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The Effect of Accounting Conservatism on Equity Valuation: Evidence from Corporate Life Cycle

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Abstract

This study examines the effects of accounting conservatism on equity mispricing. We adopt Basu's and Khan and Watt's C_Score models to measure accounting conservatism and use EBO and RKRV valuation models to calculate a stock's intrinsic value. Additionally, we consider the effects of the corporate life cycle on the above relationship. The findings show that investors would make more positive valuations if a company has a high accounting conservatism in the previous period. Second, accounting conservatism has a deferred and positive effect on equity valuation. Third, the equity value of a company at the growth stage tends to be overvalued, while that of a company in maturity stage is likely to be undervalued. Finally, accounting quality impacts equity valuations, i.e. the better, then the less undervalued it is. Overall, we provide the evidences that accounting conservatism does matter to equity valuation, especially with the change of corporate life cycle.

JEL classification numbers: G14, G32
Keywords: Accounting conservatism, Equity valuation, Corporate life cycle, Accounting quality, Mispricing

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1 Introduction

For a long time, accounting conservatism has been a qualitative characteristic that most investors will refer when value a firm's equity (Zhang, 2000; Pope, 2005; Chan et al., 2009; Kim et al., 2013), and it also has been an important principle for the theoretical architecture of most accounting concepts. Nevertheless, the International Accounting Standards Board (IASB) and the Financial Accounting Standard Board (FASB) have suggested that accounting conservatism affects accounting neutrality and a faithful representation of financial statements. However, it is excluded from the theoretical architecture in 2010. Despite this, accounting conservatism has played an essential role in making financial reporting for several decades, and there are still several important researches favor the conservatism accounting (Watts, 2003; LaFond and Watts, 2008; Hui et al. 2012; Dhaliwal et al., 2014; Kim and Zhang, 2016). Enriching the studies of conservatism accounting, this paper investigates the effect of conservatism accounting on equity mispricing, especially on different stage of corporate life cycle.

Basu (1997) finds that conservatism for earnings means that the response of earnings to bad news is quicker than to good news. If a company's earnings are less conservative, then its earnings will fail to respond to bad news in time, which will make the financial figures more likely to be higher than what they are, and vice versa. Withholding or stockpiling bad news for a certain period or a sure amount may lead to equity mispricing (Hutton et al., 2009), and there is low possibility of a firm's future stock price crashes due to predictive power of conditional conservatism (Kim and Zhang, 2016). Watts (2003) considers accounting conservatism as a governance mechanism, and he indicates that verifiable accounting numbers have positive effects on contract efficiency, shareholder's lawsuits, income tax, and regulators. LaFond and Watts (2008) find that conservatism could reduce information asymmetry and diminish manager's incentive to manipulate the accounting numbers. The empirical results are not consistent with the FASB's proposition that conservatism produces information asymmetry among equity investors.

Several previous studies prove that equity mispricing is booted by information asymmetry which will result in financing, mergers and acquisitions, and share acquisition (Myers and Majluf, 1984; Lounghran, and Ritter, 1995; Bonaimé et al., 2014). Jensen (2005) thinks good incentive and governance system may limit company's value destruction. This paper argues that equity mispricing is partly caused by information asymmetry between investors and managers along with the agency problem that can be alleviated by accounting conservatism. In other words, if a company has higher levels of accounting conservatism, then its accounting earnings will become more reliable, investors will show more trust in the company's intrinsic value calculated based on this data, and, thus, have a comparatively positive valuation of the company. Therefore, the study infers that with a higher level of accounting conservatism, the equity mispricing problem can

indirectly be lessened.

Following the prior research, this paper measures a firm's accounting conservatism using Basu (1997) asymmetric timeliness of earnings, Khan and Watts (2009) firm-specific C_Scores, and the average of both respectively. Basu's measure of conditional conservatism has been adopted in several prominent research, like Ball et al. (2000) and Watts (2003a). However, Khan and Watts (2009) comment its limitations of industry-year using a cross-section of firms in the industry or for a firm using a time-series of firm-years. Hence, they generate a firm-year measure of conservatism, C_Score, that is calculated by substituting the firm's size, market-to-book and leverage into the estimation regression for that year. In this paper, we compare the effects of the two methods and the average of the two. Regarding the equity value, we estimate firm's intrinsic value with the EBO (Edward-Bell-Ohlson) valuation model (also known as residual income method or residual income model (RIM)) and also the modified estimated RKRV value (Rhodes-Kropf, Robinson and Viswanathan, 2005), and the average of both to exam the effects.

To maintain the competitiveness of the company at different stages of the corporate life cycle, managers need to make different responses to the changes of the operation environment, apply different policies of operation, investment or dividend, and even change the organizational structure of the company. DeAngelo et al. (2006 and 2010) and Dickinson (2011) also recognize that corporate life cycle stages have important implications for the financial performance. At the stages of introduction and growth, a company has the greatest possibility of future growth and its sales volume will increase gradually because the market has the expectation. During these two stages, most of the company's funds are devoted on equipment or research and development, so it is highly possible that the company will encounter temporary negative earnings. At the stage of maturity, it is less likely that the company will invest in equipment or research and development; meanwhile, it has stable cash flows in the market, so the earnings will speed up to increase. At the stage of stagnation or decline, the company's future growth opportunity in the market is gradually getting shrunk, so it begins to reduce scale until withdrawing from the market. At this stage, there is the greatest chance that the company will suffer persistent negative earnings. Hence, this paper examines if there is any change in the relationship between a company's equity valuation and accounting conservatism at the different stages of its life cycle.

However, DeAngelo et al. (2006) find that corporate life cycle theory is not a stand-alone theory; a complementary theory. Several studies on equity valuation have intervened the corporate life cycle effects of on a company's equity and debt financing policies (DeAngelo, DeAngelo and Stulz, 2010; La Rocca et al., 2011; Alti and Sulaeman, 2012; Seifert and Gonenc, 2012). As to the prior valuable explorations, this paper also verifies the effects of a corporate life cycle on the relationship between equity valuation and accounting conservatism. We concise the five stages into three stages: growth, maturity, and decline. Beside the testing

of the link between the accounting conservatism and equity mispricing with a control valuable, the life cycle, we further investigate the mediation effects.

This paper extends the literature on accounting conservatism and equity valuation in three aspects. First, the empirical results show that a higher level of accounting conservatism alleviates the problem of agency. Accordingly, the empirical findings indicate that investors would make a more positive valuation when a company has a high accounting conservatism in the previous period, and accounting conservatism has deferred and positive effects on equity valuation. Second, it validates that after incorporating the factor of corporate life cycle, stage factor has the negative effect on undervaluation of a firm at the growth stage, positive effect on undervaluation of a firm at the maturity stage, and no effect at decline stage. Lastly, the interaction effect of conservatism and stage only functions on growth and maturity stage. In growth stage, both *Basu* and *Average* have significant, negative impacts on the average of EBO and the extended RKRV equity value, but not the *C_Score* method. In maturity stage, both *Basu* and *Average* works well on either EBO or the average of EBO and the extended RKR with a positive relationship, and not the C_Score method either. Companies in decline stage do not have any mediating effects. The consequences enrich the empirical results of Adizes (1988). Besides the major three aspects, accounting quality also impacts the equity valuation, i.e. the better, the more overvalue it is.

According to the empirical results, accounting conservatism has positive implications on the stock market. Although the IASB and the FASB title that conservatism leads to biases to financial reporting and causes more information asymmetry, and thus excluding accounting conservatism from conceptual frame in 2010, our study believes that conservative accounting can lessen the agency problem, avoid the equity mispricing possibility and be a valuable reference for most stakeholders.

