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A special issue devoted to the
Issues in Accounting and Finance

Guest Editor
Cheng Fan Fah

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Preface

This idea of publishing an issue of Pertanika JSSH as "Special Issue in Accounting and Finance" was mooted in the year 2012. The call for papers for the issue received an overwhelming response. As per Pertanika's stringent guide for peer-review, each manuscript was reviewed by a minimum of two reviewers.

The nine articles in this special issue cover two major areas of study. The first group of articles is on banking and finance. The second group of articles covers issues related to corporate governance. There are five articles on banking and finance, while the other four are on corporate governance related to board directorship and ownership studies.

The first group of articles looks at cost, revenue and profit efficiency of Islamic and conventional banks in Malaysia. Their findings show that Malaysian Islamic banks have lower levels of cost and profit efficiency compared to conventional Malaysian banks. These articles also study the profitability and dividend policy of Malaysian banks. The results show that leverage is the major determinant of dividend policy and profitability lagged dividend payout. The focus of these articles extends to international markets, considering four Asia-Pacific countries and the US banking industry. The findings of the articles reveal that earnings affect share prices significantly. Among all the financial risks, credit risk is the most important factor in determining share prices. Of course, other than banking, the derivative market is important to the efficiency of capital markets. This is the focus of one of the papers, which studies the trading influence of shares derivatives on the Malaysian spot market. The study indicates that stock index futures cause cash index with no feedback in reverse direction during periods of financial crisis and recovery; this confirms the spillover effect of derivative markets on spot markets.

The second group of studies is on the effect of a board of directors and ownership structure on the performance of companies. These articles show a significantly positive relationship between the director-auditor link and non-audit services fee. This has led the researchers to examine the roles of independent members on the board and that of CEO duality on firm performance. Their findings indicate that the dual leadership structure is more effective with a larger board size and longer duration of operation. Firms that are family managed are always interesting for both practitioners and academicians. It is interesting to find that firms managed by families have a significantly larger board size and a higher number of non-independent directors and executive directors. The family-managed firm appoints directors who have significantly more working experience. The findings of these articles also indicate that the compensations paid to the executive directors of family-managed firms are significantly higher than those paid to executive directors of non-family-managed firms. The results also suggest that family-managed firms have not utilised their assets efficiently to generate their sales compared to their non-family

business counterparts. Lastly, the results show that the number of interlocking companies, inter-industry interlocking directorates and interlocking created by independent directors is significant and positively related to corporate performance.

It is obvious that the findings of these articles, although significant and timely, are still limited in dealing with a sector as vast and complex as banking, finance and corporate governance. The principal purpose of this special issue is to quench the thirst of researchers to have their research published. It is our desire that this special issue will be the beginning of a series of publications for academicians in the field of Accounting and Finance.

The compilation of this special issue that covers banking, finance and corporate governance is an undertaking of many months of hard editorial work and strong support of its contributors. We are indebted to all our contributors for their in-depth research work and to the reviewers and editors who compiled, edited and prepared this special issue for publication. We would also like to thank the Dean, Prof. Dr. Mohd Shahwahid Othman, Deputy Dean, Assoc. Prof. Dr. Alias Rustam, and the Head of the Department of Accounting and Finance for their encouragement and guidance, numerous helpful suggestions and excellent coordination that contributed towards bringing this publication to reality.

We are equally thankful to Dr. Nayan Deep S. Kanwal, Chief Executive Editor and Ms. Erica Kwan Lee Yin, Publication Officer, Journal Division. Last but not the least, Mr. Hafizd who assisted in compiling the issue, and all our anonymous reviewers for their hard work and patience in bringing this special issue to print.

Cheng Fan Fah
Guest Editor

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Cost, Revenue and Profit Efficiency in Islamic vs. Conventional Banks: Empirical Evidence using Data Envelopment Analysis (DEA)

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ABSTRACT

The objective of this study is to compare the cost, revenue and profit efficiency of Islamic and conventional banks in Malaysia over the period 2006 to 2009. To represent the Malaysian Islamic and conventional banking sector, a sample of 39 banks were selected to participate in the study. The level of efficiencies was measured using the Data Envelopment Analysis (DEA) method, which applied the intermediation approach. The result shows that the levels of cost and profit efficiency for Malaysian Islamic banks are lower compared to the Malaysian conventional banks. The difference levels between cost and profit efficiency in the Malaysian banking sector are not influenced by revenue efficiency but, rather are subject to influence by internal and external factors.

Keywords: Cost efficiency, revenue efficiency, profit efficiency, Malaysian Islamic bank, Malaysian conventional banks

INTRODUCTION

Like all banks in general, the Islamic bank is an intermediary and trustee of the money belonging to others, but the difference between the Islamic bank and conventional banks is in how profit and loss is shared with depositors. The element of mutuality in Islamic banking gives its depositors as customers some ownership right in an Islamic bank (Dar & Presley, 2000).While the conventional banking system follows the familiar, longstanding interest-based principle, Islamic banking is based on the principles of interest-free transactions and Profit-and-Loss (PLS) sharing in their business role as intermediaries (Arif, 1988).

The main factor that distinguishes Islamic banking from conventional banking is that transactions are administered without involving the element of *riba*. *Riba* , or

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an increase or growth, is prohibited in Islam, and this is acknowledged by all Muslims. The prohibition of riba is clearly mentioned in the *Quran*, the Muslim holy book, and in the traditions of Prophet Muhammad (*sunnah*). Some insist that *riba* is the increase imposed on the debtor at the maturity of the debt in case the debtor fails to settle the debt but wants to roll it over. Debtors say so because they think the predominant from of transactions involving *riba* was sale on credit, in which case, the (deferred) price is higher than the spot price in lieu of deferment, and the need for an explicit increase arises only in case of further postponement of payment.

Nevertheless, most scholars believe that *riba* covers the interest stipulated at the time of the contract in the case of loans as well as the subsequent increase in the case of a loan or debt that arises when sale on credit is rolled over because the debtor does not pay it at the time stipulated in the contract (Badawi, 1964). Technically, *riba*, in a loan transaction, denotes any increase or premium advantage obtained by the lender as a condition of the loan. This means that earning an income is *haram* in Islam, and Muslims are thus forbidden from giving or receiving *riba*. More importantly, the principal objective of the establishment of Islamic banks is to cater for the needs of Muslims engaged in banking transactions in accordance to the rulings set in the *Al Quran* and *Hadith* (Haron and Azmi, 2009). The business management of the banks is governed by the concepts of justice and fairness towards the interests of society as a whole.

Globalisation has improved financial institutions over the world through greater deregulation and liberalisation. Islamic Banking is the one of the most fast growing institutions and has become competitive against conventional banking. The practice of Islamic banking is now spreading world-wide, from Malaysia to Bahrain to Europe and the USA.

The International Monetary Fund reported in 2005 that the number of Islamic financial institutions had increased from 75 to over 300 from 1975 to 2005, and that it was being practised in more than 75 countries. The total assets of the Islamic financial institutions are estimated to be US$250 billion, which is rising at a rate of about 15 % per year, three times the rate for conventional banks. According to Ghafour (2006) and Dubai Islamic Bank (2006), the size of the assets of the world-wide Islamic banking industry is estimated to have grown to an excess of $265 billion from merely hundreds of thousands of dollars in the 1970s.

Since Islamic financial institutions have so rapidly evolved, we expect the efficiency of the banks has also improved. Berger and Humphrey (1997) suggest that studies focused on the efficiency of financial institutions have become an important part of banking literature since the early 1990s. A study by Berger *et al*. (1993b) suggests that if banks were efficient, they could expect improved profitability, better prices

and better service quality for consumers, and that greater amounts of funds would be intermediated.

The general concept of efficiency covers three components, namely, cost, revenue and profit efficiency (Adongo *et al*., 2005; Bader *et al*., 2008). Evidence of bank efficiency could be produced by discovering these three types of efficiency concept. However, few studies have examined the comprehensive efficiency that consists of these three components. Most previous studies have mainly focused on the efficiency of cost, profit or both (cost and profit efficiency combined) (Bader *et al*., 2008).

Studies on bank efficiency that ignore revenue have been criticised (Bader *et al*., 2008). This is mainly because most of the studies have only revealed the levels of cost efficiency, which are higher than profit efficiency, but they have not identified the causes. According to Chong *et al*. (2006), banks desire maximising profit to maximise shareholders' value or wealth. However, the main problem contributing to lower profit efficiency comes from revenue inefficiency (Kamarudin *et al*., 2013; Sufian *et al.*, 2013). Ariff and Can (2008) find that inefficient revenue affected the difference between cost and profit efficiency, but they do not investigate further on the revenue efficiency and on the reasons for such an occurrence. A study which investigates the causes of inefficiency was done by Maudos et al. (2002), Rogers (1998) and Berger et al. (1993a), who find that revenue inefficiency was caused either by mispricing of outputs or the giving of wrong choice of output.

Therefore, instead of focusing on profit efficiency of Islamic and conventional banking alone, it would be better to compare profit efficiency with cost efficiency as well in order to identify the existence of revenue efficiency. By employing the non-parametric Data Envelopment Analysis (DEA) method, we have analysed cost, revenue and profit efficiencies of Malaysian Islamic and conventional banks over the period from 2006 to 2009. The preferred non-parametric Data Envelopment Analysis (DEA) methodology allowed us to distinguish between three different types of efficiency, which are cost, revenue and profit efficiencies. This information could be useful to several parties and may have several implications for regulators, bankers, investors and academicians.

The article begins with a brief overview of the Malaysian Islamic banking sector. This is followed by Literature Refiew, where we provide a review of related studies. Data and Methodology discusses the methods employed in the study and the variables employed in the panel regression analysis. We present the empirical results in next section. The article is concluded in last section, which also provides discussion on policy implications.

LITERATURE REVIEW

There are some documented studies that compare the performance of Islamic banks with their conventional counterparts. Nevertheless, those studies focus on

profitability with the help of financial ratios and are constrained by the time span and the number of Islamic banks (Samad & Hassan, 1999; Iqbal, 2001). The previous studies mostly concentrate on the technical and pure technical and on scale efficiency (Isik & Hassan, 2002; Hassan & Hussein, 2003; Yudistira, 2004; Tahir & Haron, 2008). Despite the significant importance of this area, documented studies that address cost, revenue and profit efficiency are very few (Yudistira, 2004; Hassan, 2005; Brown and Skully, 2005).

Technical Efficiency, Pure Technical and Scale Efficiency

Technical efficiency (TE) measures the proportional reduction in input usage that can be attained if the bank operates on the efficient frontier, or when the effectiveness of the limited set of inputs is used to produce a maximum of outputs. On the other hand, the allocative efficiency (AE) measures the proportional reduction in costs if the bank chooses the right mix of inputs to be used (English *et al*., 1993; Al-Sharkas *et al*., 2008). TE is related to managerial factors, while AE is often associated with regulatory factors (Isik & Hassan, 2002). Pure technical efficiency (PTE) is the measurement of technical efficiency devoid of the scale efficiency or the firm's size efficiency (SE) effects (Sufian, 2004; Coelli, 1998).

Based on the literature, it can be said that most international Islamic banks face a similar problem, where their pure technical inefficiency (PTIE) outweighs scale inefficiency (SIE) (Sufian *et al.*, 2008; Hassan & Hussein, 2003; Yudistira, 2004; Saaid, 2003). In other words, although Islamic banks have been operating at a relatively optimal scale of operations, they were managerially inefficient in exploiting their resources. On the other hand, the opposite is true for international conventional banks. Most of these studies have presented inefficiency from the scale side (wrong scale of operations).

Islamic and conventional banks in Malaysia experience a similar situation, namely, that the TE of both types of bank is not dominated by scale efficiency, but rather, it is dominated by PTE (managerial efficiency). Based on previous observation recorded in the literature, the contra findings discovered between studies on international Islamic banks and Malaysian Islamic banks (Samad, 1999; Katib, 1999; Tahir & Haron, 2008; Sufian, 2007), the technical inefficiency (TIE) of international Islamic banks is dominated by PTIE (managerially inefficient) while the TIE of Malaysian Islamic banks is dominated by SIE (inefficient bank's size).

Cost Efficiency, Revenue Efficiency and Profit Efficiency

Many studies have conducted cost and profit efficiency tests on practices by the conventional banks rather than by Islamic banks and have discovered that the different levels between cost and profit efficiency are caused by the inefficiency generated by revenue procurement (Chu & Lim, 1998; Rogers, 1998; Maudos *et al*., 2002; Berger & Mester, 2003).

Cost efficiency means that a firm is able to minimise the costs of inputs while producing the same amount of outputs sold at certain prices (Berger & Mester, 1997; Ariff & Can, 2008). Berger and Humphrey (1997) claim that most of the previous studies focused on cost efficiency (Srinivasin, 1992; Linder & Crane, 1992; Shaffer, 1993; Berger & Humphrey, 1992; Rhoades, 1993; Pilloff, 1996; Resti, 1997), and suggest that research on revenue and profit efficiency has been scarce. Most ignored the influence of revenue and profit on the efficiency of banks (Akhavein *et al*., 1997; Bader *et al*., 2008).

Profit efficiency is also a firm's maximisation of profit since it takes into account both the cost and revenue effects on the changes in output scale and scope. Profit efficiency measures how close a bank comes to producing maximum profit, given an amount of inputs and outputs and a level of their prices (Akhavein *et al*. 1997; Akhigbe & McNulty, 2003: Ariff & Can, 2008). Thus, profit efficiency provides a complete description of the economic goal of a bank, which requires banks to reduce cost and increase revenue. Furthermore, according to Berger and Mester (2003) and Maudos and Pastor (2003), profit efficiency offers more useful information on management efficiency.

Revenue is defined as how effectively a bank sells its outputs. Maximum revenue is obtained as a result of producing the output bundle efficiently (Rogers, 1998; Andogo *et al*., 2005). In fact, revenue efficiency is decomposed of technical and allocative efficiency which are related to managerial factors and is regularly associated with regulatory factors (Isik and Hassan, 2002). English *et al*. (1993) posit that in order to ascertain revenue efficiency, banks should focus on both technical efficiency (managerial operations that explore production possibilities) and allocative efficiency (bank producing revenue-maximising mix of outputs based on certain regulations).

Another way to improve revenue efficiency as proposed by several studies is for banks to produce higher quality services and charge higher prices and struggle to avoid any improper choice of input and output quantities and mispricing of outputs (Andogo *et al*., 2005; Rogers, 1998). The revenue inefficiency could be well identified via the profit function because this function combines both the cost and revenue efficiency to evaluate the profit efficiency (Lozano, 1997; Akhevein *et al*., 1997). The revenue efficiency would totally affect the efficiency of the profit even though the cost efficiency is high. In essence, the revenue efficiency would be the major factor that influences the efficiency on profit. Berger and Humphrey, 1997, Akhavein *et al*., 1997, Bader *et al*., 2008, Sufian *et al*., 2012a and Sufian *et al*., 2012b state that there have been limited studies done on the revenue efficiency of banks.

Nevertheless, several studies point to factors that may influence the differences between cost and profit efficiency levels (e.g. De Young *et al*., 2004; Akhigbe & McNulty, 2005; Andogo *et al*., 2005; Sufian

& Chong, 2008; Sufian & Habibullah, 2009; Kosmidou, 2008; Delis *et al*., 2008; Sufian & Habibullah, 2010). These studies suggest that the difference levels of cost and profit efficiency may be the influence by internal (bank-specific characteristics) and external (macroeconomics) factors. The internal factors include size of banks, asset quality, capitalisation, market power, management quality and liquidity, among others. Meanwhile, the external or macroeconomic factors consist of economic growth, inflation and banks' concentration ratio, among others.

The above literature reveals the following research gaps. First, the majority of these studies have mainly concentrated on conventional banking sectors of the Western and developed countries. Second, empirical evidence directly related to developing countries, particularly for the Islamic banking sector, is scarce. Finally, virtually nothing has been published on cost, revenue and profit efficiency and their determinants in the Malaysian Islamic and conventional banking sectors. In the light of these knowledge gaps, this paper seeks to provide new empirical evidence on cost, revenue and profit efficiency with regards to the Malaysian Islamic and the conventional banking sectors.

DATA AND METHODOLOGY

This study gathers data from all Malaysian Islamic and conventional banks from 2006 to 2009. The primary source for financial data is obtained from the BankScope database produced by the Bureau van Dijk which provides the banks' balance sheets and income statements. The data were collected from 39 banks (17 Islamic banks and 22 conventional banks) as presented in Table 1.

Data Envelopment Analysis

The level of revenue efficiency is measured using the Data Envelopment Analysis (DEA) method which applies the intermediation approach. It constructs the frontier of the observed input-output ratios by linear programming techniques. The linear substitution is possible between observed input combinations on an isoquant (the same quantity of output is produced while changing the quantities of two or more inputs) that was assumed by the DEA. Charnes *et al*. (1978) were the first to introduce the term DEA to measure the efficiency of each decisionmaking unit (DMU) obtained as a maximum of a ratio of weighted outputs to weighted inputs. The more the output produced from given inputs, the more efficient is the production. According to Bader *et al*. (2008), the DEA technique is extensively used in many recent banking efficiency studies (Drake *et al*., 2006; Sufian & Habibullah, 2009).

This study employs estimates efficiency under the assumption of variable returns to scale (VRS). The VRS model was proposed by Banker, Charnes and Cooper (1984). The BCC model (VRS) extended the CCR model that was proposed by Charnes, Cooper and Rhodes (1978) by relaxing the constant return to scale (CRS) assumption. The resulting BCC model was used to assess

TABLE 1
List of Malaysian Islamic and Conventional Banks During the Years 2006-2009

No.	Islamic Bank	No.	Conventional Bank
1	Affin Bank	1	Affin Bank Berhad
2	Alliance Bank	2	Alliance Bank Malaysia Berhad
3	Al-Rajhi Bank	3	AmBank (M) Berhad
4	Arab-Malaysia (AmIslamic Bank)	4	Bangkok Bank Berhad
5	Asian Finance Bank	5	Bank of America Malaysia Berhad
6	Bank Islam Malaysia	6	Bank of China (Malaysia) Berhad
7	Bank Muamalat	7	Bank of Tokyo-Mitsubishi UFJ (Malaysia) Berhad
8	Commerce Tijari (CIMB)	8	CIMB Bank Berhad
9	EON Bank Islamic	9	Citibank Berhad
10	Hong Kong Bank (HSBC)	10	Deutsche Bank (Malaysia) Berhad
11	Hong Leong Bank	11	Hong Leong Bank Berhad
12	Kuwait Finance House	12	HSBC Bank Malaysia Berhad
13	Maybank	13	J.P. Morgan Chase Bank Berhad
14	OCBC	14	Malayan Banking Berhad
15	Public Bank	15	OCBC Bank (Malaysia) Berhad
16	RHB Islamic Bank	16	Public Bank Berhad
17	Standard Chartered Bank	17	RHB Bank Berhad
		18	Standard Chartered Bank Malaysia Berhad
		19	The Bank of Nova Scotia Berhad
		20	The Royal Bank of Scotland Berhad
		21	United Overseas Bank (Malaysia) Bhd.
		22	EON Bank

Source: Bank Negara Malaysia (2009)

the efficiency of DMUs characterised by VRS. The VRS assumption provides the measurement of pure technical efficiency (PTE), measuring the efficiency of the DMU's managerial. The PTE measures the efficiency of the DMU's pure managerial without being contaminated by scale. Therefore, VRS results may provide more reliable information on the DMU's efficiency rather than the CRS (Coelli, *et al*., 1998; Sufian, 2004). The DEA Excel Solver developed by Zhu (2009) under the VRS model is adopted in order to solve the revenue efficiency and also cost and profit efficiency.

The cost, revenue and profit efficiency models are given in Equations (1) – (3). As can be seen, the cost, revenue and profit efficiency scores are bounded within the 0 and 1 range (Table 2).

By calculating these three efficiency concepts (cost, revenue and profit), we may observe the Islamic and conventional banks on these efficiency levels and, in addition, more robust results may be obtained.

Variables Used in DEA

According to Cooper *et al*. (2002), there is a rule required to be complied with in order to select the number of inputs and outputs. A rough rule of thumb which could provide guidance is as follows:

$$n \geq \max \{m \text{ x } s, 3(m+s)\}$$

where,
n is a number of DMUs
m is a number of inputs
s is a number of outputs

Because this study uses the intermediation approach, two inputs, two input prices, two outputs and two output

TABLE 2
The cost, revenue and profit efficiency models

Frontier Type	Cost Efficiency (Eq. 1)	Revenue Efficiency (Eq. 2)	Profit Efficiency (Eq. 3)
VRS	$min \sum_{i=1}^{m} p_i^o \tilde{x}_{io}$ *subject to* $\sum_{j=1}^{n} \ddot{e}_j x_{ij} \leq \tilde{x}_{io}$ $i=1,2,...,m;$ $\sum_{j=1}^{n} \ddot{e}_j y_{rj} \geq y_{ro}$ $r=1,2,...,s;$ $\ddot{e}_j, \tilde{x}_{io} \geq 0$ $\sum_{j=1}^{n} \ddot{e}_j = 1$	$max \sum_{r=1}^{s} q_r^o \tilde{y}_{ro}$ *subject to* $\sum_{j=1}^{n} \lambda_j x_{ij} \leq \tilde{x}_{io}$ $i=1,2,...,m;$ $\sum_{j=1}^{n} \ddot{e}_j y_{rj} \geq \tilde{y}_{ro}$ $r=1,2,...,s;$ $\lambda_j \tilde{y}_{ro} \geq 0$ $\sum_{j=1}^{n} \lambda_j = 1$	$max \sum_{r=1}^{s} q_r^o \tilde{y}_{ro} - \sum_{i=1}^{m} p_i^o \tilde{x}_{io}$ subject to $\sum_{j=1}^{n} \lambda_j x_{ij} \leq \tilde{x}_{io}$ $i=1,2,...,m;$ $\sum_{j=1}^{n} \ddot{e}_j y_{rj} \geq \tilde{y}_{ro}$ $r=1,2,...,s;$ $\tilde{x}_{io} \leq x_{io}, \tilde{y}_{ro} \geq y_{ro}$ $\lambda_j \geq 0$ $\sum_{j=1}^{n} \lambda_{j=1}$

Source: Zhu (2009)

where,

s	is output observation
m	is input observation
r	is s^{th} output
i	is m^{th} input
q_r^o	is unit price of the output r of DMU0 (DMU0 represents one of the *n* DMUs)
p_i^o	is unit price of the input i of DMU0
$\tilde{y}_{ro}$	is r^{th} output that maximises revenue for DMU0
$\tilde{x}_{io}$	is i^{th} input that minimises cost for DMU0
y_{ro}	is r^{th} output for DMU0
x_{io}	is i^{th} input for DMU0
n	is DMU observation
j	is n^{th} DMU
λ_j	is non-negative scalars
y_{rj}	is s^{th} output for n^{th} DMU
x_{ij}	is m^{th} input for n^{th} DMU

price variables are chosen. The overall selection of the variable of banks' input and output is based on Ariff and Can (2008) and other major studies on the efficiency of banks (Sufian & Habibulah, 2009; Bader *et al*., 2008; Isik & Hassan, 2002; Hassan, 2005). The two input vector variables consist of x1: deposits and x2: labour. The input prices consist of w1: price of deposit, w2 and price of labour.

The two output vector variables are y1: loans and y2: investment. Meanwhile, two output prices consist of r1: price of loans and r2: price of investment. The summary of data used to construct the efficiency frontiers are presented in Table 3.

EMPIRICAL RESULTS

This study first tested the rule of thumb on the selection of input and output variables suggested by Cooper *et al.* (2002). Since the total number of DMUs (39 banks) in this study is more than the number of input and output variables (2 inputs x 2 outputs @ 3 [2 inputs + 2 outputs]), the selection of variables is valid since it complies with the rule of thumb and allows the efficiencies of DMUs to be measured.

Next, by calculating all three efficiencies concepts (revenue, cost and profit), we may observe Islamic and conventional banks at these efficiency levels and further obtain more robust results. Table 4 and Fig.1 illustrate all efficiency concepts, namely, cost, revenue and profit efficiency for Malaysian Islamic and conventional banks.

Malaysian Islamic Bank

Table 4 shows the mean for cost efficiency, revenue efficiency and profit efficiency of 73.4 %, 74.5 % and 67 % respectively for the Malaysian Islamic banks. Another way of interpreting this result is to suggest that these banks have slacked (inefficient) by not fully producing the outputs efficiently using the same input (revenue inefficiency) and by not fully using the inputs efficiently to produce the same outputs (cost inefficiency).

TABLE 3
Descriptive Statistics for Inputs, Outputs, Inputs Prices and Outputs Prices

Variable	Minimum	Maximum	Mean	Std. Deviation
x1	41.86	243,132.00	29,596.4545	46,432.68774
x2	0.60	2,554.00	239.6037	414.31223
y1	2.41	185,783.20	19,998.3287	33,016.50439
y2	1.65	61,677.50	5,655.2189	10,090.18753
w1	0.00	0.10	0.0254	0.01056
w2	0.00	2.27	0.0264	0.18375
r1	0.01	2.51	0.1371	0.25546
r2	0.00	15.16	0.6732	1.24391

Note: x1: Deposits (deposits and short term funding), x2: Labour (personnel expenses), y1: Loans (net loans and interbank lending), y2: investment (total securities), w1: Price of deposits (total interest expenses/ deposits), w2: Price of labour (personnel expenses/total assets), r1: Price of loans (interest income on loans and other interest income/loans), r2: Price of investment (other operating income/investment)

TABLE 4
Cost, Revenue, and Profit Efficiency for Malaysian Islamic and Conventional Banks

No.	Islamic Bank	CE	RE	PE	No.	Conventional Bank	CE	RE	PE
1	Affin Islamic Bank Berhad	0.465	0.465	0.256	1	Affin Bank Berhad	0.805	0.582	0.575
2	Alliance Islamic Bank Berhad	0.982	1.000	1.000	2	Alliance Bank Malaysia Berhad	0.833	0.665	0.672
3	Al Rajhi Banking & Investment Corporation (Malaysia) Berhad	0.822	0.653	0.547	3	AmBank (M) Berhad	0.998	0.639	1.000
4	AmIslamic Bank Berhad	0.800	0.957	1.000	4	Bangkok Bank Berhad	0.856	0.655	0.835
5	Asian Finance Bank Berhad	0.902	1.000	1.000	5	Bank of America Malaysia Berhad	0.890	1.000	1.000
6	Bank Islam Malaysia Berhad	0.685	0.513	0.438	6	Bank of China (Malaysia) Berhad	0.997	0.780	0.792
7	Bank Muamalat Malaysia Berhad	0.567	0.588	0.470	7	Bank of Tokyo-Mitsubishi UFJ (Malaysia) Berhad	0.777	0.721	0.808
8	CIMB Islamic Bank Berhad	0.603	0.470	0.413	8	CIMB Bank Berhad	1.000	0.967	1.000
9	EONCAP Islamic Bank Berhad	0.773	0.776	0.640	9	Citibank Berhad	0.734	0.691	0.642
10	HSBC Amanah Malaysia Berhad	0.952	0.926	0.909	10	Deutsche Bank (Malaysia) Berhad	1.000	0.683	1.000
11	Hong Leong Islamic Bank Berhad	0.601	0.596	0.365	11	Hong Leong Bank Berhad	0.849	0.905	0.858
12	Kuwait Finance House (Malaysia) Berhad	0.653	0.583	0.442	12	HSBC Bank Malaysia Berhad	0.879	0.789	0.796
13	Maybank Islamic Berhad	1.000	1.000	1.000	13	J.P. Morgan Chase Bank Berhad	0.874	0.491	0.899
14	OCBC Al-Amin Bank Berhad	0.624	0.752	0.686	14	Malayan Banking Berhad	1.000	1.000	1.000
15	Public Islamic Bank Berhad	0.853	0.807	0.755	15	OCBC Bank (Malaysia) Berhad	0.920	0.750	1.000
16	RHB Islamic Bank Berhad	0.613	0.578	0.471	16	Public Bank Berhad	0.944	0.969	1.000
17	Standard Chartered Saadiq Berhad	0.588	1.000	1.000	17	RHB Bank Berhad	0.959	0.862	0.928
					18	Standard Chartered Bank Malaysia Berhad	0.816	0.780	0.760
					19	The Bank of Nova Scotia Berhad	0.922	0.658	1.000
					20	The Royal Bank of Scotland Berhad	0.740	0.659	0.681
					21	United Overseas Bank (Malaysia) Bhd.	0.991	0.779	0.933
					22	EON Bank	0.960	0.578	0.645
	MEAN	0.734	0.745	0.670		MEAN	0.897	0.755	0.856

Note: CE: Cost Efficiency, RE: Revenue Efficiency, PE: Profit Efficiency

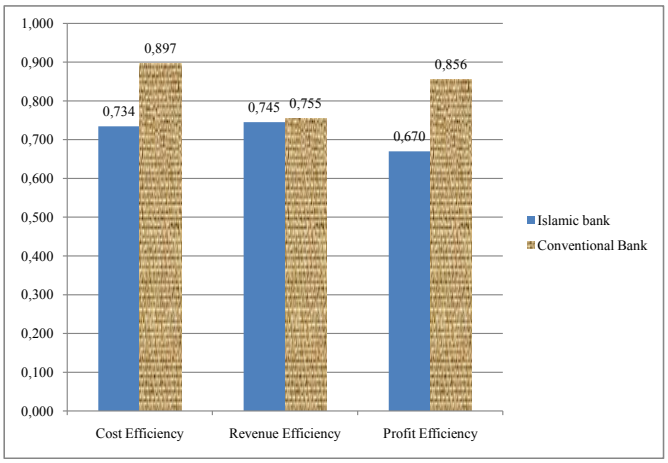

Fig.1: Graph on Cost, Revenue and Profit Efficiencies for Malaysian Islamic and Conventional Banking Sectors in Period 2006-2009

Banks are said to have slacked if they fail to fully minimise the cost and maximise the revenue (profit inefficiency). The levels of cost inefficiency, revenue inefficiency and profit inefficiency are shown as 26.6 %, 25.5 % and 33 % respectively.

Findings are noted in which on the average, the Islamic banks are found to be more revenue efficient. They managed to utilise their inputs to generate revenues and profits. For revenue efficiency, the average bank could generate 74.5 % of the revenues than it was expected to generate. Hence, there is only a slack of 25.5 %, meaning that the average bank lost an opportunity to receive 25.5 % more revenue, giving the same amount of resources, or it had to produce 25.5 % of its outputs with the same level of inputs.

As for cost efficiency, the results mean that the average bank had utilised only 73.4 % of the resources or inputs in order to produce the same level of output. In other words, on the average, the Malaysian banking sector had wasted 26.6 % of its inputs, or it could have saved 26.6 % of its inputs to produce the same level of outputs. Therefore, there was substantial room for significant cost savings for these banks if had they employed their inputs efficiently.

Noticeably, the highest level of inefficiency is on the cost side, followed by profits. Similarly, the average bank could earn 67 % of what was available, and lost the opportunity to make 33 % more profits when utilising the same level of inputs. Consequently, profit efficiency (67 %) is lower than cost efficiency (73.4 %) due to higher revenue efficiency (74.5 %) levels. Therefore, the higher revenue efficiency seems to have contributed to the lower profit efficiency or higher profit inefficiency levels compared to cost efficiency levels.

Malaysian Conventional Banks

The empirical findings presented in Table 4 seem to suggest that Malaysian conventional banks have exhibited a mean of cost

efficiency, revenue efficiency and profit efficiency (inefficiency) of 89.7 % (10.3 %), 75.5 % (24.5 %) and 85.6 % (14.4 %) respectively.

For cost efficiency, the results mean that the average bank utilised only 89.7 % of the resources or inputs to produce the same level of output for conventional banks. In other words, on the average, conventional banks wasted 10.3 % of their inputs, or they could have saved 10.3 % of their inputs to produce the same level of outputs. If the conventional banks had fully utilised their inputs, they could have saved on costs.

Nevertheless, it is noted that on the average, conventional banks were more cost-efficient in utilising their inputs compared to their ability to generate revenue and profit. For revenue efficiency, the average bank could only generate 75.5 % of revenue, less than what it was initially expected to generate. Hence, revenue was lost by 24.5 %, meaning that the average bank lost an opportunity to receive 24.5 % more revenue given the same amount of resources, or it could have produced 24.5 % of its outputs given the same level of inputs.

Obviously, the inefficiency is on the revenue side, followed by profit. Similarly, the average bank could earn 85.6 % of what was available, but lost the opportunity to make 14.4 % more profits from the same level of inputs. Even though the cost efficiency is highest in conventional banks, the revenue efficiency is found to be lower, and this led to higher revenue inefficiency. When both efficiency concepts (revenue and cost efficiency) are compared, the higher revenue inefficiency is seen to have contributed to the higher profit inefficiency.

In conclusion, the empirical findings from this study seem to suggest that conventional banks have exhibited a higher efficiency level for all three efficiency measures [e.g. cost efficiency (89.7 % vs. 73.4 %), revenue efficiency (75.5 % vs. 7.45 %), and profit efficiency (85.6 % vs. 67 %)]. In essence, revenue efficiency seems to have played the main factor that led to the lower or higher profit efficiency levels. Besides, results for the conventional banks show that the level of profit efficiency is lower than that of cost efficiency due to the lower revenue efficiency or higher inefficiency level from revenue. Meanwhile, the level of profit efficiency is lower than cost efficiency due to the higher revenue efficiency level from revenue for the Islamic banks.

The levels of cost, revenue and profit efficiency on conventional and Islamic banks were performed by a series of parametric (t-test) and non-parametric (Mann-Whitney [Wilcoxon]) and Kruskal-Wallis tests. Coakes and Steed (2003) suggest that the Mann-Whitney (Wilcoxon) is a relevant test for two independent samples coming from populations having the same distribution. The most relevant reason is that the data violate the stringent assumptions of the independent group's t-test, so it was decided that Mann-Whitney tests should be used. This study uses parametric and non-parametric tests in order to obtain robust results.

Robustness Tests

Table 5 shows the robustness tests results from the parametric and non-parametric tests of the data. The results of cost efficiency from the parametric t-test show that Malaysian Islamic banks exhibit a lower cost efficiency mean than conventional banks (0.734<0.897), and it is significantly different. Meanwhile, the profit efficiency reported that the Islamic banks also show a lower profit efficiency mean than conventional banks (0.67<0.856) and that it is significantly different. The results from the parametric t-test were further confirmed by non-parametric Mann-Whitney (Wilcoxon) and Kruskall-Wallis tests. Therefore, this suggests that the cost and profit efficiency of Islamic banks was lower than for conventional banks.

However, an interesting result is obtained regarding the revenue efficiency of Malaysian Islamic and conventional banks. The results from the parametric *t*-test indicate that revenue efficiency of the Islamic banks was lower compared to that of conventional banks (0.745<0.755). However, the results should be interpreted with caution since the difference is not statistically significant at any conventional levels. The results seem to suggest that the revenue efficiency of the conventional banks is not as efficient as that of Islamic banks. Furthermore, this revenue efficiency has not significantly influenced the levels of the cost

TABLE 5
Summary of Parametric and Non-Parametric Tests on Malaysian Islamic and Conventional Banks

	Test groups					
	Parametric test		Non-parametric test			
Individual tests	t-test		Mann-Whitney [Wilcoxon Rank-Sum] test		Kruskall-Wallis Equality of Populations test	
Hypothesis			MedianIslamic = MedianConventional			
Test statistics	*t(Prb>t)*		*z(Prb>z)*		*X^2 (Prb > X^2)*	
	Mean	*t*	Mean Rank	*z*	Mean Rank	*X^2*
Cost Efficiency						
Islamic banks	0.734	–5.835***	59.86	–4.593***	59.86	21.097***
Conventional bank	0.897		92.90		92.90	
Revenue Efficiency						
Islamic banks	0.745	-0.238	76.60	-0.470	76.60	0.221
Conventional bank	0.755		79.97		79.97	
Profit Efficiency						
Islamic banks	0.670	–4.415***	63.85	–3.805***	63.85	14.481***
Conventional bank	0.856		89.82		89.82	

***, ** indicate significance at the 1 % and 5 % levels respectively

and profit efficiency in both types of bank. Both the non-parametric Mann-Whitney (Wilcoxon) and Kruskall-Wallis tests also indicate the same. This study concludes that only cost and profit efficiency have higher levels in Malaysian conventional banks rather than in Islamic banks.

CONCLUSION

The study was carried out with the main purpose of identifying the levels of the cost, revenue and profit efficiency in Malaysian Islamic and conventional banks over the period 2006 to 2009. To recap, a few studies have examined the comprehensive efficiency that consists of these three components of cost, revenue and profit efficiency. Most of the previous studies have mainly focused on the efficiency of cost or profit or both. Therefore, by examining overall efficiency including revenue efficiency, more robustness results can be produced in order to identify the most efficient banks in Malaysia.

The non-parametric Data Envelopment Analysis (DEA) methodology was applied to distinguish between the three different types of efficiency, which are cost, revenue and profit efficiency. Furthermore, this study has performed a series of parametric (t-test) and non-parametric tests (Mann-Whitney [Wilcoxon] and Kruskall-Wallis) in order to obtain robustness results.

The results of this study show that they are statistically significant in terms of difference on cost and profit efficiency levels between Malaysian Islamic and conventional banks. The study discovers that the cost and profit efficiency for Malaysian Islamic banks are at the lower levels compared to the Malaysian conventional banks. In addition, the difference levels between cost and profit efficiency in the Malaysian banking sector are not influenced by the revenue efficiency level since the insignificant results are discovered but it may be due to the internal (bank-specific characteristics) and external (macroeconomics) factors.

The research concludes that Malaysian conventional banks are more efficient since both cost and profit efficiency show higher levels than for Islamic banks. Findings from studies on these efficiency concepts provide guidance and better information and fill in the gaps in current literature, therefore, benefiting regulators, the banking sector itself, investors and academicians when they have to make decisions for the future. In addition, to ensure the competitiveness of the Malaysian Islamic and conventional banking sectors, the other determinants on internal and external factors need to be considered as well. Thus, from the regulatory perspective, the performance of banks will be based not only on their efficiency but also on the other potential determinants.

Moreover, in view of the increasing competition attributed to the more liberalised banking sector, bank management as well as policymakers will be more inclined to identify and find an effective and efficient way to obtain the optimal utilisation of capacities. Therefore, the resources will fully utilise and eliminate wastage during the production of banking products and services.

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Effect of Risks on Earnings and the US Bank Share Valuation

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ABSTRACT

The financial crisis of 2008 had a great impact on the banking industry of the United States. This paper looks at the impact of the financial risks on the share revaluation of commercial banks in United States. It is expected that the earnings announcements will affect investors' decisions to trade in bank shares. The Earnings Response Coefficients (ERCs) are applied in this paper to ascertain whether the estimated financial risks have incremental information content beyond the reported earnings. The findings support the notion that investors in the United States do look beyond the reported numbers and look for credit, market and price risk significantly in the earnings response valuation among other financial risks variables.

Keywords: Bank earnings, financial risks, market risks, price risks, abnormal returns

INTRODUCTION

There are about 150 top financial institutions in the United States of America, of which 50 play an important role in facilitating economic growth. This is in line with the long-established theory that financial intermediation plays a critical role in the allocation of resources, mobilisation of savings, and diversification of risk and, therefore, has an important impact on the economy (Francis & Hunter, 2004). The previous "credit crunch" of 2006 and the more recent 2008 financial crisis caused a serious problem for the US economy and seriously affected its banking sector's net income, market valuation, shareholder equity and capital market liquidity.

This paper investigates the impact of the risk structure of commercial banks on share revaluation in the United States and uses the Earnings Response Coefficients (ERC) to measure the impact from changes to the financial risk and market and price risks of these banks.

Credit risk, interest risk, solvency risk and liquidity risk are used as measurements

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of financial risk with the addition of a market and price risk. The analysis uses abnormal returns and the unexpected annual earnings model.

Credit risk is the probability of not receiving cash flows from assets (loans and investments) as promised. Interest rate risk refers to the negative impact on the net cash flows and the values of assets and liabilities originating from changes in interest rates, while liquidity risk indicates the ability of a banking institution to fund its financial needs. Liquidity risk is actually the by-product of the aforementioned risks since liquidity problems originate from credit and interest rate risks. Finally, solvency risk relates to the capital cushion that the bank has to offer to protect its depositors and borrowers from declines in assets values.

There is no question that some risks have to be taken to gain adequate returns. The trade-off between risks and returns is an important decision in the assets-liabilities management of banks. Managers may sacrifice risks to gain better performance. The big question is: How much risk should the bank take in order to gain extra earnings? Additionally, how much value is in the earnings per risks trade-off?

In the past, banks have developed risk-return models that allow more sensitive assessment of the relationship between risk and earnings/profit that leads to shareholder value in terms of share price. One of the models is the risk adjusted returns model. Therefore, this study tries to link the traditional earnings response model to returns to measure investors/shareholders valuation on assets. The earnings response measures the magnitude and direction of the valuation. This study includes risks as the additional control variables.

This study, hence, is an extension of many previous studies on ERC which aims to investigate the earnings response query to banks in the US. It follows the established risk-adjusted returns and regression methodology in measuring the effect of financial risk on shares revaluation for US-based banks. The assessment summarises the impact of risks on US banking institutions on different levels before crisis that indirectly reflect the recovery ability of these banks after the US financial crisis.

