SPONSORED ANALYST COVERAGE, INFORMATION ASYMMETRY AND STOCK TURNOVER

Yee-Boon Foo *

Abstract

This study draws on Merton's investor recognition hypothesis to investigate whether (1) the sponsored analyst coverage scheme introduced by the Bursa Malaysia in April 2005 is associated with stock turnover, and (2) the relationship is stronger for firms with high information asymmetry. The results show that stock turnover is positively associated with the frequency of coverage and the association is stronger for firms with higher information asymmetry. In addition, it is found that during the initial stage of the scheme where the stock market was experiencing a downturn, analyst coverage has a significant constraining effect on the reduction in stock turnover.

Keywords: Sponsored Analyst Coverage; Stock Turnover; Board Independence; Information Asymmetry; Malaysia

* *School of Business, Monash University Malaysia, Jalan Lagoon Selatan, 46150, Bandar Sunway, Selangor, Malaysia*
Tel.: +60 3 5514 6378;
Fax:+60 3 5514 6194
Email: foo.yee.boon@monash.edu

1. Introduction

This study examines whether there is an association between the sponsored analyst research scheme adopted by Bursa Malaysia and stock turnover. In this scheme, analyst research reports are available to investors free of charge through the stock exchange's websites. The unique feature of the research scheme is that companies are assigned to analyst research firms rather than the analyst research firms choosing the companies to follow. In addition, given the centrality of information asymmetry theory in the determination of liquidity, we also evaluate whether information asymmetry moderates the relationship between analyst coverage and stock turnover; we expect the linkage between the analyst research scheme and stock turnover to be stronger (weaker) for firms with high (low) information asymmetry.

We are motivated to examine these issues for four reasons. First, it is generally recognised that stock liquidity plays a critical role in economic development, especially for an emerging economy. Levine (1991) derives a growth model where more liquid stock markets improve the incentives to investing in long-duration projects because investors can easily sell their stake in the project if they need their savings before the project matures. Thus, enhanced liquidity facilitates investments in the long run, higher-return projects and is likely to boost productivity economic growth. Levine and Zervos (1998) provide empirical evidence to support this linkage. Stock liquidity is also important for stock exchanges, listed firms and investors. From the perspective of stock exchanges, liquidity is an argument often used to attract companies to cross-list (Pagano et al., 2001) and is a key variable in the competition with other exchanges for order flow (Parlour and Seppi, 2003). At the individual firm level, stock liquidity is an important determinant of the company's cost of capital (Amihud and Mendelson, 1986). From the investors' point of view, stock liquidity determines their cost of trading and future returns (Bekaert et al., 2007). Thus, an understanding of the links between sponsored analyst coverage and stock liquidity would be of interest to both practitioners and scholars alike. Second, despite the fact that many exchanges have launched these analyst research schemes, little is known whether these schemes achieve the goal of increasing stock liquidity[1]. Prior studies have focused on firms self-selected by analysts and there is no or little evidence from firms that participate in the exchange analyst program. Third, prior studies on the link between analyst following and liquidity have yielded mixed results. For example, while Brennan and Subrahmanyam (1995) show a positive link between analyst following and liquidity, Chung et al. (1995) show a negative link. The difference in these results may be explained in terms of the different role played by analyst. Brennan and Subrahmanyam (1995) view

[1] Mak and Sequeira (2007) report some evidence on the impact of stock initiation by a research firm in Malaysia. He et al. (2010) evaluate the effectiveness of the Reserch Incentive Scheme pioneered by the Singapore Stock Exchange.

analysts as proxy for privately informed traders. Thus, they argue that the positive relation between analyst following and liquidity is due to increased competition among informed traders which subsequently reduced the adverse-selection component of the spread. In contrast, Chung et al. (1995) argue that analysts would follow a stock with a greater extent of information asymmetry as the value of private information increases with information asymmetry. Therefore, analyst following is viewed as a signal of the higher level of information asymmetry which results in a negative relationship between analyst following and stock liquidity. Recently, Roulstone (2003) provides evidence of a positive association and argue that the increase in liquidity is due to the increase in public information provided by analyst which reduces information asymmetry. This study by investigating this issue sheds some light on this controversy. Finally, most research on analyst coverage[2] has been conducted in developed markets, namely the U.S. and the European market. Little or no evidence is available on the links between analyst coverage and stock liquidity in relatively less developed markets such as Malaysia which is also an order-driven market[3] environment.

In this study, we focus on stock turnover as our dependent variable since it has been the focus of considerable interest and attention lately. A reason for this is because stock turnover could represent a number of important factors, including liquidity, momentum and information (Brown et al., 2009). It has also been adopted as primary measure of liquidity in previous empirical studies (e.g. Datar et al., 1998; Jayaraman and Milbourn, 2012). Datar et al. (1998) point out that stock turnover is a good proxy for liquidity because it is correlated with trading frequency in equilibrium (Amihud and Mendelson, 1986). In addition, Datar et al. (1998) suggest that stock turnover is an intuitive metric of stock liquidity as it does take into account the differences in the number of shares outstanding, rather than focus on number of shares traded itself. A high value of stock turnover indicates that the average holding period for a stock is shorter. Thus, it is not surprising that several prior studies recommend stock turnover as a proxy for liquidity.

In developing a theoretical framework for the link between the analyst research scheme and stock turnover, we rely on the theoretical work developed by Merton (1987), who proposes a model in which investors hold the stocks that they are "aware of". In the model, Merton incorporates limited investor recognition of stocks in his analyses of capital market equilibrium and asset prices. He posits that firms with that are relatively unfamiliar to investors should provide higher expected stock returns and demonstrate lower stock liquidity (see also Amihud et al., 1999; Grullon et al., 2004).

Using a sample of 240 companies that participated in the first phase of the research scheme, the results show that stock turnover is positively associated with the frequency of coverage throughout the first phase of the scheme. However, it is found that the positive association between analyst coverage and stock turnover is weaker for a low information asymmetry firms[4]. By comparing the pre- and post-scheme period between the participating companies covered by analyst and not covered by analyst, it is found that during the stock market downturn period, the reduction in stock turnover is significantly less severe for companies that are covered by analysts. As in the earlier tests we also find that the reduction is less severe for firms with high information asymmetry.

This study makes a number of significant contributions to the literature. First, this study by showing that sponsored analysts following is associated with higher stock turnover, especially for firms with high information asymmetry, adds to a strand of prior literature that subscribes to the theory that analysts following positively affects stock turnover by reducing information asymmetry (Brennan and Subrahmanyam,1995; Roulstone, 2003). Second, by examining the impact of the exchange sponsored research scheme on stock turnover, the findings have important implications for policy makers and listed companies which aim to improve stock liquidity at the market and company level respectively. The empirical findings also provide information to the Malaysian government and the Bursa Malaysia on the effectiveness of the scheme. Third, this study contributes to the literature by examining the impact of analyst coverage where analysts are assigned to a firm, unlike the prior studies whereby analysts choose the companies to follow. Fourth, this study adds to the capital market literature by providing empirical evidence on the association between stock liquidity and analyst coverage from an emerging order driven market perspective. Finally, the results we obtain are consistent with the investor

[2] The term is used interchangeably with analyst following throughout the study.