The remainder of this study is organized as follows: Section 2 organizes the literature review and constructs the hypotheses; Section 3 describes the research design; Section 4 presents our finding; and Section 5 concludes.

2 Literature Review and Hypothesis

Watts (2003) indicates that if the managers' compensations are related to earnings figures or creditors pose limitations on the financial indexes of debtors, such as interest coverage ratio, they will confront a moral hazard problem and be motivated to overvalue their company's earnings. Conservative accounting can prevent managers from overestimating earnings, enhance the effectiveness of contracts, and constrict the behaviors that may harm creditors. Beaver and Ryan (2005) define that accounting conservatism can be divided into unconditional conservatism and conditional conservatism. Unconditional conservatism is unrelated to the market's information and determined by the accounting recognition, which indicates that it follows the conservatism of the consistency of

accounting policies and determines the costs of assets. It is also called balance sheet conservatism or ex-ante conservatism, which underlines the irrelevance between the decline of equity value and the information of the current period. Conditional conservatism is related to the information about the market and determined by changes in information. If there is bad news, then accounting recognition should be advanced; if there is good news, then accounting recognition shall be postponed. Therefore, accounting principles need to be able to reflect the current economic situation. It is also called news dependent conservatism, income sheet conservatism, or ex-post conservatism. Kim et al. (2013) find that stock issuers with higher level of conservatism receive fewer negative market reaction to SEO announcements, and thus, accounting conservatism reduces financing costs in SEOs.

Cronqvist and Nilsson (2005) show that a company with less information transparency is more likely to raise funds through private placement because of costs. Hence, non-transparent information will influence corporate choices for fund-raising methods because of mispricing. Dittmar and Dittmar (2008) indicate that the mispricing of the market is not a factor that drives the issuance or repurchase of stocks. Stock issuance reflects the equity issuance costs that change with time rather than mispricing of the market. If a company notices that the stock price is overvalued, then it will issue new stocks and repurchase stocks. As for the mispricing of stocks, Baker and Wurgler (2002) suggeste that a company will undertake equity fund-raising when the market value of equity is higher than its book value.

Jensen and Meckling (1976) indicates that in their proposed agency relationship that principals and agents will seek to maximize their own interests because of property claims, agency costs, and ownership structure. Managers will have moral hazard and a decision of adverse selection, because of information asymmetry, the principal slack off or other non-monetary benefits. Hirst, Jackson, and Koonce (2003) indicate that if there is no information asymmetry between corporate managers and outsiders, then it will be less likely that managers manipulate earnings because, in this case, investors are easy to find if a company manages earnings that further influences stock price.

Based on the above, information asymmetry between external shareholders and controlling shareholders will result in different valuations for a company. Previous studies have shown that accounting conservatism can improve accounting quality and reduce agency costs. If controlling shareholders have fewer shareholdings, then the company shows an increasing demand for conservative accounting. The mispricing of stock is also caused by information asymmetry. This study expects that investors tend to make a more positive valuation on a company with higher levels of conservatism, which lead to an overvaluation of stock price; or, in contrast, investors tend to make a more negative valuation of a company with lower conservatism. Hence, this paper proposes the first hypothesis:

H1: Compared with an overvalued company, a company with a better accounting

conservatism is less likely undervalued by the market.

At the stages of introduction and growth, a company has great future growth opportunity and its sales volume will increase gradually because the market demand has not been satisfied. At these two stages, most of companies' funds are spent on equipment or research and development. At the stage of maturity, the company has less need to invest in equipment or research and development, but its earning will more increase. At the stage of stagnation or decline, the company begins to shrink in scale until it exits the markets. Smith, et al. (1985) and Anthony and Ramesh (1992) have indicated that a challenge for a start-up company is operational risk. If the company can overcome this challenge, then it will have many chances to create income and enter the growth stage. Further, most companies will continue to seek horizontal expansions and growth and step out of the expansion phase into a stage of maturity. If a company fails to create new opportunities for growth with innovation, it will enter the stage of recession.
According to the theory of corporate life cycle proposed by Adizes (1988), corporate operational strategy, organizational structure, operational performance and corporate values will change at the stages of its life cycle. Chan, et al. (2006) suggest that a company that is at the growth stage shows a stronger response to bad news than for a company at the maturity stage. A company at the maturity stage has higher persistence of earnings than a company at the growth stage.
As there is different information content for earnings at different stages of the corporate life cycle, this paper infers that the value of a company at the stage of maturity will not be overvalued by the market because investors have less expectation for it; however, the value of a company at the growth stage will be overvalued by the market because the market has a better expectation for its future prospects. Additionally, this paper further infers that there is difference in the relationship between accounting conservatism and the equity valuation of a company at different stages of the corporate life cycle. Hence, this paper proposes the second and the third hypotheses:

H2: The equity value of a company at a stage of growth is less likely to be undervalued by the market; and, the equity value of a company at a stage of maturity is less likely to be overvalued by the market.
H3: The relationship between accounting conservatism and market valuation of a company varies with the change of corporate life cycle.

3 Research Design

3.1 Empirical model

We first use the following logistic fix effect regression model to examine H1, that is, whether compared with an overvalued company, a company with a poorer accounting conservatism is more likely undervalued by the market.

$$Undervaluation_{it} = a_0 + a_1 Conservatism_{it} + a_2 AQ_{it} + a_3 OCF_{it} + a_4 ROA_{it} + a_5 BetaRisk_{it} + a_6 retSD_{it} + Year + Industry + e_{it} \quad (1)$$

where *Undervaluation* is a dummy variable; it is set to 1 if the stock price of a company is undervalued by the market and it is set to 0 if it is overvalued. This study uses two measures, which are estimated by the EBO method and the average value of EBO and extended RKRV methods. *Conservatism* proxies a company's accounting conservatism, which is measured by the Basu model and the C_Score model respectively. *AQ* is an accounting quality. *OCF* is the operating cash flows deflated by the beginning total assets. *ROA* is the return of total assets, measured by income from continuing operation divided by the beginning total assets. *BetaRisk* is a beta risk. *retSD* is the volatility of returns, measured by the standard deviations of returns for current and prior two years, total 3 consecutive years. *Year* is a year effect control variable. *Industry* is an industry effect control variable.

This paper further uses the following logistic fix effect regression model to examine H2, that is, whether the equity value of a company at the stage of growth is less likely to be undervalued by the market, and at the stage of maturity is less likely to be overvalued by the market.

$$Undervaluation_{it} = a_0 + a_1 Conservatism_{it} + a_2 Stagej_{it} + a_3 Conservatism_{it} Stagej_{it} + a_4 AQ_{it} + a_5 OCF_{it} + a_6 ROA_{it} + a_7 BetaRisk_{it} + \alpha_8 retSD_{it} + Year + Industry + e_{it} \quad (2)$$

where *Stagej* is the stage of the corporate life cycle, *j*=1, 2, 3. "*j*=1" means that the company is at its stages of introduction and growth, "*j*=2" indicates that the company is at the stage of maturity, and "*j*=3" means that the company is at the stagnation and recession stages. If a company is at the stage *j*=1, we set it as "1" and others as "0". Likewise, if a company is at the stage *j*=2, we set it as "1" and others as "0", and so on so forth. Other variables' definitions are the same as those in the model (1). Moreover, we also use model (2) to examine whether the relationship between accounting conservatism and market valuation of a company, either an over-evaluated one or an under- evaluated one, will change with its life cycle.

