Research Study

Thoughts on the Regulation of Investment Analysts in Canada

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Table of Contents

1. Executive Summary

This report reviews the empirical evidence on analyst research, focusing on the problems associated with analyst research and various "cues" related to analyst accuracy. Underlying the problem of biased and flawed analyst research is a conflicts of interest problem. Many of the conflicts facing analysts, however, arise out of a need to obtain financing for analysts (who otherwise would find it difficult to sell their research due to the public goods nature of information). With this background, the report makes several recommendations on how analyst research may be improved.

Key to any regulatory reform effort is an appreciation that reforms may not work out as intended. While reforms that truly improve on investor welfare will have the effect of reducing the cost of capital for firms and improving the competitiveness of the Canadian securities markets, reforms that fail to improve investor welfare will have the opposite impact. The report therefore suggests (**Recommendation #1**) that regulators take an incremental approach to reforms, implementing limited additional disclosure (such as a relative ranking based on past analyst accuracy) and limited subsidies for research, to start.

Disclosure-based reforms may focus on publicly traded companies and analyst research firms. Increased company-based disclosure (**Recommendation #2**) reduces the importance of analyst research and also helps subsidize analysts engaged in broader research (for example, examining outside sources of information that may shed light on the valuation of a particular company). Increased disclosure about analysts (**Recommendation #3**) may assist investors (particularly individual investors) to avoid poorly performing analysts. The report draws on the empirical literature in suggesting that regulators focus on simple, relative ranking-based disclosure of analyst past performance that is less prone to manipulation on the part of analysts, such as prior accuracy in earnings-per-share forecasts. Such a relative ranking, if displayed prominently on the cover of an analyst report, will both provide easily digestible information to investors while spurring competition among analysts to improve quality. Lastly, should regulators decide to pursue more intrusive regulatory actions, such as prohibiting certain conflict of interest-relationships between analysts and investment bankers, the report suggests that regulators explicitly focus on financing problems facing analysts (**Recommendation #4**). The report recommends that regulators may wish to provide subsidies for analyst research, using objective metrics (such as past analyst earnings-per-share forecast accuracy) to allocate subsidies and focusing resources on smaller companies.

2. Summary of Recommendations

Recommendation #1: Presumption toward less intrusive regulatory options when possible.

Recommendation #2: Increase the scope of mandatory disclosure from covered firms as a means of reducing the "information gap" to which analysts now supply needed information to the markets.

Recommendation #3: Require analysts to disclose simple, standardized, and relative comparison (against other analysts) information relating to "cues" on analyst accuracy.

Recommendation #4: Regulations aimed at prohibiting conflicts of interest should be accompanied with alternative means to subsidize sell-side analyst research.

3. Introduction

Investors face a range of choices in deciding where to place their investment money. Most investors seek to obtain as high a return as possible, taking into account the risk of the investment. Investors that are relatively more risk-averse will accept a lower return to obtain a reduced variance of investment outcomes. Less risk-averse investors, in contrast, will accept greater risk to obtain a higher expected return. How do actual investors make such trade offs? In a perfect world, each investor would have full information on the risks and expected returns for all possible investment alternatives, and the time and expertise to assess this information. The world is unfortunately not so perfect. Investors vary in their ability to collect and assess information. Not all information is publicly available. Moreover, some investors have greater access to certain information than other investors (whether due to privileged relationships or due to a greater willingness to expend resources in collecting information).

For companies whose stock trades in a liquid secondary market, active trading among investors (among other mechanisms) will work, at least partially, to incorporate publicly available information into the stock price. Unsophisticated investors, at least for companies whose stock trades in relatively efficient markets, may look to the stock price to incorporate publicly available information rather than conduct any of their own research. Not all information, however, is publicly available and not all companies trade in an efficient market. Rather than engage in extensive research, investors may turn to at least two sources of information about a particular securities investment. First, companies themselves may supply information, either voluntarily or through a mandatory disclosure system (such as in the U.S. and in Canada). Most public companies also provide extensive voluntary guidance on earnings in between periodic disclosure at quarterly intervals. Second, sell-side and independent analysts provide investors with an important source of information that analyzes public companies, predicts key performance measures including future earnings-per-share outcomes, and provides summary recommendation levels (e.g., buy, hold, or sell).

The provision of research, particularly through sell-side and independent analysts, is not free of problems. Recent scandals in the United States involving the truthfulness of analyst-supplied research - at Merrill Lynch, among other large Wall Street firms, as uncovered by New York State Attorney General Eliot Spitzer - highlight the risks facing investors that rely uncritically on sell-side research.[1] In Part 4, this Report provides an overview of the market failures that affect sell-side and independent analyst research

[1] See Cheryl Winokur Munk, Merrill Changes Stock-Research Rating Process, Wall St. J., June 10, 2002, at C16.

and lead potentially to conflicts of interest and bias in research. Part 5 canvasses the existing empirical research on analyst research, identifying key levers that regulators may rely upon in seeking to reform the provision of analyst research. Part 6 discusses possible regulatory interventions that may reduce the severity of the market failures affecting analysts.

4. Market Failure and Analysts

Despite the potentially important role analysts play in providing information to the market, sell-side and independent analysts face several market failures that may diminish the value of their research. This Part canvases these market failures, including: the public-good nature of analyst research and conflicts of interest facing analysts.

i. Public Good Nature of Information

Consider the value of a piece of new information. An analyst may determine that Microsoft is about to introduce a new product that will dramatically increase Microsoft's medium-term earnings outlook. How can the analyst profit from this information? One method would be for the analyst to trade on the information. Buy-side analysts do exactly this (indirectly through their employers). Analysts at Fidelity and other funds, for example, engage in research and, rather than disseminating this research, profit through trades based on the research.

If an analyst does not profit through trades, such as sell-side and independent analysts, how else can an analyst obtain a return from information? One answer is that an analyst may profit through direct sales of its information to the investing public. The trading value of information, however, drops as the number of people that learn of the information increases. Information about Microsoft's new product will generate large trading profits only if a few investors know of the information. Analysts that attempt to restrict their sales to only a small number of investors face another problem: free-riding. Because information is costless to retransmit, investors that initially purchase information may simply retransmit the information to others. Policing such retransmission is costly and difficult for an analyst.

Due to the problems with the direct sale of information, few analysts stay independent. Most broadly-disseminated analyst research is provided by sell-side analysts associated with brokerage firms. Sell-side analysts within brokerage firms are typically cost centers. They do not earn any revenue directly, but instead provide support for other profit-generating centres within the brokerage firm. Traditionally, sell-side analysts complemented the brokerage business and were subsidized through brokerage commissions. Prior to the deregulation of brokerage commissions in 1975 in the United States, and 1983 in Canada, brokerage commissions were substantial. However, after deregulation, brokerage commissions started to drop (to under $10 per trade today for certain on-line brokerage firms). In search of a source of financing, analyst research within the Wall Street brokerage firms turned increasingly to investment banking

revenues. Nothing is free, however. The investment banking solution to the financing problem facing analysts led to a conflict of interest problem.

ii. Conflict of Interest

Anecdotal evidence exists on the impact of investment banking on the accuracy of sell-side analyst research. Well before Eliot Spitzer's investigation of Merrill Lynch and the rest of Wall Street, news sources reported on bias present in some analyst research.[2]

Eliot Spitzer's investigation uncovered numerous e-mails indicating a discrepancy between how analysts at Merrill Lynch viewed recommended companies and the recommendation made to the public about these companies.[3] The e-mails also indicated the importance of investment banking revenues in determining how Merrill Lynch analysts crafted their reports and recommendations.[4] Prior to the Eliot Spitzer investigation, analysts would often accompany investment bankers on sales pitches to prospective public offering issuers (a practice known as a "bake-off"). As discussed below, not surprisingly, the empirical evidence shows evidence of bias in analyst research, particularly for analysts associated with lead underwriters in a public offering.

Importantly, sell-side analysts may face other conflicts in addition to those due to investment banking. First, many brokerage firms take ownership positions in the companies they recommend. A brokerage firm with a large ownership position in a particular company will have an incentive to delay (or avoid) reducing the recommendation on the company due to the negative impact on the brokerage's firm's own position.[5]

Second, analysts may value developing close ties with management. Particularly before the U.S. SEC promulgated Regulation FD in 2000, many analysts in the U.S. enjoyed selective disclosures from management. Analysts that desired to maintain close ties with management had an incentive to bias their recommendations and forecasts upwards for such companies. Anecdotal evidence exists that companies

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[2] See Benjamin Mark Cole, The Pied Pipers of Wall Street: How Analysts Sell You Down The River 50 (Bloomberg Press 2001); The Rohrbach Memo: "No Negative Comments," Wall St. J., July 14, 1992, at A6.
[3] See Petitioner's Affidavit in Support of Application for an Order Pursuant to General Business Law Section 354, at 9, Spitzer, No. 02-401522.
[4] See id.
[5] See Jill E. Fisch and Hillary A. Sale, The Securities Analyst as Agent: Rethinking the Regulation of Analysts, 88 Iowa L. Rev. 1035, 1043-45 (2003).

affirmatively penalized analysts who issued negative recommendations by cutting off the analysts' access to such selective disclosures of corporate inside information.[6]

Third, analysts face conflicts among different investor clients of the brokerage firm. Large institutional investors with significant positions in a particular company may not wish an analyst to provide a negative sell-recommendation for the company until the institutional investors have had a chance to unwind their positions. Particularly after a public offering, initial institutional investor purchasers of the shares may pressure analysts to maintain high ratings until after they sell out their allotted shares.[7]

iii. Synthesis

Despite the presence of conflicts of interest, simply prohibiting such conflicts outright may not improve investor welfare. Any attempt to craft a regulatory solution to the problem of wayward analysts must take into account the relationship between the financing and conflict of interest problems. Of course, some analysts are able to survive through the sale of research directly to investors. Gimme Credit, for example, provides bond research to subscribers for a fee.[8] The financing problems nonetheless limit the breadth and scope of such research. While some independent analysts may survive even without subsidies, the financing problem results in less research than investors as a group would find beneficial.[9] Following the recent reforms in the U.S. limiting conflicts of interest, several Wall Street brokerage firms took steps to reduce the amount of sell-side research they provided to the marketplace.[10]

Consider a structural solution to the conflict of interest problem that focuses on regulating the relationship between sell-side analysts and other parts of a brokerage business (including in particular investment banking). On the one hand, less intrusive prohibitions, such as simply limiting the ability of the investment banking business to have direct input into how analysts are compensated, may not reduce the conflict appreciably. Such "Chinese walls" may simply make the conflict less observable to outsiders.

