

Equity Valuation: A Survey of Professional Practice¹

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Equity Valuation: A Survey of Professional Practice

ABSTRACT

This paper reports the results of a scientific survey of the equity valuation practices of CFA Institute members with equity analysis job responsibilities. Using an instrument designed to minimize biases in prior valuation surveys and sampling a larger group than in any previous study (13,500 investment professionals, resulting in 1,980 valid completed questionnaires), this paper documents professional practices in the selection of equity valuation approaches, including specific model variations and key input preferences.

1. Introduction

The valuation estimates and judgments of professional equity analysts play an important role in the functioning of capital markets by influencing portfolio decisions and consequently share prices. Equity valuation is studied, researched, and practiced by thousands of investment professionals. Feedback on their success in valuation is provided in highly competitive capital and labor markets. Information about the equity valuation methods that have survived the scrutiny and competition just described is of great practical interest. There is, however, a dearth of such information that is current, detailed, broad-based, and not tainted by biases or limitations of the survey instrument. The objective of the survey reported in this paper was to fill that gap.

Several distinct groups should be interested in the results of this survey. Equity analysts and portfolio managers can use the information to understand how their practice compares to that of peers. Investors may discern information that is relevant to appreciating the basis for stock research and recommendations. Persons entering the profession can benefit from understanding competencies that analysts generally possess. Researchers in fields allied with equity valuation may be interested in the state of practice. Extensive surveys have played a prominent role in advancing our knowledge about practice in other areas of finance.² The present survey does the same for equity valuation practices.

The paper is organized as follows. Findings of prior related research are first briefly summarized. Following that is a description of the sample for the current survey and the survey instrument; improvements of these in relation to prior survey instruments are outlined. A presentation and analysis of the survey's major findings follow. The paper ends with conclusions.

² These include surveys on corporate finance (Graham and Harvey, 2001), capital budgeting and capital structure (Graham and Harvey, 2002), corporate dividends and repurchases (Brav, Graham, Harvey, and Michaely, 2005), earnings quality (Dichev, Graham, Harvey, and Rajgopal, 2013), and financial analysts (Brown, Call, Clement, and Sharp, 2015). These surveys have been frequently cited because of the depth of the survey instruments and the number and quality of their survey respondents.

2. Prior Research

A large number of research papers study equity analysts' incentives, conflicts of interest, career concerns, forecast accuracy, and value-added. A surprisingly small number of papers focus on the valuation methods that equity analysts employ. There are two types of prior studies that bear some relationship to the current research: content analysis of sell-side analyst reports and mail/web-based questionnaire surveys.

2.1 Content analysis of sell-side analyst reports

The first line of research, content analysis of analyst reports, addresses the information and techniques used in sell-side analyst reports.

Representative studies in this vein include Pike, Meerjanssen, Chadwick (1993), Bricker, Previts, Robinson and Young (1995), Previts, Bricker, Robinson, and Young (1994), Previts and Robinson (1996), Rogers and Grant (1997), Bradshaw (2002), Demirakos, Strong, and Walker (2004), and Imam, Barker, and Clubb (2008). Demirakos, Strong, and Walker (2004) is perhaps the most relevant to the incidence of use of various valuation models. These researchers examined 104 analyst reports on 26 large U.K.-listed companies in three industries (beverages, electronics, and pharmaceuticals). In the course of addressing specific research hypotheses, they reported that the proportion of analyst reports using valuation multiples was 67%; discounted cash flow models, 16%; residual income valuation models, 10%; and other approaches, 7%. They documented that analysts typically choose a P/E model or a multi-period DCF model as their dominant valuation approach and that reporting valuation estimates from several approaches was common.

2.2 Survey research of equity valuation methods

Relatively less common are attempts to directly study equity valuation methods by means of surveys. This approach has several potential advantages over content studies for documenting analyst practice. Buy-side practice in addition to sell-side practice analysts can be included. Sell-side analyst reports are often terse or silent on explaining the choices made in applying a given valuation approach. Among the disadvantages of surveys are potential biases in the response group and/or biases in the self-reporting of practice.

Survey studies include Block (1999) and Dukes, Peng, and English II (2006) for US analyst practice and Bancel and Mittoo (2014) for European analyst practice.³ These surveys and others are briefly summarized in Exhibit 1.

³ Bing (1971), Arnold and Moizer (1984), and Moizer and Arnold (1984) are early survey studies.

Exhibit 1
Summary of Selected Survey-Based Studies

Study	Sample Description	Major Findings
Bing (1971), <i>Financial Analysts Journal</i>	34 replies, including 15 commercial banks, 11 mutual funds, and 8 other financial institutions	Two most preferred methods were based on P/Es, and the third preferred method was a DDM
Block (1999), <i>Financial Analysts Journal</i>	297 responses from sample of names from 1998 AIMR membership directory	Only about 50% use PV techniques, and DDMs and CAPM were not very important.
Dukes, Peng, and English II (2006), <i>Journal of Investing</i>	43 responses to a 15 question internet survey	Ranked five valuation techniques based on usage, and looked at differences across analyst styles (growth/blend/value) and employer types (investment advisor, bank, money manager, brokerage, mutual fund)
Brown, Call, Clement, and Sharp (2015) (and online supplement), <i>Journal of Accounting Research</i>	Two surveys, 170 respondents to the second survey (the online supplement) asking about model usage	How do following models support your recommendations: P/e, cash flow, DDM, momentum or earnings surprise, EVA, residual income, technical analysis? Ran regressions of how 12 respondent traits (e.g., gender, CFA, experience) relate to model choice.
Bancel and Mittoo (2014), <i>Journal of Applied Corporate Finance</i>	356 valuation experts in 8 European countries	In descending order, popular methods are: relative valuation, DCF (free cash flow to the firm), DCF (free cash flow to equity), net worth, dividend discount models, and other. Extensive questions on discount rate selection.

Block (1999) reported the results of a mail-based survey addressing various equity valuation questions to members of AIMR (now CFA Institute). The survey had 297 usable responses from a random sample of 900 names in the 1998 Membership Directory of AIMR. The focus of Block was use of (“net”) present value models which are central to financial valuation theory. Among the 17 questions in the Block survey instrument, the single one that directly addressed practice was:

“To what extent do you *formally* use net present value analysis in analyzing a stock? a. Always b. Sometimes c. Not part of the normal procedure.”

Block reported that 15.4% always used PV analysis, 39.1% sometimes used it, while 45.7% did not use it as a normal procedure, concluding that “...practitioners split about 50/50 in their use of PV techniques”⁴ and finding no statistically significant difference between CFA charterholders and non-charterholders or between MBAs and non-MBAs. However, mutual funds and bank trust departments appeared to be relatively frequent users of such models and a null hypothesis of no relationship between industry classification and industry usage was rejected.