The paper is divided into five sections. The section that follows this first section or the Introduction is Literature Review, which reviews literature on the risks-and-returns relation. Section Methodology deals with the research design, hypotheses and methodology employed in this study. The findings of this study are presented in Findings while this paper ends with conclusions and limitations in Conclusion.

LITERATURE REVIEW

Many studies in the past have documented that earnings levels and earnings changes are associated with positive abnormal returns (Latane & Jones, 1979; Foster *et.al*, 1984; Bernard & Thomas, 1989). Furthermore, Ariff and Cheng (2011) state that there is strong evidence that the earnings response coefficients (ERC) are highly significant in several investigations over 40 years on the relation between abnormal returns of stocks and accounting earnings.

Two latest studies on stock price reaction to earnings announcements are Iqbal and Farooqi (2011) and Johnson and Zhao (2011). Iqbal and Farooqi (2011) study the stock price reaction to public announcement of quarterly earnings after tax profit by listed firms on an emerging market, namely the Karachi Stock Exchange (KSE). The magnitude and timing of the announcements related to earnings provide useful information to investors regarding the financial soundness of the firms. Conducting event studies on emerging markets is quite challenging due to their excessive price volatility which is a consequence of the relatively unstable political and macroeconomic conditions.

Johnson and Zhao (2011) study contrarian share price reactions to earnings surprises. The stock prices tend to rise as the effect from unexpected surprises caused by positive earnings. Moreover, the credibility of analysts and investors increases, hence, share prices either also increase or are maintained, while negative earnings surprises, on the other hand, are believed to evoke a severe share price penalty because the failure to at least meet the market's expectation raises doubt among investors about the firm's underlying strength. Firms tend to fall on impact from a negative earnings surprise. Earnings surprise persistence is obtained from a time-series regression model that controls for the presence of contrarian returns. The results find that contrarian share price responses to earnings surprises are a prevalent (but overlooked) feature of quarterly earnings announcements of stock return distributions. The direction and magnitude of the earnings surprise are not a reliable indicator of the market reaction to the earnings announcements. The research concludes about factors that influence the incidence of contrarian returns in negative earnings surprise deciles are unchanged by the sample restrictions. But the above studies show only the existence of 'information content' of the earnings announcement. This study attempts to measure the impact in change in the risk structure of the firm on share valuation. Therefore, we proposed to include risk variables in our model.

Several findings of the past show that the ERC is volatile when affected by some factors. For example, Miller and Rock (1985) examine the unexpected earnings and returns affected by the information. Soh *et al.* (2009) defines ERC as the coefficient that measures unexpected accounting earnings in regressions of abnormal share market returns on that and other variables. The ERC is influenced by other financial risks factors as well. Therefore, some research findings point to an increase in significance of the relationship between unexpected earnings and returns in the middle of time periods. Myring (2006) uses the earnings-returns relationship to examine how market reaction to earnings varies across countries, and the stability of this relationship over time as well as the factors that influence market response to earnings.

The newly raised question is: Can the above ERC studies be extended to US banks with the incorporation of risks factors? The

US subprime crisis that happened at the end of 2007 eventually affected the global economy in the following year. The global crisis started with the collapse of Lehman Brothers. The result of it was a large decline in the capital of many banks, and the US government had to sponsor enterprises, tightening credit around the world. The main issue was about an increase in mortgage rate and loan incentives and the value of the house mortgage that began to dip in 2006 and 2007. Thus, refinancing became more difficult. As a result, most financial institutions as well as the stock market reported huge losses.

The US banking industry has undergone considerable changes over the last two decades in response to major deregulation, financial innovation and technological advancement. The well-known Riegle-Neal Act of 1994 allowed banking and branching on a nationwide scale. Strahan (2003) summarises the fundamental changes in bank operation as an effect of the deregulation period which altered the competitive dynamics of the industry and directly impacted economic outcomes across US states.

One of the effects of deregulation pointed out in prior literature was an increased bank risk which can be mitigated with better risk management (Houston & Stiroh, 2006). In another sense, though, deregulation will increase competition, causing increased bank risks as banks seek out more risky high-yielding investments in order to maintain profit margins (Bundt *et al.*, 1992; Park, 1994; Galloway *et al.*, 1997). It may also allow banks to diversify, resulting in reduced risks (Craigh & Santos, 1997). Having an integrated financial structure among the European banks may have resulted in reduced operating risk through decreased foreign exchange risk exposures, decreased differences in legislation and accounting and in regulation simplification. The recent Greek Sovereign Crisis, however, highlights another contagion effect of this risk diversification as risk is being shared among the European Union countries.

Therefore, this paper concentrates on the six types of risk in the banking industry. The first four types of financial risk are credit risk, interest risk, solvency risk and liquidity risk and the other two are market risk and price risk. This study first tests whether there exists a relationship between stock pricing and returns from banks, and then extends the study to risks factors. Bystrom, Worasinchai and Chongsithipol (2005) study the relationship between default risk and firm size, book-to-market ratio and stock returns during a severe crisis. They find a significant increase in market-based default probabilities around the crisis and a fairly slow return to pre-crisis levels. The first sector to suffer deterioration in creditworthiness was the sector of banking, finance and securities institutions. However, they conclude that default risk is non-systematic. Cheng and Ariff (2007) examine whether four financial risk factors correlated with the abnormal returns of bank shares, while Wong (1997) shows that the optimal bank interest margin reacts positively to the increase in credit risk and interest rate risk.

Finally, Hartmann (2010) reviews five new research papers, which shed light on various aspects of the relationship between market and credit risk and illustrate why they matter, particularly for risk management, and also for financial supervision and regulation. He further recommends future research in bilateral interaction between market and credit risk to other trilateral interaction.

METHODOLOGY

Research Design

This study examines the impact of several risk factors on the performance of commercial banks by using ratios computed from the financial statements of 122 selected banks from the period 2004 to 2009. The first four types are financial risks such as credit risk, interest risk, solvency risk and liquidity risk. The other two are market risk and price risk. The ratios are defined in Table 1. The reason is that we wanted to determine whether these factors would impact the selected banks' shares in terms of direction and magnitude and the revaluation effect from earnings changes during that period.

There are two main ways to calculate unexpected returns, which are:

i. The return series is regressed against the lagged return series. The residual is then used as an unexpected return. This method is commonly used in economics and finance.

ii. The difference in accounting returns between current year and previous year, which is commonly used in accounting literature

In this study, the second method was adopted.

Analysis of Abnormal Returns

Sharpe Market Model (1963) as a standard general equilibrium relationship for asset returns was used. The Abnormal Returns (AR):

$$AR_{it} = R_{it} - (\alpha + \beta_i R_{mt}) \quad (1)$$

where,
$R_{it} = Ln(P_{it}/P_{it-1})$ and,
$R_{mt} = (Ln\ I_t/I_{t-}\ )$.

In addition to the terms already defined, Ln is natural logarithm and i refers to markets composite index. Hence, we took the changes in bank share prices as R_{it} and changes in market index as indicating the R_{mt}. We regressed the R_{it} and R_{mt} to compute the beta (β) and alpha (α) to complete the model for each bank. We also computed Cumulative Abnormal Return (CAR) from the summation of Abnormal Return (AR) for the period of 12 months.

Analysis of Unexpected Annual Accounting Earnings

Unexpected annual earnings were computed using the naive expectation model, which assumes that the next period's expectation is simply the current period's annual earning. This is also consistent with the design of the study to analyse the contemporaneous effect of price at a point in time.

Unexpected annual earnings (UEs) were computed using the naive model:

$$UE_{it} = (EPS_{it} - EPS_{i(t-1)})/ EPS_{i(t-1)} \quad (2)$$

We computed the unexpected earnings from annual earnings per share of each sample bank as shown above in equation (2). However, only five years' annual earnings per share were available for the selected banks, thus allowing us to compute only four years of UE_{it}. The UE_{it} depends on earnings per share of the bank. Therefore, the individual bank's profit and performance determine the movement of its share prices, and are directly related to earnings per share[1].

Risk Determinant Factors

In this study, four financial risk factors were considered. We included two additional risk factors as mentioned above. They were price risk and market risk. The financial risks and their ratios are stated in Table 1, which gives the financial risk factors and their ratios.

This study used four financial ratios calculated from the balance sheets sourced from Bankscope. The additional two risk variables were added according to price risk (P) as derived from the yearly standard deviation (σ_t) of the bank share price from 2005 to 2009. The market variable was computed from the yearly standard deviation (σ_i) of the share market index.

Relationship Between Abnormal Returns, Unexpected Earnings and Risk Factors

The relationship between abnormal returns as dependent variable and unexpected earnings and the six risk factors, namely, interest rate risk, liquidity risk, credit risk, solvency risk, market risk and price risk as independent variables was tested in the regression:

$$CAR_i = \delta_1 + \delta_2 UE_I + \delta_3 Mr_i + \delta_4 Pr_i + \delta_5 Sr_i + \delta_6 Ir_i + \delta_7 Lr_i + \delta_8 Cr_i + \varepsilon_i \quad (4)$$

where,

CAR_i = Cumulative abnormal return over a 12-month window

UE_i = Unexpected Annual Earnings,

Mr = Market risk factor,

Pr_i = Price risk,

Sr_i = Solvency risk factor,

Ir_i = Interest risk factor,

Lr_i = Liquidity risk factor, and

Cr_i = Credit risk factor

Eight regressions were performed according to the following specification:

$$CAR_i = \delta_1 + \delta_2 UE_i + \varepsilon \quad \text{Model 1}$$

$$CAR_i = \delta_1 + \delta_2 UE_i + \delta_3 Mr_i + \varepsilon \quad \text{Model 2}$$

$$CAR_i = \delta_1 + \delta_2 UE_i + \delta_4 Pr_i + \varepsilon_i \quad \text{Model 3}$$

$$CAR_i = \delta_1 + \delta_2 UE_i + \delta_5 Sr_i + \varepsilon_i \quad \text{Model 4}$$

$$CAR_i = \delta_1 + \delta_2 UE_i + \delta_6 Ir_i + \varepsilon_i \quad \text{Model 5}$$

$$CAR_i = \delta_1 + \delta_2 UE_i + \delta_7 Lr_i + \varepsilon_i \quad \text{Model 6}$$

$$CAR_i = \delta_1 + \delta_2 UE_i + \delta_8 Cr_i + \varepsilon_i \quad \text{Model 7}$$

[1]Earnings per share computed by net income / number of the shares outstanding

TABLE 1
Financial Risk Factors and Ratios

Label	Financial Risk Factors	Financial Ratios
Ir_i	Interest risk	Loan / Deposit
Cr_i	Credit risk	Non-performing loans / Total assets
Lr_i	Liquidity risk	Liquid assets / Total deposit
Sr_i	Solvency risk	Equity / Deposit and short-term funding
**Additional Risk		
Pr_i *	Price risk	Yearly Standard deviation of P (σ_t)
Mr_i *	Market risk	Yearly Standard deviation of Market index (σ_i)

$$CAR_i = \delta_1 + \delta_2 UE_I + \delta_3 Mr_i + \delta_4 Pr_i + \delta_5 Sr_i + \delta_6 Ir_i + \delta_7 Lr_i + \delta_8 Cr_i + \varepsilon_i$$

Model 8

We examined whether these four identified "accounting –financial factors" had information content over and above the information from unexpected earnings (UE) in the US banking industry. Additionally, we examined whether the two new risk factors would have an impact on the US banks earning response. The regressions used the panel Ordinary Least Square regression following Wooldridge (2001). A priori, we expected some of the key factors to significantly add more information to the price determinants.

OBJECTIVES

This paper examines the relationship between risk-adjusted abnormal returns and the unexpected annual earnings changes. It also ascertains whether six factors i.e. market risk, price risk, interest rate risk, liquidity risk, credit risk, and solvency risk affect the return-to-earnings relationship.

Data

The data set initially contained 132 US commercial banks from the Bankscope financial database. A final sample of 122 banks was available for analysis for the period 2005 to 2009. Table 2 shows the summary of the statistics related to the 122 sampled banks in terms of their total assets, total equity, total loans, total deposit and total income in 2009.

The difference between the largest and the smallest bank in terms of total assets of the banks is USD11,056 million. Wilmington Trust Corporation had the highest assets value. MB Financial Inc. was the second largest bank in assets, followed by Virginia National Bank. The smallest bank was Bank Reale, which had the lowest asset, equity and loan and deposit value.

The data above show that US banks had more deposits compared to loans in the year 2008. This indicated that US banks were giving attractive interest rates to the public, which resulted in an increase of bank savings deposits. The banks had a good cash management policy of managing the amount of money inflow and outflow. These banks

TABLE 2
The Total Assets, Shareholder Equity, Loans and Deposit of Selected Commercial Banks (in USD million) in 2008

Bank	Asset	Equity	Loans	Deposit	Income
Mean	586.3	66.3	382.5	485.8	-0.4
Standard Deviation	1,435.1	174.8	1,045.6	1,154.7	12.9
Range	11,056.0	1,303.3	8,699.9	8,967.6	147.5
Minimum	41.1	3.8	15.8	27.1	-104.6
Maximum	11,097.1	1,307.1	8,715.7	8,994.7	42.9
Sum	71,524.3	8,084.0	46,668.2	59,271.1	-49.5
Count	122	122	122	122	122

were holding cash more than giving out loans to avoid insolvency risk in times of recession. So the total loan of USD46,668.2 million compared to a total deposit of USD59,271.was at a ratio of 1:1.13. This means that 1 % of loans given out were covered with 1.13 deposits. Hence, during the recession period, US citizens preferred traditional savings than investment in other financial investment instruments. This was encouraged by an attractive deposit interest rate by the banks.

FINDINGS

Descriptive Data

Data such as earnings per share, interest risk (Loan / Deposit), Credit risk (Net loans / Total assets), Liquidity risk (Liquid assets / Total deposit) and Solvency risk (Equity / Deposit and short-term funding) were extracted from Bankscope. Capital IQ was used to extract monthly data such as the banks' share price data and S&P500 index to complete the data set.

Table 3 shows the descriptive statistics of the dependent and independent variables. The average CAR and UE are negative; this indicates that the banks were not doing well in the preceding few years. The SD values for these bank share prices and market index were 9.3% and 5 % respectively. This means that these banks were more risky than the market index.

Returns–to–earnings relationhip between UE and CAR

The regression results are summarised in Table 4. Model 1 indicates that the coefficient for Unexpected Earnings (UE) is positively and significantly related with CAR at a value of 0.050 and with a t-statistic of 5.38. The R-Squared in Model 1 was 0.066, which is the range that was obtained in other studies (Lev 1985). The findings show that US commercial banks had a strong returns-earnings relationship.

The six risk factors were subsequently added one by one into regression of risk adjusted cumulative abnormal returns (CAR) and unexpected annual earnings (UE). Table 3 has all the regression results for the remaining seven models. Initially, the risk factor was regressed one at a time and all the risk factors were then combined in the last regression.

TABLE 3
Descriptive Statistics of the Dependent and Independent Variables

	CAR	UE	Price Risk	Market Risk	Solvency Risk	Interest Risk	Liquidity Risk	Credit Risk
Mean	-0.072	-0.222	0.093	0.050	13.95	90.5	10.93	2.08
S. Deviation	0.309	2.247	0.084	0.028	8.64	33.2	8.95	2.61
Minimum	-0.944	-13.29	0.008	0.014	0.04	28.5	0.55	0.01
Maximum	1.582	17.19	0.944	0.100	89.2	385.9	51.7	9.29
Count	399	399	399	399	399	399	399	399

Each model exhibited a coefficient for UE variables which were significantly and positively related to CAR. All the risk models were insignificant except for market risk, price risk and credit risk factor. The market risk model indicated that the coefficient for share market risk was negatively and significantly related at a value of -2.092 and with a t-statistic of -3.636. The price risk model indicated that the coefficient for share price risk was positively related at a value of 0.485 and with a t-statistic of 2.564, and the credit risk model indicated that the coefficient credit risk was negatively related at a value of -0.011 and with a t-statistic of -2.812. Other risk factors such as interest risk, solvency risk and liquidity risk were all insignificant with the CAR. This is because the above stated risks dealt with the internal financial performance of the banks except for market risk and price risk, which are the returns expected from taking external risks. In terms of credit risks, the finding is consistent with Cheng and Ariff (2007). The changes in the banks' share price were affected negatively by the amount of non-performing loans in the loan portfolios of the banks. The higher the nonperforming loans, the lower the share price reaction to the same amount of earnings.

Where credit risk was concerned, three factors drove the expected and unexpected losses in the UE: (1) The customer default rate given the risks level. (2) The exposure in the loans that is technically at risk, and (3) The potential loss, given default, after allowances were made for security. The non-performing loans that measured the credit risks encompassed all these factors. Therefore, an investor would view the magnitude of earnings with the same level of credit risk as more valuable, or the same level of earnings but lower credit risks as more valuable. With this model investors would measure the credit risk as -0.011 times for the equivalent in credit risk, whereas the ERC is in the magnitude of 0.043 of unexpected earnings. The ratio of differences of credit risks is about one quarter of the ERC.

CONCLUSION

This paper examines the effect of financial risks on the earnings response coefficients for a selected number of 122 commercial banks in the US and focuses on the abnormal returns performance in US banks.

TABLE 4
Regression Results for Returns-to-Earnings Relation for Selected Banks in the US from Period 2005 to 2009

Regression Model: $CAR_i = a_1 + a_2 UE_I + a_3 Mr_i + a_4 Pr_i + a_5 Sr_i + a_6 Ir_i + a_7 Lr_i + a_8 Cr_i + \varepsilon_I$

Dependent Variable: Cumulative Abnormal Returns (CAR), n=256

Independent Variable I	Constant a_1	UE a_2	Market Risk a_3	Price Risk a_4	Solvency Risk a_5	Interest Risk a_6	Liquidity Risk a_7	Credit Risk a_8	Adj R-sq	F-Stat	VIF	Durbin-Watson
Model												
1	-0.058	0.05							0.066	28.94	1.00 - 1.00	1.944
	(-3.571)	(5.380)								(0.000)		
	(0.000)***	(0.000)***										
2	-0.043	0048	-2.092						0.094	17.961	1.138 - 1.138	1.914
	(1.343)	(5.186)	(-3.636)							(0. 000)		
	(0.180)	(0.000)***	(0.000)***									
3	-0.104	0.051		0.485					0.079	21.529	1.14 - 1.14	1.995
	(-4.316)	(5.529)		(2.564)						(0. 000)		
	(0.000)***	(0.000)***		(0.011)*								
4	-0.059	0.05			0.001				0.064	14.43	1.009 - 1.009	1912
	(-1848)	(5.373)			(0.019)					(0. 000)		
	(0.063)	(0.000)***			(0.985)							
5	-0.075	0.051				0.000			0.064	14.51	1.102 - 1.102	1.915
	(-1.573)	(5.386)				(0.370)				(0. 000)		
	(0.117)	(0.000)***				(0.712)						
6	-0.066	0.050					0.001		0.093	14.51	1.022 - 1.022	1.879
	(-2.533)	(5.368)					(0.369)			(0. 000)		
	(0.012)*	(0.000)*					(0.712)					
7	-0.032	0.046						-0.011	0.124	18.68	1.442 - 1.442	1.896
	(-1.722)	(4.864)						(-2.812)		(0. 000)		
	(0.086)	(0.000)*						(0.005)**				
8	0.031	0.043	-2.967	1.144	-0.001	0.000	0.001	-0.016	0.158	11.58	1.279 - 2.391	1.995
	(0.508)	(4.766)	(-4.77)	(5.453)	(-0.699)	(-0.113)	(0.312)	(3.552)		(0. 000)		
	(0.612)	(0.000)***	(0.000)***	(0.000)***	(0.485)	(0.910)	(0.755)	(0.000)****				

Note: Number in each bracket is t-statistic and p-value, significant at (*) 0.01 level.

The findings suggest that accounting earnings is a price relevant variable for banks and earnings has a contemporaneous impact on share prices for banks in the US market. All the risk factors were insignificant except for market risk, price risk, and credit risk. The CAR depended on the earnings of the banks' share price, which was determined by the profit the banks were making at the end of the day.

The profit of the banks was affected by the performance of the banks internally and externally. The internal factors were factors specifically related to the firms such as assets liabilities management. The external factors included the monetary policy executed by the government. The major income of the banks came from the differences in borrowings interest rate and depositing interest rate. For example, the discount rate, interest or bank lending rate which was fixed or imposed by the Federal Reserves on all banks required that each bank had a certain percentage of cash reserved in the Federal Reserves. These factors affected money circulation in the financial market. Therefore, market risk factor was significant in Model 2 and Model 8, which means that the earnings of the bank directly related to economic conditions, historical events, government policies and other macroeconomic factors.

However, the banks realised losses during the recession period due to non-performing loans from high defaults. Therefore, credit risk factor shows up as another risk factor that can affect share price revaluation due to earnings surprises.

This study unearthed no evidence that the other risk factors, namely, interest rate risk, liquidity risk and solvency risk, had information beyond earnings for US commercial banks. This could be due to the fact that these banks had managed this risk well following the BASEL Accords.

Overall, this study has shown a positive returns-to-earnings relationship for banks. The market, price and credit risks have information content beyond earnings changes in the returns-to-earnings relationship. These risk factors are to be cautiously interpreted after the unexpected earnings variables. The other three risk factors were not significant probably due to the fact that firstly, the investors were not concerned with the other factored risk variables, and secondly, the banks were very well managed by their managers so that the other financial risk variables did not vary too much to be significant.

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Earnings Response Coefficient of Banking Shares: A Multi-Country Study with Control for Risk

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ABSTRACT

This paper reports new finding on earnings response coefficients of banking firms on how information disclosed regarding (i) total earnings and (ii) fee earnings is associated with share price changes around the time of financial report releases. This paper extends to banking firms a widely used analysis of earnings response studies on non-banking firms. To obtain robust test results, we extended this common model, for the first time, by adding control variables and also by applying panel regression. Changes in total earnings do influence share prices significantly in the four countries studied i.e. Malaysia, Thailand, South Korea and Australia. Australian investors appear to use disclosed information on *fee* income also to revise share prices significantly as being value relevant. Investors regard both total and fee incomes as equally important in Australia whereas investor actions in the other three markets studied lead to weak evidence on fee income effect. This paper reports new findings on value relevance of disclosures extended to banking firms.

JEL Classification: G14, G21

Keywords: Earnings response coefficient, bank share prices, interest and non-interest incomes, unexpected earnings, value relevance

INTRODUCTION

This paper is on banking firms with a focus on value relevance of accounting earnings disclosures. After four decades of research on *non-bank* firms by accounting researchers, the change in *total* earnings as disclosed in financial statements used by market participants has been shown in

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this paper to be a major determinant of share price changes in the four markets included in this paper. There is an excellent review of this literature on non-bank firms in Kothari (2001) and Lev (1989) for interested readers.[1] These two reviews conclude that the earnings change variable is significantly associated with non-bank share price changes around accounting earnings report releases, with R-squared values typically below 10 %. Fairfield *et al*. (1996) is also a significant study on US non-bank firms while Rose (1989) tests non-financial US firms. Chen and Zhang (2007) is a later study, and there are also studies of other countries on non-bank firms, but not banking firms.

This paper is motivated, therefore, to extend the theory to banking firms on what is known in accounting literature. We also extend this analysis to the banking firms of four countries by more carefully modelling the use of an improved method to control some known factors by including new variables and finally applying panel regression, which leads to robust test results, by extending the well-known earnings response model to banking firms.

Because banking firms are more regulated than non-banking firms, and also because bank earnings are dependent on monetary policy changes; bank prices are greatly dependent on business cycles; any investor's revaluation of bank share prices to unexpected earnings news releases is important enough to be studied as a separate topic from that of non-bank firms. Banking firms have yet to be studied systematically on this issue, and this paper aims to make a modest start to contribute to this new accounting research topic.

Further, banking firms are indeed up for special attention in current research. A measurement of a bank's earning response coefficient, ERC, (thus, earning relevance theory) would add significantly new insights to banking share price behaviour. The earnings of commercial banks consist of (i) interest income and (ii) non-interest fee income report as disaggregated items whereas the revenue and earnings of non-bank firms are much more complex. We also incorporate controls, for the first time, for risk and growth in our modelling as suggested by a commentator.[2] We test the established regression model using the new and more reliable panel regression for the first time applied to this type of study so that residual errors in cross sections and in time series are eliminated to produce robust estimates of earnings coefficient parameters.

[1]Continuing research on this topic appears to have changed focus. The latest studies in earnings response coefficients (ERC) are about auditor selections, equity fund raising, stock splits and other accounting variables as these affect the *non-bank* stock price movements (Park and Pincus 2001 and Chen and Zhang 2007). Another study is Anandrajan *et al*. (2010) on value relevance of banks. Their findings show a consensus that the ERC of non-bank firm changes are correlated with firm-specific variables. With the addition of such firm-specific variables, ERC regressions produce higher explained variations as shown by improved R-squared values of about 20 %.

[2]Controlling the effects of some rather obvious variables is meant to improve the robustness of the test results. We thank an anonymous reviewer for this improvement in our modelling.

The rest of the paper is divided into four sections. The next section contains a very brief review of literature and a short rationale for having selected these four countries for this study. The research process, starting with the hypothesis development, the test models and so forth are included in the following section. The findings are presented in a penultimate section while the paper ends with a short conclusion.

RELEVANCE OF BANK EARNINGS RESPONSE COEFFICIENT (ERC)

Studies to-date over five decades have focused on and identified stock price sensitivity to changes in earnings as a key accounting parameter, hence the development of the value relevance theory of accounting disclosures. The resulting finding has largely helped to justify the price-relevance of earnings reports as strong evidence of the usefulness of accounting earnings disclosures churned out by the profession across all markets at great costs. Applying this to *non-bank* firms has been the mainstay of this line of research in prior research. This has yet been widely applied to studying share prices of banking firms, which, *a priori*, are more sensitive to information. The components of earnings of banks are also quite different in that earnings arise essentially from interest spread and fee income. Therefore earnings are critically connected to a country's monetary regime, which is not the case for the earnings of non-bank firms.

Cheng *et al.* (2008), a first study of commercial banks, provides evidence of the information content in earnings announcements of commercial banks in a small economy. There is another study relating bank stock price changes to some key factors of US commercial banks: see DeYoung and Rice (2004). They use US data over 1989 and 2001 to study the empirical links between bank's non-interest income (so it does not test the total earnings as is commonly done in such tests), business strategies, market conditions, technological change and financial performance. They indicate that well-managed banks expand more slowly into fee activities and that marginal increases, on average, in fee income are associated with poorer risk-return trade-offs. These studies do not measure share price reactions directly.

In a further indirect study of the banking industry, Rose (1989) shows US results for bank/non-bank financial-services firms as well as non-financial firms over the period 1966-85. He notes that the diversification of banks into non-bank product lines reduced risk to banking returns and the resulting cash flows satisfied appropriate portfolio conditions. He also found evidence consistent with a proposition that individual bank risk may be reduced through selected product line diversification, particularly in the insurance/data processing firms; hence, risk is a known factor for inquiry. There was no direct test of ERC.

As for tests on non-bank firms, which started this line of inquiry a long time back, researchers are very familiar with the earliest study by Ball and Brown (1968) that provides a major impetus for

empirical examination of stock market price formation to disclosures of accounting information. Hence, the concept of value relevance of information releases has been further developed in accounting. In a much later study Kothari (2001) showed strong evidence of how the total change in share prices could be traced to the amount of a firm's value change from earnings changes i.e. ERC. In a 1989 theory paper, Collins and Kothari showed how accounting earnings are related to share price changes. These published theory papers suggest that earnings impact can fully accommodate earnings changes at a time.

The latest studies using the same approach for non-bank firms in non-American stock markets are Lee, Han, Wu and Chow (2005) for the Chinese stock market and Song, Douthett and Jung (2003) for the Korean stock market.[3] The former explores the determinants of government practices of listed Chinese non-bank firms and how the practices affect domestic investor reaction to earnings reports; note that this is not on ERC. They find that investors base their valuation decisions, at least in part, on these earnings reports. This is indicated by a significant relationship between disclosed unexpected earnings and CAR. The second study examines how liberalisation of stock markets affected stock price behaviour, which suggests that non-bank stock prices decreased and the stock price differentiation based on individual firm characteristics increased after market liberalisation. The results also show that the explanatory power of accounting numbers measured by earnings changes increased after market liberalisation.

There is thus a need to explore if the information on total income and disaggregated income released by banking firms is relevant for investors to revise share prices around the time of the release of such information. This is our modest research attempt: to study the value relevance of disclosures by banking firms. In addition, there is a need to link the ERC to find the factors correlated to the price effect.

Country and Sample Selection

The brief summary above shows that there is but one study of a minor market using ERC-type analysis applied to banking firms: US studies did not directly measure ERC. Few of the Asia Pacific countries are selected in this paper (see Table 1). These countries were among the earliest to first initiate capital market opening, currency reforms and banking sector reforms in the 1980s and 1990s while also adopting efforts to align standards to international accounting practices to improve disclosure quality and coverage of information released. There are at least four countries that have carried out modernisation relevant to our choice in so far as these four countries have reforms promoting market-based signals in capital markets while also providing relevant internationally-accepted accounting information. Tests on more countries would be desirable, although due to time and resource limitations, our selection is a representative sample of Asia Pacific banking markets.

[3]See also Footnote # 1.

TABLE 1
Broader Similarities of Accounting, Banking and Market

Countries	Banking Reforms	Accounting institutions
Australia	Currency floated in 1984 Bank supervision separated Interest rate controls dropped Broader bank reforms in 1990s Foreign ownership rule relaxed Broad and liquid stock market	Profession well established Rigorous accounting training CPA and CA competing Good number of standards Strict accreditation standards
South Korea	Currency floated in 1999 Entry barrier relaxed in 1980s Supervision by central bank Foreign ownership rule relaxed Broad and liquid stock market	Profession well established Local university training Harmonisation with international accounting standards Disclosure rules tightened 2000
Malaysia	Currency basket-managed 2005 Capital and currency controls off Competition in capital market enhanced by foreign entry Entry barriers lifted for players Foreign ownership limit lifted Broad and active stock market	2 professional accounting bodies University-based training Moderate number of standards International standards adopted Foreign training recognition; link up with overseas bodies
Thailand	Currency free-floated in 1998 Competition improved with Entry barriers lifted Foreign ownership limits lifted Alien board established: larger A large liquid stock market	Profession university based Moderate number of standards Foreign training accepted International standards accepted very early, attracting foreign firms

The four countries selected de-regulated the financial systems over the mid to late 1980s: freed restrictions on charging bank fees, returned interest rates and exchange rates to be determined by market forces; restrictions on foreign ownership of all shares were lifted/reduced in Korea, Malaysia and Thailand. Australia had little restriction on such matters and the ones (currency; banking supervision) in place have been removed/rearranged since 1984 and again in 1994. On the quality improvements to accounting reports, the three countries selected have made much progress.

Chief among the changes is the adoption of international accounting standards, for example, by Malaysia, which facilitated the entry of foreign firms to this market. Improved quality of financial statements also clearly benefitted the investors to use the information to determine their value relevance actions in the markets. The joint impact of market opening actions improved liquidity in capital markets, removed entry barriers, resulting in improved competition and harmonisation of accounting standards to best practices. These reforms collectively helped the investor to have confidence in information quality and also in the efficiency

of price formation. Accounting training moved from trade institutions such as polytechnics to the universities as degree programmes, thereby enhancing the value of professional training in all these countries.

Unlike these four selected Asia Pacific countries, reforms to financial systems in most other Asian countries such as China and India were put in place only in the mid or late 1990s. So we excluded these countries in this study. Without a competitive and liquid market and the ready availability to and acceptance of accounting information by investors in the market, price reaction study is meaningless, or at best, less accurate. So, care is needed in country selection.

This study places a different focus on the effect of earning announcements on stock prices of commercial banks in Australia, South Korea, Malaysia and Thailand.[4] Following the 1997/8 Asian financial crisis, banks have been restructured in three of these countries, with banks given greater freedom to decide on how they would charge for their services. Thus the magnitude of non-interest income is growing although it has, as of 2010, not surpassed the interest incomes in the four countries. Fee income is increasing steadily as a proportion of total income (in the US, it is 34 % of banking income) and it is a lot less than that, at below 20 %, in these four countries.

The four countries selected follow the too-big-to-fail banking policy, which means the top few banks dominate the whole economy. Also, this policy results in only a few banks being listed on the respective stock exchanges. There are only 10 banks in Malaysia, and all are listed; of the 65 bank-like firms, only 11 are listed in Australia; the 10 Korean listed banks account for two thirds of the total assets; Thailand, likewise, is dominated by the 10 selected banks. Therefore, our original sample consists of 4 countries x 10 banks x 8 years of data for the regression tests. In the case of share prices, we obtained monthly share prices to measure the CAR via market model parameters: so the share price data is 12 times larger than the panel data.

DATA, HYPOTHESES AND METHODOLOGY

Hypotheses

The central hypothesis is that the already established positive earnings-to-price relationship of non-banking firms is also likely observable for commercial banking firms in the four markets included in this study. Earnings increases (decreases) of banks should induce a direct impact on share prices at the time of disclosures of earnings reports. If it is so, we test to see whether this relationship is also evident for both total income and non-interest income disclosures by the banks in the four countries. Therefore, the null hypothesis is:

[4]Interested readers are referred to the following sources for a description of the respective banking sectors of three countries in Cheng *et al*. (2008), Chansarn (2005) and the central bank websites of the four countries. These countries together are often described as having developed accounting institutions sufficiently well and that the share markets are Fama-efficient.

H_1: Bank's stock price changes are not significantly correlated with the magnitude of unexpected changes in their reported total annual earnings.

Since this study is conducted in four different markets, *a priori* expectation is that this hypothesis is rejected in the four different markets. There is no *a priori* reason to suspect that the positive relation is absent for banks especially since these four markets operate with market-based incentives under largely de-regulated financial environments. The null hypothesis is expected to be rejected if there is no significant relation between the stock price changes and the unexpected annual earnings changes. That is, the coefficients denoted as *ds* are significant in all tests using several models that will be discussed later.

The second hypothesis concerns the additional use of disaggregated income items:

H_2: Bank's non-interest income has no information content beyond unexpected changes as reported in reported total annual earnings.

This hypothesis is rejected if the non-interest income contains information beyond unexpected total earnings. This will be the case if the coefficients denoted as θs are significant (or did have the correct signs) in the models to be specified later.

The control variables are included, for the first time, in our extended models. These control variables are firm-specific variables to be added after the usual earnings variables to more fully specify the model. The expected signs of the variables are described in the relevant discussion on variables. We added two key risk variables to extend the basic model in the literature. We include risk and growth variables in case there is an effect from these omitted variables in the original model. There are likely to be other variables omitted here but which may have some effect. For example, size variable is often used, but we decided that the size of the change in total earnings captures to some extent the size effect. We felt that risk could be included as a standard deviation of share price returns. For growth, we use a very commonly used variable (popular price-to-book ratio in finance literature) as a robustness check; we specify price-earnings ratio for this[5]. Hence, the extension of the original model with controls is meant to verify the impact of known factors on the ERC.

[5]There are several variables, as suggested during the review process, which could be explored for modelling. For example, earnings level if included will introduce the econometric issue of stationarity. To avoid that, we excluded this variable. There could be an effect from the risk of low/high capital adequacy of banks or even non-performing loans: to include these factors, we needed information of the type, which is not readily available. The same may be said of a couple of other omitted variables found in the literature. We trimmed the earnings events by deleting coinciding non-earnings events disclosed in the test windows. Thus, it could be worthwhile to extend this study as a separate future effort, using more firm-specific, even macroeconomic variables, to explore the omitted variable problem.

To ensure that the results do not suffer from multi-collinearity, we measure the Variance Inflation Factor (see the statistics in the tables): the test results suggest that this is not a problem for our multiple regressions mainly because the variables are ratios of rate of changes. Our *a priori* expectation is that the null will be rejected since the banks report some growing amount of earnings from both total earnings and non-interest incomes. There are also prior studies that show a significant impact of some control variables. To improve the robustness of parameters estimated in the model, we use the more current panel regression so that there is control for variations across subjects and across time periods.

Test models

ERC has been predominantly defined as the coefficient measure of unexpected total accounting earning obtained by regressing abnormal share market returns (returns are usually adjusted by Sharpe (1963) market model) on earnings changes of each firm and then aggregating the impact across all firms. Some studies included other variable(s) placed as control variables (Collins and Kothari, 1989; Kothari & Zimmerman, 1995; Willet *et al.,* 2002; Chansarn, 2005). The price effect is normally derived by regressing unexpected (i.e. abnormal) share returns, the CAR, and the unexpected total earnings of usually non-financial firms to test for a significant relationship. There are many published studies on the topic, and we refer the reader to those existing review articles cited in this paper[6].

Therefore, the dependent variable in this research is a well-established share price returns measure, the CAR, and the independent variable is the unexpected changes in earnings. The estimation of CAR is explained in the next section.

Model 1: Following the very commonly used model, we have:

$$CAR_{jt} = c_1 + d_1\, SUE_{jt} + v_{jt} \quad (1)$$

where,

CAR_{jt} is the measure of risk-adjusted returns for bank *i* over the announcement period *t*,

SUE_{jt} is a change in earnings over two consecutive years is the unexpected earnings change (to be defined later); the value of standardised unexpected total annual earnings, SUE, is the value divided by standard deviation of earnings over the test period,

d_1 is the slope coefficient of the regression is the ERC, and

v_{jt} is the random disturbance term assumed to be normally distributed

Model 2: To test the second hypothesis of whether a disaggregated income is relevant for share price, we developed this model:

[6]One critical commentator states that the low explanatory power of such regressions in this line of research can be interpreted as accounting earnings being uninformative about value changes (Lev, 1989). However, the mainstream position is that this kind of research establishes the usefulness of accounting releases to market price formation.

$$CAR_{jt} = c_2 + d_2 SUE_{jt} + \theta_1 \Delta NI_{jt} + \varepsilon_{jt} \quad (2)$$

where,
CAR_i is a measure of abnormal returns, over and above market price changes attributed to the disclosure of earnings report,
SUE_i is the standardised unexpected earnings from unexpected earnings, and
ΔNI_i is a change in non-interest income/ total income

Since this variable is a ratio, there is no need to use unit normal transformation as done in the case of UE for statistical robustness.

Model 3: The relationship between abnormal returns, CAR, is tested with the unexpected total earnings and the non-interest income/total income as an alternative specification of Model 2.

$$CAR_{jt} = c_3 + d_3 SUE_{jt} + \theta_2 NITI_{jt} + \tau_{jt} \quad (3)$$

where,
CAR_{it} is the abnormal returns over a 12-month window,
SUE_i is the standardised unexpected annual earnings, and
$NITI_i$: non-interest income/total income (a variation of the same variable used in Model 2)

The three regression models are run for each country, one at a time. In these tests, the parameters of interest are the ERC parameters (the ds and θs) in each of the equations. Those parameters will be tested to see if the variables SUE, ΔNI and NITI are relevant for bank stock price changes. The theory suggests that the coefficients should be positive and significant if the investors value the changes in the total earnings and the non-interest earnings (disaggregated item) as price-relevant information.

Models with control variables: The two most common control variables are risk and the growth of earnings of a firm. We specify standard deviation (σ_p) of share price return as total risk of share price changes. The price earnings ratio (P/E) is specified as a proxy for earnings growth. Therefore, the final model is as follows:

$$CAR_{jt} = c_4 + d_4 SUE_{jt} + \theta_3 \Delta NI_{jt} + \theta_4 NITI_{jt} + \delta_1 \sigma_{pjt} + \delta_2 P/E + \varepsilon_{jt} \quad (4)$$

where, in addition to variables defined earlier,
σ_p is the standard deviation of the bank share price returns, and
P/E is the price earnings ratios of the banks as growth variable

Model 4 (and its variants as 5, 6 and 7) is a different specification of the basic model with control variables to obtain a parsimonious set of results[7].

[7]A further refinement would be to apply pooled regression across all four countries with a dummy variable for countries. That could produce one set of collective results for the four countries. We decided to show results for each country rather than one group as we believe this manner of presenting results provides a richer set of results for each country, as all four countries are in any known sense not closely-knit as a group. A study of EU countries, for example, could perhaps adopt that method since countries from the EU would be economically integrated.

Two methodological issues that may be of concern need to be commented upon. One is the confounding effects of events coinciding with or appearing as delayed effects from other announcements. We took care to eliminate all known accounting information disclosures falling within the test windows. The only confounding effects could have been from non-accounting disclosures in the same period. For this, we appeal to the general assumptions, of which some of the pertinent information may have affected the prices randomly, so that on average, their effects are neutral.

A second issue is whether accounting information effect fully captures price effect. This is a debatable issue because firstly, there is non-accounting information that is always coming in, and secondly, the semi-strong form of efficient market theory rests on the basis that the effect is seen anticipated, and rarely is significant in the post-event window. Hence, the methodology adopted here to take care of the econometric and statistical errors found in earlier studies should produce results that are unbiased although in terms of non-accounting information effect, one appeals to their random nature so that there is no systematic bias in the results reported in the paper.

Variable derivations

Sharpe's (1963) market model is usually applied as a standard general equilibrium model relationship for asset return generation. To identify the date over which the CAR has to be measured, we needed the announcement month of earnings report. Studies suggest final earnings reports are released during the first to third months from the end of the financial years, so the time of disclosure t=0 is the announcement month spanning end of months 1 or 2 or 3 following the accounting year ends. If one takes the prices of the third month using the actual release date report , then stock price effect in that month as well the price changes in the prior months are in fact due to the impact of disclosures by a bank. Most reports are made in the months 2 and 3 after the year end. So, the abnormal returns are first obtained by running an OLS regression using monthly return data series of each stock market index (R_{mt}) and the share prices of each of the selected country's disclosing bank, (R_{it}).

