CEO compensation

Coefficients for	Model 1	Model 2
Constant	33.12 (1.71)	19.17 (6.13)
SR(-1)	1.75 (0.69)	0.02 (0.03)
ANR(-1)	-1.93 (-0.71)	0.59 (1.01)
DPS(-1)	31.42 (2.12)*	21.67 (2.98)**
TA(-1)	-1.53 (-1.26)	-0.41 (-1.91)*
BIND	-12.33 (-0.55)	
NIND	-25.63 (-1.17)	
DUM33		-1.03 (-0.43)
DUM50		-1.49 (-0.53)
SR(-1)*BIND	-2.84 (-0.88)	
ANR(-1)*BIND	1.69 (0.49)	
DPS(-1)*BIND	-36.69 (-2.19)**	
SR(-1)*NIND	-1.42 (-0.54)	
ANR(-1)*NIND	2.27 (0.77)	
DPS(-1)*NIND	-36.72 (-1.93)*	
SR(-1)*DUM33		-0.06 (-0.12)
ANR(-1)*DUM33		-1.01 (-1.77)*
DPS(-1)*DUM33		-25.63 (-3.52)***
SR(-1)*DUM50		-0.26 (-0.54)
ANR(-1)*DUM50		-0.73 (-1.25)
DPS(-1)*DUM50		-21.59 (-2.97)**
Adjusted R square	0.87818	0.8933
Observations	168	168

Note: The dependent variable is CEO compensation in cash terms. Three firm performance variables lag one year are represented by stock return *SR* in percentage, abnormal stock return *ANR* in percentage and dividend per share *DPS* in RM. The control variable is total asset *TA* in RM. Board structure variables are represented by ratio of independent director *BIND* and ratio of non independent director *NIND* in percentage. Two dummy variables are included; *DUM33*, coded as 1 to represent board independence ratio more than 33% but less than 50% and 0 otherwise and *DUM50*, coded as 1 to represent board independence ratio more than 50% and 0 otherwise. The monitoring effectiveness of independent and non independent director result is obtained by interacting the performance variables with *BIND* and *NIND* variables respectively. As a robustness measurement; these performance variables are interacted again with dummy variable *DUM33* and *DUM50*. The t statistics are computed using the White (1980) heteroscedasticity robust standard error and are given in parentheses. Figure in the parenthesis is t-statistic, while *, **, *** indicates significance at the 10%, 5% and 1% level.

To ensure the robustness of our modeling, we include the dummy variables with the minimum 33% to 50% and minimum 50% and in model 2. From the estimates of model 2, we find a positive strong significant relationship between DPS and CEO pay ($t = 2.98$, $p < 0.0038$), suggesting an increase of nearly 22% in CEO pay for every 1 cent rise in dividend. However, stock return and abnormal return are insignificant determinants for CEO pay. Based on this mixed bag of results, we cannot totally reject the presence of agency theory in model 2. In respect to total asset (TA) as proxy of firm size, the coefficient is strongly significant but negative ($t = -1.91$, $p < 0.0601$), suggesting a decline of 0.4% in CEO pay for every percentage rise in total asset. In regards to director's monitoring effectiveness, model 1 results are almost identical to model 2, with the exception of dividend in minimum 50% board independence ratio. Nevertheless the interactive coefficient is negatively significant ($t = -2.91$, $p < 0.0039$).

5. Conclusion

The determinants of a CEO's pay have received a lot of attention but previous empirical studies have yet to establish a significant compensation method which meets both the objectives of top managers and shareholders. The optimal contracting theory by Jensen and Meckling (1976) and Jensen and Murphy (1990) suggest that the CEO's pay should be aligned to the firm's performance and deviation should be corrected by internal monitoring mechanism. However, little research has been done on the monitoring effectiveness of the directors. Hence, this research contributes to the field of CEO pay by linking agency theory with the monitoring effectiveness of directors.

Our statistical result shows that an increase of 31% and 21% respectively on CEO pay for every 1 cent increase in firm's dividend, suggesting high pay-dividend sensitivity. However, market measurement is not significant determinant of CEO pay. This is not surprising as financial firms tend to record low

variability in stock return due to strict statutory financial regulatory requirement and stable business environment. Additionally, based on the obtained empirical evidence, we conclude that independent and non independent directors are ineffective internal monitors. Subsequently, we assess the impact of implementing the best practices of corporate governance by the firms. The obtained results indicate that independent directors do not play any positive significant monitoring role, regardless whether it is 33% or 50% ratio. Therefore, overall results suggest that the directors did not play an effective monitoring role to enforce optimal contracting principles in Malaysian financial firms during the period of study. Further, based on the obtained results, managerial power seems to influence the setting of CEO pay in Malaysian financial firms.

