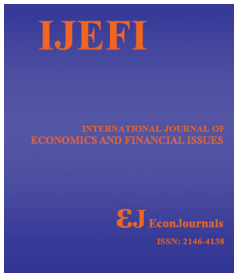

International Journal of Economics and Financial Issues

ISSN: 2146-4138

available at http: www.econjournals.com

International Journal of Economics and Financial Issues, 2019, 9(2), 265-272.

Valuation-based Accounting Research: Predominance of the Clean Surplus Valuation Model

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Received: 09 January 2019 **Accepted:** 10 March 2019 **DOI:** https://doi.org/10.32479/ijefi.7548

ABSTRACT

One of the major aims of accounting information is its usefulness in decision-making and in assessing the value of a company. To this end, a vast theoretical and empirical literature has examined the relationship between accounting information and the company's market value. In this article, we discuss the evolution of this research stream from its origins to the present by outlining the main conclusions. We also review research on the assessment of the company value through accounting determinants. In particular, we examine Ohlson's Clean Surplus valuation model, discussing its strengths and limitations. The analysis of the conclusions of this research stream provides insights into company valuation through accounting data that are likely to be useful to financial market participants and accounting standard setters.

Keywords: Value, Accounting Information, Equity Valuation, Clean Surplus
JEL Classifications: M41,G14

1. INTRODUCTION

The evaluation of the relationship between the capital market and financial statements has attracted particular attention from accounting researchers, particularly since the work of Fisher (1930) and Preinreich (1936). The latter was among the first to discuss the possibility of assessing a company's market value based in particular on its accounting data (Edwards and Ball, 1961), more specifically, the equity capital and earning.

In fact, since the stock market crash of 1929, the evaluation of the relationship between financial statement data and company value has begun to occupy an important place in accounting research (Trembley et al., 1993). However, Barth et al. (2001) and Kothari (2001) believe that the 1960s marked the emergence of this research stream, especially with the work of Edwards and Bell (1961), Beaver (1968) and Ball and Brown (1968), which served as a theoretical foundation for the subsequent research (e.g., Ohlson, 1979; Peasnell, 1982; Ohlson, 1995; Feltham and Ohlson, 1995). The main purpose of this research is to provide investors with the mechanisms and tools to make rational decisions.

In this article, we examine empirical research on the relationship between the accounting measures of firm value and the associated market value. In particular, we review the Ohlson's Clean Surplus valuation model. The primary objective of this study is to provide insight into the relationship between the market value of a company and the information derived from the financial statements. These elements are likely to be useful for investment decisions in financial markets and the establishment of accounting standards.

The paper continues as follows. In the next section, we question the authenticity of the intrinsic value of the equity. The section that follows discusses the usefulness of accounting information and focuses on two main approaches to measuring the value of equity. Finally, in section 4, we present and analyze the relationship between financial accounting information and market values of equity, by reviewing Ohlson's Clean Surplus linear model.

2. THE AUTHENTICITY OF THE INTRINSIC FIRM VALUE

Attempts to assess intrinsic firm value have opened up a major debate about its reliability as well as its deviation from market value. The origin of this debate is centered on the models used and the determinants of intrinsic value on the one hand, and on the other hand, on the question of the efficiency of the market in which equities are traded (Watts and Zemerman, 1986).

With regard to the determinants of intrinsic firm value, Beaver (1968) as well as Ball and Brown (1968) believe that accounting earning provides a better measure of this value, for Ou and Penman (1989) it is financial ratios, while for Ohlson (1995) it is the combination of accounting earnings and book value. For their part, Dechow et al. (1999) believe that the best determinant of this value is the expected price/earnings ratio (forward P/E), but for Myers (1999) it is the book values.

Most previous research that analyzes the relationship between the market value of the company and the financial statements uses association studies based on the restrictive hypothesis of market efficiency (Barth et al., 2001). Although these studies generally have explanatory powers (coefficient of determination, R^2) ranging from 5% to 20% (Lev, 1989), their conclusions often support the reliability and relevance of the information provided in the financial statements.