3.2 Definition of Variables

Undervaluation of equity (*Undervaluation*)

It is measured based on the following two methods:

(1) EBO method

This paper first follows the residual income valuation model of Warr, Elliott, Koëter-Kant, and Öztekin (2012) and Ohlson (1995), also refer to EBO, to

measure mispricing. Here, we take n = 2 as the forecast years and assuming a fixed rate of returns in future continuous years. The revised intrinsic valuation model is shown as follows.

$$IV_0 = BV_0 + \frac{[(ROE_1 - r) \times BV_0]}{(1+r)} + \frac{[(ROE_2 - r) \times BV_1]}{(1+r)^2} + \frac{[(ROE_2 - r) \times BV_1] + [(ROE_3 - r) \times BV_2]}{2(1+r)^2 \times r} \quad (3)$$

where r denotes capital cost of equity, estimated by CAPM. We calculate ROE_t and future ROE by earnings per share (EPS) growth rate which is estimated by current period EPS and the EPS in previous period, the calculation of future ROEs are as follows.

$$ROE_1 = \frac{NI_1}{(BV_0 + BV_{-1})/2}, \quad ROE_2 = \frac{ENI_2}{(BV_1 + BV_0)/2}, \quad ROE_3 = \frac{ENI_3}{(BV_2 + BV_1)/2} \quad (4)$$

where NI_1 is after-tax earnings in current period. ENI_2 and ENI_3 are predicted values of future earnings, and ENI_2 is equal to NI_1 multiplied by predicted earnings growth rate (1+g). The earnings growth rate is: $EPS_1 = EPS_0 \times (1+g)$. We adopt all-inclusive concept (CSR) to compute future book value of equity (BV_{t+1}) as following equation. That is, $BV_{t+1} = BV_t + NI_{t+1} - DIV_{t+1}$, where DIV_{t+1} is the dividend at time t+1. We finally estimate the intrinsic value of a firm in equation (3) based on ROE, earnings growth rate, and future book value of equity.

Second, we calculate the mispricing ratio by the estimated intrinsic value from the first step, $Misprice_{it}=V_{it}/P_{it}$, where V_{it} is the intrinsic value of firm i at period t and P_{it} is the stock price of firm i at period t. Third, we verify the mispricing status. The larger the ratio is, the higher level of the undervaluation of the company is, and vice versa. If the value of $Misprice$ is equal to 1, the firm value has no mispricing. If the value is higher (lower) than 1, the firm value has under- (over-) valuation.

(2) RKRV method

We extend the valuation models of the RKRV (2005), Hertzel and Li (2010), and Bonaimé, et al. (2014). Besides book value, net income, and financial leverage, this study further includes a control variable that is whether a company in the growth stage has negative net income to evaluate the intrinsic value of a firm's stock (intrinsic value, IV).

$$P_{jt} = a_0 + a_1 BPS_{jt} + a_2 LAIncome_{jt} + a_3 ND_{jt} LAIncome_{jt} + a_4 G_{jt} ND_{jt} ROA_{jt} + a_5 Leverage_{jt} + e_{jt} \quad (5)$$

where *j* is the industry of firm *i*, P_{jt} is the closing stock price of firm *i* at the year end, *BPS* is the book value per share. *LAIncome* is the natural logarithm of the absolute value of the net income. *ND* is a dummy variable, it is set to 1 if the net income of a company is negative and it is set as 0 if the net income of a company is positive. *G* is a dummy variable, it is set to 1 if a company is in stage of growth and it is set to 0 if it is not. *ROA* is the return of total assets, measured by income from continuing operation divided by the beginning total assets. *Leverage* is a company's financial leverage, measured by the following model of Rhodes-Kropf et al. (2005).[4]

Leverage = (Total debts - Deferred income tax) / (Market value of equity + Total assets - Deferred income tax)

In fact, Eq. (5) should be estimated by the annual data of all firms in the same industry in order to obtain the annual coefficients, which are then adopted to Eq. (6). Applying the actual BPS, LAIncome, and Leverage of firm i, we can obtain the predicted value, which is the intrinsic value of firm i.

$$\mathrm{IV}_{it} = \hat{a}_0 + \hat{a}_1 BPS_{it} + \hat{a}_2 LAIncome_{it} + \hat{a}_3 ND_{it} LAIncome_{it} + \hat{a}_4 G_{it} ND_{it} ROA_{it} + \hat{a}_5 Leverage_{it} \quad (6)$$

Next, we calculate the average value of the estimated value from the extended RKRV method and the estimated value from the EBO method. It is the sum of the intrinsic value obtained with the extended RKRV and the intrinsic value obtained with the EBO divided by P_{it} (the closing price of firm i at the year-end). If its value is over 1, it means that the stock price of the company is undervalued by the market; on the contrary, if its value is below 1, indicating that the stock price of the company is overvalued by the market.[5]

Accounting Conservatism

It is measured based on the following two methods:

(1) Basu's asymmetric timeliness

This paper first measure the timeliness of earnings based on Basu (1997), which is

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[4] Leverage = 1- [Market value of equity / (Market value of equity + Total assets - Deferred income tax - Total stockholder's equity)] = [(Market value of equity + Total assets - Deferred income tax - Total stockholder's equity) - Market value of equity] / (Market value of equity + Total assets - Deferred income tax - Total stockholder's equity) = (Total debts - Deferred income tax) / (Market value of equity + Total assets - Deferred income tax)

[5] Based on the EBO model, the benchmark intrinsic value is estimated by discounting the value of future return on equity (ROE). With higher accounting conservatism, the oppressive effects on earnings will curb the earnings of the company, which will result in a low ROE and possibly a lower estimated benchmark intrinsic value. Consequently, there will be a great possibility that the stock price of the company will be higher than the actual price, which means equity overvaluation. Also because the EBO calculation is based on prior 5 years' data to deduce the intrinsic equity values of the next beginning period, the deferred effect will continue make the equity overvalued.

the timeliness that a company recognizes bad news:

$$X_{it} / P_{it-1} = a_0 + a_1 DR_{it} + a_2 RET_{it} + a_3 DR_{it} \times RET_{it} + e_{it} \quad (7)$$

where X_{it} is earnings per share, P_{it-1} is stock price of the prior year, RET_{it} is stock return. *DR* is a dummy variable, we set *DR* = 1 if the company has bad news, i.e., *RET* < 0, and *DR* = 0 if *RET* > 0. If the company recognizes bad news early or delays the recognition of good news, we obtain $a_3 > 0$ in Equation (7). Second, we use the rolling-window method, adopting the current year and prior 5 years, totaling 6 years' data to run the firm-specific time-series regressions and estimate coefficients of each year. Finally, we follow Hui, Klasa, and Yeung (2012), the asymmetric timeliness of earnings measured by $(a_2+a_3)/a_2$, to reflect the company's timeliness to recognize bad news relative to good news.

