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Fair Value Accounting and the Cost of Equity Capital of Asian Banks

(Perakaunan Nilai Saksama dan Kos Modal Ekuiti Bank-bank Asia)

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ABSTRACT

The cost of equity is a measure of the required return by investors. It is desirable for firms, especially banks, to lower the cost of equity. There are a number of factors related to the quality of information disclosed that could influence the cost of equity. The accounting regulators aim to improve the quality of information by requiring assets to be valued at fair value. However the application of fair value accounting potentially increases information asymmetry, especially if fair value is estimated and subjected to the judgment of the preparers of financial statements. This asymmetric information problem potentially lowers the information quality and increases investors' estimation risk and thus influences the cost of equity capital. Therefore, this research investigates the effect of fair value accounting on the cost of equity capital for a sample of Asian banks since banks hold a relatively larger proportion of assets at fair value. Using the generalized method of moment model for dynamic panel data, this research finds significant and positive relationship between assets at fair value and the cost of equity. The results found are similar for both quoted and unquoted assets. Thus although to regulators, fair value accounting provide relevant and timely information to investors, assets at fair value are perceived to be risky and as a consequence investors require higher returns.

Keywords: Fair value; cost of equity; information asymmetry; information quality

ABSTRAK

Kos ekuiti adalah ukuran pulangan yang dikehendaki oleh pelabur. Adalah wajar untuk firma, terutamanya bank, merendahkan kos ekuiti. Terdapat beberapa faktor yang berkaitan dengan kualiti maklumat yang dizahirkan yang boleh mempengaruhi kos ekuiti. Pengawal selia perakaunan bertujuan meningkatkan kualiti maklumat dengan memerlukan aset dinilai pada nilai saksama. Walau bagaimanapun pemakaian perakaunan nilai saksama berpotensi meningkatkan maklumat tak seimbang, terutamanya jika nilai saksama dianggarkan dan tertakluk kepada budi bicara penyedia penyata kewangan. Masalah maklumat tak seimbang berpotensi mengurangkan kualiti maklumat dan meningkatkan risiko penganggaran pelabur dan dengan itu mempengaruhi kos ekuiti. Oleh itu, kajian ini mengkaji kesan perakaunan nilai saksama pada kos modal ekuiti untuk sampel yang terdiri daripada bank-bank di Asia kerana bank memegang sebahagian yang agak lebih besar aset yang dinilai saksama. Dengan menggunakan kaedah momen teritlak untuk data panel dinamik, kajian ini mendapati hubungan yang signifikan dan positif antara aset dinilai saksama dan kos ekuiti. Dapatan kajian adalah sama untuk kedua-dua aset yang disebut harga dan aset yang tidak disebut harga. Oleh itu, walaupun kepada pengawal selia, perakaunan nilai saksama menyediakan maklumat yang relevan dan tepat pada masanya kepada pelabur, aset yang dinilai saksama dilihat sebagai berisiko dan akibatnya pelabur menghendaki pulangan yang lebih tinggi.

Kata kunci: Nilai saksama; kos ekuiti; asimetri maklumat; kualiti maklumat

INTRODUCTION

The cost of equity (COE) is an implied rate of return or a measure of the return that investors required. Previous research shows that the asymmetric information (Aboody, Hughes & Liu 2005; Amihud & Mendelson 1986; Ly 2010) and information quality (Botosan, Plumlee & Xie 2004; Diamond & Verrechia 1991; Easley, Hvidkjaer & O'hara 2002; Francis, LaFond, Olsson & Schipper, 2005; Francis, Nanda & Olsson 2008; Leuz & Verrecchia 2005; Lambert, Leuz & Verrecchia 2007; Hail (2002)) influence the COE. The asymmetric information problem between investors could increase the cost of raising funds and could lead suppliers of capital to reduce the stock price. Ly (2010) describes two reasons for this. Information asymmetry increases investors' estimation risk as less information and/or poor quality information increases uncertainty of firms' future cash flows estimation. Information asymmetry induces adverse selection and in turn increases costs of transactions between buyers and sellers. Since there is less demand for stocks with high transaction costs, firms of such stocks must discount prices (translated as higher cost of capital) to induce investors to purchase the shares. Fair value accounting provide more transparent information to users thus improving the quality of information. This in turn reduces COE (Diamond &

Verrecchia 1991). Fair value measures are deemed more relevant and timely than historical cost measure albeit at the expense of reliability, some might argue. Previous studies such as Christensen and Nikolaev (2013) and Lins, Servaes and Tamayo (2011) criticise fair value accounting in generating information asymmetry problem and risk due to the inherent subjectivity and discretion in the measurement and hence, increases COE which counters the desired outcome. Some other studies reported that the notion of fair value accounting introduces more volatility in the financial statement (Barth 1994). Furthermore, the related International Financial Reporting Standard (IFRS) provides managerial flexibility and discretion in cases where market values are not available (Ball 2006; Schipper 2005).