However, Ball (1992) believes that the main problem with the relevance of accounting data is either the inefficiency of financial markets or the substantial cost of acquiring and processing accounting information. As a result, the market value of the equities may not reflect its economic value, suggesting that there are securities that are overvalued and others that are undervalued. This leads us to question the hypothesis of the efficiency of the financial market. What about the verification of this hypothesis?

In a market that is considered efficient, the values of the equities traded must reflect all available information, assuming that all market participants have access to this information (Watts and Zemmerman, 1986). If the amount of new information is low and/or less relevant, the change in security value will also be low. In other words, the stock market efficiency theory advocates the inclusion of all information available to investors in the price of securities (Watts and Zemmerman, 1986). Tobin (1984) defines market efficiency as the small difference between the value of securities observed in the market and its intrinsic value determined from the estimated data.

However, one can support the idea that the information available on the market is not complete and that there is information available that is accessible to some investors but will not be accessible to others. Consequently, everyone will act according to their economic interests, but also according to the quantity and quality of information at their disposal (Chung et al., 2016).

3. INFORMATION USEFULNESS OF ACCOUNTING

The usefulness of accounting information is constantly mentioned in the academic literature, especially when it comes to estimating the value of the company. According to Kothari (2001), Beaver (1968), as well as Ball and Brown (1968), are the pioneers of the school that defends the relevance of accounting information, more specifically, earning and book value. However, Barth et al. (2001. p. 79) consider that the first study to use the term "value relevance" for describing the association between accounting data and equity market values was that of Amir et al. (1993).

Accounting standard setters support the idea that financial statements are intended to provide useful accounting information to users so that they can clearly understand the company's financial position (IASB, 2018). The objective is to make decisions on economic choices regardless of the nature of these choices. As a result, Beaver (1998) and Barth et al. (2001) believe that the concept of utility represents the primary objective attributed to accounting information by users of financial statements. In this respect, Escaffre et al. (2008) favor the approach that gives an informative and non-prudential role to accounting. Thus, the quality of the association between the accounts recorded in the financial statements and the value of the company reflects the relevance of the accounting information (Holthausen and Watts, 2001).

In addition, the usefulness of accounting information has accompanied the evolution of accounting as a discipline. The latter has gone through several important stages since its appearance, which dates back to a very old period[1]. Trembley et al. (1993) find that the most significant step was the discovery of double-entry writing in 1494 by the Italian Luca Pacioli. This new approach has completely transformed the role of accounting by making it more coherent and logical in its economic universe; it has also had a significant influence on the nature of disclosure and accounting standards (Trembley et al., 1993).

Since that time, the development of the theories that explain and predict accounting practices (Sterling, 1990), and on which researchers base their assessment of the informational utility of accounting data, has become a necessity. These include entity theory (1873)[2], outcome measurement theory (Edwards and Bell, 1961), agency theory (Jensen and Meckling, 1976), positive accounting theory (Watts and Zimmerman, 1978 and 1986) and Clean Surplus theory (Ohlson, 1995).

To better understand the informational utility of accounting data in company assessments, we will focus on two main approaches to value measurement, namely, the assessment approach based on accounting earning and the assessment approach based on other accounting determinants.

1 >30 centuries before our era (Trembley et al., 1993).

2 Developed in the United States in 1987 by Folsom and cited in Dumontier and Teller (2002).

3.1. Assessment Approach Based on Accounting Earning

The accounting earning is always at the center of the debate on the relevance of accounting data because it results from many pro-cyclical elements that are sometimes inconsistent. (Brief and Peasnell, 1996). In reality, accounting earning is often used as a measure of a company's financial performance (Scott, 2006). The latter considers accounting earning as the main indicator of the current and future performance of companies and also as an essential parameter for the assessment of the stock market value. Brief and Peasnell (1996) note that the fundamental role of accounting earning presentation is to determine the market value of the company.

In fact, accounting earning represents the difference between revenues (profits) and expenses (losses) over a certain period. However, the determination of the earnings elements is now a controversial issue, Clean Surplus versus Dirty Surplus. Clean Surplus' accounting concept recommends that the change in the value of all assets and liabilities of a company should be presented either in the income statement or in a separate statement of comprehensive income[3] that begins with net income or in a statement of changes in equity and incorporated into the valuation of the company (Ohlson, 1995). In other words, in clean surplus accounting, changes in equity other than transactions in relation to shareholders (i.e., dividend distributions and capital transactions) are included in the income for the year (Ramond et al., 2007. p. 133).

