A Review and Synthesis of Research on Analysts’ Valuation Process Beyond Approaches and Models

Maria Dimitriou*

University of Macedonia, Greece

ABSTRACT

During the past few decades, accounting and finance researchers, both academic and investment industry researchers have been interested in analysts’ valuation approaches and models determining the intrinsic value of an ownership stake, analysts’ target price, earnings forecasts, valuation errors and stock recommendation. This survey examines publicly available articles based on accepted valuation theory, that explore this issue to determine researchers’ methods of studying this process. This survey has found that few researchers study analysts’ valuation processes from the sell-side analyst approach. Instead, many use the approach of empirical studies (based on elements of analyst reports and interviews). This research suggests the need to approach the valuation process from the sell-side analyst approach, for example, by investment research report as it shares lots of information that better serves society and economies to grow.

Keywords: Security Analysis, Financial Analyst, Sell-side Equity Analyst, Equity Valuation, Valuation Errors, Information Uncertainty, Stock Recommendations, Valuation Approaches, Valuation Model.

* Ph.D. Candidate in Field of Research: Financial Accounting with Information Systems,
Department of Applied Informatics, School of Information Sciences, University of Macedonia, N. Egnatia Str. 156, 54006, Thessaloniki, Greece
E-mail: mdimitriou@uom.gr, mdimitriou@uom.edu.gr, maria.d.dimitriou@gmail.com
Website: https://www.linkedin.com/in/maria-dimitriou-1b238b63/, https://www.researchgate.net/profile/Maria_Dimitriou3
Identifiers: Web of Science Researcher ID Y-7232-2019, ORCID 0000-0002-6153-7122
https://publons.com/researcher/3121758/maria-dimitriou/, https://orcid.org/0000-0002-6153-7122/print
Ανασκόπηση και Σύνθεση της Έρευνας σχετικά με τη Διαδικασία Αποτίμησης των Αναλυτών πέρα από Προσεγγίσεις και Μοντέλα

Μαρία Δημητρίου *
Πανεπιστήμιο Μακεδονίας, Ελλάδα

ΠΕΡΙΛΗΨΗ
Τις τελευταίες δεκαετίες, οι ερευνητές στον τομέα της λογιστικής και της χρηματοοικονομικής, τόσο οι ακαδημαϊκοί όσο και οι ερευνητές της βιομηχανίας επενδύσεων ενδιαφέρονται για τις προσεγγίσεις και τα μοντέλα αποτίμησης των αναλυτών που καθορίζουν την εσωτερική αξία της μετοχής μιας εταιρείας, την ενδεικτική τιμή-στόχο των αναλυτών, τις προβλέψεις κερδών, τα σφάλματα αποτίμησης και τις συστάσεις μετοχών. Αυτή η έρευνα εξετάζει διαθέσιμα στο κοινό άρθρα που βασίζονται σε αποδεκτή θεωρία αποτίμησης, τα οποία διερευνούν αυτό το ζήτημα για τον προσδιορισμό των μεθόδων που χρησιμοποιούνται από τους ερευνητές για τη μελέτη αυτής της διαδικασίας αποτίμησης των αναλυτών. Αυτή η έρευνα διαπίστωσε ότι λίγοι ερευνητές μελετούν τη διαδικασία αποτίμησης των αναλυτών από την προσέγγιση του αναλυτή. Αντ' αυτού, πολλοί χρησιμοποιούν η προσέγγιση των εμπειρικών μελετών (βάση στοιχείων των εκθέσεων των αναλυτών και συνεντεύξεων). Η έρευνα αυτή υποδηλώνει την ανάγκη προσέγγισης της διαδικασίας αποτίμησης από τον προσδιορισμό του αναλυτή. Αντ' αυτού, πολλοί χρησιμοποιούν η προσέγγιση των εμπειρικών μελετών (βάση στοιχείων των εκθέσεων των αναλυτών και συνεντεύξεων). Η έρευνα αυτή υποδηλώνει την ανάγκη προσέγγισης της διαδικασίας αποτίμησης από τον προσδιορισμό του αναλυτή, για παράδειγμα, από την ερευνητική έκθεση επενδύσεων, καθώς μοιράζεται πολλές πληροφορίες που εξουσιοδοτούν καλύτερα την κοινωνία και τις οικονομίες να αναπτυχθούν.

Λέξεις - Κλειδιά: Ανάλυση Μετοχής, Οικονομικός Αναλυτής, Χρηματοοικονομικός Αναλυτής, Αποτίμηση Μετοχών, Σφάλματα Αποτίμησης, Πληροφορίες, Αξιολογείται, Συστάσεις/Επενδυτικές Αποφάσεις, Προσεγγίσεις/Μοντέλα Αποτίμησης.

* Υπ. Διδ. στο Πεδίο Έρευνας: Χρηματοοικονομική Λογιστική με Πληροφορικά Συστήματα.
Τμήμα Εφαρμοσμένης Πληροφορικής, Σχολή Επιστημών Πληροφορίας, Πανεπιστήμιο Μακεδονίας, Εγνατία 156, 546 36, Θεσσαλονίκη, Ελλάδα
E-mail: mdimitriou@uom.gr, mdimitriou@uom.edu.gr, maria.d.dimitriou@gmail.com
Website: https://www.linkedin.com/in/maria-dimitriou-1b238b63/, https://www.researchgate.net/profile/Maria_Dimitriou3
Identifiers: Web of Science Researcher ID Y-7232-2019, ORCID 0000-0002-6153-7122
https://publons.com/researcher/3121758/maria-dimitriou/, https://orcid.org/0000-0002-6153-7122/print
INTRODUCTION

In the past few decades, accounting and finance researchers, both academic and investment industry researchers, have been interested in analysts’ valuations. Valuation is the estimation of an asset’s value based either on variables perceived to be related to future investment returns or on comparisons with similar assets. Valuation, including equity valuation, is most closely associated with the valuation process. For one group of participants in the investment profession -equity analysts - the valuation is particularly critical, for determining the value of an ownership stake is at the heart of their professional activities and decisions (Jerald et al., 2007). Benjamin Graham and David L. Dodd’s Security Analysis (1934) represented the first significant attempt to organize knowledge in this area for the investment profession. Benjamin Graham is the father of security analysis and future mentor to a well-known modern investor, Warren Buffett.