Nonetheless, the criticisms of fair value accounting are largely directed towards accounting for unquoted fair valued assets (Liao, Kang, Morris & Tang 2010; Li 2010). Managers use estimation models for unquoted fair valued assets which may introduce, as a result, estimation risk from intentional or unintentional errors and information asymmetry issues as managers have more information regarding the value of these assets. Unquoted fair valued assets are more likely to influence COE compared to quoted fair valued assets. Thus, this research examine whether the subjectivity and discretionary nature of the measurements under fair value accounting introduce information risk and consequently increase COE. This research focuses on banks as banks hold substantial amount of fair valued assets.

Generally, the results indicate that fair valued assets in total, unquoted fair valued assets and quoted fair valued assets individually increases the COE after taking into account other risk factors such as size, beta and book to market ratio. This is an important contribution towards the body of knowledge as previous study such as Christensen and Nikolaev (2013) focuses on non-financial assets or employs a survey method (Lins et al 2011). By testing the effect of fair value accounting on the COE, the research addresses directly the asymmetric information problem with regards to fair value accounting. Theoretically this research affirms Armstrong, Core, Taylor and Verrecchia (2011) theoretical assertion that the relationship between information asymmetry and COE is likely to be found in imperfect market such as in Asia. This is further explained in the methodology section.

This paper proceeds as follows: the section immediately follows provides literature review related to this research, while the methodology section discusses the sample selection, research model and the generalized method of moment (GMM). The section that follows presents the results and discusses the findings of the study. The paper finally concludes the research finding and presents limitations of the study and possible avenues for further research.

LITERATURE REVIEW

FAIR VALUE ACCOUNTING

For the purpose of this research and discussion fair value accounting means measuring assets/liabilities at fair value. The adoption of fair value measurement moves accounting practice away from the established concepts of historical cost and stewardship towards the concepts of investor decisions based on future cash flows and fair value. The International Financial Reporting Standard (IFRS) 13 Fair Value (IFRS 2011:13) defined fair value as" the price that would be received to sell an asset or paid to transfer a liability in an orderly transaction between market participants at the measurement date." Further IFRS 13 prescribes a framework for performing fair value measurements using a three-tiered hierarchy of inputs. The main purpose of the three-tiered hierarchy of inputs is to increase consistency and comparability in fair value measurements (Fahnestock & Bostwick 2011). Level 1 fair value estimates "are observable inputs based on quoted market prices for identical assets and liabilities" as given in IFRS 13 (IFRS 2011: 10) and has been used in this present research as quoted fair valued assets. Level 1 fair value is most applicable to those assets or liabilities that are actively traded (Chea 2011). Level 2 fair value inputs are quoted prices from sources other than Level 1 which are observable either directly or indirectly. Estimates are based on quoted market prices of similar or related assets and liabilities.

Level 3 is defined in IFRS 13 (IFRS 2011: 33) as "unobservable inputs for the asset or liability." Level 3 fair value is computed by using price models or discounted cash flow methodologies or other information reflecting a reporting entity's own assumptions and judgments in assigning the asset or liability. Level 3 should only be used if level 1 or 2 estimates are not available, no readily available markets exist or with quoted values on measurement dates that fall during periods of market illiquidity or volatility (Verdi 2006). This research classifies fair valued assets using level 2 and 3 inputs as unquoted fair valued assets as in the sample period the three-tiered hierarchy of inputs is not applicable yet.

ARGUMENTS FOR AND AGAINST FAIR VALUE ACCOUNTING

Advocates of fair value accounting argues that fair value measurement is the best measure that allows investors to evaluate companies and make decisions based on up to date information (Ball 2006; Fahnestock & Bostwick 2011; Cherry & Hague 2009). Fair value measurement in recent standard focuses on market-based exchange values instead of entity-based values claiming that such treatment allows investors to see what is inside the company when economic conditions change (Fahnestock & Bostwick 2011). Thus, fair value accounting is encouraged as a means of enhancing transparency to investors (Chasan 2008). Since fair value accounting provides information

about current and future condition of an entity, it helps investors in making their own prediction and in confirming or correcting their earlier expectations (Barth, Landsman & Wahlen 1995; Kuhrana & Kim 2003).

Barth (1994), Willis (2002) and Danbolt and Rees (2008) assert that information about financial assets and liabilities based on fair value measurement is more relevant than amounts based on their historical cost. Historical cost method is viewed as having a significantly lower degree of comparability (Georgiou & Jack 2011). Investors are concerned with value, not costs, so reporting assets/liabilities at historical prices become irrelevant in assessing an entity's current financial position (Penman 2007) with the passage of time.