On the other hand, the Dirty Surplus concept does not recommend the integration of all changes in equity in the income statement. For example, unrealized gains or losses on available-for-sale financial instruments are not recognized in the income statement in Dirty Surplus' accounts. In fact, Dirty Surplus' accounting consists of eliminating transitional and non-trading items from the income statement, which subsequently simplifies the determination of companies' sustainable earnings by users of financial statements (O'Hanlon and Pope, 1999. p. 479). In short, in Dirty Surplus' accounting, we directly incorporate Dirty Surplus elements into shareholders' equity while, in Clean Surplus' accounting, all changes in net assets, not attributable to owners, must be included in the statement of comprehensive income.

Several academic studies, examining the relevance of the financial statements, are based on the informational content of the accounting earning. Preineich (1936) was one of the first to raise the issue of equity valuation in corporate finance (Brief and Peasnell, 1996). He analyzed the relationship between the present value of future cash flows and the present value of residual income[4]. In other words, he argues that the income statement is an essential determinant for the valuation of the company. Edwards and Bell (1961) confirm this trend and conclude that the income statement presents relevant information to the extent that it is always taken into account by investors in their decision-making. For its part, Beaver (1998) considers earnings per share to be the only financial statement data that investors are interested in and rely on to make rational decisions.

3 A new financial statement proposed under the standard (IAS 1).

4 Preineich breaks down the accounting income into two parts, interest on the investment and the income surplus which represents the goodwill.

Ball and Brown (1968) analyzed the informational content of the accounting earnings. They then developed two models, one to determine market expectations of accounting earnings and the other to examine the market's response if these expectations do not materialize. They find that accounting earning is correlated with the market value of the company. More specifically, their research results show that approximately 85–90% of the information in the accounting income statement presentation was anticipated by investors. They, therefore, conclude that the usefulness of the accounting information is contained in the income statement.

Beaver (1968), on the other hand, assessed the impact of the publication of accounting earnings on the reaction of the market value of a sample of 506 observations between 1961 and 1965. He finds the net income relevant in the sense that the market reacts with an increase in trading volume and an increase in the volatility of the securities trading in it within the week of its disclosure. Moreover, his study shows that investors revise their expectations following the presentation of the financial statements, which could be reflected in the adjustment of the company's market value on the market.

3.2. Valuation Approach by Other Accounting Determinants

The low explanatory power of research that considers accounting earnings as a permanent determinant of value is one of the reasons that has led accounting researchers to find other determinants (Dumontier and Raffournier, 2002). For Easton (1985) it is dividends, for Ou and Penman (1989) it is financial ratios, for Barth and Beaver (1999) intangibles and cash flows, and finally, for Lee and Lai (2001) it is governance variables.

Lev (1997) shows that the relevance of accounting earning has declined over time. For their part, Amir and Lev (1996) believe that accounting income and book value are not relevant in the mobile telephony sector because of the volume of intangibles in this sector. Collins et al. (1997) analyze the relevance of accounting income and book value separately and the relevance of the combination of the two in the U.S. market between 1953 and 1993. They find that the relevance of the combination of accounting income and book value has increased over the years. However, it seems to them that the relevance of the accounting earning decreases, while the relevance of the book value increases during the study period. Like Collins et al. (1997), Francis and Schipper (1999) show a decrease in the relevance of the accounting earning and an increase in the relevance of balance sheet data.

4. INFORMATIONAL ACCOUNTING RESEARCH

4.1. Assessment of the Relevance of Accounting Data

The relevance of accounting information is often assessed through the quality of the relationship between the capital market and financial statements (Barth et al., 2001). Several methods have been developed to evaluate this relationship (Kouthari, 2001) and can be summarized in three categories: (1) Those based on abnormal benefits (e.g., Preinreich, 1936; Edwards and Bell, 1961; Ball and Brown, 1968; Feltham and Ohlson, 1995 and Ohlson,

1995), (2) those based on discounting future flows and (3) those recommended by specialists and based on financial ratios (Beaver, 1968, Altman, 1968, Ohlson, 1980).