(2) C_Score

In this paper, the C_Score deriving from the extended Basu model of Khan and Watts (2009) is employed to solve the problem that the Basu (1997) conservatism model cannot effectively measure earnings conservatism indexes of different-companies and different-years. To capture α_2 and α_3 as the linear function of market-to-book value (MB), company size (Size) and financial leverage (LEV) of a company in different years after the establishment of Eq. (7), α_2 and α_3 represented in Eqs. (8) and (9) respectively as follows:

$$\alpha_2 = \mu_0 + \mu_1 MB_{it} + \mu_2 Size_{it} + \mu_3 LEV_{it} \quad (8)$$

$$\alpha_3 = \lambda_0 + \lambda_1 MB_{it} + \lambda_2 Size_{it} + \lambda_3 LEV_{it} \quad (9)$$

Then, Eqs. (8) and (9) are put into Eq. (7) by year to obtain Eq.(10)

$$\begin{aligned} EARN_{it} = {} & \alpha_0 + \alpha_1 DR_{it} + (\mu_0 + \mu_1 MB_{it} + \mu_2 Size_{it} + \mu_3 LEV_{it}) \times RET_{it} + \\ & (\lambda_0 + \lambda_1 MB_{it} + \lambda_2 Size_{it} + \lambda_3 LEV_{it}) \times DR_{it} \times RET_{it} + \rho 1 Size_{it} + \rho 2 MB_{it} + \\ & \rho 3 LEV_{it} + \rho 4 MB_{it} \times DR_{it} + \rho 5 Size_{it} \times DR_{it} + \rho 6 LEV_{it} \times DR_{it} + e_{it} \end{aligned} \quad (10)$$

The μ_0~μ_3 and λ_0~λ_3 valued by Eq. (10) of different years are put into Eqs. (8) and (9) to obtain the G_Score_{it} and C_Score_{it} of a company in a specific year. C_Score_{it} is used to measure the conservatism of company i in the year t, and it refers to the sensitivity of accounting earnings to the incremental sensitivity of bad news of company i in the year t. A higher C_Score indicates stronger accounting conservatism of a company.

Accounting quality

This paper adopts the model of Rajgopal and Venkatachalam (2011) to measure

accounting quality.

$$\frac{TCA_{it}}{Assets_{it-1}} = d_0 + d_1 \frac{CFO_{it-1}}{Assets_{it-1}} + d_2 \frac{CFO_{it}}{Assets_{it-1}} + d_3 \frac{CFO_{it+1}}{Assets_{it-1}} + d_4 \frac{\Delta REV_{it}}{Assets_{it-1}} + d_5 \frac{PPE_{it}}{Assets_{it-1}} + e_{it} \quad (11)$$

where *TCA* is total current accruals, calculated as $\Delta CA - \Delta CL - \Delta Cash + \Delta STDEBT$, ΔCA is the change in current assets, ΔCL is the change in current liabilities, $\Delta Cash$ is the change in cash, $\Delta STDEBT$ is the change in short-term debt in current liabilities. *STDEBT*, non-operational items, includes short-term loan, commercial paper payable, acceptance bill, and the current portion of long term debt due within a year. *CFO* is the cash flow from operations. ΔREV is the change in revenues, *PPE* is the gross value of property, plant and equipment. All the variables are deflated by prior year′ s assets. The residual of Eq. (11) implies the abnormal accruals. This study uses the absolute value of abnormal accruals as the measure of accounting quality. A higher value of AAccrual indicates a poorer accounting quality of a company.

Corporate life cycle

This paper refers Dickinson (2011) to classify the corporate life cycle, which adopts the information in the statement of cash flows. With the positive and negative directions of the net operating cash flows, net investing cash flows and net financing cash flows, there comes to eight combinations. Complying with the economic theories, Dickinson summarized the originals to five evolution stages of life cycle; introduction, growth, maturity, stagnation, and recession. In our paper, the stage of introduction and growth are combined into one stage – the stage of growth; the stage of maturity remains; the stage of stagnation and recession are integrated into one stage, the stage of decline.

3.3 The data

Due to global financial crisis in 2008, this paper selects the samples in the period from 2009 to 2014, totaling 6 years. The samples are sourced from the database of Taiwan Economic Journal (TEJ), and the samples of government-owned, finance, insurance, and securities companies are excluded because of their special industrial and accounting characteristics. Although the original number of the sample firms is 1,558, we delete 836 companies with missing values. We finally obtain 722 sample firms and thus 4,332 firm-years.

4 Empirical Results

4.1 Descriptive statistics

The descriptive statistics of the variables are shown in Table 1 which includes 4,332 firm-year samples. From Table 1, under EBO method, the average of

undervaluation is 0.4441, indicating the firms with undervalued equity value are slightly less than those with overvalued equity value. Also, under RKRV method, the average of undervaluation is 0.5106 that shows firms with undervalued equity are higher than overvalued firms. The Basu accounting conservatism of the previous period increases from minimum -101.669 to maximum 120.4535 and standard deviation is 20.8768, which denotes a great gap. The minimum, maximum and the standard deviation of the C_Score accounting conservatism are -15.115, 11.8252 and 4.7857 respectively, only little fluctuation exists. When averaging the values of two methods, both minimum -58.3922 and maximum 61.3744 fall in between. For the *AQ*, the average of 0.0372 shows that most of firms maintaining good accounting quality. About the life cycle, *Stage*, mean of stage value is 1.9753 which implies more firms are staying at growth to maturity stages comparatively. Besides, the correlation coefficients between two variables show that all value is less than 0.45, so the model is no collinearity problem.

Table 1: Descriptive Statistics

	Mean	Std. Dev.	Min	Max
Undervaluation$_{\text{EBO}}$	0.4441	0.4969	0	1
Undervaluation	0.5106	0.4999	0	1
ConservatismBasu$_{\text{t-1}}$	0.5653	20.8768	-101.669	120.4535
ConservatismCscore$_{\text{t-1}}$	-0.9615	4.7857	-15.115	11.8252
ConservatismAverage$_{\text{t-1}}$	-0.1981	10.7587	-58.3922	61.3745
AQ	0.0372	0.0434	1.03E-05	0.3976
OCF	0.0536	0.0913	-0.25649	0.3164
ROA	0.0449	0.0800	-0.2174	0.2799
BetaRisk	0.8288	0.3362	0.1333	1.5721
retSD	0.6715	0.6308	0.0038	5.0245
Stage	1.9753	0.7348	1	3

samples total 4332. Variables definition: Undervaluation$_{\text{EBO}}$= undervalued equity value measured by EBO method. Undervaluation= undervalued equity value measured by the average value of the equity value calculated using both the RKRV method and EBO method. ConservatismBasu$_{t-1}$= the previous period of accounting conservatism, measure by the Basu (1997) model. ConservatismCscore$_{\text{t-1}}$= the previous period of C_Score accounting conservatism, measure by the Khan and Watts (2009) model. ConservatismAverage$_{\text{t-1}}$= the average value of previous period's Basu accounting conservatism and previous period's C_Score accounting conservatism. AQ= accounting quality. OCF= operating cash flows deflated by the beginning total assets. ROA= return of total assets, measured by income from continuing operation divided by the beginning total assets. BetaRisk= beta risk. retSD= volatility of returns, measured by the standard deviations of returns for current and prior two years, total 3 consecutive years. Stage= corporate life cycle, 1 refers to company at its stage of growth, 2 refers to company at the stage of maturity, 3 refers to company at the stage of recession.

4.2 Relationship between equity mispricing and accounting conservatism

We use the EBO method and the average value of extended RKRV and EBO methods to evaluate the firm value. Meanwhile, this study adopts the Basu method, the Khan and Watts's C_Score method, and the average value of above two methods to estimate the accounting conservatism of a firm. Model 1 analyzes the correlation between the EBO and Basu. Model 2 examines the correlation between the EBO and C_Score. Model 3 tests the link between the EBO and average value of Basu and C_Score. Model 4 analyzes the correlation between the average of EBO and extended RKRV and the Basu. Model 5 examines the correlation between the average of EBO and extended RKRV and the C_Score. Model 6 tests the link between the average of EBO and extended RKRV and the average of Basu and C_Score. So as to verify the deferred effect, the results of current and prior period are both displayed in the followings.