According to the book entitled “Equity Asset Valuation” (Jerald et al., 2007), CFA Institute Investment Series as well as book in a course in my master syllabus (M.Sc. Degree in Strategic Managerial Accounting and Financial Management: Finance, for Business Executives, Department of Accounting and Finance, University of Macedonia), analysts’ valuations based on sound analysis and helps their clients achieve their investment objectives by enabling those clients to make better buy and sell decisions; contribute to the efficient functioning of capital markets (in providing analysis that leads to informed buy and sell decisions, analysts help make asset prices better reflections of underlying values; when asset prices accurately reflect underlying values, capital flows more quickly to its highest-value uses); and benefit the suppliers of capital, including shareholders, by monitoring management’s performance. Additionally, it provides valuation information and opinions, valuation judgments to a portfolio manager, or an investment committee (Jerald et al., 2007). However, this study is not aimed to provide a comprehensive view of every perspective of analysts’ valuations.

PURPOSE - CONTRIBUTION

The purpose of this study is to survey literature and provide a summary of research into analysts’ valuation process. In particular, two different approaches are used to examine analysts’ valuation process and discuss the advantages and limitations of both approaches. We will pay special attention to the most commonly used forms of equity valuation beyond approaches and models - dividend discount, free cash flow, price/earnings models, and residual income models (often known by trade names), and to the overlooked and unaddressed questions regarding analysts’ valuation process. Besides, as a result of this study, direction for future studies on analysts’ valuation process will be provided.

RESEARCH QUESTION/S

The specific research questions addressing the valuation process are:

- What kind of valuation process do analysts communicate?
- How can a valuation process be described?
- How are approaches, models, and other related valuation aspects treated/ communicated by analysts?

The specific research questions, addressing the researches on analysts ‘valuation process, are:

- Are the academic and investment industry researchers implementing analysts’ valuation process analysis or making an investment decision?
• Are the academic and investment industry researchers communicating other issues on analysts’ valuation process (financial accounting and other market-related information, elements of analyst reports, interviews)?

• How does the valuation process by analysts influence the stock recommendation/decision making?

DESIGN/METHODOLOGY/APPROACH

This project contains three sections. The first section provides descriptive information on the role of analysts in capital markets and their valuation process through a format for a research report. In the second and third sections, how researchers have examined analysts’ valuation process beyond approaches and models is analyzed, and what we need to do, generally and specifically.

ANALYSTS’ ROLE AND VALUATION PROCESS

Analysts play an essential role in the capital market. Investment analysts work in a wide variety of organizations and positions applying the tools of equity valuation to address a range of practical problems. They play a critical role in collecting, organizing, analyzing, and communicating corporate information, as well as in recommending appropriate investment actions based on their analysis. In fulfilling this role, they help clients, investors, and company management achieve their investment objectives and contribute to the efficient functioning of capital markets. Analysts can contribute to the welfare of shareholders through monitoring the actions of management. So, analysts must provide substantive and meaningful content. CFA Institute members have an additional overriding responsibility to adhere to the CFA Institute Code of Ethics and relevant specific Standards of Professional Conduct guiding the analyst to independent, well-researched, and well-documented analysis (It is discussed more in Pinto, J. E., Henry, E., Robinson, T. R., Stowe, J. D., Cohen, A., 2007).

Finance theory and professional practice propose alternative approaches to the evaluation of a company. In theory, valuation is a relatively simple process of discounting a firm’s expected cash flows by investors required rates of return. In practice, valuation is highly complex because there are numerous valuation models and techniques (Rawley and Benton, 2009). The traditional distinction is between valuation based on the fundamentals of the company (future cash flows, earnings and so on) and the market ratios approach, which is based on the market multiples of a company. Penman (2001) gives a definition of the fundamental analysis as a five-step process consisting of: 1) knowing the business through the strategic analysis; 2) analysing the accounting and non-accounting information; 3) specifying, measuring and forecasting the value relevant payoffs; 4) converting the forecast to a valuation; and 5) trading on the valuation.

While the valuation is the estimation of an asset’s value based either on variables perceived to be related to future investment returns or on comparisons with similar assets, valuation - including equity valuation - is most closely associated with valuation process (Pinto, J. E., Henry, E., Robinson, T. R., Stowe, J. D., Cohen, A., 2007). The valuation process is at the heart of equity analysts’ professional activities and decisions. Each valuation that an analyst undertakes can be viewed as a complex and, therefore, diverse process with the following five steps. Analysts’ valuations process includes:

Step 1: Understanding the business to be valued
Step 2: Forecasting company performance
Step 3: Selecting the appropriate valuation model for the valuation task
Step 4: Converting forecasts to the valuation
Step 5: Making the investment decision (recommendation)

The goal of this process is to provide stock recommendations to their clients. These recommendations include which stocks to buy, which stocks to sell, and which stocks to hold. Therefore, writing an investment research report is an integral part of an analyst’s job.