The results obtained by such methods have never lived up to expectations because their main problem is that the intrinsic values they allow to determine are very often largely different from the values observed on the market (El Ibrami and Dicko, 2013). Moreover, their explanatory power rarely exceeds 30% (Lev, 1989), and even if it exceeds 30%, the additional explanatory power cannot be attributed to accounting information but is due to statistical bias in the models used (Holthausen and Watts, 2001). Brown et al. (1999. p. 83) show that the increase of R^2 in accounting research is attributable to increases in the coefficient of variation of the scale factor. All this has led researchers to question the reliability and relevance of such techniques and the exhaustiveness of the variables observed when estimating the value of the company (Holthausen and Watts, 2001).

Historically, the evolution of accounting has always been accompanied by a major evolution in research methodologies in this field (Kothari, 2001). We can divide this methodical development into two periods: Before 1968 and after 1968. For the period before 1968, according to Kothari (2001), accounting research was generally normative in nature, based more particularly on theoretical choices without the need for empirical validation. The objective of this research stream is to define and conceptually identify accounting methods (e.g., Edwards and Bell, 1961).

According to Kothari (2001), the end of the 1960s was marked by two major events, namely the development of the Capital Asset Pricing Model (CAPM) by Sharpe (1964) and Lintner (1965) and the study on the market efficiency hypothesis by Fama (1965). These two major events have strongly contributed to the emergence of positive and quantitative accounting research based on empirical verification, generally using association studies. More specifically, it was with Ball and Brown (1968) and Beaver (1968) that accounting research took a new turn, introducing empirical research methods adapted to financial accounting. Since then, there has been a flow of empirical studies that have dominated the informational accounting research to this day (e.g., Collins and Hopwood, 1980; Easton, 1985; Ou and Penman, 1989; Easton and Harris, 1991; Easton et al., 1992; Ali and Zarowin, 1992).

However, this predominance of empirical research has been marked by the work of Ohlson (1995) and Feltham and Ohlson (1995)[5] (hereafter F&O'95), who have built a new link between accounting and the economic market by developing a model that link financial statements with equity market values (Bernard, 1995, Matias et al., 2016). Since this work, the debate on the relevance of accounting data and the link between accounting and finance has gained new momentum (Barth et al., 2001).

5 The Feltham and Ohlson (1995) model is an extension of the Ohlson (1995) model. "Feltham and Ohlson (1995) extend the Ohlson (1995) model in a way that highlights the effects of biased (conservative) accounting for net operating assets. Net operating assets are distinguished from (net) financial assets, which are assumed to be zero net present value financing arrangements that are marked to market" (Stober, 1999. p. 9).

4.2. The Ohlson's Clean Surplus Model

The Ohlson (1995) model was the result of a current of research in perpetual motion, starting with financial theory that advocates discounting dividends and future cash flows for the valuation of securities, and ending with the theory of income measurement developed in the pioneering work of Edwards and Bell (1961) (Richardson and Tinaikar, 2004). The work of Ohlson (1995) reconciled these two major theories to arrive at the concept of residual income or abnormal earnings. Although the logic of this approach was previously theoretically evoked in Preineich's (1936) work using the expression "excess profit" and in Edwards and Bell's (1961) work, by the term "surplus profit," Ohlson (1995) start from a new platform that links discounted dividends with abnormal profits to develop their own model. According to the Ohlson (1995) model, the market value of the firm is a linear function of its book value added to the present value of future residual income. Thus, they show that the intrinsic value of the company can be estimated on the basis of information from a balance sheet and income statement components. Before discussing the strengths and criticisms of Ohlson's Clean Surplus model, we first review its approach.

The Ohlson's (1995) model is based on three underlying assumptions. The first on which the model is based is the Gordon and Shapiro (1956) dividend discount model method. The MDD assumes that the value of the assets is equal to the present value of the expected future dividends. We then obtain the following expression:

$$V_t = \sum_{\tau=1}^{\infty} \frac{E_t(d_{t+\tau})}{(1+r_f)^{\tau}} \quad (1)$$

Where: V_t = The value of a firm at date t; d_t = Dividends paid at time t; r_f = The discount rate that is assumed to be constant; $E(\ )$ = The expected value operator based on the information at date t.