In nine questions, Block asked for viewpoints on the relative importance of various

⁴ Block (1999), p. 87.

inputs or variables in valuation. For their role “in helping to determine value” the modal responses were that the dividend valuation model and the capital asset pricing model were “not very important” (38.9% and 47.7%, respectively).^{5,6} However, the majority viewed economic value added (EVA) to be “moderately important” (53.2%) in analyzing stocks with 14.4% viewing it as “very important.”

In “relating price to other variables,” the weighted average rank of the four variables offered for ranking was, (top rank: 1, lowest: 4): earnings (1.55), cash flow (1.65), book value (3.29), and dividends (3.51). Interestingly, the survey instrument did not distinguish “free cash flow” from “cash flow,” “sales” was not offered as an alternative, and enterprise multiples were not covered. The following five factors were given the following ranks for their role in determining an appropriate multiple for a stock: growth potential (1.45), quality of earnings (2.48), quality of management (2.84), overall riskiness of the issue (3.36), and dividend policy (4.87). Other survey questions addressed respondents’ attitudes to the efficient market hypothesis, recent market conditions, returns to style investing, global investing, market timing, and prospects for reversion to the mean for dividend yield and P/E ratio over the coming decade. Overall, the study provided evidence that, as of about 2000, models such as the DDM and CAPM current in business school curricula were much less important than valuation focused on P/E multiples and earnings growth and perhaps other relative value models.

Another survey by Dukes, Peng, and English II (2006) reported gathering 43 responses from professional analysts to a 15-question internet-based survey. Taking a cue from some traditional academic investment textbooks focusing on the dividend discount model and the P/E ratio,⁷ the survey focused on usage of only the following techniques with usage rates shown:

- Present value of all future dividends 4.7%
- Two-stage dividend discount model 30.2%
- Total return (yield plus capital gains) 48.8%
- Current price-earnings \times estimated future earnings 76.7%
- Current price-earnings multiplier 53.5%

Dukes et al. also found that the PEG ratio (P/E divided by estimated EPS growth) was used by just over 50% of respondents and that the CAPM was used by about 37% of respondent for estimating the equity required rate of return.

Like Block (1999) and earlier Bing (1971), Dukes et al. (2006) see the limited popularity of dividend discount models as a wedge between investment theory and investment practice. It is not clear whether the studies explored practice deeply enough to draw that conclusion—for example, use of free cash flow valuation, was left relatively unexplored although it is closely tied in theory to the DDM and the focus of much professional writing.⁸

⁵ Block (1999), p. 87.

⁶ The responses to the dividend valuation model question could be ambiguous as the question associated the model specifically with the constant growth model.

⁷ Dukes et al. (2006), p. 90.

⁸ Miller and Modigliani (1961) showed that discounted free cash flow is a valid alternative to discounted dividends. The McKinsey & Company textbook *Valuation: Measuring and Managing the Value of Companies* through five editions (1990, 1994, 2000, 2005, and 2010) has popularized this approach. Relative valuation

2.3 Distinguishing features of current survey

The survey reported in this paper is distinguished from these earlier surveys in the following ways:

- The only objective is to provide a neutral survey of current practice in equity valuation. Thus questions allowed all valuation approaches equal opportunity to be reported rather than being anchored in the dividend discount or other model.
- The sponsorship of CFA Institute facilitated the use of a longer and more comprehensive survey instrument.⁹
- The survey applied stratified random sampling among professional equity analysts to construct the sample.
- Respondent traits were gathered as part of the survey and also pre-populated from CFA Institute files.
- The number of valid responses gathered, almost 2,000, by far exceeded earlier surveys.
- Global reach included responses of analysts based in North America, Europe, and Asia.

Prior surveys, by focusing on professionals' use of a limited set of models from theory, did not give a detailed and fully neutral picture of professional practices. For example, within present value models—based on discounting dividends, free cash flow to the firm, free cash flow to equity, or residual income—only DDMs received specific attention. Within relative valuation based on valuation multiples, choices offered in prior survey have also been incomplete. Besides omissions for price multiples, multiples, enterprise value multiples have been overlooked in prior surveys. Asset-based valuation, frequently mentioned in relation to the valuation of financial companies and natural resource companies, has also been neglected. Real options analysis has been extensively discussed in relation to valuation, but survey evidence of its use is also lacking.

3. Survey Design and Sample

Objectives in the survey instrument design included elimination of experimenter bias and gathering information on conditioning factors in valuation model selection. Sampling objectives included achieving unbiased representation of equity valuation practices of currently employed professional equity analysts.

3.1 Design of survey instrument

The instrument consisted of 38 questions. The major objective was to obtain comprehensive basic information on current professional equity valuation practices within the constraints of a moderate-length survey. After two introductory, qualifying questions, the third question (#3) asked the respondent to identify which of four major approaches to evaluating equity securities he or she used, where the approaches are simply defined by example and space

approaches are also grounded in theory, either through their relation to present value models or by reference to the law of one price.

⁹ A practical objective of the survey was to gather information in making topic coverage choices in revising the CFA Level 2 curriculum in equity valuation. In the Wiley CFA Institute Investment Series, Pinto et al. (2010) reflects use of survey information in various coverage choices; Pinto et al. (2010) is a revision of Stowe et al. (2007), reprinted from Stowe et al. (2002).

is afforded to write in an alternative approach:

- In evaluating individual equity securities, which of the following approaches to valuation do you use? (Select all that apply)
- a) A market multiples approach (e.g., based on price-to-earnings, enterprise value-to-EBITDA, or other multiples)
 - b) A present discounted value approach (e.g., based on forecasts of future dividends, free cash flows, or economic value added/residual income)—also known as the income approach
 - c) An asset-based approach (e.g., based on book value, adjusted book value, asset market values, or asset replacement costs)
 - d) A (real) options approach (using options models to value equity)
 - e) Other (please specify)

Depending on the approaches selected, the instrument would branch to further series of questions gathering more detail about how the analyst implemented the chosen approaches.

For example, suppose the respondent indicated that he/she used a market multiples approach and a present discounted value approach. The respondent would next see a question (#4) asking in what percentage of cases the analyst applies a market multiples and a present discounted value approach. These percentages could sum to more than 100% as analysts often assess value by several means. On the basis of using a market multiples approach, the analyst would see question #5 eliciting which specific multiples are used (suppose these are P/E, P/CF, EV multiples) and question #6 eliciting percentage of cases in which these are used. The analyst would be directed to further questions identifying the preferred definition of the denominator for P/E and P/CF ratios (P/E: #7; P/CF: #8) and for EV multiples, the denominator measure(s) used (#9).

The analyst would then be presented with questions #11 and #12 identifying the specific present discounted value model(s) used and gathering frequency of use information, followed by #13, #14, #15, and #16 related to required rate of return estimation and equity risk premium estimation. To encourage respondents to accurately reflect their use of multiple approaches, it was explicitly stated that use frequencies could sum to more than 100%.