Research reports share several common elements, whether a research report is for review by an investment committee or a portfolio manager in an investment management firm, or distribution to the retail or institutional clients of a brokerage firm. Most research reports cover the following three broad areas: description (presentation of facts; this brings the reader up to date on the company’s sales, earnings, new products, and the macroeconomic and industry contexts in which the company operates); analysis and forecasts for the industry and company; and valuation and recommendation (Pinto, J. E., Henry, E., Robinson, T. R., Stowe, J. D., Cohen, A., 2007). Table 1 provides us with a brief view of a format for analysts’ research reports.

Table 1. A Format for Research Reports. Source: Book entitled “Equity Asset Valuation”, pp.28

<table>
<thead>
<tr>
<th>Section and Investment Conclusion</th>
<th>Purpose</th>
<th>Content</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Table of Contents</td>
<td>•Shows report’s organization</td>
<td>•Consistent with narrative in sequence and language</td>
<td>This section is typically used in very long research reports only.</td>
</tr>
<tr>
<td>Summary and Investment Conclusion</td>
<td>•Communicate the large picture •Communicate major-specific conclusions of the analysis •Recommend an investment course of action</td>
<td>•A capsule description of the company •Major recent developments •Earnings projections •Other major conclusions •Valuation summary •Investment action</td>
<td>This section is an executive summary; it may be called “Summary.”</td>
</tr>
<tr>
<td>Business Summary</td>
<td>•Present the company in more detail •Communicate a detailed understanding of the company’s economics and current situation •Provide and explain specific forecasts</td>
<td>•Company description to the divisional level •Industry analysis •Competitive analysis •Historical performance •Financial forecasts</td>
<td>This summary reflects the first and second steps of the valuation process. Financial forecasts should be explained adequately and reflect the quality of earnings analysis.</td>
</tr>
<tr>
<td>Risks</td>
<td>•Alert readers to the risk factors in investing in the security</td>
<td>•Possible negative industry developments •Possible adverse regulatory and legal developments •Possible negative company developments •Risks in the forecasts •Other risks</td>
<td>Readers should have enough information to determine how the analyst is defining and assessing the risks specific to investing in security.</td>
</tr>
<tr>
<td>Valuation</td>
<td>•Communicate a precise and careful valuation</td>
<td>•Description of the model(s) used •Recapitulation of inputs •Statement of conclusions</td>
<td>Readers should have enough information to critique the analysis.</td>
</tr>
<tr>
<td>Historical and Pro Forma Tables</td>
<td>•Organize and present data to support the analysis in the Business Summary</td>
<td></td>
<td>This section is generally a separate section in more extended research reports only. Many reports fold all or some of this information into the Business Summary section</td>
</tr>
</tbody>
</table>
A key element of research reports supporting a recommendation is the valuation of the security. In this process, equity valuation models help to specify what is to be forecasted, directs to the information needed to make the forecast, and shows how to relate the forecasted data into an intrinsic value estimate (Pinto, J. E., Henry, E., Robinson, T. R., Stowe, J. D., Cohen, A., 2007). A valuation model is a mechanism that converts a set of forecasts of (or observations) on a series of company and economic variables into a forecast of market value for the company’s stock. Structures of valuation models often include many assumptions and parameters. Each valuation model and technique have its strengths and weaknesses.

The valuation model can be considered a formalization of the relationship that is expected to exist between a set of corporate and economic factors and the market’s valuation of these factors (Elton, Gruber, Brown, & Goetzmann 2011). Barker, R (2001) argues that a good understanding of valuation methods requires two main things: the first is an analytical review of the models, and the second is an evaluation of the data that are available for the use of these models. It is because of this; there is a significant relationship between the choice of valuation models and the available data. Valuation, however, is relevant and critical to active investment strategies, risk factors that objectively address the uncertainty associated with investing in the security (Pinto, J. E., Henry, E., Robinson, T. R., Stowe, J. D., Cohen, A., 2007).

Literature suggests three major valuation model categories: 1. Asset-based Valuation, 2. Absolute Valuation or Discounted Cash Flow models and 3. Relative Valuation or Price Multiple models. Other methods, such as the yield-based valuation method, which focuses on dividend yield when the investment priority is income, or option valuation models that explicitly consider management flexibility in the value creation process, are not the subject of this paper. The broad criteria for model selection are that the valuation model is consistent with the characteristics of the company we value; appropriate given the availability and quality of data; and consistent with the purpose of valuation, including the analyst’s ownership perspective (Pinto, J. E., Henry, E., Robinson, T. R., Stowe, J. D., Cohen, A., 2007). According to Bertinetti, G., Caveazzali E., & Rigoni U. (2006), there are five valuation method classes including techniques.

Table 2. Valuation method classes including techniques. Source: Bertinetti, G., Caveazzali E., & Rigoni U. (2006)

<table>
<thead>
<tr>
<th>Method Class</th>
<th>Method Technique</th>
</tr>
</thead>
<tbody>
<tr>
<td>Net Assets based Methods (NAV)</td>
<td>Embedded Value (EV) and Appraisal Value (AV)</td>
</tr>
<tr>
<td>Earnings-based Methods</td>
<td>Discounted Shareholder Profit (DSP), Discounted Earnings (DE), Heuristic methods</td>
</tr>
<tr>
<td></td>
<td>(WEV, RR)</td>
</tr>
<tr>
<td>Cash flows-based Methods</td>
<td>Dividend Discounted Model (DDM), Discounted Cash Flows (DCF), Gordon Growth Model</td>
</tr>
<tr>
<td></td>
<td>(GGM), Adjusted Present Value (APV), HOLT-CFROI</td>
</tr>
<tr>
<td>“Hybrid” Methods</td>
<td>Economic Value Added (EVA), Regulatory Asset Based methods (RAB)</td>
</tr>
<tr>
<td>Market ratios Methods</td>
<td>Comparable companies and comparable trades</td>
</tr>
</tbody>
</table>

Analysts depend on accurate forecasts combined with an appropriate valuation model to construct their valuations, obtaining a useful estimate of intrinsic value. The more information that is known about the company, the industry, and the company’s position within the industry, the more realistic and supportable the assumptions made in the projections will be. The analyst integrates the analysis of industry prospects and competitive and corporate strategy with financial statement analysis to formulate specific numerical forecasts of such items as sales and earnings.