The second assumption of the model is the Clean-Surplus relationship that determines the book value of the period (t) based on the book value of the previous period (t−1) added to the earnings of the period (t) minus the dividends paid during that same period. The following relationship can, therefore, be stated:

$$bv_t = bv_{t-1} + x_t - d_t \quad (2)$$

Where: bv_t = The book value of equity at time t; x_t = Earnings for period t.

From equations (1) and (2), Ohlson (1995) shows that the expected value of the company can only be expressed with the accounting profit and the future book value. So, Ohlson (1995) introduced the abnormal earnings variable which is defined as follows:

$$x_t^a = x_t - \left(1+r_f\right) bv_{t-1} \quad (3)$$

Where x_t^a is abnormal earnings for the period t that the company can have if it achieves a return higher than its cost of capital. On the other hand, normal earning equal to the book value multiplied by the cost of capital $[(1+r_f)\ bv_{t-1}]$.

In other words, abnormal earnings represent the difference between current and expected earnings, which represents the additional remuneration generated by the company's assets after satisfying the remuneration expected by the market (Ohlson, 1995). In this sense, Dechow et al. (1999) find that abnormal earnings can be summarized as the difference between the accounting prudence concept based on historical cost, represented by the expected earnings, and the market approach based on fair value measurement, which offers the current earnings.

Substituting x_t by $[x_t^a+(1+r_f)\, bv_{t-1}]$ in equation (2), we obtain:

$$d_t = x_t^a - bv_t + \left(1+r_f\right)bv_{t-1} \tag{4}$$

By transferring the expression (4) to (1), Ohlson (1995) expresses the market value of the company using the following simplified formula:

$$V_t = bv_t + \sum_{\tau=1}^{\infty} \frac{E_t(x_{t+\tau}^a)}{(1+r_f)^{\tau}} \tag{5}$$

Where the value of a firm the value of a firm (V_t) can be expressed as the sum of book value (bv_t) and the present value of future abnormal earnings ($\sum_{\tau-1}^{\infty} \frac{E_t(x_{t+\tau}^a)}{(1+r_f)^{\tau}}$).

Therefore, the assessment of the company's value in the Ohlson (1995) model is based on the estimation of future income. However, it is unlikely that this measure based on the estimate is reliable, due to the difficulties in predicting the expected earnings.

The third central assumption of the Ohlson's (1995) model is the linear information model (LIM). The latter assumes that successive abnormal earnings are linked by a persistence parameter, and are conditional on information other than abnormal earnings. According to Ohlson (1995), abnormal earnings follow the following autoregressive process:

$$x_{t+1}^a = \omega x_t^a + v_t + \varepsilon_{1,t+1} \tag{6}$$

$$v_{t+1} = \gamma v_t + \varepsilon_{2,t+1} \tag{7}$$

Where: v_t = information other than abnormal earnings; ω = persistence parameter of abnormal earnings et γ = persistence parameter of other information; $\varepsilon_{1,t+1}$ and $\varepsilon_{2,t+1}$ = Error terms.

By combining expression (5) with expressions (6) and (7), we obtain the linear Clean Surplus model of Ohlson (1995), presented as follows:

$$V_t = bv_t + \alpha_1 x_t^a + \beta_1 v_t \tag{8}$$

Where:

$$\alpha_1 = \frac{\omega_1}{1+r_f-\omega_1} \quad \text{and} \quad \beta_1 = \frac{1+r_f}{\left(1+r_f-\omega_1\right)(1+r_f-\gamma)}$$

Theoretically, Ohlson (1995) and F&O (1995) add a new element to the old valuation by net assets, which is abnormal profits. Since their model uses earnings as a valuation variable, they must, therefore, incorporate all gains and losses arising from assets that are not recognized elsewhere in the accounting measure of income. As a result, Ohlson (1995) and F&O'95 show that all changes arising from assets, even transitory changes (e.g., changes in fair value), must be marked-to-market, which explains the need for accounting called "clean surplus."

