

2.0 LITERATURE REVIEW

Full-length analyst reports are generally written for distribution to clients but their main points can often be found online such as at Investors.com (www.investors.com) and The Motley Fool (www.fool.com) and sometimes published by the press such as Malaysia's the Star and The Edge. Institutional and individual investors take note of analysts' investment recommendations because they perceive analysts as independent. Analysts' earnings forecasts, therefore, are perceived to be more credible than those released by management (Cote, 2000 and Chang, Ng and Yu, 2008).

2.1 How Analysts Arrive at Investment Recommendations

According to Schipper (1991), an analyst's basic responsibility is to "follow stocks". She explained that an analyst is typically assigned a portfolio of 10 to 20 stocks in a particular industry or economic sector and is expected to estimate the returns from each stock in his/her portfolio and issue a report with an investment recommendation to buy, sell, or hold. Brokers at the analyst's firm then market the stocks to their institutional and individual clients with the understanding that any trades that are executed based on the research will be done through the firm so that they can collect a brokerage commission (Brown *et. al*, 2009).

Analysts typically create a financial model to forecast a firm's future earnings and/or cash flow. In the process, they identify the key drivers of a firm's revenues and costs, and make educated assumptions using a variety of information such as the firm's quarterly earnings, management guidance, and relevant economic data. Using the firm's forecast future earnings and/or cash flow, the analyst then calculates the forecast fair value for a share of the firm's stock, which is commonly referred to as the "target price" or "price objective" in analyst reports (Bradshaw, 2002). Generally, if the forecast fair value of a firm's share is higher (lower) than the current trading price, the analyst would issue a buy (sell) recommendation (Bradshaw, 2002). Analysts also typically revise their assumptions, which may affect the firm's forecast future earnings and target price after every quarterly earnings announcement (Stuerke, 2005).

2.2 Previous Studies in Accounting Literature

The topic of equity valuation methods has received extensive attention from accounting and finance researchers (Pike *et. al*, 1993, Ohlson, 1995, Block, 1999, Bradshaw, 2002, Demirakos *et. al*, 2004, Jenkins and Kane, 2006, and El-Gazzar, Finn and Tang, 2009). In accounting literature, Ohlson (1995), Jenkins and Kane (2006), and El-Gazzar *et. al*(2009) have all conducted studies on how a firm's value can be derived from its accounting information.

Using fundamental analysis of accrual-accounting financial statements, Ohlson (1995) proposed that a firm's market value equals its book value plus

a multiple of its abnormal or residual earnings. He defined abnormal or residual earnings as earnings minus the normal returns that can be expected from the firm's net assets. Ohlson (1995) argued that abnormal returns essentially signify the value of a firm's goodwill, which would explain the difference between a firm's book value and its market value. Once the abnormal returns are determined, Ohlson (1995) suggested that one can then study how a firm's value is related to its dividends, book value, and earnings.

Jenkins and Kane (2006) studied the accuracy of three valuation models, namely an asset-based model, an income-based model and a hybrid model that combined elements from both the asset-based and income-based models, to value the equity of privately held firms. In asset-based and income-based valuation models, a firm's value was derived from its book value and earnings respectively while in a hybrid model, a firm's value was derived from a combination of both its book value and earnings. Jenkins and Kane (2006) found that a hybrid model was more accurate in calculating a firm's value compared to both the asset-based and income-based models. Based on Ohlson's (1995) arguments, Jenkins and Kane (2006) suggested that a hybrid model may outperform an asset-based model and an income based model because book values do not fully capture a firm's intangibles (e.g.: its brand name, innovation and dedicated distribution channels) and earnings provide little information when a firm is not profitable or has low profitability.

However, it appears that Jenkins and Kane's (2006) findings could not be generalized to the aviation industry due to "airline specific economics" (El-Gazzaret. *al*, 2009). In a study of security prices of air transportation firms in the US, El-Gazzaret. *al* (2009) found evidence that non-earnings based measurements such as book values and operating cash flows better explained share prices of air transportation firms than earnings information during regulated times. El-Gazzaret. *al* (2009) suggested that this may be due to the government guaranteeing airlines' routes and price subsidies, which is typical in a regulated industry. This affectually guarantees a fair rate of return on invested capital, similar to other traditionally regulated industries such as utilities and transportation which also incur large capital expenditures expenses at the beginning of a project. El-Gazzaret. *al's* (2009) study also found evidence that although earnings information's explanatory power increased when the aviation industry was deregulated, when increased competition among airlines led to higher volatility in the aviation sector, non-earnings based measurements still maintained their influence on stock prices.