[3] There are two types of market, namely order-driven market and quote-driven market. In an order-driven market, all orders are displayed in the market and can be seen by people who access to this information. The price and the amount of the stock/share at which the seller are willing to buy or sell are submitted to an order book. On the other hand, a quote-driven market relies on specialist/dealers/market makers who buy stocks when public participants wish to sell and sell stocks when public participants wish to buy. The specialists' bid quotes are lower than their ask quotes for them to make profit. Prices are adjusted by the market makers over time to keep supply and demand approximately balances. Prices are increased if market makers run short of stock and vice versa.

[4] Information asymmetry is proxied by bid-ask spreads and firms' age.

recognition hypothesis and thus, to this extent, validate Merton's (1987) theory in an emerging market context.

The remainder of the paper is structured as follows. Section 2 provides an overview of the institutional and the analyst research scheme background. Section 3 discusses the prior literature on analyst coverage and develops the research hypotheses. Section 4 describes the sample and data sources, the measurement of variables and model specification. Section 5 reports results of descriptive statistics, regressions and some robustness tests. Section 6 discusses the limitations of the study and the final section concludes the paper.

2. Institutional background

2.1. Bursa Malaysia

Public trading of shares commenced in Malaysia in 1960 with the establishment of the Malayan Stock Exchange. In 1964, the Stock Exchange of Malaysia was established and became known as Stock Exchange of Malaysia and Singapore in 1965 with secession of Singapore from Malaysia. With the termination of currency interchangeability in 1973, the Stock Exchange of Malaysia and Singapore was split into the Kuala Lumpur Stock Exchange Berhad and the Stock Exchange of Singapore. With the enforcement of the Securities Industries Act 1976, a new company limited by guarantee, The Kuala Lumpur Stock Exchange (KLSE) was incorporated on 14 December 1976 to replace the Kuala Lumpur Stock Exchange Berhad. In 2003, the KLSE was demutualised with the aim to create a more competitive and efficient market. Its name was renamed to Bursa Malaysia on 14 April 2004.

Before the implementation of the new structure on 3 August 2009, Bursa Malaysia comprises of the Main Board, the Second Board and the Malaysian Exchange of Securities Dealing and Quotation Berhad (MESDAQ). Main Board is the platform for the listing of large companies (with a minimum of RM60 millions of paid-up capital) while Second Board was launched in 1988 to encourage smaller, viable and strong growth potential companies (with a minimum of RM40 millions of paid-up capital) to be listed. On 6 October 1997, MESDAQ was launched as a separate market for technology-based and high growth companies listing. It was conceived by the Securities Commission in 1996 and it commenced trading in April 1999. Under the new structure, the Main and Second Board were merged into a single unified board for established companies and was called the Main Market. On the other hand, the MESDAQ market was transformed into an alternative market for emerging companies of all sizes and sectors and was called the ACE (Access, Certainty and Efficiency) Market.

Similar to all other stock exchanges in Asia, Bursa Malaysia is a purely order-driven market with no market makers or specialists. Trading takes place from Monday to Friday, except on public holidays. Trading on the Bursa Malaysia is fully automated where orders are keyed into WinSCORE (a broker front end system) and orders are matched automatically by the system. All prices are determined by market forces of supply and demand through a process where bids and offers are matched. In every transaction, a security is sold to the highest bidder and purchased at the lowest offer.

2.2. Capital Market Development Fund-Bursa Research Scheme (CBRS)

To help create more liquidity in the market, Bursa Malaysia has implemented a number of measures[5]. One such important measure implemented is the initiation of an exchange sponsored analyst research scheme in April 2005, namely CBRS. The main objective of the scheme is to generate investors' interests in smaller capitalised stocks and at the same time to create balancing research coverage on public listed companies. This scheme is in line with the argument that security analysts are prominent information intermediaries between firms and investors in capital markets (Chung and Jo, 1996; Frankel et al., 2006; Chen et al., 2010). Analysts collect information from corporate managers and conduct analysis that interprets a firm's past events as well as forecasting a firm's future earnings and cash flows. Therefore, analyst research reports usually contain recommendation and supporting arguments. They are viewed as the most influential sources of information available to the individual investors for investment decision making (SRI International, 1987).

The scheme is similar to the Research Incentive Scheme pioneered in December 2003 by the Singapore Stock Exchange (SGX) and the Monetary Authority of Singapore (MAS) which sponsored analyst coverage of previously un-followed or poorly followed stocks. In 2009, SGX introduced a new research scheme, SGX Equity Research Insights (SERI), to better cater the needs of listed companies and their investors. Around this same period, three of the top ten largest stock exchanges, NYSE Euronext, NASDAQ and London Stock Exchange, also launched a similar exchange sponsored research scheme[6].

[5] The measures include the reduction of minimum of bid sizes, setting up of Over the Counter (OTC) model for stock borrowing and lending and short selling, launching of market making guidelines for structured warrants and exchange traded funds and the establishment of Malaysian Investor Relations Association (MIRA).

[6] NASDAQ Euronext struck a deal with Virtua Resaerch to make financial models of under-researched companies available on the NYSE website and NASDAQ OMX inked

The two-year pilot phase of the CBRS scheme, with a participation of 303 listed companies, was completed in June 2007. More than ten research houses and stock broking firms are involved and Standard & Poor Equity Research being the anchor research provider. The second phase of the scheme, which ran from end-2007 until end-2010, involves 218 listed companies and 15 research firms. Currently, the scheme is in its third phase. Under the scheme, participating companies pay 50% of the cost of RM60,000 for two-year participation while CMDF subsidises the balance. Each participating listed company is covered by at least two research firms. Research reports generated under this scheme are published on the Bursa Malaysia website and made available, free of charge to the public. At a minimum, research firms are required to produce in each year: (i) one initiation of Coverage Report within 3 months from commencement date; (ii) at least four coverage of Results Reports, corresponding to the quarterly results and full year results announcements by the listed company, and (iii) at least two Update Reports to be issued at any time within the year, at the discretion of the research firm. A sample of the Initiation Report, Results Report and Update Reports can be obtained from Bursa website[7].

According to Bursa Malaysia Annual Report 2008, the average number of hits per day on CBRS website is more than 38,000. In 2010, there are 50,000 downloads of analyst reports a month compared to the 30,000 downloads a month from January 2008. According to media reports, Bursa Malaysia claimed that the scheme has achieved its objective of facilitating informed investing and widening the coverage for small- and mid-cap companies.[8]

3. Prior related literature and hypotheses development

3.1. Prior literature

Prior literature has documented the impact of analyst coverage on firms based on the (a) informational role, (b) monitoring role, and (c) both informational and monitoring role played by analysts in the capital market. Examples of the first strand include Brennan and Subrahmanyam (1995) who conjecture that more analyst coverage results in a greater number of informed traders in the market for a stock. Therefore, prices will tend to be more informative and as a result, uninformed traders face smaller expected losses from transactions with informed traders which lead to a smaller spread. Using 1,550 common stocks that were listed continuously on the New York Stock Exchange for the calendar year 1988, Brennan and Subrahmanyam (1995) find that greater analyst following reduces adverse selection costs and deepens the market. In a similar vein, Brennan and Tamarowski (2000) also show that the number of analyst who follows a firm has a positive effect on the liquidity of trading in the firm's shares by reducing information asymmetry. Recently, Bowen et al. (2008) hypothesise that analyst coverage reduce information asymmetry among investors and thus lower the cost of raising equity capital. They investigate the effect of analyst coverage on the underpricing of 4,776 seasoned equity offerings whereby underpricing represents a substantial cost of issuing new shares. They find that a higher level of analyst following is associated with less underpricing, which suggests lower cost of equity for heavily followed firms.