There are limitations in this study. First, stock based incentives have yet to be implemented by Malaysian financial firms during the period of study. As such, this study has to rely on component of cash compensation. It would be fruitful academic exercise in future research to incorporate stock options as part of the CEO pay performance analysis, when a sizable firms starts to reward them with stock options. Such research enhances the understanding of market discipline influence on CEO pay-performance and risk appetite in Malaysia. Second, independent and non independent directors monitoring incentives and capabilities are quite subjective to observe. Our results seem to suggest that directors have been ineffective in their monitoring role. Taking cue from this, future research should look into the possibility that directors might have certain preference of pay-performance variable and criteria for setting these preferences. Third, our approach did not incorporate the entrenchment power of a CEO. Thus, incorporating managerial power approach as proposed by Bebchuk and Fried (2004) and Bebchuk et. al. (2002) might explain why independent and non independent directors have not been effective in discharging their fiduciary role, despite complying with the minimum board independence ratio. Finally, our study is only based on Malaysian financial firms. To ensure a more conclusive and inclusive result, future research should include firms from other sector in Malaysia.

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IMPACT OF OWNERSHIP STRUCTURE ON DEFAULT RISK: A CASE OF BANKING SECTOR OF PAKISTAN

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Abstract

This study empirically investigates the impact of ownership structure on default risk of banks by using the panel data of commercial banks of Pakistan over the period of 2005-2011. The study considers two dimensions of ownership structure: categories of owners and ownership concentration. The study further splits the categories of owners into seven categories (managers/directors, families/individuals, foreigners, public owners, banks, non-banking financial institutions, and non-financial institutions), having different risk taking incentives. Controlling for various factors, the results of the study reveal that the ownership structure is significantly related with default risk of banks. On the whole, higher equity stake families/individuals are associated with a decrease in default risk of banks. Also, the involvement of public owners and foreign owners in ownership structure seem to increase the default risk of banks. All other categories do not have significant relation with default risk of banks. Finally, the findings of the study suggest that high ownership concentration is associated with high default risk in banks.

Keywords: Ownership Structure, Default Risk, Commercial Banks, Concentrated Ownership

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1. Introduction

Financial sector is a mainstay of an economy and is significantly linked with economic growth of the country. Financial stability of an economy relies heavily on the strength of banking sector along with other factors. The disruption in the banking sector is caused by both macroeconomic factors and microeconomic factors. These macroeconomic factors include inefficient corporate governance mechanism, insufficient disclosures, regulatory failures and improper supervisory measures. While at micro level information asymmetries, asset liability mismatch, excessive leverage and herd behavior of investors increase the risk level of individual bank which ultimately leads to the banking crisis[46]. So, it is necessary to address the issue of risk taking behavior of banks for financial stability and minimization of banking crises especially in developing economies where regulatory environment is weak.

The banking crises in last three decades have led to substantial losses both in developed and developing countries. These nonstop banking crises spotlight the volatile nature of banks and the propensity of banks to take undue risks. The effect of these crises may be minimized by improving the macro level regulatory environment controlling risk taking behavior of banks. However, to control risk taking behavior of banks, it is necessary to assess the sources of risk. Although several national and international agencies are focused on regulations to bring down the risk in banking, however, less attention is paid to work out the underlying issues that could affect bank risk taking. There are many factors which may influence the risk of banks: franchise value of bank, stability of ownership structure, corporate governance mechanism etc (Konishi and Yasuda, 2004). The ownership structure is the main pillar of corporate governance mechanism, which may contribute to risk taking of banks. The Basel Committee in its report emphasized the ownership structure as a key internal mechanism of corporate governance for regulatory reforms in financial sector.

Ownership structure is described not only as a division of equity with reference to right to vote of shareholders and their share in equity but also by the specification of the equity owners. Banking industry has passed through many changes in last few decades. These shifts in banking industry have

[46] Simkovic (2009);Kindleberger and Aliber (2005);Gordy and Howells (2006)

resulted in change in ownership structure along with other changes. But in previous decades, there was no reduction in corporate scandals because of corrupt incentive schemes and incompetent ownership structures. That's why; to find most effective ownership structure has become very important as it exerts influence on the quality of bank regulation and control, banks portfolio composition and the transparency of banks records.

Ownership structure has been assumed to influence firm performance for many years. Adam Smith (1776) identifies that private companies (management and ownership in a single hand) are more efficient than joint-stock companies (management and ownership in separate hands) as the managers would not take care of 'other people's money' with 'same anxious vigilance' as their own money[47]. Similarly, Berle and Means (1932) asserted that with the evolution of corporations, various organizations are owned by scattered shareholders and controlled by managers which resulted in agency problems and thus ultimately affect the firm performance.