However, there is an element of discretion in determining fair value which reduces the reliability of asset measurement compared to historical cost. The key issue is whether fair value accounting can be measured reliably for financial instruments which are not traded in competitive and liquid form, for example, specialized receivables or non-standardized loans (Khan 2014). Nissim (2003) reported that the reliability of loan at fair value is lower for less healthy banks, since banks mangers may overstate fair value in an attempt to influence the market's perception of their risk and performance. On the other hand, fair value of available –for-sale securities which are more actively traded in a well-established market, explain equity values better than historical cost. Therefore, fair value accounting is more relevant when objective market determined fair value is available.

However, in established market, the bid-ask spread can be large enough to cause substantial uncertainty about fair value accounting and hence introduce noise in the financial statements (Ball 2006). Ball (2006) argued that in illiquid markets, there is a potential for managers to influence quoted prices if the trading is performed by them. Consequently this allows them to manipulate fair value estimates especially when 'mark to model' accounting is employed to simulate market prices, since managers can impact both the choice of models and the parameter estimates. However, if liquid market prices are available, fair value accounting decreases opportunities for self-interested managers to impact the financial statements by exercising their discretion over realizing gains and losses through the timing of asset sales (Ball 2006).

Many bank managers express concern that users will be misled (Barth et al. 1995), because earnings numbers based on fair value for investment securities are likely to be more volatile than those based on historical cost. This increased volatility is not only reflective of the underlying economic volatility of banks' operations, but inefficient capital allocation decisions by investors will result, thus raising banks' COE. Also, increased use of fair value measurement will result in financial statements reflecting more inherent volatility and, likely, more estimation error volatility Livne, Markarian and Milne (2011).Vera and Renato (2012) document that investors are aware of estimation errors and, therefore, assign less relevance to numbers which are less trustworthy and less reliable in fair valued assets because these investors expected a high information risk, inherent estimation errors and possible reporting bias exist with these numbers.

The error and uncertainty is also one of the main concerns under the three levels of hierarchy particularly in Level 3 inputs (Lefebvre, Simonova & Scarlett 2009). Managers have the ability to exercise a degree of discretion over it, so, managers are more likely to generate intentional biases in their estimations (Aboody et al. 2005; Bartov, Mohanram & Nissim 2007). The expected presence of intentional error and unintentional error especially in levels 3 fair valued assets are expected to influence the reliability and transparency of financial information. Unintentional error comes from the controlling system, environment and other factors (Fahnestock & Bostwick 2011). Unintentional or the noise error also comes from estimating market value. Intentional error may come from management purpose or intention (Valencia 2011), because, the manager revalue the assets ex post after they know the effect of the fair value estimate on the financial statements. For instance, managers may only revalue assets when they intend to manipulate reported performance (Nissim 2003). Alternatively, managers may revalue assets when reliable fair value estimates are available as reported by Christensen and Nikolaev (2013). To the extent that these biases are expected on average, investors are likely to adjust such estimates in valuing the firm.

FAIR VALUE ACCOUNTING, INFORMATION ASYMMETRY AND THE COE

In general, accounting information facilitates investors in their assessment of firms' future cash flows, consequently risk and the return they required of firms. Thus in order to examine the consequences of applying fair value accounting, this research examine its effect on the cost of equity. COE is "the expected return on the firm's equity capital that equates the firm's stock price at the beginning of the period to the expected cash flow investors receive at the end of the period" (Biddle, Hilary & Verdi 2009; Botosan & Plumlee 2005). Munteanu (2011) defines the COE from the firm perspective as the cost on companies for obtaining funds. From the investors' perspective, COE is the return that investors expect. If investors are uncertain of a firm's future cash flows, as a result of poor accounting information, they are likely to use a higher discount rate to price the firm's equity. This research adopts this concept of COE.

Information asymmetry, that is when different levels of information exist between managers and investors, and between buying and selling investors, influences the COE. Information asymmetry problem increases transaction costs resulting in low market liquidity as a result of low demand from the investors for stocks with high cost of transaction (Diamond & Verrecchia 1991). The COE is also higher because the company gives a discount to

compensate for the investors' reluctance to retain their portfolio stocks with low market liquidity (Ly 2010).

The influence of firm specific information on firm's cost of capital is the subject of a number of theoretical papers: Diamond and Verrechia (1991), Easley and O'Hara (2004), Leuz and Verrecchia (2005) and Lambert et al (2007). Diamond and Verrechia (1991) builds a model that focus on information effect and their result shows the beneficial effect of public information in reducing information asymmetry, the cost of equity and future risk. But their result is expected to be found with large firm and when no one has private information about these firms.

Easley and O'Hara (2004) examines the relation between the relative proportion of public and private information with COE. They argue that less informed traders are less likely to hold assets. Less informed investors perceive the stocks to be risky due to the information risk and thus they demand higher returns to compensate for this extra risk. So investors received lower return for stocks when they hold greater private information and less public information because this private information impose risk on less informed investors and they are not able to adjust their investment as informed investors. More importantly for the purpose of this research, their analysis concludes that firm's choice of accounting treatment, among others, could influence its COE.