Chung and Jo (1996) posit that analysts' monitoring of corporate performance helps motivate managers, thus reducing agency costs associated with the separation of ownership and control. At the same time, analysts also help to expand the breadth of investor recognition. Consistent with these conjectures, they find evidence that analyst following exerts a significant and positive impact on firms' market value, as proxied by Tobin's *q*. Similarly, Lang et al. (2004) also find that increased analyst following is associated with higher valuations arguing from monitoring perspective.

Using both the informational as well as monitoring role of analysts, Cheng and Subramanyam (2008) hypothesise a negative relation between analyst following and default risk. They argue that this relationship is expected because of both the monitoring and the informational roles played by analysts. Consistent with their hypothesis, the results document that default risk, as proxied by credit rating, is lower when a firm is followed by a large number of analysts.

Another strand of research investigates how the market reacts to analyst recommendations published or broadcasted (Davies and Canes, 1978; Groth, et al., 1979; Bjerring et al., 1983; Pari, 1987)[9]. These empirical studies show that abnormal performance is associated with the recommendations. However, these studies do not examine what drives the abnormal performance associated with the recommendations.

an exclusive agreement with Morningstar under which Morningstar will provide research profiles of companies listed on its exchanges. London Stock Exchange launched PSQ Analytics, a service that produces research coverage of smaller companies on the London Stock Exchange's Main Market and AIM.

[7] http://www.klse.com.my.

[8] See for example The Star, 7th August 2010.

[9] Davies and Canes (1978) examine the analyst recommendations appearing in the Wall Street Journal's "Heard on the Street" column. Groth et al. (1979) and Bjerring et al. (1983) evaluate the investment advice of a U.S. brokerage house and a leading Canadian brokerage house respectively. Pari (1987) investigates guest recommendations on the Wall Street Week television program.

Barber and Loeffler (1993) address the issue by suggesting two potential hypotheses, namely price pressure hypothesis and the information hypothesis. The price pressure hypothesis states that the recommendation creates temporary buying pressures by uninformed investors. Investors rush out to buy or sell stocks based on recommendations even though these recommendations are tied to no value related information, creating temporary price pressure and thus causes the observed abnormal returns. On the other hand, the information hypothesis proposes that analyst's recommendation reveals relevant information, and thus the abnormal performance on the announcement of a recommendation represents a fundamental revaluation of the security. Using analysts' recommendations published in the monthly "Dartboard" column of the Wall Street Journal, Barber and Loeffler (1993) conclude that the positive abnormal return on announcement of the recommendations is a result of naive buying pressure as well as the information content of the analysts' recommendations. Recently, Keasler and McNeil (2010) examine the market's reaction to stock recommendations of Jim Cramer on *Mad Money*, a CNBC hour long weekday television show. Their results, however, provide greater support for the price pressure hypothesis as opposed to the information hypothesis.

3.2. Theoretical framework and hypotheses development

This study draws on investor recognition hypothesis suggested by Merton (1987) to investigate the impact of analyst research scheme on stock turnover. Merton modifies the rational framework of the capital asset pricing model (CAPM) to account for incomplete information. The key behavioural assumption underpinning Merton's model is that investor's incomplete information affects their trading behaviour and the resulting stock values. Due to incomplete information, some investors may not be aware about certain stocks and as a result, they do not hold the stocks in their portfolio. In such case, investors will be inadequately diversified and their undiversified positions entail the bearing of some non-systematic risk for which they require compensation. Based on this rationale, Merton (1987) shows that when stocks are recognised by large number of investors, the investor base for the stocks will be increased and subsequently the expected rate of return will be reduced. Likewise, analyst research scheme can help to increase the investors' awareness of the companies as information is disseminated to more investors via the stock exchange's website. Therefore, companies are recognised by more investors and the decreased in expected rate of return is likely to improve stock liquidity, as suggested by Merton.

Merton's (1987) model has been empirically tested and supported in a number of studies. Kadlec and McConnel (1994) provide the first empirical test of Merton's model. Using 273 Nasdaq stocks that listed on the NYSE over the period 1980 to 1989, Kadlec and McConnel examine a few aspects of investor recognition. Their results show that newly listed companies experience a 19% increase in the number of registered shareholders and a 27% increase in the number of institutional shareholders. They also find that after controlling for changes in bid-ask spread, companies that experience the greatest increase in number of shareholders after listing have the greatest increase in stock prices. Chung and Jo (1996) also postulate in their study that the information intermediary function provided by security analysts helps expand the breadth of investor recognition. Using Tobin's *q* as measure of market value, Chung and Jo (1996) find that market value is significantly and positively associated with the number of analysts following the firm. Chen et al. (2004) study the price effects of inclusion in the S&P 500 index. They document a permanent increase in the price of added firms and explain that the price effect arises from the changes in investor awareness. More recently, Lehavy and Sloan (2008) find that investor recognition can explain more of a firm's stock return than investment fundamentals, such as earnings and cash flows.

Consistent with the above arguments, this study posits that there is positive relationship between analyst coverage and stock turnover. Analyst reduces information asymmetry by collecting and disseminating information to investors. The information increases market liquidity by increased trading of informed or uninformed investors. In a similar vein, the investor recognition hypothesis suggests that more complete information would create investors' awareness in a particular stock and as a result, stock turnover is improved. In addition to the information role, analyst coverage serves as monitoring device to helps reduce agency costs and the lower the cost of capital which results in improve stock liquidity. The above reasoning leads to the following hypothesis stated in the alternative form:

H1. Analyst coverage is positively associated with stock turnover.

A central concept in the theoretical and empirical work examining stock turnover is information asymmetry. As pointed out earlier, prior literature suggests that analysts reduce information asymmetry between informed and uninformed investors by disseminating information to investors. Thus, the effectiveness of the analyst is likely to vary with the level of information asymmetry of a company that participates in the analyst research scheme. More specifically, the involvement of analyst is likely to enhance stock turnover more for a high information asymmetry company than for a low information asymmetry company. Thus, we also investigate whether the association between analyst coverage and stock turnover is stronger for firms with

a high level of information asymmetry of a company. To test this reasoning we set up the following hypothesis in alternative form:

H2. The positive association between analyst coverage and stock turnover is stronger for companies with high information asymmetry.

4. Research design

4.1. Sample selection and data

The initial sample consists of all 303 Bursa Malaysia listed companies that participated in the first phase of CBRS. Thirty eight companies that were listed during year 2005, 2006 and 2007 are eliminated from the sample to avoid the confounding effects of newly listed firms (with perhaps different characteristics and incentives to maintain liquidity). The remaining companies are matched with the availability of stock data. If stock data of a company is not available, the company is excluded from the sample. As a result, the final sample comprised 240 participating companies.