The banking sector of Pakistan has undergone many reforms in the past few decades. In recent years, many transformations also took place in terms of consolidation and diversification. Almost 40 transactions of mergers and acquisitions have been accomplished in Pakistani banking sector in the last ten years. Although the banking sector of Pakistan is continuously expanding, the non performing loans are also increasing. This is the indication of increase in credit risk of banks. Like other sectors, block-holder ownership is prevalent in banking sector. Around seventy percent ownership of all the banks is in the hands of their top five shareholders. Thus, the risk of expropriation by the controlling owner at the cost of minority shareholders seems to be a major problem. The ownership concentration in banking sector is increasing in recent years. Also the foreign ownership and institutional ownership is increasing, whereas, family ownership and public ownership is decreasing. So, there is a need to study the impact of these changes in ownership categories and ownership concentration on performance of banks. It is also very relevant to determine the most effective ownership structure in the banks of Pakistan. In Pakistan, corporate governance reforms began after the inception of Code of Corporate Governance 2002. Hence the ownership pattern is required under the Code of Corporate Governance. That's why there is limited work done on the ownership pattern in Pakistan.

The objective of the study is to investigate the impact of ownership structure on default risk of banks, in perspective of banking sector of Pakistan. For this purpose, the study uses two dimensions of ownership i.e. categories of ownership and concentration of ownership. The study further categorize the ownership structure into seven different categories of ownership like individual ownership, managerial ownership, foreign ownership, public ownership, banks ownership, non banking financial institutions ownership and non financial institutions ownership. To capture the default risk of banks, this study uses the Z-score (Boyd and Graham, 1986) and ZP-score (Goyeau and Tarazi, 1992).

1.1 Hypotheses

On the basis of previous studies, following hypotheses are generated in alternative form:

H1: There is a relationship between category of ownership and default risk of banks.

H2: There is a relationship between ownership concentration and default risk of banks.

In order to observe the relationship, this study uses the data of commercial banks of Pakistan over the period 2005-2011. The study concludes that ownership concentration and some categories of ownership like family ownership, foreign ownership and public ownership has significant impact on default risk of banks. Overall, the results of this study are consistent with some earlier studies' findings.

The remainder of paper is structured as follows. In section 2, we present the brief review of some relevant studies. In section 3, we describe the data, variables, model and research methodology. In section 4, we discuss the empirical results of this study. Section 5 concludes the paper.

2. Literature Review

According to previous literature, agency problems and risk-taking behavior in any organization are depending on the nature of the owners. The agency problem is first identified by Jensen and Meckling (1976). Their study shows that shareholders having diversified portfolio of investment are interested in higher risk taking for a higher expected return whereas managers tend to take less risk for their private benefits and to protect their positions. Another study of Saunders et al. (1990) examines the relationship between ownership structure and risk-taking incentives of banks. Their study finds a positive relationship between managerial ownership and risk taking. Existing research also analyzes the relation between ownership concentration and bank's performance. The findings of Shleifer and Vishny (1986) suggest that ownership concentration may improve the performance of firm by increasing monitoring and reducing the free rider problem. Conversely, Shleifer and Vishny (1997) explain that concentrated shareholders sometimes expropriate minority shareholders by

[47] Adam Smith (1776), An Inquiry into the Nature and Causes of the Wealth of Nations, P317.

exercising their control rights to get private benefits. Another study of Burkart et al. (1997) show that concentrated ownership adversely affects the performance of firm if managerial ingenuity is inhibited by excessive monitoring of concentrated owners.

Many other studies have been conducted to examine the relation between ownership structure and risk in developed economies but scanty of literature is available for emerging economies. For example Pound (1988) investigates the impact of institutional ownership on risk taking ability. He suggests that institutional investors increase the risk taking ability of banks because of exercise control at lower cost, greater voting power and their portfolio of investment is diversified. Leaven (1999) suggests that company owned banks and family owned banks take greater risk; whereas, foreign owned banks take lesser risk. Choi and Hasan (2005) explore the effect of foreign ownership on risk taking behavior of banks. Their study shows that foreign ownership proportion is negatively related with risk of banks. Iannotta et al. (2007) studies the impact of ownership structure on risk of 181 banks of fifteen European countries, spanned over the period 1999 to 2004. They suggest that State Owned Banks has higher asset risk and higher probability of default, whereas, concentrated ownership have lower asset risk and lower probability of default.

The findings of Kim et al. (2007) suggest that there is positive relation between concentrated ownership and bank risk in less restrictive regulatory environment. Zeitun and Tian (2007) examine the impact of ownership structure on firm's default risk in Jordan. They propose that the presence of foreign owners and government owners reduce the probability of default, however, the concentrated ownership increases the default risk. Marco and Fernández (2008) show that concentrated ownership have negative impact on risk in large and medium size banks, whereas, concentrated ownership have positive impact on risk in small size banks. Empirically, Detragiache et al. (2008) find that foreign banks do cream-skimming in poor countries, because of higher cost of monitoring soft information of non transparent firms, than that of domestic banks.