The market model regression is run as $R_{it} = \alpha_i + \beta_i R_{mt} + e_{it}$ with five years of monthly returns data to estimate the parameters (α_i and β_i) of the i-th bank around the disclosure months t=1 or 3 and backwards to months 1 month before the previous year end. This enables the abnormal returns at the t-th month to be estimated for each bank as follows:

$$AR_{it} = R_{it} - [\alpha_i + \beta_i R_{mt}] \quad (5)$$

where,

R_{it} is $[P_{it} - P_{i(t-1)}] / P_{i(t-1)}$,

R_{mt} is $[I_t - I_{(t-1)}] / I_{(t-1)}$,

I, P are market price index value using a composite index (I) and adjusted prices of bank stocks (P),

α_i is the intercept of the regression between stock returns and market returns, measured

as monthly returns, and
β_i is the slope of the regression between stock returns and market returns representing the responsiveness of the stock price to price movements in the overall market represented by a composite index of the market

The window of analysis for the ARs is taken as the months starting with the month of announcements (month t=0) and prior months up to at most 11 months, in conformity with similar usage in accounting studies.[8] Hence, the market price reactions to observations in the post-disclosure months are not likely to be significantly different from zero as price changes pick up the information in disclosures. The abnormal returns of each bank's response over the period from month 0 and prior months are cumulated as follows,

$$CAR_i = \Sigma_{t=0..T} AR_{it} \quad (6)$$

for each bank i so that for each country j (symbol not shown) share price effect is measured as the CAR for each of the 10 banks for each year of the seven years under observation. Thus there are 10 x 7 = 70 observations for each country's test(s) sufficient for reliable parametric test statistics.

Next, we measure the change in earnings over each consecutive year over 8 annual observations for each bank in each country. Observations of earnings can be specified as total income, interest income and non-interest income. Non-interest income is included in the regression equation as independent variable to study if the effect of this disaggregated reporting item also affects the share prices in addition to the total earnings. The non-interest income and a bank's financial performance are interrelated in general, so using this item of disclosure will reveal if this disclosure affects share prices[9].

The changes in earnings over any two periods are computed as:

$$\Delta NI_i = [NI_{it} - NI_{i(t-1)}] / NI_{i(t-1)} \quad (7)$$

To provide a robustness check, this variable on non-interest income is specified alternatively as a ratio: non-interest income divided by total income.

$$NITI_i = \text{Non-interest income/total income} \quad (8)$$

These variables sets are now grouped by country j=1, 2, 3, 4. The individual bank data of each country are matched with bank price variables. The variables are tested using three versions of the theory: Model 1 is the original version on total earnings closely following established procedure in accounting (except that we use panel regression across 10 banks in each country, so our results are clearly robust) while

[8]There are several dated and well cited studies of market efficiency of these markets. Hence, we are citing them in this paper.

[9]Cheng *et al.* (2008) finds that (in one emerging country) banks with large amounts of fee income suffered share price declines despite the common aphorisms that it is the banks with high-quality management that should generate fee income; thus, one would expect share prices to go up.

the other two sets of results are meant to examine if the information conveyed by the disaggregated items has additional impact on share prices. Finally, in a final test of the basic models, we also re-estimate the coefficients of the main variables after controlling the effects of control variables.

Data sources

The data are sourced from two databases at University Putra Malaysia: Bankscope and Datastream. The data relate to the four countries over 8 years from 2000 to 2007 (before the world financial crisis) so that the changes in earnings are computed over seven consecutive two years . The data set includes only the stock market listed banks: the 40 largest banks in the four countries . The 10 banks in each of the four countries are large banks, and together these accounts for four fifths of the assets in each banking sector. In the case of Malaysia, the 10 banks are the only banks resulting from mergers of some 54 deposit-taking institutions as part of a 1999-01 central bank reform process. Thus, the 10 banks represent the total banking system. The names of the banks are listed in the Appendix.

The observations on monthly closing prices of banks over the test period and the respective market index values are obtained from Datastream whereas the financial statement items relating to banks are taken from the Bankscope database. These were annual earnings, interest income, non-interest income, and total assets as at the reporting period used for this study. In some cases, where the data series were incomplete, access to financial statements of the banks in the web sites provided additional data for completing and, in some cases, corroborating the data items. The data set for the tests was then screened using Winsorian tests so as to remove transcription errors or extreme outliers. Also, elimination of coinciding events is meant to eliminate confounding effects.

FINDINGS

Descriptive statistics of banks

The summary descriptive statistics of the banks by country are found in Table 2. The Australian banks are the largest in this study in terms of total assets, as befits the size of the Australian economy. The 10 largest listed banks have total assets amounting to USD296 billion. The banking sectors of the other three countries have the following total assets in billions: USD71.3 (Malaysia), USD48.8 (Thailand) and USD183.7 (Korea). The smallest single bank is a Thai bank with total assets of USD172 million while the smallest bank in Malaysia has assets of USD409 million and the smallest bank in Korea has assets of USD653 million.

Columns 4, 5 and 6 of Table 2 indicate the average total income, interest incomes and the percentage of interest incomes to total incomes for the banks in the respective countries. The Australian banks have interest incomes ranging from 45.2 % to 90.3 % with a mean of 76.2 % across the selected banks. That means the non-interest income is about 24 % of total income. The Korean banks have interest incomes ranging

between 32.8 % and 91.7 % with an average of 69.5 %. Malaysian bank numbers are anywhere in the range of 66.8 % to 82.7 % with a mean of 75.8 %. We also provide the median numbers for the variables. As is seen, the medians are not close to the values of averages, as is common in studies using such values. We believe, given the absence of multi-collearity and use of panel regressions as shown in our tests in later tables, this aspect of the variable is unlikely to lead to errors in our test statistics.

Thailand's banks have a mean of 75.8 % with a range of 66.5 %and 89.5 %. Comparing the four countries, two (Malaysia and Thailand) have a similar income break-down of non-interest income while Korean and Australian banks have a wider spread in their interest incomes.

Table 3 shows the averages of the same variables over a seven-year period. Comparing these numbers against the 2007 numbers in Table 3 shows how non-interest income has increased/decreased in these countries. The non-interest incomes of Australian banks have steadily increased from USD10.3 billion in the year 2001 to USD17.9 billion. The Australian banks

TABLE 2
Descriptive Statistics of Representative Banks in Thailand, Korea, Malaysia and Australia, Most Recent Year 2007 (USD million) with n=10 x 4

		Total Assets	Total Income	Interest Income	%	Non-Int Income	%
1	2	3	4	5	6	7	8
			A	B	B/A	C	C/A
Australia	Mean	111,038.3	8,030.8	6,236.0	76.2	1,794.8	23.8
	Median	65,149.3	4,703.8	3,030.2	64.4	2,072.9	44.0
	Min	9,286.3	653.9	554.9	45.2	70.3	9.7
	Max	296,252.1	19,793.9	15,615.7	90.3	4,178.2	62.1
South Korea	Mean	79,117.9	3,453.0	2,101.7	69.5	1,351.3	30.5
	Median	27,298.3	2970.1	1798.3	19.2	1424.2	16.7
	Min	2,772.2	137.7	118.5	32.8	11.5	8.3
	Max	223,044.4	8,666.7	4,848.0	91.7	4,091.2	67.2
Malaysia	Mean	27,906.9	1,695.2	1,257.4	75.8	350.3	18.3
	Median	20,839.6	1,321.9	1,019.2	84.4	252.9	15.6
	Min	7,333.1	409.2	311.7	66.8	60.0	13.1
	Max	71,296.4	4,063.5	3,015.6	82.7	1,183.5	30.9
Thailand	Mean	22,108.4	972.1	716.6	75.8	255.5	24.2
	Median	24,492.4	705.9	537.3	74.3	168.6	25.7
	Min	171.7	171.8	124.9	66.5	24.3	10.5
	Max	48,726.8	2,024.1	1,436.5	89.5	602.3	33.5

Note: Exchange rate: 1 USD = 1.6 Australian Dollar; = 1,454.96 Korean Won; = 3.6 Malaysian Ringgit; = 33.5571 Thai Baht

have a positive increase in the amount of fee incomes but the increase is less than the increase in interest incomes. The non-interest income in terms of percentage declined by 2 % over the period. The fee incomes of Malaysian banks increased from USD1.2 billion in the year 2001 to USD3.4 billion in the year 2007; from 15 % of the total income in the year 2001 to 20.6 % of total income in the year 2007. The increase is more than 5 %. Therefore, the rate of increase in the non-interest fee incomes is greater than the rate of increase in the interest incomes, a result opposite to that seen in the Australian banks.

Thai banks' non-interest fee incomes increased from USD1.4 billion in the year 2001 to USD2.5 billion in the year 2007. The increase is 34.4 % of the total income in the year 2001 and 26.3 % in the year 2007. Thai banks have a positive increase in the amount of fee incomes but the increase is less than the interest income. Therefore, the percentage dropped by 8 %. The rate of increase in the fee income for Thai commercial banks is less than the rate of increase in the interest incomes, as in Australia. The non-interest fee incomes of Korean banks increased from USD5.4 billion (2001) to USD9.4 billion (2007). The increase is 35 % of the total income to 33 % in the period. Similar to the Thai banks, Korean banks have a positive increase in the amount of fee income but the increase is less than the increase in interest income. The fee income dropped by 2 %. Therefore, the rate of increase in the fee income for Korean banks is less than the rate of increase in interest incomes. This suggests that, unlike in Malaysia, there have been declines (thus increased risk) in the expectations about this item in the other three countries.

Table 3 also provides information on total income, interest income and fee income from 2001 to 2007. The fee income for Malaysian commercial banks has been increasing from USD1.2 billion in the year 2001 to USD3.4 billion in the year 2007. The increase formed 15 % of the total income in the year 2001 and 20.6 % of total income in the year 2007.

The increase is more than 5 %. Therefore, the rate of increase in the fee income for Malaysian commercial banks is greater than the rate of increase in the interest income.

The fee income for Australian commercial banks increased from USD10.3 billion in the year 2001 to USD17.9 billion in the year 2006. The increase formed 24.7 % of the total income in the year 2001 and 22.3 % of total income in the year 2007. The Australian banks have a positive increase in the amount of fee income but the increase is less than the interest income. The fee income in terms of percentage dropped by 2 %. Therefore, the rate of increase in the fee income for Australian commercial banks is greater than the rate of increase in the interest incomes.

The fee income for Thai commercial banks increased from USD1.4 billion in the year 2001 to USD2.5 billion in the year 2007. The increase formed 34.4 % of the total income in the year 2001 and 26.3 % of the total income in the year 2007. The

TABLE 3
Total Income, Interest Income and Fee-income of Banks in Australia, Korea, Malaysia and Thailand, (USD million) with n=270

Yr-end	Total Income (A)	Interest Income (B)	% B/A	Fee Income (C)	% C/A
Australia - Panel A					
2006	80,307.9	62,360.2	77.7	17,947.7	22.3
2005	70,169.6	51,723.8	73.7	18,445.8	26.3
2004	48,036.4	34,783.2	72.4	13,253.2	27.6
2003	41,418.7	29,669.4	71.6	11,749.2	28.4
2002	38,687.0	27,615.5	71.4	11,071.5	28.6
2001	41,721.8	31,434.9	75.3	10,286.8	24.7
South Korea - Panel B					
2007	28,438.6	19,016.6	66.9	9,422.0	33.1
2006	24,062.6	16,279.2	67.7	7,783.3	32.4
2005	20,478.4	15,166.5	74.1	5,311.9	25.9
2004	19,514.7	14,769.6	75.7	4,745.2	24.3
2003	18,329.1	12,629.5	68.9	5,699.6	31.1
2002	15,379.3	10,038.3	65.3	5,340.9	34.7
2001	13,342.2	5,945.1	44.6	7,397.2	55.4
Malaysia - Panel C					
2007	16,369.4	12,991.0	79.4	3,378.4	20.6
2006	13,667.4	11,069.8	81.0	2,597.6	19.0
2005	11,933.0	9,652.4	80.9	2,280.7	19.1
2004	11,276.3	9,313.6	82.6	1,962.8	17.4
2003	10,138.3	8,554.7	84.4	1,583.6	15.6
2002	9,034.9	7,653.3	84.7	1,381.6	15.3
2001	8,613.4	7,319.3	85.0	1,294.1	15.0
Thailand - Panel D					
2007	9,720.9	7,165.7	73.7	2,555.2	26.3
2006	9,242.7	6,725.6	72.8	2,517.1	27.2
2005	7,830.4	5,720.5	73.1	2,110.0	27.0
2004	6,860.9	4,689.8	68.4	2,171.1	31.6
2003	5,512.7	3,541.0	64.2	1,971.7	35.8
2002	4,803.3	3,075.5	64.0	1,727.8	36.0
2001	4,188.2	2,748.8	65.6	1,439.3	34.4

Thai banks have a positive increase in the amount of fee income but the increase is less than the interest income. Therefore, the percentage amount dropped 8 %, and the rate of increase in the fee income for Thai commercial banks is less than the rate of increase in the interest income.

The fee income for Korean commercial banks increased from USD5.4 billion in the year 2002 to USD9.4 billion in the year 2007. The increase formed 35 % of the total income in the year 2002 and 33 % of the total income in the year 2007. Similar to the Thai banks, Korean banks have a positive increase in the amount of fee income but the increase is less than that of the interest income. The fee income in terms of percentage dropped by 2 %. Therefore, the rate of increase in the fee income for Korean commercial banks is less than the rate of increase in the interest income.

Do earnings disclosures affect bank share prices?

This sub-section reports the main findings on ERC using the commonly used model as extended in this study. Our aim is to test and discuss if the findings on banking firms are similar to those on non-bank firms. The results are presented by country.

Australia: The statistics in Table 4 obtained for Model 1 show results using the Australian data over seven years for the 10 largest banks. The coefficient of standardised unexpected total earnings (SUE) is 0.040 with t-statistics of 2.753 with a highly significant p-value of 0.008. Thus, as in the other countries to be discussed in this section, information on unexpected change in total earnings had a positive and significant impact on share prices because investors used the disclosures to revalue share prices in the period ahead of disclosure date. The R-squared value is 10 %. This result is consistent with all previous research on non-bank earnings response coefficients reported. The earnings response coefficient is a significant factor in bank share price revisions as tested in this study.

The results from Model 2 include an additional variable, the unexpected fee income (ΔNI), as another independent variable besides total earnings. The results show that the coefficient for unexpected earnings, SUE, in this model is about the same, again 0.040, with a t-statistic of 2.725, which is also significant as indicated by the p-value of 0.009. The coefficient on unexpected fee income is 0.021, and it has a t-statistic of 0.174, which is not significant at all. It appears, as has been shown in several studies of non-bank firms using extraordinary income, Australia investors in this major market appear to value total income more than non-interest income, which is a minor portion of the earnings.

The results from using an alternative specification of non-interest income as in Model 3 produced a significant result. The coefficient for SUE is 0.046 with a t-statistic of 3.145, thus significant with a p-value of 0.003. The coefficient on non-interest (fee) income is significant with a value of 0.133 and t-value at 1.801 and p-value at 0.077, acceptable 0.10 probability level. This suggests that unexpected fee income

TABLE 4
Regression Results of Returns-to-Earnings Relation of Banks, Australia: 2001-2007

This table provides a summary of results of seven regressions using the four basic models developed in this paper. The basic model (Equation 1: $CAR_{jt} = c_1 + d_1 SUE_{jt} + v_{jt}$) is extended by including an additional variable for fee income in Model 2. The other 4 models from 4 to 7 include control variables on growth and risk to specify key omitted variables.

	Australia, n = 70						
Independent Variables	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model7
Constant, a_1	-0.034	-0.039	-0.060	-0.066	-0.087	-0.265	-0.284
	-1.625	-1.077	-2.390	-1.709	-1.927	-2.658	-2.786
	(0.110)	(0.286)	(0.020)**	(0.093)	(0.059)*	(0.010)**	(0.007)***
SUE, d	0.040	0.040	0.046	0.047	0.046	0.054	0.053
	2.753	2.725	3.145	3.115	3.071	3.614	3.589
	(0.008)***	(0.009)***	(0.003)***	(0.003)***	(0.003)***	(0.001)***	(0.001)***
ΔNI, θ_1		0.021		0.026	0.005	0.087	0.067
		0.174		0.214	0.041	0.733	0.551
		(0.862)		(0.831)	(0.967)	(0.467)	(0.584)
NII, θ_2			0.133	0.133	0.135	0.091	0.093
			1.801	1.790	1.814	1.219	1.246
			(0.077)*	(0.079)*	(0.075)*	(0.228)	(0.218)
Risk σ, δ_1					0.025		0.025
					0.900		0.909
					(0.372)		(0.367)
P/E Ratio, δ_2						1.157	1.153
						1.152	1.140
						0.136)	(0.137)
Adj-R-squared	0.100	0.085	0.134	0.119	0.116	0.173	0.170
F-stat	7.579***	3.741***	5.557***	3.658***	2.937**	4.079***	3.418***
Variance Inflation Factor = VIF	1.000	1.023	1.056	1.081- 1.024- 1.056	1.082- 1.061- 1.057- 1.038	1.1.38- 1.087- 1.134- 1.208	1.140- 1.125- 1.135- 1.038- 1.208

Note: Values in bracket are t-statistics and p-values are significant at (*) 0.1, (**) 0.05 and (***) 0.001 levels. VIF shows no multi-collinearity problem in the regression.

SUE = standardised unexpected earnings; **Δ**NI = change in net income; NITI = change in net income relative to total assets; Risk = standard deviation of EPS over 8 years; P/E = price to book ratio of bank shares as growth proxy

disclosures by banks have significant information value to investors in addition to the information disclosure on total earnings change. This result is consistent with the concept that well-managed banks in this market are seen by investors as earning significant interest and fee income, both being valuable for revaluation of share prices. The use of a refined variable as in Model 3 made a difference to test results. So, specification of the variable is important.

Model 4 (and its variation of) regression analyses includes control variables in addition to interest income, non-interest income by including risk and growth of earnings (also price-to-earnings variable) as controls. The results are surprising. The risk and growth variables have no influence on the earnings response after the earnings variables have extracted the value. However, the growth variable (P/E) appears to be relevant only if the ΔNI variable is included.

Korea: Table 5 provides a summary of test results of regressions using the models with the data set relating to 10 South Korean banks.

The results from Model 1 yielded a coefficient of 0.129 on total earnings with t-statistic of 2.258, which is significant at 0.031 probability level. The R-squared value is 11.7 %, low but similar in size to findings in most studies. Compared with the Australian market, this R-squared value is quite similar in size. The results indicate that the information disclosed as unexpected total earnings had a similar effect on the returns of the stocks as in Australia. This indicates that Korean investor behaviour relating to bank stock pricing is somewhat similar to that of Australia and also similar to non-bank firms.

The findings from using Model 2 would suggest that the coefficient for SUE is 0.127 with a t-statistic of 2.00, which is significant at 0.030 probability level. The coefficient for the change in non-interest income is -0.504 with t-statistic of -1.529, and, contrary to theory, with a negative sign. It is not significant at any acceptable confidence level as the probability is 0.137.

Results from Model 3 suggest that the coefficient on SUE is 0.131 with a t-statistic of 2.264, which is also significant at 0.031 probability level. The coefficient for non-interest income over total income is 0.042 with a t-statistic of 0.527. That coefficient is positive but is not significant at levels usually acceptable given that the measured probability is 0.602. This shows the non-interest income effect is positive as predicted but the investors do not appear to value this information as significant. Taken together, Korean investors value disclosures on total income and not non-interest income, although the sign is correct.

Model 4 (and its variants) produced results for control variables added in addition to interest income, non-interest income, risks and earnings growth. The results show that after the effect of change in total income (SUE) and non-interest (fee) income, risk and growth variables have no influence on the share price revisions. The control variables did not matter.

Malaysia: The statistics in Table 6 from regression Model 1 show share price

TABLE 5
Regression Results of Returns-to-Earnings Relation of Banks, Korea: 2001-2007

This table provides a summary of results of seven regressions using the four basic models developed in this paper. The basic model (Equation 1: $CAR_{jt} = c_1 + d_1 SUE_{jt} + v_{jt}$) is extended by including an additional variable for fee income in Model 2. The other 4 models from 4 to 7 include control variables on growth and risk to specify key omitted variables.

	South Korea, n = 70						
Independent Variables	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model7
Constant, a_1	-0.008	0.119	-0.017	0.114	0.125	0.145	0.157
	-0.159	1.245	-0.321	1.179	1.161	1.440	1.406
	(0.875)	(0.223)	(0.751)	(0.248)	(0.256)	(0.161)	(0.172)
SUE, d	0.129	0.127	0.131	0.130	0.131	0.136	0.136
	2.258	2.275	2.264	2.303	2.268	2.398	2.361
	(0.031)**	(0.030)**	(0.031)**	(0.029)**	(0.032)**	(0.024)**	(0.026)**
ΔNI, θ_1		-0.504		-0.532	-0.521	-0.478	-0.465
		-1.529		-1.591	-1.515	-1.415	-1.340
		(0.137)		(0.123)	(0.141)	(0.169)	(0.192)
NII, θ_2			0.042	0.057	0.055	0.047	0.045
			0.527	0.722	0.687	0.590	0.555
			(0.602)	(0.476)	(0.498)	(0.560)	(0.584)
Risk σ, δ_1					0.000		0.000
					-0.251		-0.270
					(0.804)		(0.789
P/E Ratio, δ_2						-0.004	-0.004
						-1.052	-1.039
						(0.302)	(0.308)
Adj-R-squared	0.117	0.155	0.095	0.140	0.111	0.144	0.113
F-stat	5.099***	3.833***	2.627**	2.687**	1.963*	2.300**	1.791*
Variance Inflation Factor = VIF	1.000	1.000	1.006	1.006- 1.014- 1.019	1.006- 1.033- 1.026- 1.024	1.015- 1.038- 1.035- 1.046	1.016- 1.058- 1.042- 1.024- 1.046

Note: Values in bracket are t-statistics and p-values are significant at (*) 0.1, (**) 0.05 and (***) 0.001 levels. VIF shows no multi-collinearity problem in the regression.

SUE = standardised unexpected earnings; **Δ**NI = change in net income; NITI = change in net income relative to total assets; Risk = standard deviation of EPS over 8 years; P/E = price to book ratio of bank shares as growth proxy

changes and the change in total earnings data, SUE, of all the banks over seven years. The coefficient on SUE is 0.086 with t-statistics of 2.444 with a p-value of 0.019, which is significant. The R-squared value is 7 % meaning that about 7 % of variation in share price returns is explained by earnings changes. The result is consistent with all previous research on earnings response coefficient literature relating to non-financial corporations. Thus, our tests on banking firms help to verify that this is true for commercial banks in this emerging economy. Thus, in the case of Malaysian banking firms, the earning impact is binding.

The results from Model 2 are from adding unexpected fee income as another independent variable. The results show that the coefficient for SUE is 0.066 with a t-statistic of 1.95 and a p-value of 0.059. Thus, the earnings impact continues to be significant in this economy. The coefficient for unexpected fee income (ΔNI) is -1.884 with a t-statistic of -2.412 but a p-value of 0.021, which is significant but not positive as expected. This suggests that unexpected fee income information has significant negative information for investors, and so it does significantly affect share valuation by investors at the time of information release. It is possible that this result is driven by extreme values (despite Winsorian checks) since some banks in this banking sector have a large fee income while most banks have a very low fee income. The results from alternative specification of fee income produced a positive coefficient, but it is not statistically significant. Thus, one should conclude that fee income disclosure has no discernible effect in Malaysia's banking sector.

The results shown against model 4 (and its variations) are with control factors. This test is meant to fully specify earnings with non-interest income, risks and growth factors. As with all three prior countries, the risk and growth variables have no influence on share price changes after earnings impact.

Thailand: A summary of results for this country is to be found in Table 7. The statistics show that the coefficient for unexpected change in total earnings in the measured relationship in Model 1 is 0.136 with a t-statistic of 2.746, which is significant since the computed p-value is 0.009. The coefficient for change in non-interest income in Model 2 is -0.034 with a t-statistic of -0.168, the sign being contrary to theory.

The coefficient for change in non-interest income is negative (as in Malaysia and in the US) and is not significant since the computed p-value is 0.868, below the acceptable 0.10 level. This suggests that investors do not value the change in non-interest income information. But the re-specification of fee income appears to make a difference to the result. The results using Model 3 indicate the SUE coefficient is still significant with a coefficient of 0.117 with t-statistic of 2.127 and a computed p-value of 0.039. The coefficient for non-interest income over total income is 0.056 with a t-statistic of 0.831, a result that matches expectation. The adjusted R-squared value is 11.4 %, which is almost similar to 12 %

TABLE 6
Regression Results of Returns-to-Earnings Relation of Banks, Malaysia: 2001-2007

This table provides a summary of results of seven regressions using the four basic models developed in this paper. The basic model (Equation 1: $CAR_{jt} = c_1 + d_1 SUE_{jt} + v_{jt}$) is extended by including an additional variable for fee income in Model 2. The other 4 models from 4 to 7 include control variables on growth and risk to specify key omitted variables.

	Malaysia, n = 70						
Independent Variables	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model7
Constant, a_1	-0.016	0.282	-0.017	0.291	0.270	0.293	0.272
	-0.565	2.225	-0.452	2.267	1.990	2.230	1.976
	(0.575)	(0.032)**	(0.654)	(0.029)**	(0.054)	(0.032)**	(0.056
SUE, d	0.086	0.066	0.086	0.063	0.061	0.064	0.063
	2.444	1.950	2.402	1.807	1.722	1.774	1.735
	(0.019)***	(0.059)*	(0.021)**	(0.079)*	(0.094)*	(0.085)*	(0.091)*
ΔNI, θ_1		-1.884		-2.031	-2.077	-2.020	-2.056
		-2.412		-2.488	-2.504	-2.426	-2.441
		(0.021)**		(0.017)***	(0.017)***	(0.020)**	(0.020)**
NII, θ_2			0.001	0.106	0.121	0.109	0.137
			0.006	0.674	0.751	0.677	0.809
			(0.995)	(0.504)	(0.457)	(0.503)	(0.424)
Risk σ, δ_1					0.072		0.094
					0.508		0.598
					(0.615)		(0.554
P/E Ratio, δ_2						0.000	-0.001
						-0.128	-0.350
						(0.899)	(0.729)
Adj-R-squared	0.070	0.098	0.133	0.113	0.115	0.097	0.092
F-stat	5.973***	6.266***	2.910**	4.269***	3.202***	3.120***	2.523**
Variance Inflation Factor = VIF	1.000	1.059	1.008	1.085- 1.141- 1.086	1.098- 1.155- 1.127- 1.046	1.128- 1.155- 1.125- 1.102	1.129- 1.161- 1.215- 1.233- 1.299

Note: Values in bracket are t-statistics and p-values are significant at (*) 0.1, (**) 0.05 and (***) 0.001 levels. VIF shows no multi-collinearity problem in the regression.

SUE = standardised unexpected earnings; **Δ**NI = change in net income; NITI = change in net income relative to total assets; Risk = standard deviation of EPS over 8 years; P/E = price to book ratio of bank shares as growth proxy

TABLE 7
Regression Results of Returns-to-Earnings Relation of Banks, Thailand: 2001-2007

This table provides a summary of results of seven regressions using the four basic models developed in this paper. The basic model (Equation 1: $CAR_{jt} = c_1 + d_1\ SUE_{jt} + v_{jt}$) is extended by including an additional variable for fee income in Model 2. The other 4 models from 4 to 7 include control variables on growth and risk to specify key omitted variables.

	Thailand, n = 60						
Independent Variables	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model7
Constant, a_1	-0.036	-0.026	-0.039	-0.026	0.014	-0.060	-0.025
	-1.256	-0.401	-1.330	-0.402	0.195	-0.910	-0.338
	(0.215)	(0.690)	(0.190)	(0.690)	(0.846)	(0.368)	(0.737)
SUE, d	0.136	0.138	0.117	0.119	0.111	0.086	0.083
	2.746	2.682	2.127	2.105	1.973	1.482	1.438
	(0.009)***	(0.010)***	(0.039)**	(0.041)**	(0.055)*	(0.046)*	(0.058)*
ΔNI, θ_1		-0.034		-0.042	-0.020	-0.040	-0.023
		-0.168		-0.206	-0.099	-0.205	-0.118
		(0.868)		(0.838)	(0.921)	(0.838)	(0.907)
NITI, θ_2			0.056	0.057	0.073	0.052	0.065
			0.831	0.831	1.065	0.776	0.966
			(0.410)	(0.410)	0.293)	(0.442)	0.340)
Risk σ, δ_1					-0.017		-0.014
					-1.466		-1.167
					(0.150)		(0.250)
P/E Ratio, δ_2						0.002	0.001
						1.896	1.658
						(0.165)	(0.105)
Adj-R-squared	0.120	0.101	0.114	0.095	0.118	0.145	0.152
F-stat	7.538***	3.705***	4.090***	2.684**	2.602**	3.027***	2.714**
Variance Inflation Factor=VIF	1.000	1.056	1.219	1.265- 1.059- 1.221	1.278- 1.065- 1.253- 1.033	1.396- 1.059- 1.224- 1.146	1.398- 1.065- 1.260- 1.069- 1.185

Note: Values in bracket are t-statistics and p-values are significant at (*) 0.1, (**) 0.05 and (***) 0.001 levels. VIF shows no multi-collinearity problem in the regression.

SUE = standardised unexpected earnings; **Δ**NI = change in net income; NITI = change in net income relative to total assets; Risk = standard deviation of EPS over 8 years; P/E = price to book ratio of bank shares as growth proxy

obtained for Model 1. The market perceives the interest income and fee income of Thai banks to be important.

Finally, results using Model 4 (and its variations) included control factors in addition to the two earnings factors. The results would have us believe that the risk and earnings growth variables have no influence on investor behaviour in revising share prices. The relevant information for share price changes is from change to total earnings only.

CONCLUSION AND LIMITATIONS

This paper reports significant share price impacts in four banking sectors from accounting reports disclosing earnings changes in four moderate-sized economies with efficient capital markets and well-developed accounting institutions. We believe this is a first multi-country study of value relevance of accounting disclosures focused on banking firms. In terms of size measured by total assets, Australian banks are the largest banks while Thai banks are the smallest, and the banks included accounted for four fifths of their national banking sectors .

Testing the bank's earnings-to-share price relation is the objective of this paper as is commonly done in value relevance studies. We tested if (i) changes in total earnings (ii) changes in non-interest (fee) incomes and (iii) control variables are significantly correlated with share price changes over eight years in four significant economies in the Asia Pacific, namely Malaysia, Thailand, South Korea and Australia. We selected only those countries with sufficient stock market reforms, banking reforms and developed accounting institutional development for accounting disclosure, so that inefficiency and lack of quality of information are unlikely to affect the findings reported in this paper. The samples of listed banks selected in each country (in the case of Malaysia all banks were selected) are representative of the banking sector. Australian and Korean economies are modestly large economies with institutional and market-based incentives promoting pro-private sector actions, with strong supervisory history, as in Australia.

The regression results using data from four countries suggest that the unexpected changes in total earnings as disclosed in the final reports appear to significantly affect the banking share prices in each of the four countries. The results for the 10 listed banks in each of the four Asia Pacific markets are somewhat similar in that share prices across the four countries react positively to unexpected total earnings changes while in three countries there is also some impact of fee-income on share prices of the banks. This result is the first to be provided for fee income in any country, and so, is important. Also, this is contrary to the impact of extraordinary income in the studies of non-bank firms: extraordinary income effect is absent as reported in most studies. Obviously, investors in banks do value fee income although in two of the four countries, that is not the case.

Our attempt to refine the usually applied common model by applying the panel regression and control variables could well be a significant factor in the refined results reported in this paper. For example, the explained variation is slightly larger in this study than in previous studies on non-bank firms: this could well be due to the higher sensitivity of commercial banks to information. Further refinements were done by including control variables (risk and earnings growth) which did not produce any findings of significant correlation arising from risk and earnings growth, in addition to total income and fee income.

These findings are from four significant Asia Pacific economies since we could not include other less liberalised, less institutionally-developed economies. The excluded countries, in our opinion, have yet made sufficient reforms to assure us that share price is efficiently formed and the accounting information framework is well-developed. An extension of this study to major non-Asian economies with open share markets and accounting institutional development may help to reveal if similar results are evident, for example in the EU. Also, testing these propositions with control variables for a more integrated set of economies such as the EU could be done as pooled regression with dummy variables. In that event, our refined modeling and test procedures may serve to yield reliable findings to generalise the results relating to the very critical banking firms to generalise our findings to a large population of countries. Confounding events effect in our measure of share price returns may have some impact on our results, but we hope it is trivial. Extending the value-relevance findings to a new set of firms, the banking firms, is a modest contribution of the paper.

The methodology developed for earnings research in this paper has the unique advantage of removing errors in the response coefficients reported in earlier papers. Adoption of this methodology would improve future research on earnings. In addition, applying this model to a larger sample of banking firms from more countries would lead to more generalisable findings on the earnings behaviour of banking firms. This task is left as an extension to this research effort.

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APPENDIX

Names of Commercial Banks in this Study: Australia, Malaysia, South Korea and Thailand

No	Australian Banks	South Korean Banks	Malaysian Banks	Thai Banks
1	Commonwealth Bank of Australia	Cheju Bank	Affin Holding Berhad	Ayudha Bank
2	National Australia Bank	Daegu Bank	AMMB Berhad	Bangkok Bank
3	Australia and New Zealand Banking Group	Hana Bank	Commerce Assets Berhad	Bankthai
4	Westpac Banking Corporation	Jeonbuk Bank	EON Capital Berhad	Kasikornbank Bank
5	Bank of Queensland Limited	KEB Bank	Hong Leong Bank Berhad	Kiatnakin Bank
6	Bendigo Bank	Kiup Bank	Maybank Bank Berhad	Krung Thai Bank
7	Macquarie Bank Ltd	Kookmin Bank	M. Plant Berhad (Alliance Bank)	Siam City Bank
8	Adelaide Bank Ltd	Pusan Bank	Public Bank Berhad	Siam Commercial Bank
9	St. George Bank Limited	Shinhan Bank	RHB Capital Berhad	Thanachart Bank
10	Suncorp-Metway Ltd	Woori Bank	Southern Bank Berhad	TMB Bank

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Derivatives Trading and Volatility Spill-Over: Evidence from a Developing Derivatives Market

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ABSTRACT

The objective of the paper is to ascertain the influence of shares derivatives trading on the Malaysian stock market. Johansen-Juselius' co-integration test reveals signs of increasing integration between these cash and futures markets over time. The Granger causality test indicates that the stock index futures Granger causes the cash index with no feedback in the reverse direction during periods of financial crisis and recovery. Significantly observable during the period was high participation of foreign investors in the futures market. The increase in the number of foreign investors in the futures market dramatically increases the herding activities in futures market trading. The findings suggest that the transmission of information from the futures market to the cash market could, to a certain extent, during a period of "bad economy", be due to herding by foreign investors.

Keywords: Derivatives trading, cash market, volatility spill-over and developing derivatives market

INTRODUCTION

The introduction of the derivatives market cantract is one of the significant innovations in the emerging stock markets of the 1980s and the 1990s. The economic functions of the contract for example are to diversify financial risk through hedging strategies and to facilitate the process of price discovery. Hedging through futures trading is a process used to reduce uncertainty induced by adverse price changes in the cash marketindices. The introduction of stock index futures contract offers portfolio managers an opportunity to manage portfolio market risk without changing the portfolio composition. The stock index futures is preferred as a hedging vehicle because of its speed, liquidity and lower transaction cost on brokerage commissions and bid and asked spread (Drimbetas *et al*., 2007; Ghosh, 1993).

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Economic agents involved in the cash market trading are subjected to a wide range of risks associated with movements in the spot prices. A key factor in the development of the futures markets is the demand for hedging facilities. In line with the Malaysian Government's aim of establishing Kuala Lumpur as the Asia Pacific region's premier financial centre, on 15 December 1995, the Kuala Lumpur Option and Financial Futures Exchange (KLOFFE) was established. Derivative instruments such as option[1] and stock index futures are offered by the KLOFFE, in which the basis is the Kuala Lumpur Stock Exchange (KLSE)[2] Composite Index. Having these hedging facilities in the Kuala Lumpur Stock Exchange, allows portfolio managers and investors to better manage their risk exposure and exploit the full potential of the tools for effective risk and portfolio management.

In mid 1997, the currency crisis hit Asian countries including Malaysia. The roots of the crisis can be traced to the speculative activity on Thai Baht in mid-May 1997. The Malaysian stock market began its sharp downward trend not long after the Thai Baht crisis. In July of the same year, the KLCI (Kuala Lumpur Composite Index) broke through the lowest psychological level. The futures market during that period exhibited the strongest correlation with the cash market. The correlation was so significant that many analysts suspected there was a lead and lag relationship between these two markets, and that the futures index was the leading factor. As seen from the observations of the index movement in the cash market during the crisis period, the continued decline each day of the futures index would be followed by a definitive decline in the cash market composite index in the following few day. Could this phenomenon depict that the trading in the futures market has a causal effect on the cash market in Malaysia?

Based on their findings, Lemmon and Ni (2008) and Hodgson and Nicholls (1991) have shown that higher volatility in the futures markets is caused by more highly levered and speculative participants. This may be a significant contributing factor in increasing the volatility of the cash market in Malaysia. An increase in spot market volatility may result in an increase in cost of capital and real interest rates, leading to a decline in the value of investments and investors' share market loss of confidence. In the study by Kasman and Kasman (2008), and Stoll and Whaley (1990), it was suggested that the stock index futures, index arbitrage and program trading are to blame for the excessive stock market price swings.

A study on the impact of the introduction of financial futures index on the cash market in Germany, Japan, Spain, Switzerland, the UK and the US was carried out by Antoniou et. al (1998). In the study, an analysis was conducted using data over a three-year period prior to the introduction of futures trading. Overall results for all countries in this study

[1]The option was launched by the KLOFFE in the office of the Kuala Lumpur Stock Exchange in December 2000.

[2]The Kuala Lumpur Stock Exchange is now referred to as Bursa Malaysia.

showed that the introduction of futures had not had an unfavorable effect on the cash market. As a matter of fact, it appeared that there had been an improvement in the way the news was transmitted into prices following the introduction of futures trading. Thus, the researchers believed that market turbulence as a result of the introduction of derivative trading appeared unfounded. Consequently, calls for further regulation of futures markets based on this view were deemed injudicious.

At the Kuala Lumpur Stock Exchange the usefulness of the futures market during the crisis as a hedging function was questioned. Was there a possibility that the investors used the futures market to influence the cash market? If so, trading in the futures market can create a negative feedback to the cash market and increase the latter's volatility. Such speculative activities, therefore, merit further regulation of the futures market.

The objectives of this paper are to examine the relationship between the cash market and the futures market of the KLSE. Specifically, the objective is to determine whether derivatives in the futures market exert a destabilising influence on the cash market during a financial crisis. The paper is divided into four sections. The first section is this Introduction. The methodological framework employed and sources of data are discussed in the second section. The estimated results and discussion are reported in third, and last section presents some concluding remarks.

METHODOLOGY AND DATA

The daily closing values of the Kuala Lumpur Stock Exchange Composite Index (CI) and the Kuala Lumpur Stock Exchange Composite Index Futures contract (CIF), spanning from January 1996 to June 2000 are employed as the main variables in this study. The Daily Dairy, published by the Kuala Lumpur Stock Exchange is the major source for these data. The analysis is conducted over three sub-sample periods, namely: before the financial crisis period (Jan 1996 – Jun 1997); during the crisis period (Jul 1997 – Aug 1998) and during the recovery period (Sep 1998 – Jun 2000), which saw the oversight of selective capital control measures. .

Methodology

In order to investigate the relationship between the CI and CIF, this study employed the vector autoregressive (VAR) model. The VAR model can be presented as:

$$\begin{bmatrix} CI_t \\ CIF_t \end{bmatrix} = \begin{bmatrix} \alpha_1 \\ \alpha_2 \end{bmatrix} + \begin{bmatrix} \beta_{1,1}(L) & \beta_{1,2}(L) \\ \beta_{2,1}(L) & \beta_{2,2}(L) \end{bmatrix} \begin{bmatrix} CI_t \\ CIF_t \end{bmatrix} + \begin{bmatrix} \varepsilon_1 \\ \varepsilon_2 \end{bmatrix} \quad (1)$$

where CI denotes the Kuala Lumpur Stock Exchange Composite Index; and CIF is the Composite Index Futures contract.

The co-integration test is employed to investigate the long-run relationship between both variables, CI and CIF. Prior to testing

for co-integration however, the individual variables' time-series properties should be investigated. If the variables are found to be stationary, the appropriate procedures to follow would be the conventional regression procedures. But, if the variables are found to be non-stationary, with means and variances that are time-dependent, then to establish the long-run relationships, the co-integration test is necessary. Testing the stationary level of the variables is done using the unit root tests method introduced by Augmented Dickey-Fuller (1979) and Phillips-Perron (1988).