Analysts may consider qualitative as well as quantitative factors in financial forecasting and valuation. Qualitative factors and other considerations may affect a recommendation and merit discussion. The quality of the analyst’s forecasts, the expectational inputs used in valuation models, is a crucial element in determining investment success (Pinto, J. E., Henry, E., Robinson, T. R., Stowe, J. D., Cohen, A., 2007).

Analysts may consider qualitative as well as quantitative factors in financial forecasting and valuation. Qualitative factors and other considerations may affect a recommendation and merit
discussion. The quality of the analyst’s forecasts, the expectational inputs used in valuation models, is a critical element in determining investment success (Jerald et al., 2007).

Schipper (1991) indicates that knowing how analysts use financial accounting information should make accounting and finance academics more knowledgeable professors and thus more able to teach future students.

THE APPROACH OF EMPIRICAL STUDIES

The approach of empirical studies (based on elements of analyst reports and interviews). Given the valuation models used on sell-side analysts’ reports, accounting and finance researchers, both academic and investment industry researchers, have a consistent methodology to measure their accuracy, effectiveness, and predictive capability.

Bradshaw, M. T. (2001) investigate whether the degree of assessed overpricing or underpricing implied by target prices is related to the favorableness of stock recommendations. His study examines a sample of 103sell-side analysts’ reports to document the frequency with which analysts disclose target prices as justifications for their stock recommendations. He finds that analysts use target price justifications in over two-thirds of the sample reports, and higher target prices are associated with more favorable stock recommendations. The most favorable recommendations (and target prices) are more likely to be justified by price-earnings ratios and expected growth, while the least favorable recommendations are more likely to be justified with other qualitative statements. Further evidence suggests that analysts compute target prices using price-multiple heuristics such as “Price/Earnings to Growth.” However, in reports that do not disclose target prices, estimates of target prices based on these heuristics are unable to justify the stock recommendations. Several explanations are proposed, including self-selection biases implying analysts do not disclose target prices when the disclosure would not support the recommendation or when analysts are less sure about underlying earnings forecasts.

Demirakos, E., Strong, N., & Walker, M. (2010) investigate whether the choice of valuation model affects the forecast accuracy of the target prices that investment analysts’ issue in their equity research reports, controlling for factors that influence this choice. They examine 490 equity research reports from international investment houses for 94 UK-listed firms published over the period July 2002–June 2004. They use four measures of accuracy. Based on during the 12-month forecast horizon and absolute forecast error, price-to-earnings outperform discounted cash flow models, while based on met on the last day of the 12-month forecast horizon and the forecast error of target prices that are not met at the end of the 12-month forecast horizon, the difference in valuation model performance is insignificant. However, after controlling for variables that capture the difficulty of the valuation task, the performance of DCF models improves in all specifications, and, based on the forecast error of target prices that are not met at the end of the 12-month forecast horizon, they outperform price-to-earnings models. These findings are robust to standard controls for selection bias.

Imam, Shahed, Barker, Richard, and Clubb, Colin (2008) examine the use of valuation models by UK investment analysts. The study is based on, first, semi-structured interviews with 35 sell-side analysts from 10 leading investment banks and with seven buy-side analysts from 3 asset management firms and, second, content analysis based on 98 equity research reports for FTSE-100 companies covered by the sell-side interviewees. They observe that analysts perceive the discounted cash flow (and to some extent ‘sophisticated’ models in general) to have become significantly more critical than prior survey evidence suggests, although they also find the (somewhat paradoxical) continued importance of ‘unsophisticated’ valuation multiples, notably the price/earnings ratio.

Imam, S., Barker., R., & Clubb, C. (2008) examine the use of valuation models by UK investment analysts. The study is based on, first, semi-structured interviews with 35 sell-side analysts from 10 leading investment banks and with seven buy-side analysts from 3 asset management firms and, second, content analysis based on 98 equity research reports for
FTSE-100 companies covered by the sell-side interviewees. They observe that analysts perceive the discounted cash flow (and to some extent ‘sophisticated’ models in general) to have become significantly more critical than prior survey evidence suggests, although they also find the (somewhat paradoxical) continued importance of ‘unsophisticated’ valuation multiples, notably the price/earnings ratio.

Imam, S., Barker, R., & Clubb, C. (2008) find perceived limitations in the technical applicability of the discounted cash flow model, which causes analysts to rely on practice upon valuation multiples and subjective judgment of whether the market price ‘feels right.’ They also find that contextual factors, notably the analysts’ need for their research to be credible to buy-side clients, cause the use of subjective, unsophisticated methods of valuation to be played down. Given the inherent flexibility of the discounted cash flow model, coupled with its ostensible credibility, it becomes the natural vehicle for conveying the analyst’s research, even though it is very rarely relied upon to determine target prices and investment recommendations. They conclude that, while the literature has focused on the technical merits of alternative valuation models, analysts’ actual usage of valuation models also requires an understanding of social and economic context and motivations.

Price to earnings and discounted cash flow are two popular valuation methodologies used by equity research analysts to derive target price forecasts. Recent studies in developed markets show that analysts using a sophisticated model like discounted cash flow model produce more accurate target price forecasts as compared to heuristics driven models like price-to-earnings.