Supposing a discounted free cash flow model was selected in #11, the analyst would now see #21, asking which of four free cash flow to the firm or which of four free cash flow to equity implementations were used (based on modeling of stages) with space for a write-in implementation, and #22 would follow up by gathering frequency of use information. #23 would gather information on the number of years of cash flows individually forecast. All respondents would be presented with #28 through #38 covering industry/sector influence on valuation method (#28), vendor usage (#29), portfolio style orientation (#30), geographic distribution of companies analyzed (#31), job function (#32), type of employing firm (#33), employing firm institutional/private client orientation (#34), years of equity analysis experience (#35), highest academic degree earned (#36), and any professional accounting designation held (#37). This information was gathered to allow us to identify job, educational, and geographic influences on valuation practices. The final item (#38) (“Please provide any additional comments on equity valuation in the box below”) gave respondents space to provide any feedback, criticism, or further information they cared to provide.

3.2 Description of sample

The study defined its target population as professional equity analyst members of CFA Institute. CFA Institute members specify up to four job responsibilities in their CFA Institute member profile. The survey was conducted in September-October 2007. As of September 2007, 19,646 CFA Institute members, out of a total membership of about 80,000, indicated “equity analysis” (EA) as one of their job responsibilities. In contrast to the study of Block (1999), we defined the population in terms of the equity analyst subset of CFA Institute membership rather than the general membership in order to focus on professional equity valuation practice. That objective was achieved as respondents in the final sample indicated they spent an average of slightly more than 62% of their work week evaluating individual securities for the purposes of making an investment recommendation or portfolio decision.

In detail, sample selection proceeded as follows. We drew a stratified random sample of 13,500 individuals where the strata were member subgroups reporting as job responsibilities EA only, EA + 1, EA + 2, or EA + 3 (the “+” indicating the number of other job responsibilities). Of that number, 22 were eliminated because they had been used in a pre-test of the survey instrument, reducing the final sample to 13,478. We invited by e-mail those 13,478 members to participate in the survey, with 13,456 receiving the invitation after accounting for email delivery failures. As a result of the invitations, 2,378 members started the online survey. However, 285 individuals from that group were eliminated because they provided a negative answer to the first question; “In your current job, do you evaluate individual equity securities for purposes of making an investment recommendation or portfolio decisions?” Finally, another 113 respondents were eliminated because, although they opened the survey, they gave completely (or nearly) empty responses to the survey questions. That left a total of 1,980 valid responses, representing 14.7% of the final sample of 13,478.

Various demographics of survey respondents were pre-loaded from CFA Institute files or collected as part of the survey. The respondent sample was generally demographically closely representative of the total sample of 13,500, with the chief exception that younger members (under the age of 30) were included in the respondent sample with a somewhat higher frequency than they were represented in the total sample (19% compared to 12%, respectively).

Approximately 80% of the respondents were CFA charterholders. Respondents spent an average of 62.2% of their work week evaluating individual equities, and the median time spent was 70.0%. Responding buy-side analysts averaged 71.7% and sell-side analysts averaged 72.3%, while portfolio managers averaged 54.7%, probably reflecting broader job responsibilities. Brokerage firms, hedge funds, investment banks, and investment management firms were all broadly represented in the sample.

Particularly noteworthy is the worldwide representation of analysts in this study, as shown in Exhibit 2. To the authors’ knowledge, no previous published survey related to equity valuation methods or content review of analysts’ reports has had a similarly global scope.

Exhibit 2
Geographic Representation in Sample and Respondents

Region	Total Sample	Respondent Sample
Americas	67%	66%
Asia Pacific	14%	12%
Europe, Middle East, Africa	19%	22%

4. Major Survey Findings

In the following we present the major findings of the survey. We first present the broad results and then report additional detail for what the survey revealed were the major valuation approaches.

4.1 Valuation approaches: Broad results

Survey respondents showed their broad preferences concerning valuation approaches, as reported in Exhibit 3, based on question #3 which was earlier quoted in full.

Exhibit 3
Valuation Approaches: Global Ranking¹⁰

In evaluating individual equity securities, which of the following approaches to valuation do you use? N=1980	Percent of Respondents	Percentage of Cases Respondents Use Each of the Approaches* (<i>mean</i>)
A market multiples approach	92.8	68.6
A present discounted value approach	78.8	59.5
An asset-based approach	61.4	36.8
A (real) options approach	5.0	20.7
Other approach	12.7	58.1

*Note: Given that a respondent uses an approach, he or she is asked for the percentage of valuation cases in which the approach is used. Thus, this column reports conditional frequencies.

In the Percent of Respondents column, an overwhelming, large proportion of respondents (92.8%) reported using market multiples in valuation. Ranking second and third, still with wide adoption, were present discounted value (78.8%) and asset-based approaches (61.4%). By contrast, a real options approach, although widely written about, was quite infrequently used. Respondents were given the opportunity to write in what other techniques they use under “Other approach.” Among the techniques mentioned for “Other approach,” roughly in order of declining frequency, were:¹¹ technical analysis and momentum specifically and (proprietary) quant models/analysis—these two groups were each mentioned in 15–20 responses; LBO analysis; (precedent) transaction multiples and M&A deal comps; sum-of-the-parts valuation; multifactor models; free cash flow yield; and HOLT CFROI.

¹⁰ With 1,980 responses, the margin of error is +/- 2.1% at a 95% confidence level.

¹¹ The wording of write-in responses did not always permit clear classification. Interestingly too, sum-of-the-parts valuation is typically executed using one of the major valuation methods given.

The survey gathered information on conditional frequency of use of valuation approaches; that is, the percentage of cases in which a given approach was reported to be used, given that the analyst previously indicated that he or she uses the approach. These frequencies are shown in the last column of Exhibit 3. Given that an analyst uses a particular approach, he or she might use it for most valuations—rely on it as a general tool—or only use it for valuations with special characteristics—using it as a specialist tool. Thus, this number provides relevant information on whether analysts view a tool as widely or narrowly applicable. A high conditional frequency of use (say greater than 50%) suggests a general tool rather than one occasionally used in special cases.¹²

With mean conditional frequencies of 68.6% and 59.5%, respectively, market multiples and present discounted value approaches appeared to be general tools, whereas asset-based (mean frequency: 36.8%) and especially real options (mean frequency: 20.7%) appeared to be more specialist. The product of “percent of respondents” and “conditional frequency” is the average frequency with which analysts who sometimes use the valuation approach actually apply it in valuation. Market multiples, present discounted value, asset-based, and real options approaches were applied with average frequencies of 64%, 47%, 23%, and 1%, respectively.¹³

It is interesting in Exhibit 3 that a substantial 12.7% of respondents indicated use of an “other approach.” The paper will return to analyze those responses later. At the broad level of valuation models, some significant¹⁴ global variations in practice were noted, as summarized in Exhibit 4. Present discounted value approaches have significantly stronger footholds in Asia Pacific and EMEA than in the Americas and asset-based approaches are significantly more frequently used Asia Pacific than in the Americas (and nearly as widely used in Asia Pacific as presented discounted value approaches are in the Americas).