If the two variables are non-stationary and integrated of the same order, then to estimate the relationship of these two variables, the co-integration method suggested by Johansen (1988) and Johansen and Juselius (1990) can be employed. The co-integration method (see Engle and Granger, 1987) is described as a long-run relationship between the variables, and it implies that deviations from equilibrium are stationary, with finite variance, even though the series itself is non-stationary and has infinite variance. The Johansen and Juselius (1990) procedure provides the appropriate test statistics to test the hypothesis for the number of co-integrating vectors and tests of restriction upon the coefficients of the vectors.

The Johansen procedure involves the identification of rank of the *m* by *m* matrix Π in the specification given by

$$\Delta X_t = \delta + \sum_{i=1}^{k-1} \Gamma_i \Delta X_{t-i} + \Pi X_{t-k} + \varepsilon_t \quad (2)$$

where X_t is a column vector of the *m* variables, Γ and Π correspond to coefficient matrices, Δ is a difference operator, k denotes the lag length, and δ is a constant. In the case of no co-integration, Π is treated as a singular matrix (its rank, r = 0). Hence, in a co-integrated case, the rank of Π could be anywhere between zero. For the rank of Π, the procedure provides two likelihood ration (LR) tests, namely, the trace statistics and maximum Eigen value (λ-max).

If two variables move together in the long-run equilibrium, the short-run Granger causality tests should be constructed within a vector error-correction model (VECM) to avoid misspecification (see Granger 1988)[3]. Otherwise, the standard vector autoregressive (VAR) model[4] may be applied in the analysis. The vector error-correction model (VECM) derived from the long-run co-integrating vectors can be used to detect the direction of the Granger-causal effect running from one variable to another. The VECM model employed for the testing of Granger-causality across various variables can be represented by:

$$X_t = \begin{pmatrix} CI_t \\ CIF_t \end{pmatrix} = \begin{pmatrix} \alpha_1 \\ \alpha_2 \end{pmatrix}.$$

[3]If the variables in a system are co-integrated, then the short-run analysis of the system should incorporate the error-correction term (ECT) to model the adjustment for the deviation from its long-run equilibrium.

[4]When an ECT is added to the vector autoregressive model (VAR), the modified model is referred to as the vector error-correction model (VECM). VECM is thus a special case of VAR.

$$+\begin{pmatrix}\beta_{11}(L) & \beta_{12}(L)\\ \beta_{21}(L) & \beta_{22}(L)\end{pmatrix}\begin{pmatrix}\Delta CI_t\\ \Delta CIF_t\end{pmatrix}$$

$$+\begin{pmatrix}\gamma_1 z_{1,t-1}\\ \gamma_2 z_{2,t-1}\end{pmatrix}+\begin{pmatrix}\Phi(L) & 0\\ 0 & \Phi(L)\end{pmatrix}\begin{pmatrix}\varepsilon_{1,t}\\ \varepsilon_{2,t}\end{pmatrix} \quad (3)$$

where X_t is a (2 x 1) vector of the variables in the system, α corresponds to a vector of constant terms, Δ is a difference operator, β is the estimable parameter, β(L) and $\Phi(L)$ are finite polynomials in the lag operator, z_{t-1} is the error-correction term, L is a lag operator and ε_t is the disturbances.

The short-run Granger causality test is executed by calculating the F-statistic based on the null hypothesis that the set of coefficients on the lagged values of independent variables (in first difference except for the I(0) variable, which will be in its level) are not statistically different from zero. In the event that the null hypothesis is not rejected, then it can be concluded that there is no causal effect between the independent variable and the dependent variable. In addition to the detection of the short-run causal effects, the VECM also enables us to examine the effective adjustment towards equilibrium in the long run through the significance or otherwise of the *t*-test of the lagged error-correction terms (ECT) of the equation.

ESTIMATION RESULTS

Integration and Co-integration Tests

Presented in table 1 are the results of the ADF and PP unit root tests for the CI and CIF in levels and the first differences. As indicated in the results the null hypothesis of a unit root could not be rejected for both variables in levels in the three sub-sample periods. The null hypothesis of a unit root, however, was rejected for the first differences in the three sub-sample periods. This indicates that all the variables are stationary in their first differences, or I(1). As a result, all these variables should appear in first difference in stationary form in the causality tests within the VAR/VECM framework.

Reported in table 2 are the results of bivariate co-integration tests using the method introduced by Johansen (1988), Johansen and Juselius (1990). The test results indicate that there is one co-integrating vector in the system for the different sample periods. This means that both variables have a tendency to move together in the long-run. This test also establishes the existence of the long-run co-integration relationship between CI and CIF since both variables reveal very high correlation[5] (see Fig.1a). Even though within the short sample period, the long-run relationship is already established for both CI and CIF.

Granger Causality Tests

As indicated by the co-integration test results in Table 2, both CI and CIF are co-integrated. Thus, this warrants further analysis in order to determine the short-run and long-run dynamic relationships

[5]The correlation between CI and CIF before the crisis, during the crisis and during the crisis under selective capital control measures are 0.9940, 0.9977, 0.9980 respectively.

TABLE 1
Results of Unit Root Tests

	Test Statistics			
	Augmented Dickey-Fuller test		Phillips-Perron test	
Variables	Constant without trend	Constant with trend	Constant without trend	Constant with trend
		Level		
Before crisis				
CI	-1.7889 (7)	-1.2748 (7)	-2.6916 (1)	-2.1504 (1)
CIF	-1.8279 (7)	-1.3967 (7)	-2.5961 (1)	-2.1207 (1)
During crisis				
CI	-0.3256 (1)	-1.6791 (1)	-0.1991 (1)	-1.5097 (1)
CIF	-0.4319 (0)	-1.8099 (0)	-0.4270 (1)	-1.8188 (1)
Recovery				
CI	-2.3875 (5)	-1.9974 (1)	-2.0486 (1)	-2.8315 (1)
CIF	-1.6318 (4)	-0.5013 (4)	-2.5606 (1)	-2.7853 (1)
		First Difference		
Before crisis				
CI	-2.9408 (19)*	-3.1978 (19)	-16.267 (1)*	-16.365 (1)*
CIF	-2.9685 (19)*	-3.2173 (19)	-17.361 (1)*	-17.449 (1)*
During crisis				
CI	-4.3891 (14)*	-4.4345 (14)*	-14.579 (1)*	-14.572 (1)*
CIF	-3.8472 (16)*	-3.8758 (16)*	-17.012 (1)*	-16.996 (1)*
Recovery				
CI	-7.3590 (6)*	-7.4962 (6)*	-23.732 (1)*	-23.973 (1)*
CIF	-5.8139 (10)*	-5.9799 (10)*	-27.010 (1)*	-27.208 (1)*

Note: The critical values for rejection of ADF tests and PP tests are -2.86 and -3.41 at a significant level of 5 %, where a constant without and a constant with a time trend are included in the equation. The asterisk * indicates rejection of the null at 5 % significance level. Numbers in parentheses indicate the lag length to ensure residual whiteness.

between both variables within the vector error-correction model (VECM). The results of the causality test under the framework of VECM are presented in Table 3.

The short-run causality tests for the period before the crisis indicate that the CIF was not causing the CI and vice-versa. This could be due to the nature of the financial futures trading at that time which was still at the infant stage. As a 'young' financial futures market, the market is still mired in a grinding step-by-step battle to win approval from the investors to participate in the derivatives market. Perhaps investors still could not see the benefit of futures trading at that time and the lack of knowledge of its usefulness as a hedging instrument. As a result, the transaction volume was persistently low over the period before crisis (See Fig.1b).

However, the short-run causal effect running from CIF to CI is detected during

TABLE 2
Johansen's Test for Co-Integrating Vectors

H_0	Maximum Eigen value	Critical Value 95%	Trace	Critical Value 95%
Full sample period (k = 10)				
p = 0	32.17**	14.1	33.6**	15.4
p ≤ 1	2.32	3.8	2.32	3.8
Before crisis (k = 8)				
p = 0	20.57**	14.1	23.9**	15.4
p ≤ 1	3.33	3.8	3.33	3.8
During crisis (k = 2)				
p = 0	35.76**	14.1	35.84**	15.4
p ≤ 1	0.08	3.8	0.08	3.8
Recovery (k = 10)				
p = 0	29.77**	14.1	34.23**	15.4
p ≤ 1	2.46	3.8	2.46	3.8

Note: p indicates the number of co-integrating vectors. The (*) indicates rejection at the 95% critical values. The optimal lag-structure (k) is determined through the likelihood ratio test. Critical values are tabulated in Osterwald-Lenum (1992).

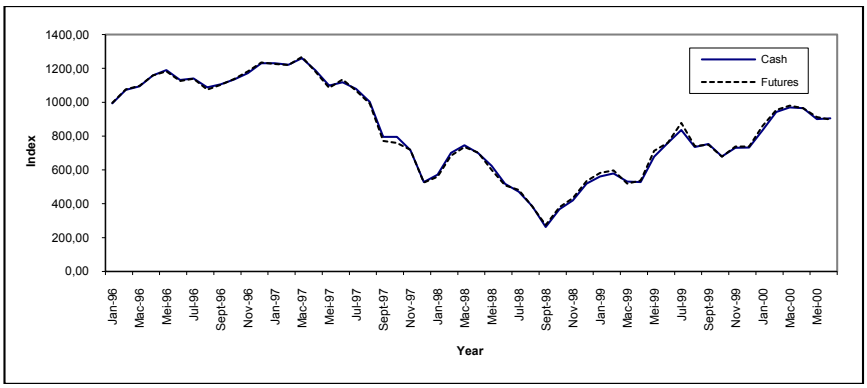

Fig.1(a): Daily KLSE Composite Index and Composite Index Futures

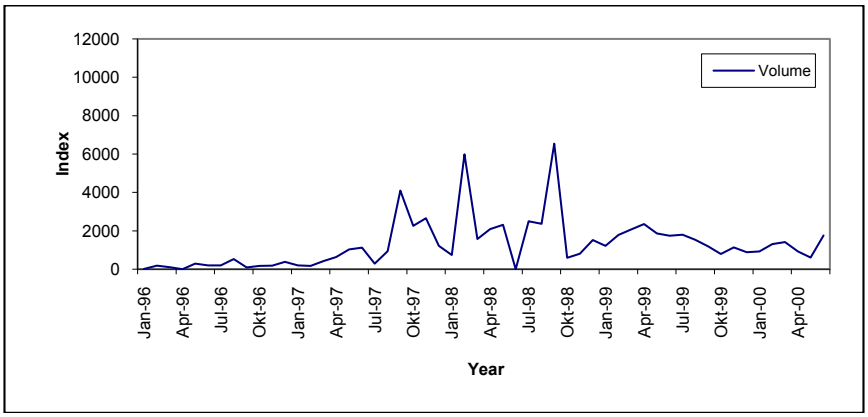

Fig.1(b): Daily Futures Volume in KLSE

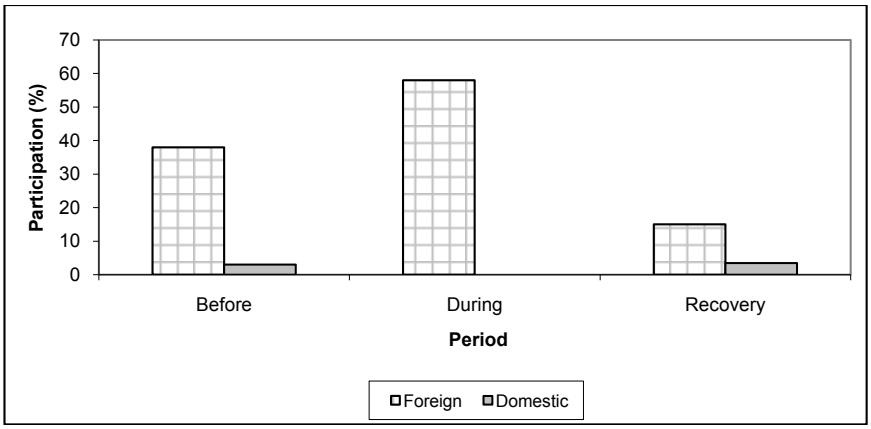

Fig.1(c): Market Demography of Futures Market Between Foreign and Domestic Institutions

the crisis period. It is alleged that the unidirectional causality effect has led to a major decline in cash market performance. The observation highlights that the volume traded for the futures contract increased significantly during the crisis period and showed a significant correlation between these two markets over the same period. This leads us to conclude that trading in index futures may have played a significant role during the KLSE stock market turbulence of 1997. Furthermore, we also suspect that the increase in transaction volume during that period was caused by massive selling transactions.

Due to the Asian financial turmoil, selective capital control measures were introduced in September 1998 to give Malaysia breathing space for its reforms to work. This included pegging the ringgit at RM3.80 to the US dollar, the convertibility of the Ringgit abroad, a moratorium on the outflow of capital and profits for 12 months and restrictions on exporting Malaysian currency. As shown in Fig.1(a), the CI reveals an upward trend after the implementation of capital control, indicating a positive response from the investment sectors towards the control measures. During this period, the Granger causality results reveal that the CIF has a similar unidirectional influence on the CI just as it did during the crisis.

In the case of the recovery period, it is suspected that the confidence in the market returned and the investors at KLSE were buying instead of selling the futures contract and this stimulated the cash market. It is also suspected that the investors may have regained their confidence, and this time, were buying futures contracts for normal hedging purposes. The lower volume of trading in the futures market during this recovery period was perhaps due to investors approaching the market more cautiously. The buying of futures derivatives for hedging purposes as a result created stability in the cash market. This is consistent with the efficient market hypothesis suggested by Fama (1970). According to Fama, this trend indicates that as the KLSE market matures, it slowly becomes more rational.

The overall result thus reveals that the CIF was a more significant influence on the CI during the financial crisis period. Table 3 displays the error-correction coefficient (ECT) and measures the degree to which the one-period response of each of the endogenous variables to a deviation from the equilibrium is corrected. These terms are statistically significant during a crisis period when the independent variable is CI, implying that futures adjust to short-run deviations from a long-run equilibrium. This verifies the long-run relationship between CI and CIF. This estimate seems to suggest high speed, with around 32 % occurring during the crisis under the selective capital control period, 27 % during the crisis period and 13 % during the period before the crisis.

As shown by the estimated results, the futures market Granger cause led to the cash market. What could be the underlying factors that explain such a relationship? A variety of factors have been put forward to explain the lead-lag and the causal relationship. Perhaps the best explanation for the Malaysian case would be the herding factor. In the context of a capital market, herding is trading by a group of investors in the same direction over a certain period of time. In Malaysia it has been documented that futures market trading was mostly done by foreign institutional investors, who are more sophisticated and more informed than ordinary local traders. Hence, they tend to react to any information more efficiently. Due to the fact, local traders would normally watch the action taken by these foreign investors and then react to that (Nofsiger & Richard, 1999). The results in Table 3 show that during the crisis period, the Granger cause between

TABLE 3
Granger Causality Test with Vector Error-Correction Model Results

Dependent Variables		Independent Variables	
	ΔCI F-statistics	ΔCIF Coefficient (Significant levels)	ECT[$\varepsilon_{1,t-1}$] (t-statistics)
Before Crisis (k = 8)			
ΔCI	1.2529	1.2193	-0.0984
	(0.2674)	(0.2865)	(-0.9312)
ΔCIF	1.3776	1.0632	-0.1256
	(0.2050)	(0.3884)	(-1.0812)
During Crisis (k = 2)			
ΔCI	5.4474***	8.9608***	-0.0166
	(0.0047)	(0.0002)	(-0.1410)
ΔCIF	1.4546	1.5871	-0.2742
	(0.2352)	(0.2063)	(-1.8838)*
Recovery (k = 10)			
ΔCI	11.894***	1.8667***	-0.0546
	(0.0001)	(0.0480)	(-0.4650)
ΔCIF	0.7119	16.629***	-0.3170
	(0.7133)	(0.0001)	(-2.1145)**

Note: The F-statistic tests the joint significance of the lagged values of the independent variables, and t-statistics test the significance of the error correction term (ECT). The asterisks indicate the following levels of significance: *10 %, **5 % and ***1 %.

the CI futures and the CI index was most significant. In general, this may be due to the foreign traders who had made their move first in the futures market because of market conditions. In response to the exchange rate uncertainty at the time, foreigners were struggling to sell their portfolio in order to minimise their anticipated losses. This action was later replicated by local investors in the cash market, causing a sharp decline within a short period of time.

Table 4 shows that foreign participants accounted for 55 % of total futures market participants in 1996 compared to local participants, who numbered only 20 %. Even more surprising was that Local Institutions represented only 1 % of total futures market participation. In 1997 and 1998, foreign participants steadily maintained their participation level at 46 % and 49 %, respectively. Local participants, especially the Retails, also maintained their level at 31 % and 33 % in 1996 and 1997, respectively. In September 1998, most of the foreigners offset their futures market positions and sold their cash market portfolio due to government capital control measures, and this resulted in a sharp decline in foreign participation in the futures market as well as in the cash market leaving only 14 % and 16 % in 1999 and 2000, respectively.

Table 5 shows that foreign participation in the futures market during the crisis increased from 38 % to 58 %. This market demography has proven the assumption that foreigners hedged their cash market position by going short in the futures market, hoping to gain a profit to cover their losses in the cash market. They were taking advantage of bearish market sentiment by locking in their profit in the futures market. By late 1998, foreign investors offset their futures market position, leaving foreign participation during recovery at 15 % only. Domestic retail and local member participation during the crisis declined by 6 % and 7 %, respectively, in adverse reaction to this foreign investment trend. Domestic retail and local investors did not take advantage of the downward trend sentiment due to lack of futures trading knowledge, an improper regulatory structure, wide publicity on losses suffered by companies engaged in futures transaction and lack of in-depth market for hedging[6].

The interesting issue here is why the initial transactions made by the foreigners were done in the futures market first. It has been suggested that the existence of transaction costs, capital requirements and the freedom of short-selling transactions may have made it optimal for some to trade in the futures market rather than in the cash market. As explained by Grossman and Fleming (1990), the futures market may provide more immediacy than the spot market. This implies that informed foreign

[6]Several authors, including Kim and Wei (1999), Park and Song (1999) and Radelet and Sachs (1998), put the blame for the Asian crisis on foreign investors. Bae *et al.* (2009) and Ghysels and Seon (2000) examined the role of derivatives securities in the Korean capital market. They found evidence supporting market destabilisation by foreign investors during the crisis. Foreign investors also became negative feedback traders of futures, and the permanent impact of their futures contracts sales increased substantially during the crisis.

traders may find that they can act faster and at a lower cost in the futures market than they can in the cash market, resulting in a lead-lag relationship between these two markets. With raising uncertainty, foreign traders were struggling to leave the market. These attributes of the futures market were the key incentives for them to exit initially via the futures market.

Another factor that could explain why the initial actions were first taken in the futures market is the liquidity factor. Grunbichler *et al.* (1994) proposed that the differences in liquidity between the two markets could also create a lead-lag relationship. As pointed out in their work, if the average time between trades for index constituent firms is longer than that of the index futures contract, information would be incorporated, on average, more rapidly in futures prices than in cash prices. Thus futures prices will adjust more quickly in reaction to economic conditions than would cash prices. This period of adjustment could also be attributed to the investor behaviour. As explained by Kim and Wei (1999), traders in the developing futures market are made up of mostly foreign institutional traders, who are generally more informed than local traders. With these advantages it is expected that they would react to information more efficiently than other less-

TABLE 4
Market Demography of Futures Market

Category	Year 1996	Year 1997	Year 1998	Year 1999	Year 2000
Foreign Institutions	52 %	45 %	47 %	14 %	16 %
Domestic Institutions	1 %	2 %	1 %	4 %	4 %
Overseas Retail	3 %	1 %	2 %	2 %	2 %
Domestic Retail	19 %	31 %	33 %	51 %	49 %
Local Members	20 %	17 %	15 %	26 %	28 %
Proprietary	5 %	4 %	2 %	3 %	1 %
Total	100 %	100 %	100 %	100 %	100 %

TABLE 5
Market Demography of Futures Market

Category	Before Crisis	During Crisis	Recovery
Foreign Institutions	38 %	58 %	15 %
Domestic Institutions	3 %	0 %	3.5 %
Overseas Retail	1 %	0 %	2 %
Domestic Retail	34 %	28 %	50 %
Local Members	19 %	2 %	28 %
Proprietary	5 %	1 %	1.5 %
Total	100 %	100 %	100 %

Before Crisis : As at June 1997
During Crisis : As at June 1998
After Crisis : Average Rate for 2000 and 2001
(Source: Malaysian Derivatives Exchange - MDEX)

informed traders.

CONCLUSION

The major objective of this paper is to ascertain the effect of derivatives trading on the Malaysian stock market. The Johansen-Juselius co-integration test indicates that there are signs of increasing integration between the Malaysian futures market and the cash market over time. The Granger causality test indicates that the stock index futures cause no reverse direction to the cash index during periods of financial crisis and recovery. The causal relationship is more vigorous in the high volume-trading period with significant volatility, particularly during a financial crisis period. It is suggested from the estimated results that the futures market played a key role during the Malaysian stock market turbulence in 1997-98. The fraction of index futures volume started to increase dramatically in July 1997. The massive selling sentiment in the futures market during the crisis was eventually transmitted to the cash market, causing a decline in cash prices, a pattern which was not observed prior to the crisis.

Given the significance of futures trading, we examine whether futures trading by foreign investors exerted a destabilising influence during the crisis. We find that foreign investors increased their presence in the futures market and dramatically increased their herding of futures trading. During the crisis period, to protect their profitability, foreign traders fled the cash market and entered the futures market. Observing this, the local investors in the cash market reacted irrationally and made similar moves without giving any form of consideration to the strong fundamentals at that time (Kremer & Nautz, 2011). On the other hand, the foreigners took advantage of the flexibility features of the futures market such as lower transaction cost, small capital requirement, ease in engaging in short selling activities, and no barriers to entering and exiting the market. Thus, the estimated results suggest that, to a certain extent, the transmission of information from the futures market to the cash market during the period of "bad economy" could have been due to manipulation by foreign participants.

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The Effect of Director-Auditor Link on Non-Audit Services Fee

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ABSTRACT

Despite concerns on joint-provision of audit and non-audit services, not many studies have been conducted on examining the factors influencing companies to purchase non-audit services from their auditor. The attachment theory postulates that non-audit services purchasing decisions are influenced by the director-auditor link. Using 759 sample companies listed on Bursa Malaysia in 2007, the OLS regression results show a significant positive relationship between director-auditor link and non-audit services fee. The finding adds to the limited literature on the factors influencing companies to purchase non-audit services from their auditor and suggests the need for active involvement of shareholders in the auditor selection process.

Keywords: Attachment theory, auditor choice, auditor-auditee relationship, director-auditor link, interlocking directorships, non-audit services fee

INTRODUCTION

Joint provision of audit with non-audit services has received a considerable amount of attention due to the possible negative effects on auditor independence. It is argued that providing non-audit services to audit clients creates conflicts of self interest (Svanstrom & Sundgren, 2012) in the sense that an auditor might give in to client pressure to avoid jeopardising or losing lucrative non-audit services or be reluctant to adversely report on items involving non-audit services (Firth, 2002). However, despite these concerns, not many studies have been conducted on examining the factors influencing companies to purchase non-audit services from their auditors. The limited research may probably be due to the lack of data since many countries do not have any requirements regarding the disclosure of non-audit services. For example, listed companies in Malaysia

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and the United States only required the disclosure of non-audit services in 2001. Thus, the primary purpose of this study is to examine the factors affecting the joint provision of audit and non-audit services focussing on the director-auditor link. The attachment theory postulates that purchasing decisions related to non-audit services are influenced by the director-auditor link.

LITERATURE REVIEW

Besides auditing services, accounting firms also provide some other services. Among them are accounting related consultancy, forensic accounting, taxation, management accounting, secretarial services, management information systems and internal controls. As has been contended by Chien and Chen (2005), audit firms need to provide non-audit services to gain various benefits, which, among others, are competitive advantages, personnel attraction and retention, meeting client's needs and risk diversification. Non-audit services have become an issue in auditing due to the joint provision of audit with non-audit services. Even though joint provision could be beneficial in terms of cost saving through knowledge spillover (Barkess & Simnett, 1994; Svanstrom & Sundgren, 2012), the possible effects on auditor independence have become a concern (see for example DeFond, Raghunandan & Subramanyam, 2002; Hay, Knechel & Li, 2006; Quick & Warming-Rasmussen, 2009). In Malaysia, the government's concerns on this matter have led to the imposition of a mandatory requirement for the disclosure and the prohibition of joint provision of audit with some types of non-audit services. The *By-laws (On Professional Ethics, Conduct and Practices)* of the Malaysian Institute of Accountants (2010) have prohibited auditors from providing valuation services, litigation support services, dispute resolutions and some corporate finance services to their audit clients. For listed clients, the *By-laws* also prohibit auditors from providing accounting and bookkeeping services, internal audit services, staff lending and design and financial information technology services.

Prior studies have identified three (3) factors that may affect the non-audit services fee. While many believe that companies with higher agency conflicts will demand higher audit quality (see for example DeFond, 1992; Firth & Smith, 1992; Francis & Wilson, 1988), the level of agency conflict is postulated to be negatively related to non-audit fee. Firth (1997) hypothesised that higher agency conflict companies will purchase lesser non-audit services in order to protect an auditor's independence (especially when it is perceived independence). In a study, Firth (1997), who used data from 500 of the largest British listed companies for the year 1993, found significant positive relationships between directors' shareholdings and the largest owner's shareholdings with non-audit services fee; Firth also found a significant negative relationship between leverage and non-audit services fee. In an earlier United States study by Parkash and Venable (1993), data from 860 observations

during the period from 1978 to 1980 were used, with similar evidence collected.

Audit services fee is believed to have a negative relationship with non-audit fee. This belief is due to the possible 'loss leader' practised by auditors, where the auditor charges a lower price for audit services in order to attract the non-audit service work (Hay *et al.*, 2006). Besides that, the use of an incumbent auditor may also increase the level of efficiency of the auditor due to knowledge-spillovers and hence, may save cost (Barkess & Simnett, 1994; Simunic, 1984). However, prior research has generally found a positive relationship (see for example Barkess & Simnett, 1994; Hay *et al.*, 2006; Houghton & Jubb, 1999). Peel and Clatworthy (2001) had argued that the positive relationship may be due to the audit services fee being inflated at the expense of the non-audit services fee, where the portion of non-audit services fee is included as audit services fee. Meanwhile, Firth (2002) posits that the positive relationship as due to the demand for non-audit services because of certain company specific events and the occurrence of these events may lead to higher audit efforts (thus increases the amount of audit services fee). Firth (1997) had suggested that the cost-saving of knowledge-spillover (if it exists), may be kept by the auditor if competition for audit and non-audit services is limited.

It has also been hypothesised that the type of audit opinion has an effect on the amount of non-audit services fee charged by the auditor. While audit production costs and audit risks are likely to be higher for auditors who issue qualified audit opinions (Francis, 1984; Palmrose, 1986; Simunic, 1980), Houghton and Jubb (1999) argue that an audit qualification could increase the amount of non-audit services fee charged due to the audit services fee recoup strategy by the auditor. They add that the additional costs borne by the auditors by their decision to issue an audit qualification are not necessarily recouped through the audit services fee alone but also through the non-audit services fee (where an incumbent auditor also provides non-audit services to the client). The auditors may make use of non-audit services as a means of relieving billing constraints for audit services since the non-audit services fee is less price-sensitive and less constrained to increase (Houghton & Jubb, 1999). Prior studies by DeFond *et al.* (2002) and Houghton and Jubb (1999) have both found support for these arguments.

HYPOTHESES

Past studies have shown that interlocking directors have the tendency to select the same auditor across the companies in which they serve. This may be due to the fact that these directors may have developed an attachment with a particular auditor with whom they have previously worked. The evidence of these occurrences (termed as director-auditor link) have been shown by Davison, Stening and Wai. (1984) and Jubb and Houghton (1998) in Australia and Malek and Che Ahmad (2011) in Malaysia.

The strength of interpersonal and inter-organisational attachment is expected to

grow when relationship-specific skills are necessary to adequately perform the tasks required (Meyer, Rigsby & Boone, 2007). Such assets may consist of well-grounded communication patterns and the development of trust among those individuals involved in boundary-spanning roles; knowledge of the peculiarities of a firm's accounting system; and understanding of the client's product market to forecast the likely value of inventory (Levinthal & Fichman, 1982). For example, when specialised knowledge or skill-sets are needed, which may be specific to a particular organisation, then, significant investment is required at the personal and the organisational level in the relationship (Meyer *et al*., 2007). One immediate benefit of continuing a relationship is a substantial saving in time and effort for both the client and auditor in familiarising the auditor with the client's accounting procedures (Levinthal & Fichman, 1982).

Most of the non-audit services provide beneficial and important inputs to directors (which will then be used by the directors in the decision-making process), hence, besides emphasising upon the quality of the services itself, directors also require that the providers of these services are those whom they can personally trust. The familiarisation of the quality of work of auditors (through experience working in the interlink companies) and mutual trust between interlink directors and interlink auditor will result in the interlink directors being more favourable towards an interlink auditor in the appointment for the providers of the non-audit services.

From the auditor's perspective, interlink auditors may also use their influence power (which exists due to mutual dependence and mutual trust) upon the interlink directors to purchase additional services from them. In a profession in which clients are loyal to their existing relationships, networking offers one of the best ways of finding leads for new business opportunities (Harding, 1996). This suggests that the attachment created by the director-auditor link may lead to the existence of opportunities for new businesses (which, in this case, is providing non-audit services) for the auditor.

Therefore, it is argued that director-auditor links are related to non-audit fees, hence, leading to the following hypothesis:

H_1: The director-auditor link is significantly and positively related to the non-audit services fee.

In order to capture the possible different influence by different types of director, the following hypotheses are tested:

H_{1a}: The director-auditor link generated by executive interlocking directors is significantly and positively related to the non-audit services fee.

H_{1b}: The director-auditor link generated by non-executive interlocking directors is significantly and positively related to the non-audit services fee.

H_{1b1}: The director-auditor link generated by independent non-executive interlocking directors is significantly and positively related to the non-audit services fee.

METHODOLOGY

The initial population of this study was all companies listed on the Bursa Malaysia Main Board and Second Board in the year 2007, totalling 863 companies. A total of 104 companies (23 newly-listed companies, 39 financial companies, 8 financial year-end-change companies and 34 incomplete information companies) were excluded from the sample, which brings the final sample to a total of 759 companies.

For the testing of hypotheses $H_1 - H_{1b1}$, the Ordinary Least Square (OLS) non-audit services fee model is used and is replicated and modified from Firth (1997) and Parkash and Venable (1993). The model takes the following form:

$$\begin{aligned} LNAS = {} & \beta_0 + \beta_1 DIRLINK + \beta_2 LAFEE \\ & + \beta_3 OPINION + \beta_4 ET\_CC \\ & + \beta_5 ET\_FC + \beta_6 BFOUR \\ & + \beta_7 LASSET + \beta_8 LSUBS \\ & + \beta_9 INVREC + \beta_{10} LEV + \beta_{11} ROE \\ & + \beta_{12} DIROWN + \beta_{13} INITIAL \\ & + \beta_{14} BOARD + \beta_{15} INSTHLDG \\ & + \beta_{16} ISSUE + \beta_{17} GROWTH \\ & + \beta_{18} RESTATE + \beta_{19} LgOWN \\ & + \beta_{20} LAGE + \beta_{21} DLOSS \\ & + \beta_{22} LAGOPINION + \beta_{23} QUICK \\ & + \mu \end{aligned}$$

LNAS is measured by natural logarithm of total non-audit services fee paid by the company to its auditor. Consistent with Courtney and Jubb (2002) and Jubb and Houghton (1998), the director-auditor link is measured by the number of interlocking companies (companies in which the directors of the observed company also served as directors) audited by the focal company's auditor. H_1 is measured by the number of interlocking companies generated by all directors of the focal company audited by the observation company's auditor. H_{1a} is measured by the number of interlocking companies generated by executive directors of the focal company audited by the observation company's auditor, H_{1b1} is measured by the number of interlocking companies generated by non-executive directors of the focal company audited by the observation company's auditor and H_{1b2} is measured by the number of interlocking companies generated by executive directors of the focal company audited by the observation company's auditor. Other variables are measured as follows:

LAFEE = Natural logarithm of audit services fee
OPINION = 1, unqualified audit opinion 0, otherwise
ET_CC = Proportion of Chinese directors
ET_FC = Proportion of foreign directors
BFOUR = 1, brand name auditor 0, otherwise
LASSET = Natural logarithm of total assets
LSUBS = Natural logarithm of number of subsidiaries
INVREC = Proportion of inventory and receivables to total assets
LEV = Ratio of long-term debt to total equity

ROE = Proportion of net profit to total shareholders' equity
DIROWN = Percentage of directors' shareholdings
INITIAL = 1, newly appointed auditor 0, otherwise
BOARD = 1, main board companies 0, otherwise
INSTHLDG = Percentage of shares owned by institutional holdings
ISSUE = 1, acquired additional funding 0, otherwise
GROWTH = Sales growth over last fiscal year
RESTATE = 1, restatement of prior year audit account 0, otherwise
LgOWN = Percentage of shares owned by the largest shareholder
LAGE = Natural logarithm of number of years listed
DLOSS = 1, loss in prior and current year 0, otherwise
LAGOPINION = 1, unqualified audit opinion in prior year 0, otherwise
QUICK = Ratio of current asset (less inventory) to current liabilities

RESULTS

Descriptive and Univariate Analysis Results

Table 1 and Table 2 below present the descriptive statistics and univariate test results for samples of companies based on companies which purchase non-audit services from its auditor (purchaser companies) and companies which do not purchase non-audit services from its auditor (non-purchaser companies).

Table 1 shows that purchaser companies have twice the number of director-auditor links than non-purchaser companies and the results of the t-test of mean differences between the two groups are significant (at a 1 % significance level) for all the hypotheses variables. On average, the purchaser companies' auditors audit 1.77 of interlocking companies, while non-purchaser companies' auditors only audit 0.88 of interlocking companies. Based on types of interlocking director, the purchaser companies' auditors audit 0.45 of executive directors' interlocking companies, 1.56 of non-executive directors' interlocking companies and 1.08 of independent directors' interlocking companies, while non-purchaser companies' auditors only audit 0.20 of executive directors' interlocking companies, 0.78 of non-executive directors' interlocking companies and 0.61 of independent directors' interlocking companies.

Meanwhile, Table 2 shows significant frequency differences of the interlink auditor between purchaser and non-purchaser companies (at a 1 % significance level). While a majority of non-purchaser companies are audited by non-interlink auditors, a majority of purchaser companies are audited by interlink-auditors (60 %) and interlink auditors from non-executive interlocking directors (56 %). In addition, 49 % of purchaser companies are audited by interlink auditors from independent interlocking directors and 25 % are audited by interlink auditors from executive interlocking directors.

Table 3 presents a matrix of the Pearson-Correlation for all the variables.

TABLE 1
Descriptive Statistics and Univariate Test Results of Continuous Variables for Purchasers and Non-Purchasers of Non-Audit Services

Variable	Purchaser of NAS (Sample= 428)		Non-Purchaser of NAS (Sample= 331)		t-test (2 tailed)
	Mean	Std. Deviation	Mean	Std. Deviation	
DIRLINK	1.77	2.26	0.88	1.45	-6.556*
EDLINK	0.45	0.94	0.20	0.56	-4.625*
NDLINK	1.56	2.09	0.78	1.34	-6.229*
INDLINK	1.08	1.57	0.61	1.12	-4.851*
LAFEE	5.17	0.44	5.08	0.37	-3.267*
ET_CC	0.54	0.31	0.6	0.27	2.688*
ET_FC	0.05	0.11	0.05	0.12	0.143
LASSET	8.7	0.65	8.45	0.5	-5.884*
LSUBS	1.14	0.47	1.1	0.38	-1.267
INVREC	0.28	0.19	0.32	0.19	2.781*
LEV	0.29	0.94	0.23	0.34	-1.096
ROE	0.13	0.77	-0.01	1.15	-1.83
DIROWN	33.9	25.81	37.61	23.13	2.059*
LDELAY	1.97	0.13	2.01	0.12	3.644*
INSTHLDG	56.27	25.75	46.86	25.5	-5.021*
GROWTH	0.21	0.66	0.24	1.03	0.431
LGOWN	30.16	16.72	27.11	16.37	-2.517#
LAGE	1.04	0.38	0.95	0.35	-3.167*
QUICK	2.35	3.44	3	22.15	0.532

*Significant at 1 % level
#Significant at 5 % level

The variables representing director-auditor links (DIRLINK, EDLINK, NDLINK and INDLINK) are all found to be significant and positively correlated with LNAS. LNAS is also found significant and positively correlated with variables such as LAFEE, ET_BC, BFOUR, LASSET, LSUBS, LEV, ROE, BOARD, INSTHLDG, RESTATE, LGOWN, LAGE and QUICK but significantly and negatively correlated with ET_CC, INVREC, DIROWN, LDELAY and DLOSS. Meanwhile, as expected, the correlations among the hypotheses variables are significant and considerably high. Thus, this supports the inclusion of the hypotheses variables separately, one after the other into the multivariate regressions. Among the independent variables, the correlations are found to be less than 0.5, except for correlations between LASSET with LSUBS, LASSET with BOARD and LGOWN with INSTHLDG.

Multivariate Analysis Result

Table 4 presents the results of OLS regressions. All models are significant at

TABLE 2
Descriptive Statistics and Univariate Test Results of Dummy Variables for Purchasers and Non-Purchasers of Non-Audit Services Companies

Variable		NAS Purchaser (Sample = 428)	Non- Purchaser (Sample = 331)	Pearson chi-square test
OPINION	Unqualified Other	294 (88.82%) 37 (11.18%)	374 (87.38%) 54 (12.62%)	0.3661
BFOUR	Big 4 Non-Big 4	258 (77.95%) 73 (22.05%)	237 (55.37%) 191 (44.63%)	41.922*
INITIAL	Change Non-Change	14 (4.23%) 317 (95.77)	28 (6.54%) 400 (93.46%)	1.909
BOARD	Main Second	269 (81.27%) 62 (18.73%)	280 (65.42%) 148 (34.58%)	23.426*
ISSUE	Issue Non-Issuance	52 (15.71%) 279 (84.29%)	65 (15.19%) 363 (84.81%)	0.0392
FISDEC	December Others	178 (53.78%) 153 (46.22%)	250 (58.41%) 178 (41.59%)	1.630
RESTATE	Restate None	161 (48.64%) 170 (51.36%)	149 (34.81%) 279 (65.19%)	14.770*
FOREIGN	With Without	185 (55.89%) 146 (44.11%)	251 (58.64%) 177 (41.36%)	0.5789
DLOSS	Loss None	36 (10.88%) 295 (89.12%)	77 (17.99%) 351 (82.01%)	7.456*
LAGOPINION	Unqualified Others	306 (92.45%) 25 (7.55%)	395 (92.29%) 33 (7.71%)	0.0066
Director -Auditor Link	DIRLINK Others	198 (59.82%) 133 (40.18%)	181 (42.29%) 247 (57.71%)	22.941*
	EDLINK Others	84 (25.38%) 247 (74.62%)	62 (14.49%) 366 (85.51%)	14.252*
	NDLINK Others	186 (56.19%) 145 (43.81%)	166 (38.79%) 262 (61.21%)	22.745*
	INDLINK Others	162 (48.94%) 169 (51.06%)	141 (32.94%) 287 (67.06%)	19.919*

*Asymptotic Significance at 1 % level (two-tailed)
Asymptotic Significance at 5 % level (two-tailed)

a 1 % significance level. However, the adjusted R-squared of around 0.14 is lower than previous studies by Firth (1997) of 0.32 and Parkash and Venable (1993) of 0.26. This implies that around 14 % of variation in non-audit services fee is explained by the model.