Samie, A., S. (2016) investigate if analysts using a discounted cash flow model outperform analysts using price-to-earnings in an emerging market institutional set up by an in-depth analysis of 392 equity research reports is conducted to understand the dominant valuation model used by analysts to derive target price forecasts. Research reports with explicit mention of valuation methodology (price-to-earnings or discounted cash flow) to derive target price forecasts are used. Multivariate ordinary least squares and logit regression analysis has been conducted to investigate if analysts using discounted cash flow methodology outperform analysts using price-to-earnings to derive target price forecasts. They find that analysts using price-to-earnings produce significantly better short-term results than analysts using discounted cash flow, i.e., when target price accuracy is measured anytime during the forecast horizon of 12 months.

However, they claim that there is no significant difference in target price performance or target price forecast error of price-to-earnings and discounted cash flow when analyst performance is measured at the end of the forecast horizon. In contrast to results from developed markets, their study does not find evidence of superior target price performance of discounted cash flow. On the contrary, their results suggest that price-to-earnings outperforms discounted cash flow on the short-term measure of target price accuracy. Their study shows that the price-to-earnings model, which captures market moods and sentiments effectively, is more suitable in dynamic, emerging markets like India.

Glaum, M., & Friedrich, N. (2006) present the results of a series of interviews given by financial analysts specializing in the European telecommunications industry. Their objective is to gain an insight into their approaches to analysis and valuation (information sources, valuation methods, determinants of recommendations). They also consider whether analysts’ approaches have changed since the high-tech bubble. They find that today, they rely much more on the discounted cash flow analysis method than at the end of the 1990s when the valuation was based mainly on multiples. In line with this, analysts have changed their focus from revenue-oriented measures towards an assessment of profitability and cash flow generation. Further, analysts claim to have become more diligent and more critical in their analysis.

Fernandez, P. (2002) describes the four main groups comprising the most widely used company valuation methods: balance sheet-based methods, income statement-based methods, mixed methods, and cash flow discounting based methods. The methods that are conceptually “correct” are those based on cash flow discounting. He will briefly comment on other methods since -even though they are conceptually “incorrect”- they continue to be used frequently. He also presents a
A real-life example to illustrate the valuation of a company as the sum of the value of different businesses, which is usually called the break-up value. The last section is a list that contains the most common errors that the author has detected in the more than one thousand valuations he has had access to in his capacity as a business consultant or teacher.

A simple valuation model is presented in which a firm can invest in projects with positive net present values for a limited number of years. Although prior models have made this assumption, the model of Danielson M. G. (1998) can be simplified to a concise, easy-to-use form. The model can facilitate a broad understanding of the expectations implied by a firm's stock price—for example, growth patterns consistent with a firm's price to earnings ratio—which can guide in-depth analysis of prices.

Frankel, R. & Lee, C. M. (1998) test the residual income model of Ohlson (1995) operationalized with analysts’ earnings forecasts. They find that the model predicts abnormal returns over one-, two-, and three-year holding periods. Specifically, a portfolio constructed by taking a long position in the most undervalued quintile of firms and a short position in firms in the most overvalued quintile produces cumulative returns of 3.1%, 15.2%, and 30.6%, over one-, two-, and three-year holding periods. Herzberg (1998) shows that Frankel and Lee's results can be improved further by using more refined model estimation procedures.


According to Bancel, F., & Mittoo, U. (2014), “the Discounted Cash Flow and Relative Valuation Approach are equally popular methods. In order to do relative valuation correctly, we need to understand the fundamentals of discounted cash flows valuation. About 80 percent of experts use both Discounted Cash Flow and Relative Valuation, and less than 40 percent use the free cash flow to the equity method. less than 22 percent of experts use Discounted Cash Flow growth models, and rarely use Economic Value-Added models.” They also found that most experts use more than one valuation method. They use two valuation methods to calculate the value of a company. The combination of the Discounted Cash Flow and Residual Income valuation approaches is the most popular used by over 67 percent of respondents. The prominence of the Discounted Cash Flow and Residual Income valuation approaches reflects their dominance in textbooks and CFA curriculum’ (Bancel, F., & Mittoo, U., 2014).

While Relative Valuation or Price Multiple models are used extensively in practice, there exists little published academic research documenting the relative superiority of different multiples. Most commonly used is, however, the earnings multiple approaches (Demirakos, E., Strong, N., & Walker, M., 2002). In many situations, multiple methodologies are used to eliminate outliers and derive as accurate an estimate of values as possible. In the survey, conducted by Groenewald, J, Human, M., Gumel, F., & Agarwal, V. (2012), the price/earnings multiple is the most frequently used valuation multiple in the application of the market approach. Also, the market value of invested capital to earnings before interest, taxes, depreciation, and amortization ratio is prevalent when valuing using multiples. There were also few adjustments made by financial analysts to observed comparable company multiples. According to Groenewald, J. (2012), ‘All
respondents indicated that they consider making adjustments in determining appropriate multiples in terms of the market approach. Although the adjustments are frequently or always considered, whether an adjustment will be applied will depend on the facts and circumstances of the specific valuation.


Courteau, L., Kao, J. L., & Richardson, G. D. (2000) primarily explore whether, over a five-year valuation horizon, dividend discount model, discounted cash flow model and Edwards-Bell-Ohlson residual income model, are empirically equivalent when Penman's (1998) theoretically "ideal" terminal value expressions are employed in each model. Using Value Line terminal stock price forecasts at the horizon to proxy for such values, they find empirical support for the prediction of equivalence between these three price-based valuation models. Secondary, they demonstrate that, within each class of the discounted cash flow and residual income model valuation models, the model that employs Value Line forecasted price in the terminal value expression would generate the lowest pricing errors, compared to models that employ non-price-based terminal value under an arbitrary growth assumption. Results indicate that, for both discounted cash flow and residual income model, price-based valuation models outperform the corresponding non-price-based models by a wide margin. They also revisit the issue of the apparent superiority of the residual income model and find that this result does not hold in a level playing field where an approximation of typical terminal values is employed. The price-based residual income model is marginally outperformed by the price-based discounted cash flow and dividend discount models in terms of pricing errors, as well as its ability to explain the current market price.