2.3 Valuation Models in Finance Theory

The model many consider the most theoretically sound is the Discounted Cash Flow Model (DCF), which incorporates the Capital Pricing Asset Model (CAPM). This is followed by the Dividend Discount Model (DDM) and market multiples analysis. DCF and DDM both have solid foundations in theory and although calculating the price of a share using market multiples may be

simpler than using DCF and/or DDM, it is generally considered a crude method to determine a range of values for the firm's equity.

2.3.1 Discounted Cash Flow Model (DCF)

The present value of a firm can be calculated by discounting its projected future Free Cash Flows (FCFs) and Terminal Value (TV). The TV can be derived in a number of ways, one of which is as a growing perpetuity. The future FCFs are usually discounted at the Weighted Average Cost of Capital (WACC), while the TV is usually discounted at WACC less its expected future growth rate, g . The cost of debt, k_d , one of the inputs to calculate the WACC is often derived from the firm's financial statements while the cost of equity, k_e , is calculated using the Capital Asset Pricing Model (CAPM). A summary of how the future FCFs, TV, WACC, k_d , and k_e are generally calculated is shown next:

FreeCashFlow (FCF)

$$= EBIT(1 - t) + DEP\&AMORT - Capex \pm \Delta NWC \pm Other$$

$$TerminalValue (TV) = \frac{FCF\text{fromlastyearinproforma}}{WACC - g}$$

$$WeightedAverageCostofCapital (WACC) = \frac{D}{TC} k_d(1 - t) + \frac{E}{TC} k_e$$

$$Costofequity, k_e = r_f + \beta (R_m - r_f)$$

Where

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DEP & AMORT = Depreciation and amortization

Capex = Capital expenditures

Δ NWC = Change in Net Working Capital

g = firm's expected growth rate

D = Amount of debt

E = Amount of equity

TC = Total capital

k_d = Cost of debt

k_e = Cost of equity

r_f = Risk-free rate

R_m = Market returns

β = Measure of volatility relative to the market

Although DCF has a solid foundation in theory, its usage is limited because very few firms can accurately predict their future cash flows. The value of the firm is also sensitive to the WACC because it is used to discount the FCFs and TV. WACC can vary widely depending on the analyst's assumptions regarding its inputs: the risk-free rate (r_f), beta, and the risk premium ($R_m - r_f$).

2.3.2 Gordon's Dividend Discount Model (DDM)

The current price of a share is equal to the present value of all its future dividends, assuming dividends are growing at a steady rate from current to perpetuity (Ross, Westerfield and Jaffe, 2010).

$$\text{Current price of one share, } P_0 = \frac{\text{Div}}{R - g}$$

Where

Div = Dividend on the stock at the end of the first period

R = discount rate

g = dividend growth rate

The use of DDM, however, is limited to firms that issue dividends to its shareholders. The price of the share calculated using DDM is also sensitive to the discount rate and the dividend growth rate. Although an analyst may study the historical behaviour of these two variables and make educated guesses, there is no guarantee that they will continue to exhibit the same behaviour in the future.

2.3.3 Market Multiples Analysis

Multiples of various financial measures (e.g. revenues, EBITDA, earnings, and book value) are commonly used to compare similar firms (Damodaran, 2006). Comparable firms may have similar risk exposure, be within the same sector or have similar revenue levels. By calculating a multiple such as the

Price-to-Sales (P/S) ratio for several comparable firms, one can compare the P/S ratio of the firm he/she is trying to value with the comparable firms' P/S ratios to determine whether it is over or undervalued relative to its peers (Damodaran, 2006).

One of the most common multiples in finance is the Price-to-Earnings (P/E) ratio. It is the ratio of a stock's price to its earnings per share (EPS) and it implies the firm's future growth prospects. A firm that the market believes has more growth opportunities, such as electronics and technology stocks, may trade at a higher P/E ratio than a firm with low growth prospects such as railroads, utilities and steel companies (Ross *et. al*, 2010).

$$\text{Price to Earnings (P/E)ratio} = \frac{\text{Price per share}}{\text{Current earnings per share (EPS)}}$$

$$\text{Forward Price to Earnings (P/E)ratio} = \frac{\text{Price per share}}{\text{Forecast EPS for next 12 months}}$$

By examining the range of comparable firms' P/E ratios, one can determine a target forward P/E ratio for the subject firm (for example, by calculating the average P/E ratio of several comparable firms) and apply it to the subject

firm's forecast EPS to arrive at the target price per share. Rearranging the above formula,

$$\begin{aligned} & \textit{Target price per share} \\ &= \textit{Forecast EPS for next 12 months} \\ &\times \textit{Target Forward P/E Ratio} \end{aligned}$$

Analysts may also be interested in Enterprise Value (EV) multiples. A firm's EV is the "market value of its operating assets" (Damodaran, 2006) and is calculated as follows:

$$\begin{aligned} & \textit{Enterprise Value (EV)} \\ &= \textit{Market Value of Equity} + \textit{Market Value of Debt} \\ &- \textit{Cash Holdings} \end{aligned}$$

The EV to EBITDA ratio, calculated by dividing a firm's EV with its earnings before interest, tax, depreciation and amortization (EBITDA), removes the effects of leverage in a firm's capital structure and is useful for comparing firms with different debt levels (Damodaran, 2006).