Leuz and Verrecchia (2005) develops a model to explain the effect of information quality on the COE through its effect on expected cash flows. They assumed firms' investment opportunities are observable to investors as firms report them to investors. So, mangers are expected to select projects that maximize market value and given that the firms report to the investors, the quality of report affects investment choice, which in turn affects the level of expected cash flows.

Lambert et al. (2007) analyzes the quality of accounting information effect on COE and found that directly, quality of accounting information influences COE since an improvement in information quality decreases non-diversifiable risk and affects the assessed covariance between a firm's cash flow with other firms' cash flows. Indirectly, the quality of accounting information influences COE since information quality can change a firm's real decisions (regarding production or investment) through the end-of-period expected cash flows.

These theoretical papers form a basis for why information risk can potentially be priced and determine the COE. Consistent with this idea, many empirical research explore the effect of information quality/risk or information asymmetry on asset returns or the COE using different proxies of information quality or risk and required return. Aboody et al. (2005) reports a positive relationship between information asymmetry, using earnings quality, and COE. Li and Shroff (2010) measure the asymmetric information by calculating bid-ask spread. Armstrong et al. (2011) use accounting data that are associated with higher information asymmetry. Ashbaugh, Collins and LaFond (2004) also find that COE is low for company reporting higher quality information through capital accruals and transparent earnings. Francis et al. (2005) find that information risk increases the COE through accruals quality in firm and they differentiate between accruals quality determined by economic fundamentals and management discretions. And accruals quality has been used in their paper because it is a proxy for the information risk that is associated with earnings. Thus the link between accounting information and COE of firms is considered as one of the most fundamental issues in accounting and standard setters too frequently refer to it (Lambert et al. 2007).

In summary pervious research establish the impact of both the asymmetric information and information quality on COE. In other words these theoretical and empirical researches show that information risk is a risk factor that could affect the COE. This study takes cognizance of these research findings in conjecturing the information risk in fair valued assets and consequently its effect on COE. The information risk arises as the shareholders do not have the full information regarding the evaluation; especially in unquoted asset fair valued assets. So the level of the managerial discretion and manipulation with unquoted asset at fair value are expected to be high (Acharya & Yorulmazer 2002). Nissim (2003) also states that the fair values are associated with potential unreliability when there are no market prices for the asset or liability. So, the reliability cost of fair value estimates is compounded by the problem that in the absence of active markets for a particular financial instrument, management must estimates fair value, which can be subject to discretion or manipulation (Landsman 2005). Even though assets and liabilities measured at the Level 2 fair value are considered more reliable than Level 3 fair value, they are not without risk. The inputs or the prices used might be inferred from an index, another security with similar attributes to the one being measured (Chea 2011) or estimation model (Liao et al. 2010), and thus still involve some managerial judgement and discretion. Without reliable accounting information the ability of investors to monitor managerial behaviour is reduced; hence investors lose their ability to link manager activities to firm performance and value (Biddle et al. 2009; Hope & Thomas 2008; Vera & Renato 2012). So, the ability to obtain reliable fair value estimates is more closely related to the existence of liquid markets for assets, which provide an independent source of verification (Watts 2006). Accordingly, the Level 1 inputs based on quoted prices are considered as most transparent and reliable as compared to Level 2 and 3 which has been classed together as unquoted asset at fair value in this research. Fair value accounting is also influenced by intentional and unintentional error. Intentional estimation error arises from incentives to manage earnings, and unintentional error arises from management lapses and environmental uncertainty (Francis et al. 2005) and it is a real possibility. Thus given the compelling arguments of the information risk in the specific case of adopting fair value accounting, this research will focus on the influence of fair value accounting on COE.

RESEARCH METHODOLOGY

POPULATION AND SAMPLE

The population for this study is listed banks in Asia. This study focuses on banks as banks have substantial proportion of fair valued assets. Armstrong et al (2011) shows that the relationship between asymmetric information and COE is more likely in imperfect markets. Armstrong et al (2011) found information asymmetry among investors positively affects COE when markets are imperfect and this relationship depends on the nature of the market. Armstrong et al (2011) refers to perfect market as when investors are price takers and the number of traders is essentially large or infinite. As a result, this research selects sample of banks in Asian market since this best present imperfect market.

We draw the sample from population of largest Asian (top five in each country or less depending on availability) banks listed on the stock exchange of each country for the period 2007 – 2013 because these large banks are the ones holding large assets (especially fair valued assets) and have resources to improve their information quality and practices. We began our sample from 2007 as these big banks start disclosing unquoted fair valued assets and quoted fair valued assets in that year. Thus the effective date of application of the standard is not relevant for the purpose of our study. In 2007, companies are allowed to practice fair value measurement for all financial assets and liabilities (Fahnestock & Bostwick 2011; Li 2010). Beck, Demirgüç-Kunt and Peria (2008) and Caprio and Klingebiel (1996) use the same method to choose their sample.