Panda, S. (2013) uses a valuation model based on the Discounted Cash Flow Method that calculates the quarterly intrinsic values of selected Indian stocks for the year 2010. The calculated intrinsic values are compared with the corresponding market values in order to know whether the model is capable enough to capture the market price or not. Welch’s t-test is conducted to check the significance level between the two values and robustness of the model. Selected “A” category companies are taken for the study, and the period of the study is from 1st January 2001 to 31st December 2010.

In evaluating how much attention and weight to give to a recommendation of analyst reports, the researchers examine the risk and return prospects, the prospects for both the industry and the company, the quality of the valuation and recommendation, the historical, descriptive statistics about the industry and company.

Since this approach does not provide enough evidence for researchers to conclude the information that they can get from sell-side analysts’ reports in doing valuations, a different approach, such as the approach of sell-side analysts for direct observation.

Schipper (1991), Brown (1993), and mainly Bradshaw (2011) suggest further research indirectly observing the analysts’ decision process of analysis in contrast to examine correlations between financial inputs, outputs, and conditioning variables to understand the analysis process and bases for recommendations. In this project, we consider this type of approach as an approach of sell-side analysts used to study analysts’ valuations process.

THE APPROACH OF SELL-SIDE ANALYST (AND MOTIVATION)

There are several ways a researcher can adapt to the sell-side analyst approach study analysts’ valuation process. They include practical tests of combining several valuation models, case studies, real-life examples to value firms, projects, and portfolios. However, few studies have
attempted to use such a direct approach to observe analysts’ valuation process. Investment research reports are another category that can be found in international competitions like CFA Institute Research Challenge and recently, Ben Graham Center’s stock pricing competition.

Fernandez, P. (2001) focuses on equity valuation using multiples. His necessary conclusion is that multiples nearly always have broad dispersion, which is why valuations performed using multiples may be highly debatable. He revises the 14 most popular multiples and deals with the problem of using multiples for valuation: their dispersion. One thousand two hundred multiples from 175 companies illustrate the dispersion of multiples of European utilities, English utilities, European constructors, hotel companies, telecommunications, banks, and Internet companies. He also shows that Earnings before interest, taxes, depreciation, and amortization and Profit after Tax (the most commonly used parameters for multiples) were more volatile than equity value. He also provides additional evidence of the analysts’ recommendations for Spanish companies: less than 15% of the recommendations are to sell. However, multiples are useful in a second stage of the valuation: after performing the valuation using another method, a comparison with the multiples of comparable firms enables us to gauge the valuation performed and identify differences between the firm valued and the firms it is compared with.

Bhojraj, S. & Lee, C. M., C. (2002) present a general approach for selecting comparable firms in market-based research and equity valuation. Guided by valuation theory, they develop a “warranted multiple” for each firm and identify peer firms as those having the closest warranted multiple. They test this approach by examining the efficacy of the selected comparable firms in predicting the future (one- to three-year-ahead) enterprise-value-to-sales and price-to-book ratios. Their tests encompass the general universe of stocks as well as a sub-population of so-called “new economy” stocks. They conclude that comparable firms selected in this manner offer sharp improvements over comparable firms selected based on other techniques.


Fama and French (1992) and Dreman (1998), again among many others, find that low Price to Book Ratio (or low book-to-market ratio) stocks perform better than stocks with high such ratios. Capaul, C., Rowley, I., & Sharpe, W. (1993) extend the analysis of Price to Book ratios across international markets and conclude that low multiple stocks earn abnormal returns in every market they analyzed. The results of studies on the price to sales ratio and price to cash flow ratio and even price to dividend yield ratio are no different (Dreman, D., 1998).

According to Damodaran A. (2002), “Discounted Cash Flow model is the foundation on which all other approaches are built upon.” Luehrman (1997) states that in the 1970s-discounted cash flow analysis emerged as best practice for valuing corporations. He states that with today’s improved computers and data, he states that the Discounted Cash Flow model would work better than ever, but other valuation methodologies improve through this way too. He also states that: Companies will routinely use more than one formal valuation methodology, and the Discounted Cash Flow model will remain the foundation of most formal valuation analyses.

DeFond, M. L., & Hung, M. (2003) investigate the recent trend in analysts disseminating operating cash flow forecasts. They find that analysts tend to forecast cash flows for firms were accounting, operating, and financing characteristics suggest that cash flows are useful in interpreting earnings and assessing firm viability. Specifically, they find that analysts tend to forecast cash flows for firms with

1. substantial accruals,
2. more heterogeneous accounting choices relative to their industry peers,
3. high earnings volatility,
4. high capital intensity, and
5. poor financial health.

These findings are consistent with financial analysts responding to market-based incentives to provide market participants with value-relevant information.

Mear, R., & Firth, M. (2012) attempt to test the relevance of accounting and other market-related information in a risk-assessment task by a laboratory experiment using the Brunswik lens model framework, estimates of ex-ante risk on thirty stocks were regressed against nine company-specific cues and one industry variable. The results provide substantial evidence that publicly available accounting and financial data convey information relevant for security risk evaluation.