Several studies have been conducted to examine whether the change in market value can be estimated by the book value of assets and abnormal profits, as proposed in the Ohlson (1995) and F&O'95 model. Kouthari (2001) and Richardson and Tinaikar (2004) report that the Ohlson (1995) and F&O'95 models have generated considerable interest in accounting research, given the large number of articles that have been published since their introduction, either to examine the validity of their approach (e.g., Collins et al., 1997; Barth et al., 1998; Ota, 2002; Ahmed et al., 2000; Spilioti and Karathanassis, 2005) or to criticize it by making changes (e.g., Bernard, 1995; Stober, 1999; Dechow et al., 1999; Myers, 1999; Lee and Lai, 2012), or to invalidate it (e.g., Hayn, 1995; Amir and Lev, 1996, Lev, 1997).

Easton (1999) confirms that prior to the publication of the work of Ohlson (1995) and F&O'95, the financial community was unable to conceptualize empirically the relationship between accounting data and a firm's equity value. All the empirical research carried out in this direction up to this date did not succeed in presenting a theoretical basis validating their result (e.g., Collins et Hopwood., 1980; Peasnell, 1982; Stewart, 1991; Easton and Harris, 1991).

In order to examine the validity of Ohlson's model, Martinez et al. (2012) conducted a study on the South American market for the period 2002 to 2009. They concluded that the Ohlson model is a good estimator of market value for some countries in the region compared to others. Spilioti and Karathanassis (2005) find that Ohlson's Clean Surplus model has significant explanatory power for stock market volatility in the Greek market.

Ota (2002) investigated the validity of the linearity hypothesis on which the Ohlson (1995) model was based. He also questioned the ability of this model to explain the company's market value and its ability to predict future equity returns. His results show that the Ohlson (1995) model is generally valid, but it can be improved by correcting the problem of auto-correlation of residues caused by the omission of the variable "other information."

Dechow et al. (1999) compared the intrinsic values determined by the Ohlson (1995) a model with those determined by the standard model of capitalization of expected earnings. The results of their research show that a simple model of capitalization of expected earnings in perpetuity provides a better explanation of the value of simultaneous shares than the Ohlson's model. They, therefore, conclude that the Ohlson's (1995) model, which has its origins in Edward and Ball's (1961) model, needs improvement. Myers (1999) compared intrinsic values calculated using current accounting data in a linear model as proposed by Ohlson (1995),

with the book value of equity. He finds that the values estimated by the Ohlson (1995) model do not provide better explanatory power than the book value of equity.

4.3. Strengths and Limitations of Ohlson's Clean Surplus Model

4.3.1. Strengths of the model

The work of Ohlson (1995) and F&O'95 is not the first attempt to model the relationship between the accounting data and the company's market value, there have been some considerations before that were not satisfactory, however. (e.g., Collins and Kothari, 1989; Easton and Zmijewski, 1989; Ali and Zarowin, 1992). Lee and Lai (2012) conclude that the greatest contribution of Ohlson (1995) and F&O'95 is to have established a rigorous structure to examine the relationship between accounting data and the market value of companies.

Dechow et al. (1999) point out that the Ohlson (1995) and F&O'95 models are distinguished by two main characteristics: The residual outcome valuation and the LIM. The residual income valuation cannot be attributed only to Ohlson (1995) and F&O'95, as it is derived from the market model based on discounting future cash flows to determine the value of the securities, i.e., dividends and the resale value of the securities at maturity. However, Lo and Lys (2000), among others, point out that the originality of the Ohlson (1995) and F&O'95 models come from the idea of linearizing accounting information from the three financial statements, namely, the balance sheet, the income statement and the statement of changes in equity. Richardson and Tanaikar (2004) note that the real impact of these models is to have made the accounting data dynamic by integrating them into a linear model to explain the company's market value.

In summary, the theoretical basis represents the main strength of the Ohlson (1995) and F&O'95 models. Richardson and Tanaikar (2004) find that the majority of association studies used before the work of Ohlson (1995) and F&O'95 lacked theoretical support to validate their results.