The results show the significant and positive coefficient of DIRLINK at a 1 % significance level which implies that the greater the director-auditor link, the higher the audit services fee. Meanwhile, the coefficient for variables EDLINK and NDLINK are positive and significant at a 5

TABLE 3
Pearson Correlations

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26
1	1																									
2	.29*	1																								
3	.21*	.57*	1																							
4	.28*	.38*	.40*	1																						
5	.22*	.85*	.35*	.86*	1																					
6	.21*	.38*	.26*	.36*	.32*	1																				
7	.03	.04	-.02	.04	.04	-.00	1																			
8	-.14*	-.25*	-.12*	-.25*	-.18*	-.25*	.09#	1																		
9	.01	.04	-.03	.04	.05	.06	-.04	-.35*	1																	
10	.27*	.38*	.21*	.36*	.33*	.23*	.04	-.10*	.10*	1																
11	.31*	.45*	.30*	.44*	.39*	.77*	.09#	-.26*	.09*	.23*	1															
12	.12*	.26*	.26*	.23*	.18*	.76*	-.07	-.09*	-.11*	.05	.54*	1														
13	-.14*	-.22*	-.17*	-.21*	-.18*	-.12*	-.01	.19*	.00	-.12*	-.34*	-.13*	1													
14	.08#	.10*	.14*	.09#	.09#	.21*	.02	-.17*	.04	.02	.22*	.15*	-.06	1												
15	.06	.05	.02	.05	.05	.08#	.07	.00	.00	.07	.11*	.06	-.11*	-.12*	1											
16	-.11*	-.15*	-.02	-.15*	-.11*	-.15*	.11	.36*	.18*	-.09#	-.13*	-.05	.08#	.02	-.02	1										
17	-.06	-.04	-.08#	-.03	-.05	.01	-.09#	.02	-.03	-.15*	-.04	.00	.12*	-.04	-.00	.00	1									
18	.20*	.22*	.14*	.22*	.19*	.34*	.07	-.15*	.05	.19*	.52*	.25*	-.23*	.01	.08#	-.06	-.03	1								
19	.22*	.31*	.14*	.32*	.29*	.32*	.17*	-.26*	.12*	.24*	.48*	.13*	-.23*	.05	.02	-.12*	-.04	.36*	1							
20	.03	.03	.03	.02	-.00	.10*	.08#	.01	-.04	.01	.08#	.08#	-.02	.09#	.03	.08#	.02	.04	.01	1						
21	-.01	.01	.05	.00	.00	.00	.05	-.04	.01	-.02	.03	-.01	-.04	.04	.03	-.06	.04	.04	.02	.04	1					
22	.16*	.19*	.18*	.16*	.15*	.17*	-.05	-.02	-.03	.10*	.18*	.16*	-.10*	.06	.04	-.01	.02	.09*	.07#	-.01	.01	1				
23	.09#	.14*	.02	.16*	.14*	.01	.16*	-.16*	.13*	.21*	.11*	-.18*	-.05	-.01	.01	.00	-.02	.17*	.58*	-.13*	-.03	.01	1			
24	.14*	.22*	.18*	.21*	.18*	.25*	-.06	-.16*	.12*	.17*	.27*	.26*	-.22*	-.04	.04	-.22*	-.04	.21*	.19*	-.17*	.01	.14*	.06	1		
25	-.11*	-.10*	-.06	-.10*	-.11*	-.15*	-.26*	-.02	.04	-.09#	-.27*	-.06	-.02	-.08#	-.03	-.08#	-.05	-.25*	-.21*	-.02	-.10*	-.00	-.14*	-.01	1	
26	.00	-.06	-.09#	-.06	-.01	-.02	.58*	.10*	-.03	0.01	.04	-.09*	.02	.09#	.01	.08#	-.04	.00	.06	.01	.06	-.00	.11*	-.10*	-.21*	1
27	-.02	-.02	.01	-.02	-.02	-.13*	.04	-.00	-.02	-.04	-.03	-.12*	-.09*	-.03	.00	-.04	-.02	.04	.05	.07#	.19*	-.03	-.04	-.04	-.04	.03

* Correlation is significant at the 1 % level (2 tailed) # Correlation is significant at 5 % level (2 tailed)

1. LNAS 2. DIRLINK 3. EDLINK 4. NDLINK 5. INDLINK 6. LAFEE 7. OPINION 8. ET_CC
9. ET_FC 10. BFOUR 11. LASSET 12. LSUBS 13. INVREC 14. LEV 15. ROE 16. DIROWN
17. INITIAL 18. BOARD 19. INSTHLDG 20. ISSUE 21. GROWTH 22. RESTATE 23. LGOWN 24. LAGE
25. DLOSS 26. LAGOPINION 27. QUICK

% significance level but the coefficient for variable INDLINK is insignificant. These results imply that the director-auditor link created by executive and non-executive directors have an influence on the non-audit services fee while the director-auditor link created by independent directors do not have an influence on non-audit services fee. Overall, the results support the hypotheses that the greater the director-auditor link, the higher the non-audit services fee. Therefore, the results confirm the prediction of the preferences of Malaysian companies for interlink auditors in non-audit services fee decisions as a result of attachments developed through director-auditor links. The attachments created by director-auditor links develop trust regarding the quality of services provided by interlink auditors and at the same time, gives an opportunity for interlink auditors to influence the interlink director to purchase additional services from them. For the control variables, BFOUR, LASSET and RESTATE are found to be positively significant across all the regressions at a 1 %significance level, which is consistent with earlier studies by Firth (1997), Houghton and Jubb (1999) and Parkash and Venable (1993).

TABLE 4
Results of OLS Regression of Non-Audit Services Fee

Variable	Predicted Sign	OLS Regression			
		Panel A Coefficient (t-value)	Panel B Coefficient (t-value)	Panel C Coefficient (t-value)	Panel D Coefficient (t-value)
Constant		-4.121## (-2.31)	-4.078## (-2.28)	-4.035## (-2.25)	-3.999## (-2.23)
DIRLINK	+	0.717* (2.47)	-	-	-
EDLINK	+	-	0.912** (1.91)	-	-
NDLINK	+	-	-	0.589** (1.91)	-
INDLINK	+	-	-	-	0.466 (1.37)
LAFEE	+/-	-0.420 (-0.99)	-0.460 (-1.08)	-0.431 (-1.01)	-0.478 (-1.12)
OPINION	-	-0.085 (-0.28)	-0.038 (-0.12)	-0.086 (-0.28)	-0.056 (-0.18)
ET_CC	+/-	-0.434 (-1.34)	-0.443 (-1.36)	-0.429 (-1.32)	-0.458 (-1.41)
ET_FC	+/-	-0.191 (-1.63)	-1.211** (-1.65)	-0.1214** (-1.66)	-1.260** (-1.72)
BFOUR	+	0.765* (4.05)	0.872* (4.84)	0.814* (4.36)	0.853* (4.61)

TABLE 4 (continue)

Variable	Predicted Sign	OLS Regression			
		Panel A Coefficient (t-value)	Panel B Coefficient (t-value)	Panel C Coefficient (t-value)	Panel D Coefficient (t-value)
LSUBS	+	-0.165 (-0.52)	-0.130 (-0.41)	-0.149 (-0.47)	-0.119 (-0.37)
INVREC	+	0.115 (0.25)	0.121 (0.26)	0.099 (0.21)	0.096 (0.21)
LEV	-	0.100 (0.81)	0.086 (0.70)	0.102 (0.82)	0.098 (0.79)
ROE	-	0.063 (0.80)	0.065 (0.81)	0.061 (0.77)	0.061 (0.76)
DIROWN	+	-0.005 (-1.53)	-0.005 (-1.55)	-0.005 (-1.53)	-0.005 (-1.51)
INITIAL	-	-0.161 (-0.46)	-0.163 (-0.47)	-0.177 (-0.51)	-0.170 (-0.49)
BOARD	-	0.162 (0.77)	0.162 (0.77)	0.162 (0.77)	0.168 (0.79)
INSTHLDG	+	0.005 (1.21)	0.006 (1.31)	0.005 (1.22)	0.005 (1.24)
ISSUE	+	0.171 (0.76)	0.156 (0.69)	0.175 (0.78)	0.179 (0.79)
GROWTH	+	-0.073 (-0.81)	-0.079 (-0.88)	-0.068 (-0.76)	-0.066 (-0.74)
RESTATE	+	0.401* (2.46)	0.405* (2.48)	0.425* (2.62)	0.431* (2.65)
LGOWN	-	-0.004 (-0.57)	-0.004 (-0.57)	-0.004 (-0.61)	-0.004 (-0.58)
LAGE	-	0.158 (0.66)	0.119 (0.50)	0.164 (0.69)	0.168 (0.70)
DLOSS	+	-0.193 (-0.80)	-0.193 (-0.80)	-0.202 (-0.83)	-0.196 (-0.81)
LAGOPINION	-	0.022 (0.06)	-0.018 (-0.05)	0.005 (0.01)	-0.038 (-0.10)
QUICK	+/-	-0.003 (-0.69)	-0.004 (-0.73)	-0.003 (-0.70)	-0.003 (-0.71)
Adj-R^2		0.1414#	0.1386#	0.1386#	0.1365#

*Significant at 1 % level (one-tailed)
**Significant at 5 % level (one-tailed)
Significant at 1 % (two-tailed)

CONCLUSION

Using the data of 759 listed companies on Bursa Malaysia in 2007, this study has shown the effect of the director-auditor link on non-audit services fee. Consistent with the initial prediction, the results of the OLS regression show that the director-auditor link has significant positive effects on non-audit services fee paid to the auditor. In addition, the OLS regression results also show that the director-auditor link created by executive and non-executive directors have influence on non-audit services fee while the director-auditor link created by independent directors do not have an influence on non-audit services fee. Overall, the results confirm the prediction of the preference of companies for their interlink auditor in non-audit services decisions as a result of the attachments developed by the director-auditor link. The findings support the influence of attachments created by the director-auditor link on auditing in Malaysia. While the joint provision of audit and non-audit services are usually linked to the impairment of the auditor's independence, the findings suggest the need for active involvement of shareholders in the auditor selection process.

Despite the concerns of impairment on auditor's independence from providing additional services to audit clients, not many studies have been conducted in understanding the factors influencing companies' decision to purchase additional services from their auditors. In particular, this study adds to the growing literature on the influence of interlocking directorships (especially the director-auditor link) and the factors influencing joint provision of audit and non-audit services. For future studies, it is suggested to consider corporate governance as one possible factor in influencing non-audit fees and to separate the data of non-audit fees into different categories.

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Board Composition, CEO Duality and Firm Performance: Malaysian Plantation Sector

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ABSTRACT

This paper seeks to examine the roles of independent members on the board and CEO duality on firm performance in Malaysia. Data on 40 Malaysian plantation companies over 2007 and 2010 are used. The result shows that independent directors may not fully understand the operations of their firms since they might not be fully involved in business activities. The findings indicate that a dual leadership structure is more effective with larger board sizes and longer years of operation. In the context of Malaysian plantations, firms should balance their number of outsiders and adopt a CEO duality structure in order to be competitive in facing external threats.

JEL classification: G34

Keywords: Board composition, CEO duality, corporate governance, plantation industry, Malaysia

INTRODUCTION

Investors and other stakeholders in corporations have begun to discover the importance of good corporate governance practices in protecting their interests (Ehikioya, 2009). Before making any investment in a company, investors look into the governance practices of the company and the structure of the board of directors as good corporate governance can enhance a firm's performance and increase its access to outside capital (Abdullah, 2004). Poorly governed firms find it difficult to attract capital investment from investors for their business expansion. Such firms are likely to suffer higher bankruptcy risks, lower valuations, less profit and less investment return to shareholders (Kyereboah-Coleman & Biekpe, 2006). Board members of such firms have been criticised for the decrease in shareholders' wealth and the failure of the firms. These firms might be associated with fraud cases such as WorldCom and

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Enron (Uadiale, 2010), where the board of directors failed to be vigilant in exercising oversight ability by assigning control power to managers who pursue their self-interest and fail in their accountability to shareholders.

Although many research studies have been carried out in the area of corporate governance, there are confusing results with regards to the effect of CEO duality and board composition on firm performance. Many developing or emerging market countries are not obtaining full and effective corporate governance support from the private sector (Samada, 2010) as the enforcement capacities are not yet fully developed due to the legal and regulatory systems. Malaysia is no exception. Unlike developed countries, Malaysia's legal and regulatory system is not as well established nor as well regulated(Gregory & Simms, 1999). Therefore, the prior study findings might not be applicable in the Malaysian context.

An Overview of Corporate Governance in Malaysia

Corporate governance is always in operation but it lacks clear definition (Abidin & Ahmad, 2007). Corporate governance is also always used to explain the structures and processes used to direct and manage business activities (Mustapja & Ahamd, 2011). According to the agency theory, outside or independent directors are in a better position to monitor management as they are assumed to be independent members not employed by the firm such as are its managers. The separation of Chairperson and Chief Executive Officer (CEO) provides higher transparency and accountability to firm information and decisions (Kroll *et al*., 2008). In contrast, the stewardship theory proposes that the board of directors should be dominated by executives or insider members in order for effective decisions to be made. The CEO and chairman positions should be combined in order to strengthen the leadership of the company (Ramdani & Witteloostuijn, 2009).

In the 1990s, Malaysia began to reform its corporate governance in order to develop better governance in monitoring firms with the purpose of enhancing transparency and accountability for the management of companies. The Asian financial crisis of 1997/98 brought to Malaysian government's attention the fact of weak corporate governance, which was the primary factor behind the crisis (Zulkafli *et al*., 2006). In 2000, the government launched the Malaysian Code on Corporate Governance (MCCG), which was fully implemented in 2001 (Mustpha & Ahamd, 2011). The code was gradually enforced on public-listed firms in Bursa Malaysia.

However, MCCG was again revised by the Malaysia Securities Commission with more stringent international standards effective as of 1 October 2007 (Johari *et al.,* 2008). The code proposes that the board of directors of a company should include independent directors numbering at least one third of the total board and that there must be clear separation of duties between the chairman and the CEO. Firms

in which the roles of chairman and CEO are combined have to publicly announce the fact and explain the need for it in their annual report (Securities Commission, 2007).

In 2000, the Code of Malaysian Corporate Governance (MCCG) was first issued. However, many scholars claim that the existing governance mechanisms lackeffective control over managerial behaviour (Khoo, 2003). Most listed companies have disclosed their corporate governance information according to their own format (Rachagan, 2010). Besides, many studies also focus on large firms in developed countries with very few studies having been conducted in developing countries such as Malaysia (Muhamad e*t al.,* 2005), especially studies related to the plantation industry.

Board Composition and Firm Performance

Fama and Jensen (1983) state that the board of directors plays a vital role in corporate governance. There are two types of board of directors, namely, insiders and outsiders. Some prior studies suggest the board of directors should consist of independent members i.e. non-executive and outside directors (Johari *et al.,* 2008). It may help to reduce the agency problem by controlling and monitoring the opportunistic behaviour of management (Meckling, 1976 cited in Haniffa & Hudaib, 2006).

Dehaene *et al*. (2001) use 122 Belgian listed companies to test the link between governance mechanism (board independence and CEO duality) and firm performance (ROE and ROA). The result presented significant positive relationship between board independence and ROE, implying the higher the percentage of outside director, the better the performance. The study of Kyereboah-Coleman and Biekpe (2006) find an insignificantly negative link between outside directors, Tobin's Q and ROA. Ehikioya (2009) finds no association between board composition and performance. Weir *et al*., (2002) documents no significant association between independent board composition and accounting based measure of performance. Using Tobin's Q, the findings from Yermarch (1996) and Ehikioya (2009) indicate a significant relationship between board composition and performance.

Based on Bhagat and Black's (2002) findings, there was no relationship between non-executive director and Tobin's Q. Kajola (2008) shows that there is no relation between ROE and board composition, implying an insignificant impact of the boards of outside directors on the firms' financial performances. Agrawal and Knoeber (1996) point out that too many outsiders on the board will not help to increase firm performance due to political reasons. Moreover, Ibrahim and Samad (2011) find no significant link in proportion of independent directors to performance as measured by ROE and Tobin's Q. The weak link between outside directors and performance indicated that outside directors cannot enhance potential value to the firms (Rashid *et al*., 2010; Haniffa & Hudaib, 2006). To conclude, the prior studies'

findings on the impact of independent non-executives are mixed.

CEO Duality and Firm Performance

The CEO is a full-time employee who holds the responsibility for the daily running of the firm as well as for setting and implementing corporate strategies. The chairperson leads the board of directors to ensure that the board performs effectively and he holds the responsibility for monitoring and evaluating the performance of the executive directors, including the CEO. A dual position does not separate the positions of chairman and CEO (Petra, 2005). The CEO takes responsibilities as chairman such as setting meeting agenda, running meetings of the board and overseeing the processes of compensation. Obviously, a potential conflict of interest arises when there is CEO duality (Petra, 2005). Higgs (2002) suggests both roles should not be combined due to the fact that a dual position affects the firm performance adversely (Chen *et al.,* 2005).

Among others, Pi and Timme (1993) and Rechner and Dalton (1991) suggest that firms with a dual leadership structure have a higher ROE. Consistently, Dehaene *et al.* (2001) find a significant positive link between CEO duality and ROA. However, according to Ehikioya's (2009) study, the CEO duality has a significant adverse impact on performance, measured as ROA and Tobin's Q. Kyereboah-Coleman and Biekpe (2006) find a negative correlation between thedual position and Tobin's Q and ROA but both are insignificant. Ibrahim and Samad (2011) suggest that if different persons held the separate positions of CEO and Chairman as suggested by the MCCG (revised 20007), then the firm's performance would improve.

Moreover, Haniffa and Hudaib (2006) state that there is no relationship between CEO duality and performance as measured by Tobin's Q while it is significantly inversely related to ROA. Kajola's (2008) study finds that there is a significant relationship between ROE and CEO duality but there is no relation between ROE and board composition. This is supported by Baliga *et al.* (1996) who also find no significant relationship between duality and firm performance. To conclude, the results of prior studies are inconsistent and mixed.

DATA AND METHODOLOGY

Data

The plantation industry was selected as the research context because it makes a substantial contribution to economic growth under the Malaysian Economic Transformation Programme (ETP) (Tan, 2011). Malaysia's palm oil export is one of the largest contributors to the Malaysian economy today, amounting to RM1.889 (8 %) of the country's GNI per capital (PEMANDU, 2010). The rubber industry, on the other hand, only contributed RM18.5 billion to the country's GNI in 2009;it is the second main commodity crop after oil palm (PEMANDU, 2010). Therefore, the plantation industry is selected as the focus of this study with regards to its potential growth in Malaysia in the future. This study aims to examine the relationship among independent board composition, CEO

duality and firm performance. The findings of this study are expected to provide an in-depth knowledge of corporate governance in the plantation industry by filling in the gap in the literature on corporate governance and it is also expected to benefit organisational stakeholders such as managers, investors, the government and customers in terms of theoretical and managerial significance.

The data was collected using secondary data including each company's annual report and its official website as well as DataStream. Such data was obtained manually by calculating the number of directors on the board (Board Size) in order to determine the number of independent non-executive/outside director on the board (Ibrahim & Samad, 2011) and also the dual position of chairman and CEO in the years from 2007 to 2010, making up a total of 41 listed plantation companies. Firms that were newly listed after 31 December 2007 or that were delisted from the Main Board were excluded. This study also excluded firms which failed to comply with any obligations under Practice Notes No 4 (PN4) and No 17 (PN 17). PN4 was also amended to PN 17 effective as of January, 2005 (Ibrahim & Samad, 2011). At the same time, the firm's accounting period must have fully completed 12 months' of operation for the business year and should be in line with the same end of year over a four-year period (Ibrahim & Samad, 2011). This study also included firms that changed the name of the company during the study period. In total, there were 40 firms meeting the criteria with only one PN17 firm having to be dropped.

Methodology

This study utilised the multiple regression technique to determine the relationship among board composition, CEO duality and firm performance as follows.

$$Y_{it} = \beta_0 + \beta_1 X1_{it} + \beta_2 X2_{it} + \beta_3 X3_{it} + \beta_4 X4_{it} + \beta_{35} X5_{it} + \beta_6 X6_{it} + \beta_7 X7_{it} + \beta_8 X8_{it} + e_{it}$$

Where

Y_{it} = Return on Asset (ROA) or Return on Equity (ROE) or Tobin's Q

β_0 = Constant

βj = Coefficient of the explanatory variable, with j =1,2….8

$X1_{it}$ = CEO Duality (CD)

$X2_{it}$ = Board Composition (BC)

$X3_{it}$ = Board Size (BSize)

$X4_{it}$ = Firm Size (FSize)

$X5_{it}$ = Firm Age (FAge)

$X6_{it}$ = Firm Growth (Growth)

$X7_{it}$ = Total Debt to Total Assets (Debt 1)

$X8_{it}$ = Total Debt to Total Equity (Debt 2)

e_{it} = Error term

It is important to state that this study adopts two accounting performance measures (ROA and ROA) and a market performance measure (Tobin's Q) to measure the performance of the firm. A summary of the terms of variables is presented in Table 1.

TABLE 1
Summary of Terms of Variables

Variables	Acronym	Terms of Measurement
Dependent		
Return on Assets	ROA	Profit before interest and tax payment Total assets Kyereboad-Coleman and Biekpe (2006); Haniffa and Hudaib (2006)
Return on Equity	ROE	Total Profit after Interest and Tax Payment Total Equity *Kyereboad-Coleman and Biekpe (2006); Kajola (2008)*
Tobin's Q ratio	Q-Ratio	Market Value of Equity Capital + Book Value of Debt Book Value of Total Assets *Haniffa and Hudaib (2006); Ehikioya (2009),* Note: Book values of total assets should not differ markedly from replacement cost due to reasonably frequent updating of book values to reflect market values (Black *et al.,* 2006)
Independent		
CEO duality	CD	Dummy variable: (1) CEO combined as the chairman (0) Otherwise Abdullah (2004); Johari *et al*. (2008); Kajola (2008); Ehikioya (2009)
Board Composition (%)	BC	Number of outside directors Total number of directors (Board Size) Haniffa and Hudaib (2006); Kajola (2008)
Control		
Board Size	BSIZE	Natural Logarithms of Total Board Members Jackling and Johl (2009); Arosa et al. (2010)
Firm Size	FSIZE	Natural Logarithms of Total Assets Arosa *et al.* (2010)
Firm Age	FAGE	Natural Logarithms of the number of years firm was incorporated Wang (2006);Barontini and Caprio (2006); Arosa *et al.* (2010)
Growth (%)	GROWTH	Current Year's Revenue-Last Year's Revenue Last Year's Revenue Wang (2006); Barontini and Caprio (2006); Arosa *et al*. (2010)
Debt 1	DEBT 1	Total Liability Total Assets Masheyekhi and Bazaz (2008); Rashid *et al.* (2010)
Debt 2	DEBT 2	Total Liability Total Equity Wang and Oliver (2009); Rashid *et al.* (2010)

Descriptive Analysis

The statistics in Table 2 indicate that the majority of listed plantation firms (90 %) are engaged in the oil palm business in Malaysia due to the increasing demand for edible oils and animal proteins under oil crop cultivation, particularly oil palm, in the last few decades. Today, palm oil is the most widely traded edible oil. Its production has increased almost twice since the 1990s.

As shown in Table 3, the majority of listed firms (80 %) have 6 to 9 board

TABLE 2
Core Business of Sampled Firms

Business Activity	Percentage (%)	Number of Company
Oil Palm	90.0	36
Oil Palm and Rubber	5.0	2
Oil Palm and Cocoa	2.5	1
Oil Palm, Coconut and Banana	2.5	1
Total	100.0	40

TABLE 3
Number of Directors on the Board and Number of Independent Directors

No. of Persons	No. of Directors on Board		No. of Independent Directors	
	Percentage (%)	Number of Company	Percentage (%)	Number of Company
2-5 persons	7.5	3	90	36
6-9 persons	80.0	32	10	4
10-13 persons	12.5	5	0	0
Total	100.0	40	100.0	40

members. The Code of Malaysia corporate governance does not limit the number of directors on a board but Abduallah (2004) argues that broad size should be 8 to 9 persons for the board to be effective. Table 4 presents 90 % of the listed firms that have 2 to 5independent directors. The MCCG requires at least two or one third of the company's board members to be independent directors. Hence, listed plantation firms mostly comply with the MCCG.

Table 4 presents the descriptive analysis of the 40 companies in the sample. For the dependent variables, the mean of ROA, ROE and Q-ratio is about 9.8 %, 9.4 % and 0.857. The Q value is near to 1, implying that on average, the firms are perceived to be valuable for shareholders (Khatab *et al.,* 2011). The majority of the firms comply with the provisions of the MCCG and the listing of Bursa Malaysia as the mean of board composition is about 5 %, which requires that more than two or one third of the members should be independent non-executive directors on the board. Almost 20.6 % of the sampled firms have one person holding the dual position of CEO and Chairman while 79.4 % of the firms have different individuals holding the posts of CEO and Chairman. Hence, it can be argued that the MCCG (revised 2007) recommendation for the separation of the CEO and Chairman posts has been complied with by the majority of the listed firms in the plantation sector. However, this percentage is lower compared with the study of Abidin *et al.* (2009) which finds that 29.3 % of the selected sample practices CEO duality.

The mean of the board size is about 8 directors, ranging from minimum 4 directors to maximum 13 directors. This result fulfils the board size requirement that there should be 8 or 9 persons on the board in order for

TABLE 4
Descriptive Statistics for Independent, Dependent and Control Variables

Variables	Minimum	Maximum	Mean	Median	Mode	Standard Deviation
ROA	-0.165	1.262	0.098	0.068	-0.165	0.133
ROE	-0.168	0.471	0.094	0.078	-0.168	0.986
Q-Ratio	0.194	3.557	0.856	0.714	0.194	0.694
BC	0.167	0.857	0.497	0.444	0.333	0.168
CD	0.000	1.000	0.206	0.000	0.000	0.406
BSIZE (log)	0.600	1.110	0.863	0.845	0.780	0.105
FSIZE (log)	5.448	10.074	8.007	8.470	5.448	1.280
FAGE (log)	0.301	1.973	8.467	1.362	1.342	0.331
GROWTH	-1.0	8.980	0.318	0.077	0.000	1.808
DEBT 1	0.001	1.00	0.219	0.147	0.001	0.206
DEBT 2	0.001	3.235	0.793	0.497	0.001	0.794

it to be effective (Abdullah, 2004). The mean of firm size is around RM88,900,000 ranging from minimum RM280,825 to maximum RM11,859,088,000. The average operating years of the firms is 28.82 years. Firm growth ranges from100 % to 898 % with a mean of 31.8 %, implying that some of the firms are growing faster while others tend to be at default. The average of total debt to total assets (debt 1) is 21.9 %, which indicates that merely 20 % of the assets are financed by debt whereas the mean of total debt to total equity (debt 2) is 79.3 %. Firm growth ranges from100 % to 898 % with a mean of 31.8 %, implying that some of the firms are growing at a faster speed while others tend to be at default.

The results shown in Table 6 indicates that the Tolerance and VIF values are well below the cut-off points for determining the presence of multi-collinearity, thus suggesting no multi-collinearity problems with cross correlation.

TABLE 5
Collinearity Statistics

Variables	Tolerance	VIF
(Constant)		
BC	0.823	1.215
CD	0.790	1.266
BSIZE(log)	0.592	1.690
FSIZE (log)	0.789	1.268
FAGE	0.678	1.476
GROWTH	0.832	1.202
DEBT 1	0.675	1.120
DEBT 2	0.781	1.365

Regression Analysis

Table 6 presents the result of regression analysis by performing the Ordinary Least Square (OLS) regression in this study. The R-squares for ROA, ROE and Tobin's Q are 10 %, 15.97 and 20.4 % respectively. Of these three models, none of the board composition and CEO duality show a significant relationship with ROA and ROA respectively. The overall significance level of Tobin's Q model is higher and the board composition and dual CEO are significant.

TABLE 6
Factors Affecting Firm Performance in the Plantation Industry, 2007-2010

Variables	ROA			ROE			Tobin's Q ratio		
	Coefficient	t-value	Sig.	Coefficient	t-value	Sig.	Coefficient	t-value	Sig.
BC	-0.040	-0.059	0.555	-0.027	-0.561	0.575	-0.670	-2.014	0.046
CD	-0.028	-1.079	0.282	-0.024	-1.262	0.209	0.395	3.063	0.003
BSIZE (log)	0.154	1.488	0.139	0.132	1.782	0.077	-0.653	-1.287	0.200
FSIZE (log)	-0.004	-0.541	0.589	-0.002	-0.416	0.678	-0.021	-0.520	0.604
FAGE (log)	0.031	0.991	0.324	0.027	1.211	0.228	-0.067	-.0431	0.667
GROWTH	0.026	2.755	0.007	0.029	4.307	0.000	0.040	-0.843	0.401
DEBT 1	-0.107	-1.273	0.205	-0.118	-1.976	0.050	2.092	5.099	0.000
DEBT 2	0.000	-0.043	0.966	0.030	1.925	0.056	-0.503	-4.722	0.000
	$R^2 = 0.100$			$R^2 = 0.159$			$R^2 = 0.204$		
	Adjusted $R^2 = 0.052$			Adjusted $R^2 = 0.115$			Adjusted $R^2 = 0.162$		
	F value = 2.088			F value = 3.575			F value = 4.848		
	F significance = 0.040			F significance = 0.001			F significance = 0.000		

Independent board composition is statistically negatively correlated with Tobin's Q with a t-value of -0.670. This suggests that independent directors do not necessarily have a positive association with firm performance if they do not play their role properly. If the board is dominated by a large number of independent directors, poor investment decisions may result such as investing in undervalued projects. CEO duality is positively significant with Tobin's Q, consistent with Yermarck (1996) but not Haniffa and Hudaib (2006) and Ehikioya (2009). A firm can perform well under dual leadership as CEO duality would lead to better knowledge and understanding of the firm's operation and environment, allowing the firm to make a better investment decision. He or she is not only responsible for the running of the firm's operation but also the running of the board.

CONCLUSION

This study aims to examine the relationship between governance mechanisms (i.e. independent board and CEO duality) and firm performance in the plantation sector in the period from 2007 to 2010 by using both accounting and market-based performance measures. The majority of the listed firms have 6 to 9 directors. Abdullah (2004) states that board size should be 8 or 9 persons in order for the board to achieve effectiveness. In addition, an independent board has a negative relationship with firm performance. Raheja (2005) argues that outside directors are not involved in day-to-day management while inside directors have a greater knowledge of the firm. According to Abdullah (2004), independent directors might not be truly independent while they may have connections in unlisted subsidiaries. The results also recommend that listed firms should balance their number

of independent directors on the board of directors. On the other hand, CEO duality has a positive relationship with firm performance as suggested by the stewardship theory. It can be interpreted that a firm can perform well under a dual leadership structure even though the MCCG recommends that the dual position should be avoided The CEO and chairman positions should be combined rather than separated as such a merging can strengthen the leadership of a company (Ramdani and Witteloostuijn, 2009). Baliga *et al.* (1996) suggests that a non-dual leadership structure would limit innovation, and Davis *et al.* (1997) believe that a dual leadership structure can help listed companies to achieve leadership that is unambiguous and strong in order to achieve internal efficiency through unity of command; to remove potential for conflict between the chairman and CEO; and also to avoid confusion as a result ofhaving two different public spokespersons.

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APPENDIX

Pearson Correlation Analysis

Variable	ROA	ROE	Q-Ratio	BC	CD	BSIZE (log)	FSIZE (log)	FAGE	GROWTH	DEBT 1	DEBT 2
ROA	1	0.716**	-0.052	-0.083	-0.074	0.128	-0.039	0.450	0.200*	-0.151	-0.124
ROE		1	-0.217**	-0.100	-0.082	0.136	-0.058	0.068	0.302**	-0.037	0.054
Q-Ratio			1	-0.115	0.153	-0.059	0.014	-0.010	-0.036	0.170*	-0.067
BC				1	0.186*	-0.295**	0.098	-0.010	0.004	-0.137	-0.105
CD					1	0.002	-0.006	0.145	-0.023	-0.087	-0.015
BSIZE (log)						1	0.014	0.002	-0.067	-0.042	-0.026
FSIZE (log)							1	0.065	0.004	-0.003	-0.132
FAGE								1	-0.047	0.047	0.074
GROWTH									1	0.021	-0.018
DEBT 1										1	0.788**
DEBT 2											1

**Correlation is significant at the 0.01 level (two-tailed)

*Correlation is significant at the 0.05 level (two- tailed)

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An Empirical Examination of Family-Managed Firms and Non-Family-Managed Firms: Evidence from Malaysia

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ABSTRACT

The purpose of this study is to explore the firm characteristics of family-managed firms in Malaysian public-listed firms. Selected firms were matched for size and industry before comparisons were made between the family-managed firms and non-family-managed firms. The data were collected using secondary sources. Various firm characteristics were investigated. The findings indicate that firms managed by families have a significantly larger board size, higher number of non-independent directors and executive directors and their directors have significantly longer experience working in the firm. However, the results suggest that the directors of these family-managed firms significantly lack professional qualification and tend to have fewer meetings compared to those directors in non-family-managed firms. The findings also indicate that the compensations paid to the executive directors of family-managed firms are significantly higher than those paid to executive directors of non-family managed firms. The results also suggest that these firms have not utilised their assets efficiently to generate sales compared to their non-family-business counterparts.

Keywords: Family managed firms, firm characteristics, Malaysia

INTRODUCTION

Family firms are unique (Saito, 2008). It is also claimed that there are differences in the way family firms are run compared to the way non-family firms are run. McConaughy *et al*. (1998) claim that family businesses are more efficient in managing their businesses. This ownership structure is claimed to be common among public-listed firms in developed and developing countries, and contribute to wealth creation and job generation in the development of the economy (Jorissen *et al*., 2007). Faccio

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and Lang (2002) find that 44 % of firms in Western Europe are controlled by families. Anderson *et al*. (2003) reveal that founding families are present in one third of 500 firms in the US, and more than 50 % of businesses in East Asia are family-owned (Tsai *et al*., 2006). Saito claims that it is important to generate stylized facts on family firms from different countries because of the various characteristics of the countries, such as their legal system and corporate governance system, which may affect the family firms. Family businesses are claimed to be different from non-family businesses because they are owned or controlled by family members, and, thus, have a great potential for the family to be involved in or influence business matters (Jorissen *et al*., 2007). Despite the significance of these businesses, prior studies claim that very little research has been done in less developed countries where their corporate governance mechanisms are still evolving (Carcello *et al.*, 2002; Yatim *et al*., 2006).

This paper attempts to explore the corporate governance structure of family-managed firms among public-listed firms in Malaysia. Besides being a developing country with an emerging market in Asia, Malaysia was chosen for this study because of its unique concentrated business environment. It is claimed that owner-managed firms are common among Malaysian firms (Mat Nor & Sulong, 2007), especially in the form of family businesses (Haniffa & Hudaib, 2006; Hanazaki & Liu, 2006). This claim is further supported by Ow-Yong and Guan (2000), who posit that listed firms in Malaysia evolved from traditional family-owned firms, and some of these firms continue to be managed as such. Unlike firms with dispersed shareholdings, these firms are believed to have reduced agency problems and agency costs due to a better match of control and cash flow rights of the shareholders (Abdul Rahman and Mohamed Ali, 2006). In order to examine the differences in the characteristics and corporate governance structure between public listed firms which are managed by families and those managed by nonfamilies, a comparison is made between the groups. Among others, board size, board activity, the education level of the directors and remuneration of the directors are investigated.

The rest of this paper is structured as follows. Literature Review gives a review of the relevant literature and Methodology describes the sample and methodology used for the study. Result and Discussion presents and discusses the empirical results and, finally, Conclusion provides the conclusions of the study.

LITERATURE REVIEW

Family businesses are regarded as the most common ownership structure around the world (La Porta *et al*., 1999). It is claimed that the structure of family firms is different compared to non-family firms. This structure would normally affect their governance structure, such as the selection of their board members, the CEO and their decision processes (Bartholomeusz & Tanewski, 2006). Family businesses would

normally choose their family members to sit on their boards and to be their chairman. Horii (1991) observes that family businesses tend to place their family members in the top management position of the organisations. In addition, knowledge and expertise are more likely to be passed on within families as opposed to shared with outsiders (Andres, 2008). Even though professionals are more qualified, family enterprises will only hire professionals after their businesses reach a critical size because they believe the professional interest may not be aligned with the interest of the family (Bhattacharya and Ravikumar, 2001). Family businesses are also claimed to have committed, undiversified stake in the firm and induce strong incentive to monitor as the firm survival and its value maximisation are important to them (Fleming *et al*., 2005).

Tsai *et al.* (2006) claimed that informal family influence is more powerful than formal authority in Taiwanese family firms because CEOs and top management are also family members. Tsai *et al*. find that CEO turnover is significantly lower in family firms and its relation to firm's performance is negative. They further claim that there are two opposite effects of family firms: the family firms have sufficiently high ownership concentration to help solve the firms' problem, and to discipline the CEO, but on the other hand, they may also create conditions for new agency problems, when the interests of the controlling shareholders and the managers are still not perfectly aligned. This is agreed by Andres (2008), who claims that family businesses with concentrated shareholdings have strong economic incentives to monitor managers and decrease agency costs; this is also due to the fact that the agency conflict does not arise as family members are also part of the executive board. However, this combination of management and control might also lead to sub-optimal investment decisions when the interests of the family are not in line with those of other shareholders (Fama & Jensen, 1983). For example, it is claimed that the family's role in selecting managers and members of the board may increase entrenchment and lower the firm value since the external parties can hardly capture control over the firm. It is also claimed that family control provides family members with a unique opportunity to use their concentrated block-holding to expropriate the wealth of outside shareholders through excessive compensation, related-party transactions, special dividends and risk avoidance (Bartholomeusz & Tanewski, 2006).

It is claimed that these corporate governance attributes (such as its board size, and board leadership or role duality) are related to the corporate performance of the firm, (Haniffa & Hudaib, 2006). Haniffa and Hudaib posit that the size of the board does matter as it affects the extent of monitoring, controlling and decision-making in a firm. Small boards are said to help in alleviating the effort problem and in becoming more effective. But, when they grow too big, boards become more symbolic rather than part of the management process. Jeremias (2007)

claims that firms might minimise agency costs if the board of directors effectively supervises managers. Accordingly, there are arguments that the boards' manager-monitoring activities will be more effective when they are dominated by independent, outside directors. Furthermore, the value of outside directors is related to their ability to judge firm performance objectively; inside directors may lack this quality, which will limit their effectiveness as corporate monitors. Boards of directors which are more independent from management tend to perform management-monitoring activities more effectively, which will in turn minimise the likelihood of managers engaging in opportunistic behaviour, and discipline them to run the firm more efficiently. But in family businesses, the family members are normally appointed as the directors and sit on the board, thus, they are not independent. Lansberg (1999) argues that, in the case of family businesses, even when they are well stocked with independent outsiders, they tend to focus too narrowly on business issues. Too often, independent directors are not chosen for any particular knowledge or sensitivity to the family side of the business. On the contrary, they are selected for precisely the opposite reasons; for example, because they are from the larger corporate world, they presumably have much experience into which the family firm can tap.

A study by Amran and Che Ahmad (2009) finds evidence that independent directors' background and competencies are essential factors that contribute positively to family firms. The study claims that family firms are facing challenges in searching for qualified directors to sit on their boards and encounter the problem of incompetence agents. Amran and Che Ahmad conclude that educational background and skills may influence the performance of family firms. They further claim that a family's special technical knowledge concerning a firm's operations may put it in a better position to monitor the firm more effectively. They also claim that families have the incentive of counteracting free-rider problems that prevent atomised shareholders from bearing the costs of monitoring, ultimately reducing agency costs. This is supported by another study, which claims that directors appointed among family members have excellent knowledge of the firm due to their long-standing relationship with the senior management of the firm. In addition, some family firms institute succession plans, which include training for successors (Smith & Amoako-Adu, 1999).

Jeremias (2007) claims that CEO duality might impede the effectiveness of a firm's control mechanisms. He argues that the CEO and the chairman of the board should not be the same person in order to ensure that the board is more independent from management. If the CEO is also the chairman of the board of directors, he might have a significant influence on the board, which could diminish the board's ability to oversee managerial decisions and activities and, thereby, negatively affect performance. The board, with the high influence of the management, will not be able to discipline

the management appropriately as the management who controls the board will over-rule such initiatives and a non-executive chairman promotes a higher level of corporate openness. Jeremias (2007) claims that the existence of CEO duality could diminish the board's ability to supervise management decisions and activities and, thus, give negative feedback on the firm's performance. However, in family businesses, the firm would normally appoint the family member to be the CEO and chairman of the board.

Prior studies claim that structures of ownership will affect the firm's performance (Saito, 2008; Tsai *et al*., 2006). Among others, family ownership is claimed to affect this relationship. Tsai *et al.* (2006) claim that family firms have a positive impact on firm values because they typically have longer planning horizons that result in valuable investment strategies. They conclude that family firms have effective organisational structures because they perform better compared to non-family firms. The evidence from McConaughy *et al.* (1998) proves that family relationship improves monitoring and provides incentives that are associated with better firm performance. This is supported by Anderson *et al.* (2003), who find evidence that family ownership is associated with lower agency cost of debt. After controlling for industry and firm specific characteristics, their study indicates that the costs of debts financing for family firms are lower than those in non-family firms. This is supported by McConaughy *et al*. (1998), who claim that the unique relationship between the family descendant in management and the firms holds the potential for improved monitoring and top managerial incentives. They find firm efficiency and value related to the person who owns and manages the firm. Family-managed firms are managed by both tenure and their descendants, and for this reason, their firms are run more efficiently than they would be run by managers outside the family.

Thus, this study examines these corporate governance attributes of family businesses in Malaysian firms. Specifically, this study investigates the differences between the corporate governance attributes (such as board size, board activity, board independence and the existence of CEO duality) of family-managed firms and non-family-managed firms.

METHODOLOGY

The study uses secondary data from annual reports of public-listed firms. These annual reports are available and downloadable from the website of the exchange[1]. Firstly, 50 firms which were defined as family-managed firms were selected; then, after matching the industry category and size, another 50 firms were selected and categorised as non-family-managed firms. This study defines a firm as a family-managed firm if 2 or more directors on the board of directors are related, and at least one of the family members holds an executive director's position in the firm and their shareholdings

[1]http://www.announcements.bursamalaysia.com

are equal to or more than 20% (as used by Bartholomeusz & Tanewski, 2006).

Independent t-tests were carried out to investigate the differences in the governance structure and characteristics between the two groups, namely family-managed firms and non-family-managed firms.

RESULTS AND DISCUSSION

Descriptive statistics

The descriptive statistics for sample firms used in this study are presented in Table 1. The table shows the statistics of family-managed firms and non-family-managed firms.

The sample firms include firms from the industrial sector (40 firms), consumer sector (28 firms), trading/services sector(12 firms), properties sector (12 firms) and technology and plantation sector (4 firms each). The firms were categorised as family-managed firms and non-family-managed firms after matching for size and industry category.