For each of the sample companies, analyst research reports from 1 April 2005 to 30 June 2007 are downloaded from the Bursa Malaysia CBRS website. Daily stock data, covers the period from 1 January 2005 to 30 June 2007, are collected from the Datastream. The companies' daily stock data include trading volume (both in number and dollar), last traded price, last ask price, last bid price, market capitalization, number of outstanding shares and market to book ratio. For each of the variables constructed, the daily data has to be available for at least 45 trading days in each calendar quarter and the data are averaged for the calendar quarter. Failing which, the company quarter will be excluded from the analysis.

4.2. Variable Measurement

4.2.1. Dependent Variable

Stock turnover (*TURN*) is proposed by Datar et al. (1998) which reflects trading activity. It is defined as the ratio of the number of shares traded (trading volume) to the number of shares outstanding for a company. Stock turnover is computed as averages of daily data at quarterly frequencies.

$$TURN_{i,q} = \frac{1}{D_{i,q}} \sum_{d=1}^{D} VOL_{i,d} / SO_{i,d} \qquad (1)$$

where $D_{i,q}$ is the number of trading days for company i in quarter q. $VOL_{i,d}$ is the trading volume (number of shares traded) and $SO_{i,d}$ is the number of shares outstanding for company i on day d. Both the volume and number of shares outstanding data are collected on a daily basis. The use of daily data eliminates the issue of stock changes due to stock splits etc.

4.2.2. Test Variable

The commonly used measure for analyst coverage or analyst following in the prior empirical studies is the number of analyst following a firm (the number of analyst who issued earnings forecast for the firm) and the data is drawn from I/B/E/S (I/B/E/S refers to Institutional Brokers' Estimate System.) (see for example Ahn et al., 2005; Chan and Hameed, 2006). Since the aim of this study is to examine the effect of the exchange sponsored analyst scheme, the analyst coverage measure thus refers to the analyst following a company participating in the scheme.

This study adopts two different measures for analyst coverage. The first measure is the frequency of analyst coverage, proxied by the number of analyst research reports posted on the CBRS website. The second measure is a dichotomous measure to distinguish whether or not there is analyst coverage for a firm in a certain period.

4.3. Model specification

To test for the effect of frequency of analyst coverage on stock turnover, the following regression model is estimated:

$$\begin{aligned} TURN_{i,Qt} = {} & \alpha + \beta_1 * LOG(1 + RPT_{i,Qt}) + \beta_2 MCAP_{i,Qt} + \beta_3 MTB_{i,Qt} + \beta_4 PRICE_{i,Qt} + \\ & \beta_5 SDRET_{i,Qt} + \beta_6 INED_i + \beta_7 QuarterDummies + \beta_8 IndustryDummies + \varepsilon_{i,t} \end{aligned} \qquad (2)$$

where $TURN_{i,Qt}$ is the stock turnover of company i during quarter Qt, measured as stock turnover (*TURN*). $RPT_{i,Qt}$ is the number of analyst research reports of company i uploaded on Bursa CBRS website during quarter Qt. The number of analyst research reports is used as an indication of the frequency of analyst coverage. If analyst research reports reduce information asymmetry by revealing information, the stock turnover is likely to be improved. Therefore, the coefficient associated with $Log(1+RPT_{i,Qt})$ will have a positive sign.

Following previous research (for example Roulstone, 2003; Chung et al., 2010), a total of four firm specific control variables that are known to influence stock turnover are included in this study, i.e. company size (*MCAP*), growth (*MTB*), stock price (*PRICE*) and stock return volatility (*SDRET*). Company size is proxied by market capitalization

(*MCAP*) defined as shares outstanding multiplied by price. Large companies are expected to be more liquid as they are more transparent due to the greater demand from shareholders. On the other hand, high growth companies, proxied by high market to book ratio (*MTB*) are likely to be less liquid as they are associated with higher information asymmetry. *MTB* is defined as the stock price divided by the book value. Stock price (*PRICE*) is the last traded share price at the end of the day whereas stock return volatility is proxied by the standard deviation of daily returns (*SDRET*). We also include board independence (*INED)* as a proxy for corporate governance since Foo and Mat Zain (2010) provide some evidence on the relationship between board independence and stock liquidity in Malaysia. They argue that the inclusion of independent non-executive directors on corporate boards improves firms' compliance with disclosure requirements and reduces agency costs thus leading to higher liquidity. Similarly, Kent and Steward (2008) as well as Taylor et al. (2010) also provide evidence that disclosure is positively related to some aspects of corporate governance. Board independence is measured as the percentage of independent non-executive directors on the board. Table 1 provides a summary of the variables used in the study.

Table 1. Variable Definitions

Variable		Definition
Analyst coverage variables:		
$RPT_{i,qt}$	=	number of analyst research report of company *i* in Quarter *qt*.
$COVER_{i,qt}$	=	An indicator variable set to one if the company is covered by analyst during Quarter *qt.*
Dependent variables:		
$TURN_{i,q}$	=	stock turnover ratio of company *i* in quarter *q*, calculated as the natural log of average daily stock trading volume divided by the number of outstanding shares. $\left[Log \frac{1}{D_{i,q}} \sum_{d=1}^{D} VOL_{i,d} / SO_{i,d} \right]$
$\Delta TURN_{i,qt}$	=	change in stock turnover of company *i* in quarter *qt*, calculated as stock turnover ratio of company *i* in Quarter *qt* less stock turnover ratio of company *i* in quarter q*1*. [$TURN_{i,qt} - TURN_{i,q1}$]
Other variables:		
$MCAP_{i,q}$	=	market capitalisation of company *i* in quarter *q*, calculated as natural log of average daily share price multiplied by number of outstanding shares. $\left[Log \frac{1}{D_{i,q}} \sum_{d=1}^{D} price * Outstandings Shares \right]$
$MTB_{i,q}$	=	market to book ratio of company *i* in quarter *q*, calculated as natural log of average daily shares price divided by the book value. $\left[Log \frac{1}{D_{i,q}} \sum_{d=1}^{D} \frac{Share\,Price}{Book Value} \right]$
$PRICE_{i,q}$	=	share price of company *i* in quarter *q*, calculated as natural log of average daily share price. $\left[Log \frac{1}{D_{i,q}} \sum_{d=1}^{D} price \right]$
$SDRET_{i,q}$	=	standard deviation of return of company *i* in quarter *q*, calculated as natural log of standard deviation of return.
INED	=	proportion of independent non-executive director on board.
$\Delta MCAP_{i,qt}$	=	change in market capitalisation of company *i* in quarter *q*, calculated as market capitalisation of company *i* in Quarter *qt* less stock market capitalisation of company *i* in quarter q*1*. [$MCAP_{i,qt} - MCAP_{i,q1}$]
$\Delta MTB_{i,qt}$	=	change in market to book ratio of company *i* in quarter *q*, calculated as market to book ratio of company *i* in Quarter *qt* less market to book ratio of company *i* in quarter q*1*. [$MTB_{i,qt} - MTB_{i,q1}$]
$\Delta PRICE_{i,qt}$	=	change in price of company *i* in quarter *q*, calculated as share price of company *i* in Quarter *qt* less share price of company *i* in quarter q*1*. [$PRICE_{i,qt} - PRICE_{i,q1}$]
$\Delta SDRET_{i,qt}$	=	Change in standard deviation of return of company *i* in quarter *q*, calculated as standard deviation of return of company *i* in Quarter *qt* less standard deviation of return of company *i* in quarter q*1*. [$SDRET_{i,qt} - SDRET_{i,q1}$]

Note: Quarter *1* (*q1*) denotes Quarter 1 Year 2005, the quarter before the launch of the analyst research scheme. Quarter *t* (*qt*) denotes quarters after the launch of the analyst research scheme.