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[6] See id. at 1054-56.
[7] See id. at 1050. An additional conflict may exist from the desire on the part of analysts to maximize brokerage commissions. To the extent investors tend to trade more on positive information, analysts will systematically have a bias to put forth more positive recommendations. See id. at 1045.
[8] See http://daily.gimmecredit.com/gcdaily/request (last visited on March 22, 2006).
[9] Put another way, research is more valuable the more uninformed the information environment. Thus, even with free-riding on information research, the level of independently supplied research paid through direct subscription fees will not drop to zero. Nonetheless, the fact that some research will persist does not mean that the level of research is as high as the group of investors would want if they could coordinate in paying for more research.
[10] Morgan Stanley, for example, announced its intention to cut 50 to 60 stock-research jobs in the U.S. and Europe in early 2006. See Randall Smith and Kate Linebaugh, Morgan Stanley Plans Reduction in Research Jobs, Wall St. J., Mar. 22, 2006 at C1.

So long as analyst compensation is still tied generally to the overall fortunes of a brokerage firm, analysts (and ultimately the CEO and board of the brokerage firm) may arguably have a financial incentive to bolster the investment banking revenues of the firm.

One could imagine more drastic structural solutions, such as forcing brokerage firms to either divest themselves of analyst research or compensate analysts completely separately from the fortunes of the rest of the brokerage firm (such as through a fixed and guaranteed salary paid to analysts for a long-term contract). Severing the compensation of analysts completely from investment banking, however, will result in far less funding for analyst research within a brokerage firm. Brokerage firms may rationally respond simply with a reduction in the scope of their supplied research. To the extent that analyst research is not valuable for investors, eliminating such research imposes no cost on the securities markets or investors. However, analyst research, as discussed in the next Part, is not valueless. More perniciously, such an absence of information is unlikely to continue. The level of information on a particular company is endogenous. Where investors are unable to satisfy their desire for information from sell-side analysts, they will turn to other sources of information. Some may seek to place their money through intermediaries, such as mutual funds, thereby paying for the research of the buy-side analysts associated with the fund. Others may turn to the internet, including message boards and chat rooms. Too-drastic measures imposed on sell-side analyst research may simply substitute flawed analyst reports with even more flawed (and misleading) information obtained from anonymous sources on the internet.[11]

Despite the presence of structural solutions to some aspects of the conflict problem, the fact remains that sell-side analysts, if forced to provide research without the subsidies provided through conflict-plagued relationships, would provide far less research. Solutions to the conflict of interest problem must therefore also take into account the financing problem. Before assessing these regulatory alternatives, this Report in the next Part examines the existing empirical evidence on analyst research. Such evidence sheds light on more nuanced regulatory approaches that regulators in Canada may seek to take in addressing the twin financing and conflicts of interest problems facing analysts.

[11] See Jill E. Fisch, Regulatory Responses to Investor Irrationality: The Case of the Research Analyst, __ Lewis and Clark L. Rev. __ (2006) (noting that investor willingness to look to web sites, chat rooms, and other internet sources has led to "a dramatic growth in internet securities fraud.").

5. Empirical Evidence

This Part first assesses empirical evidence on the value of analyst research and problems with analyst research (see glossary at the end of the report for definitions of key statistical terms). The Part then discusses evidence on objective factors, or "cues", that correlate with more accurate analyst research. How investors respond to analyst research turns crucially on the sophistication of the investors. Section iv. discusses the evidence on the differential response of sophisticated and unsophisticated investors to research. Lastly, the United States promulgated Regulation FD in 2000, prohibiting selective disclosure and thereby reducing the ability of managers to put pressure on analysts to bias their research. Section v. discusses the evidence of how Regulation FD affected the analyst research market in the United States.[12] Most of the existing empirical studies focus on analysts in the United States. Given the similarity of institutions and accounting information in Canada and the United States (as well as the same underlying financing and conflict of interest problems), I assume that the insights from the empirical studies apply to the Canadian situation.

i. The Value of Analyst Research

Numerous studies exist demonstrating a significant market reaction to the announcement of analyst research. The studies also indicate that the market response is relatively stronger for negative analyst research compared with positive research.

Diefenbach (1972) provides an early study of the value of analyst research in the 1960s.[13] He examines the stock price performance for recommended firms for the 52-week period commencing with the week in which the recommendation is received.[14] Diefenbach compares the returns against the performance for the S&P 425 index for the comparable time period. Diefenbach reports that the mean differential between the average return of analyst buy-recommended stocks and the S&P 425 index is only +2.7% (he provides

[12] The empirical evidence relating to analyst research is vast. I survey only those articles that directly relate to the possibility of regulatory reform of analyst research here in this Report. For a broader survey of the existing research on analysts see Ramnath, Sundaresh, Rock, Steve Karl and Shane, Philip B., "A Review of Research Related to Financial Analysts' Forecasts and Stock Recommendations" (January 11, 2006). Available at SSRN: http://ssrn.com/abstract=848248.

[13] See R. E. Diefenbach, How Good Is Institutional Brokerage Research?, Financial Analysts Journal (Jan-Feb 1972) p. 54. Diefenbach examines a dataset of specific analyst buy and sell-recommendations which he characterizes as "verbal or in writing, solicited or unsolicited, received during a period of 80 weeks beginning with the week ended November 17, 1967 and extending through the week ended May 23, 1969". Id. at 54.

[14] See id. at 54.

no tests of statistical significance).[15] In contrast, the mean differential between the average return of analyst sell-recommended stocks and the S&P 425 index is -11.2% (again with no test of statistical significance).[16] Diefenbach observes that "analysts have been more selective in making sell-recommendations".[17]

In a later study, Womack (1996) studies the impact of analyst recommendation changes on market price movements and trading volume.[18] If the market believes that analyst recommendations are worthless, we should see no market movement related to changes in these recommendations. To test the market's view on analyst recommendations, Womack looks at recommendations from the 14 highest-ranking brokerage firms obtained from *Institutional Investor* for the period between 1989 to 1991.[19] Womack examines only recommendation changes that add or remove a company from the best analyst rating and changes that add or remove a company from the worst analyst rating category.[20] To test the market's reaction to a recommendation change, Womack performs an event study using a 3-day window from -1 to +1 day period, centered on the date of the recommendation change.[21] He reports that a move to a buy recommendation results in a size-adjusted return of +3.0%.[22] A change to a sell recommendation in comparison receives a size-adjusted return of -4.7%.[23] Womack also looks at the abnormal trading volume during the 3-day event window.[24] He reports that a move to a buy recommendation results in 190 percent of normal trading volume while moves to sell-recommendations results in 300 percent of normal

[15] See id. at 56.
[16] See id. at 57.
[17] Id. at 57. Groth, Lewellen, Schlarbaum, and Lease (GLSL) (1979) also provide an early study of the market reaction to analyst recommendations. See John C. Groth, Wilbur G. Lewellen, Gary G. Schlarbaum, and Ronald C. Lease, An Analysis of Brokerage House Securities Recommendation, Financial Analyst Journal (January-Feb 1979) p. 32. They obtained all the analyst recommendations from an unnamed brokerage house from 1964 to 1970, for a total of 6014 recommendations. See id. at 34. GLSL report that buy-recommendations are preceded by six months of abnormally positive adjusted returns, culminating in a large positive abnormal return (+1.79%) in the month of the analyst recommendation. See id. at 35. To calculate adjusted monthly returns, GLSL use the Capital Asset Pricing Model to compute expected returns. See id. at 34-35.
[18] See Kent L. Womack, Do Brokerage Analysts' Recommendations Have Investment Value?, 51 J. Fin. 137-67 (1996).
[19] See id. at 140- 41. Womack focuses solely on US firms (for which CRSP stock return data is available) and obtains a dataset of 1473 recommendation changes for 822 different companies. See id.
[20] See id.
[21] Womack reports that the majority of his rating changes do not coincide with release of new quarterly earnings release or other private information release. See id. at 145-46.
[22] Womack calculates size-adjusted returns based on CRSP market capitalization decile returns. See id. at 147-49. Womack also looked at raw returns, industry-adjusted returns, and Fama-French excess returns (using calendar months as the measurement period). See id.
[23] See id. at 148-49. Both 3-day event window size-adjusted returns are statistically significant.
[24] Abnormal volume is defined as the difference between the daily trading volume for a particular company's stock in the 3 day event window minus the average daily volume for the -3 month to +3 month period (excluding the 3 day event window) for the same company. See id. at 151.

trading volume.[25] Womack's study provides evidence that the market views analyst recommendation changes as important information, particularly where the change is a negative recommendation revision.