Working with a sample of 279 banks in 48 countries, Leaven and Levine (2008) find that banks having concentrated ownership are taking higher risk than banks with dispersed ownership because controlling owners have strong incentive to take high risk. Fungáčová and Solanko (2009) suggest that banks with foreign ownership have higher insolvency risk than banks with banks with private domestic ownership, whereas, state owned banks has least insolvency risk. Magalhaes et al. (2010) show that at moderate level of concentration, concentration affects the risk negatively, whereas, at high level of concentration, concentration affects the risk positively. Paligorova (2010) suggests that concentration of ownership is positively relates with risk taking ability of corporations, only if, the controlling owners have well diversified portfolio of investment.

The recent study of Barry et al. (2011) suggests that higher proportion of families and banking institutions in ownership structure leads to less risk taking of banks, whereas, higher proportion of non-financial firms and institutional investors increase the level of risk of banks, in private banks. Another study of Lamy (2012) shows that concentrated ownership has significant positive effect on bank risk. This study further suggests that family ownership and institutional ownership have significant positive impact on risk taking of banks.

In the previous literature on ownership structure, some studies take ownership fraction as a measure of ownership structure (Lamy, 2012; Barry, et al., 2011; Zeitun, 2009). To our knowledge, no such empirical study available in Pakistan to observe the impact of ownership fractions on default risk of banks. Again, there are few studies in literature which use yearly Z-score and yearly ZP-score as measure of default risk (Lepetit and Strobel, 2013; Liu, et al., 2013; Onali, 2012; Fang, et al., 2011) but no such empirical study is available in Pakistan. This study attempts to fill the above mentioned gaps in the literature by deeply investigating the relation between ownership structure and default risk in banking sector of Pakistan over the period of 2005-2012. In addition to it, the study also contributes in existing literature by using yearly Z-score and yearly ZP-score as a measure of risk for the first time in Pakistan. Thus, this study seems to be a contribution in existing literature on ownership structure and risk taking behavior of banks.

3. Methodology

3.1 Data collection and sample definition

We obtain the annual data used in this study from the audited fiancial statements and annual reports of individual banks. We use a sample consisting of an unbalanced panel of annual report data from 2005 to 2011 for the commercial banks of Pakistan. In this study, we consider the proportionate share held by following categories of ownership: managers/directors, individuals/families, foreign investors, government, banks, non banking financial institutions and non financial intitutions. First we consider all types of bank available in Pakistan. 58 banks are identified from website of State Bank of Pakistan. Then for homogeneity purpose (ensure that all sample banks have same profit maximization objective), we only consider

commercial banks to check the impact of ownership structure on default risk of banks. We also exclude all those banks with less than two consecutive years of time-series observations or having no change in ownership during the period of study. Thus the final sample of study is comprised of 23 commercial banks.

3.2 Default risk variables

To measure the default risk of banks, two variables are used in this study. The first variable which is used as a measure of default risk is "Z-Score"[48], proposed by Boyd and Graham (1986). Z-Score is inversely related with default risk of banks. The second variable is "ZP-Score"[49] suggested by Goyeau and Tarazi (1992) along with its two additive components: ZP1 and ZP2. ZP1[50] is a measure of portfolio risk of banks, and ZP2[51] is a measure of leverage risk of banks. ZP-Score is also an inverse measure of default risk of banks.

3.3 Ownership variables

Ownership structure is an independent variable in this study. Here, we take two aspects of ownership: categories of owners and concentration of ownership. As the aim of our study is to examine how equity held by various types of shareholders influence the default risk of banks, we should take as many categories of owners as possible. The categories of owners are measured as proportionate share held by each category in individual bank. There are seven categories of owners which are included in our study: (1) managers/directors (Managers), (2) individuals/families (Family), (3) foreign investors (Foreign)[52], (4) government (Public)[53], (5) banks (Bank), (6) non banking financial institutions (NBFI)[54], and (7) non financial institutions (NFI)[55].

Two variables are constructed to measure the ownership concentration in individual bank which is another aspect of ownership structure. First we use the cumulative percentage of shares held by largest five shareholders in each bank (TOP5). We also employ the Herfindahl index of ownership concentration, sum of squared percentage of shares held by largest five shareholders in each bank (HINDEX). Descriptive statistics and correlation matrix of all dependent, explanatory and control variables are reported in appendix.