This sample is unbalanced in the sense that not all banks are observed in each year, although they are all observed for at least five to four years in order to have appropriate number of lags as an explanatory variable. This is to solve data reduction problem due to the adoption of lagged values in the dynamic GMM estimations.

The relevant data was extracted from Thomson DataStream and annual reports. Initial data collection yielded an initial sample of 995 bank-year observations. The sample size was subsequently reduced to 509 for a number of reasons. Some financial reports could not be obtained for different reasons such as financial reports were not in the English language and financial reports were unavailable. Some banks are deleted due to the missing data required to estimate COE and fair valued assets. In addition the sample to test the relationship between quoted and unquoted fair valued assets and COE consists of unbalanced panel of 471 banks -year observations. The final sample involved 114 banks from 26 countries in Asia (Table 1).

TABLE 1. List of countries and number of banks in the sample

	Countries	No of Banks
1	United Arab Emirates	5
2	Bahrain	3
3	Kuwait	5
4	Qatar	5
5	Oman	5
6	Saudi Arabia	5
7	Malaysia	5
8	China	5
9	Hong Kong	5
10	Indonesia	5
11	Japan	5
12	Philippine	5
13	Singapore	3
14	Korea	4
15	Taiwan	5
16	Thailand	5
17	Vietnam	5
18	Jordan	4
19	India	4
20	Israel	4
21	Kazakhstan	2
22	Lebanon	2
23	Pakistan	5
24	Russia	4
25	Sir Lanka	4
26	Turkey	5
		114

RESEARCH MODEL

The relationship between FVA and COE is expressed in the following equation:

$$COE_{it} = \alpha_0 + \beta_1 COE_{i,t-1} + \beta_2 FVA_{i,t} + \beta_3 BETA_{i,t} + \beta_4 BMV_{i,t} + \beta_5 SIZE_{i,t} + \eta_i + \nu_{i,t} \quad (1)$$

Where:

COE_{it} = cost of equity capital of bank i at time t, This is calculated as $\sqrt{(EPS_{t+2} - EPS_{t+1})/Pit}$. EPS_{t+1} and EPS_{t+2} are forecasted earnings per share at time t+1 and t+2 . P_{it} is share price of bank i at time t.

COE_{it-1} = the cost of equity of bank i at time t-1

FVA_{it} = fair valued assets measured as the proportion of assets at fair value over total assets

$BETA_{i,t}$ = the systematic risk and the value is extracted from Thomson DataStream,

BMV_{it} = ratio of book to market value

$SIZE_{it}$ = the natural logarithm of total assets.

This measurement of COE is found to be stable and valid (Botosan & Plumlee 2005). The error term (ε_i) is a function of the firm specific effect (η_i) and time specific effect ($\nu_{i,t}$). $\varepsilon_i = \eta_i + \nu_{i,t}$, represent error term which is assumed to be based on unobserved firm specific effect that cause heterogeneity in $COE_{i,t}$ and $\nu_{i,t}$ represents remainder stochastic disturbance term that is assumed to be identical and independently distributed with mean zero and the variance σ^2_ν.

Including the lag of COE implies that the current COE is influenced by the past COE. This indicates that the baseline model in equation (1) is a dynamic panel data model. The dynamic panel data has been used in many studies, for example Karim et al. (2013), Karim and Saini (2013), and Karim and Zaidi (2015). The inclusion of lagged of COE in the baseline model in equation (1) implies that there is a correlation between the regressors and the error term since the lagged of COE depend on error term ε_{i-1}. Therefore, due to this correlation, the dynamic panel data estimation in equation (1) suffers from Nickel (1981) bias, which disappears only if T is large or approaches infinity. Arellano and Bond (1991) proposed a generalized method of moments (GMM) estimators to address the endogeneity problem (the correlation between the lagged dependent variable and the error term). This estimator was then extended by Arelano and Bover (1995) and Blundel and Bond (1998).

In order to remove bank-specific effect (η_i) in equation (1), Arelano and Bover (1995) proposed a forward orthogonal deviation transformation. This transformation essentially subtracts the mean of future observations available in the sample from the first T-1 observations. Its main advantages is to preserve sample size in panel with gaps. This method of transformation has been used by previous study, for example Karim et al. (2013), Karim and Saini (2013), and Karim and Zaidi (2015). All variables in this paper are potentially endogenous and they are related to transformed error term. So, all variable present in equation have been assumed and treated as endogenous variables. As result the GMM model assumptions could be written as presented in equation (2) – (6).