Dreman, D. N., & Berry, M., A. (1995) offered a perspective on analyst earnings forecast errors and their implications for security analysis. Among other arguments, they contended that the errors are too large to be reliably used by investors, the forecasts are less accurate than forecasts by time-series models, the errors are increasing over time, the analysts' forecasts are too optimistic, and the investment community relies too heavily on analyst forecasts. Brown, L. D. (1996) provides an alternative perspective on these issues. The argument is that analysts' forecast errors are within 3 percent of an appropriate benchmark (namely, stock price), that their forecasts generally are significantly more accurate than forecasts by naive or sophisticated time-series models, that analyst forecast errors have not been increasing over time, that analysts have been too pessimistic in recent years, and that the investment community relies too little on analysts' forecasts by placing too much weight on forecasts made by time-series models.

Mikhail, M. B., Walther, B. R., & Willis, R. H. (1999) investigate if earnings forecast accuracy matters to security analysts by examining its association with analyst turnover. Controlling for the firm- and time-period effects, forecast horizon, and industry forecasting experience, they find that an analyst is more likely to turn over if his or her forecast accuracy is lower than his peers. They find no association between an analyst's probability of turnover and his absolute forecast accuracy. They also investigate another observable measure of the analyst's performance, the profitability of his stock recommendations. There is no statistical relationship between the absolute or relative profitability of an analyst's stock recommendations and his or her probability of turnover. They interpret their findings as indicating that forecast accuracy is important to analysts.

Empirical evidence in Kim, M., & Ritter, J. R. (1999) and Liu, J., Nissim, D., & Thomas, J. (2002) suggest that in the earnings multiple approaches forward earnings perform better than historical earnings. Liu, J., Nissim, D., & Thomas, J. (2002) show that in terms of accuracy relative to current prices, the performance of forwarding earnings is followed by that of historical earnings, cash flow, book value, and finally sales. Furthermore, find Liu, J., Nissim, D., & Thomas, J. (2002) that contrary to the popular view that different industries have different ‘best’ multiples, the previous rankings are observed consistently for almost all industries examined. Studies over many decades and in different countries have shown that low multiple stocks (value stocks) perform better than high multiple stocks (growth stocks). Plenborg, T., & Pimentel, R. C. (2016) identify a more effective way to handle each implementation issue in order to enhance the accuracy of valuation outputs. By synthesizing the main empirical findings and thereby identifying best practices when applying market multiples, and they expect to help analysts, portfolios managers, and investment bankers make more informed decisions when accessing a firm’s value.

Skantz, T. R., & Marchesini, R. (1992) use a discount cash flow model to value liquidating firms where the cash flows and growth patterns are known. They conclude that the market appears to value stocks by discounting expected cash flows using a risk-adjusted required rate of return. The uniqueness of their sample, however, generalizes to going concern companies difficult.
Penman, S. H. (1998) lays out alternative equity valuation models that involve forecasting for finite periods and shows how they are related to each other. He contrasts dividend discounting models, discounted cash flow models, and residual income models based on accrual accounting. Penman shows that some models that are different yield the same valuation. He gives the general form of the terminal value calculation in these models and shows how this calculation serves to correct errors in the model. Penman also shows that all models can be interpreted as providing a specification of the terminal value for the dividend discount model. In so doing, he shows how one calculates the terminal value for the dividend discount formula. The calculation involves weighting forecasted stocks and flows of value with weights determined by a parameter that can be discovered from pro forma analysis.

A simple study of the dividend discount model was conducted by Sorensen, E. H., and Williamson, D. A. (1985), who valued 150 stocks from the S&P 400 in December 1980. They use the difference between the market price and the intrinsic value obtained from the model to form five portfolios based upon the degree of under- and overvaluation. They make reasonably broad assumptions by testing the dividend discount model:

1. the average of the earnings per share between 1976 and 1980 is used as the sustainable earnings per share,
2. the cost of equity is estimated using the CAPM,
3. the extraordinary growth period is assumed to be five years for all stocks,
4. the I/B/E/S consensus forecasts of earnings growth are used as the growth rate for this period,
5. the stable growth rate is assumed to be 8% for all stocks, and
6. the payout ratio is assumed to be 45% for all stocks.

Sorensen, E. H., and Williamson, D. A. (1985) also test whether the investment performance could be increased by using more sophisticated models and tests; therefore, one-, two-, and three-stage dividend discount models. They conclude that model performance improves as model sophistication increases.


1. the volatility in the firm's stock returns;
2. disagreement among securities analysts in their forecasts of the firm's future profits; and
3. the variance of forecast errors in analysts' forecasts of the firm's future profits.


1. a standard measure of Brainard-Tobin's q constructed from the firm's stock market valuation; and
2. an alternative measure of the q ratio constructed from discounted forecasts of the firm's future profits.

Their sample consists of publicly traded U.S. companies that were tracked by two or more securities analysts for at least four consecutive years between 1982 and 1999.

The results show that all three measures of uncertainty are positively correlated and appear to pick up underlying movements in uncertainty. When they consider these measures individually, they find a significantly negative long-run effect of higher uncertainty on capital accumulation, which is robust to the inclusion of either of our controls for expected profitability. When they consider our uncertainty measures jointly, they find that the level of disagreement among analysts provides the most informative indicator for identifying this long-run effect of uncertainty on
capital accumulation. Besides, they find a significantly negative short-run interaction term between share price volatility and current sales growth, consistent with the idea that investment will respond less to a given demand shock at higher levels of uncertainty. These effects of uncertainty on investment are shown to be quantitatively, as well as statistically significant.

Empirical accounting research provides surprisingly little evidence on whether accounting earnings numbers capture cross-sectional differences in risk that are associated with cross-sectional differences in share prices. Baginsk, S. P., and Wahlen, J. M. (2002) address two questions regarding the risk-relevance of accounting numbers:

1. Are accounting-related risk measures (i.e., the systematic risk and total volatility in a firm's time-series of residual return on equity) associated with the market's assessment and pricing of equity risk?
2. If so, then are these accounting-related risk measures incrementally associated with the market's assessment and pricing of equity risk beyond other observable factors, such as those in the Fama and French (1992) three-factor model?