Independent Sample T-test Analysis

Table 2 displays the independent t-test results relating to the characteristics and governance structure of sample firms from both categories, family-managed firms and non-family-managed firms.

The first row of the table indicates that family-managed firms have a significantly larger board size compared to the non-family-managed firms. The average mean size is 8.4 compared to 6.86. This larger board may be attributed to a higher number of non-independent and executive directors in their firms as shown in the following rows. The results appear to suggest that family-managed firms have a significantly higher number of non-independent directors (mean = 5.18) and executive directors (mean = 4.24), compared to non-family-managed firms. A plausible explanation for these significant results may be that family-managed firms prefer to appoint family members who have shares and interests in the firms rather than outsiders to the board of directors as well as to manage the firm. This is consistent with earlier observations by Horii (1991), who posits that family businesses tend to place family members in the top management position of the organisations. It is further claimed that even though professionals are more qualified, family enterprises will only hire professionals after their businesses reach a critical size because they believe the professional interest may not be aligned with the interest of the family (Bhattacharya & Ravikumar, 2001). Thus, in the case of family businesses, the appointment of the independent directors may be done only because of the requirement by law. From the results in Table 2, it is observed that the number of independent directors in both categories of companies are about the same and not statistically different; this may be due to the fact that both categories are listed companies which are supposed to adhere to the law, which requires them to have a certain percentage of independent directors to monitor the management.

The results also show that the chairman of the board is significantly related to the

TABLE 1
Descriptive Statistics of the 100 Sample Firms and the Variables in the Study

	Family-Managed Firms				Non-Family-Managed Firms			
	No of firms	Minimum	Maximum	Percentage (%)	No of firms	Minimum	Maximum	Percentage (%)
Net profit/loss after tax:								
Loss to RM0	6	-24,372,168	-6,291,000	12	15	-35,541,097	-2,041,346	30
RM0 to RM20,000,000	26	1,599,342	18,294,000	52	22	638,297	18,914,905	44
RM20,000,001 and above	18	20,364,595	154,278,000	36	13	20,940,045	174,912,000	26
Total compensations:								
RM100,000 – RM2,000,000	23	179,000	1,970,000	46	42	141,000	1,970,037	84
RM2,000,001 – RM5,000,000	21	2,077,000	4,484,907	42	7	2,045,000	4,157,069	14
RM5,000,001 – RM16,000,000	6	5,001,348	15,110,000	12	1	10,580,000	10,580,000	2
Earnings per share:								
Loss to RM0	6	-16.50	-0.31	12	15	-31.00	-0.71	30
RM0 to RM20	28	0.70	19.2	56	27	0.54	19.74	54
RM20.01 to maximum	16	20.50	47.19	32	8	22.60	74.83	16
Total assets (RM):								
Below 100,000,000	2	80,614,739	96,031,930	4	8	47,179,904	89,494,066	16
100,000,001 – 500,000,000	36	113,428,072	496,978,153	72	33	109,816,266	451,531,000	66
500,000,001 – 1,000,000,000	8	621,371,926	920,744,366	16	7	607,889,000	879,594,508	14
1,000,000,000 and above	4	1,015,183,000	2,133,046,000	8	2	1,239,275,000	1,309,911,618	4
Total Sales (RM):								
Below 100,000,000	8	24,721,000	91,585,651	16	20	8,820,000	92,332,045	40
100,000,001 – 500,000,000	29	108,221,063	483,254,974	58	22	108,974,000	496,545,000	44
500,000,001 – 1,000,000,000	9	536,224,935	976,100,278	18	6	518,172,413	740,139,018	12
1,000,000,000 and above	4	1,035,647,000	1,662,034,000	8	2	1,372,850,318	2,047,302,008	4

TABLE 1 (continue)

	Family-Managed Firms				Non-Family-Managed Firms			
	No of firms	Minimum	Maximum	Percentage (%)	No of firms	Minimum	Maximum	Percentage (%)
Firm with CEO duality	8	N/A	N/A	16	5	N/A	N/A	90
Firm without CEO duality	42	N/A	N/A	84	45	N/A	N/A	10
CEO's background education:								
Doctor of philosophy	1	N/A	N/A	2	2	N/A	N/A	4
Master	5	N/A	N/A	10	12	N/A	N/A	24
Bachelor	14	N/A	N/A	28	15	N/A	N/A	30
Diploma	2	N/A	N/A	4	4	N/A	N/A	8
Others	7	N/A	N/A	14	3	N/A	N/A	6
Not stated	21	N/A	N/A	42	14	N/A	N/A	28
Board positions:								
Main board	41	N/A	N/A	82	42	N/A	N/A	84
Second board	9	N/A	N/A	18	8	N/A	N/A	16

CEO in family-managed firms compared to those in non-family-managed firms. Further investigation of this data reveals that 18 out of 50 of the chairman of the family-managed firms are related to the CEO, and another 8 chairmen also act as CEOs for the firms. However, none of the chairmen is related to the CEO in non-family-managed firms. CEOs in family-managed firms appear to have significantly more years of experience (mean = 15.26 years) compared to their counterparts in non-family-managed firms (mean = 7.12 years). This may be due to the fact that in family businesses the descendant has been trained and developed to manage the firm and has been exposed to the working environment and culture of the firms from the start of the business, as it is claimed that some family firms develop succession plans and training for their successors (Smith & Amoako-Adu, 1999). However, there is a significantly lower number of CEOs in family-managed firms who have professional qualification and higher education compared to those CEOs in non-family-managed firms. This may be due to the fact that in family managed firms, CEOs are appointed based on their family values and relationship, as well as their past experience in handling the family businesses rather than on educational or professional qualification. In these firms, older members of the family will continue to head the firm until they can pass the management to a suitable descendant. Their aim is to determine survival and safeguard the future of the firm as well as that of the following generations (Bhattacharya &

Ravikumar, 2001). On the other hand, CEOs of non-family-managed firms are usually appointed based on merit, knowledge and qualification.

As indicated in the last three rows of Table 2, the total directors' compensation in family-managed firms also appears to be significantly higher than that of non-family-managed firms. The detailed statistics show that this high compensation payment is due to the high payment to executive directors in compensation, which also shows a significant result. The descriptive statistics show that the average mean for total directors' compensation and executive directors' compensation is about 2.97 million and 2.64 million respectively in family-managed firms, which is almost double the amount paid to their counterparts in non-family-managed firms of 1.47 million and 1.24 million respectively. However, the payment to the non-executive directors is approximately the same for both categories of firm, with the average mean of 2.5 million for family-managed firms and 2.3 million for non-family-managed firms, and the results indicate an insignificant difference. This result appears to suggest the possibility that family-managed firms adopt a different compensation plan compared to non-family-managed firms, as the payments would flow to the board members who are family members. Further investigation in this domain is needed before any conclusion can be made.

Family-managed firms appear to have significantly fewer board meetings compared to non-family-managed firms. A detailed investigation of the data reveals that the majority of the family-managed firms have either 4 or 5 meetings in a year, whereas the majority of the non-family-managed firms have either 5 or 6 meetings every year. The law requires listed firms to have at least 4 meetings every year, or one meeting each quarter. The 4 or 5 meetings conducted by family-managed firms may be conducted to make sure that this requirement is fulfilled. Another plausible explanation is that as family members, they may have informal meetings during which some of the firms' problems or issues may be solved or discussed, therefore, they may need fewer meetings than would non-family-managed firms, the board members of which rarely have the opportunity to meet without reason.

In terms of performance, at 10 % level of significance, the total sales of family-managed firms are statistically different compared to the total sales of non-family-managed firms. Earnings before interest and tax and earnings per share of family-managed firms are also statistically higher than those of non-family-managed firms. However, the results also indicate that family-managed firms have a significantly lower asset utilisation ratio compared to that of non-family-managed firms.

CONCLUSION

The objective of the study is to explore the differences between family-managed firms and non-family-managed firms in Malaysia. The findings indicate that governance characteristics of family-managed firms and non-family-managed firms are significantly

TABLE 2
Independent Sample T-tests of the 100 Sample Firms

Variable	Categories	N	Mean	T value (sig)
Board size	Family-managed firms	50	8.40	4.158
	Non-family-managed firms	50	6.86	(0.000)
No of independent directors	Family-managed firms	50	3.22	-0.224
	Non-family-managed firms	50	3.26	(0.823)
No of non-independent directors	Family-managed firms	50	5.18	5.431
	Non-family-managed firms	50	3.60	(0.000)
No of executive directors	Family-managed firms	50	4.24	8.320
	Non-family-managed firms	50	2.26	(0.000)
No of non-executive directors	Family-managed firms	50	4.16	-1.260
	Non-family-managed firms	50	4.60	(0.211)
No of related directors	Family-managed firms	50	3.94	30.524
	Non-family-managed firms	50	.00	(0.000)
Independent directors (%)	Family-managed firms	50	.3879	-4.836
	Nonfamily-managed firms	50	.4855	(0.000)
Chairmen are related to CEO	Family-managed firms	50	.36	5.250
	Non-family-managed firms	50	.00	(0.000)
CEO Duality	Family-managed firms	50	.16	0.887
	Non-family-managed firms	50	.10	(0.378)
Years of CEO's experience	Family-managed firms	50	15.26	5.050
	Non-family-managed firms	50	7.12	(0.000)
CEO has professional qualification	Family-managed firms	50	.16	-3.233
	Non-family-managed firms	50	.82	(0.002)
CEO has higher education	Family-managed firms	50	.4400	-2.244
	Non-family-managed firms	50	.6600	(0.027)
Board activity (meetings)	Family-managed firms	50	4.94	-1.898
	Non-family-managed firms	50	5.50	(0.061)
Total sales	Family-managed firms	50	389, 179, 837.68	1.730
	Non-family-managed firms	50	263, 348, 846.40	(0.087)
Earnings before interest and tax	Family-managed firms	50	27, 649, 958.74	2.155
	Non-family-managed firms	50	13, 603, 991.80	(0.034)
Asset utilisation ratio	Family-managed firms	50	1.6764	-1.656
	Non-family-managed firms	50	2.5031	(0.091)
Earnings per share	Family-managed firms	50	12.9700	1.610
	Non-family-managed firms	50	7.9068	(0.091)
Executive Directors' compensation	Family-managed firms	50	2,642,152.84	3.317
	Non-family-managed firms	50	1,236,856.78	(0.000)
Non-Executive Directors' compensation	Family-managed-firms	50	250, 095.02	0.278
	Non-family-managed firms	50	230, 321.08	(0.781)
Total Directors' compensation	Family-managed firms	50	2, 975, 760.50	3.475
	Non-family-managed firms	50	1, 475, 562.52	(0.001)

different. Firms managed by families have a significantly larger board size, higher number of non-independent directors and executive directors and their directors have a significantly longer experience working in the firm compared to non-family-managed firms. However, the results suggest that the directors of family-managed firms significantly lack professional qualification and tend to have fewer meetings compared to directors of non-family-managed firms. The findings also indicate that the compensations paid to the executive directors of family-managed firms are significantly higher than those paid to executive directors of non-family-managed firms. Even though the family-managed firms appear to have significantly higher earnings per share and total sales compared to the non-family-managed firms, they have not utilised their assets efficiently compared to non- family-managed firms.

This study provides information to potential investors about the differences between family-managed firms and non-family-managed firms. In addition, it also provides a basis for more detailed study on family-managed firms in Malaysia, where this unique concentrated business environment is claimed to be common.

However, the conclusions drawn from this study should be interpreted in a limited way, which would potentially represent opportunities for further investigation in future research. This study is a cross-sectional study that uses data from one year only. Future research could extend the study to include data collected over more years for a longitudinal study.

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The Impact of Interlocking Directorates on Corporate Performance of Bursa Malaysia Listed Companies

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ABSTRACT

One of the main concerns about interlocking directorates is their effect on corporate performance; however, there is little research undertaken on this issue. Therefore, the objective of this study is to examine the effect of interlocking directorates on corporate performance by considering the nature and the direction of interlocking. The analyses are based on the data of 741 listed companies on Bursa Malaysia in 2007. The Ordinary Least Square regression results show that the number of interlocking companies, inter-industry interlocking directorates and interlocking created by independent directors are all significant and positively related to corporate performance, which is consistent with the resource dependence theory and the corporate governance theory. However, it is also discovered that both multiple directorships by executive directors and non-executive non-independent directors do not have any effect on corporate performance, which is consistent with the class integration theory. Despite the negative perception on interlocking directorates by the public, the findings suggest that interlocking directorates actually benefit shareholders by enhancing the earnings performance of the corporation.

Keywords: Corporate performance, directors, interlocking directorates

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INTRODUCTION

The issue of directorships has long been discussed in corporate governance research and by policy makers due to the importance of the role of directors in the corporate structure. Among the debated issues is the matter of interlocking directorates, where directors of one company hold additional

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directorships in other companies. The holding of multiple directorships has been criticised as it is said to limit the directors' time and commitment in discharging their responsibilities (Ibrahim Raman & Saidin, 2009).

In Malaysia, a study by Haniffa and Hudaib (2006) found negative perceptions related to multiple directorships by the capital market; the study argued that this was due to the perception of 'crony capitalism', 'class consolidation' and 'elite capitalist integration' in the Malaysian business environment. However, Hashim and Abdul Rahman (2011) found that the presence of interlocking directors enhances the quality of financial reporting due to the diligent monitoring and protection guaranteed by the reputation of these directors.

The government's concern about this issue can be seen through the restriction on multiple directorships imposed Bursa Malaysia. Under Paragraph 15.06 of the Listing Requirements, a director of a listed company is restricted from holding not more than 25 directorships (10 in listed companies and 15 in unlisted companies).

One of the main concerns about interlocking directorates is its effect on corporate performance. However, findings from earlier studies by Ferris, Jaghannathan and Pritchard (2003), Haniffa and Hudaib (2006), Liu and Yang (2008), Phan Lee and Lau (2003) and Shao (2010) have all shown mixed results of the effect of interlocking directorates on corporate performance. The mixed results may possibly be due to their failure to recognise the nature and the direction of the interlocking directorates. Therefore, the objective of this study is to examine the effects of interlocking directorates on corporate performance by considering the nature of directors and the direction of the interlocking directorates.

LITERATURE REVIEW

The basic form of interlocking directorates occurs when a director of one corporation also sits on the board of directors of another corporation (Mizruchi, 1996). It also occurs when two directors from different companies (e.g. A and B) sit on the board of a third company (namely C), where company A and B are directly interlocked with company C (or the other way around) and indirectly interlocked with each other (Phan *et al*., 2003). Two main theories have been proposed by researchers for the existence of interlocking directorates. The class integration theory proposes that interlocking directorates occur as mutual protection of interest of a social class by its members (Koenig & Gogel, 1981). Under this theory, the directors are appointed from candidates within the personal network of incumbent directors who have similar backgrounds, characteristics and political beliefs to protect the welfare of the individual within the class (Phan *et al.*, 2003). The resource dependence theory as proposed by Pfeffer and Salancik (1978) argues that interlocks occur for the inter-organisational coordination exchange of resources (capital, information and market access) to overcome environmental uncertainty.

Past studies on interlocking directorates focus more on the nature and reasons behind interlocking directorates. Generally, interlocking directorates are found to be a common phenomenon and an increase in the trend of interlocking directorates is found around the world (see for example Dooley, 1969; Ferris *et al.*, 2003; Haniffa & Hudaib, 2006).

Several factors contributing to the occurrences of interlocking directorates among corporations have been identified by earlier studies. Dooley (1969) hypothesised that the proven ability and the influence of directors of large corporations towards others (such as industry, potential investors and government) and the importance of business connections with large corporations by small/ medium corporations, make the directors of large corporations attractive candidates for other boards. Dooley also posits that due to the importance of corporation-financial institution relationships such as funding (for the corporation) and reliable customers (for the financial institutions), interlocking directorates have been related to financial institutions. Dooley postulates that financially-difficult-corporations need to have a close connection with financial institutions (so they can have more ready access to funds) and at the same time, the need of monitoring by financial institutions has led to the occurrence of interlocking directorates by financial institutions. In addition, the existence of trust operations by financial institutions has also been a leading factor for the occurrence of interlocking directorates by financial institutions (Dooley, 1969). Besides that, the appointment of individual directors to other boards is the market's reward to the individuals due to the superior performance enjoyed by the corporation in which the director serves (Ferris *et al.*, 2003). It has also been postulated that the predominance of non-executive directors on the board of directors will lead to more interlocks since these directors will favour the nomination of individuals in their elite class (Phan *et al*., 2003). At the same time, executive directors are less likely to hold directorships in other corporations due to their commitment and as well as to time constraints (Dooley, 1969).

HYPOTHESES

Several arguments based on corporate governance and organisational theories have been used by earlier studies in hypothesising the effects of interlocking directorates on corporate performance. The class integration theory proposes that interlocking directorates occur as a form of mutual protection of interest within a social class by its members and therefore, it has been argued that interlocking directorates do not have any effect on corporate performance (Koenig & Gogel, 1981; Phan *et al*., 2003). The corporate governance theory, however, offers that holding multiple directorships may have a negative effect on corporate performance due to limitation of time and increase in commitment by the interlocking directors (Ibrahim *et al*., 2009). Time and commitment limitation may affect interlocking directors' monitoring ability. On the other hand, holding multiple

directorships may increase directors' ability as monitors due to experience and knowledge gained by serving on multiple companies' boards and increase their motivation to discharge their monitoring roles due to the concerns of damage to reputation (Fama & Jensen, 1983). The resource dependence theory as proposed by Pfeffer and Salancik (1978), argues that interlocking directorates occur for inter-organisational coordination exchange of resources (capital, information and market access) to overcome environmental uncertainty, and, thus, may imply that interlocking directorates may have a positive effect on corporate performance.

Prior empirical evidence has shown mixed findings on the effects of multiple directorships on corporate performance. While Liu and Yang (2008) found significant negative relationships between multiple directorships and earnings, Shao (2010) provided evidence of significant positive relationships. The mixed findings by the above studies may probably be due to the failure to recognise the types of director involved in interlocking directorates. Limitation of time and increase in commitment due to holding multiple directorships as argued by Ibrahim *et al*. (2009) may be true for executive directors, due to their daily involvement in business operations, while the argument that experience and knowledge are gained as proposed by Fama and Jensen (1983) may be suitable for non-executive directors, due to their indirect involvement in daily business operations. In the Malaysian business environment, it can be seen that interlocking directorates are more pronounced among non-executive directors than executive directors. Therefore, the following hypotheses are developed:

H_1: Average multiple directorships have a significant positive relationship with corporate performance.

H_{1a}: Average executive directors' multiple directorships have a negative effect on corporate performance.

H_{1b}: Average non-executive non-independent directors' multiple directorships have a positive effect on corporate performance.

H_{1c}: Average independent directors' multiple directorships have a positive effect on corporate performance.

The above studies view interlocking directorates at the individual (directors) level without considering the organisational (company) level. Interlocking directorates may exist between companies in the same industry (known as intra-industry interlocking directorates) or in different industry (also known as inter-industry interlocking directorates) (Phan *et al*., 2003). Phan *et al*. (2003) argued that intra-industry interlocking directorates are important for the coordination exchange of resources and inter-industry interlocking directorates are important for a wide view of business environment. Based on Singapore listed companies, Phan *et al*. (2003) found that inter-industry interlocking directorates

have a significant positive relationship with return on equity (ROE) but failed to find any significant effect contributed by intra-industry interlocking directorates. Therefore, the following hypotheses are developed:

H_2: Total number of interlocking companies has a positive effect on corporate performance.

H_{2a}: Inter-industry interlocking directorates have a positive effect on corporate performance.

H_{2b}: Intra-industry interlocking directorates have a positive effect on corporate performance.

METHOD

The archival method is used to collect data from listed companies in Bursa Malaysia both on Main and Second Board (now known as Main Market) in 2007. Listed companies are chosen due to their publicly available annual reports, and 2007 data is used due to the stability of the country both economically and politically during that period of time. As at 31 December 2007, 863 companies are listed on Bursa Malaysia, but only 741 companies are used in the final sample. Due to the difference in the regulatory requirements, all financial and unit trust companies are excluded. In addition to that, newly listed companies are also excluded because of unavailability of prior year annual reports and financial year-end change companies are also excluded due to inconsistency of their data. Furthermore, 42 companies are excluded due to incomplete data and another 12 companies are also excluded due to the negative value of their equity.

For the multivariate analysis, the Ordinary Least Square (OLS) regression will be used. The model takes the following form:

$$\begin{aligned}\text{PERFORMANCE} &= b_1\text{INTERLOCKING} + b_2\text{ISSUE} \\ &\quad + b_3\text{BOARD} + b_4\text{FOREIGN} \\ &\quad + b_5\text{DIROWN} + b_6\text{BODIND} \\ &\quad + b_7\text{BODSIZE} + b_8\text{GROWTH} \\ &\quad + b_9\text{LSUBS} + b_{10}\text{LAGE} \\ &\quad + b_{10}\text{LEVERAGE} + C\end{aligned}$$

The dependent variable represents corporate performance. Two common proxies for corporate performance are market return and accounting return, but only accounting return will be used in this study. The accounting return is suitable for long-term phenomenon, whilst market return measurement is more suitable for the testing of the effects of specific events (Phan *et al*., 2003). Two accounting return measurements are used, namely, return on equity (ROE) and return on asset (ROA). High values of ROE and ROA indicate effective use of company resources in enhancing the shareholders' wealth. ROE is calculated as the ratio of the net income to the book value of equity and ROA is calculated as the ratio of the net income to the book value of assets.

Consistent with Phan *et al.* (2003), only interlocking directorates within the population and direct interlocking directorates will be counted. The inclusion of interlocking directorates outside the

population and indirect interlocking directorates will complicate the calculation. Two main measurements are used in defining interlocking directorates, namely, average additional directorships and the number of interlocking companies. Consistent with Feris *et al*. (2003), TOTALOCK is measured by the average number of additional directorships held by all directors, EXECLOCK is measured by the average number of additional directorships held by executive directors, NONLOCK is measured by the average number of additional directorships held by non-executive non-independent directors and INDLOCK is measured by the average number of additional directorships held by independent directors. Meanwhile, consistent with Phan *et al*. (2003), INTERLOCK is measured by the number of other companies served in by the directors of the observed company, INTRA is measured by the number of other companies served in by the directors of the observed company within the same industry and INTER is measured by the number of other companies served in by the directors of the observed company in the different industry.

Several factors have been said to affect corporate performance (see for example Fama & Jensen, 1983; Liu & Yang, 2008; Shao, 2010) and therefore, these variables are included in the model to control for the interrelation of these variables. ISSUE is measured by dummy, 1 if observed company issues additional shares or acquires additional loan in the current year and 0 if otherwise; BOARD is measured by dummy, 1 if observed company is listed on Main Board and 0 if otherwise; and FOREIGN is measured by dummy, 1 if observed company has foreign subsidiaries and 0 if otherwise. DIROWN is measured by the proportion of shares, directly and indirectly owned by directors; GROWTH is measured by the changes in sales over prior year sales; LSUBS is measured by natural logarithm of the number of the company's subsidiaries; and LAGE is measured by natural logarithm of the number of years a company is listed on Bursa Malaysia. All of these variables are expected to have significant positive relationships with corporate performance. Meanwhile, LEVERAGE is measured by the proportion of total liabilities over total assets and is expected to have a negative effect on corporate performance. BODSIZE is measured by the number of board of directors' members and BODIND is measured by the proportion of non-executive directors on the board of directors.

RESULTS

Descriptive

Table 1 and Table 2 present the descriptive statistic of the continuous variables and the dummy variables respectively.

Table 1 shows that on average, the return on asset (ROA) is 3.7 % and return on equity (ROE) is 4.5 %. On average, a company shares its director with 5 other listed companies, with the highest number of companies being 23. It also shows that a company is interlocked more with companies in a different industry (a mean of 4 companies are found for inter-industry

TABLE 1
Descriptive Statistics of Continuous Variables

Variables	Minimum	Maximum	Mean	Std. Dev
TOTALOCK	0	4.25	0.757	0.712
EXECLOCK	0	7	0.446	0.887
NONLOCK	0	8	0.587	1.053
INDLOCK	0	7	1.045	1.066
INTERLOCK	0	23	4.668	4.235
INTRA	0	7	1.078	1.448
INTER	0	22	3.579	3.534
DIROWN	0	0.992	0.365	0.243
BODIND	0.286	1	0.637	0.174
BODSIZE	3	17	7.522	2.006
GROWTH	-1	17.837	0.232	0.877
LSUBS	0	2.535	1.123	0.419
LAGE	0	1.663	0.988	0.366
LEVERAGE	0.001	0.985	0.398	0.210
ROA	-1.406	1.426	0.037	0.121
ROE	-7.751	2.271	0.045	0.381
AGE	1	46	13.472	11.030
SUBS	0	342	20.734	31.214

interlocking directorates, while a mean of 1 company for intra-industry interlocking directorates). Based on directors, on average, a director holds almost 1 additional directorship in other companies, whereby independent directors hold 1 additional directorship and executive directors only hold 0.44 additional directorships. This implies that interlocking directorates is more pronounced among independent directors than any other types of director and is more likely to incur between companies in different industries.

Related to board of directors, the average size is 8 members with the minimum being 3 and the maximum being 17 members. About 64 % of the directors are non-executive directors. On average, the directors also own about 37 % of the shares of the companies. The average number of years a company has been listed on Bursa Malaysia is 13 and the average number of subsidiaries is 21 companies. The average value of leverage is 40 % and sales increase is by 23 %. Table 2 shows that 16 % of the sample companies (115 companies) have issued additional shares and acquire additional long-term liabilities, 73 % (539 companies) are listed on Main Board and 58 % (427 companies) have foreign subsidiary.

Univariate

Table 3 shows the univariate result by comparing the ROE and ROA between companies with interlocking directorates and companies without interlocking

TABLE 2
Descriptive Statistics of Dummy Variables

Variables	Variables	Number	Percentage
ISSUE	Issue	115	15.52
	No	626	84.48
BOARD	Main	539	72.74
	Second	202	27.26
FOREIGN	Yes	427	57.62
	No	314	42.38

TABLE 3
Univariate Result

	Panel A			Panel B		
	INTERLOCK (n=647)	Non-INTERLOCK (n=94)	t-test	EXECLOCK (n=268)	Non-EXECLOCK (n=473)	t-test
ROE						
Mean	0.050	0.006	-1.07	0.062	0.035	-0.95
Std dev	0.391	0.304		0.279	0.428	
ROA						
Mean	0.039	0.023	-1.26	0.044	0.034	-1.10
Std dev	0.123	0.100		0.130	0.115	

Continue:

	Panel C			Panel D		
	NONLOCK (n=287)	Non-NONLOCK (n=454)	t-test	INDLOCK (n=580)	Non-INDLOCK (n=161)	t-test
ROE						
Mean	0.039	0.048	0.32	0.061	-0.014	-2.22**
Std dev	0.517	0.261		0.221	0.700	
ROA						
Mean	0.042	0.034	-0.84	0.040	0.026	-1.32
Std dev	0.154	0.093		0.097	0.182	

Continue:

	Panel E			Panel F		
	INTER (n=606)	Non-INTER (n=135)	t-test	INTRA (n=385)	Non-INTRA (n=356)	t-test
ROE						
Mean	0.053	0.006	-1.32	0.065	0.024	-1.46
Std dev	0.402	0.263		0.247	0.486	
ROA						
Mean	0.042	0.018	-2.10**	0.042	0.032	-1.10
Std dev	0.126	0.092		0.124	0.117	

** significant at 5 % level (2-tailed)

directorates. In general, interlocking companies have a higher mean of ROE and ROA than non-interlocking companies, which suggests that interlocking companies have better earnings performance than non-interlocking companies. However, significant mean difference is only found between ROE by comparing companies with interlocking independent directors and companies without interlocking independent directors, which suggests that companies with interlocking independent directors have better earnings performance than companies without interlocking independent directors. A significant mean difference is also found between ROA by comparing companies with inter-industry interlocking and companies without inter-industry interlocking, which suggests that companies with inter-industry interlocking companies have better earnings performance than companies without inter-industry interlocking companies.

Correlation

Table 4 shows the correlation matrix among the variables. The table shows that ROE and ROA are significantly correlated with most of the explanatory variables. ROE is significant and positively correlated with INTERLOCK, INTER, TOTALOCK, INDLOCK, BOARD, FOREIGN, GROWTH, LSUBS, LAGE and significant and negatively related to LEVERAGE. ROA is significant and positively related to INTERLOCK, INTER, INTRA, TOTALOCK, EXECLOCK, INDLOCK, BOARD, FOREIGN, GROWTH, LSUBS and LAGE and significant and negatively related to LEVERAGE. As expected, the correlations between hypotheses variables are significant and highly positively related. This supports the inclusion of the hypotheses variables separately, one after the other, into the multivariate regression. In addition, the correlations among other explanatory (control) variables are less than 0.5. While 0.8 is usually used as a threshold for possible multi-collinearity, it can be assumed that no serious collinearity exists.

OLS Regression

Table 5 shows the Ordinary Least Square (OLS) regression results of the ROE model and Table 6 shows the Ordinary Least Square (OLS) regression results of ROA model. Both tables show that all regression models are significant at 1 % significance level. The adjusted R-squared of ROE model is between 0.050 and 0.056, which is consistent with Phan *et al*. (2003). This suggests that the variation of return on equity that is explained by the models is about 5 to 6 %. Meanwhile, an adjusted R-squared of between 0.105 to 0.110 of ROA model is slightly higher than a prior study by Amran and Che Ahmad (2010) who had recorded an R-squared of 0.07. This suggests that the variation in return on asset that is explained by the models is about 11 %.

Both tables show that all the hypotheses variables are positively related to ROE and ROA. Table 5 shows that the variables INTERLOCK, INTER and INDLOCK are significant at a 5 % level and the variables INTRA and TOTALOCK are only marginally significant (at a 10 % level). However, the

TABLE 4
Pearson Correlation Matrix of Variables

Variables	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
1-ROE	1																	
2-ROA	0.84*	1																
3-TOTALOCK	0.09**	0.12*	1															
4-EXECLOCK	0.05	0.08**	0.62*	1														
5-NONLOCK	0.02	0.06	0.50*	0.23*	1													
6-INDLOCK	0.09**	0.09**	0.75*	0.24*	0.11*	1												
7-INTERLOCK	0.09**	0.12*	0.84*	0.41*	0.39*	0.76*	1											
8-INTER	0.08**	0.11*	0.80*	0.39*	0.34*	0.73*	0.95*	1										
9-INTRA	0.07	0.08**	0.51*	0.25*	0.31*	0.44*	0.61*	0.32*	1									
10-ISSUE	0.065	0.07	0.01	0.01	-0.00	-0.00	0.01	0.01	0.00	1								
11-BOARD	0.104*	0.19*	0.20*	0.13*	0.07	0.16*	0.23*	0.23*	0.11*	0.03	1							
12-FOREIGN	0.09**	0.10*	0.11*	0.09**	0.04	0.09**	0.14*	0.14*	0.07**	0.13*	0.12*	1						
13-DIROWN	-0.00	-0.03	-0.19*	-0.05	-0.11*	-0.13*	-0.21*	-0.22*	-0.08**	0.08**	-0.07	0.05	1					
14-BODIND	-0.02	0.03	0.27*	0.16*	0.24*	0.13*	0.31*	0.30*	0.19*	-0.06	0.15*	0.01	-0.33*	1				
15-BODSIZE	0.03	0.06	-0.03	-0.06	0.04	0.05	0.27*	0.24*	0.19*	-0.02	0.17*	0.08**	0.04	0.03	1			
16-GROWTH	0.09**	0.12*	-0.03	0.01	-0.00	-0.03	-0.03	-0.02	-0.03	0.03	0.02	-0.02	-0.06	0.01	0.02	1		
17-LSUBS	0.09**	0.09**	0.22*	0.23*	0.15*	0.09**	0.24*	0.25*	0.08**	0.09**	0.26*	0.42*	-0.05	-0.02	0.12*	0.00	1	
18-LAGE	0.09**	0.10*	0.29*	0.25*	0.16*	0.18*	0.26*	0.28*	0.09**	-0.16*	0.21*	0.11*	-0.23*	0.25	0.01	0.02	0.25*	1
19-LEVERAGE	-0.15*	-0.22*	-0.03	-0.03	-0.05	0.02	0.02	0.05	-0.04	0.07**	-0.11*	0.17*	-0.03	-0.10*	0.03	0.04	0.25*	-0.11*

TABLE 5
Ordinary Least Square (OLS) Regression Result of Return on Equity (ROE)

Variables	Panel A Coefficient (p-value)	Panel B Coefficient (p-value)	Panel C Coefficient (p-value)	Panel D Coefficient (p-value)	Panel E Coefficient (p-value)	Panel F Coefficient (p-value)	Panel G Coefficient (p-value)
Constant	0.059 (0.61)	0.055 (0.57)	0.051 (0.53)	0.047 (0.49)	0.095 (0.96)	0.089 (0.90)	0.065 (0.68)
ISSUE	0.067 (1.72)**	0.069 (1.77)**	0.069 (1.78)**	0.068 (1.74)**	0.066 (1.69)**	0.066 (1.70)**	0.068 (1.76)**
BOARD	0.038 (1.14)	0.043 (1.28)	0.043 (1.30)	0.035 (1.06)	0.037 (1.11)	0.038 (1.13)	0.042 (1.26)
FOREIGN	0.059 (1.92)**	0.060 (1.95)**	0.060 (1.95)**	0.057 (1.84)**	0.058 (1.87)**	0.059 (1.90)**	0.058 (1.89)**
DIROWN	-0.000 (-0.24)	-0.000 (-0.39)	-0.000 (-0.37)	-0.000 (-0.21)	-0.000 (-0.14)	-0.000 (-0.16)	-0.000 (-0.32)
BODIND	-0.166 (-1.90)**	-0.143 (-1.64)***	-0.139 (-1.58)***	-0.148 (-1.72)**	-0.180 (-2.04)**	-0.171 (-1.94)**	-0.159 (-1.83)**
BODSIZE	0.003 (0.44)	0.003 (0.36)	0.002 (0.33)	0.002 (0.26)	-0.001 (-0.18)	-0.000 (-0.06)	0.000 (0.05)
GROWTH	0.042 (2.72)*	0.041 (2.65)*	0.041 (2.65)*	0.043 (2.75)*	0.043 (2.76)*	0.043 (2.73)*	0.042 (2.70)*
LSUBS	0.045 (1.15)	0.052 (1.31)	0.055 (1.38)	0.056 (1.43)	0.045 (1.14)	0.046 (1.17)	0.052 (1.34)
LAGE	0.046 (1.09)	0.054 (1.28)	0.057 (1.36)	0.046 (1.10)	0.045 (1.08)	0.046 (1.08)	0.056 (1.34)
LEVERAGE	-0.326 (-4.70)*	-0.328 (4.71)*	-0.329 (-4.72)*	-0.336 (-4.83)*	-0.332 (-4.78)*	-0.334 (-4.81)*	-0.324 (-4.66)*
TOTALOCK	0.034 (1.62)***						
EXECLOCK		0.006 (0.37)					
NONLOCK			0.000 (0.00)				
INDLOCK				0.028 (2.11)**			
INTERLOCK					0.007 (1.97)**		
INTER						0.007 (1.69)**	
INTRA							0.015 (1.53)***
Adjusted R-squared	0.054	0.050	0.050	0.056	0.055	0.054	0.053
p-value	0.000	0.000	0.000	0.000	0.000	0.000	0.000

*, **, *** significant level at 1, 5, 10 % respectively (one-tailed)

TABLE 6
Ordinary Least Square (OLS) Regression Result of Return on Asset (ROA)

Variables	Panel A Coefficient (p-value)	Panel B Coefficient (p-value)	Panel C Coefficient (p-value)	Panel D Coefficient (p-value)	Panel E Coefficient (p-value)	Panel F Coefficient (p-value)	Panel G Coefficient (p-value)
Constant	0.027 (0.92)	0.027 (0.92)	0.026 (0.87)	0.023 (0.78)	0.037 (1.22)	0.036 (1.20)	0.027 (0.92)
ISSUE	0.022 (1.85)**	0.023 (1.91)**	0.023 (1.92)**	0.023 (1.90)**	0.022 (1.85)**	0.022 (1.85)**	0.023 (1.91)**
BOARD	0.031 (3.02)*	0.032 (3.18)*	0.033 (3.23)*	0.031 (3.00)*	0.031 (3.04)*	0.031 (3.04)*	0.032 (3.19)*
FOREIGN	0.022 (2.37)*	0.023 (2.42)*	0.023 (2.42)*	0.022 (2.31)**	0.022 (2.34)**	0.022 (2.36)*	0.022 (2.37)*
DIROWN	-0.000 (-0.73)	-0.000 (-0.95)	-0.000 (-0.89)	-0.000 (-0.76)	-0.000 (-0.68)	-0.000 (-0.67)	-0.000 (-0.87)
BODIND	-0.029 (-1.06)	-0.021 (-0.80)	-0.021 (-0.77)	-0.020 (-0.78)	-0.030 (-1.11)	-0.028 (-1.05)	-0.022 (-0.84)
BODSIZE	0.002 (1.17)	0.002 (1.11)	0.002 (1.01)	0.002 (0.97)	0.001 (0.51)	0.001 (0.59)	0.002 (0.82)
GROWTH	0.017 (3.57)*	0.017 (3.47)*	0.017 (3.48)*	0.017 (3.57)*	0.017 (3.58)*	0.017 (3.57)*	0.017 (3.52)*
LSUBS	0.014 (1.14)	0.015 (1.26)	0.017 (1.36)	0.018 (1.48)	0.015 (1.21)	0.015 (1.21)	0.017 (1.41)
LAGE	0.004 (0.29)	0.006 (0.46)	0.008 (0.59)	0.005 (0.39)	0.005 (0.36)	0.004 (0.33)	0.008 (0.61)
LEVERAGE	-0.144 (-6.74)*	-0.144 (-6.74)*	-0.144 (-6.73)*	-0.146 (-6.87)*	-0.146 (-6.83)*	-0.146 (-6.86)*	-0.144 (6.72)*
TOTALOCK	0.013 (2.03)**						
EXECLOCK		0.005 (0.95)					
NONLOCK			0.002 (0.52)				
INDLOCK				0.008 (1.87)**			
INTERLOCK					0.002 (1.88)**		
INTER						0.002 (1.80)**	
INTRA							0.003 (1.08)
Adjusted R-squared	0.110	0.106	0.105	0.109	0.109	0.109	0.106
p-value	0.000	0.000	0.000	0.000	0.000	0.000	0.000

*, **, *** significant level at 1, 5, 10 % respectively (one-tailed)

variables EXECLOCK and NONLOCK are insignificant. Meanwhile, Table 6 shows that the variables INTERLOCK, INTER, TOTALOCK and INDLOCK are significant at a 5 % level but the variables INTRA, EXECLOCK and NONLOCK are insignificant.

The significant positive relationship of INTERLOCK is consistent with the resource dependence theory as proposed by Pfeffer and Salancik (1978), who argue that interlocking directorates occur for the inter-organisational coordination exchange of resources to overcome environmental uncertainty. The significant positive relationship of INTRA with ROE provides support for the postulation made by Phan *et al*. (2003) that intra-industry interlocking directorates are important for the coordination exchange of resources. Meanwhile, the significant positive relationships of INTER with ROE and ROA provide support that inter-industry interlocking directorates are important for a wide view of the business environment as suggested by Phan *et al.* (2003). Furthermore, the significant positive relationships of TOTALOCK and INDLOCK with ROE and ROA provide support for the argument by Fama and Jensen (1983) that holding multiple directorships increases directors' ability as monitors due to experience and knowledge gained by serving on the boards of multiple companies and increases directors' motivation to discharge their monitoring roles due to their concern about damage to their reputation.

The insignificant relationships between the variables, EXECLOCK and NONLOCK, with two of the performance measures may be due to the possibility that these directors were appointed to sit on the boards of other companies due to their social group and thus, did not have any effect on the corporate performance as proposed by the class integration theory.

Related to the control variables, the variables BODIND and LEVERAGE are significant and negatively related to ROE, whilst ISSUE, GROWTH and FOREIGN are significant and positively related to ROE. Meanwhile, the variable LEVERAGE is significant and negatively related to ROA, whilst BOARD, ISSUE, GROWTH and FOREIGN are significant and positively related to ROA. This suggests that a higher proportion of non-executive directors on the board of directors and a higher proportion of total liability over total asset decrease corporate performance, while being listed on the Main Board, acquiring additional funds, seeing growth in sales and having a foreign subsidiary enhance corporate performance.

CONCLUSION

Earlier studies have shown mixed findings on the effect of interlocking directorates on corporate performance, which may possibly be due to the failure to recognise the nature and the direction of the interlocking directorates.

Using data of 741 listed companies on Bursa Malaysia in 2007, it is found that the number of interlocking companies, inter-industry interlocking directorates, multiple directorships and multiple directorships of independent directors have a positive effect

on corporate performance. The findings support the resource dependence theory that interlocking directorates are beneficial in overcoming environmental uncertainty and as well as the argument that inter-industry interlocking directorates are important for a wide view of the business environment. The findings are also consistent with the argument that holding multiple directorships enhances directors' expertise and increases their motivation in discharging their roles. However, it is also found that multiple directorships by executive and non-executive non-independent directors do not have any effect on corporate performance, which is found consistent with the class integration theory. This is due to the possibility that these directors were appointed to sit on the boards of other companies based on their social group (consistent with the nature of their directorships) and therefore, do not have any effect on corporate performance. On the other hand, the argument of limitation of time and increased commitment due to holding multiple directorships as proposed in the corporate governance theory seems to be irrelevant, due to the restriction of directorships mandated in Malaysia.