Exhibit 4
Regional Differences in Valuation Practice

In evaluating equity securities, in what percentage of cases do you use each of the following approaches to valuation?					
REGION	Market multiples approach	Present discounted value approach	Asset-based approach	(Real) options approach	Other approach
Americas	92.6	<i>73.9</i>	<i>59.5</i>	4.6	13.6
Asia Pacific	92.6	<i>86.9</i>	<i>70.3</i>	7.4	7.9
EMEA	93.5	<i>89.0</i>	<i>62.5</i>	4.9	12.8

Note: Italicized entries reflect significant pairwise differences at the 5% significance level.

Exhibit 5 shows that the use of the market multiples approach across job function, firm type, and client type is quite similar, ranging from about 91% to almost 95%. The relative ranking of the other approaches is identical across job, firm, and client type with the exception

¹² We expect the relationship to only be approximate. For example, for an analyst covering only one industry with perceived unique characteristics (such as banking) a perceived specialized valuation method might be applied with high frequency.

¹³ The calculations are 0.928×0.686 , 0.788×0.595 , 0.614×0.368 , and 0.05×0.207 , respectively.

¹⁴ The reference is to pairwise comparisons at the 5% significance level using a Fisher Least Significant Difference (LSD) test.

that hedge funds used asset-based approaches more frequently than present value approaches. For asset-based approaches, the differences in use between hedge funds and investment banks and hedge funds and investment management firms were significant.

Both brokerage firms and investment banks used present discounted value approaches significantly more frequently than hedge funds. For investment banks, the comparison with hedge funds was also significant.

A real options approach was least likely to be used in investment management firms and most likely to be used at hedge funds (in 7.8% of cases); the differences between hedge fund and investment bank and investment management firm use were significant. Hedge funds were the most distinctive group in choice of valuation methods. Besides the differences already noted, in more than one-fifth of cases respondents in that group used valuation techniques they were not ready to classify in four recognized approaches.

Exhibit 5
Job Function, Firm Type, and Client Type as Factors in Valuation Approach

In evaluating equity securities, in what percentage of cases do you use each of the following approaches to valuation?					
Panel A: Job Function					
	Market multiples approach	Present discounted value approach	Asset- based approach	(Real) options approach	Other approach
Investment analyst, buy-side	92.8	80.0	64.7	3.7	10.9
Investment analyst, sell-side	93.2	84.0	57.3	3.4	10.5
Portfolio manager	93.0	71.7	63.1	3.4	14.7
Panel B: Firm Type					
	Market multiples approach	Present discounted value approach	Asset- based approach	(Real) options approach	Other approach
Brokerage firm	93.1	<i>83.0</i>	65.1	4.1	<i>11.0</i>
Hedge fund	94.0	<i>71.3</i>	76.6	7.8	22.2
Investment bank	94.5	<i>86.6</i>	<i>55.9</i>	5.9	<i>11.8</i>
Investment management firm	91.8	74.6	<i>60.8</i>	2.0	<i>12.3</i>
Panel C: Client Type					
	Market multiples approach	Present discounted value approach	Asset- based approach	(Real) options approach	Other approach
Institutional	91.2	80.9	61.3	4.4	12.9
Private	93.9	72.9	61.5	3.9	13.1

Note: Italicized entries reflect significant pairwise differences at the 5% significance level.

4.2 Further analysis of market multiples approaches

By far the most popular approach to valuation as shown in Exhibit 3 was market multiples. Market multiples were defined to include both price multiples (based on share price) and enterprise value or firm value multiples (based on a measure of enterprise or firm value). Market multiples are the basis for relative valuation of an asset in relation to comparable assets

and can also be used as a shorthand way to express absolute valuation estimates.¹⁵

Exhibit 6 reports on the global popularity of specific multiples. For analysts who sometimes use market multiples, the most popular multiples are the P/E and enterprise value multiples, which are used by 88.1% and 76.7% of multiples users, respectively. Users of these two multiples also use them more intensively, on average, than is the case for any other multiples (they are used in 67.2% and 61.1% of cases, respectively). The least popular ratios are D/P (dividend yield) and the P/S (price-to-sales) ratio; they are used by 35.5% and 40.3% of multiples users, respectively. The P/B and P/CF ratios occupy the middle ground of popularity but the P/CF ratio has a higher conditional frequency of use (54.6% for P/CF versus 44.8% for P/B).

Exhibit 6
Market Multiples Approach: Global Evidence

When you use a market multiples approach, which of the following ratios do you use? N=1765	Percent of Respondents	Percentage of Cases Respondents Use Each of the Approaches (<i>mean</i>)
D/P (Dividend yield) or P/D (Price-to-dividend)	35.5	44.3
Enterprise value (EV) or firm value multiples (e.g., EV-to-EBITDA, EV-to- operating profit)	76.7	61.1
P/B (Price-to-book value, price-to-adjusted book value, book-to-market)	59.0	44.8
P/CF (Price to some measure of cash flow)	57.2	54.6
P/S (Price-to-sales or revenues)	40.3	45.7
P/E (Price to some measure of earnings)	88.1	67.2
Other ratios	11.6	58.5

On a global basis, more than half of respondents used P/E, EV, P/BV, and P/CF multiples when they used a multiples approach. EV multiples receive generally sparse attention in US investment textbooks, but ranked strikingly high in use. Among “other ratios,” the most common write-in response was the PEG ratio (P/E ratio divided by growth rate).

Details about the regional usage of market multiples are in Exhibit 7. Data indicated that each region ranked multiples differently after the number one spot held by P/E (for which the more frequent use in Asia Pacific compared to Americas was significant). EV multiples were significantly more frequently used in EMEA compared to Americas and Asia Pacific. Asia Pacific and EMEA showed a significantly much more frequent use of P/B compared to the Americas. Americas analysts made significantly more frequent use of cash flow ratios compared to Asia Pacific and EMEA, and EMEA use was significantly higher than in Asia Pacific. This regional discrepancy in cash flow ratio use merits investigation. The same significant regional differences that hold for cash flow ratios were observed for P/S; the difference between America and Asia Pacific was proportionally the largest among all differences. Asia Pacific and EMEA analysts made significantly more frequent use of dividend

¹⁵ See Pinto et al. (2010). In the latter case, such multiples are sometimes labeled “justified” or “warranted.”

yield (or P/D) than did Americas analysts.

Exhibit 7
Market Multiples Approach: Regional Differences

Rank	Global	Americas	Asia Pacific	EMEA
1	P/E (88%)	P/E (87%)	P/E (94%)	P/E (89%)
2	EV multiple (77%)	EV multiple (76%)	P/B (72%)	EV multiple (83%)
3	P/B (59%)	P/CF (65%)	EV multiple (69%)	P/B (66%)
4	P/CF (57%)	P/B (54%)	D/P (42%)	D/P (47%)
5	P/S (40%)	P/S (46%)	P/CF (34%)	P/CF (46%)
6	D/P (36%)	D/P (31%)	P/S (19%)	P/S (36%)
7	Other ratio (12%)	Other ratio (12%)	Other ratio (8%)	Other ratio (11%)

We cover selected results about each multiple below, in order of global revealed popularity.