3.4 Empirical Model

We use the following empirical model to test our hypotheses:

$$DRI_{i,t} = \alpha + \beta_1 OS_{i,t} + \beta_2 TOA_{i,t} + \beta_3 OFBS_{i,t} + \beta_4 LQU_{i,t} + \beta_5 BUSD_{i,t} + \beta_6 EQTY_{i,t} + \varepsilon_{i,t}$$

where $DRI_{i,t}$ is a measure of default risk of bank i at time t (Z-Score, ZP-Score, ZP1 and ZP2); $OS_{i,t}$ represents ownership structure of individual banks (categories of ownership & ownership concentration); $TOA_{i,t}$ is natural log total assets of each bank; $OFBS_{i,t}$ is the ratio of off balance sheet items to total asset; $LQU_{i,t}$ is the ratio of liquid assets to total assets; $BUSD_{i,t}$ is the ratio of deposits to total assets; $EQTY_{i,t}$ is the ratio of bank equity to total assets; and $\varepsilon_{i,t}$ is the residual. The details of all these variables are given in appendix.

There are generally two approaches which are used for panel data estimation in financial research: random effects model and fixed effects model. Fixed effects models are used when omitted variables are present in the model and these omitted variables are also correlated with other observed variables in the model. Random effects model is appropriate model estimation approach when there are no omitted variables or if omitted variables are not correlated with other variables in the model. Hausman test is used to check the appropriateness of random or fixed effects. In this study, we used random and fixed effects regressions and pooled regressions to estimate the above model.

We consider seven categories of owners that may influence the default risk of banks. Managers/directors (MANAGER) represent first category of ownership. They have less diversified portfolio of investment. So, the banks with higher stakes of manager and director owners may be reluctant to take high risk. Second category of owner is family/individual owners (FAMILY) which are long-term owners and they look at their firm as heritage for their descendants. Family owned businesses are mostly managed by family members, which reduces the agency problems. Moreover, individual and family owners have less diversification in their portfolio of investment and their liability is extended. In case of failure of banks, they suffer with more losses than others. Thus, it is expected that the higher stakes of

[48] $Z-score_t = (100 + \mu ROE_{t-2,t-1,t}) / SDROE_{t-2,t-1,t}$, where μ ROE at time t is (amount outstanding at time t + amount outstanding at time t-1)/2.

[49] $ZP-score_t = ZP1_t + ZP2_t$

[50] $ZP1_t = \mu ROA_{t-2,t-1,t} / SDROA_{t-2,t-1,t}$, where μ ROA at time t is (amount outstanding at time t + amount outstanding at time t-1)/2.

[51] $ZP2_t = \mu(E/A)_{t-2,t-1,t} / SDROA_{t-2,t-1,t}$, where μ E/A at time t is (amount outstanding at time t + amount outstanding at time t-1)/2.

[52] 'Foreign' comprises of proportionate share held by the foreign individuals and foreign organizations.

[53] 'Public' comprises of proportionate share held by government and state owned organizations.

[54] 'NBFI' comprises of proportionate share held by the non banking financial institutions like Insurance companies, Leasing companies, Modarabas, Mutual Funds etc.

[55] 'NFI' comprises of proportionate share held by non financial institutions like public and private companies.

individual/ family owners in ownership structure reduces the risk taking of banks. Third category of owner is foreign owners (FOREIGN). Literature shows that foreign owners have less local expertise in selecting creditors and know less about the aptitude of people of local country. Their presence in ownership may be positively related with risk taking of banks.

There are two views about the state ownership (PUBLIC): political and social. Public owners work for the welfare of the society, so they finance those risky developing projects that other banks are reluctant to take (social view). According to political view, political owners use the bank's resources for their political interest and give benefit to their supporters by low cost financing. In both cases, the involvement of public ownership increases the risk level of a bank. Bank owners (BANKS) is fifth category of ownership. Banks as a shareholder of other bank might support the conservative strategies due to their reputational concerns. Their involvement may also reduce the default risk due to their strong capital support to investee bank. Non banking financial institutional owners (NBFI) have well diversified portfolio of investment as they manage the money of ultimate owners. They have higher risk taking incentives and their involvement in ownership may increases the risk-taking. Non financial institutional owners (NFI) rarely hold well diversified portfolios which may lead to conservative strategies. On the other hand, the company owners also take risky loans for their company's projects from the banks, which ultimately increase the risk of banks.

The second aspect of ownership structure is ownership concentration (TOP5 and (HINDEX). Literature shows that owners of banks are interested in high risk taking to increase shareholder wealth. In concentrated ownership, controlling owners have power and expertise to monitor management and they can pressurize management to take more risk. Concentrated ownership may also elevate the free riding problem and reduces the conflict of interest between managers and owners. Literature shows that concentrated ownership, up to some extent, increases the risk-taking of banks and also improves the performance of banks (Convergence of Interest Hypothesis). But very high concentration reduces the performance because highly concentrated owners are interested in getting private benefit at the expense of minority owners (Entrenchment Hypothesis). Hence, it is assumed that concentration of ownership is positively related with risk of banks.