Despite the negative perception of interlocking directorates by the public, the results suggest that interlocking directorates actually benefit shareholders by enhancing the performance of the corporation. The results also add to the growing body of literature on interlocking directorates and corporate performance. For future studies, it is recommended to consider using a wider data set or perhaps using a different data set.

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The Dividend Payout Policy – A Study on Malaysian Financial Institutions

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ABSTRACT

The purpose of this study is to identify the determinants of dividend policy in Malaysian financial institutions. Panel data set were constructed from 33 financial institutions in Malaysia for a period of 10 years (2001-2010). The results show a statistically significant positive relationship between dividend policy and profitability, which implies that Malaysian financial institutions distribute higher dividends when they record higher profitability. Lagged dividend also shows a positive significant relationship with dividend policy, which implies that financial institutions in Malaysia follow a stable dividend policy that maintains regularity of dividend payments with gradual adjustments of dividend payments towards the target payout. On the other hand, leverage shows a significant negative relationship with dividend policy, which means that a riskier financial institution pays out lower dividends. In conclusion, profitability, lagged dividend and leverage are found to be the major determinants of dividend policy in relation to Malaysian financial institutions. The results support the agency cost theory, signaling theory and the free cash flow hypothesis.

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INTRODUCTION

Black (1976) states in his study that, "the harder we look at dividend, the more it seems like a puzzle with pieces that just don't fit together." Until today, the dividend payout decision has always been a subject of interest to financial analysts, academicians and researchers as they are interested in

studying the extent to which the earnings of a company are distributed in dividends among shareholders or retained for future growth of the company. There are different arguments with regards to dividends in finance-related literature. Miller and Modigliani (1961) first raised the issue on dividend policy, arguing that in a perfect capital market, the dividend decision is irrelevant as it does not affect the value of the firm. However, this argument is opposed by financial practitioners as well as academicians due to the existence of market imperfections such as differential tax rates, information asymmetries, conflict of interest between managers and shareholders, transaction costs, flotation costs and irrational investor behaviour. Shiller (1984) observes that investor behaviour is largely affected by societal norms and attitudes. Furthermore, errors in judgement and trading activities by shareholders cannot be logically explained due to social pressures. On the other hand, Michel (1979) reports a systematic relation between industry type and dividend policy. This shows that the actions of executives of competitive firms do influence the determination of dividend payout levels made by managers.

Companies pay dividends for three common reasons: taxation, asymmetric information and agency costs. In terms of taxation, investors may prefer stocks that have low dividend payouts if they have favourable tax treatment. This is supported by Brennan (1970), who found that higher pretax risk adjusted returns on stocks with higher dividend yields are required to compensate for the tax disadvantages of these returns. Furthermore, managers choose to increase the level of dividends as an indication of indirect confidential information to investors such as in a situation where they believe that the current market value of their firm's stock is lower than its intrinsic value. Thus, the result of the dividend-signaling hypothesis is that firms that increase/decrease dividends will experience increasing/ decreasing share prices (Bhattacharya, 1979). Agency relationship between managers and shareholders of the firm is also one of the causes why firms pay dividends. Easterbrook (1984) suggests that in order to lessen the agency costs between shareholders and managers, firms pay dividends. If the firm pays dividends, they can opt to raise money through the capital market. However, they will be subject to the scrutiny and disciplining effect of investment professionals. Thus, in exchange for the increased monitoring, shareholders are willing to accept higher personal taxes associated with dividends.

The dividend decision reflects the market value of the firm, for there will be less availability of internal funds for expansion purposes of the firm as a direct consequence of dividend payments. Therefore, in deciding on dividend payment, there is a dilemma in balancing between the shareholder's expectation and the firm's long-term interest. Since Miller and Modigliani's study, many other studies have been conducted to identify how dividend affects the firm's value as well as how

dividend policy should be formulated by managers. In practice, different dividend payment models are used such as residual dividend policy, constant growth dividend policy, constant dividend payout ratio, low stable dividend and premium payout policy at the end of the year. These policies are normally chosen based on the size and profitability of the company. (Alekneviciene *et al.*, 2006).

There are many factors that are seen to have an effect on the dividend decision. These factors may differ from country to country as well as from industry to industry. However, there has been little attention given to financial institutions in relation to the study on dividend policy. Financial institutions are normally excluded from the samples in studies of firms' decision policy due to their characteristics of high leverage, tight regulation, capital structure and asset opaqueness. For example, the Malaysian Banking and Financial Institutions Act 1989 (BAFIA) requires that every licensed institution apply in writing for the Central Bank's approval with respect to the amount of dividend proposed for declaration. The Central Bank may approve the same, or a reduced amount, or even prohibit payment of any dividends, depending on the financial condition of the institution.

Previously, the financial sector was just an enabler of growth; however, it has morphed from being an enabler to a vital source of economic growth. The Malaysian financial sector has encountered significant transformation, together with reinvention. As a result of the restructuring, consolidation and rationalisation efforts that were undertaken in the banking sector, the Malaysian financial sector now rests on a stronger foundation. Furthermore, progressive deregulation and liberalisation have contributed to the increasing flexibility of financial institutions as well as created new business opportunities and increased competition.

This study aims to identify the determinants of dividend policy in Malaysian financial institutions. Even though there is an enormous volume of studies conducted on issues related to determinants of dividend policy, these studies have mainly focused on developed countries, and the conclusion reached may not be applicable in countries with different corporate cultures and economic frameworks. Furthermore, very little attention has been given to financial institutions in relation to study into dividend policy. The rest of this paper is organised as follows: the next section provides a review of related studies in a literature review. The third section outlines the data and methodology. The fourth section discusses the results, and finally, the article is concluded in the fifth section.

LITERATURE REVIEW

Ross *et al.* (2008) define dividends as cash that is paid out arising from current or accumulated current earnings. This payment is divided among shareholders out of the cash surplus from their net income for the year, depending on management's decision to retain it for re-investment purposes or to pay out as dividends.

Tax-adjusted models conclude that investors require higher expected returns for shares of dividend paying stocks. Due to the imposition of tax liability on dividends, dividend payment needs to be grossed up in order to enhance the shareholder's pre-tax returns. Masulis and Trueman (1988) view cash dividend payments as deferred dividend costs. They predict that investors differ in their ideal firm investment or dividend policy based on their tax liabilities. In a situation where there is an increase in tax liabilities, the dividend payments would decrease, while earnings reinvestment increases and vice-versa. Differences will then be minimised by segregating the investors into clientele. Farrar and Selwyn (1967) developed a model with the assumption that investors capitalise on after-tax income, where in a partial equilibrium framework, investors have two options: either they select the amount of personal and corporate tax leverage or accept corporate distributions as dividends or capital gains. This model argues that share repurchase is supposed to be considered as distribution of corporate earnings rather than dividend. Miller (1986) criticises the tax-adjusted model as incompatible with rational behaviour. He suggests that individuals can avoid tax liability of these payments by refraining from purchasing dividend-paying shares. Alternatively, shareholders can purchase dividend-paying stocks and receive distributions while at the same time use borrowed finances to invest in securities that are tax-free.

Market imperfection of asymmetric information has become the foundation for three different efforts in explaining corporate dividend policy: 1) the signaling model, 2) the agency cost model and 3) the free cash flow hypothesis. The dividend signaling model arises from the lack of information asymmetries between managers and owners through unanticipated changes in dividend policy. The signaling theory believes that compared to any other alternatives, the dividend policy is able to communicate information about the existing or expected level of earnings (Chen & Dhiensiri, 2009). They point out that share price reactions are not caused by the dividend payout itself, but by the information that investors understood with regards to the future prospects of the firm. A reduction in dividend is viewed as very bad news, as it is usually understood to arise after a sustained decrease in earnings, and it conveys the expectation of management of having less cash than it had in the past. Dividends also help investors in solving the asymmetric information problem of identifying between high-quality and low-quality firms because high-quality firms will naturally be able to pay dividends.

The agency cost model assumes that firms pay dividends in order to solve the agency's problems arising from the separation of corporate ownership and control (Megginson et, al., 2010). Dividend is perceived as an approach to lessen the agency's costs that arise from the managers and owners of the firm, thus

offering a rationale for the distribution of cash resources to shareholders (Chen & Dhiensiri, 2009). Based on the agency theory, the need for monitoring managers increases in more dispersed ownership firms due to severe agency problems. However, in a firm that has high managerial ownership, agency costs are lower due to the better alignment of both the shareholders' and the manager's goals (Jensen & Meckling, 1976). Agency problems that might arise as a result of information asymmetries are wealth transfers from bondholders to shareholders as well as failure to accept projects that have positive net present value (Barnea, et.al, 1981). There are two ways in which dividend policy influences these situations. Fama and Jensen (1983) highlight that covenants that govern claim priority are able to mitigate the conflict between shareholder and bondholder. Besides that, Easterbrook (1984) suggests that the reduction of agency costs between shareholders and managers is the reason why firms pay dividends. If the firm pays dividends, they can opt to raise money through the capital market. However, they will be subject to the scrutiny and disciplining effect of investment professionals. In exchange for the increased monitoring, shareholders are willing to accept higher personal taxes associated with dividends.

The free cash flow hypothesis combines market information asymmetrics and the agency theory (Jensen, 1986). The inefficient utilisation of funds in excess of profitable investment avenues by the management was first identified by Berle and Means (1932). Managers whose goal is to maximise shareholders' wealth should invest in all profitable opportunities. The free cash flow hypothesis suggests that paying high dividends is one of the ways to hinder managers from investing in projects below cost of capital or wasting the cash on organisation inefficiencies with respect to firms that have growth opportunities and higher free cash flow. After financing all positive net present value projects, the remaining funds can bring conflicts of interest between managers and shareholders (Frankfurter & Wood, 2002). Therefore, debt interest payments and dividend payments will reduce the amount of free cash flow available to managers to invest in marginal net present value projects as well as consumptions that benefit the manager. Frankfurter and Wood (2002) conclude that comparing either one of the theories (market information asymmetric and agency theory) with better explains dividend policy rather than explaining dividend policy from an understanding of both theories combined.

Determinants of Dividend Policy

From the literature review, many factors may be identified as the determinants of dividend policy. This study, however, will focus on a few selected factors, which are profitability, liquidity, lagged dividend, growth opportunities and leverage.

Profitability

Lintner (1956) takes the qualitative approach in his study by conducting interviews with personnel of large firms in the United States

of America to address corporate dividend behaviour. Throughout the interviews, he found that the main determinants of dividend changes were the most recent earnings and past dividend paid. Management is more concerned with the change in rather than the amount of dividend and it tries to maintain a consistent level of dividend. Furthermore, there was a tendency to move towards some target payout ratio; however, the speed of adjustment varies among companies. Fama and Babiak (1968) used statistical techniques of regression analysis, simulations and prediction tests to study the determinants of dividend payments by individual firms during the period from 1946 to 1964. They conclude that net income provides a better measure of dividend compared to either cash flow or net income and depreciation incorporated as separate variables in the model.

This is further supported by Pruitt and Gitman (1991) who also take a qualitative approach by interviewing the financial managers of a thousand of the largest US companies and found that vital factors that influence dividend payments are current and past-year profits. They also add that firms with relatively stable earnings are more likely to distribute a higher percentage of their earnings as dividend compared to firms with fluctuating earnings. Furthermore, Fama and French (2001), who study the characteristics of dividend paying companies, found that firm size, profitability and investment opportunities affect the decision to pay dividends. Larger firms that are more profitable are expected to pay dividends. However, firms with more investment opportunities are less expected to pay dividends.

Pandey (2003) in his study of corporate dividend policy and behaviour in Malaysia finds that payout ratios vary from industry to industry. Based on the results of multinominal logit analysis, it can be seen that the dividends of companies listed in KLSE are sensitive to changes in earnings. From a slightly different view, Baker *et al.* (1985) conclude that the levels of future earnings and past dividend patterns are the major determinants of dividend payments in their study of 318 New York Stock Exchange firms. This is further supported by Baker and Powell (2000). Based on their survey of NYSE listed firms, they find that determinants of dividends differ from industry to industry. Anticipated levels of future earnings are the main determinant of dividend policy. Moreover, in studying the dividend policy and payout ratio based on evidence collected from the Kuala Lumpur Stock Exchange, Al-Twaijry (2007) finds that there is no significant correlation between earnings and payout ratio, which is in line to past results of most Malaysian companies, where the link between the companies' dividend policies and the companies' income for the year is not clear.

Liquidity

Brittain (1966) suggests that the more suitable measure of a company's capability to pay dividends is cash flow. Cash flow is derived from profit after tax plus depreciation expenses of the financial

year. He argues that dividend payment is considered a charge before depreciation and thus, should be related to earnings. Besides that, due to the changes in regulations and accounting practices related to depreciation allowance, net current earnings would fail to mirror the movement of true earnings, which is the ultimate basis of the ability to pay dividends. This is further supported by Alli *et al.* (1993), who disclose that dividend payments depend more on cash flow which reflect the firm's ability to pay dividends rather than on current earnings. This is because current earnings are more heavily influenced by accounting practices. Thus, current earnings do not really reflect the firm's ability to pay dividends.

Furthermore, Jensen (1986) suggests that conflict of interest between shareholders and managers over payout policy is severe when the firm generates considerable free cash flow, in which situation the free cash flow hypothesis concludes that a firm should pay higher dividends if growth opportunities are fewer and free cash flow is higher in order to prevent managers from investing the cash at below cost of capital or wasting it on organisational inefficiencies. Thus, it is expected that there be a positive relationship between free cash flow and dividend payout.

Chen and Dhiensiri (2009) analyse the determinants of the corporate dividend policy using a sample of firms listed in the New Zealand Stock Exchange using 11 independent variables, each representing the various dividend theories, which are signaling theory, agency theory, residual theory, dividend stability theory and imputation system. Ordinary least squares regression was adopted to test the relationship and the findings strongly support the agency theory, where the higher the management share holding, the lower the dividend payout ratio. Besides that, the more dispersive the ownership structure, the higher the dividend payout ratio. They also find a significant positive relationship between the level of free cash flow and dividend payout ratio in their truncated sample. However, their full sample shows that there is a positive but insignificant relationship between the level of free cash flow and dividend payout ratio.

In addition, Mahapatra and Biswasroy (2002) study the influence of profit after tax and cash flow on the dividend policy of 59 Indian sample companies from four industries for a period of 12 years and find that dividend policy is mostly influenced by cash flow, where as profit after tax was found to be a less significant determinant. Furthermore, Anil and Kapoor (2008) examine the determinants of dividend payout ratios of the Indian Information Technology Sector. The sample selected for this study come from companies under the CNX IT, which have more than 50 % of their turnover contributed from IT-related activities such as software development, hardware manufacture, vending, support and maintenance. Data collectd over seven years (2000–2006) were then tested using a multiple linear regression technique. The results show a positive but insignificant relationship between profitability and dividend payout ratio. However, there is a

positive and significant relationship between cash flow and dividend payout ratio. On the other hand, corporate taxes, sales growth and market-to-book value show an insignificant relationship and thus, it is concluded that these are not the important factors that influence the dividend payout ratio of the Indian IT sector.

In contrast, Simon (1994) studies the determinants of dividend payments by US firms from the year 1984 to 1985 by re-evaluating Lintner's data with new independent variables related to cash flows. Though his results support Lintner's view that changes in per share dividends are related to earnings and the previous year's dividend payout, he finds that there is no relationship between cash flows and dividend policy. More firms that have a large portion of idle cash are likely to return part of the cash to their investors. When the amount of idle cash available to management is reduced, the ability of management to use that idle cash for their own interests rather than the interests of management will therefore be reduced. However, this effect might not be clear with regards to financial institutions as financial institutions have a wide range of short-term investment vehicles in which to place their idle funds. Yiedom and Agyei (2011), who conducted a study on the determinants of dividend policy of banks in Ghana by the use of panel methodology with random effects model, found that liquidity has a negative but insignificant relationship with dividend payout, and they highlight that this is probably due to the wide array short-term investment vehicles available to financial institutions.

Lagged Dividend

Baker *et al.* (1985) and Farelly *et al.* (1986) survey 562 New York Stock Exchange firms and based on their analysis, they conclude that the major determinants of dividend payments are the pattern of past dividends and the expected future earnings. Furthermore, the results also show that managers are concerned with dividend stability and believe that dividend policy affects share value. In addition, Pal and Goyal (2007) study the leading determinants of the dividend policy of the Indian banking industry by applying various statistical models which include the Backward Elimination regression model, the Granger Causality Model and the Lintner Model. They eventually show some concrete results related to dividend decisions in the Indian banking industry, where the industry follows a stable dividend policy as lagged dividend that emerges as the significant factor. In addition, Yiadom and Agyei (2011) find that a change in dividend is one of the statistically significant factors that positively influences the dividend policy of banks in Ghana. In addition, Isa (1992) concludes in his study that firms in Malaysia follow stable dividend policies. In contrast, Darling (1957) argues that lagged dividend has no direct influence on the decision-making on dividends. This is because the weight assigned to it in the regression equation is a reflection of some other variables that co-vary with the lagged dividends and thus, the

function based on lagged dividend is only useful for the short-run prediction. However, he suggests that lagged profit would offer a better explanation of the current dividend level.

Growth Opportunities

Dhemeja (1976) tests the dividend behaviour of Indian companies by classifying them into size group, industry group, growth group and control group and finds that there is no statistically significant relationship between dividend payout of one industry and size of another. Furthermore, growth is negatively related to dividend payout and is found to be significant. In addition, Rozeff (1982) argues that if past or anticipated future growth is rapid, managers tend to conserve funds for reinvestment purposes and thus, a lower payout ratio is established. This is further supported by a study conducted by Chen and Dhiensiri (2009) in their study using evidence from New Zealand. Krishnamoorthy and Sastry (1971) study the dividend behavior of the chemical industry for the period between 1962 and 1967 using Lintner's model with additional explanatory variables such as investment expenditure and external finance. The study shows that investment activity influences the dividend policy of the firms, implying higher savings when the investment climate is positive. This is further supported by Yiadom and Agyei (20011), who find that growth influences a bank's dividend policy negatively and significantly.

Smith (1963) studies the factors influencing corporate savings decisions of firms. These factors have been classified into two broad categories; the first factor is the investment decision and the second factor arises from dividend stability. He finds that income and lagged dividend play a vital role in corporate savings in the short run but demand for investment fund has a smaller role in deciding the behaviour of corporate savings. However, in the long run, demand for investment funds plays an important role in estimating corporate savings. This study shows slightly different views in terms of the short-run and long-run effect of growth towards making a dividend decision.

There are studies that show that the dividend decision is independent of investment policy. For example, Pruitt and Gitman's survey (1991) based on 114 responses finds that managers make dividend decisions independent of investment and financing decisions. They find that the major influences on current dividends are profits and lagged dividend. In addition, Al-Twaijry (2007) also finds that in the case of companies listed in the Kuala Lumpur Stock Exchange , the payout ratio and the company's future growth are negatively correlated, albeit insignificantly. Furthermore, Ahmed and Javid (2009) find that growth and leverage are not the determinants of dividend policies in listed firms of the Karachi Stock Exchange. In addition, Naceur et.al (2006), who conducts a study on the re-examination of dividend policy in a dynamic panel data analysis, finds that growth has negative insignificant

relationship with the dividend payout of financial institutions in Tunisia.

Leverage

Financial institutions are typically leveraged and their debt contracts (deposits) are generally standardised, resulting in little chance for the imposition of indentures and specific covenants. In banks, particularly, deposits are highly demandable and depositors can withdraw their funds from the bank as a way of disciplining bank managers from expropriation and taking excessive risk. In addition, excessive risk taking is sometimes punished with higher required interest rates and slower deposit growth. Hence, it is understandable that banks use dividends for the purpose of signaling quality of their assets to debt holders and depositors. However, this can be very costly due to the regulation of capital adequacy requirements (Forti & Schiozer, 2011).

Dhrymes and Kurz (1964), Mahapatra and Sahu (1993) and Mahapatra and Panda (1995) have identified debt equity ratio (represented by capital structure/financial leverage) as another factor that has strong impact on a firm's dividend behaviour. A firm often demands external finances if there is a constraint on its internal resources, which are generated by net profits after tax and dividends. Thus, the higher the dividend, the higher the demand for borrowing. On the other hand, lower dividends will bring about a lower debt equity ratio due to less demand for borrowing. This is also supported by Aivazian and Booth (2003), where they find that US firms and emerging market firms which have higher debt ratios will have lower dividend payments.

Al-Kuwairi (2009) confirms that the dividend policy is inversely related to the leverage ratio. Nonetheless, in their study of the determinants of the dividend policy for banks in Ghana, Yiadom and Agyei (2011) find that the use of debt has been associated with lower agency cost and enhanced firm profitability, both of which have the tendency of improving dividend payments. However, a study conducted by Abor and Bokpin (2010) on investment opportunities, corporate finance and dividend payout policy contradicts this opinion. They investigate the effects of investment opportunities and corporate finance on dividend policy with a sample of 34 emerging market countries covering a 17-year period using the fixed effects panel model. Although the results exhibit a positive relationship between financial leverage and dividend payouts, this relationship, however, is not significant. Ajmi and Hussain (2011), in examining corporate dividend decisions of Saudi Arabian firms, find that current profit, lagged dividends and life cycles are positive statistically and significant . However, leverage is found to be not an important determinant of dividend payments and this is explained by the fact that Saudi firms are generally low-geared. Furthermore, Juhmani (2009) studies the determinants of dividend payout policy of 35 Bahraini firms. His results show that profitability has the

greatest effect on the current-year cash dividends change, followed by previous-year dividends and lastly, by size of Bahraini companies. On the other hand, financial leverage does not influence the change in cash dividends. This is further supported by a study on the determinants of dividend policy in Pakistan conducted by Ahmed and Javid (2009).

DATA AND METHODOLOGY

This study examines the determinants of dividend policy of financial institutions in Malaysia. Samples of firms that are listed in the Bursa Malaysia for the period of 2001 to 2010 are considered. However, based on the availability of data in the DataStream and annual reports of each financial institution, out of 36 financial institutions listed in Bursa Malaysia, 33 were selected for this study. This includes financial institutions offering banking and financial services, investment banking and brokerage as well as insurance and reinsurance. The rationale for this is that all these financial institutions have common factors of being highly leveraged and highly regulated and act as financial intermediaries in the financial markets. This study includes both financial firms that pay dividends and those that do not so as to avoid selection bias (Kim & Mandala, 1992; Deshmukh, 2003).

The dependent variable in this study is Dividend Payout, which is measured by the dividend payout ratio while the independent variables are profitability, liquidity, lagged dividend, growth and leverage. Table 1 below provides a summary of the variables used.

The correlation coefficient measures the degree to which two variables are associated with each other. It can take any value between -1 and +1. A value of -1 means that the variables move in the opposite direction while a value of +1 means the variables move in the same direction. This test is conducted to determine the presence of multi-collinearity among the regressors.

The model in this study is tested for a stationary series using the panel unit root test in order to ensure that an inconsistent and spurious relationship is not analysed. A series will not be stationary if it shows a stochastic trend, or even simply wanders around randomly, and thus it cannot be forecast in the future. Regardless of the starting point, a stationary series will constantly return to a given value and is also expected to attain that value in the long run (Hall, 1994). Two Panel Unit Root Tests were considered in this study, which are Levin *et al.* (2002) (LLC hereafter) and Im, Pesaran and Shin (2003) (IPS hereafter).

LLC allows for heterogeneity of individual deterministic effects and heterogeneous serial correlation structure of the error terms, which assumes homogeneous first order autoregressive parameters. The pooled t-statistic of the estimator is developed in order to evaluate the null hypothesis that each individual time series contains a unit root against the alternative hypothesis that each time series is stationary. The procedure imposes a higher power than the separate unit root test for each individual due to the imposition of a cross-equation restriction on the first-order

TABLE 1
Summary of Variables

Variables		Proxies
Dependent	Dividend Policy	*Dividend Payout Ratio (DPR)* The ratio of dividends paid out of the total earnings. It is calculated as: (Dividend/Earnings) or (DPS/EPS) This variable is used in the study of determinants of dividend policy of banks in Ghana that was conducted by Yiadom and Agyei (2011) and is proved to be a significant determinant of dividend policy.
Independent	Profitability	*Return on Assets (ROA)* Since the financial institutions chosen for this study differ in size, a comparison based on absolute amount (i.e. net income) will not yield reliable results. Return on Assets is used as a proxy for profitability. It is calculated as: Net Income/Total assets
	Liquidity	*Cash Flow (LIQ)* As found by Brittain (1966) in his study, the more appropriate measure of a company's ability to pay dividends is cash flow. The formula is as follows: Cash and cash equivalent/Net total assets
	Lagged Dividend	*Do (LAGDIV)* This refers to the cash dividend paid a year before the year under study. A company that follows a stable dividend policy, past dividend trend influences the current dividend payment. Most of the previous studies have taken this variable into account as a vital factor that determines dividend policy.
	Leverage	*Total Debt to Total Asset (LEV)* This variable was used by Ajmi and Hussain (2011) in their study of corporate dividend decisions: Evidence from Saudi Arabia. It is calculated as: Total Debt/Total Asset
	Growth Opportunities	*Asset Growth Rate (GROWTH)* Asset growth rate measures the average of expansion or contraction of a company. Generally, when growth is high, the distribution of dividends will be low because the company will retain most of its earnings to finance its investments. It is calculated as: (Total Asset ^{1}- Total Asset ^{0}) / Total Asset ^{0} This proxy is used by Forti & Schiozer (2011) in their study of informed depositors and bank dividends, a case of Brazilian banks, and Naceur *et al.* (2006) in the re-examination of the dividend policy of Tunisian firms.

partial autocorrelation coefficients under the null. The LLC tests are conducted using the following model:

$$\Delta y_{it} = \alpha y_{it-1} + \sum_{j=1}^{P_i} \beta y_{it-j} + X'_{it}\ \delta + \varepsilon_{it} \quad (1)$$

where, H_0: $\alpha = 0$ (there is unit root) and H_1: $\alpha < 0$ (no unit root).

Levin *et al*. (2002) noted that their panel based unit root tests are more relevant for panels of moderate size (i.e., $10 < N < 250$ and $25 < T < 250$). However, the major limitation of LLC is that the autoregressive parameters are considered identical across the panel. This limitation has therefore been overcome by IPS, which proposes a panel unit root test without the assumption of identical first order correlation under the alternative. They suggested a more flexible and computationally simple unit root testing procedure for panels which allows for a simultaneous stationary and non-stationary series. IPS tests use the same model as the LLC except that its H_0: $\alpha_i = 0$ for all *i* (existence of unit root) and H_1: $\alpha_i = 0$ for $i = 1, 2, \ldots, N_1$ or $\alpha_i < 0$ for $i = N+1, N+2, \ldots, N$ (no unit root).

The cross-sectional character of the data allows the use of panel data methodology. Panel data involves the pooling of observations on a cross-section of units over several time periods and provides results that are simply not detectable in pure cross-sections or pure time-series studies. Instead of only looking at the temporal behaviour of each company, the determination of temporal evolution of groups of companies is possible with the panel data technique. This technique takes into consideration the individual heterogeneity, which allows a larger number of data points, hence improving the efficiency of the estimates. Thus, the panel regression equation differs from a regular time series or cross-section regression by the double subscript attached to each variable. The general form of the panel data model can be specified as:

$$Y_{it} = \alpha_i + \beta X_{i,t} + \varepsilon_{it} \quad (2)$$

Where the subscript *i* denotes the cross-sectional dimension and *t* represents the time-series dimension. In this equation, Y_{it} represents the dependent variable in the model, which is Dividend Payout Ratio (DPR). X_{it}, on the other hand contains the set of explanatory variables in the estimation model. α is the constant and β represents the coefficients.

In addition, the following model was used for this study to explain the relationships between dividend payout ratios and the determinants:

$$DPR_{it} = \beta_0 + \beta_1 PROF_{i,t} + \beta_2 LIQ_{i,t} + \beta_3 LAGDIV_{i,t} + \beta_4 GROWTH_{i,t} + \beta_5 LEV_{i,t} + \varepsilon_{i,t} \quad (3)$$

where:

DPR_{it} = Dividend per share / earnings per share for firm *i* in period of *t*,

$PROF_{it}$ = Net income / total assets for firm *i* in period *t*,

$LAGDIV_{it}$ = Previous year divident for firm *i* in period *t*,

$GROWTH_{it}$ = Asset growth rate for firm i in period t,
LEV_{it} = Total debt / total asset for firm i in period t,
ε_{it} = Error term for firm i in period t

Panel data may have group effects, time effects or both, and these effects could either be fixed effects or random effects. A fixed effect model assumes differences in intercepts across groups or time periods, whereas a random effect model explores differences in error variances. In order to come to a decision on whether the fixed effects model or the random effects model should be adopted, the Hausman (1978) specification test is employed. The Hausman specification test compares the fixed versus random effects under the null hypothesis that the individual effects are uncorrelated with the other regressors in the model. If correlated (H_0 is rejected at 5 % significant level, where P-value<0.05), a random effect model produces biased estimators, which violates one of the Gauss-Markov assumptions, thus a fixed effect model is preferred.

RESULTS AND DISCUSSION

This research analyses the effect of profitability, liquidity, leverage, lagged dividend and growth towards the dividend policy of Malaysian financial institutions.

Correlation Analysis

In determining whether the coefficient estimates may vary erratically with respect to minimal changes in the model or the data, the correlation coefficients of the variables are shown in Table 2. Dividend payout ratio shows positive correlation with return on assets, liquidity and lagged dividend, but negative correlation with growth and leverage. On the other hand, return on assets exhibits positive correlation with liquidity, lagged dividend and growth, but negative correlation with leverage. Next, liquidity has positive correlation with lagged dividend but negative correlation with growth and leverage. Lastly, growth depicts negative correlation with leverage. The results above also depict that the presence of multi-collinearity among the regressors is minimal, indicating that multi-collinearity is not a problem in the regression model.

TABLE 2
Correlation Matrix of the Variables

	Dividend Payout Ratio	Return on Assets	Liquidity	Lagged Dividend	Growth	Leverage
Dividend Payout Ratio	1					
Return on Assets	0.1483	1				
Liquidity	0.1609	0.0776	1			
Lagged Dividend	0.4632	0.2197	0.0636	1		
Growth	-0.0149	0.2386	-0.0799	0.0324	1	
Leverage	-0.2739	-0.1285	-0.1135	-0.2518	-0.0067	1

Panel Unit Root Test

Prior to testing for panel regression, the data are tested for stationarity. This is conducted in order to be sure that the researcher is not analysing an inconsistent and spurious relationship. Two panel unit root tests are employed in this study, which are the Levin, Lin & Chu (LLC) and also the Im, Pesaran & Shin (IPS). The results of the panel unit root tests for the chosen variables, both in level and first difference, are reported in Table 3. In addition, the null hypothesis H_0: assumes a common unit root process. As shown in Table 3, both LLC and IPS tests show that dividend payout ratio, return on assets, liquidity, growth and leverage for Malaysian financial institutions are stationary at level I(0). However, lagged dividend is stationary in its first difference I(1).

Panel Regression

Table 4 shows the results of panel regression. In order to determine whether the fixed effects model or random effect model works for the panel regression, the Hausman (1978) specification test is employed. This test is under the null hypothesis that the correlation between the stochastic error term and explanatory variables is null and thus, the random effects model is more

TABLE 3
Panel Unit Root Test Results

Variables	LLC Test		IPS Test	
	Level	First Difference	Level	First Difference
Dividend Payout Ratio	-11.8308** (0.0000)		-5.6807** (0.0000)	
Return on Assets	-11.8937** (0.0000)		-6.06997** (0.0000)	
Liquidity	-6.1368** (0.0000)		-3.6103** (0.0002)	
Lagged Dividend	-3.3844** (0.0004)	-15.487** (0.0000)	-0.5915 (0.2771)	-7.2953** (0.0000)
Growth	-24.8655** (0.0000)		-14.8698** (0.0000)	
Leverage	-24.4003** (0.0000)		-8.4702** (0.0000)	

Notes:
** denotes significant at 1% confidence level.
Numbers in parenthesis are p-value.
The null hypothesis of LLC test and IPS test is that all of the series in the panel must contain unit roots. The alternative hypothesis of LLC test is that all of the series in the panel are stationary, whereas the alternative hypothesis of IPS test is that at least one of the series in the panel is stationary.

suitable compared to the fixed effects model. The results of the regression are shown in Table 4, together with the results of the Hausman specification test. The Hausman specification test rejects the null hypothesis at 1 % significant level, thus denoting that the fixed effect model is better than the random fixed effect model. Hence, this study captures the determinants of dividend policy via the fixed effect model.

TABLE 4
Panel Data Methodology: Fixed-effect Model

33 Cross-sections x 9 years (after adjustments)

Dependent Variable: DPR	
Independent Variables	Coefficient
Constant	0.3079** (0.0000)
ROA	1.3875** (0.0034)
LIQ	0.2237 (0.1113)
LAGDIV	0.8556** (0.0083)
GROWTH	-0.0318 (0.6034)
LEV	-0.4713** (0.0000)
R^2	0.1602
Number of Observations	306
Hausman Test	Prob = 0.0001

Notes:
** denotes significant at 1% confidence level

The regression results indicate that profitability, as measured by return on assets, has a statistically significant positive relationship with the dividend payout. This signals the fact that the financial institution's profitability is viewed as a vital factor in influencing the dividend payments. The positive relationship indicates that as the financial institution becomes more profitable, it is more likely to declare high dividends. Over time, profitable Malaysian financial institutions are capable of accumulating sufficient earnings, enabling them to distribute higher dividend payments to their shareholders. This finding is consistent with prior empirical studies (Lintner, 1956; Fama & Babiak, 1968; Pruitt & Gitman, 1991; Fama & French, 2001; Abor & Bokpin, 2010; Yiadom & Agyei, 2011).

However, the results show that liquidity, as measured by ratio of cash and cash equivalents to total assets, has a positive effect on dividend payouts but the result is insignificant. This implies that Malaysian financial institutions that have ample liquidity are more likely to distribute higher dividends to shareholders, compared with those that have less liquidity. This conforms to the free cash flow hypothesis. However, the insignificant relationship between these two variables might be due to the fact that compared with companies in other industries, financial institutions have ample short-term investment opportunities. Thus, although they may have high liquidity, they will also take into consideration their short-term investment opportunities. This

is consistent with past studies conducted by Chen and Dhiensiri (2009) and Yiedom and Agyei (2011).

Lagged dividends have a significant positive relationship with the dividend payout of Malaysian financial institutions. This shows that financial institutions in Malaysia follow a stable dividend policy, where regularity of dividend payments is maintained, resulting to only a gradual adjustment of dividend payments towards a target payout ratio. This result supports the signaling theory, where most firms are reluctant to decrease dividend payments as it is normally viewed as terrible news indicating that the management might encounter reduction in its cash level. This result is also consistent with the findings of past studies (Baker *et al.*, 2004*;* Farelly *et al.*, 1986*;* Pal & Goyal, 2007*;* Yiedom & Agyei, 2011*)*.

Growth, which is measured by the changes in assets, shows a negative influence on dividend policy. This indicates that when past or anticipated future growth is rapid, managers tend to conserve funds for reinvestment purposes, hence establishing a lower payout ratio. Managers' reluctance to be short of funds and to rely on costly financing to protect against under-investment is one of the possible reasons for this. Moreover, the retained earnings will increase their capacity in relation to profitable investment opportunities. However, the relationship is insignificant. This may be due to the financial institutions making dividend decisions independently of investment policy. This result is consistent with earlier empirical evidence (Pruitt & Gitman, 1991; Al-Twaijry, 2007; Ahmed & Javid, 2009).

Lastly, there is a significant positive relationship between leverage and dividend payouts of Malaysian financial institutions. This indicates that a riskier financial institution pays out lower dividends in order to lessen its reliance on external financing. This is similar to the findings recorded in finance-related literature (Dhrymes & Kurz, 1964; Mahapatra & Sahu, 1993; Mahapatra & Pandi, 1995; Aivazian & Booth, 2003; Yiedom & Agyei, 2011). Nevertheless, the R^2 of 0.1602 shows that 16.02 % of the variation in the dividend policy can be explained by the independent variables, namely, profitability, liquidity, lagged dividend, growth opportunities and leverage, whereas the balance of the variation is explained by other internal or external forces or other variables.

CONCLUSION AND RECOMMENDATIONS

This study is conducted to identify the determinants of the dividend policy of Malaysian financial institutions. The panel dataset is constructed from 33 financial institutions in Malaysia over a period of 10 years (2001-2010). Due to the advantages of panel data analysis this study employs panel data analysis. In order to test the relationship between dividend policy and the chosen set of explanatory variables, the fixed effect model is used based on the result of the Hausman specification test.

The results show a statistically significant positive relationship between dividend policy and profitability, which implies that Malaysian financial institutions distribute higher dividends when they record higher profitability, despite the regulations that they need to follow before declaration of dividends, outlined in the Banking and Financial Institutions Act 1989 and Insurance Act 1996. Similarly, liquidity shows a positive association with dividend policy, which means that the financial institutions with ample liquidity will likely distribute higher dividends. However, this association is not significant as shown by the analysis. Lagged dividends also show a positive significant relationship with dividend policy, which implies that financial institutions in Malaysia follow a stable dividend policy that maintains regularity of dividend payments with gradual adjustments of dividend payments towards target payout. However, the results find that growth opportunity has a negative association with dividend policy. This attests that financial institutions in Malaysia with higher growth opportunities will likely retain their earnings in order to finance their growth. This association, however, is not significant in the case of Malaysian financial institutions. Finally, leverage shows a significant negative relationship with dividend policy, which means that a riskier financial institution pays out lower dividends.

In conclusion, profitability, lagged dividend and leverage are found to be the major determinants of dividend policy in relation to Malaysian financial institutions. The results support the agency cost theory, signaling theory and the free cash flow hypothesis. This study only focuses on five independent variables that aim to explain the determinants of dividend policy in the Malaysian financial industry. As a result, the variables chosen can only explain 16.02 % of the variation in the dividend policy. However, based on the literature, there are other factors that can influence dividend policy such as size of firms and ownership structure, among others. Thus, it is recommended that more variables should be added in future studies in order to better analyse the determinants of dividend policy for more robust results.

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ERP Adoption Factors: The Effect of Institutional- and Economic-Based Theory

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ABSTRACT

The introduction of the Enterprise Resource Planning (ERP) system in the early 1990s was perceived as a new way of managing a business that could lead to better management of an organisation and improve its efficiency. However, studies have repeatedly reported a low success rate in ERP system adoption. This encouraged various research studies that sought to uncover factors that could have contributed to the system failure. A poor decision-making process has been stated as one of the main reasons for ERP system failure. Clear objectives and good justification could, we believe, increase the ERP system adoption success rate. Hence, in this study, we extend the existing research on ERP by exploring the effect of institutional pressures and economic benefits on the decision-making process of the management. Specifically, we investigate the influence of external pressures and internal needs in ERP adoption decisions. Empirical analyses in this study are based on survey data obtained from 136 Malaysian companies. Overall, our findings indicate that only operational benefits and mimetic pressure have significant influence on ERP system adoption decisions. Other economic benefits such as managerial benefits and strategic benefits have no significant impact on the management's decision to adopt the system. Similarly, institutional pressures, coercive pressures and normative pressures yield non-significant results. These results are important because the evidence highlights that the management's decision to adopt the ERP system is based on the felt need for the organisation to improve its operational efficiency, and the influence of mimetic pressures further accentuates the importance for the organization of being competitive in its technological capabilities.

Keywords: IT adoption factors, economic-based theory, Enterprise Resource Planning, Information and Communications Technologies , institutional theory

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INTRODUCTION

The advancement of Information and Communications Technologies (ICT) has significantly intensified market competition the world over. Organisations are increasingly seen to rely on technology to enhance their business operations efficiency, either to achieve cost reduction or to improve operating performance. One of the most sophisticated information systems currently known to be able to satisfy the need for efficiency is the Enterprise Resource Planning system (ERP). However, many of the benefits attained from ERP adoption are intangible and difficult to measure (Spathis & Constantinides, 2003). Nevertheless, the strength of the ERP system lies in the system's ability to provide accurate and real time data to facilitate decision-making is one that is too significant to be immediately disregarded (Spathis & Constantinides, 2003). Prior studies on ERP have repeatedly demonstrated that information system technology implementation requires appropriate skills, full support from management and adequate organizational capabilities (Francoise, Bourgault, & Pellerin, 2009; Basoglu, Daim, & Kerimoglu, 2007; Law & Ngai, 2007). A large number of organisations are known to discontinue or stop the progress of a project although a large amount of money may have been spent due to obstacles being encountered during the phases of development (Davenport, 1998). Despite the many challenges identified relating to ERP system implementation, the adoption rate continues to increase (Basoglu *et al.*, 2007). Therefore, this study aims to investigate and analyse the factors that may influence an organisation's decision to adopt the ERP system, particularly in Malaysia.