Asquith, Mikhail, Au (2004) (AMA) examine analyst ratings put forth by analysts that were members of the *Institutional Investor* All-American Analyst Team from 1997-1999.[26] To determine the strength of an analyst's recommendation, AMA read each analyst report and ranked the report based on 28 separate categories of possible recommendations (e.g., revenues, earnings growth, new product introductions, etc), giving a 1 for a positive recommendation and a -1 for a negative one. AMA then totalled the 28 categories to generate an overall measure for the strength of the recommendation. They report that upgrades received a mean score of 2.8; re-iterations (involving repeats of prior recommendations) received a 1.7; and downgrades received a -0.2. The small negative score for downgrades is consistent with analysts seeking to downplay downgrades in an effort not to create ill-will with the subject firm. AMA test whether information in analysts' reports is more important for upgrades or downgrades. They report that the market reacts more strongly to information related to downgrades.[27]

Given the information value contained in analyst recommendations, the question exists whether an investor can develop a profitable trading strategy to exploit the information contained in analyst recommendations after taking into account the transaction costs. Barber, Lehavy, McNichols, and Trueman (BLMT) (2001) examine analyst recommendations from 1985-1996, obtained from Zacks Investment Research.[28] For each firm that receives an analyst recommendation, BLMT calculate the consensus analyst recommendation and break the consensus recommendation into one of five categories, depending on the favorability of the recommendation. They then create five value-weighted portfolios based on a sorting of firms into the five categories of consensus recommendations.[29] Without taking into account transaction costs, BLMT report that investing in a portfolio based on the most favourable consensus estimates results in significantly higher annual geometric returns (4.13%) compared with a portfolio of least favourable consensus estimates (-4.91%) after controlling for market risk, size, and other factors.[30] Traders may potentially profit from this differential (going long on the high recommendation

[25] See id. at 151.
[26] See Paul Asquith, Michael B. Mikhail, Andrea S. Au, Information Content of Equity Analyst Reports (SSRN) (2004) (available at http://papers.ssrn.com/sol3/papers.cfm?abstract_id=501522).
[27] See id. ("Investors appear most interested in an analyst's supporting documentation and affiliation in the case of a downgrade.").
[28] See Brad Barber, Reuven Lehavy, Maureen McNichols, Brett Trueman, Can Investors Profit from the Prophets? Security Analyst Recommendations and Stock Returns, 56 J. Fin. 531 (2001). Their dataset consists of dataset of 361,620 recommendations involving 4340 analysts and 269 brokerage houses. See id. at 534.
[29] See id. at 541.
[30] See id. at 533-34.

portfolio and shorting the stock of the least favourable consensus recommendation portfolio). They report however that delay in responding to changes in the consensus estimate reduces the return for investors, particularly for the high-recommendation portfolio.[31] BLMT also report that once transaction costs - including the bid-ask spread, brokerage commissions, among others - is taken into account, the returns from trading based on analyst recommendations is not statistically different from zero.[32]

Jegadeesh, Kim, Krische, and Lee (JKKL) (2004) examine the relationship between recommendation changes and other publicly available information that may predict future stock price performance.[33] They start with the observation that other empirical studies have demonstrated a correlation between 12 publicly observable characteristics and future stock returns.[34] JKKL then collect a sample of firms from 1985 to 1998 that received an analyst recommendation (as obtained from Zacks Investment Research).[35] For each firm, they calculate the change in the consensus recommendation level from the prior quarter consensus recommendation level.[36] JKKL provide a multivariate analysis with future returns as the dependent variable.[37] As explanatory variables, JKKL include (in a variety of permutations) the change in the consensus recommendation level as well as the 12 publicly available factors that correlate with future returns. JKKL report a significant correlation between the degree of change in consensus recommendation level and future return performance even after controlling for the 12 publicly-available factors they identify.[38] They conclude that "One interpretation of our finding is that recommendation changes capture qualitative aspects of a firm's operations (e.g., managerial abilities, strategic alliances, intangible assets, or other growth opportunities) that do not appear in the quantitative signals we examine."[39]

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[31] See id. at 535.
[32] See id. at 536. Copeland and Mayers (1982) provide similar results based on a trading strategy involving the highest and lowest recommended stocks by Value Line from 1965 to 1978. See Thomas E. Copeland and David Mayers, The Value Line Enigma (1965-1978), 10 Journal of Financial Economics 289-321 (1982). They also note that once transaction costs are taken into account, it is unclear whether investors would earn a positive return following such a trading strategy. See Copeland and Mayers, supra, at 319.
[33] See Narasimhan Jegadeesh, Joonhyuk Kim, Susan D. Krische, and Charles M. C. Lee, Analyzing the Analysts: When Do Recommendations Add Value?, 59 Journal of Finance 1083 (2004).
[34] See id. at 1087-89. They identify 12 such factors including factors related to price and earnings momentum and contrarian factors (e.g., glamour stocks with high turnover in the stock market tend to perform poorly into the future). See id.
[35] See id. at 1089.
[36] See id. at 1090.
[37] Future returns are defined as the six-month market actual adjusted returns after the month of the recommendation. See id. at 1106.
[38] See id. at 1110.
[39] Id. at 1118. JKKL, nonetheless, note that they cannot rule out the alternate hypothesis that the market may simply overreact to analyst recommendation changes (resulting in price "drift") and that the market reaction therefore does not reflect any new information brought to the market by analysts. See id. at 1118. JKKL also report however that

Hennessey (1995) provides a test of the impact of analyst revision of earnings forecasts on the stock market price for Canadian companies from 1979 to 1988.[40] Hennessey's sample consists of companies with analyst earnings forecasts reported on the Canadian I/B/E/S database.[41] Hennessey documents a prolonged (up to seven months in some instances) positive and significant excess return in the market following a positive revision.[42] Hennessey reports a 18.2% mean excess return for the 12-month period after a positive revision.[43] In contrast, Hennessey reports a more rapid response to negative forecast revisions (most of this response takes place in the one-year period prior to the revision as well as the first month after the revision).[44]

Summary of Evidence

The market finds analyst research informative. Analyst changes to a buy-recommendation results in a significant, abnormal stock price reaction. Changes to a sell-recommendation result in an even greater abnormal stock price reaction. Trading strategies based on analyst recommendations can generate abnormal returns (but only before taking into account transaction costs). The studies also indicate that analyst-supplied research provides information in addition to the information contained in publicly-available quantitative characteristics relating to a covered firm. While most of the evidence is from the U.S., Hennessey (1995) provides similar evidence for Canadian firms.

ii. Problems with Analyst Research

The empirical literature on analysts indicates at least four problems that may affect analyst research. This section canvasses the empirical evidence on these problems.

a) Coverage Skewed Toward Larger Companies

Studies indicate that analyst coverage is skewed toward larger market-capitalization companies. Womack (1996) notes that 99% of the recommendations in his dataset are for companies in the 8 largest CRSP

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the consensus analyst recommendation *level* is not significantly correlated with future performance once the 12 publicly available factors are also included in the regression model. See id. at 1106-09.

[40] See Sean M. Hennessey, Earnings Forecast Revisions and Security Returns: Canadian Evidence, 25 Accounting and Business Research 240 (1995).

[41] See id. at 241.

[42] Excess returns are calculated using a market model. See id. at 243.

[43] See id. at 251.

[44] See id. at 245-46.

market-capitalization deciles, indicating that analysts skew heavily toward larger companies.[45] Barber, Lehavy, McNichols, and Trueman (BLMT) (2001) report in their study of analyst recommendations from 1985 to 1996 that only 59.8% of all firms in NASDAQ, NYSE, and AMEX have at least one analyst recommendation in the database (covering 95.6% of the total market capitalization).[46] Michaely and Womack (1999) examine the analyst recommendations following an initial public offering.[47] Out of a sample of 391 equity IPOs with an offering amount of at least US$5 million from 1990 to 1991, they report that 191 IPO firms did not have any analyst recommendation in the first year after the IPO. These firms were the smaller issuers in terms of market capitalization.[48]

Any reform measures that increase the costs for sell-side analysts (such as prohibiting certain conflicts of interest that otherwise would generate subsidies for research) will exacerbate the lack of coverage for smaller companies.

b) Buy-Recommendations Outnumber Sell-Recommendations

The empirical studies indicate that the absolute number of buy-recommendations outnumber sell-recommendations. The ratio of buy- to sell-recommendations in Womack (1996)'s sample is 7 to 1, supporting the view that analysts are more hesitant to put forth a sell- compared with buy-recommendation.[49] Similarly, Barber, Lehavy, McNichols, and Trueman (BLMT) (2001) report that of the recommendations in their dataset, 47.1% are buy and 5.7% are sell-recommendations.[50] In Asquith, Mikhail, Au's (2004) study of analysts that were a member of the Institutional Investor All-American

[45] See Kent L. Womack, Do Brokerage Analysts' Recommendations Have Investment Value?, 51 J. Fin. 142-143 (1996).
[46] See Brad Barber, Reuven Lehavy, Maureen McNichols, Brett Trueman, Can Investors Profit from the Prophets? Security Analyst Recommendations and Stock Returns, 56 J. Fin. 531, 538 (2001).
[47] See Roni Michaely and Kent L. Womack, Conflict of Interest and the Credibility of Underwriter Analyst Recommendations, 12 Rev. of Fin. Studies 656-686 (1999)
[48] See id. at 664.
[49] See Kent L. Womack, Do Brokerage Analysts' Recommendations Have Investment Value?, 51 J. Fin. 142, 143 (1996). In an early study of analyst recommendations from 1964-70, Groth, Lewellen, Schlarbaum, and Lease (GLSL) (1979) report that 77 percent of the recommendations they examine are in one of the top 3 out of 5 possible recommendation categories and that only 13 percent provided weak-sell or sell-recommendations (with another 10 percent as unclassifiable). See John C. Groth, Wilbur G. Lewellen, Gary G. Schlarbaum, and Ronald C. Lease, An Analysis of Brokerage House Securities Recommendation, Financial Analyst Journal (January-Feb 1979) p. 34.
[50] See Brad Barber, Reuven Lehavy, Maureen McNichols, Brett Trueman, Can Investors Profit from the Prophets? Security Analyst Recommendations and Stock Returns, 56 J. Fin. 531, 538 (2001).