$$E \mid COE_{i,t}(\varepsilon_i)\mid = 0 \text{ for all } s \geq t \quad \text{but} \quad E \mid COE_{i,t}(\varepsilon_i)\mid \neq 0 \text{ for } s < t \quad (2)$$

$$E \mid FVA_{i,t}(\varepsilon_i)\mid = 0 \text{ for all } s \geq t \quad \text{but} \quad E \mid FVA_{i,t}(\varepsilon_i)\mid \neq 0 \text{ for } s < t \quad (3)$$

$$E \mid BETA_{i,t}(\varepsilon_i)\mid = 0 \text{ for all } s \geq t \quad \text{but} \quad E \mid BETA_{i,t}(\varepsilon_i)\mid \neq 0 \text{ for } s < t \quad (4)$$

$$E \mid BTM_{i,t}(\varepsilon_i)\mid = 0 \text{ for all } s \geq t \quad \text{but} \quad E \mid BTM_{i,t}(\varepsilon_i)\mid \neq 0 \text{ for } s < t \quad (5)$$

$$E \mid SIZE_{i,t}(\varepsilon_i)\mid = 0 \text{ for all } s \geq t \quad \text{but} \quad E \mid SIZE_{i,t}(\varepsilon_i)\mid \neq 0 \text{ for } s < t \quad (6)$$

The reliability of the GMM estimates is tested by the Sargan test with null hypothesis of a correct model specification and valid over identifying restrictions (Beltratti & Paladino 2013). And it tests if the instruments as a group are exogenous. If the moment condition holds, then the instrument is valid and model correctly specified. Therefore, the higher the p-value of Sargan statistics the better it is. The test for AR (1) should reject null of no first different order serial correlation. Nevertheless, the test for AR (2) should not reject null of no second order serial correlation test in dynamic model.

RESEARCH FINDINGS

DESCRIPTIVE STATISTICS

Table 2 presents the descriptive statistics of variables. The dependent variable COE ranged from 0 to 0.58 with a mean of 0.13, and standard deviation of 0.10. A mean (median) cost of equity of 13.9% (11.2%) is similar to estimates used in other studies. The mean and median for this study is similar to the value presented in Botosan (1997) and Francis et al. (2005). These summary statistics indicate that our sample bank costs of equity estimates are in line with past researches.

TABLE 2. Descriptive statistics

Stats	COE	FVA	QFVA	UFVA	BETA	BTM	SIZE
Mean	0.13	0.20	0.13	0.08	1.00	0.85	8.6
Median	0.11	0.11	0.05	0.02	1.03	0.72	8.51
Min	0.00	2.62E-07	7.81E-08	1.29E-09	0.04	0.00	5.98
Max	0.58	0.98	0.95	0.86	1.88	3.70	11.46
Skewness	2.44	1.93	2.66	3.55	-0.27	2.16	0.14
Kurtosis	10.56	5.73	9.57	16.13	3.78	10.17	2.96
Std. Dev.	0.10	0.26	0.21	0.16	0.32	0.57	1.27

Note: COE = Cost of equity, FVA = Fair valued assets, QFVA = Quoted fair valued assets, UFVA = Unquoted fair valued assets, Beta = Systematic risk, BTM = Book to market ratio, SIZE = natural logarithm of total assets

The proportion of fair valued assets to total assets range between 2.62E-07 and 0.98, with mean of 0.20 and standard deviation of 0.26. Whilst, the proportion of quoted fair valued assets range between 7.81E-06 and 0.95, with mean of 0.13 and standard deviation of 0.21. The proportion of unquoted fair valued assets range between 1.29E-09 and 0.86, with mean of 0.08 and standard deviation of 0.16. As a whole banks hold a higher proportion of quoted fair valued assets than unquoted fair valued assets.

Beta ranges from 0.04 to 1.88 with mean 1.01 and standard deviation of 0.32. The mean of beta has a value slightly higher than one, indicating that the samples have an average total market risk slightly over the stock market. And the minimum, maximum, mean and standard deviation for book to market ratio is 0.00, 3.70, 0.85 and 0.57 respectively. The standard deviations of the dependent and explanatory variables show large variation.

BIVARIATE ANALYSIS

Table 3 shows a significant correlation between the dependent variable COE and all of the control variables. However, the relationship between independent variables fair valued assets and COE is not significant. But the correlation between fair valued assets and other risk factors such as beta and BTM and size are positive and significant and this positive and significant relationship indicates the riskiness of this asset.

However, the correlation between quoted fair valued assets (Table 3) and risk factors such as beta, book to market ratio and size are positive and significant. The correlation between unquoted fair valued assets and risk factors are not significant. It is possible that the insignificant correlation between fair valued assets with COE arises as the bivariate analysis ignores the potential influence of any correlation among explanatory variables as Botosan and Pulmee (2002) discussed.