4. Results

The redundant fixed effect likelihood ratio test show that fixed effect models are adequate because null hypothesis of this test is rejected at 1% level of significance. The results of Hausman test are insignificant which suggest that the random effects are preferred over fixed effects in our model. The results in table 1 show the impact of different categories of ownership and ownership concentration on default risk of banks by using random effects. Here, the default risk is measured by Z-scores (PF) and ZP-scores (TDFR) which are inversely related with default risk. ZP-score is further decomposed into ZP1-score (measure of bank portfolio risk BPR) and ZP2 scores (measure of leverage risk LR).

The results show that among the different categories of ownership, managerial ownership is insignificantly negatively related with default risk of banks. The results of second category of ownership, individual/family ownership, show that they have significant negative relation with the default risk of banks. Bank portfolio risk and leverage risk also reduces with increase in individual/family ownership. The reason for reduction in default risk, bank portfolio risk and leverage risk is may be that individual and family owners have less diversified portfolio of investment, and in case of failure of banks, they suffer with more losses than others. So, they tend to take less risky projects and favor a lesser amount of debt in capital structure. These results are same as they were expected in this study. Furthermore, these results are align with the findings of Barry et al. (2011); Paligorova (2010) and contradictory to the findings of Lamy (2012); Leaven (1999).

The result of foreign category shows that involvement of foreign owner has insignificant positive relation with default risk but they significantly increases the bank portfolio risk of banks. The foreign owners know less about the aptitude of people of local country and also they may have less local expertise to select the creditor, which may leads to increase in bank portfolio risk. These results are parallel with the findings of Angkinand and Wihlborg (2010); Fungáčová and Solanko (2009); Yeyati and Micco (2007); Maechler et al. (2007). The results of remaining three categories of ownership: Banks, NBFI and NFI, show that they have insignificant impact on default risk, bank portfolio risk and leverage risk of banks.

Table 1. Impact of Ownership Structure on Default Risk of Banks: Random Effects Regression

Variables	PF	BPR	LR	TDFR
Managers	0.443020	0.050569	0.192994	0.243562
	(0.1517)	(0.6723)	(0.7138)	(0.6937)
Families	0.589215	0.515195	1.664595	2.179790
	(0.0556)*	(0.0000)***	(0.0013)***	(0.0003)***
Foreign	-0.107416	-0.077151	-0.210409	-0.287560
	(0.3673)	(0.0923)*	(0.2983)	(0.2261)
Public	-0.416190	-0.063215	-0.413723	-0.476938
	(0.0392)**	(0.4168)	(0.2273)	(0.2362)
Banks	0.165780	0.036719	-0.135859	-0.099140
	(0.6134)	(0.7711)	(0.8069)	(0.8794)
NBFI	0.114749	0.040356	0.267698	0.308054
	(0.5362)	(0.5721)	(0.3943)	(0.4042)
NFI	0.104393	-0.021009	-0.045267	-0.066276
	(0.6391)	(0.8066)	(0.9046)	(0.8813)
Top 5	-0.396475	-0.231675	-0.868133	-1.099808
	(0.0160)**	(0.0002)***	(0.0018)***	(0.0007)***
Hindex	-0.004434	-0.001884	-0.006092	-0.007976
	(0.0136)**	(0.0067)***	(0.0480)**	(0.0273)**

Note: ***, ** and * indicate significance at 1%, 5% and 10% levels respectively. P-values in parentheses. Variable definitions: PF = Z-Score (measure of probability of failure); BPR = ZP1-Score (measure of bank portfolio risk); LR = ZP2-Score (measure of leverage risk); TDFR = ZP-Score (measure of total default risk); Top 5 = Cumulative percentage of shares held by largest five shareholders (measure of ownership concentration); Hindex = Sum of squared percentage of shares held by largest five shareholders (measure of ownership concentration). Managers, Families, Foreign, Public, Banks, NBFI and NFI represent the proportionate share held by managers/directors, families/individuals, foreign owners, government, banks, non banking financial institutions and non financial institutions respectively.

Both proxies of ownership concentration (TOP5 and HINDEX) provide uniform results. The results reveal that ownership concentration significantly increases the default risk of banks. The reason for increase in default risks is that controlling owners have more incentive and power to pressurize bank's management to consider risky projects and risky lending, as they know that high risk is associated with high probable returns. Thus, concentrated owners get private benefits at the expense of other minority share holders which results in high expropriation cost (Entrenchment Hypothesis). These findings are consistent with the expectations of the study. The results of ownership concentration with risk taking support the findings of some earlier studies (Paligorova, 2010; Leaven and Levine, 2008; Zeitun and Tian, 2007; Kim, et al., 2007; Levine, 2004).