Analyst Team from 1997-1999,[51] AMA report that only 0.5% of the recommendations in their sample are either sell- or strong-sell recommendations (the bottom two categories of recommendations).[52]

The fact that analyst reports are skewed toward positive recommendations is consistent either with (a) analyst bias in favour of companies or (b) a self-selection effect. Under the self-selection hypothesis, analysts are not biased but rather choose to provide unbiased research only for companies for which the analysts have formed a positive opinion. McNichols and O'Brien (1997) provide evidence to distinguish between these two hypotheses.[53] McNichols and O'Brien's dataset consists of analyst recommendations drawn from Research Holdings, Ltd. and runs from July 1987 to December 1994.[54] McNichols and O'Brien compare analyst recommendations for stocks that are newly added to the set of recommended stocks against other recommended stocks to gauge the relative level of optimism in the recommendations. They predict that if analysts are generally biased, the bias will be the same across all recommended stocks. In contrast, if analysts selectively add only stocks that they are truly optimistic about, then the level of recommendation for newly added stocks will be greater than the recommendations for other recommended stocks. McNichols and O'Brien report that the level of analyst recommendation is relatively more skewed towards one on a five point scale for newly added stocks compared with other covered stocks (that were originally covered by analysts at the start of the dataset time period), supporting the self-selection hypothesis.[55] On the other hand, McNichols and O'Brien also report that the analysts in their sample use sell ratings only sparingly, consisting of only 9.5% of analyst ratings.[56] They also report that the median time between recommendations for upgrades is lower than for downgrades, supporting the view that analysts delay downgrades.[57] One implication of the McNichols and O'Brien study is that the information environment for firms with poor prospects is much worse - due lower overall analyst coverage - than for firms with brighter long-term prospects.

[51] See Paul Asquith, Michael B. Mikhail, Andrea S. Au, Information Content of Equity Analyst Reports (SSRN) (2004) (available at http://papers.ssrn.com/sol3/papers.cfm?abstract_id=501522).
[52] The majority (65.5%) of their recommendations are for reiterations of prior recommendations. A majority (52.6%) also have some form of underwriting relationship with the subject firm of the report. A majority of the investment banks (84.2%) also hold stock ownership in the subject firm.
[53] Maureen McNichols and Patricia C. O'Brien, Self-Selection and Analyst Coverage, 35 Journal of Accounting Research 167-199 (1997).
[54] McNichols and O'Brien focus on analysts who "report on at least five companies and who are in the database for at least two years" among other criteria, giving 523 analysts. Id. at 179.
[55] See id. at 189.
[56] See id. at 183. Nonetheless, the sell ratings are distributed widely among covered stocks. The authors report that of the 3,774 stocks covered by analysts in their sample, 30.4% receive a sell rating (4 or 5) at least once. See id.
[57] See id. at 185.

Hennessey (1994) tests the accuracy of analyst forecast revisions for Canadian companies.[58] Hennessey examines whether analysts systematically revise their positive and negative forecasts. He takes a systematic pattern of revisions as indicative of bias in the initial forecast revision (e.g., systematic downward revisions for an initial positive forecast revision indicate that the initial positive forecast revision was overly optimistic). Hennessey's sample consists of 200 Canadian companies where I/B/E/S forecast data was available from 1979-89.[59] Hennessey reports that for small positive forecast revisions, analysts systematically revise the forecasts downwards (indicating initial over-optimism on the part of analysts). For large positive revisions, analysts systematically revise their forecasts upwards (indicating initial under-optimism on the part of analysts). For all types of negative forecast revisions, analysts systematically revise downwards (indicating initial over-optimism on the part of the analysts).[60] Hennessey writes: "This suggests that analysts underestimate the decline in earnings. In this sense, analysts' forecasts are biased upwards: they are optimistic."[61] On the other hand, Hennessey also provides evidence that the stock market does not react strongly to extreme negative forecast revisions, indicating that the market is not fooled by the analyst over-optimism.[62]

c) Biased Recommendations from Lead Underwriters

Michaely and Womack (1999) test whether conflicts of interest for brokerage firms working as lead underwriter for an initial public offering (IPO) issuer affect the credibility of the brokerage firms' analyst reports.[63] They focus on the end of the 25-day quiet period after an IPO when underwriter analysts (and other analysts) typically begin providing analyst reports on the issuer.[64] Michaely and Womack report that in the one-year period after the end of the quiet period, analysts associated with the lead underwriter issued 50% more buy-recommendations than other analysts. To assess the credibility of analysts, Michaely and Womack look to the stock market reaction to buy-recommendations. After controlling for size, closeness in time to an earnings announcement, and whether the analyst recommendation is the first recommendation post-IPO, they report that non-underwriter analyst recommendations result in a 2.8%

[58] See Sean M. Hennessey, Are Revisions of Security Analysts' Earnings Forecasts >Rational? Canadian Evidence, 3 Journal of International Accounting 205 (1994).
[59] See id. at 209.
[60] See id. at 215.
[61] Id. at 215.
[62] See id. at 216.
[63] See Roni Michaely and Kent L. Womack, Conflict of Interest and the Credibility of Underwriter Analyst Recommendations, 12 Rev. of Fin. Studies 656-686 (1999)
[64] See id. at 656. Their sample consists of 391 equity IPOs with an offering amount of at least $5 million from 1990-1991 identified from Investment Dealer's Digest. See id. at 660. They look only at initiations and changes to recommendations and obtain 360 recommendations for 200 IPO Firms during the first year after the IPO. See id. at 664.

greater size-adjusted excess return compared with underwriter analysts.[65] To see if the market's initial assessment of the (lower) value of the lead underwriter's analyst recommendation is correct, Michaely and Womack look at the long-run performance of firms that receive a buy-recommendation from a lead underwriter compared to firms that received a buy-recommendation from other analysts. They report that the mean excess 2-year return for lead underwriter-only buy-recommended firms was -18.1% compared with +45.5% for non-lead underwriter buy-recommended firms.[66]

Lin and McNichols (1998) examine the importance of analyst conflict of interests in the context of seasoned public offerings, using a dataset of equity offerings in the U.S. from 1989 to 1994.[67] Comparing affiliated and unaffiliated analysts, Lin and McNichols report that over the short-term, analysts associated with the lead or a co-underwriter provide similar earnings forecasts as unaffiliated analysts.[68] On the other hand, they report that analysts affiliated with the lead underwriter and co-underwriters provide systematically more optimistic overall recommendations than unaffiliated analysts (difference significant at the <1% confidence level).[69] In explaining this discrepancy, Lin and McNichols speculate that "it is likely that manipulation of a growth forecast or an investment recommendation is more difficult for investors to detect than manipulation of an earnings forecast."[70]

Krigman, Shaw, and Womack (2001) (KSW) examine the importance of analyst research in the decision of issuers to switch lead underwriters from the IPO to a subsequent seasoned equity offering (SEO).[71] Starting with IPOs that took place from 1993 to 1995, they examine a dataset of 578 firms that engaged in a SEO within three years after the IPO.[72] Almost one-third of their sample issuers make such a switch.[73]

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[65] The difference is significant at the 10% confidence level. See id. at 656.
[66] The difference is significant at the 1% confidence level. See id. at 674-76.
[67] See Hsiou-wei Lin, Maureen F. McNichols, Underwriting Relationships, Analysts' Earning Forecasts and Investment Recommendations, 25 Journal of Accounting and Economics 101, 110 (1998). They select offerings where they are able to obtain a matching pair of affiliated and unaffiliated analyst forecasts for current and subsequent year earnings-per-share (EPS), the five-year earnings growth rate (Growth), and the overall recommendation (coded from 1 to 5). See id.
[68] See id. at 113. Lin and McNichols also report that affiliated analysts provide more positive five-year earnings growth forecasts. The difference however is only weakly significant. See id. Lin and McNichols also report that no significant difference exists in how the stock market reacts exists between affiliated and unaffiliated analyst "buy" and "strong-buy" recommendations. See id. at 119-120. When they examine the long-term performance over the first-year after the analyst recommendation (or when the next recommendation comes out if earlier), they report that no difference exists in the long-term performance, suggesting that an investor that followed the advice of analysts associated with an underwriter would do no worse than if she followed the advice of unaffiliated analysts. See id. at 120-122.
[69] See id. at 113.
[70] Id. at 116.
[71] See Laurie Krigman, Wayne H. Shaw, and Kent L. Womack, Why do Firms Switch Underwriters?, 60 Journal of Financial Economics 245-284 (2001).
[72] See id. at 247.