4.3.2. Criticisms of the model

Despite their contribution to empirical accounting research, the work of Ohlson (1995) and F&O'95 has some limitations. Bernard (1995) describes the work of Ohlson (1995) and F&O'95 as a crucial starting point for assessing the company's market value, but it is incomplete. Most of the criticisms attributed to the work of Ohlson (1995) and F&O'95 are more focused on the statistical parameters on which they were based, more specifically the LIM hypothesis, and the empirical nature of the "other information" variable not specified in the model (Dechow et al., 1999).

Myers (1999) conducted research to examine the underlying assumptions of Ohlson's Clean Surplus model, including the LIM. He finds that the LIM is not fully respected because of the nature of the "other information" that is not identified in the model. Moreover, he explains these results by the fact that the evolution of historical accounting data over time is not sufficiently stable for several companies, which means that it is not possible to generate linear parameters. For his part, Hayn (1995) questions the LIM. She finds, following her empirical research, that there is no linear relationship between abnormal profits and stock market values. Amir and Lev (1996) and Lev (1997), on their side, find that the assessment of market value by abnormal profits and book values is not relevant in the telecommunications sector. They even went further in their analyses to invalidate Ohlson's Clean Surplus model.

Referring to the existing literature, we find that researchers often choose between the yield model, in which yield is explained by the elements contained in the income statement, and the price model, in which the stock price is explained by book value and earnings per share (Kothari and Zimmerman, 1995). Barth et al. (2001. p. 95) report that research using the price model is to determine what is reflected in the market value of the business, while research using the performance model is to examine what is reflected in changes in that value over time. However, Dumontier and Raffournier (2002. p. 131) report the result of Brown et al. (1999) by explaining "statistical associations inferred from price regressions suffer from a spurious effect of scale because large security prices tend to be mechanically related to large book value and large earnings per share, and conversely. Consequently, the value relevance measured by R-squares of price regressions are unwisely overstated, and comparisons of R-squares to infer changes or differences in value relevance are invalid if there is no explicit control for this scale effect. In contrast, return regressions are not affected by potentially serious scale problems because stock data and accounting figures per share are all scaled by beginning-of-period stock prices. Therefore, empirical studies should preferably rely on returns specifications."

Easton (1999) believes that the Ohlson (1995) model, which considers stock market value as a variable to be explained, suffers from a problem of scale effect. Also, Kothari and Zimmerman (1995) believe that the price model offers biased coefficients due to the strong relationship between stock price and book value. Easton (1999) therefore opts to transform Ohlson's Clean Surplus model into yield models in order to find more meaningful results.

Further improvements have been proposed based on the Ohlson (1995) model. Frankel and Lee (1998) and Beaver (1999) proposed a revision of the latter by amending the LIM. Dechow et al. (1999) believe that the greatest limitation of Ohlson (1995) is the non-specification of the variable "other information." They, therefore, propose to specify this variable in order to control the statistical bias of the model. Although Dechow et al. (1999) believe that Ohlson's Clean Surplus model provides a useful theoretical framework for empirical research, they confirm that a simple model of capitalization of earnings forecasts by analysts in perpetuity better explains market values.

5. CONCLUSION

Several methodologies have been used in the past to determine the conceptual nature of accounting methods as accurately as possible (e.g., Preineich, 1936; Edwards and Bell, 1961) and the relationship between accounting information and the market value of equity (e.g., Ball and Brown, 1968; Beaver, 1968; Easton, 1985;

Ohlson, 1995; Feltham and Ohlson, 1995; Amir and Lev, 1996; Beaver et al., 1997; Collins et al., 1997).

In this article, we have reviewed research on the valuation of the company's value through financial statement data. We have shown that the work of Ohlson (1995) and F&O'95 was motivated by the inability of traditional accounting models to convey the firm's market value based on accounting data. Although their models have some limitations, they remain among the most widely used in quantitative accounting research. Finally, we believe that in addition to the abnormal income and book value, other financial and non-financial data can be added to the models in order to better understand the change in the company's market value.

Despite the contribution of Ohlson (1995) and F&O'95's work to empirical accounting research, our article concludes that a long and positive research path remains to be explored in order to empirically validate the dynamism of accounting data, without relying on restrictive assumptions that are sometimes difficult to verify.

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