Current Period Result

In Model 1 of Table 2, p-value 0.242 of *ConservatismBasu* indicates an insignificant relationship between EBO and Basu in current period. In Model 2, p-value 0.717 of *ConservatismCscore* also implies no link between EBO and C_Score. However, in Model 6, while averaging the methods, *p*-value 0.067 of *ConservatismAverage* reveals a negative and significant correlation between equity mispricing and accounting conservatism. The empirical results are consistent with the expectation of H1. Evaluating the six models, after stepping in RKRV, the average of EBO and RKRV and the average of Basu and C_Score are more representative for both issues.

As for the control variables, besides the operating cash flow (*OCF*), p-value of 0.764, not significant; all the others, accounting quality (*AQ*), return on total assets (*ROA*), beta risk (*BetaRisk*) and volatility of returns (*retSD*) are negatively and significantly related to equity undervaluation. The p-values of *AQ* in all models are 0.003, 0.004, 0.003, 0.000, 0.000 and 0.000. The values imply that a poor/good accounting quality would lead to a great possibility of equity undervaluation/overvaluation from the market. This empirical result is that good accounting quality might not lead to equity mispricing.

Prior Period Result

In Table 3, three methods of accounting conservatism have negative and significant associations with equity undervaluation in five out of six models. The p-values, $ConservatismBasu_{t-1}$ is 0.032 in Model 1 and 0.032 in Model 4, $ConservatismCscore_{t-1}$ is .002 in Model 2, and $ConservatismAverage_{t-1}$ is 0.028 in Model 3 and 0.03 in Model 6. They imply that comparing with an overvalued firm, a firm that is undervalued has less conservatism in prior period, and vice versa. The findings are consistent with H1. Comparing three models by the EBO method, the significance in Model 2 with $ConservatismCscore_{t-1}$ is better than Model 1 with $ConservatismBasu_{t-1}$ and Model 3 with average $ConservatismAverage_{t-1}$. The possible reason is that in the Basu method, the conservatism of the current year is

estimated with prior five years and current year due to the rolling window effect, five years' data are calculated repetitively each time, and caused insignificant differences among consecutive periods of one firm. Nevertheless, in the C_Score method, the conservatism is calculated adopting all industries data in the same year.

When comparing Tables 2 and 3, a deferred effect on the relationship between equity mispricing and accounting conservatism is detected. The effect is weaker in current period than the prior one. Theoretically, when a company has better accounting conservatism, investors give more credits on its equity value; however, the financial reporting are not released until the next year. All the market persons might make some evaluation adjustments based on the reports.

In this session, we also test Bayesian Information Criterion (BIC) effect. BIC is an information criterion to select a proper time series model and is especially suitable for a large sample size. A lower BIC indicates a higher goodness-of-fit. From the BIC, models in Table 3, the prior period, are better than Table 2, the current period. Comparatively, Model 1 to 3 of EBO method is superior than Model 4 to 6 of EBO and EBO & RKRV average methods.

Table 2: Current accounting conservatism and equity valuation

$$Undervaluation_{it} = a_0 + a_1 Conservatism_{it} + a_2 AQ_{it} + a_3 OCF_{it} + a_4 ROA_{it} + a_5 BetaRisk_{it} + a_6 retSD_{it} + Year + Industry + e_{it}$$

Methods	Model 1 EBO		Model 2 EBO		Model 3 EBO		Model 4 AVG of EBO & RKRV		Model 5 AVG of EBO & RKRV		Model 6 AVG of EBO & RKRV	
Variable	Coef.	(P value)	Coef.	(P value)	Coef.	(P value)	Coef.	(P value)	Coef.	(P value)	Coef.	(P value)
ConservatismBasu$_t$	-0.002	(0.242)					-0.003	(0.066)				
ConservatismCscore$_t$			-0.025	(0.717)					-0.006	(0.869)		
ConservatismAverage$_t$					-0.004	(0.238)					-0.006	(0.067)
AQ	-2.238	(0.003)	-2.234	(0.004)	-2.238	(0.003)	-3.693	(0.000)	-3.674	(0.000)	-3.964	(0.000)
OCF	0.199	(0.625)	0.185	(0.653)	0.198	(0.628)	-0.119	(0.768)	-0.101	(0.803)	-0.121	(0.764)
ROA	6.204	(0.000)	6.19	(0.000)	6.204	(0.000)	5.588	(0.000)	5.568	(0.000)	5.588	(0.000)
BetaRisk	-1.265	(0.000)	-1.256	(0.000)	-1.256	(0.000)	-0.993	(0.000)	-0.988	(0.000)	-0.993	(0.000)
retSD	-0.256	(0.000)	-0.289	(0.000)	-0.284	(0.000)	-0.367	(0.000)	-0.363	(0.000)	-0.368	(0.000)
Year	included		included		included		included		included		included	
Industry	included		included		included		included		included		included	
Number of obs.	4332		4332		4332		4332		4332		4332	
BIC	5474		5475		5474		5604		5607		5604	
	Prob > chi2 =0.000		Prob > chi2 =0.000		Prob > chi2 =0.000		Prob > chi2 =0.000		Prob > chi2 =0.000		Prob > chi2 =0.000	

Variables definition: ConservatismBasu= current period's the Basu accounting conservatism. ConservatismCscore= current period's the C_Score accounting conservatism. ConservatismAverage = average value of current period's the Basu accounting conservatism and current period's the C_Score accounting conservatism. AQ= accounting quality. OCF= operating cash flows deflated by the beginning total assets. ROA= return of total assets, measured by income from continuing operation divided by the beginning total assets. BetaRisk= beta risk. retSD= volatility of returns, measured by the standard deviations of returns for current and prior two years, total 3 consecutive years. Model 1, Model 2 and Model 3 is equity value measured by EBO method. Model 4, Model 5 and Model 6 is equity value measured by the average of the equity value calculated using the extended RKRV method and EBO method.

Table 3: Prior Accounting conservatism and equity valuation

$$Undervaluation_{it} = a_0 + a_1 Conservatism_{it-1} + a_2 AQ_{it} + a_3 OCF_{it} + a_4 ROA_{it} + a_5 BetaRisk_{it} + a_6 retSD_{it} + Year + Industry + e$$

Methods	Model 1 EBO		Model 2 EBO		Model 3 EBO		Model 4 AVG of EBO & RKRV		Model 5 AVG of EBO & RKRV		Model 6 AVG of EBO & RKRV	
Variable	Coef.	(P value)	Coef.	(P value)	Coef.	(P value)	Coef.	(P value)	Coef.	(P value)	Coef.	(P value)
ConservatismBasu$_{t-1}$	-0.003	(0.032)					-0.003	(0.032)				
ConservatismCscore$_{t-1}$			-0.22	(0.002)					-0.083	(0.243)		
ConservatismAverage$_{t-1}$					-0.007	(0.028)					-0.007	(0.030)
AQ	-2.211	(0.004)	-2.117	(0.006)	-2.209	(0.004)	-3.655	(0.000)	-3.637	(0.000)	-3.653	(0.000)
OCF	0.226	(0.579)	0.195	(0.633)	0.226	(0.579)	-0.095	(0.813)	0.113	(0.778)	-0.095	(0.813)
ROA	6.165	(0.000)	5.983	(0.000)	6.162	(0.000)	5.565	(0.000)	5.488	(0.000)	5.562	(0.000)
BetaRisk	-1.260	(0.000)	-1.313	(0.000)	-1.261	(0.000)	-0.998	(0.000)	-1.010	(0.000)	-0.999	(0.000)
retSD	-0.284	(0.000)	-0.32	(0.000)	-0.284	(0.000)	-0.366	(0.000)	-0.379	(0.000)	-0.367	(0.000)
Year	included		included		included		included		included		included	
Industry	included		included		included		included		included		included	
Number of obs.	4332		4332		4332		4332		4332		4332	
BIC	5463		5466		5463		5592		5606		5592	
	Prob > chi2 =0.000		Prob > chi2 =0.000		Prob > chi2 =0.000		Prob > chi2 =0.000		Prob > chi2 =0.000		Prob > chi2 =0.000	