Comparing issuers that switched with those that did not, KSW report that no significant difference exists in the level of underpricing, the degree of share placement with institutional investors, and the amount of market making activity.[74] Turning to analyst research, KSW report significant differences in the analyst research for issuers that switched, compared with issuers that did not switch the lead underwriter. The IPO lead underwriter for issuers that switched provided only 1.27 research reports on average in the six-month period before the SEO, compared with 3.11 reports on average for issuers that did not switch (difference significant at the <1% confidence level).[75] To measure the quality of the research, KSW look at the fraction of lead underwriters that employ an analyst listed as a member of the first, second, or third All-America Research Team in *Institutional Investor*'s annual rankings ("All-Star analyst").[76] They report that only 13% of the issuers that switched were covered by an All-Star analyst from the IPO lead underwriter compared with 25% of the non-switchers.[77] KSW also report that graduating to a higher-reputation lead underwriter is a significant factor in the decision to switch lead underwriters.[78]

d) Maintaining Access with Management

Francis and Philbrick (1993) hypothesize that even "independent" analysts not affiliated with an investment bank may bias their research in favour of management in order to preserve their access to non-public information from management.[79] They examine a set of 918 Value Line (VL) annual and first-quarter EPS forecasts obtained from 1987 to 1989.[80] Importantly, they note that VL analysts do not make stock recommendations.[81] Instead, VL stock-selection recommendations, known as "timeliness" ranks and ranging from 1 (best) to 5 (worst), are made by a separate VL group. Francis and Philbrick hypothesize that VL analysts will attempt to compensate for a low overall stock recommendation, in an

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[73] OF the 578 issuers, 28% made a switch. See id. at 252.
[74] See id. at 258-59.
[75] See id. at 261.
[76] See id. at 253.
[77] See id. at 263.
[78] See id. at 266. KSW confirm their results in using a multivariate probit model for the decision to switch lead underwriters, controlling for various factors including the log of the IPO expected proceeds. See id. at 264-65. They report that the quality of the analyst coverage (as proxied by the presence of an All-Star analyst) and the graduation to a higher reputation underwriter are significant in the multivariate probit model. See id. KSW also confirm their results through a broad based survey of CFOs at the switching issuers in the dataset. Not all of the issuers responded, leading to possible sample selection bias. KSW nonetheless note that the characteristics (offering proceeds, etc…) are similar between those that responded and those that did not. See id. at 268. Among other things, the survey responses strongly support the hypothesis that analyst research is an important driving force behind the decision of an issuer to switch lead underwriters for a seasoned equity offering. See id. at 268-74.
[79] See Jennifer Francis and Donna Philbrick, Analysts' Decisions as Products of a Multi-Task Environment, 31 Journal of Accounting Research 216 (1993).
[80] See id. at 220.
[81] See id. at 217.

effort to appease management, through a more optimistic forecast. They report that "[t]he average optimism for sell stocks is 12% of the EPS forecast ($0.23 per share) and is significantly greater (at the .07 level) than the average optimism for hold stocks (9% of the EPS forecast or $0.19 per share)."[82] This result is consistent with their hypothesis that VL analysts use overly optimistic EPS forecasts to compensate for lower stock recommendations not directly in their control in order to appease management.

Das, Levine, and Sivaramakrishnan (1998) (DLS) also examine the level of optimism among independent financial analysts for a set of December year-end firms for the years 1989 to 1993.[83] As with Francis and Philbrick (1993), DLS look at Value Line (VL) analyst forecasts. DLS report that analysts are more optimistic in their forecasts for firms whose earnings are more difficult to predict, compared with high predictability firms. DLS use a variety of measures of the predictability of earnings. Controlling for, among other things, firm size (log of average market value of equity), the number of analysts following the firm, and the VL level of recommendation (the Timeliness report), DLS report that the level of optimistic forecasts is greater for firms with more unpredictable earnings.[84] DLS speculate that "analysts have greater incentive to seek and acquire non-public information for low-predictability firms."[85] Access to management inside information is particularly important for analysts for such low-predictability companies.

Ivkovic and Jegadeesh (2004) examine the information content of analyst earnings forecasts and recommendation revisions.[86] They focus in particular on the value of such revisions relative to the earnings announcement date of a covered firm. Right after a firm makes an earnings announcement, the amount of inside, non-public information is at a minimum. If analysts provide value primarily through access with managers, one would expect that analyst revisions that occur immediately after an earnings announcement would have the lowest value (and correspondingly, revisions that occur right before an earnings announcement would have the highest value). Ivkovic and Jegadeesh's dataset consists of sell-side analyst earnings forecasts from January 1990 to March 2002 and stock recommendations from

[82] Id. at 217. The authors also report that the fraction of positive stock annual EPS forecast errors is significantly greater for hold- (64% positive error) and sell- (62%) recommendations compared with buy-recommendations (44%). See id. at 225. Francis and Philbrick define the difference between the forecast EPS and the actual EPS for the same period as the forecast error.
[83] See Somnath Das, Carolyn B. Levine, and K. Sivaramakrishnan, Earnings Predictability and Bias in Analysts' Earnings Forecasts, 73 The Accounting Review 277, 280 (1998).
[84] See id. at 286-88.
[85] Id. at 291.
[86] See Zoran Ivkovic and Narashimhan Jegadeesh, The Timing and Value of Forecast and Recommendation Revisions, 73 Journal of Financial Economics 433-63 (2004).

November 1993 to March 2002 as obtained from I/B/E/S.[87] Ivkovic and Jegadeesh report that the relative forecast error is smallest in magnitude right after an earnings announcement date.[88] The relative forecast error grows in magnitude (particularly for upward revisions) up until the next earnings announcement date, indicating that individual analyst forecasts become more precise in the period before the next earnings announcement. Unlike for upward revisions, when analysts make a downward revision, the accuracy of individual analysts does not increase in the final week before the earnings announcement date.[89] The authors conclude that this supports the view that guidance from insiders is important and "analysts have early access to positive news prior to the earnings announcements, but they do not have a similar level of access to negative information during this event window."[90]

Summary of Evidence

The empirical literature provides strong evidence that conflicts of interest influence analyst recommendations and earnings-per-share forecasts. Conflicts are particularly acute when a brokerage firm takes on the role of lead underwriter for a covered company. Conflicts even exist for independent research analysts not affiliated with a brokerage house. At least prior to Regulation FD in the United States, such analysts may have positively skewed their research to curry favour with managers at covered firms, thereby ensuring access to inside information. The desire on the part of analysts to maximize their profits leads to another problem, in addition to conflicts of interest: analysts tend to focus coverage on larger market-capitalization companies, leaving smaller market-capitalization companies with a relatively weak information environment. The limited evidence from Canada also suggests bias in analyst research in the form of over-optimism in forecasts.

iii. "Cues" of Analyst Accuracy

Several empirical studies examine the relationship between observable data and both the accuracy of

[87] See id. at 439.
[88] See id. at 446-47. To assess the informational content of analyst revisions, they construct (1) a measure for the error of a particular analyst forecast of earnings relative to actual quarterly earnings and (2) a measure for the error of the consensus analyst forecast (based on the average of all outstanding analyst forecasts from the time of the last earnings announcement date up to the time of the particular analyst forecast) of earnings relative to actual quarterly earnings. They then take the difference between (1) and (2) as the relative forecast error for new analyst forecasts. A more negative relative forecast error indicates that the specific analyst is more accurate than the prior consensus analyst estimate. See id. at 445.
[89] See id .at 446-47. Ivkovic and Jegadeesh report a similar pattern for stock price reactions to recommendation revisions. See id .at 458-61.
[90] Id. at 461.

analyst research and the stock market reaction to the public release of research. These studies collectively identify a series of "cues" that investors (and researchers) may use to predict the accuracy of a particular analyst's earning-per-share forecasts. The "cues" may be broken down into the following categories: a) cues related to analyst characteristics; b) cues related to the information environment of the firm; c) cues related to the past performance of the specific analyst; and d) cues specific to a particular forecast.

a) Analyst Characteristics

Several studies document a relationship between ex ante observable analyst characteristics and the accuracy of analyst earnings forecasts. Stickel (1992) examines whether variance exists among analyst quality and whether pay is related to this variance.[91] He starts with *Institutional Investor*'s annual All-American Research Team (AART) lists from 1978-88, developed based on evaluations by 2,000 money managers of investment analysts.[92] Stickel examines several attributes of analyst quality to determine whether AART analysts are also higher quality. First, Stickel examines the quality of analyst forecasts of earnings-per-share.[93] Stickel reports that AART analysts have a lower mean forecast error compared with non-AART analysts (a difference of 2.8 cents per share in forecast error).[94] Second, Stickel looks at the frequency of forecasts. He reports that AART analysts issue forecasts every 86 calendar days on average, compared with 93 calendar days for non-AART analysts.[95] Third, Stickel examines the market response to analyst earnings-per-share forecast revisions.[96] To analyze the market response, Stickel estimates an ordinary least squares regression model with the cumulative abnormal return as the dependent variable. As explanatory variables, he includes a measure of firm size, a dummy variable for an AART analyst, and