5. Empirical results

5.1. Descriptive statistics

For the 240 sample companies, a total of 4,439 research reports were posted on Bursa CBRS website during the first phase of the research scheme. Table 2 summarises the descriptive statistics for the pooled data of the 240 sample companies (2160 company-quarter for most of the variables) from April 2005 to June 2007. The average number of analyst research report for a quarter is two with a maximum of seven research reports in a quarter. The mean market capitalization is RM 341 million and market to book ratio is 1.1213. Table 3 provides simple correlations between variables. As expected, stock turnover (*TURN*) is positively significantly correlated with the number of analyst research report (*RPT*). The size of a company (*MCAP*) is positively related to *TURN*. There is no high correlation between the independent variables, namely market capitalization (*MCAP*), market to book ratio (*MTB*), price (*PRICE*), return volatility (*SDRET*) and the proportion of independent non-executive directors (*INED*).

Table 2. Descriptive Statistics (240 companies) for 9 quarters from April 2005 to June 2007

	Observation	Mean	Std. Dev.	Min	Max
TURN	2160	0.0021	0.0060	0.0000	0.1426
RPT	2160	2.0551	1.2561	0.0000	7.0000
MCAP	2160	340.0668	643.5578	16.90377	8707.69
MTB	2099	1.1213	1.0222	0.1410	14.2750
PRICE	2160	1.6784	2.0030	0.1032	40.4468
SDRET	2160	0.0257	0.0159	0.0029	0.1439
INED	2106	0.3992	0.1148	0.1000	0.8300

Note:

TURN = stock turnover

RPT = number of analyst research report

MCAP = market capitalisation (in MYR million)

MTB = market to book ratio

PRICE = share price

SDRET = standard deviation of return

INED = proportion of independent non-executive director on board

Table 3. Correlations

	RPT	TURN	MCAP	MTB	PRICE	SDRET	INED
RPT	1						
TURN	0.1495**	1					
MCAP	0.03812*	0.0963**	1				
MTB	-0.02325	0.1282**	0.3092**	1			
PRICE	-0.0144	-0.1503**	0.5992**	0.3968**	1		
SDRET	0.0693**	0.3600**	0.2669**	-0.1449**	-0.5011**	1	
INED	-0.0328	0.0750**	0.0482*	-0.0438*	0.0069	0.0279	1

Note:

RPT = natural log of one plus number of analyst research report for company *i* in quarter *t*.

TURN = natural log of stock turnover

MCAP = natural log of market capitalization

MTB = natural log of market to book ratio

PRICE = natural log of share price

SDRET = natural log of standard deviation of return

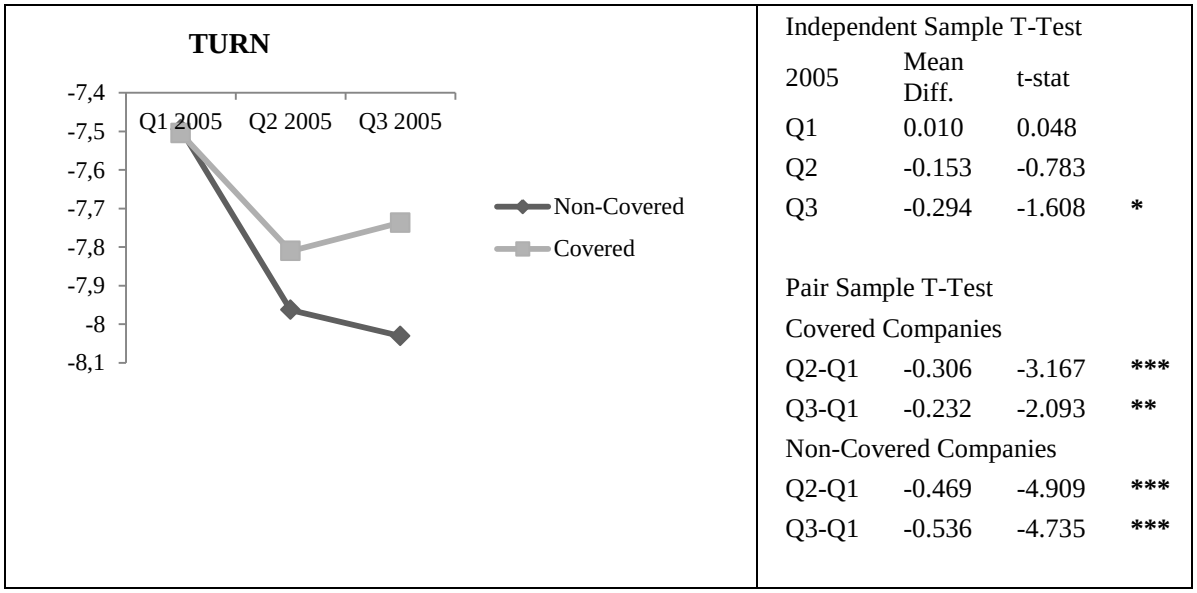
INED = proportion of independent non-executive director on board

** and * correlation is significant at the 0.01 and 0.05 level (2-tailed).

5.2. Univariate tests of differences

We made a comparison between the covered participating companies (participating companies that were covered by analyst in both quarters) and non-covered participating companies (participating companies that were not covered by analyst in both quarters). It is found that 75 participating companies were covered and 132 participating companies were not covered at the early stage of the scheme. There are 33 companies that were only covered in the second quarter and they were eliminated from the analysis. Figure 1 presents the differences in stock turnover (*TURN*) between covered and non-covered companies for the first three quarters of year 2005. Q1 is the pre-scheme quarter while Q2 and Q3 are the post-scheme quarter. It is noticed that for the covered and non-covered companies, stock turnover decreases in Quarter 2 and 3 compared to Q1. Such decrease is in line with the reduction in trading volume and the Kuala Lumpur Composite Index (The average daily volume (number of shares traded) for the Kuala Lumpur Composite Index (KLCI) is 72.6 million (Quarter 1, 2005), 62.2 million (Quarter 2, 2005) and 77.6 million (Quarter 3, 2005)). However, *TURN* for covered companies are found to be higher than non-covered companies after the launch of analyst research scheme. The difference in means is statistically significant (*t*-stat = -1.608, p<0.1) in Q3. The pair sample *t*-test results show that the reduction in stock turnover is significant for both covered and non-covered companies. However, for the non-covered companies, the *t*-stat is double of the covered companies. These univariate results are consistent with the findings of Irvine (2003) that liquidity improves after analysts' initiation of coverage; however, these results are preliminary, and inferences can be made only after controlling for other factors.