P/E Multiples

In the first edition of *Security Analysis*, Benjamin Graham and David L. Dodd (1934, p. 351) described common stock valuation based on the P/E ratio as the standard method of that era. Block's (1999) survey respondents effectively ranked P/E as the most important price ratio. This survey indicates its continuing primacy in practice. In effect, $0.928 \times 0.881 = 0.818$ or 81.8% of all survey respondents use the P/E ratio in the course of their valuation work.

Forward looking P/Es were much preferred to trailing P/Es and net income was much preferred to operating income in measuring earnings. Notably, as shown in Exhibit 8, the dominant definition of P/E, preferred by 61.1% of respondents using a P/E multiple, was leading (forward) P/E based on forecasted net income. In stark comparison, trailing P/Es were preferred by only 8.8%.

Exhibit 8
Definition of Earnings in the P/E Multiples

When you use a P/E multiple, what measure of earnings do you prefer to use in the denominator? N=1505	Percent of Respondents
Trailing net income	8.8
Trailing operating income	4.5
Forecasted net income	61.1
Forecasted operating income	20.1
Other	5.5

Exhibit 9 shows some significant regional variation in the measure of earnings used in the definition of the P/E multiple. Trailing operating income was more frequently used in the Americas than in Asia; analysts in the Americas also used forecasted operating income significantly more frequently than was the case in EMEA. Forecasted net income was more frequently used in Asia Pacific and in EMEA than in the Americas. Overall, an operating income definition of earnings has a greater foothold in the Americas than elsewhere. Analysts everywhere, but especially in Asia Pacific and EMEA, appear to follow the suggestion of theory that forward looking earnings are, all else equal, more relevant than past earnings.

Exhibit 9
Definition of Earnings in the P/E Multiples

When you use a price-to-earnings (P/E) multiple, what measure of earnings do you prefer to use in the denominator? N=1505	Americas (responses 64.5% of total)	Asia Pacific (responses 12.2% of total)	EMEA (responses 23.3% of total)
Trailing net income	9%	6%	9%
Trailing operating income	5%	2%	4%
Forecasted net income	57%	72%	67%
Forecasted operating income	23%	16%	15%
Other (please specify)	6%	4%	4%

Enterprise Value Multiples

The popularity of enterprise value multiples, which were used by more than three-quarters of respondents who use market multiples at all, is noteworthy. In effect, approximately $0.928 \times 0.767 = 0.712$ or 71.2% of survey respondents sometimes used enterprise multiples in valuation. Enterprise value multiples have frequently been ignored in prior surveys.

EV/EBITDA is overwhelmingly the most popular EV ratio, among those that use EV ratios, as shown in Exhibit 10. Given that an analyst uses EV/EBITDA, he or she applied it in most cases (86.3%). EV/EBITDA is clearly a widely used metric in current valuation practice.

Exhibit 10
Measures Used in Denominator of Enterprise Ratios

When you use an enterprise value (EV) multiple, which of the following measure(s) do you use in the denominator? N=1308	Percent of Respondents
EBIT	19.3
EBITDA	88.3
Free cash flow to the firm	21.2
Revenue	16.6
Other	5.6

Among the alternatives for the denominator, FCFE probably has the most direct support from finance theory via the FCFE valuation model, and EV/FCFE ranks second in number of adopters. Third and fourth placed were occupied by EBIT and revenues, respectively. Although the conditional frequency of use of non-EBITDA measures was above 50% in each case, when they were used, none was as broadly applied as EBITDA. In theory, EV/revenue avoids the mismatch in the P/S ratio of share price in the numerator with a pre-financing income measure (sales) in the denominator. However, in practice, EV/revenue appears to be used by slightly less than a third as many practitioners as P/S.¹⁶

Although regional differences are not presented here in an exhibit, enterprise value multiples are significantly more frequently used in EMEA (83% of cases when any multiple is used) than in the Americas (76% of cases) or in Asia Pacific (69%). Investment banks (frequency 65.6%) and hedge funds (frequency 64.3%) used EV multiples more significantly more frequently than investment management firms (frequency 55.8%); and investment bank use was in addition significantly more frequent than brokerage firms (frequency 57.8%).

P/B Multiples

Mentioned in the 1934 (first) edition of Graham and Dodd, P/B multiples historically complemented P/Es by appraising value in relation to assets rather than earnings. In the survey, P/B was the third most commonly used market multiple, used by 59% of respondents who used market multiples (Exhibit 6). As observable in Exhibit 7, use in Asia Pacific at 72% and EMEA at 66% was significantly greater than in the Americas at 54%. In Asia Pacific, P/B was the second most frequently used multiple (behind P/E).

P/CF Multiples

Among analysts who sometimes used market multiples, the P/CF ratio with a 65.3% adoption rate ranks third in popularity after P/E (86.8% adoption rate) and enterprise multiples (76% adoption rate), ahead of P/B (54.4% adoption rate) P/S (45.6%) and dividend yield (30.6%). FCFE may have the strongest support from finance theory via its use in FCFE absolute valuation models; operating cash flow, free cash flow to the firm, and EBITDA relate to cash flows to creditors and shareholders both instead of to shareholders alone. However, as shown in Exhibit 11, there seems to be no consensus on the denominator for the P/CF ratio.

¹⁶ About $0.928 \times 0.767 \times 0.166 = 11.8\%$ of survey respondents who use market multiples sometimes use EV/Revenue compared to $0.928 \times 0.403 = 37.4\%$ who sometimes use P/S ratios.

Exhibit 11
Definition of Cash Flow in P/CF Multiples

When you use a P/CF multiple, which measure of cash flow do you prefer to use in the denominator? N=967	Percent of Respondents
Operating cash flow	22.3
Free cash flow to the firm	28.9
Free cash flow to equity	32.2
EBITDA	12.7
Other	3.9

P/S Ratios and D/P (or P/D)

The survey results (not reported in an exhibit) indicated that, for analysts who sometimes use multiples, the P/S ratio was used significantly more frequently in the Americas (46%) than in Asia Pacific (19%) or in EMEA (36%). By contrast, the corresponding frequencies of use of dividend yield (D/P) in Asia Pacific (42%) and in EMEA (47%) were both significantly higher than in the Americas (31%).

4.3 Present discounted value approaches

Exhibits 3 and 4 indicated that present discounted value approaches were used by 78.8% of respondents overall, and by substantially larger fractions of respondents in the Asia Pacific and EMEA regions. Exhibit 12 shows that the overwhelming preference (86.8%) is for a free cash flow (FCF) approach when a present discounted value model is used. Furthermore, analysts using the free cash flow approach use it on average in about 80% of the cases where they are valuing equities, while those using other approaches employ them only about half of the time they are valuing equities. This finding suggests that analysts using a FCF approach are committed to it as a generally applicable tool.