[91] See Scott E. Stickel, Reputation and Performance Among Security Analysts, 47 J. Fin. 1811 (1992)
[92] See id. at 1811.
[93] See id.
[94] See id. at 1813. Individual analyst EPS forecasts are obtained from Zacks Investment Research for 1981-85. Actual EPS data is obtained from COMPUSTAT. See id. at 1816. Stickel defines forecast errors as the actual annual EPS minus the forecasted annual EPS. See id. at 1812. Stickel notes that analyst forecasts may become more accurate closer to earnings announcement dates. To mitigate this possible bias, Stickel creates 60 subsamples based on the calendar month in which the forecast falls (within the five-year period from 1981 to 1985) and calculates mean results by subsample. He then averages the means of the subsamples to obtain an overall mean forecast error. See id. at 1815
[95] See id. at 1812.
[96] See id. at 1826. For the market response, Stickel calculates the abnormal return for the +0- to +10- day window from the date of an earnings forecast revision using the market model to calculate expected returns. The market model used to calculate abnormal returns is estimated from +251 to +300 from the date of the revision (with a minimum of 30 return days). See id.

a variable for the magnitude of the revision.[97] Stickel reports that when he restricts the regression only to those forecasts that are in the top 10% of upward earnings revisions, an AART recommendation results in a 0.21% greater abnormal market reaction compared with non-AART analyst revisions.[98] Stickel's results are consistent with the view that the market puts greater weight on reports from AART analysts.[99]
Stickel (1995) examines the short and long-term adjusted price reactions to brokerage firm analyst changes in recommendations.[100] Using data from Zacks Investment Research, Stickel examines 8,790 buy- and 8,167 sell-recommendations from 1988-91 (including recommendations from 1,510 analysts from over 80 brokerage houses).[101] He examines whether the market reacts more strongly (or weakly), depending on: the strength of the recommendation; the magnitude of the change in recommendation; the reputation of the analyst; and the marketing power of the brokerage firm (proxied with the size of the brokerage firm).[102] He also looks at whether the market reacts more strongly for companies that trade in a weaker information environment (as measured using firm size). To test these relationships, Stickel uses a multivariate model with the adjusted market reaction as the dependent variable (over a number of different short- to long-term windows from the date the analyst recommendation change is distributed).[103] From the model, he reports that the magnitude of the change in recommendation is correlated with the market reaction. Downgrades to strong-sell and sell result in a greater negative market reaction than a downgrade to hold.[104] The market reaction, moreover, is significant even using a long-term event window, indicating that the market effect is permanent. The market, in other words, learns more from a recommendation downgrade to strong-sell or sell than from a downgrade to a hold. Stickel also reports that recommendation changes from analysts that are members of Institutional Investors' All-America first-team list result in a significantly greater market response.[105] As well, recommendation changes from

[97] As a measure of the magnitude of the revision, Stickel uses the change in the EPS forecast divided by the standard deviation of all forecasts outstanding for the particular firm in question on the date of the forecast change. See id. at 1826. To avoid time effects based on the closeness in time of a forecast to an earnings revision date and to control for heteroscadescity, Stickel segmented his sample based on the calendar month in which the forecast revision takes place (for a total of 60 samples for this five-year period from 1981 to 1985). See id. 1826-28. He then takes the mean of the 60 coefficients from the 60 separate regressions to obtain an overall coefficient for each of his independent variables. See id. (also describing his method of calculating standard errors for the mean coefficients).
[98] See id. at 1828-30, 32.
[99] See id. at 1828-30, 32. In contrast, when Stickel restricts the regression to the bottom 10% of earnings revision (consisting of the largest downward revisions), he reports that in his regression no statistically significant difference exists between AART analyst revisions and non-AART revisions. See id.
[100] See Scott E. Stickel, The Anatomy of the Performance of Buy and Sell Recommendations, Financial Analysts Journal p. 25 (Sept-Oct. 1995).
[101] See id. at 25.
[102] See id. at 25.
[103] Stickel uses the market model to adjust returns to control for overall market movements.
[104] See id. at 32-37.
[105] See id.

larger brokerage houses have a greater market response.[106] These effects disappear when a longer-term event window is used, indicating that the effects are temporary and may reflect a price-pressure effect. Stickel also reports that smaller companies receive a greater market reaction than larger companies and that this effect is permanent across a longer-term horizon.[107] Stickel writes that this effect is "consistent with the existence of fewer alternative information sources about the value of smaller companies."[108]

Mikhail, Walther, and Willis (1997) (MWW) examine the importance of analyst experience in determining analyst earnings-forecast accuracy.[109] MWW define analyst firm-specific experience as the number of prior quarters in which an analyst has issued an earnings forecast for a specific company. MWW perform a time-series analysis of analyst forecast errors. As a consequence, their sample is restricted to analysts with a minimum of 32 quarters of data in the Zacks database (from 1980 to 1995).[110] This restriction does not allow MWW to test the importance of experience for analysts with relatively less experience (e.g., under eight years of experience).[111] MWW's time-series model uses a measure of analyst forecast error as the dependent variable.[112] As explanatory variables, MWW include measures for firm-specific experience; the amount a particular analyst concentrates in a particular industry; the information environment of the covered firm;[113] whether the analyst has recently switched firms; the forecast age; and a dummy variable for whether the forecast is for the fourth quarter.[114] MWW report that firm-specific experience and a high information environment are both negatively correlated with the analyst earnings-forecast error.[115] Forecast age is positively correlated with analyst earnings-forecast error.[116]

Clement (1999) examines several analyst characteristics that relate to analyst accuracy in their earnings estimates.[117] Clement examines three categories of analyst characteristics: analyst general and firm-

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[106] See id.
[107] See id.
[108] Id. at 37.
[109] See Michael B. Mikhail, Beverly R. Walther, and Richard H. Willis, Do Security Analysts Improve Their Performance with Experience?, 35 Journal of Accounting Research 131 (1997).
[110] See id. at 136.
[111] MWW's final sample consists of only 236 analysts and 435 firms. See id. at 136.
[112] See id. at 137. The dependent variable is the log of the "Mean Absolute Percentage Error" defined as "the absolute value of actual earnings minus the forecast deflated by end-of-quarter price". Id.
[113] MWW proxy the information environment using the number of other analysts that cover the specific firm. See id. at 140.
[114] See id. at 140.
[115] See id. at 143. The coefficients are significant at the <1% confidence level.
[116] See id. at 143. The coefficient is significant at the <1% confidence level. MWW also report that the market reaction to forecast revisions is greater for analysts with more firm-specific experience. See id. at 152-55.
[117] See Michael B. Clement, Analyst Forecast Accuracy: Do Ability, Resources, and Portfolio Complexity Matter?, 27 Journal of Accounting and Economics 285-303 (1999).

specific experience (as measures of skill), brokerage employer size (as a measure of the economic resources available to the analyst), and the number of firms and industries an analyst follows (as a measure of the complexity of the particular analyst's task).[118] Clement uses an analyst's forecast error as the dependent variable in his ordinary least squares model.[119] He includes measures of his three categories of analyst characteristics as explanatory variables in the models and the forecast age as a control variable.[120] Clement's dataset is obtained from I/B/E/S for the 1983 to 1994 time period.[121] Clement reports that analyst general and firm-specific experience variables are significantly and negatively correlated with analyst forecast error in the model.[122] He also reports that the number of firms and industries an analyst follows is significantly and positively correlated with forecast error.[123] Lastly, association with a top-size decile brokerage firm is significantly and negatively correlated with the forecast error, consistent with the view that increased resources raises the accuracy of analysts.[124]

b) Information Environment of the Covered Firm

Lys and Soo (1995) examine whether analyst earnings forecasts are more accurate for firms that are covered by a larger number of analysts.[125] Lys and Soo posit that an analyst's research costs will decrease the more publicly available information exists for a company. In particular, analysts may learn from other analysts' forecasts about a specific company.[126] Lys and Soo's dataset consists of analyst forecasts for 62 randomly-selected companies (spread equally across three market capitalization size-based partitions of companies) for the 1980-86 period.[127] Lys and Soo control for a number of company-specific factors that may increase the difficulty analysts may face in generating earnings forecasts including the amount of information available for a firm (using both the size of the firm and the coverage in the WSJ as proxies for information), a measure of earnings predictability, the forecast horizon, and the volume of shares

[118] See id. at 285. Note that brokerage firm size may also correlate with greater access to confidential information obtained from management (at least prior to Regulation FD in the United States).
[119] See id. at 291. Clement defines an analyst's forecast error as the difference between the analyst's absolute forecast error for a specific firm and the mean absolute forecast error for all analysts covering the specific firm all scaled by the mean absolute forecast error for all analysts covering the specific firm. See id.
[120] See id. at 292-93. For brokerage firm size, Clement uses an indicator variable for whether the brokerage firm is in the top size decile for brokerage firms.
[121] See id. at 293. Clement reports that his dataset "contains over 1 million forecasts for the annual earnings of more than 9,500 companies made by over 7,500 analysts." Id at 293.
[122] See id. at 298.
[123] See id.
[124] See id.
[125] See Thomas Lys and Lisa Gilbert Soo, Analysts' Forecast Precision as a Response to Competition, 10 J. Accting, Auditing, & Fin. 751 (1995).
[126] See id. at 755.
[127] See id. at 759-60.

traded.[128] They report that after controlling for these company-specific factors, an analyst's forecast precision is positively related with the number of analysts that cover a particular firm.[129]