Figure 1. Stock Turnover Differences between Covered (N=75) and Non-Covered (N=132) Participating Companies for Quarter One to Quarter Three Year 2005



Independent Sample T-Test			
2005	Mean Diff.	t-stat	
Q1	0.010	0.048	
Q2	-0.153	-0.783	
Q3	-0.294	-1.608	*
Pair Sample T-Test			
Covered Companies			
Q2-Q1	-0.306	-3.167	***
Q3-Q1	-0.232	-2.093	**
Non-Covered Companies			
Q2-Q1	-0.469	-4.909	***
Q3-Q1	-0.536	-4.735	***

Note:
TURN = natural log of stock turnover
***, **, and * indicate significance at the 1%, 5% and 10% levels, respectively.

5.3. Multivariate analysis results

Table 4 reports regression results for equation (2) relating stock turnover (*TURN*) and other control variables. Table 4 Panel A shows the results using all observations with available data (The assumptions of ordinary least square are met. The problem of multicollinearity is unlikely since all the variance inflation factors are below 10 (Gujarati, 2003). All residuals are normally distributed (Jarque Bera significant value >0.05). All Durbin Watson statistics are found to be around two hence no autocorrelation is likely (Gujarati, 2003)). The coefficient on number of analyst research report (*RPT)* is positive (0.1747) on *TURN* and statistically significant at the 1% level. The positive coefficient of *RPT* implies that as the number of analyst research report increases, *TURN* increases, consistent with the investor recognition hypothesis which suggests that there is positive relation between analyst coverage and liquidity. Consistent with prior studies, company size (*MCAP*) and market to book ratio (*MTB*) are significantly positively related to *TURN* while price (*PRICE*) is negatively related to *TURN*. Board independence

(*INED*) is also significantly positively related to *TURN*. Industry and quarter effect are included in the regression analysis but in order to present the results parsimoniously, the individual coefficient on seven industries and eight quarters are excluded from the table.

To test H2, we partitioned the sample based on the level of information asymmetry, proxied by bid-ask spread (Bid-ask spread is measured as the average of closing ask price less bid price scaled by the middle prices. It is commonly used as the proxy for information asymmetry in prior studies (for example Welker, 1995; Petersen and Plenborg, 2006). We also, in additional tests, split the sample by firm age based on the argument that younger firms are associated with higher information asymmetry (Pastor and Veronesi, 2003; Pittman and Fortin, 2004)). Companies are categorised as HIGH (LOW) if their bid-ask spreads are above (below) median. Table 4 Panel B and C reports the regression results of the companies with HIGH and LOW information asymmetry respective. Consistent with H2, the positive coefficient on RPT on TURN is statistically significant at the 5% level for companies with HIGH information asymmetry and not significant for the companies with LOW information asymmetry. We also ran a regression with an interaction term between high/low dummy (1=high, 0=low) variable for the bid-ask spreads and RPT in the same regression and the results (unreported) show a significant negative interaction thus supporting the earlier results.

Table 4. Regression on stock turnover

	Panel A All			Panel B High			Panel C Low		
Variable	Coef	t-Stat	Sig	Coef	t-Stat	Sig	Coef	t-Stat	Sig
CONSTANT	-7.2467	-16.27	***	-6.8362	-10.31	***	-1.2573	-2.68	***
RPT	0.1747	2.41	***	0.1995	2.03	**	0.0876	1.14	
MCAP	0.4692	10.97	***	0.0066	0.07		-0.0467	-1.13	
MTB	0.3272	5.54	***	0.0357	0.39		0.4942	8.20	***
PRICE	-0.4994	-8.02	***	-0.6564	-6.81	***	-0.2701	-4.85	***
SDRET	0.5652	6.77	***	0.2743	2.24	**	1.2095	14.55	***
INED	0.7298	2.77	***	0.5066	1.16		0.2831	1.24	
INDUSTRY		included			included			included	
QUARTER		included			included			included	
F-stat	44.25 (p <0.01)			20.84 (p<0.01)			50.93 (p<0.01)		
Adj R^2	30.8%			30.4%			50.8%		
N	2044			1022			1022		

Note:

Refer to Table 1 for variable definition.

***, **, and * indicate significance at the 1%, 5% and 10% levels, respectively (1-tailed)

t-statistics are White-corrected.

5.4. Additional tests

5.4.1. Pre and post scheme liquidity

To evaluate the impact of analyst coverage on the changes in stock liquidity, we estimate equation (3) with the subsample of the first six months of the analyst scheme.

$$\Delta TURN_{i,Qt} = \alpha + \beta_1 COVER_{i,Qt} + \beta_2 \Delta MCAP_{i,Qt} + \beta_3 \Delta MTB_{i,Qt} + \beta_4 \Delta PRICE_{i,Qt} + \beta_5 \Delta SDRET_{i,Qt} + \beta_6 INED_i + \varepsilon \quad (3)$$

where $\Delta TURN$ is the change in stock turnover. , defined as $TURN_{i,Qt} - TURN_{Q1.}$ $TURN_{i,Qt}$ is the quarterly average stock liquidity post analyst research scheme while $TURN_{i,Q1}$ is the stock turnover before the launch of the analyst research scheme. $COVER_{i,Qt}$ is an indicator variable set equal to one if there is analyst coverage for company *i* during quarter *q*. If analyst coverage improves stock liquidity, then the

estimated coefficient on $COVER_{i,Qt}$ should be positive for stock turnover ($\Delta TURN$). Similar to the equation (2) mentioned above, four company-level control variables, i.e. size (measured by market capitalization, *MCAP*), growth (measured by market to book ratio, *MTB*), share price (*PRICE*) and share return volatility (measured by standard deviation of return, SDRET), are added in the model to capture the shifts in the company market data after (*Qt*) and before (*Q1*) the analyst research scheme. $\Delta MCAP_{i,Qt}$ is the change in natural log of company *i*'s market capitalisation for quarter Qt, defined *as* $MCAP_{i,Qt}$ - $MCAP_{i,Q1}$. $\Delta MTB_{i,Qt}$ is the change in natural log of company *i*'s market to book ratio volume for quarter *Qt*, defined as $MTB_{i,Qt}$ - $MTB_{i,Q1}$. $\Delta PRICE_{i,Qt}$ is the change in natural log of company *i*'s share price for quarter *Qt*, defined as $PRICE_{i,Qt}$ - $PRICE_{i,Q1}$ and $\Delta SDRET_{i,Qt}$ is the change in natural log of company *i*'s standard deviation of share return for quarter *Qt*, defined as $SDRET_{i,Qt}$ - $SDRET_{i,Q1}$. Board independence (INED) is also included.

The results are reported in Panel A of Table 5. The coefficient on analyst coverage (*COVER*) is 0.2886 with a significant *t*-value of 2.92, thus providing evidence that analyst coverage has an impact on the changes in stock turnover comparing the post-scheme and pre-scheme quarter. However, the results are not clearly interpretable as some companies experience reduction while some experience increase in stock turnover. To further examine the impact of analyst coverage on the increase or decrease in stock turnover, we partition the sample into increase in stock turnover and decrease in stock turnover and run the regression on the subsample respectively. The results in Panel B Table 5 clearly indicate significantly negative coefficient (-0.3964) on COVER for those companies experiencing a decrease in stock turnover. However, there is no significant association between COVER and stock turnover for companies which experienced an increase in stock turnover (Panel C Table 5). The evidence suggests that the presence of analyst coverage reduces the reduction in stock turnover. In other words, reduction in stock turnover is less severe for companies that are covered by analyst, as shown in Figure 2. We also split the sample (based on terciles) for the test in Panel B in terms of high and low information asymmetry. The results (untabulated) are significant for firms with high information asymmetry (coefficient -0.3476, *t*-stat = 2.12) and not for firms with low information asymmetry (coefficient -0.1863, *t*-stat = 1.41), consistent with hypothesis 2.