Variables definition: ConservatismBasu$_{t-1}$= previous period Basu accounting conservatism. ConservatismCscore$_{t-1}$= previous period C_Score accounting conservatism. ConservatismAverage$_{t-1}$ = average of previous period the Basu accounting conservatism and previous period the C_Score accounting conservatism. AQ= accounting quality. OCF= operating cash flows deflated by the beginning total assets. ROA= return of total assets, measured by income from continuing operation divided by the beginning total assets. BetaRisk= beta risk. retSD= volatility of returns, measured by the standard deviations of returns for current and prior two years, total 3 consecutive years. Model 1, Model 2 and Model 3 is equity value measured by EBO method. Model 4, Model 5 and Model 6 is equity value measured by the average of the equity value calculated using the extended RKRV method and EBO method.

4.3 A test of corporate life cycle

To examine the corporate life cycle's influence, we focus on the relationship between equity mispricing and accounting conservatism in prior period. Revising Dickinson (2011), the corporate life cycle in this study is divided into growth, maturity, and decline three stages.

Growth Stage Result

In Table 4, the *p*-value of $ConservatismBasu_{t-1}$ in Model 7 is 0.416 and in Model 10 is 0.499, of $ConservatismCscore_{t-1}$ in Model 8 is 0.014 and in Model 11 is 0.495, and of $ConservatismAverage_{t-1}$ in Model 9 is 0.386 and in Model 12 is 0.491. Only Model 8 with C_Score conservatism is negatively and significantly related to EBO equity valuation. The coefficients (*p*-value) of *Stagej* are -0.162 (0.035), -0.180 (0.033), -0.164 (0.033), -0.291(0.000), -0.314(0.000), and -0.292(0.000), all are significant in six models, which means conservatism in growth stage is positively related to their overvalued equity. This results support our hypothesis H2. For the interaction effects, the *p*-value of $ConservatismBasu_{t-1}Stagej$ is 0.135 in Model 7 and 0.095 in Model 10, of $ConservatismCscore_{t-1}Stagej$ is 0.724 in Model 8 and 0.460 in Model 11, and of $ConservatismAverage_{t-1}Stagej$ is 0.134 in Model 9 and 0.092 in Model 12. Only interaction effects with the growth stage in Models 10 and 12 are negatively and significantly related to equity valuation.

Comparing Models in Table 3 with Models in Table 4, we find that most of the *p*-values change from significant to insignificant or from significant to less significant; which denotes the moderator role of corporate life cycle, *Stagej*. Thereafter, we conclude that, overall, during the growth stage, rather than accounting conservatism of less effect, life cycle (*stage*) plays a more critical role on equity evaluation, and the results support H3.

Maturity Stage Result

In Table 5, the p-value of $ConservatismBasu_{t-1}$ in Model 7 is 0.004 and in Model 10 is 0.007, of $ConservatismCscore_{t-1}$ in Model 8 is 0.047 and in Model 11 is 0.339, and of $ConservatismAverage_{t-1}$ in Model 9 is 0.003 and in Model 12 is 0.091. Since five out of six models show that accounting conservatism is negatively and significantly related to equity undervaluation, so the findings support H1. The *p*-values of *Stagej* in Table 5 are 0.054, 0.1, 0.051, 0.002, 0.005 and 0.002, and these positive and significant relationships imply the firms with conservatism in the maturity stage are more likely undervalued by the market. The results support H2.

About the moderate effects, the *p*-value of $ConservatismBasu_{t-1}Stagej$ is 0.041 in Model 7 and 0.090 in Model 10, of $ConservatismCscore_{t-1}Stagej$ is 0.753 in Model 8, and 0.863 in Model 11, and of $ConservatismAverage_{t-1}Stagej$ is 0.044 in Model 9, and 0.091 in Model 12. The results show that the coefficients of the six models are all positive to *Undervaluation*, and only $ConservatismCscore_{t-1}Stagej$ in both EBO and average of EBO and extended RKRV are not significant. The company

in maturity stage with higher Basu accounting conservatism in previous period is more likely to have undervalued equity. The possible reason is that Basu accounting conservatism tends to be consistent with the trans-period conservatism of the same company as previously described. If the Basu accounting conservatism of the previous period is low, it is not easy that the accounting conservatism would become higher in the following years. Therefore, it is likely that earnings are overvalued for many years, which would make investors intuitively believe that the company's earnings are high and thus pursue a high stock price. Conversely, if the Basu accounting conservatism of the previous period is high, it is not easy that the accounting conservatism will become low in the following years. Earnings may remain low for many years, which would make investors intuitively believe that the earnings are low and thus pursue a low stock price. This also demonstrates that Basu accounting conservatism is unsuitable for the trans-period comparison of the same company.

Overall, Table 5 suggest that higher level of conservative accounting still has positive relation with more equity valuation; however, the corporate cycle also plays an important function. During the maturity stage, the equity value tends to be undervalued, and the interact result of stage and conservative accounting further proves the effect. The findings are consistent with H2 and H3.

Decline Stage Result

In Table 6, the p-value of $Conservatism\_Basu_{t-1}$ in Model 7 is 0.135 and in Model 10 is 0.071, of $Conservatism\_Cscore_{t-1}$ in Model 8 is 0.002, and in Model 11 is 0.187, and of $ConservatismAverage_{t-1}$ in Model 9 is 0.118 and in Model 12 is 0.067. Half of the models show that conservative accounting is negatively and significantly related to *Undervaluation*, which partially supports H1. The *p*-values of *Stagej* in Table 6 show that all have nonsignificant relationships to equity valuation. About the interaction effects, the p-values of six models show the insignificant impacts. Comparing with Table 3, these insignificant effects indicate that the stage (*Stagej*) of decline has mediating effect on the relationship between accounting conservatism and equity valuation, and also demonstrate an uncertain approach from the market to value the firm at decline stage. The possible reason is that a firm in the decline stage may face the pressure of transformation to embark on organizational reconstruction. If the reorganization is successful, the company will re-enter another stage of growth; conversely, it may gradually step out of the market. Hence, the investors have different opinions to this kind of firms.

Overall, it is likely that equity value of firms on growth stage will be overvalued when they have higher level of accounting conservatism during prior period. On the contrary, during the maturity stage, equity value of the firm is likely to be undervalued. Equity values of firms in the decline stage are hard to forecast due to unpredictable development. The findings support H3, indicating that the relationship between accounting conservatism and equity valuation by the market will change with the stage of corporate life cycle.