“Income” variables other than free cash flow were much less frequently used. About 35% of respondents used a dividend discount model (conditionally in 52% of cases), 21% use a residual income approach (conditionally in 46% of cases), and 20% use a CFROI model (conditionally in 59% of cases).

Exhibit 12
Present Discounted Value Approaches: Global Evidence

When you use a present discounted value model approach, which of the following models do you use? N=1457	Percent of Respondents	Percentage of Cases Respondents Use Each of the Approaches (mean)
Dividend discount model	35.1	51.7
Residual income approach (e.g., based on discounted abnormal earnings, economic profit, EVA, or similar concepts)	20.5	46.1
Discounted free cash flow model	86.8	80.1
Cash flow return on investment (CFROI®) model	19.7	58.5
Other	3.6	71.3

Portfolio managers used the dividend discount model more and the discounted free cash flow model less than either buy-side or sell-side analysts. Similarly, analysts with private clients used the DDM more and the free cash flow model less than analysts with institutional clients.

Exhibit 13
Present Discounted Value Approaches: Regional Differences

When you use a present discounted value model approach, which of the following models do you use? N = 1505	Americas (responses 64.5% of total)	Asia Pacific (responses 12.2% of total)	EMEA (responses 23.3% of total)
Dividend discount model	31%	40%	43%
Residual income approach	20%	19%	23%
Discounted free cash flow model	85%	89%	91%
Cash flow return on investment (CFROI) model	21%	12%	19%
Other (please specify)	4%	3%	3%

With respect to Exhibit 13, the following relationships were significant:

- Respondents from Asia Pacific and EMEA used DDMs more frequently than those from the Americas.
- Respondents from EMEA were more likely to use discounted free cash models than respondents from the Americas.
- Respondents from the Americas were more likely to use CFROI than respondents from Asia Pacific.

Exhibit 14 provides further details about choice of present discounted value models.

Exhibit 14
Job Function, Firm Type, and Client Type as Factors in Choice of Present Discounted Value Model

When you use a present discounted value model approach, which of the following models do you use?					
Panel A: Job Function					
	Dividend discount model	Residual income approach	Discounted free cash flow model	CFROI model	Other model
Investment analyst, buy-side	34.3	19.8	86.7	20.7	3.7
Investment analyst, sell-side	28.9	18.4	92.5	13.6	3.1
Portfolio manager	42.0	23.0	81.0	26.5	3.0
Panel B: Type of Firm					
	Dividend discount model	Residual income approach	Discounted free cash flow model	CFROI model	Other model
Brokerage firm	33.7	19.3	89.5	14.9	2.2
Hedge fund	32.8	20.2	94.1	19.3	2.5
Investment bank	25.9	16.6	92.7	13.7	2.0
Investment Management firm	38.2	22.8	80.4	28.1	3.7
Panel B: Client Type					
	Dividend discount model	Residual income approach	Discounted free cash flow model	CFROI model	Other model
Institutional	31.2	19.2	88.1	17.7	3.1
Private	39.4	21.8	83.6	24.9	3.3

Note: Data are row percentages; the percent of respondents using each model by row.

Significant relationships included the following:

- Regardless of job function, type of firm, or client type, the free cash flow models are the dominant class of model.
- The dividend discount model was more frequently used by portfolio managers (than by buy-side or sell-side analysts), at investment management firms (than by investment banks), and by analysts with private clients (than with institutional clients).
- The discounted free cash flow model was less frequently used by those analysts (immediately above) who were more likely to use dividend discount models.
- CFROI was more frequently used by portfolio managers, at investment management firms and by analysts with private clients.

Estimating the Required Return on Equity and the Equity Risk Premium

The next questions elicited more information about analysts using DCF analysis. Panels A and B of Exhibit 15 present feedback on which model analysts use to estimate the required rate of return on equity.

Exhibit 15
Required Rate of Return on Equity

Panel A		
When you use a present discounted value model, which of the following approaches for estimating the required return on equity (the cost of equity) for use in such a model do you use? N=1436	Percent of Respondents	Percentage of Cases Respondents Use Each of the Approaches (mean)
The capital asset pricing model (CAPM)	68.2	77.5
Arbitrage pricing theory (APT) model	4.8	47.0
Fama-French or related model	4.0	42.2
Bond yield plus a risk premium	42.7	61.4
A judgmentally determined hurdle rate	47.5	64.3
Other	6.3	79.4
Panel B		
If you estimate an equity risk premium as part of a required rate of return computation, which of the following estimates do you use? N=1794	Percent of Respondents	Percentage of Cases Respondents Use Each of the Approaches (mean)
Historical equity risk premium	36.2	77.7
Adjusted historical equity risk premium	26.9	72.6
Forward looking equity risk premium	34.7	75.3
Other	4.8	82.4
None. I do not estimate an equity risk premium.	24.5	N/A

The CAPM is the most commonly used model for estimating the required return on equity (68% of respondents use it), and these users employ it on 78% of the cases where they estimate a required return). Arbitrage pricing theory and a Fama-French-type model are used only about 5% of the time. The other two methods (bond yield plus a risk premium and a judgmental approach) are each used by over 40% of analysts, and these analysts use it, on average, in about 60% of the cases in which they estimate a required return.

In estimating equity security values using a present discounted value approach, the estimate of the equity risk premium can have a substantial effect on value estimates through its effect on the magnitude of the discount rate. Historical or adjusted historical estimates are most widely used. However, quite a few respondents do not estimate an equity risk premium at all. How this fact is to be interpreted is not completely clear. It is possible that this reflects a situation in which analysts simply use a premium that their firm requires all analysts to use or they use a premium from a financial services vendor (such as Bloomberg).

Before examining use of the dominant free cash flow approach in more detail, we cover the less frequently used approaches.

Dividend Discount Models

About 35.1% of analysts using a DCF approach employ a dividend discount

model. Information on their usage is in Exhibit 16.

**Exhibit 16
Dividend Discount Model**

When you use a dividend discount model to value equity, which of the following models do you use? N=500	Percent of Respondents	Percentage of Cases Respondents Use Each of the Approaches (<i>mean</i>)
Single-stage (“constant growth”) model	40.6	65.5
Two-stage model	55.2	67.6
H-model	10.6	48.2
More than two-stage model	50.4	73.5
Other	2.4	77.0

The two-stage and multiple-stage models are used more often than the single-stage model. The H-model (which assumes a constantly declining growth rate in stage 1) was used by about 10% of analysts (although some analysts may use such an approach without calling it the H-model). As Exhibit 17 reports, when analysts are using the DDM, they forecast an average of roughly 7 years of dividends individually.