Table 5. Regression on changes in stock turnover

	Panel A ΔTURN			Panel B Decrease in TURN			Panel C Increase in TURN		
Variable	Coef	t-Stat	Sig	Coef	t-Stat	Sig	Coef	t-Stat	Sig
CONSTANT	-0.6601	-2.69	***	-1.4336	-6.21	***	0.5810	2.95	***
COVER	0.2886	2.92	***	-0.3964	-4.72	***	0.0601	0.61	
ΔMCAP	1.4258	4.55	***	0.9574	2.32	**	0.6417	2.49	
ΔMTB	0.0015	0.01		0.0027	0.02		-0.4177	-0.96	
ΔPRICE	-0.1860	-0.69		-0.6003	-1.40		0.2932	2.69	***
ΔSDRET	0.7152	6.58	***	0.4028	3.30	***	0.3549	0.81	
INED	0.1526	0.35		0.2594	0.68				
INDUSTRY		included			included			included	
QUARTER		included			included			included	
F-stat	7.59 (p<0.01)			4.07 (p<0.01)			2.25 (p<0.01)		
Adj R^2	19.9%			12.8%			19.2%		
N	442			294			148		

Note:
Refer to Table 1 for variable definition.
***, **, and * indicate significance at the 1%, 5% and 10% levels, respectively (1-tailed).
t-statistics are White-corrected.

5.4.2. Sensitivity tests

First, we perform tests to control for the possible correlation in the time-series and cross-sectional error structure by using the methodology discussed in Petersen (2009) to control for clustered standard errors. The results (untabulated) are qualitatively similar to those reported in Table 4.

Second, we perform sensitivity checks by using firm age as another proxy for information asymmetry and partition the sample into HIGH and LOW information asymmetry. Prior research suggests that information problems subside with age as firms' accumulate a history in the capital markets (Pittman and Fortin, 2004). By examining the link between auditor choice and debt pricing for newly public firms, Pittman and Fortin (2004) provide evidence that the economic value of auditor reputation to the cost of credit declines over time as borrowers gradually shift toward relying on their own reputations to moderate information asymmetry. In a similar vein, we conjecture that older firms have less information asymmetry than younger firms. Thus, the positive association between analyst coverage is likely to be stronger for younger firm. The results (untabulated) are qualitatively similar to those reported using bid-ask spread as a proxy for information asymmetry for tests in Table 4 and Panel B of Table 5.

6. Limitations

This study is subject to several limitations. First, the empirical evidence provided in this study is confined to participating companies in the first phase of the analyst research scheme, i.e. from April 2005 to June 2007. Future research may expand the investigation to the second phase of the analyst research scheme which has just been completed in December 2010. Second, this study has only taken into account the number of analyst research reports as a proxy for frequency of analyst coverage without considering the content of analyst research reports which could have an impact on stock liquidity. One could therefore extend the study by examining the content as well as the type of recommendation ("buy", "sell" or "hold") presented in the analyst research reports.

Third, this study has not taken into account the time that an analyst research report is posted on Bursa's website. Timeliness is a necessary component of financial information disseminate through internet (Abdelsalam and Street, 2007). The availability of high frequency data (intraday data) would enable a study into the speed with which the information generated on analyst research reports is impounded into stock prices. Lastly, the results cannot be generalised to other countries as the evidence is drawn from companies listed on the Malaysian stock exchange. It may be worthwhile for future studies to consider a comparative analysis of the analyst research scheme offered by stock exchanges in different countries.

7. Conclusion

This study examines whether the analyst research scheme has an impact on stock turnover. Using a sample of 240 companies that participated in the first phase of the research scheme, the results show that stock turnover is positively associated with the frequency of coverage throughout the first phase of the scheme. The positive association between analyst coverage and stock turnover is stronger for firms with higher information asymmetry. By comparing the pre- and post-scheme period between the companies covered by analyst and not covered by analyst, it is found that during the stock market downturn period, the reduction in stock turnover is significantly less severe for companies that are covered by analysts. Thus, the results support the investor recognition hypothesis as suggested by Merton (1987).

The fundamental contribution of this study is that it sheds light on the controversy regarding the link between analyst following and stock turnover discussed earlier. The results support the theory that analyst coverage improves stock turnover due to the reduction in information asymmetry, consistent with the findings in Brennan and Subrahmanyam (1995) and Brennan and Tamarowski (2000). Further, these results have implications for Malaysian policy makers in the sense that it demonstrates that sponsored analyst scheme does indeed achieve the objective of increasing stock liquidity. Other emerging countries with low stock liquidity might very well emulate the Malaysian practice.

References

1. Abdelsalam, O.H. and D.L. Street (2007), 'Corporate governance and the timeliness of corporate internet reporting by U.K. listed companies', *Journal of International Accounting, Auditing & Taxation,* 16: 111-130.
2. Ahn, H.-J., J. Cai, Y. Hamao and R.Y. K. Ho (2005), 'Adverse selection, brokerage coverage, and trading activity on the Tokyo Stock Exchange', *Journal of Banking & Finance,* 29 (6): 1483-508.
3. Amihud, Y. and H. Mendelson (1986), 'Asset pricing and the bid-ask spread', *Journal of Financial Economics,* 17 (2): 223-249.
4. Amihud, Y., H. Mendelson and J. Uno (1999), 'Number of Shareholders and Stock Prices: Evidence from Japan', *The Journal of Finance,* 54 (3): 1169-1184.
5. Barber, B.M. and D. Loeffler (1993), 'The "Dartboard" Column: Second-Hand Information and Price Pressure', *Journal of Financial & Quantitative Analysis,* 28 (2): 273-284.
6. Bekaert, G., C.R. Harvey and C. Lundblad (2007), 'Liquidity and Expected Returns: Lessons from Emerging Markets', *The Review of Financial Studies,* 20 (6): 1783-1831.