Table 4: Relationship between prior accounting conservatism and equity valuation of a company at growth stage

$$Undervaluation_{it} = a_0 + a_1 Conservatism_{it-1} + a_2 Stagej_{it} + a_3 Conservatism_{it-1} Stagej_{it} + a_4 AQ_{it} + a_5 OCF_{it} + a_6 ROA_{it} + a_7 BetaRisk_{it} + \alpha_8 retSD_{it} + Year + Industry + e_{it}$$

Methods	Model 7 EBO		Model 8 EBO		Model 9 EBO		Model 10 AVG of EBO & RKRV		Model 11 AVG of EBO & RKRV		Model 12 AVG of EBO & RKRV	
Variable	Coef.	(P value)	Coef.	(P value)	Coef.	(P value)	Coef.	(P value)	Coef.	(P value)	Coef.	(P value)
ConservatismBasu$_{t-1}$	-0.002	(0.416)					-0.001	(0.499)				
ConservatismCscore$_{t-1}$			-0.208	(0.014)					-0.057	(0.495)		
ConservatismAverage$_{t-1}$					-0.003	(0.386)					-0.003	(0.491)
Stagej	-0.162	(0.035)	-0.180	(0.033)	-0.164	(0.033)	-0.291	(0.000)	-0.314	(0.000)	-0.292	(0.000)
ConservatismBasu $_{t-1}$Stagej$_t$	-0.005	(0.135)					-0.006	(0.095)				
ConservatismCscore $_{t-1}$Stagej$_t$			-0.052	(0.724)					-0.107	(0.460)		
ConservatismAverage $_{t-1}$Stagej$_t$					-0.010	(0.134)					-0.011	(0.092)
AQ	-2.193	(0.004)	-2.125	(0.006)	-2.191	(0.004)	-3.661	(0.000)	-3.662	(0.000)	-3.658	(0.000)
OCF	-0.004	(0.993)	-0.035	(0.934)	-0.003	(0.993)	-0.513	(0.219)	-0.515	(0.216)	-0.513	(0.219)
ROA	6.129	(0.000)	5.939	(0.000)	6.126	(0.000)	5.506	(0.000)	5.415	(0.000)	5.503	(0.000)
BetaRisk	-1.242	(0.000)	-1.296	(0.000)	-1.243	(0.000)	-0.967	(0.000)	-0.982	(0.000)	-0.968	(0.000)
retSD	-0.280	(0.000)	-0.317	(0.000)	-0.280	(0.000)	-0.360	(0.000)	-0.375	(0.000)	-0.361	(0.000)
Year	included		included		included		included		included		included	
Industry	included		included		included		included		included		included	
Number of obs.	4332		4332		4332		4332		4332		4332	
	Prob > chi2 =0.000		Prob > chi2 =0.000		Prob > chi2 =0.000		Prob > chi2 =0.000		Prob > chi2 =0.000		Prob > chi2 =0.000	

Variables definition: ConservatismBasu$_{t-1}$= the Basu accounting conservatism in the previous period. ConservatismCscore$_{t-1}$= C_Score accounting conservatism in the previous period. ConservatismAverage$_{t-1}$= average value of the Basu accounting conservatism in the previous period and the C_Score accounting conservatism in the previous period. Stagej= a dummy variable; it is set to 1 if a company is in stage of growth and it is set to 0 if it is not. ConservatismBasu$_{it-1}$Stagej$_t$= prior period's Basu accounting conservatism is multiplied by dummy variable Stagej. ConservatismCscore$_{it-1}$Stagej$_t$= prior period's C_Score accounting conservatism is multiplied by dummy variable Stagej. ConservatismAverage$_{t-1}$Stagej$_t$= average value of previous period's the Basu accounting conservatism and previous period's the C_Score accounting conservatism is multiplied by dummy variable Stagej. AQ= accounting quality. OCF= operating cash flows deflated by the beginning total assets. ROA= return of total assets, measured by income from continuing operation divided by the beginning total assets. BetaRisk= beta risk. retSD= volatility of returns, measured by the standard deviations of returns for current and prior two years, total 3 consecutive years. Models 4, 5 and 6 are equity value measured by EBO method. Models 7, 8 and 9 areequity value measured by the average of the equity value calculated using the extended RKRV method and EBO method.

Table 5: Relationship between prior accounting conservatism and equity valuation of a company at maturity stage

$$Undervaluation_{it} = a_0 + a_1 Conservatism_{it-1} + a_2 Stagej_{it} + a_3 Conservatism_{it-1} Stagej_{it} + a_4 AQ_{it} + a_5 OCF_{it} + a_6 ROA_{it} + a_7 BetaRisk_{it} + \alpha_8 retSD_{it} + Year + Industry + e_{it}$$

Methods	Model 7 EBO		Model 8 EBO		Model 9 EBO		Model 10 AVG of EBO & RKRV		Model 11 AVG of EBO & RKRV		Model 12 AVG of EBO & RKRV	
Variable	Coef.	(P value)	Coef.	(P value)	Coef.	(P value)	Coef.	(P value)	Coef.	(P value)	Coef.	(P value)
ConservatismBasu$_{t-1}$	-0.006	(0.004)					-0.005	(0.007)				
ConservatismCscore$_{t-1}$			-0.198	(0.047)					-0.093	(0.339)		
ConservatismAverage$_{t-1}$					-0.012	(0.003)					-0.011	(0.091)
Stagej	0.144	(0.054)	0.132	(0.1)	0.146	(0.051)	0.223	(0.002)	0.225	(0.005)	0.224	(0.002)
ConservatismBasu $_{t-1}$ Stagej$_t$	0.007	(0.041)					0.006	(0.090)				
ConservatismCscore $_{t-1}$Stagej$_t$			0.043	(0.753)					0.023	(0.863)		
ConservatismAverage $_{t-1}$Stagej$_t$					0.013	(0.044)					0.011	(0.091)
AQ	-2.070	(0.007)	-2.001	(0.009)	-2.068	(0.007)	-3.452	(0.000)	-3.447	(0.000)	-3.450	(0.000)
OCF	-0.159	(0.726)	-0.188	(0.679)	-0.159	(0.727)	-0.696	(0.121)	-0.702	(0.118)	-0.696	(0.122)
ROA	6.171	(0.000)	5.984	(0.000)	6.169	(0.000)	5.568	(0.000)	5.483	(0.000)	5.566	(0.000)
BetaRisk	-1.255	(0.000)	-1.305	(0.000)	-1.256	(0.000)	-0.990	(0.000)	-1.002	(0.000)	-0.991	(0.000)
retSD	-0.279	(0.000)	-0.317	(0.000)	-0.279	(0.000)	-0.361	(0.000)	-0.375	(0.000)	-0.361	(0.000)
Year	included		included		included		included		included		included	
Industry	included		included		included		included		included		included	
Number of obs.	4332		4332		4332		4332		4332		4332	
	Prob > chi2 =0.000		Prob > chi2 =0.000		Prob > chi2 =0.000		Prob > chi2 =0.000		Prob > chi2 =0.000		Prob > chi2 =0.000	

Variables definition: ConservatismBasu$_{t-1}$= the Basu accounting conservatism in the previous period. ConservatismCscore$_{t-1}$= C_Score accounting conservatism in the previous period. ConservatismAverage$_{t-1}$= average value of the Basu accounting conservatism in the previous period and the C_Score accounting conservatism in the previous period. Stagej= a dummy variable; it is set to 1 if a company is in stage of growth and it is set to 0 if it is not. ConservatismBasu$_{it-1}$Stagej$_t$= prior period's Basu accounting conservatism is multiplied by dummy variable Stagej. ConservatismCscore$_{it-1}$Stagej$_t$= prior period's C_Score accounting conservatism is multiplied by dummy variable Stagej. ConservatismAverage$_{t-1}$Stagej$_t$= the average value of previous period's the Basu accounting conservatism and previous period's the C_Score accounting conservatism is multiplied by dummy variable Stagej. AQ= accounting quality. OCF= operating cash flows deflated by the beginning total assets. ROA= return of total assets, measured by income from continuing operation divided by the beginning total assets. BetaRisk= beta risk. retSD= volatility of returns, measured by the standard deviations of returns for current and prior two years, total 3 consecutive years. Model 4, Model 5 and Model 6 is equity value measured by EBO method. Model 7, Model 8 and Model 9 is equity value measured by the average of the equity value calculated using the extended RKRV method and EBO method.