Many control variables also have significant impact on default risk of banks. Size of banks (TOA) has significant negative impact on default risk of banks. In contrast, off balance sheet items (OBS) have no significant relationship with default risk of banks. Moreover, liquidity (LQU) and business difference (BUSD) also have insignificant relation with default risk of banks. Finally, leverage significantly increases the default risk of banks[56]. The results of the study are also obtained through pooled regressions which are shown in table A4 in appendix. The results of our ownership variables remain unchanged.

5. Conclusion

The aim of our study is to analyze whether different ownership structures are related with default risk of banks. We take two dimensions of ownership structure: categories of owners and ownership concentration. We further differentiate categories of owners into seven categories (Manager, Family, Foreign, Public, Banks, NBFI, and NFI) having different risk taking incentives. Working with panel data of commercial banks of Pakistan on ownership structure and default risk measures, we find that changes in ownership structure are significant in explaining the difference of default risk of banks.

From the results discussed in section 4, it is concluded that involvement of family/individual ownership in ownership structure significantly reduces the default risk of banks. Regarding public ownership, when their stakes are higher in banks, they seem to increase the default risk of these banks. In addition, involvement of foreign ownership is positively related with only bank portfolio risk. All other categories (Managers, Banks, NBFI, and NFI) do not have significant relation with default risk of banks. Finally, the result of ownership concentration suggests that

[56] Extensive tables on the results of control variable are available on request.

concentrated ownership enhances the default risk of banks in commercial banks of Pakistan. The recommendation of the study is to reduce the ownership concentration to some extent in banking sector of Pakistan. As our study is confine to small number of banks, the scope of the study should be extended in future studies.

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Appendix. A

Table A1. Variables List

VARIABLES	EXPLAINATION	SOURCE
DRI	DRI stands for default risk and it is measured by either Z-score (PF) or ZP-score (TDFR). ZP-score is subdivided into ZP_1 (BPR) and ZP_2 (LR);	Authors' calculation based on audited financial statements of banks.
OS	Ownership structure is an independent variable in the models. It will either be managerial ownership, family ownership, foreign ownership, public ownership, banks ownership, non banking financial institutions ownership (NBFI), other non financial institutions ownership (NFI_OTHERS), Cumulative percentage of shares held by largest five shareholders (TOP5), sum of squared percentage of shares held by largest five shareholders (HINDEX);	Annual reports of each bank.
TOA	Total asset, a control variable for size of banks and is measured by natural log of total assets;	Audited financial statements of banks.
OFBS	Off balance sheet, a control variable and is measured by ratio of off balance sheet items to total asset;	Audited financial statements of banks.
LQU	Liquidity, a control variable and is measured by ratio of liquid assets to total assets;	Audited financial statements of banks.
BUSD	Business differences, a control variable and is measured by ratio of deposits to total assets;	Audited financial statements of banks.
EQTY	Equity, a control variable and is measured by ratio of bank equity to total assets;	Audited financial statements of banks.

Table A2. Descriptive statistics for our panel data of 23 commercial banks of Pakistan, over the period of 2005-11

	Observations	Mean	Std. Dev.	Maximum	Minimum
Descriptive statistics of the explanatory variables					
MANAGERS	122	7.967652	12.93427	70.56000	0.000000
FAMILIES	122	13.47683	11.68100	51.34000	0.000000
FOREIGN	122	33.50914	30.85877	99.12900	0.000000
BANKS	122	4.289383	11.21446	80.38000	0.000000
PUBLIC	122	14.06434	19.72061	78.74830	0.000000
NBFI	122	14.71679	22.00955	86.02000	0.000000
NFI	122	11.97739	16.11855	56.61000	0.000000
TOP 5	122	69.61629	21.21887	100.0000	17.16290
HINDEX	122	2597.124	2049.401	9798.301	102.9983
Descriptive statistics of the control variables					
TOA	122	18.74446	1.408370	20.86266	14.52268
OBS	122	35.09115	23.97994	105.8475	0.326697
LQU	122	16.91247	14.55068	121.6113	4.098874
BUSD	122	75.59507	14.89486	90.83151	0.000000
EQTY	122	10.03709	7.734610	42.71728	0.286904
Descriptive statistics of dependent variables					
PF	122	31.01244	37.78872	211.7678	-0.528426
BPR	122	5.415952	14.30261	120.4374	-5.371258
LR	122	35.79961	64.01251	434.8044	0.949292
TDFR	122	41.21556	74.70442	499.1361	-2.289183