**Exhibit 17
Dividend Forecasting**

How many years of dividends do you individually forecast?	N=415
Mean	6.95
Median	5.00
Std. Deviation	5.9
Min	0
Max	50

Analysts were also asked, as reported in Exhibit 18, whether share repurchases play a role in their implementation of a DDM. The majority (74.4%) reported that it did. If they answered the question with a “yes,” they were asked to explain their answer. The verbal responses frequently mentioned the effects of share repurchases and gave a terse answer about how they incorporate repurchases into their analysis. Repurchases are clearly a topic they have thought about, but the survey instrument and survey responses were inadequate to determine in any detail how analysts build them into their valuation models.

Exhibit 18
Share Repurchases and DDM

Do forecasts of share repurchases play a role in your application of dividend discount models?	N=488
Yes	74.4%
No	25.6%

Residual Income Model

Exhibit 19 shows that when implementing a residual income approach, analysts tended to use a generic or proprietary measure rather than relying on a trademarked version such as EVA.

Exhibit 19
Residual Income Models: Generic, Proprietary, Trademarked

When you use a residual income model, which of the following do you typically use?	N=267
A generic residual income measure	57.7%
A proprietary measure	23.6%
A trademarked version such as EVA	18.7%

In results not reported in an exhibit, analysts tended to favor multistage residual income models over single-stage models in a proportion of roughly to 2:1, similar to the proportion of respondents favoring multistage- to single-stage free cash flow models (seen below in Exhibit 21). Finally, as shown in Exhibit 20, analysts tended to forecast about 7 years of residual income individually when applying this approach.

Exhibit 20
Residual Income Forecasts

How many years of residual income do you individually	N=974
Mean	6.99
Median	5.00

Free Cash Flow Models

Exhibits 12 and 13 indicated that among present discounted value approaches, free cash flow models are dominant globally and in each world region. Exhibit 21 provides data about users of free cash flow valuation. Two general themes are apparent. First, free cash flow to the firm (FCFF) models (in the first four lines of the exhibit) are used far more frequently than free cash flow to equity (FCFE) models (in the next four lines). In fact, FCFF usage is almost double that of FCFE. Analysts may prefer the FCFF valuation approach (over the FCFE approach) when they believe a firm's capital structure is changing or if they have more confidence in the discount rate for the FCFF approach (which is the cost of capital instead of the cost of equity used for the FCFE approach). Second, analysts tend to use the more

complex models (two-stage and more- than-two-stage) more frequently than the simpler single-stage models (twice as often). The H-model, which wasn't used as frequently, is a two-stage model where the growth rate of free cash flow declines at a constant rate through the first stage.

Exhibit 21
Free Cash Flow Valuation Model

When you use a discounted free cash flow approach, which of the following models do you use? N=1209	Percent of Respondents	Percentage of Cases Respondents Use Each of the Approaches¹⁷ <i>(mean)</i>
Single-stage ("constant growth") free cash flow to the firm	22.6%	58.8%
Two-stage free cash flow to the firm	43.8%	70.0%
H-model free cash flow to the firm	6.2%	44.8%
More than two-stage free cash flow to the firm	40.5%	72.9%
Single-stage ("constant growth") free cash flow to equity	11.8%	46.8%
Two-stage free cash flow to equity	21.1%	57.7%
H-model free cash flow to equity	4.4%	38.2%
More than two-stage free cash flow to equity	24.8%	65.8%
Other	4.2%	83.7%

Although not presented in an exhibit here, based on 1048 responses, the survey indicated that respondents used individually forecasted cash flows a median of 5 years and an average 7.77 years.

The evidence in Exhibit 22 suggests that variations in discounted free cash flow modelling do not depend on job function or type of firm. There is variation in the usage of the various models, but these differences were not statistically significant. This seems to be a logical finding, as model choice should not in theory depend on characteristics of the analyst as much on characteristics of the security being valued.

¹⁷ Based on responses by those that indicated they use the approach in their valuation practices.

Exhibit 22
Factors Influencing Free Cash Flow Valuation Model Choices

When you use a discounted free cash flow approach, which of the following models do you use?									
Panel A: Job Function									
	Free cash flow to the firm approach				Free cash flow to equity approach				Other
	Single-stage	Two-stage	H-model	More than two-stage	Single-stage	Two-stage	H-model	More than two-stage	
Investment analyst, buy-side	20.8	39.5	7.0	41.4	12.2	21.9	4.1	27.0	4.1
Investment analyst, sell-side	19.2	43.9	5.9	38.4	9.6	16.2	4.4	20.7	4.4
Portfolio manager	20.3	42.1	4.7	36.1	12.7	23.4	5.1	24.7	4.7
Panel B: Type of Firm									
	Free cash flow to the firm approach				Free cash flow to equity approach				Other
	Single-stage	Two-stage	H-model	More than two-stage	Single-stage	Two-stage	H-model	More than two-stage	
Brokerage firm	21.7	47.8	4.3	38.5	10.6	14.9	5.0	21.1	2.5
Hedge fund	28.2	41.8	9.1	38.2	12.7	20.9	3.6	28.2	5.5
Investment bank	25.3	43.2	6.3	43.7	11.6	18.4	3.2	24.7	4.7
Investment management firm	17.4	41.7	4.9	36.2	12.2	21.2	4.3	24.9	3.5
Panel C: Client Type									
	Free cash flow to the firm approach				Free cash flow to equity approach				Other
	Single-stage	Two-stage	H-model	More than two-stage	Single-stage	Two-stage	H-model	More than two-stage	
Institutional	20.2	45.1	5.8	41.2	9.5	17.3	4.1	23.0	3.9
Private	22.3	39.5	4.8	39.0	14.1	21.2	5.4	22.9	4.0

Other Practices

The survey gathered much incidental information on industry practices related to valuation. Exhibit 23 shows that valuation methods can vary depending on the industry or sector of the stock being valued.

Exhibit 23
Industry and Sector Influences

Does your selection of valuation methods depend on the industry(-ies) or economic sector(s) in which the company operates?	N=1683
Yes	67.9%
No	32.1%

Exhibit 24 presents the reliance on external vendors for valuation inputs, models, price estimates, and recommendations. As shown, it is common (41.6% of the time) to use vendors as a source of valuation inputs. But for models, estimated prices, and recommendations, analysts use vendors an average of about 20% of the time.

Exhibit 24
Reliance on Vendors

For what percentage of valuations do you rely on external vendors for each of the following types of information?	Valuation inputs	Valuation models	Expected price/value estimates	Buy/sell recommendations
N	1642	1580	1575	1563
Mean	41.6%	18.4%	20.2%	10.5%
Median	30.0%	0.00%	0.00%	0.00%

Although not presented in an exhibit, sell-side analysts relied much less on external vendors for all of the services (valuation inputs, models, price/value estimates, or buy/sell recommendations) than others. On average, they used vendors about 2/5 as often as the average in the exhibit. Buy-side analysts, who typically cover more individual stocks than buy-side analysts, relied on external vendors at roughly the mean values shown in the exhibit. Finally, portfolio managers relied much more heavily on external vendors, using them roughly 1.3 to 1.5 times as often as the means in Exhibit 24.