Asquith, Mikhail, Au (2004) examine analyst ratings put forth by analysts that are members of the Institutional Investor All-American Analyst Team from 1997-1999.[130] AMA assess the market's reaction to the release of analyst reports.[131] They estimate a regression model with cumulative abnormal return (CAR) in the market as the dependent variable. As independent variables, they include percentage change in earnings forecast; whether the report included an upgrade or downgrade; the percentage change in the projected price target; a proxy for the strength of the analysts recommendation; and a variable calculated based on the presence of a relationship between the analyst and the firm (whether underwriting or stock ownership). Among other things, they report that the strength of the analyst's recommendation is correlated positively with CAR (significant at the <1% level).[132] AMA report that the information environment of a specific firm affect the market's reaction to an analyst report. For changes in the strength of the analyst recommendation, the market reaction is greater for smaller size firms and firms with a lower number of analysts.[133] Analyst reports provide relatively more information for companies with a low information environment.

c) Past Analyst Performance

Sinha, Brown, and Das (1997) (SBD) examine whether analysts that provide more accurate earnings-per-share forecasts persist in their accuracy over multiple years.[134] SBD examine analyst forecasts from 1984

[128] See id. at 757-79.
[129] See id. at 762.
[130] See Paul Asquith, Michael B. Mikhail, Andrea S. Au, Information Content of Equity Analyst Reports (SSRN) (2004) (available at http://papers.ssrn.com/sol3/papers.cfm?abstract_id=501522).
[131] To determine the market reaction, AMA calculate the CAR for the period from -2 to +2 days centered on the release date (a 5 day window). See id. AMA report that "Consistent with our expectations and prior research, we find a statistically positive average mean return of 4.5% for upgrades, a statistically negative mean return of -6.6% for downgrades and an insignificant mean reaction of 0.0% for reiterations." Id.
[132] To test the importance of positive compared with negative components of the strength of recommendation proxy, they split the variable into separate positive and negative variables. While both remain significant, the magnitude of the negative component variable is greater than the positive variable, consistent with the market reacting more strongly to negative information.
[133] To control for the possibility that confounding information events (such as earnings announcements by the firm, dividend changes, merger announcements, lawsuits, new product introductions and so on) may actually drive their findings, the authors re-run their regression tests on the subsample of firms without any confounding information event. They find qualitatively the same result.
[134] See Praveen Sinha, Lawrence D. Brown, and Somnath Das, A Re-Examination of Financial Analysts' Differential Earnings Forecast Accuracy, 14 Contemporary Accounting Research 1 (1997).

to 1990 as obtained from the I/B/E/S database in the 14 largest 2-digit SIC industry groups.[135] After controlling for the age of a forecast and forecast frequency, among other things, SBD find that prior superior (inferior) analysts (as measured over a period from one to four years) persist with superior (inferior) earnings-per-share accuracy for the subsequent year.[136] SBD's results are consistent with the hypothesis that different analysts have varying abilities to forecast earnings-per-share.

Jacob, Lys, Neale (1999) (JLN) examine the relationship of analyst skill and experience and the internal environment of the analyst's brokerage firm with earnings-per-share forecast accuracy.[137] Larger brokerage houses may provide analysts greater distribution outlets for their research as well as more support for the research task itself (including access possibly to greater flows of information on covered companies).[138] JLN also hypothesize that acclimatizing a new analyst to a brokerage firm may take time, leading to reduced accuracy. JLN's dataset consists of analyst forecasts obtained from Zacks Investment Research from 1981-1992.[139] Among other things, JLN report that increased forecast frequency, industry specialization, and brokerage firm size are associated with greater forecast accuracy.[140] On the other hand, greater analyst turnover (leaving a brokerage firm) is associated with lower forecast accuracy. Turning to whether analyst accuracy persists across time, JLN report that analysts do differ in their average forecasting performance over time.[141] JLN attribute this persistence to a "combination of working for a particular brokerage house, their own aptitude for forecasting tasks and the quality of the alignments between their skills and aptitudes and the idiosyncrasies of the companies they follow - coupled with a bit of good fortune in forecasting - that results in all-star performance."[142]

Brown (2001) examines the importance of prior analyst accuracy in explaining analyst accuracy (and predicting future accuracy).[143] His dataset consists of analyst's earning estimates from 1986 to 1998. Brown uses a measure of the accuracy of an analyst's earnings forecasts as his dependent variable.[144] He

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[135] See id. at 6.
[136] See id. SBD's study is in response to an earlier study that found no persistence in analyst accuracy but that did not control for the age of the forecast. See P. O'Brien, Forecast Accuracy of Individual Analysts in Nine Industries, J. Accting. Res. 286 (1990).
[137] See John Jacob, Thomas Z. Lys, Margaret A. Neale, Expertise in Forecasting Performance of Security Analysts, 28 J. Accting & Econ. 51 (1999).
[138] See id. at 56-57.
[139] See id. at 58.
[140] See id. at 79.
[141] See id. at 79.
[142] Id. at 79.
[143] See Lawrence D. Brown, How Important is Past Analyst Forecast Accuracy?, Financial Analyst Journal, Nov/Dec 1991, p. 44.
[144] The accuracy measure for an analyst for a particular year is equal to: "The individual analyst's forecast error that year minus the mean of the forecast errors of all analysts following the company that year, scaled by the mean of the

then estimates two models to explain the analyst earnings-forecast accuracy. The first model includes as explanatory variables forecast age and a variety of factors identified in other studies to explain forecast accuracy, including company-specific experience, general experience, number of companies followed, number of industries followed, and the size of the brokerage house.[145] The second model includes as explanatory variables the forecast age and the prior forecast accuracy of the analyst.[146] He reports no significant difference in the adjusted R2 for the two models, from which he concludes "the past accuracy model performs as well as the analyst characteristics model."[147]

d) Cues Specific to Particular Forecasts

Several studies discussed above indicate that the magnitude of an analyst recommendation or earnings forecast revision communicates information to the market. Asquith, Mikhail, Au (2004), for example, find that the market reaction is positively correlated with the strength of analyst recommendations. Studies indicate that other factors specific to particular forecasts are correlated with greater analyst accuracy.

Brown and Mohd (2003) examine the relative importance of age of forecast compared with other factors identified in prior studies as important in explaining analyst accuracy.[148] The other factors they examine include company-specific experience; general experience; number of companies followed; number of industries followed; the size of the brokerage house; and the frequency of analyst forecasts (defined as the number of forecast an analyst makes in a specified quarter relative to the mean forecast frequency for analysts following the same firm).[149] Brown and Mohd's dataset consists of quarterly earnings forecasts from 1987-99 as obtained from I/B/E/S.[150] Brown and Mohd estimate two models using forecast error as the dependent variable.[151] The first model consists of solely the age of the forecast as an explanatory variable. The second includes age of forecast and the other identified factors found important in

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forecast errors of all analysts following the company that year. Forecast error is defined as the absolute value of the difference between I/B/E/S actual annual earnings and the last forecast made by the analyst for that year." Id. at 45.

[145] See id. at 44-45.

[146] See id.

[147] Id. at 48. Brown also uses both models to make predictions on future accuracy for specific analysts and compares the actual accuracy against these predictions. He reports that those analysts predicted to have the highest accuracy in fact did have higher forecast accuracy than those analysts predicted to have the lowest accuracy using the two models. See id. at 47.

[148] See Lawrence D. Brown and Emad Mohd, The Predictive Value of Analyst Characteristics, 18 Journal of Accounting, Auditing & Finance 625-647 (Fall 2003).

[149] See id. at 630-631.

[150] See id. at 630.

[151] See id. at 632. Forecast error is defined as "[t]he ratio of the individual analyst's forecast error for the quarter divided by the mean of all analysts' forecast errors following the firm that quarter, minus 1". If. At 630.

explaining analyst accuracy in prior studies.[152] They report that the other identified factors are, as with the prior studies, statistically significant in explaining analyst accuracy. They then construct a weighted consensus forecast using weights based on the two models, placing more weight on analysts who are predicted to have a higher accuracy. They report that the model with the other factors does not outperform the model with solely age of forecast as an explanatory variable.[153]

Clement and Tse (2005) examine whether "bold" earnings-per-share forecasts are different from other earnings-per-share forecasts.[154] Clement and Tse define a bold forecast as a forecast both greater (lower) than the analyst's prior forecast and greater (lower) than the consensus forecast.[155] Analysts concerned about their future career opportunities may engage in herding, ignoring (at least partially) relevant private information on a company and choosing instead to publish forecasts closer to the consensus forecasts. Herding protects analysts from making a mistake in forecasting greater in magnitude than the average analyst in the market. The authors hypothesize that by herding, analysts may therefore reduce their risk of termination at a particular brokerage firm. Given the incentive to herd, Clement and Tse test what factors correlate with the decision on the part of an analyst to make bold forecasts. Their dataset consists of annual earnings forecasts from 1989 to 1998 as collected from I/B/E/S.[156] They estimate a logit model using whether a forecast is bold or not as the binary dependent variable. For explanatory variables they include, among other things, the prior-year accuracy of the analyst's forecasts; the size of the brokerage firm (based on the number of analysts employed); the frequency of an analyst's forecasts for a particular firm; the number of companies and industries a particular analyst follows in a given year; and the experience of the analyst (broken out between experience in following the specific firm and general experience).[157] They report that more general experience of the analyst, greater prior year accuracy, greater brokerage firm size, and higher forecast frequency - all factors other studies find are associated with analyst accuracy - are significantly and positively correlated with the likelihood of issuing a bold forecast. Clement and Tse then estimate a model with the forecast accuracy as the dependent variable.[158]