Although market multiples are easier to use and understand compared to DCF and DDM, market multiples generally only provide a rough gauge for a firm's value. They are not generally used exclusively when an accurate value for a firm is essential, such as in merger and acquisition activities.

2.4 Previous Studies in Finance Literature

In finance theory, DCF is commonly proposed as the superior method to value a firm compared to the DDM and market multiples analysis. In spite of this, results of studies by Pike *et. al* (1993), Block (1999), Bradshaw (2002) and Demirako *et. al* (2004) all indicated that DCF is not generally used by analysts to value shares. The low usage of DCF by analysts may be due to the difficulty in forecasting accurate future cash flows and calculating the cost of equity, k_e (Block, 1999). To avoid this problem, analysts have been observed to instead use the Price-to-Earnings (P/E) ratio to calculate a share's target price (Pike *et. al*, 1993, Bradshaw, 2002 and Demirako *et. al*, 2004).

In one early study on analysts' practices, Pike *et. al* (1993) surveyed 139 British and German analysts to determine the valuation methods used by them to value a share of a firm's stock. They found evidence that the Price-to-Earnings (P/E) ratio was the most preferred method. DDM and DCF were, at most, found to be "averagely" useful, on a seven-point scale, to analysts. Although analysts from both countries agreed that growth in EPS is key to their valuations, Pike *et. al* (1993) also found evidence of differences in

time horizons between English and German analysts. English analysts were more likely to adopt a long-term view towards creating shareholder wealth than their German counterparts, who were more focused on short-term profitability. Pike *et. al* (1993) suggested that the difference may be due to the difference in how English and German analysts obtain information. English analysts rated the subject firm's company personnel as the most important source of information for their analysis while German analysts were more likely to refer to well informed colleagues, such as the bank's in-house client advisers.

In a study of 297 analysts in the US, Block (1999) surveyed 16 key areas including the most widely used valuation methods by analysts; whether earnings, cash flow, book value or dividends are the most important input to their valuation models; portfolio management strategies; and the analysts' beliefs regarding the Efficient Market Hypothesis (EMH). Block (1999) found that present value analysis was not widely practiced by analysts because it was difficult to project future cash flows and select an appropriate discount rate. Analysts who participated in the survey were also found to prefer the Economic Value Added model (EVA) to DCF and DDM. EVA is technically not a valuation model but a method made popular by Stewart & Co., a consulting firm in New York, USA.

Bradshaw (2002) was among one of the earliest researchers to apply content analysis methodology on a sample of analyst reports. To study whether

analysts use target prices to justify their buy, sell, or hold recommendations, Bradshaw (2002) analysed a random sample of 103 analyst reports over a cross-section of industries in the US. He found that more than three quarters of the analysts used the P/E ratio to arrive at a target price for a share, which they compared with the share's current price. Analysts typically issued a buy (sell) recommendation when the target price was below (above) the share's current price (Bradshaw, 2002). His findings also indicated that analysts may place great importance on the subject firm's forecast long-term earnings growth rates. It was not uncommon for analysts to combine the two constructs, by dividing the P/E ratio with the growth rate, to arrive at the P/E to Growth (PEG) ratio (Bradshaw, 2002).

Demirakos *et. al* (2004) expanded Bradshaw's (2002) study by applying a more quantitative approach to content analysis methodology. Using a "structured content analysis" with a scoring system, Demirakos *et. al* (2004) analysed 104 analyst reports over three distinct industries in the UK (beverages, electronics and pharmaceuticals) and found that an analyst's chosen valuation method depended on the subject firm's industry. Similar to Bradshaw (2002), 92 of the 104 (88%) analyst reports sampled presented the P/E ratio as the main rationale for the analyst's recommendation. Depending on the company's key drivers of earnings, alternative valuation methods, such as DCF, price-to-sales multiples, and growth and profitability analysis may also be used to determine the share's target price (Demirakos *et. al*, 2004).

Studies by Pike *et. al* (1993), Block (1999), Bradshaw (2002) and Demirakos *et. al* (2004) all found that the P/E ratio may be the most commonly used method by analysts to value a share of a firm's stock. To calculate a share's target price, analysts generally selected a target forward P/E ratio and applied it to the firm's 12-month forecast earnings. However, it was unclear how analysts identified the appropriate target forward P/E ratio for the firm they are valuing.