Similarly, analysts with private clients relied on external vendors for services roughly 1.5 times as frequently as analysts with institutional clients. Other analyst traits—such as geographic region, years of experience, possession of an accounting designation, or highest degree earned—had little effect on reliance on external vendors.

In general, sharp contrasts in valuation practice were not observed based on personal variables (for example, years worked in equity analysis, highest academic degree earned, accounting designations, and years holding the CFA charter, and charter versus noncharter status).

5. Conclusions

The present study captures in detail how professional equity analysts practice valuation, globally and in the Americas, Asia Pacific, and EMEA regions. Our survey instrument is broader and more structured than those used in prior studies, and we have far more respondents as well as more information about them than in any prior study. One conclusion is that choices in valuation methods are more sophisticated and more clearly justifiable economically than those reported in many earlier surveys. In particular, the concerns of Block (1999), Bing (1971), and Dukes et al. (2006) regarding a discrepancy between valuation theory and practice are not borne out. This finding could reflect the fact the advantages of our survey instrument. It might also reflect characteristics of the sample. The current survey was sent only to CFA Institute members who indicated that equity analysis was part of their job, and members who were not currently engaged in valuing and recommending individual equities were eliminated. Casual investors, retired investors, and those who may still be in the business but are not directly engaged in equity analysis were eliminated. If prior surveys could not enforce such a standard, it is likely that their results would be affected by the composition of their sample.

Given its design and respondent sample, this survey is important as a snapshot of professional equity valuation practice at the beginning of the 21st century. We hope the information shared in this report may be useful to investment practitioners, educators, and others.

References

- Arnold, John, and Peter Moizer, "A Survey of the Methods Used by UK Investment Analysts to Appraise Investments in Ordinary Shares," *Accounting and Business Research*, Volume 14, Issue 55, Summer 1984, pp. 195-207.
- Bancel, Franck, and Usha R. Mittoo, "The Gap between the Theory and Practice of Corporate Valuation: Survey of European Experts," *Journal of Applied Corporate Finance*, Fall 2014, Volume 26, Issue 4, pp. 106-117.
- Bing, Ralph A., "Survey of Practitioners' Stock Evaluation Methods," *Financial Analysts Journal*, May/June 1971, Volume 27, Number 3, pp. 55-60.
- Block, Stanley R. "A Study of Financial Analysts: Practice and Theory," *Financial Analysts Journal*, Volume 55, Number 4, July/August 1999, pp. 86-95.
- Bradshaw, Mark T. "The Use of Target Prices to Justify Sell-Side Analysts' Stock Recommendations," *Accounting Horizons*, Volume 16, Number 1, March 2002, pp. 27-41.
- Brav, Alon, John R. Graham, Campbell R. Harvey, and Roni Michaely, "Payout Policy in the 21st Century," *Journal of Financial Economics*, September 2005, Volume 77, Issue 3, pp. 483-527.
- Bricker, Robert, Gary Previts, Thomas Robinson and Stephen Young, "Financial Analyst Assessment of Company Earnings Quality," *Journal of Accounting, Auditing and Finance*, Volume 10, Number 3, Summer 1995, pp. 541-554.
- Brown, Lawrence D., Andrew C. Call, Michael B. Clement, and Nathan Y. Sharp, "Inside the 'Black Box' of Sell-Side Financial Analysts," *Journal of Accounting Research*, March 2015, Volume 53, Issue 1, pp. 1-47, and "Online Appendix," 50 pages, that can be downloaded at <http://research.chicagobooth.edu/arc/journal-of-accounting-research/online-supplements>.
- Demirakos, Efthimios G., Norman C. Strong, and Martin Walker, "What Valuation Models Do Analysts Use?" *Accounting Horizons*, Vol. 18, No. 4, December 2004, pp. 221-240.
- Dichev, Ilia D., John R. Graham, Campbell R. Harvey, and Shivaram Rajgopal, "Earnings Quality: Evidence from the Field," *Journal of Accounting and Economics*, Volume 15, Issues 2-3, December 2013, pp. 1-33.
- Dukes, William P., Zhuoming "Joe" Peng, and Philip C. English II, "How Do Practitioners Value Common Stock?" *Journal of Investing*, Vol. 15, No. 3, Fall 2006, pp. 90-104.
- Graham, Benjamin and David L. Dodd. *Security Analysis*. McGraw-Hill Professional Publishing, 1934.

Graham, John R., and Campbell R. Harvey, "The theory and practice of corporate finance: Evidence from the field," *Journal of Financial Economics*, May 2001, Volume 50, Issues 2-3, pp. 187-243.

Graham, John R., and Campbell R. Harvey, "How Do CFOs Make Capital Budgeting and Capital Structure Decisions?" *Journal of Applied Corporate Finance*, Spring 2002, Volume 15, Issue 1, pp. 8-23.

Imam, Shahed, Richard Barker, and Colin Clubb, "The Use of Valuation Models by U.K. Investment Analysts," *European Accounting Review*, 2008, Volume 17, Number 3, pp. 503-534.

Miller, Merton H. and Franco Modigliani. "Dividend Policy, Growth, and the Valuation of Shares." *Journal of Business*, 1961, Vol. 34, No. 4, pp. 411-433.

Moizer, Peter and John Arnold, "Share Appraisal by Investment Analysts – Portfolio vs. Non-Portfolio Managers," *Accounting and Business Research*, Volume 14, Number 56, August 1984, pp. 341-348.

Pike, Richard, Johannes Meerjanssen, and Leslie Chadwick, "The Appraisal of Ordinary Shares by Investment Analysts in the UK and Germany," *Accounting and Business Research*, Volume 23, Number 92, August 1993, pp. 489-499.

Pinto, Jerald E., Elaine Henry, Thomas R. Robinson, and John D. Stowe. *Equity Asset Valuation* (Wiley, 2010)

Previts, Gary J., Robert J. Bricker, Thomas R. Robinson, and Stephen J. Young, "A Content Analysis of Sell-Side Financial Analyst Company Reports," *Accounting Horizons*, Volume 8, Number 2, June 1994, pp. 55-70.

Previts, Gary J. and Thomas R. Robinson, "The Content of Equity Analysts' Buy and Non-Buy Reports: Disclosure Policy and Information about Expectations," *The Journal of Financial Statement Analysis*, Fall 1996, Volume 2, Number 1, pp. 41-48.

Rogers, Rodney K. and Julia Grant, "Content Analysis of Information Cited in Reports of Sell-Side Financial Analysts," *The Journal of Financial Statement Analysis*, Fall 1997, Volume 3, Number 1, pp. 17-30.

Stowe, John D., Thomas R. Robinson, Jerald E. Pinto, and Dennis W. McLeavey, *Analysis of Equity Investments: Valuation*, CFA Institute, 2002, republished as *Equity Asset Valuation* (Wiley, 2007).