Table A3. Correlation coefficient among the sample variables

	PF	BPR	LR	TDFR	MANAGERS	FAMILIES	FOREIGN	BANKS	PUBLIC	NBFI	NFI	TOP 5	HINDEX	TOA	OBS	LQU	BUSD	EQTY
PF	1.0000																	
BPR	0.3690	1.0000																
LR	0.7013	0.6983	1.0000															
TDFR	0.6716	0.7898	0.9906	1.0000														
MANAGERS	0.0842	-0.0052	0.0298	0.0246	1.0000													
FAMILIES	0.0815	0.3440	0.2116	0.2471	-0.0606	1.0000												
FOREIGN	-0.0507	-0.1198	-0.0711	-0.0838	-0.0653	-0.3578	1.0000											
BANKS	-0.0441	-0.0323	-0.0497	-0.0488	-0.1288	-0.1215	-0.2031	1.0000										
PUBLIC	-0.1022	0.0412	-0.1024	-0.0798	-0.2808	-0.1273	-0.3734	0.0828	1.0000									
NBFI	0.0756	-0.0454	0.1167	0.0913	-0.2444	0.0650	-0.4002	-0.1278	-0.1439	1.0000								
NFI	0.0224	0.0182	-0.0407	-0.0314	0.1332	0.1605	-0.4583	-0.0423	-0.0520	-0.1851	1.0000							
TOP 5	-0.1514	-0.3414	-0.2021	-0.2385	-0.1166	-0.699	0.2531	0.1556	0.0535	0.1441	-0.3087	1.0000						
HINDEX	-0.101	-0.1967	-0.0982	-0.1218	-0.3106	-0.474	0.2991	0.2376	-0.0905	0.0897	-0.3301	0.7395	1.0000					
TOA	0.1065	0.2171	-0.0126	0.0308	-0.2073	-0.1062	0.1243	-0.2182	0.4446	-0.3931	0.1498	-0.1209	0.0921	1.0000				
OBS	0.1112	0.0569	0.0581	0.0606	-0.1652	-0.0715	0.2026	-0.1907	-0.0632	-0.0332	0.0516	0.1023	0.0879	0.3010	1.0000			
LQU	-0.0150	-0.0800	-0.0096	-0.0235	-0.1236	-0.1184	-0.0578	0.0175	-0.0907	0.3969	-0.1474	0.1326	0.0174	-0.3630	0.0792	1.0000		
BUSD	0.0211	0.0985	0.0045	0.0227	-0.1623	-0.0490	0.0006	0.0891	0.2238	-0.2218	0.1313	-0.0534	-0.1309	0.5839	0.1656	-0.2090	1.0000	
EQTY	0.1311	-0.1246	0.1470	0.1021	0.0787	-0.1087	-0.0228	-0.0557	-0.2249	0.4490	-0.240	0.2271	0.2389	-0.6069	-0.1489	0.2875	-0.6022	1.0000

Table A4. Impact of Ownership Structure on Default Risk of Banks: Pooled Regression

Variables	PF	LR	BPR	TDFR
Managers	0.325414	-0.044331	0.050569	-0.002533
	(0.4390)	(0.9390)	(0.6735)	(0.9973)
Families	0.527203	1.867907	0.515195	2.179790
	(0.1998)	(0.0002)***	(0.0000)***	(0.0004)***
Foreign	-0.116215	-0.179049	-0.077151	-0.266027
	(0.4737)	(0.4145)	(0.0935)*	(0.3469)
Public	-0.473667	-0.398822	-0.063215	-0.463341
	(0.0916)*	(0.2875)	(0.4187)	(0.3412)
Banks	0.660746	0.107647	0.036719	0.167063
	(0.2275)	(0.8727)	(0.7722)	(0.8484)
NBFI	0.219431	0.292518	0.040356	0.344553
	(0.4219)	(0.4429)	(0.5733)	(0.4836)
NFI	0.016956	-0.226198	-0.021009	-0.282890
	(0.9563)	(0.5790)	(0.8073)	(0.5920)
Top 5	-0.383004	-0.910184	-0.231675	-1.099808
	(0.0996)*	(0.0015)***	(0.0002)***	(0.0010)***
Hindex	-0.004542	-0.007004	-0.001884	-0.007976
	(0.0758)*	(0.0375)**	(0.0070)***	(0.0309)**

Note: ***, ** and * indicate significance at 1%, 5% and 10% levels respectively. P-values in parentheses. Variable definitions: PF = Z-Score (measure of probability of failure); BPR = ZP1-Score (measure of bank portfolio risk); LR = ZP2-Score (measure of leverage risk); TDFR = ZP-Score (measure of total default risk); Top 5 = Cumulative percentage of shares held by largest five shareholders (measure of ownership concentration); Hindex = Sum of squared percentage of shares held by largest five shareholders (measure of ownership concentration). Managers, Families, Foreign, Public, Banks, NBFI and NFI represent the proportionate share held by managers/directors, families/individuals, foreign owners, government, banks, non banking financial institutions and non financial institutions respectively.

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