2.5 Accuracy of Analysts' Forecasts

Both institutional and individual investors refer to analysts' recommendations (Mikhail *et. al*, 2007). Analysts generally take care when deciding on a valuation method because their earnings forecasts are regularly compared to those of their counterparts in other firms (Groysberget. *al*, 2008). Their reputation depends on the accuracy of their earnings forecasts and their ability to recommend investments that yield high returns (Desai *et. al*, 2000, and Brown *et. al*, 2009).

In spite of this, investors should be aware that the accuracy of analyst earnings forecasts can vary by country, depending on the disclosure level required by law (Higgins, 1998). Higgins (1998) compared the accuracy of analyst earnings forecasts in seven countries (the US, UK, the Netherlands, France, Japan, Germany and Switzerland) and found that analyst forecasts in

countries with high disclosure requirements, such as the US and the UK, were more accurate than those forecasted in countries with low disclosure requirements, such as Japan, Germany and Switzerland.

2.6 How Analyst Recommendations Affect Stock Prices

Extensive research has been conducted on the impact of analyst recommendations on the market. Numerous studies found that analysts' recommendations influenced both small-cap and large-cap stock prices and reduced investors' tendency to "sell winning stocks too soon and hold losing stocks too long" (Stickel, 1995, Desai *et. al*, 2000, and Krishnan and Booker, 2002). Irvine (2004) also found that an analyst's buy recommendation generated more trades, both in buying and selling, at the analyst's brokerage firm in the two weeks after the buy recommendation was released. The strength of the recommendation, firm size and earnings forecast revisions generally changed stock prices permanently while the analyst's reputation, brokerage size and a change in the analyst's recommendation generally exerted a temporary upward or downward pressure on stock price (Stickel, 1995).

Stickel (1995), Womack (1996) and Brown *et. al* (2009) all found that the market generally reacted more to a change in an analyst's recommendation, relative to his or her last recommendation, than to the strength of the analyst's current recommendation. Although the market generally reacted positively

(negatively) to a stock upgrade (downgrade), the market typically overreacted when an analyst downgraded a stock, i.e. the price movement following a downgrade is more severe than following an upgrade. This is supported by Chang *et. al*(2008) who found that unfavourable forecasts had a greater effect on investors than favorable forecasts. A reiteration of an analyst's previous recommendation typically only resulted in a small or insignificant movement in the market (Brown *et. al*, 2009).

2.7 Investment Banking Conflict

Although investors may perceive analysts as independent (Chang *et. al*, 2008), investors who refer to analyst recommendations to make their investment decisions should be aware of any business relationships between the analyst's firm and the company whose share the analyst is recommending because analysts may be optimistically biased to assist its brokers to sell shares their employer is underwriting (Irvine, 2004 and Cliff, 2007). Cliff (2007), who studied the returns on investment based on recommendations by affiliated analysts, i.e. analysts whose employers are underwriting a stock offering, and non-affiliated analysts found that affiliated analysts' stock recommendations generally underperformed those recommended by independent analysts.

Mikhail, *et. al* (2007) argued that analysts' buy and upgrade recommendations may be less credible than sell and downgrade recommendations due to "incentive conflicts". This is supported by Irvine (2004), who suggested that analysts may be inclined to be more optimistic in their earnings forecasts

because a buy recommendation may generate more brokerage commissions due to increased trading volume, both buying and selling, at the analyst's brokerage firm in the two weeks after the earnings forecasts were released. Analysts who may want to "curry favor with management" prior to potential capital raising exercises that could lead to investment banking business have also been observed to overweight management's guidance in their earnings forecast and recommendations (Feng and McVay, 2010).

2.8 Could There Be Too Much Analyst Coverage?

A rise in the share price was generally observed following an announcement of an analyst initiating coverage, particularly a respected analyst from a large investment bank (Branson, Guffey and Pagach, 1998, and Dhiensiri and Sayrak, 2010). Thus, it is not surprising that a heavy analyst following of a share appeared to benefit both the firm and its investors (Chung and Jo, 1996, and Doukhaset. *al*, 2005). It may generate more buying interest, which has generally exerted upward pressure on the stock price because there is more demand than supply (Doukhaset. *al*, 2005) and may reduce agency costs, as managers may be motivated to make decisions that directly impact the items that are monitored by analysts such as profitability and growth in earnings (Chung and Jo, 1996).

However, too large of an analyst following may yield unfavourable results. Subsequent to an analyst's coverage initiation announcement, firms with a

small existing analyst following typically received a significantly larger, positive stock price reaction compared to firms that did not receive any prior analyst coverage (Branson *et. al*, 1998). Doukhas *et. al* (2005) also found that firms with excessive analyst coverage were more likely to be overvalued and yield low returns. They argued that the excessive analyst coverage raised investors' interest, which drove up demand of the stock and consequently, the stock price above its fundamental values. This is supported by Brown *et. al* (2009) who found that stocks with relatively large number of analysts covering the stock typically yielded negative returns to investors.