Valuation Models: An Analysis

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Abstract - *The importance of financial statement is articulated by the role it plays for its users or stakeholders. The primary interest of users is to assess the fair value of shares by estimating and interpreting from financial reports. They use different models to capture the pulse of the firm to make sure of their investment prospects and use measures for valuation of the company. This paper aims to analyze different valuation models and interrogates the conjecture around the company valuation and estimation of measures particularly at the time of crisis that provokes the debate about the reliability of financial statements. The paper concludes that for forecasting value, it is imperative to understand the economic factors, strategic choices made by the management such as choosing product, location, quality, R&D program, alliances but at the same time, it is correspondingly significant to look at the business conditions like legal, political and regulatory constraints.*

Key Words: **Dividend Valuation model, Residual Earnings model, Abnormal Growth Valuation model, Free Cash Flow Valuation model, Residual Operating Income Model, Abnormal Operating Income Growth Model**

The importance of financial statement is articulated by the role it plays for its users or stakeholders. The primary interest of users is to assess the fair value of shares by estimating and interpreting from financial reports. They use different models to capture the pulse of the firm to make sure of their investment prospects and use measures for valuation of the company.

Dividend Valuation model (DVM), Residual Earnings model (REM) and Abnormal Growth Valuation model (AEGM) take cost of equity as discount factor to calculate equity value directly. DVM requires prediction of future dividend that becomes a challenging task when companies pay little or no dividends and might incorporate valuation errors (Ohlson, 1995). Nevertheless, DVM is an imperative theoretical model for earnings models. As Nissim and Penman (2001) observed that the structure of accounting ties the accounting numbers to dividends in REM.

REM incorporates the clean surplus relation (CSR) and takes the book value and present value of future retained earnings to calculate the equity value. The value drivers in REM are the excess of Return on Equity (ROE) over the Cost of Equity

(COE) and growth in the book value of equity. It articulates that the market value of equity would be greater than the book value if the present value of retained earnings is positive and hence, provides the information about Price to Book value ratio (P/B) which also explains the variation between PB ratios across firms. AEGM derived by Ohlson and Juettner-Nauroth (2005) is based on the estimations of earnings and dividend that gives the flexibility for its readily application. It measures the change in residual earnings and therefore connotes the Price to earnings ratio (PE) as reciprocal of COE in case of no change or zero growth in it.

The accounting book value is generally presumed as a conservative estimate of value. However, conservative accounting is observed as quality accounting but applying it continuously has the danger of higher earnings rate with low book values and eventually an earning pyramid that is unrelated to the value (Penman, 2003). Penman (2003) argued that the residual income or earnings growth model protects the investors from misunderstanding the growth by forecasting earnings growth. Ohlson (2000)[1] warned that they misvalue equity in the process of forecasting Generally Accepted Accounting principles (GAAP) earnings by considering the transactions related to shares at market value assuming those at fair value and hence ignoring potential gains and losses that should be adjusted for a value to shareholders. To this, Penman (2003) seemed to agree and recognized that the measurement problems in financial statements are considerable and GAAP should account for these complications. This highlights the importance of role of GAAP in reliability of financial statements for equity valuations.

The indirect valuation to equity by Free Cash Flow Valuation model (FCFM), Residual Operating Income Model (ReOIM) and Abnormal Operating Income Growth Model (AOIGM) relates to the enterprise valuation by deducting net financial obligations (NFO). These approaches take Weighted Average Cost of Capital (WACC) as a discount factor which is less sensitive to the financing policy and relates to the riskiness of the operations.

The FCFM is relatively easily applied than DVM by forecasting future free cash flows derived from the accrual accounting forecasts. The challenge for FCFVM is the cash

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[1]Penman (2003) mentioned Ohlson (2000).Residual Income Valuation: The Problems. Unpublished paper, New York University.

flow statements do not associate with the previous cash outflows. Penman (2003) discussed that GAAP rules results in confused measures of cash flow from operations (CFFO) and FCF from operations, for instance, CFFO includes interest that complicates its calculations with reference to CF from financing. Further, Penman and Sougiannis (1998) argued that the accrual accounting is a correction to discounted CF valuation and equity valuation based on estimation of GAAP accrual earnings has advantages over estimation of dividends and cash flows. They also analysed valuation errors and concluded that the accrual accounting provides some of the missing values in cash flow analysis in retained earnings.

The operating income models provide an explanation to the variation in RNOA, ROE by relating it to Net Borrowing costs and leverage of the firm. ReOIM and AOIGM requires reformulation of financial statements that distinguish the financing activities from operating activities to emphasis on unlevered PB and income from operations rather than bottom line earnings and to focus on Net Operating Assets (NOA) rather than common equity in the balance sheet. The drivers of ReOIM are the excess of Return on NOA (RNOA) over the WACC and growth in book value of NOA. AOIGM emphasized that the operations add value and focus on growth in residual operating income. It is calculated through forecast of operating income and free cash flows. However, Clubb (2013) linked dividend coefficient to next-period abnormal earnings and provides link between dividend, expected performance and equity value.

The standard application of valuation models needs the information from financial statements about the forecasting and reliable prediction till infinite or over a long term horizon. Moreover, the contextual factors (Imam et al., 2008), conflict of interest (Hayward & Boekar, 1998), dependence for the information (Fogarty and Rogers,2005) makes some of these sophisticated models of limited practical use and the analyst turned to unsophisticated multiples based models like PE, PE to growth ratio (PEB).The common problem with these multiples is locating the comparable firms to which Bhojraj and Lee (2001) developed warranted multiple for identifying the peer firms with the closest warranted multiple.

All models should provide the same estimation but the market imperfections, conservative estimations in the financial statements and the sensitivity of accounting ratios leads to different results and the choice of one over another depend upon the comfort of access to adequate proxies for the model building (Palepu et al., 2000). However, there are many studies concluding preferences for different reasons; bias in REM is lower than DVM or FCFM (Penman and Sougiannis, 1998); REM performed better than FCFM on accuracy, FCF and REM performed best in relation to bias and DVM performed the least well (Francis et al., 2000); PE and DCF as the highly rated models (Imam et al., 2008). Imam et al. (2008) argued neither sophisticated nor unsophisticated dominate, albeit they are complementary to each other and unsophisticated helps in communicating the information that sophisticated not able to and highlighted the socio-economic context and motivations.

The financial statements reflect the fundamentals of the company and based on the sound principles such as revenue recognition and matching principle. Nonetheless the conjecture around the company valuation and estimation of measures particularly at the time of crisis provokes the debate about the reliability of financial statements and interrogates the principles on which it is supposed to be based. As Penman (2003:89) observed that "…excessive write-downs, merger changes, cookie jar reserving, front-end revenue recognition and under-or overestimating of allowances for credit losses, warranties, and deferred tax assets(to name a few)- with the associated intertemporal shifting of earnings- are failures of management, directors, and auditors in applying basic accounting, not a failure of principle".

The financial statement analysis is undeniably supportive tool at the hands of users. But it is also important to understand the economic factors before forecasting value, to look not only at the strategic choices made by the management such as choosing product, location, quality, R&D program, alliances but also at the business conditions like legal, political and regulatory constraints. It is necessary to understand the drivers in the industry, role of management in the competitive conditions, product innovations, market power, government allocated privileges that gets translated in financial terms such as sales margins, higher growth rates and lower production cost.

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