Table 6: Relationship between prior accounting conservatism and equity valuation of a company at decline stage

$$Undervaluation_{it} = a_0 + a_1 Conservatism_{it-1} + a_2 Stagej_{it} + a_3 Conservatism_{it-1} Stagej_{it} + a_4 AQ_{it} + a_5 OCF_{it} + a_6 ROA_{it} + a_7 BetaRisk_{it} + \alpha_8 retSD_{it} + Year + Industry + e_{it}$$

Methods	Model 7 EBO		Model 8 EBO		Model 9 EBO		Model 10 AVG of EBO & RKRV		Model 11 AVG of EBO & RKRV		Model 12 AVG of EBO & RKRV	
Variable	Coef.	(P value)	Coef.	(P value)	Coef.	(P value)	Coef.	(P value)	Coef.	(P value)	Coef.	(P value)
Conservatism_Basu$_{t-1}$	-0.003	(0.135)					-0.003	(0.071)				
Conservatism_Cscore$_{t-1}$			-0.246	(0.002)					-0.103	(0.187)		
ConservatismAverage$_{t-1}$					-0.006	(0.118)					-0.007	(0.067)
Stagej	0.01	(0.899)	0.043	(0.607)	0.009	(0.903)	0.062	(0.415)	0.084	(0.311)	0.062	(0.415)
ConservatismBasu $_{t-1}$*Stagej*$_t$	-0.002	(0.562)					0.000	(0.999)				
ConservatismCscore $_{t-1}$*Stagej*$_t$			0.133	(0.439)					0.095	(0.572)		
ConservatismAverage $_{t-1}$*Stagej*$_t$					-0.004	(0.581)					0.000	(0.986)
AQ	-2.229	(0.004)	-2.137	(0.006)	-2.226	(0.004)	-3.715	(0.000)	-3.702	(0.000)	-3.713	(0.000)
OCF	0.242	(0.565)	0.218	(0.604)	0.242	(0.565)	-0.016	(0.97)	-0.029	(0.944)	-0.016	(0.970)
ROA	6.163	(0.000)	5.984	(0.000)	6.16	(0.000)	5.552	(0.000)	5.477	(0.000)	5.548	(0.000)
BetaRisk	-1.259	(0.000)	-1.310	(0.000)	-0.126	(0.000)	-0.993	(0.000)	-1.005	(0.000)	-0.994	(0.000)
retSD	-0.283	(0.000)	-0.321	(0.000)	-0.284	(0.000)	-0.366	(0.000)	-0.38	(0.000)	-0.367	(0.000)
Year	included		included		included		included		included		included	
Industry	included		included		included		included		included		included	
Number of obs	4332		4332		4332		4332		4332		4332	
	Prob > chi2 =0.000		Prob > chi2 =0.000		Prob > chi2 =0.000		Prob > chi2 =0.000		Prob > chi2 =0.000		Prob > chi2 =0.000	

Variables definition: ConservatismBasu$_{t-1}$= the Basu accounting conservatism in the previous period. ConservatismCscore$_{t-1}$= C_Score accounting conservatism in the previous period. Conservatism$_{t-1}$= the average value of the Basu accounting conservatism in the previous period and the C_Score accounting conservatism in the previous period. Stagej= a dummy variable; it is set to 1 if a company is in stage of growth and it is set to 0 if it is not. ConservatismBasu$_{it-1}$Stagej$_t$= prior period's Basu accounting conservatism is multiplied by dummy variable Stagej. ConservatismCscorei$_{t-1}$Stagej$_t$= prior period's C_Score accounting conservatism is multiplied by dummy variable Stagej. ConservatismAverage$_{t-1}$Stagej$_t$= average value of previous period's the Basu accounting conservatism and previous period's the C_Score accounting conservatism is multiplied by dummy variable Stagej. AQ= accounting quality. OCF= operating cash flows deflated by the beginning total assets. ROA= return of total assets, measured by income from continuing operation divided by the beginning total assets. BetaRisk= beta risk. retSD= volatility of returns, measured by the standard deviations of returns for current and prior two years, total 3 consecutive years. Model 4, Model 5 and Model 6 is equity value measured by EBO method. Model 7, Model 8 and Model 9 is equity value measured by the average of the equity value calculated using the RKRV method and EBO method.

5 Conclusions

This study extends the literature on accounting conservatism and equity valuation in three aspects, and expects that accounting conservatism matters to equity mispricing. A company with better accounting conservatism is less likely undervalued by the market. Furthermore, the equity value of a company at the stage of growth is less likely to be undervalued by the market; whereas, the equity value of a company at the stage of maturity is less likely to be overvalued by the market. Thus, with the change of corporate life cycle, the relationship between accounting conservatism and market valuation of a company varies.

To pile up the research for testing the relationship between accounting conservatism and equity valuation, this paper measures equity intrinsic value using both the EBO model and the average value of EBO and the extended RKRV model. On the other hand, accounting conservatism has been a continuing quality of financial reporting. We first measure accounting conservatism with Basu's model. Even though the Basu's mothod, a measurement that has been adopted in other research, Khan and Watts (2009) have still questioned the homogeneity of its cross-sectional variation and timings for changes. Therefore, we further measure accounting conservatism using the average of Basu's conservatism and the extended Khan and Watts's C_Score conservatism.

The empirical results first show that a higher level of accounting conservatism alleviates the problem of agency. Accordingly, in the meantime, the equity intrinsic value or earnings are assumed to be reliable drivers for investors to make more positive equity valuation of a company. In other words, a company having a lower level of accounting conservatism may bring investors to question and undervalue its equity valuation. Second, after incorporating the factor of corporate life cycle, stage factor has the negative effect on undervaluation of a firm at the growth stage and positive effect on undervaluation of a firm at the maturity stage. Generally, with well-developed and steady performance, companies in the stage of maturity will not receive extra expectations from the market. Thus, it is unlikely that the stock price for this kind of companies will be overvalued. However, for those companies in the stage of growth, the market always will watch closely and have affirmative expectations on these high R & D and positive perspective companies, which means they are overvalued. When a company steps into the decline stage, the market is uncertain about the strategy and outcome of its development or reconstruction, thus, whether there is accounting conservatism is not a critical issue. The results conform to the hypothesis of the corporate life cycle effect in this study and also the prior researches. Lastly, when testing the interaction effect between corporate life cycle and accounting conservatism, it only has the function on growth and maturity stage. In growth stage, both *ConservatismBasu* and *ConservatismAverage* have significant, negative impacts on the average of EBO and the extended RKRV equity value, but not the C_Score method. In maturity stage, both *ConservatismBasu* and *ConservatismAverage* works well on either EBO or the extended RKRV equity value with a positive

relationship, and not the C_Score method either. Companies in decline stage do not have any mediating effects.

Basu's accounting conservatism is based on samples from the current year and continual samples at continual temporal points in the previous 5 years. For instance, if the research period ranges from 2009–2014, then the samples must be collected from the period ranging from 2004–2014. Meanwhile, the data of the previous period must also be tested, so the samples must be selected from the data in the period (12 years) ranging from 2003–2014. As long as the data of one year is unavailable, all relevant samples will be removed, which will result in an inadequate number of samples. Moreover, the model of C-Score accounting conservatism includes such variables as market-to-book value (MB), company size (Size), and financial leverage (LEV). To reduce the effects of variable collinearity, the three variables are not added as control variables into the empirical model, which might cause a result different from that of Basu.

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