TABLE 3. Correlation between variables

Stats	COE	FVA	QFVA	UFVA	BETA	BTM	SIZE
COE	1						
FVA	-0.03	1					
	(0.36)						
QFVA	0.03	-	1				
	0.38						
UFVA	-0.05	-	-0.01	1			
	0.12		*(0.75)*				
BETA	-0.13***	0.08***	0.12***	-0.00	1		
	(0.00)	*(0.01)*	*(0.00)*	*(0.79)*			
BTM	0.48***	0.09***	0.11***	0.05	-0.08***	1	
	(0.00)	*(0.00)*	*(0.00)*	*(0.15)*	*(0.02)*		
SIZE	0.09***	0.07**	0.11***	-0.01	0.15***	0.07**	1
	(0.01)	*(0.05)*	*(0.0)*	*(0.68)*	*(0.00)*	*(0.03)*	

Notes: COE = Cost of equity, FVA = Fair valued assets, QFVA = Quoted fair valued assets, UFVA = Unquoted fair valued assets, Beta = Systematic risk, BTM = Book to market ratio, SIZE = natural logarithm of total assets.
The figures in italics in parenthesis are the probabilities.
*** Significant at 1% level
** Significant at 5% level

MULTIVARIATE ANALYSIS

Fair valued assets variable (FVA), together with risk factors; beta, book to market ratio and size are regressed first on COE using GMM. Secondly, the fair value assets is then split into quoted and unquoted assets (QFVA and UFVA) and together with other control variables are regressed on COE using GMM. The correlations between the independent variables are not harmful and it are not too high. Another method to assess multicollinearity is VIF which is the inverse of the Tolerance. The VIF in Table 4 and 5 have values less than 10, which indicate that the correlation is small and suggests no possibility of the multicollinearity problem according to Pallant (2007) and Tabachnick and Fidell (2007).

Outlier data were removed by winsorizing 1% cut off to eliminate the effects of outlier issues as recommended by McLean, Pontiff and Watanabe (2009), Aboody (2009) and Hail (2002). Moreover, this winsorizing method has ability to save the quantity of sample comparing with other method. And it can be observed that the removing of outlier was advisable by comparing the skewness and kurtosis, minimum and maximum (Tabachnick & Fidell 2007).

On the normality of data issue, according to the central limit theorem the mean of the sampling distribution for large sample size approaches the population mean. Tabachnick and Fidell (2007) and Ghasemi and Zahediasl (2012) stated that normality tests could reject the null of normal distribution for large samples such as in this study. Because the actual size is more important than the significant level of skewness and the influence of departure from zero kurtosis also diminishes.

TABLE 4. VIF values for equation 1 analysis using fair valued assets as independent variable

Variable	VIF	1/VIF
BETA	1.04	0.95
SIZE	1.04	0.96
BTM	1.03	0.97
FVA	1.02	0.97
Mean VIF	1.03	

TABLE 5. VIF values for equation 1 analysis using quoted and unquoted fair valued assets as independent variables

Variable	VIF	1/VIF
BETA	1.05	0.95
SIZE	1.04	0.95
QFVA	1.04	0.96
BTM	1.03	0.97
UFVA	1	0.99
MEAN VIF	1.03	

Tables 6 provide the results of the multivariate analysis. The reliability of the GMM estimates is tested using the Sargan test. The model passes the requirement with a *p*-value of 0.10 in Table 6. For the second model when fair valued assets is divided into quoted fair valued assets and unquoted fair valued assets the *p*-value is 0.27 as shown in Table 6. This indicates that the instruments are valid.

And lastly, the research tests the autocorrelation AR (1) and AR (2). The resulting *p*-value of 0.001 and 0.21 for test AR (1) and AR (2) indicate that estimates of the dynamic panel related to fair valued assets do not suffer from first and second order- serial correlation (Table 6). Similarly, the results (Table 6) found AR (1) = (0.00) and AR (2) = (0.18) for the second model related to quoted fair valued assets and unquoted fair valued assets. Thus the results show that all assumptions are valid and that the results obtained under the dynamic model are acceptable.

DISCUSSION

The results found positive and significant relationship between fair valued assets and COE at 5% significant level (Table 6). This implies that high fair valued assets in banks indicates high asset risk, which, therefore, leads to a high COE. Fair valued assets generally introduces more volatility in the financial statement and generates information asymmetry problem (Barth 1994). So, high fair valued assets indicate a high likelihood of error either intentional or unintentional. This information asymmetry in risky asset is expected to lead to a large probability of

TABLE 6. Results for equation 1 analysis (with the constant 0)

	$FVA_{i,t}$ as independent variable		$QFVA_{i,t}$ and $UNQFVA_{i,t}$ as independent variables	
	EXPECTED SIGN	COEFFICIENT (*P-VALUE*)	EXPECTED SIGN	EXPECTED SIGN (*P-VALUE*)
$COE_{i,t-1}$		0.10** *(0.04)*		0.35** *(0.04)*
$FVA_{i,t}$	(+)	0.10** *(0.02)*		-
$QFVA_{i,t}$			(+)	0.11* *(0.08)*
$UFVA_{i,t}$			(+)	0.27* *(0.09)*
$BETA_{i,t}$	(+)	0.09 *(0.36)*	(+)	0.04 *(0.68)*
$BTM_{i,t}$	(+)	0.03** *(0.02)*	(+)	0.02** *(0.09)*
$SIZE_{i,t}$	(-)	-0.14*** *(0.00)*	(-)	-0.12*** *(0.01)*
Number of observations		509		471
Observations per group		115		110
Number of instruments		15		18
AR(1)		0.00		0.00
AR(2)		0.21		0.18
Sargan test		0.102		0.27