So, they develop an accounting-fundamentals-based measure of the market's pricing of risk—the difference between actual share price and a residual income valuation model estimate of share value using risk-free rates of return. Their results show that both systematic risk and total volatility in residual return on equity partially explain this pricing differential and that the explanatory power of total volatility is incremental to the Fama and French (1992) factors—market beta, firm size, and the market-to-book ratio.

As we can see, studies using the approach of sell-side analysts can provide us with the more helpful information in studying analysts’ valuations that we cannot get from using an approach of empirical studies. That information can help us to address issues such as how do analysts use financial information to generate valuations and stock recommendations. However, investment research reports of valuation models are rare in the academic literature, and we still need to consider limitations that this approach has. For example, assumptions and limitations regarding the application of valuation methods are significant concerns for firms' valuation studies. Furthermore, we did not find any study that uses an investment research report as a method to examine the valuation process from the approach of sell-side analysts.

The possible explanation of having no researcher uses this approach is that the investment research reporting is a complicated and time-consuming process. Besides that, it is challenging to find analysts that are willing to cooperate with researchers to go through the investment research report process except for competition concepts like CFA research challenge and recently Ben Graham Center’s stock pricing competition.

CONCLUSION/ DISCUSSION

In conclusion, we have learned a lot about analysts’ valuation process. We are now able to differentiate the empirical studies (based on elements of analyst reports and interviews) and sell-side analyst approaches used to study analysts’ valuation process. We also addressed the advantages and limitations associated with both empirical studies and sell-side analyst approaches. As a result of this study, we conclude that both approaches are helpful in and required for examining and studying analysts’ valuation processes; using only one of the two approaches is not enough for us to have a clear understanding of analysts’ valuation process.

To date, researchers have conducted a considerable amount of studies with empirical studies approach. Researchers are encouraged to switch their focuses to the use of a sell-side analyst approach in examining the valuation process. For those that are going to observe analysts’ valuation process from the sell-side analyst approach, a few more methods that have not yet been practiced may be considered. They are included: investment research reports beyond valuation models that can be found in international competitions like CFA Institute Research Challenge and recently, Ben Graham Center’s stock pricing competition regarding their decision-making process.
Both above, create challenges for academic research. This potential is not yet been adequately explored. We must prepare to meet the challenges and respond to opportunities for this trend. Given this theoretical difference between the methods, perhaps the paper could investigate better whether different approaches to valuation can have a different impact on the output of the valuation process conducted by practitioners.

Several tests and observations on how different valuation methods and practices forecast the share price, calculate the forecast error (i.e. the difference between the actual and the predicted price) and affect the accuracy of target prices, are offered since personal attempt and experience with conducting investment research report in the same way that it is approaching from the professionals, by competing in the CFA Institute Research Challenge representing University of Macedonia (four months of full-time research during my master). It has received excellent reviews, mentoring by an experienced professional. Any effort from researchers into improving the limitations that previous studies have encountered is strongly encouraged. I hope that this paper can make a positive contribution to this direction.
ACKNOWLEDGMENT

This research was published, presented, and discussed at the 5th Spring Conference of the Multinational Finance Society. It is a postprint. The implementation of the Ph.D. thesis or related research papers was supported by the State Scholarships Foundation-IKY (seventeen months). The participation with research paper to scientific conference was supported by the University of Macedonia’s Unit of Special Account for Research Funds-ELKE followed the decision of the Faculty Assembly. The planning and presentation of the Ph.D. Thesis supervised by 3-faculty member advisory committee (1. assoc. professor Stavropoulos A.-supervisor, 2. assist. professor Dassilas A. who replaced professor Negakis C. who replaced professor Vazakidis A., 3. professor Refanidis I.) with four annually and five more quarterly progress reports, MSc Thesis supervised by professor Dimitrios Papadopoulos, BSc Thesis supervised by professor Despina Makridou-Boussiou. The Chartered Financial Analyst Society provided the support that was the CFA Research Challenge, the related meetings and a book on equity asset valuation. The Multinational Finance Society and the Hellenic Finance and Accounting Association provided the support that was Tutorial Sessions, Panel Sessions “Improving Research in Accounting and Finance,” Keynote Speeches, and Discussion Sessions at their Conferences. Participants at the conferences of the Multinational Finance Society (professor Anna Giannopoulou-Merika - Deree College, Greece, which indicated the attendance of the Conference entitled «26th EFMA», assoc. professor Neofytos lampertidis - Technological University, Cyprus), at the conferences of the Hellenic Finance and Accounting Association (prof. Michalis Bekiaris - University of the Aegean, Greece), at two other international conferences (professor Dimitrios Koyssenidis - Aristotle University of Thessaloniki, Greece, professor Pavlos Malindretos) and at an international university competition / local CFA Research Challenge (Mr. Dimitris Karydas – CFA mentor, Mr. Ioannis Ritsios- CFA chair, professor Ioannis Lazaridis, and lecturer Simos Papadopoulos – faculty advisors, Panel of Experts or Examination Committee, Participants), provided the written reports or discussions on the author’s previous research papers. Reviewers in the Multinational Finance Journal (professor Theodossiou P. - Editor-in-Chief and the Referees) provided the written reports on the author’s previous research article.

REFERENCES


Pinto J. E. CFA (Author), Henry E. CFA (Author), ROBINSON T. R. CFA (Author), STOWE J. D. CFA (Author), COHEN A. CFA (Foreword), Equity Asset Valuation, 2nd edition. CFA Institute Investment Series