In 2002, Computimes (Computimes, 2002) reported that there was only a small number of SMEs in Malaysia which had adopted the ERP system. High cost, resistance to change and lack of awareness of the benefits of the system were identified as the key factors for the low adoption of ERP system. Kushairi (2000) highlighted the importance of top management initiatives in paving the way for ERP adoption. It has pointed out that rganisations that ignore the advantages of embracing information technology applications may find themselves in a difficult position in confronting global challenges (Kushairi, 2000). Hun (2005) reported that industry experts predicted that the global market value of the ERP system would increase to US$12 billion in 2008 from US$9.1 billion in 2003. According to SSA Global Technologies, one of the largest producers of ERP system software in South Asia, Malaysia with its strong economic base emerged as the organisation's (SSA Global Technologies) second largest clientele, accounting for 21 % of SSA Global customers, slightly behind India (Hun, 2005). Hun (2005) also highlighted that there is increasing demand for ERP solutions in Malaysia. In addition, The Star newspaper (2010) reported that International Data Corporation (IDC) Malaysia had expected an increase in investments for information technology from the manufacturing sector and investment was expected to grow at a

rate of 5.6 % yearly. This positive outlook for the ERP system arose out of the urgent need for cost saving technologies such as ERP and 3D modelling technologies to cut down on the excessive costs experienced during the global financial crisis (The Star, 2010).

A recent study conducted by Supramaniam and Kuppusamy (2010) shows strong demand for the ERP system in Malaysia. Various industries are seen to have ventured into adopting the system, led by the manufacturing industry. Nevertheless, only 50 % of the participating organisations reported full adoption last year or over a one-year period. This finding indicates that ERP system adoption is still fairly new in Malaysia. As in other developing countries, in Malaysia, the issue of ERP adoption decision has been largely unexplored (Spathis & Constantinides, 2003).

In general, it is widely acknowledged that many studies have been focusing on finding the best approach to ensure ERP system success, for example, Zhang, Lee, Huang, Zhang and Huang , 2005; Katharina, Sabine and Fiona, 2009. However, there has been very limited study into the factors that could influence management in their decision to adopt the ERP system. Hence, this study aims to extend the existing research by exploring the effect of institutional pressures and economic benefits on management's decision to adopt ERP. Specifically, we investigate the influence of external pressures and internal needs in ERP adoption decisions. The remainder of the paper is structured as follows: the next section discusses prior studies on ERP adoption from economics and institutional perspectives, followed by a discussion of the methodology used in this study. The results are subsequently presented while the last section concludes and highlights the implication of this research.

LITERATURE REVIEW

This section will briefly highlight the importance of adopting the ERP system for the right reasons in order to realise its full benefits and then go on to review the literature related to the economic-based benefit theory and institutional theory concepts and their relationship with ERP system adoption.

Enterprise Resource Planning (ERP) System

The introduction of the ERP system as a tool to create competitive advantage and the potential benefits derived from the system adoption have induced many organisations to adopt the system. ERP is a system that connects all of an organisation's business operations through the information sharing concept (Gulledge, 2006). The system has been used worldwide to improve business process and business efficiency (Calisir, Gumussoy, & Bayram, 2009; Hendricks, Singhal, & Stratman, 2007, Price Waterhouse Cooper, 2009). However, implementing the ERP system is not merely installing a new programme. It requires careful planning, substantial effort from management and a large investment of time and money. ERP changes business operation and requires

a total overhaul on the organisation's processes and procedures. It needs to be embedded in the organisation's culture, thus changing how things are normally conducted. Therefore, it is important for the organisation to adopt the ERP system for the right reasons. The benefits expected to be obtained from the system adoption should match the organisation's needs. This is to ensure that significant returns are realised from the ERP system investments.

Many prior studies, for example, Koh, Simpson, and Padmore, 2006; Zhang *et al.*, 2005; Spathis and Constantinides, 2003, assumed that organisations make decisions entirely based on efficiency. However, this assumption is not well substantiated; it ignores other external forces that could hinder organisations from making rational decisions. Understanding motives for adopting ERP system is very important. Organisations that have a good justification and clear objectives for adopting the ERP system have better potential to realise the system's benefits (Sammon, Adam, & Carton, 2003). Clear objectives enhance the organisation's ability to systematically dictate the progress and success of the system. Therefore, it is essential for organisations to have pre-defined objectives prior to the adoption of the ERP system. This initiates the main agenda of this study, which is to examine the influence of both economic realities and external pressures on management's decision to adopt ERP.

Economic-based benefit theory perspective

There are three reasons that initiate the adoption of new technology, which are the organisation's need to expand its existing system functions using new updated tools, to reduce its operational costs and to replace its current legacy software with a new system that provides better performance and speed (Newcomb & Doblar, 2001). The ERP system's ability to integrate many processes within an organisation has long been awaited by managers who feel the need for such a system to help them organise and streamline all data and processes for efficiency (Nah, Lau, & Kuang, 2001; Davenport, 1998). Having an efficient, more accurate and updated data system has been among the most significant motivations that has led to ERP system adoption (Koh *et al.*, 2006; Spathis & Constantinides, 2003). Other contributing factors such as cost reduction, increase in sales revenue, solving year 2000 problems, attaining competitive advantage and survivability have also been identified as key determinants in ERP adoption (Emerson, Karim, & Rutledge, 2009; Law & Ngai, 2007; Zhang et.al 2005; Russell & Hoag, 2004; Spathis & Constantinides, 2003).

Study into this area has also pointed out that an organisation's internal and external strategies are significant driving factors for ERP system adoption (Jang, Lin, & Pan, 2009). Internal strategies include reduction of operations costs, enhancement of employees' motivation, improvement of product cycle time and improvement of data management. External

strategies, on the other hand, enhance the organisation's competitive ability as they push the organisation to continuously seek out opportunities and to consistently upgrade its technological capabilities. Laukkanen, Sarpola, and Hallikainen (2007) found that there were no external influences affecting these organisations' decisions. The majority of the organisations confirmed that in-house analysis was adopted in their decision-making process.

A study on the adoption factors in a less developed country indicates that technical, operations, strategic and decision-making motives are important in the decision to adopt ERP (Kamhawi, 2008). The decision-making and operational motives are found to be the most important reasons for ERP system adoption. These findings suggest that the ERP system is no longer mainly perceived to ease business operational and technical functions but also that it is a competitive tool in facing global challenges. This, of course, has enhanced its value greatly.

The transaction cost theory was used to represent the hypotheses of economic benefits. The theory explains that organisations take into account various costs involved prior to their engagement of any transactions (Robin, 1987). Costs and benefits analyses are conducted to ensure rational economic justifications for every transaction undertaken. It is important for an organisation to ensure that benefits obtained from a transaction are higher than the cost of the products or services. Therefore, in the context of ERP system adoption, the transaction cost theory suggests that the organisation will undertake proper costs and benefits analyses to ensure that the new system adopted will be able to enhance the performance and value of the organisation.

Collecting quantitative data on the exact costs and benefits expected from ERP adoption by an organisation would not only be very difficult but almost impossible because of data confidentiality. Therefore, in this study, measures of perceived economic net benefits were used to represent the overall costs and benefits analysis conducted by each organisation. Profit-oriented organisations are expected to conduct a systematic analysis on the costs (disadvantages) and the benefits (advantages) associated with an investment. Thus, perceived benefits represent the end-result of that rational economic decision based on careful costs and benefits analysis.

Institutional theory perspective

The institutional theory recognises that an organisation operates in an institutionalised environment in which prevailing rules and procedures rather than the rational efficiency factor determine the legitimacy of a business (Meyer & Rowan, 1977). Legitimacy is public acceptance and a vote of confidence that a business is conducted in the best manner. An organisation that adheres to customary rules and procedures demonstrates its effort to do business in an adequate and socially acceptable manner (Fogarty, 1996). The display of such responsible conduct will enhance public support, which will eventually lead to the

survival and growth of the organisation. Thus, the theory provides an explanation for why organisations become homogeneous and the role played by myth and established values in driving many organisations to implement similar procedures and practices (DiMaggio & Powell, 1983; Meyer & Rowan, 1977).

A similar trend can be seen in information system adoption. Over time, many organisations are driven to adopt customary and established criteria. This is because the perceived benefits that can be obtained by conforming to the procedures and practices motivate many organisations to adopt them voluntarily. Additionally, it is suggested that organisations that institutionalise their products, services, policies and programmes may gain added advantages such as increased survival prospect, enhanced public acceptance and confidence in the legitimacy of their business operations (Rowan & Meyer, 1977), reduction in uncertainty (Liao, 1996) improved capability in acquiring resources and improving relationships with business partners (DiMaggio & Powell, 1983).

Furthermore, conformity to rules and procedures protects the organisation from unnecessary legal actions or claims of negligence in conducting its business operations (Meyer & Rowan, 1977). Nevertheless, failure to adapt to these socially established norms and values could expose the organisation to many issues that would potentially lead to loss of business and support (Fogarty, 1996). Therefore, organisations are motivated to obtain legitimacy through the three pillars of isomorphism, which are coercive isomorphism, mimetic isomorphism and normative isomorphism.

Coercive isomorphism

Coercive isomorphism commonly results from resource dependence factors (Teo, Wei, & Benbasat, 2003). Studies suggest that management is more willing to accept rules or procedures enforced upon them if they are highly dependent on the resource providers. These forces are mainly exerted by government, business partners and suppliers (Benders, Batenburg & van der Blonk, 2006). The acceptance of the procedures is based merely on the pressures imposed on them and not because of the economic benefits that could improve the organisation's performance. Non-adherence or disregard for procedures could lead to loss of business and survival ability.

Mimetic isomorphism

Mimetic isomorphism is based on the organisation's ignorance and lack of information available on what is the best method or practice to solve an issue. When faced with uncertainties, many organisations resort to imitate and replicate the practices or structures of any organisation that they view as being the most successful in their field (DiMaggio & Powell, 1983). Management may view imitating other successful organisationa as the best alternative available as it minimises search cost of identifying and experimenting with the best course of action and reduces the risk

of being the first adopters of a procedure or system. Additionally, overwhelming adoption of upcoming technology could also drive management into adopting such technology to avoid being left behind (Benders *et al.*, 2006).

Normative isomorphism

Finally, normative isomorphism exists as a result of duty or obligation as evidenced by members' obligation to comply with a professional body's requirements (Batenburg, Benders & Blonk, 2008). Organisations experience normative isomorphism when decision-making is influenced by prior education and training or from the professional bodies that they are associated with.

A study on the mechanism that influences ERP adoption has led the researchers to adopting a technical isomorphism perspective (Batenburg *et al.*, 2008). The study reveals how technical isomorphism together with coercive isomorphism leads to the standardisation of working procedures and systems adoption. This suggests that managers should be aware of the implications of isomorphism during the early stage of decision-making.

It is argued that due to a high level of uncertainty associated with the ERP system and the fact that many of its benefits are intangible, increase the possibility of institutional influences on management's decision (Ugrin, 2009). Management may choose to pursue institutionalised reasoning to legitimise their justifications to adopt the ERP system.

An investigation on the impact of generalised competition and firm strategy choices on ICT adoption has indicated that investment in ICT does have a positive impact on firm value (Loukis, Sapounas, & Aivalis, 2008). The study also finds that only the bargaining power of suppliers, suggesting the existence of coercive isomorphism, and frequent introduction of new products and services are significant variables in ICT development.

An analysis on supply change management (SCM) suggests that implementation of the ERP system resulting from coercive pressure offers more benefits to the implementing organisations, also known as the follower, as the adopted organisation, known as the initiator, tends to provide support and technical assistance to ensure successful implementation of the system (Lai, Wong, & Cheng, 2006). The followers are normally guaranteed business opportunities by the initiator. Alternatively, system adoptions arising from mimetic and normative pressures are more complicated and challenging. This is because organisations influenced by normative pressure need to adopt the standards set by the initiator and are less likely to receive additional support and business from the initiator. Similarly, organisations influenced by mimetic pressure have to struggle alone in implementing the system in the hope that by adopting the system, they may enhance business growth and encourage business opportunities with other adopting organisations.

A comparative analysis to examine if there were any significant differences between adoption factors infuencing SMEs and large organisations was conducted (Buonanno, Faverio, Pigni, Ravarini, Sciuto, & Tagliavini, 2005), and the findings suggest that business complexity does not affect an organisation's decision to adopt the ERP system except for the size factor; large organisations are more inclined to adopt the system compared to SMEs. The decision of larger organisations is largely influenced by the need to improve business efficiency, and decisions are mainly made based on implications arising from both internal and external factors. The need to integrate all business functions and resolve management issues and high data redundancy have been the main objectives why the ERP system has been adopted. In addition, it is noted that 38.2 % of larger organisations claim that they are forced by controlling companies to adopt the system (highlighting the influence of coercive pressure).

Studies also acknowledge the notion that technology selection does not always involve a rigorous analytical and evaluation process (Tingling & Parent, 2004). It may be entwined with ceremonial rules and the organisation's culture and experience. In selecting an appropriate system, extensive analysis must be conducted but, at the same time, what is considered acceptable and appropriate in the industry may also influence management's decision.

In summary, the institutional theory provides an alternative explanation for the decision to adopt ERP i.e. the possibility that organisations would adopt a system not entirely based on economic rationality. However, this does not necessarily mean that the organisation could not achieve enhanced efficiency previously (DiMaggio & Powell, 1983) as "rational behaviour, efficiency and effectiveness" (Tingling & Parent, 2004, pp 333) are still the fundamental concern in terms of the institutional theory. The difference lies in the way a subject is viewed as institutional theory concentrates on achieving legitimacy. The theory focuses on building relationship, trust and acceptance with customers, suppliers and other significant resource providers.

Based on the theories and empirical literature reviewed, this study proposes to investigate how both economic- and institutional-based factors may affect management's decision to adopt the ERP system. As the perceived benefits from ERP adoption would aid attainment of organisational economic goals, economic considerations or economic-based factors are expected to influence ERP adoption. The following hypotheses are developed:

H_{1a}: Expected operational benefits of ERP adoption significantly influence the decision to adopt the ERP system.

H_{1b}: Expected managerial benefits of ERP adoption significantly influence the decision to adopt the ERP system.

H_{1c}: Expected strategic benefits of ERP adoption significantly influence the decision to adopt the ERP system.

The pressure from customers, dominant organisations and suppliers could have a strong influence on an organisation's decision to adopt the ERP system (Teo *et al.*, 2003; Krell *et al.*, 2009; Lai *et al.*, 2006), leading to the following hypothesis:

H_{2a}: The greater the coercive pressure experienced by the organisation, the greater the likelihood of the decision to adopt the ERP system by the organisation.

The complexity of the tasks and additional efforts required in making the decision could induce management to resort to a more simplified method in arriving at a decision (Vessey, 1994). One of the most common methods is to mimic the actions of other successful organisations (Ugrin, 2009). Mimicking behaviour boosts the confidence of management that they are making the right decision as their decision is alligned with successful outomes experienced by other organisations in the same industry. This suggests that when management are faced with a high level of uncertainty and the cost and time required to search for the right decision are excessive, there is a high possibility that management will rely on the successful actions of other organisations to legitimise their decision.

The most successful organisations in the field will be held as a benchmark (Gosain, 2004). Benchmarking other successful organisations can be classified as a mimetic process (Ketokivi & Schroeder, 2004). This is supported by Dos Santos and Peffers (1998) who examined the impact of competitor and vendor behaviour on system selection decision-making. Dos Santos and Peffers (1998) find that competitors' success in implementing an innovation encourages organisations to mimic the actions of those competitors that led to their success.

In addition, the risk of making the wrong decision could also lead management to imitate the practices of other organisations that have proven to be successful (Lindley & Topping, 2008). Organisations also adopt mimetic behaviour to gain recognition and acceptance (DiMaggio & Powell, 1983). This commonly occurs when many other organisations value certain information system as essential and feel more comfortable working with organisations that use a similar system (Lai *et al.,* 2006). This will further encourage management to implement similar technology to facilitate the initiation of new business contacts and to enhance business profitability. Thus, the second sub-hypothesis is:

H_{2b}: The greater the mimetic pressure experienced by the organisation, the greater the likelihood of an ERP system adoption decision by the organisation.

In the ERP context, normative isomorphism commonly arises out of the management's association and membership with professional bodies, trade associations and business alliances (Krell *et al.*, 2009). Management are commonly influenced to adopt certain ideology and best practices through communication with people within the same professional networks or during

discussions at trade conventions (Ketokivi & Schroeder, 2004). Professional association has long been offered as a means for managers to exchange views and vision that can help them in shaping the direction of their organisation (Gosain, 2004). The information and new knowledge learnt from these encounters may influence management judgement. Naturally, it is common for people with the same background and education to be more agreeable towards and receptive of one another's ideas and suggestions (Liao, 1996), thus, resulting in normative behavior. Therefore, the following hypothesis is formulated:

H_{2c}: The greater the normative pressure experienced by the organisation, the greater the likelihood for an ERP system adoption decision by the organisation.

The research framework is summarised in Fig.1.

METHODOLOGY

A survey in the form of a questionnaire was used in this study. It is the most appropriate method to measure people attitudes, behaviour, knowledge and opinion (Cooper & Schindler, 2008; Totten, Panacek, & Price, 1999). The questionnaire consisted of a set of questions developed to measure the respondent's perception of factors influencing an organisation's decision to adopt the ERP system and the system's impact on organisational performance. The question items were adapted from previous studies such as Kamhawi (2008), Law and Ngai (2007), and Teo *et al.* (2003). Some modifications were made to the questionnaire items to suit the research objectives and the ERP system setting in Malaysia. The questionnaire was pre-tested on several business managers to gauge the validity of the questionnaire items and to further improve the questionnaire design. Several comments were received and amendments were made accordingly.

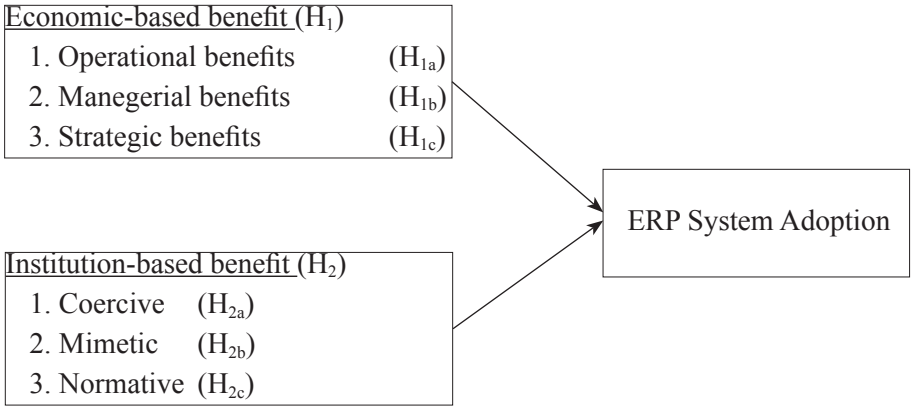

Fig.1: Research Framework of Factors Affecting the Decision to Adopt the ERP System

A reliability test was conducted to measure the reliability of the instrument used in this study. A reliability test gauges the degree to which research results would be similar even if the research were conducted in a different environment (Cooper & Schindler, 2008). As a rule of thumb, a Cronbach Alpha value of 0.70 and above is viewed as acceptable (Nunnaly, 1978).

As indicated in Table 1, the reliability coefficients for *strategic benefits* and *mimetic* are above 0.90, while those of three of the other variables, *operational benefits, managerial benefits* and *coercive,* are above 0.80. The *normative pressure* variable is the only variable with a Cronbach Alpha of less than 0.80 (0.794). Therefore, the Cronbach Alpha coefficients for all of the variables in this study have exceeded the acceptable level required.

TABLE 1
Reliability Coefficient of the Research Variables

Variable	Number of Items	Cronbach Alpha
Operational benefits	8	0.864
Managerial benefits	6	0.867
Strategic benefits	8	0.928
Mimetic	3	0.926
Coercive	6	0.809
Normative	2	0.794

The sample size for this study consisted of all 976 companies listed with BURSA Malaysia. Of this number, 861 companies are listed in the main market of Bursa Malaysia and 115 companies are listed in the ACE market of Bursa Malaysia (Bursa Malaysia, 2010). Questionnaires were also sent to a sample of 200 companies, which were selected based on a systematic sampling procedure from the Federation of Malaysian Manufacturers (FMM) database.

The unit of analysis for this study was the organisational level and senior managers of organisations were the targeted respondents because they were likely to be involved in the ERP system adoption decision-making process. Organisations were selected from various industries and sectors as the ERP system is not exclusive to certain types of organisation.

Questionnaires were mailed out in stages. The first sets of questionnaires were sent in the first week of April. Two weeks later, non-responding organisations were contacted via telephone and reminder emails were sent to them to encourage participation. This process was repeated until all the respondents had been contacted. At this point of time, a webbased questionnaire was also created. This was to provide wider options for managers to choose their preferred method of answering the questionnaire. By the end of June 2011, 136 usable responses were received via mail and email.

Measures

This study uses a five-point rating scale for measurement. The dependent variable of the organisation's adoption level is measured based on the organisation's intention to achieve automate level, informate level or transformate level (Zuboff, 1985). Automate level benefits is defined as replacing the existing system with a better and more

advanced technology that operates the same functions with less cost incurred. Informate, on the other hand, refers to the organisation's capability to analyse and comprehend the information presented by the system to make better and informed decisions. Finally, transformate is the extent to which the ERP system can affect the organisation's strategies and goals. Accordingly, in this study, automate is known as operational benefits focusing on process improvement and cost reduction; informate as tactical or managerial benefits comprising management's ability to make better decisions, correctly identifying customer needs and requirements and increasing the organisation's revenue; and transformate as strategic benefits which refer to the organisation's ability to adapt to changes and improve market value (Chand, Hachey, Hunton, Owhoso & Vasudevan, 2005).

Statistically significant ERP system benefits, empirically proven by Shiau, Hsu and Wang (2009), Kamhawi (2008) and Buonanno *et al.* (2005), were used as items to represent the independent variables. The benefits were subsequently categorised as economic-based factors comprising operational benefits (representing the automate objective), managerial benefits (representing the informate objective) and strategic benefits (representing the transformate objective) and institution-based factors consisting of coercive, mimetic and normative factors. Each benefit is assessed based on its perceived importance.

Coercive pressure is defined as the influence asserted by dominant parties in the adoption of the ERP system. The source of this pressure may be the parent company, suppliers or customers. Mimetic pressures refer to voluntary and conscious action undertaken by an organisation that mimics its competitor's actions (Shi, Shambare, & Wang, 2007). Normative behaviour, on the other hand, is the organisation's unconscious act of imitating the actions and practices of its competitors (Shi *et al.*, 2007; DiMaggio & Powell, 1983). Membership of professional bodies or trade associations was included as a proxy for normative influence. All the questions on institutional pressures were adapted and developed from studies by Teo *et al.* (2003) and Ugrin (2009).

RESULTS

Descriptive data analysis was conducted to provide an overview of the data pattern. Statistical analysis such as mean, median and mode are commonly adopted in this type of analysis.

Respondent profiles

As shown in Table 2, the majority of the respondents (70.59 %) held senior managerial positions such as accounts manager, branch manager, finance manager, human resource manager and information and technology manager. Respondents holding top management positions consisted of Chief Executive Officers, Directors and Vice Presidents and they constituted 26.47 % of the total respondents. About 2.94 % of the responses were from deputy managers or assistant managers and management consultants.

TABLE 2
Profile of Respondents and Organisations

Job Designation	Total	Percentage
Middle Manager	4	2.94
Senior Manager	96	70.59
Top Management	36	26.47
	136	100.00
Work Experience	Total	Percentage
Less than 10 years	30	22.06
11 to 20 years	62	45.59
Above 20 years	44	32.35
	136	100.00
Industry Category	Total	Percentage
Manufacturing	82	60.29
Trading and Services	25	18.38
Construction	18	13.24
Finance and Insurance	7	5.15
Mining and Plantation	4	2.94
	136	100.00
Number of employees	Total	Percentage
Less than 250	59	43.38
251 to 1000	54	39.71
Above 1001	23	16.91
	136	100.00
Legal Structure	Total	Percentage
Unincorporated	29	21.32
Incorporated	107	78.68
Ownership Structure	Total	Percentage
Privately-owned company	46	33.82
Local public-listed	67	49.26
Government-owned/ Controlled	8	5.88
Foreign-owned	15	11.03
	136	100.00

Most of the respondents had many years of working experience; 45.59 % of them had work experience of between 11 and 20 years, 32.35 % had more than 20 years of work experience, and the remaining 22.06 % had less than 10 years of work experience.

The respondents came from five industry sectors: manufacturing sector, trading and services sector, construction sector, finance and insurance sector and mining and plantation sectors. The sample is dominated by organisations from the manufacturing sector, which includes the industrial products and consumer products industry (60.29 %), followed by those in the trading and services sector, which include the technology industry (18.38%), and the construction sector, which includes the property and infrastructure industries (13.24%). Organisations in the finance and insurance industry represented 5.15 % of this study sample. The remaining 2.94 % were from the mining and plantation industry.

In this study, the size of the organisation is measured by the number of employees. About 43.38 % of the respondents were from the small industries sector with less than 250 employees and the remaining 56.62 % were from larger organisations with between 251 and more than 1,000 employees.

With regard to the legal structure, 78.68 % of the organisations were incorporated entities, while the remaining 21.32 % were unincorporated entities. In terms of ownership type, almost half of the sample organisations (49.26 %) were public-listed organisations, while 33.82 % were privately-owned organisations comprising local-family owned and local non-family privately-owned organizations. Foreign-owned organisations and government controlled organisations constituted 11.03 % and 5.88 % of the sample respectively.

Correlation and Logistic regression results

A correlation analysis tests the strength of linear relationships and the association between two variables. A correlation analysis was conducted for economic-based benefits and Institutional factors influencing ERP adoption. Table 3 depicts the correlation results.

The results indicate that there are significant correlations between ERP adoption with all variables except for the normative and coercive pressure variables.

Logistic regression was conducted to investigate the effect of factors affecting the decision to adopt the ERP system. Logistic regression was used due to the categorical nature of the dependent variable. In addition, logistic regression is also designed to predict the probability of the occurrence of an event (Hair *et al.*, 2006).

Before reviewing the results, it is important to ascertain how well the model actually fits the observed data (Hair *et al.*, 2006). Therefore, the Hosmer and Lemershow test was carried out. The subsequent step is to determine the impact of each variable on the decision to adopt ERP. The significance of the variable is indicated by the p-value of the result. However, the direction of the relationship is determined by the positive or negative sign for the beta coefficient (B), while the association between ERP adoption and the independent variables is determined by examining the odds ratio figure (Exp 'B'). The odds ratio indicates the change in odds resulting from a change in predictor variables. As a rule of thumb, an odds ratio of more than 1 indicates a high probability of ERP system adoption and an odds ratio of less than 1 suggests the probability of non-adoption of the ERP system. Table 4 shows the results of logistic regression analysis.

Table 4 highlights that there are only three variables that are statistically significant and the variables are the operational benefits, strategic benefits and mimetic variables ($p<0.1$). However, the strategic benefits variable shows a negative sign, indicating that this variable is negatively associated with ERP system adoption. The chi-square value of 12.761 with a significant p-value of 0.120 further indicates that the model is good.

TABLE 3
Result of Correlation Analysis

	ERP Adoption	Operation	Managerial	Strategic	Mimetic	Normative	Coercive
ERP Adoption	1						
Operational	0.200*	1					
Managerial	0.253**	0.784**	1				
Strategic	0.288**	0.723**	0.735**	1			
Mimetic	0.321**	0.077	0.104	0.116	1		
Normative	0.055	0.240**	0.205**	0.220**	0.541**	1	
Coercive	0.062	0.164*	0.119	0.104	0.596**	0.657**	1

*Correlation is significant at the 0.05 level (1-tailed)
**Correlation is significant at the 0.02 level (1-tailed)

In general, the result shows that only two variables, operational benefits and mimetic pressure, are significantly associated with the decision to adopt the ERP.

Table 5 indicates that the model could correctly classify 75.7 % of ERP system adoption cases.

DISCUSSION

Analysis on economic benefit factors shows that only operational benefits (H_{1a}) is significant in the decision to adopt ERP, while managerial benefits (H_{1b}) and strategic benefits (H_{1c}) are not significant in ERP adoption. For institutional pressure factors, the results indicate that only mimetic pressure (H_{2b}) is significant in ERP adoption. Normative pressure (H_{2c}) and coercive pressure (H_{2a}) are not significant.

Operational benefits have been widely acknowledged as the most important set of factors to influence ERP system adoption (Shiau *et al.*, 2009; Jang *et al.*, 2009). The increasing need to improve internal operations and activities is the prime reason that encourages many organisations to adopt the ERP system. It is also reported that internal requirements rather than the

TABLE 4
Results of the Logistic Regression Analysis

Variables	B	Wald	Sig.	Exp (B)
Constant	-4.837	4.461	0.035	0.008
Organisation size	-0.139	0.302	0.645	0.87
Industry Sector	-0.234	1.549	0.213	0.791
Operational	1.526	6.629	0.01***	4.598
Managerial	0.118	0.065	0.799	1.125
Strategic	-1.291	8.698	0.003***	0.275
Mimetic	0.809	5.92	0.015**	2.245
Normative	0.21	0.311	0.5	1.234
Coercive	0.371	0.52	0.471	1.45

Hosmer and Lemershow test: Chi square=12.761, p=0.120
Cox & Snell R Square=0.218
Nagelkerke R Square=0.306
***Significant at 0.01, **Significant at 0.1

TABLE 5
Summary of Classification Table

Observed		Predicted		
		ERP ADOPTION		Percentage Correct
		Yes	No	
ERP ADOPTION	Yes	84	9	90.3
	No	24	19	44.2
Overall Percentage				75.7

need to remain competitive have driven many organisations towards adoption of the system (Koh *et al.*, 2006). Earlier studies have found that operational benefits such as improvement of processing time, integration of business process and ability to access, monitor and process wider data are among the most cited motivations for adoption of the system (Benders *et al*., 2006; Koh *et al.*, 2006). Similarly, the results from this study indicate that *the need to improve data accuracy and integrity* and to *speed up the preparation of financial reports* has been among the most important operational benefits that motivate ERP system adoption. This suggests that operational benefits are still held as one of the key considerations in an organisation's deliberation on adopting the ERP system.

This study, however, finds that managerial-benefits reasoning is not strong enough to encourage ERP system adoption. This finding indicates that both adopters and non-adopters of ERP system do have a similar perception of the system's ability to enhance decision-making capabilities. Managerial benefits in this study covers the management's decision-making quality in terms of speed and timely decision-making and collaborative performance in the decision-making process. The findings of this study however, are not consistent with previous research that reported improvement in decision-making as one of the important motives for ERP adoption (Kamhawi, 2008; Shiau *et al.*, 2009). Even though managerial-benefits consideration does not significantly impact the decision to adopt ERP in this study, both ERP adopters and non-adopters have ranked managerial benefits as one of the important benefits that can be attained from ERP system adoption (overall mean value = 4.094).

In addition, a statistically significant negative result obtained for strategic benefits indicates that the variable of strategic benefits is not an important consideration in an organisation's decision to adopt the ERP system. This finding suggests that ERP adoption in Malaysia still focuses on improving the organisation's internal operation processes. The advantages that come from positioning itself strategically to face future challenges as may be attained from ERP system adoption are not compelling enough for an organisation to initiate system adoption. This finding is consistent with the finding of Chand *et al.* (2005), whose study noted that automate level benefits are the first to be seen from ERP adoption, followed by informate and transformate level benefits respectively. This study implies that an organisation's key objective in adopting the ERP system is to improve their its internal processes (automate benefits) rather than to improve its capabilities to respond to market changes and build better relationships with customers and suppliers (transformate benefits). Some organisations, however, are usually contented when the automate- and informate-level benefits have been achieved. This further supports the notion that strategic benefits is the last economic factor that organisations expect to achieve with the adoption of the ERP system (Chand *et al.*, 2005).

As for institutional-based factors, the results show that the mimetic pressure hypothesis (H_{2b}) is supported, while the normative pressure (H_{2c}) and coercive pressure (H_{2a}) hypotheses are not supported.

The results of this study indicate that mimetic pressure does influence an organisation's decision to adopt the ERP system. This is consistent with various studies that highlight the existence of competitive pressure in the decision to adopt the ERP system (Ugrin, 2009; Salmeron & Bueno, 2006; Tingling & Parent, 2004). Organisations are known to be very reactive to external pressures, and this has been recognised to be a common motivating factor that influences technological innovation adoption (Benders *et al.*, 2006). Management do look at their competitors for direction in their own decision-making. Thus, to remain competitive, it is important for organisations to be ahead in their technological capabilities. By replicating competitors, management may hope to reduce the risks of uncertainty and to appear more confident about their decision. More importantly, this study highlights the competitive drive of Malaysian organistions in shaping and improving their technological capabilities, particularly in ensuring that they are on par with their competitors.

Finally, the impact of both normative-pressure and coercive pressure are found to be not significant. The findings are consistent with a study conducted by Laukkanen *et al.* (2007), which found out that there was minimal influence received from external parties in the decision to adopt ERP. The majority of the organisations in the sample studied in this work make decisions based on their own independent analysis. Thus, this suggests that Malaysian organisations are not too vulnerable to extenal pressures, particularly from normative and coercive influence, in their decision-making. Pressure from customers, suppliers, parent companies and professional associations has limited impact on their decision to adopt the ERP system. One of the possible reasons for this is that many Malaysian organisations which have adopted the ERP system are still at the early stage of the system implementation (Supramaniam & Kuppusamy, 2010). Thus, they do not have much authority to exert others to follow their lead.

CONCLUSION AND IMPLICATIONS

The conceptual model in this study is based on two theoretical concepts. First, the economic-based transaction cost theory explains the rationale for ERP system adoption. Second, the institutional theory explains the influence of institutional pressure on ERP adoption. The results of this study provide further empirical evidence in addition to previous literature on the importance of a consideration of the economic benefits in management decisions on technology adoption. Even though there is no significant result for a consideration of managerial benefits and strategic benefits, the descriptive statistics indicate its perceived importance. With regard to institution-based factors, the study finds that mimetic pressure is a significant factor that in influencing an organisation's decision-making.

This study highlights some important elements that might impact management's decision-making. Generally, the results suggest that management do make decisions based on rational decision-making. The benefits of adopting the ERP system are carefully weighed and the system's ability to further enhance the organisation's operational objectives is evidently taken into consideration. This implies that management are generally cautious in their contemplation of adopting a technical system that involves huge investments and necessitates changes to their existing organisational activities.

This study also finds evidence of mimetic pressure that may influence the decision to adopt ERP. Even though the results indicate that both coercive pressure and normative pressure do not significantly influence an organisation's decision to adopt the ERP system, they are however somewhat influenced by the need to mimic decisions of successful competitors. Mimicking other successful organisations could lead to various advantages as it minimises the cost of searching for the right information system and also reduces the risk of being the first adopter of any new innovation. In addition, adopting a system proven to be successful by other organisations would definitely lend some confidence to the management in making their own decision.

However, the risk of imitating other organisations cannot be undermined. This is because every organisation is unique in itself with its own flow of operational activities and processes. This also means that each organisation possesses specific needs and requirements. Imitating other organisations that have different requirements could cause major catastrophe. Management should also consider their existing capabilities when adopting a sophisticated information system such as ERP. It is important to be able to measure the organisation's own capabilities prior to imitating another organisation's actions. Therefore, it is particularly crucial for management to be aware of this type of influence. The act of imitating another organisation could be a best alternative, but the imitation must be conducted with caution. An indiscreet and thoughtless imitation could lead an organisation to a disastrous outcome.

Acknowledging the limitations of the study would actually create potential avenues for carrying out prospective future research. As this study only focuses on two types of organisation, public-listed companies and organisations listed with FMM, future studies can be conducted on other types of organisation such as small and medium enterprises, public-sector companies and non-profit organisations.

Only the middle-to-top-management perspective was investigated in this study. Low-level management and employee perception were not taken into consideration, in particular, to determine the level of ERP system usage and the intensity of user satisfaction. Future studies looking at these perspectives may increase the understanding of the overall ERP system impact on organisational performance.

Finally, conducting a case study analysis or qualitative research can further enhance

the value of this study. The variables presented in this study were obtained from prior literature on information system generally and the ERP system specifically. Since the ERP system is a unique and complex system, there is always a possibility that it would also have unique factors. Therefore, case study analysis and in-depth interview with the right authorities may uncover new factors that may affect ERP system adoption and subsequently, the system's impact on organisational performance. It could also further verify the findings of this study, thus providing greater validity for the research results.

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REFEREES FOR THE PERTANIKA
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Journal of Social Sciences and Humanities

INSTRUCTIONS TO AUTHORS

(Manuscript Preparation & Submission Guidelines)

Revised: February 2013

We aim for excellence, sustained by a responsible and professional approach to journal publishing.
We value and support our authors in the research community.

Please read the guidelines and follow these instructions carefully; doing so will ensure that the publication of your manuscript is as rapid and efficient as possible. The Editorial Board reserves the right to return manuscripts that are not prepared in accordance with these guidelines.

About the Journal

Pertanika is an international peer-reviewed journal devoted to the publication of original papers, and it serves as a forum for practical approaches to improving quality in issues pertaining to tropical agriculture and its related fields. *Pertanika* began publication in 1978 as Journal of Tropical Agricultural Science. In 1992, a decision was made to streamline *Pertanika* into three journals to meet the need for specialised journals in areas of study aligned with the interdisciplinary strengths of the university. The revamped Journal of Social Sciences & Humanities (JSSH) aims to develop as a pioneer journal for the Social Sciences with a focus on emerging issues pertaining to the social and behavioural sciences as well as the humanities, particularly in the Asia Pacific region. Other *Pertanika* series include Journal of Tropical Agricultural Science (JTAS); and Journal of Science and Technology (JST).

JSSH is published in **English** and it is open to authors around the world regardless of the nationality. It is currently published four times a year i.e. in **March**, **June**, **September** and **December**.

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Our goal is to bring the highest quality research to the widest possible audience.

Quality

We aim for excellence, sustained by a responsible and professional approach to journal publishing. Submissions are guaranteed to receive a decision within 12 weeks. The elapsed time from submission to publication for the articles averages 5-6 months.

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Pertanika is now over 33 years old; this accumulated knowledge has resulted Pertanika JSSH being indexed in SCOPUS (Elsevier), EBSCO, Thomson (ISI) Web of Knowledge [CAB Abstracts], DOAJ, Google Scholar, ISC, Citefactor, Rubriq and MyAIS.

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We are continuously improving access to our journal archives, content, and research services. We have the drive to realise exciting new horizons that will benefit not only the academic community, but society itself.

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Pertanika Journal of Social Sciences & Humanities aims to develop as a pioneer journal for the social sciences with a focus on emerging issues pertaining to the social and behavioural sciences as well as the humanities. Areas relevant to the scope of the journal include Social Sciences—Accounting, anthropology, Archaeology and history, Architecture and habitat, Consumer and family economics, Economics, Education, Finance, Geography, Law, Management studies, Media and communication studies, Political sciences and public policy, Population studies, Psychology, Sociology, Technology management, Tourism; Humanities—Arts and culture, Dance, Historical and civilisation studies, Language and Linguistics, Literature, Music, Philosophy, Religious studies, Sports.

Editorial Statement

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Pertanika policy prohibits an author from submitting the same manuscript for concurrent consideration by two or more publications. It prohibits as well publication of any manuscript that has already been published either in whole or substantial part elsewhere. It also does not permit publication of manuscript that has been published in full in Proceedings. Please refer to Pertanika's **Code of Ethics** for full details.

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Pertanika accepts submission of mainly four types of manuscripts. Each manuscript is classified as **regular** or **original** articles, **short communications**, **reviews**, and proposals for **special issues**. Articles must be in **English** and they must be competently written and argued in clear and concise grammatical English. Acceptable English usage and syntax are expected. Do not use slang, jargon, or obscure abbreviations or phrasing. Metric measurement is preferred; equivalent English measurement may be included in parentheses. Always provide the complete form of an acronym/abbreviation the first time it is presented in the text. Contributors are strongly recommended to have the manuscript checked by a colleague with ample experience in writing English manuscripts or an English language editor.

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Definition: Full-length original empirical investigations, consisting of introduction, materials and methods, results and discussion, conclusions. Original work must provide references and an explanation on research findings that contain new and significant findings.

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With few exceptions, original manuscripts should not exceed the recommended length of 6 printed pages (about 18 typed pages, double-spaced and in 12-point font, tables and figures included). Printing is expensive, and, for the Journal, postage doubles when an issue exceeds 80 pages. You can understand then that there is little room for flexibility.

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Format

The paper should be formatted in one column format with at least 4cm margins and 1.5 line spacing throughout. Authors are advised to use Times New Roman 12-point font. Be especially careful when you are inserting special characters, as those inserted in different fonts may be replaced by different characters when converted to PDF files. It is well known that 'μ' will be replaced by other characters when fonts such as 'Symbol' or 'Mincho' are used.

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6. When the reviewers have completed their work, the executive editor in consultation with the editorial board and the editor-in-chief examine their comments and decide whether the paper is ready to be published, needs another round of revisions, or should be rejected.

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- *Pertanika* JSSH aims to develop as a flagship journal for the Social Sciences with a focus on emerging issues pertaining to high-quality research related to the **social** and **behavioural sciences** as well as the **humanities**, particularly in the Asia Pacific region.
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  - main findings
  - overall contribution
  - conclusions & suggestion for further research
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In 1992, a decision was made to streamline *Pertanika* into **3 journals**. i.e.,

1. Journal of Tropical Agricultural Science (JTAS)
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Pertanika Journal of Social Sciences & Humanities
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