Notes: COE =Cost of equity, FVA = Fair valued assets, QFVA= Quoted fair valued assets, UFVA= Unquoted fair valued assets, Beta = Systematic risk, BTM = Book to market ratio, SIZE = natural logarithm of total assets.
The figures in italics in parenthesis are the probabilities.
*** Significant at 1% level
** Significant at 5% level
* Significant at 10% level

risk that is a large risk premium. A large risk premium requires a large expected rate of return by the banks' investors.

Therefore, the results and discussions indicate that information asymmetry as proxied by fair value accounting is consistent with previous studies such as Aboody et al. (2005), Armitage and Marston (2008), Armstrong et al. (2011), Bertomeu, Beyer and Dye (2011), Easley and O'Hara (2004), Easley et al. (2002), Francis et al. (2005), Francis et al. (2008), Lambert et al. (2007), Lambert, Leuz. and Verrecchia (2012), and Leuz and Verrecchia (2005). These previous studies in the same manner conclude the influence of quality of information in various forms and asymmetric information on COE.

The control variables book to market and size that are risk factors in the GMM model are consistent with the hypotheses and expectation as shown in Table 6. The BTM is significant and positively related to the COE. This result in BTM is consistent with previous studies such as as Ohlson and Juettner-Nauroth in 2005. However beta although positive is insignificant. Gebhardt, Lee and Swaminathan (2001) and Hail (2002) document some issues under beta that could make beta to be poorly suited for testing the influence of factors in COE. The lack of significance in beta is not surprising since, Allee (2008) reported the same issues. Size is another control variable that is significantly and negatively related to the COE. This result in size is also consistent with previous studies such as Hail and Leuz (2004) and Botosan (1997).

QUOTED FAIR VALUED ASSETS AND UNQUOTED FAIR VALUED ASSETS

Equation 1.0 is run again with the fair valued assets separated into quoted fair valued assets and unquoted fair valued assets. The results are given in Table 6. Since for the period under study not all banks disclose FVA into categories: level 1, 2 and 3, the level 1 fair valued assets are classed as quoted and level 2 and 3 are together classed as unquoted. As a result the number of observations is also reduced. The results found positive and significant relationship between each of quoted FVA and unquoted FVA with COE even though in both cases they are weakly significant at 10% significant level.

This means that the effects of fair value measurements on COE are similar between quoted and unquoted ones even though arguably risk and issues in asset at quoted fair values are different from those in assets at unquoted fair value. However, the coefficient value of unquoted fair valued assets (0.27) is higher than quoted fair valued assets (0.11). There are many researchers who document the critic of using the fair value measurement without differentiating between the different levels of inputs into the measurement such as Barth et al. (1995) Livne et al. (2011) Barth and Landsman (2010) and Vera and Renato (2012). So this significant relation between variables indicated that fair value accounting in total will influence the COE, even if it is quoted in the market.

All the control variables that are risk factors in the GMM model were consistent with the hypotheses, expectations and previous studies as presented in Table 6. The book to market ratio is significant and positively related to COE at the 0.09 level. And beta is also positive although weakly significant. Size is other control variable that is significantly and negatively related to COE at the 0.01 level. Generally, the results of this study support the hypotheses and previous studies that criticise the practice of fair value accounting. Results from this GMM analysis suggest a high fair valued assets is associated with high estimated cost of equity when all risk factors are included.

CONCLUSION

This research finds high fair valued assets, indicating high information risk, leads to high COE. It could be inferred that the high information risk is from asymmetric information issues related to fair value accounting. Additionally, the empirical research also finds positive and significant relationship between each of the quoted and unquoted assets at fair value and the COE even though the unquoted fair valued assets draws more criticisms than the quoted ones. This positive and significant GMM results for both quoted and unquoted assets at fair value suggest that the market finds in general assets at fair value poses information risk which lead to high COE. The market derived prices do not mitigate the risk and influence on COE. Thus although to regulators, FV accounting provide relevant and timely information to investors, fair valued assets are perceived to be risky and as a consequence investors require higher returns.

This research examine the fair value effect as a whole as an information risk. A future research should separate out the two effects of fair value that is the measurement error and volatility effect on COE. Such research could be beneficial as it could differentiate the information risk aspect of quoted and unquoted fair value. One practical implication would be to improve the practice of fair value accounting in absence of quoted prices. Consequently an investigation into mitigating factors, such as the role of disclosure or improved methods of fair value measurements would contribute to the practice of fair value accounting.

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