7. Bjerring, J.H., J. Lakonishok and T. Vermaelen (1983), 'Stock Prices and Financial Analysts' Recommendations', *Journal of Finance,* 38 (1): 187-204.
8. Bowen, R.M., X. Chen and Q. Cheng (2008), 'Analyst Coverage and the Cost of Raising Equity Capital: Evidence from Underpricing of Seasoned Equity Offerings', *Contemporary Accounting Research,* 25 (3): 657-699.
9. Brennan, M.J. and A. Subrahmanyam (1995), 'Investment analysis and price formation in securities markets', *Journal of Financial Economics,* 38 (3): 361-381.
10. Brennan, M.J. and C. Tamarowski (2000), 'Investor Relations, Liquidity, And Stock Prices', *Journal of Applied Corporate Finance,* 12 (4): 26-37.
11. Brown, J.H., D.K. Crocker and S.R. Foerster (2009), 'Trading Volume and Stock Investments', *Financial Analysts Journal,* 65 (2): 1-18.
12. Chan, K. and A. Hameed (2006), 'Stock price synchronicity and analyst coverage in emerging markets', *Journal of Financial Economics,* 80 (1): 115-147.
13. Chen, H., G. Noronha and V. Singal (2004), 'The Price Response to S&P 500 Index Additions and Deletions: Evidence of Asymmetry and a New Explanation', *The Journal of Finance,* 59 (4): 1901-1930.
14. Chen, X., Q. Cheng and K. Lo (2010), 'On the relationship between analyst reports and corporate disclosures: Exploring the roles of information discovery and interpretation', *Journal of Accounting and Economics,* 49 (3): 206-226.
15. Cheng, M. and K.R. Subramanyam (2008), 'Analyst Following and Credit Ratings', *Contemporary Accounting Research,* 25 (4): 1007-1043.
16. Chung, K.H., T.H. McInish, R.A. Wood and D.J. Wyhowski (1995), 'Production of information, information asymmetry, and the bid-ask spread: Empirical evidence from analysts' forecasts', *Journal of Banking & Finance,* 19 (6): 1025-1046.
17. Chung, K.H. and H. Jo (1996), 'The Impact of Security Analysts' Monitoring and Marketing Functions on the Market Value of Firms', *Journal of Financial & Quantitative Analysis,* 31 (4): 493-512.
18. Chung, K. H., J. Elder and J.-C. Kim (2010), 'Corporate Governance and Liquidity', *Journal of Financial & Quantitative Analysis,* 45 (2): 265-291.
19. Datar, V.T., N.Y. Naik and R. Radcliffe (1998), 'Liquidity and stock returns: An alternative test', *Journal of Financial Markets,* 1 (2): 203-219.
20. Davies, P.L., and M. Canes (1978), 'Stock Prices and the Publication of Second-Hand Information', *Journal of Business,* 51 (1): 43-56.
21. Foo, Y.-B. and M. Mat Zain (2010), 'Board independence, board diligence and liquidity in Malaysia: A research note', *Journal of Contemporary Accounting & Economics,* 6 (2): 92-100.
22. Frankel, R., S.P. Kothari and J. Weber (2006), 'Determinants of the informativeness of analyst research', *Journal of Accounting and Economics,* 41 (1-2): 29-54.
23. Groth, J.C., W.G. Lewellen, G.G. Schlarbaum and R.C. Lease (1979), 'An Analysis of Brokerage House Securities Recommendations', *Financial Analysts Journal,* 35 (1): 32-40.
24. Grullon, G., G. Kanatas and J.P. Weston (2004), 'Advertising, Breadth of Ownership, and Liquidity', *The Review of Financial Studies,* 17 (2): 439-461.
25. Gujarati, D. N. (2003), *Essentials of Econometrics.* McGraw-Hill Irwin.
26. He, W., L. Shivakumar, B.K. Sidhu and D. Simmonds (2010), 'Exchange Sponsored Analyst Research'. 23rd Australasian Finance and Banking Conference 2010 Paper, Available at SSRN: http://ssrn.com/abstract=1677713
27. Irvine, P.J. (2003), 'The incremental impact of analyst initiation of coverage', *Journal of Corporate Finance,* 9 (4): 431-451.
28. Jayaraman, S. and T.T. Milbourn (2012), 'The Role of Stock Liquidity in Executive Compensation', *The Accounting Review,* 87 (2): 537-563.
29. Kadlec, G. B. and J.J. McConnell (1994), 'The Effect of Market Segmentation and Illiquidity on Asset Prices: Evidence from Exchange Listings', *Journal of Finance,* 49 (2): 611-636.
30. Keasler, T. and C. McNeil (2010), 'Mad Money stock recommendations: market reaction and performance', *Journal of Economics & Finance,* 34 (1): 1-22.
31. Kent, P. and J. Stewart (2008), 'Corporate governance and disclosures on the transition to International Financial Reporting Standards', *Accounting & Finance,* 48 (4): 649-671.
32. Lang, M.H., K.V. Lins and D.P. Miller (2004), 'Concentrated Control, Analyst Following, and Valuation: Do Analysts Matter Most When Investors Are Protected Least?', *Journal of Accounting Research,* 42 (3): 589-623.
33. Lehavy, R. and R. Sloan (2008), 'Investor recognition and stock returns', *Review of Accounting Studies,* 13 (2): 327-361.
34. Levine, R. (1991), 'Stock Markets, Growth, and Tax Policy', *Journal of Finance,* 46 (4): 1445-1465.
35. Levine, R. and S. Zervos (1998), 'Stock Markets, Banks, and Economic Growth', *The American Economic Review,* 88 (3): 537-558.
36. Mak, Y.T. and J.M. Sequeira (2007), 'An Analysis of the Impact of the CMDF-Bursa Research Scheme'. Available at http://www2.standardandpoors.com/spf/pdf/equity/Impact_Study_Revised.pdf.
37. Merton, R.C. (1987), 'A Simple Model of Capital Market Equilibrium with Incomplete Information', *Journal of Finance,* 42 (3): 483-510.
38. Pagano, M., O. Randl, A.A. Röell and J. Zechner (2001), 'What makes stock exchanges succeed? Evidence from cross-listing decisions', *European Economic Review,* 45 (4-6): 770-782.
39. Pari, R. (1987), 'Wall Street Week recommendations: yes or no?' *Journal of Portfolio Management,* 13: 74–76.
40. Parlour, C.A., D.J. Seppi (2003), 'Liquidity-Based Competition for Order Flow', *Review of Financial Studies,* 16 (2): 301-343.
41. Pastor, L., and P. Veronesi (2003), 'Stock Valuation and Learning about Profitability', *Journal of Finance,* 58 (5): 1749-1790.
42. Petersen, C. and T. Plenborg (2006), 'Voluntary disclosure and information asymmetry in Denmark', *Journal of International Accounting, Auditing and Taxation,* 15 (2): 127-149.

43. Petersen, M.A. (2009), 'Estimating Standard Errors in Finance Panel Data Sets: Comparing Approaches', *Review of Financial Studies*, 22 (1): 435-480.
44. Pittman, J.A. S. Fortin (2004), 'Auditor choice and the cost of debt capital for newly public firms', *Journal of Accounting and Economics*, 37 (1): 113-136.
45. Roulstone, D.T. (2003), 'Analyst Following and Market Liquidity', *Contemporary Accounting Research*, 20 (3): 551-578.
46. SRI International (1987), '*Investor Information Needs and the Annual Report'.* Morristown, N.J: Financial Executives Research Foundation.
47. Taylor, G., G. Tower and J. Neilson (2010), 'Corporate communication of financial risk', *Accounting & Finance*, 50 (2): 417-446.
48. Welker, M. (1995), 'Disclosure Policy, Information Asymmetry, and Liquidity in Equity Markets', *Contemporary Accounting Research*, 11 (2): 801-827.
49. White, H. (1980), 'A Heteroskedasticity-Consistent Covariance Matrix Estimator And A Direct Test For Heteroskedasticity', *Econometrica*, 48 (4): 817-838.