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[152] See id. at 634-36.
[153] See id. at 645.
[154] See Michael B. Clement and Senyo T. Tse, Financial Analyst Characteristics and Herding Behaviour in Forecasting, 60 J. Fin. 307 (2005).
[155] See id. at 307.
[156] Their dataset consists of 57,596 analyst-firm-year observations. See id. at 312. The mean brokerage firm size was approximately 30 analysts and each analyst followed a mean of 21 firms in 6 industries in their dataset. See id. at 320.
[157] See id. at 315-16.
[158] They include explanatory variables identified in prior studies as correlated with forecast accuracy including, among others, the prior-year accuracy of the analyst; the size of the brokerage firm; the frequency of analyst forecasts; the number of companies and industries followed by the analyst; and the experience (firm-specific and

Clement and Tse report that accuracy is significantly and positively correlated in the regression model with a bold forecast.[159]

Similar with Clement and Tse's study of bold analysts, Cooper, Day, and Lewis (2001) (CDL) examine the impact of the lead forecast revision.[160] They test whether the lead forecast provides greater new information to the marketplace compared with follow-on forecasts. Given the tendency of analysts to herd in their forecasts, CDL posit that an analyst that chooses not to herd but provides the lead forecast does so because of superior forecasting ability. CDL's dataset consists of earnings forecasts as obtained from I/B/E/S from 1994 to 1995 for firms in two industries (as they describe "(1) high-tech firms that manufacture semiconductors and printed circuit boards and (2) low tech firms in the restaurant industry."[161] CDL report that "analyst rankings based on forecast timeliness are more informative than rankings based on abnormal trading volume and forecast accuracy."[162] They also report that the stock market responds with greater magnitude to the lead forecast compared with follow-on forecasts.[163]

Summary of Evidence

The empirical studies indicate the existence of several publicly-available, objective cues that are significantly correlated with analyst earnings-per-share forecast accuracy. These cues include factors that are related to: the specific analyst and analyst brokerage firm (experience of the analyst, reputation of the analyst, brokerage firm size); the covered firm's information environment (proxied through market capitalization and the number of analysts following the firm); past forecast accuracy; and the specific forecast (the "boldness" of the forecast, the frequency of the forecast, whether the forecast is the lead forecast, the age of the forecast).

iv. Unsophisticated Investors

A question exists whether the abnormal returns and trading volume surrounding an analyst recommendation change are due to the activity of large, more sophisticated investors or to the activity of

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general) of the analyst. They also include a variable for whether the forecast was bold or not as an explanatory variable.

[159] See id. at 332-33.

[160] See Rick A. Cooper, Theodore E. Day, and Craig M. Lewis, Following the Leader: A Study of Individual Analysts' Earnings Forecasts, 61 J. Fin. Econ. 383 (2001).

[161] Id. at 389.

[162] Id. at 415.

[163] See id.

smaller investors, who are, likely, less sophisticated. Where abnormal returns and trading volume are due to smaller investors, there is a greater concern that investors who do not realize the extent of analyst conflicts-of-interest may be trading based on such biased research. Mikhail, Walthier, and Willis (2005) provide evidence that smaller investors are responsible for much of the abnormal returns and trading volume related to an analyst recommendation change.[164] MWW's dataset consists of individual analyst recommendation revisions from 1993 to 1999 as obtained from Zacks Investment Research.[165] MWW use trade size (in terms of dollar value) as a proxy for the size of the investor.[166] They define large traders as those who make a trade of more than $30,000; small traders are those who make a trade for less than $7,000; medium size traders are ignored. They compare the reaction of investors with large trade-sizes against the reaction of small trade-size investors to see if smaller investors react differently to analyst research. MWW estimate separate models of abnormal trading volume for each type of trader.[167] From the models, MWW report that small investors respond more in terms of trading volume than large investors to the mere occurrence of an analyst recommendation change. They also report that small traders respond with a reduced magnitude, compared with large traders, to the magnitude of an earning revision (difference significant at the 5% level). MWW state that these results support the view that "large traders consider the informativeness of the analyst's report more than small traders…." MWW also report that small traders have a greater abnormal trading volume than large traders for recommendation upgrades (significant at the <1% level). On the other hand, large traders respond with more trading volume, among other things, for recommendation downgrades. In addition to abnormal trading volume, MWW look at the abnormal return for the five-day window, centered on the analyst recommendation release date.[168] They report that large trader volume accounts for more of the price reaction for downgrades and that small trader volume accounts for more of the price reaction for

[164] See Mikhail, Michael B. B., Walther, Beverly R. and Willis, Richard H., "When Security Analysts Talk Who Listens?" (August 2005). Available at SSRN: http://ssrn.com/abstract=709801.

[165] Their dataset contains 50,076 recommendation changes. They obtain intraday trading data from TAQ (Trade and Quote data). To eliminate the possibility of confounding information affect the market response, they eliminate analyst recommendations where an earnings or dividend announcement is made within a 5 day event window centered on the recommendation date.

[166] They also look at the number of shares traded and find similar results.

[167] For explanatory variables they user the abnormal market trading volume during the 5 day event window, the recommended firm size (log of market capitalization), brokerage firm size (number of analysts employed at the brokerage firm), prior performance (equal to the "quintile ranking of the profitability for investments made based on revisions issued in the prior year"), and magnitude for recommendation change (defined as the absolute value of the current recommendation on a five point scale minus the prior recommendation). As explanatory variables, MWW also include interaction terms between the magnitude of the recommendation change and the other explanatory variables and an intercept term. MWW estimate their models separately for small and large trades using seemingly unrelated regression.

[168] They calculate 5-day buy-and-hold characteristic-adjusted excess returns. They define characteristic-adjusted excess returns as "equal to the firm's compounded raw return minus the value-weighted compounded return on the characteristic-sorted benchmark portfolio to which the firm belongs in the year of the recommendation change".

upgrades. This result is consistent with large traders focusing more on downgrades and small traders focusing more on upgrades.

Bonner, Walther, and Young (2001) examine whether sophisticated investors, compared with unsophisticated investors, respond differently to "cues" related to the informativeness of analyst quarterly earnings forecasts.[169] BWY's dataset consists of 169,247 revisions in quarterly earnings forecasts as obtained from Zacks Investment Research from 1981 to 1999 (encompassing 3,904 analysts and 3,311 firms). They first develop an "environmental model" that determines which factors correlate significantly with greater analyst forecast accuracy.[170] BWY examine the importance of several cues in determining forecast error including: an analyst's status in Institutional Investors All-American survey, whether an analyst is first to forecast (award-winning analysts are more accurate generally and more likely to forecast first); whether an analyst is last to forecast (which correlates with a relatively "young" forecast in terms of age and thus may be more accurate, but also may correlate with a lower-quality analyst and thus may correlate with reduced accuracy); analyst turnover from one brokerage house to another (Mikhail (1999) finds that turnover is negatively correlated with accuracy); the size of the brokerage house; the age of the forecast (more "stale" forecasts are less accurate); the number of forecasts issued by an analyst for a particular firm in a given time-period relative to forecast frequency by other analysts; and measures for the number of firms and industries followed by an analyst. Using these factors, they estimate a multivariate regression model with the analyst accuracy forecast as the dependent variable. They use this model as the base "environmental model", indicating what "cues" are related to analyst accuracy.

BWY then estimate a second multivariate regression model using the size-adjusted market reaction to the analyst forecast revision announcement as the dependent variable. They use this second model as a measure of what investors in the market focus upon when deciding to utilize analyst forecast revisions. They include the forecast revision as an independent variable (e.g., a positive revision correlates with a greater stock price positive abnormal return). They also include interaction terms between the forecast revision and the "cue" variables they use in the environmental model. This allows the authors to get an assessment of which "cue" variables are important in investors' decision-making. They then compare the predicted accuracy errors from the environment model compared with the predicted accuracy errors, using

[169] See Sarah H. Bonner, Beverly R. Walther, and Susan M. Young, Sophisticated and Unsophisticated Investors' Reactions to Analysts' Forecast Revisions Conditional on Factors that are Associated with Forecast Accuracy (Working Paper 2001).

[170] Analyst forecast accuracy is defined based on the difference in a particular analyst's forecast error (relative to the actual earnings outcome) and the mean forecast error for all analysts covering a particular firm.

coefficients for the cues from the model for the market reaction to determine how "close" the weighting investors place on the cue variables relate with the environmental model.

To obtain a test of the difference between sophisticated and unsophisticated investors, BWY divide their sample of firms based on which firms have relatively more sophisticated investors, as proxied through firm size, analyst following, and institutional ownership for the firms. BWY then compare the factors that more-sophisticated, compared with less-sophisticated, investors focus upon in reacting to analyst information. They report that sophisticated investors place weight on the different cues that are much closer to the environmental model (that reflects how the cues in fact correlate with analyst earnings-forecast accuracy) than less-sophisticated investors. Among other things, BWY note that sophisticated investors are more likely to assign the correct weight on the age of the forecast in determining forecast accuracy while unsophisticated investors do not apply the correct weight.

Summary of Evidence

Larger, institutional traders react to analyst recommendations differently than smaller, retail investors. While smaller traders respond with a greater abnormal trading volume to analyst recommendation upgrades, larger traders respond with a greater abnormal trading volume to analyst recommendation downgrades. More sophisticated investors also tend to place more accurate weights on cues that correlate with analyst earnings and forecast accuracy compared with less-sophisticated investors.

v. The Impact of Regulation FD

The United States promulgated Regulation FD in 2000, restricting the ability of Exchange Act reporting issuers to make selective disclosures. Without the ability to engage in selective disclosures, companies in the U.S. now face the choice of either disclosing information publicly or keeping information confidential from outsiders. The promulgation of Regulation FD had two possible impacts on analysts. First, Regulation FD limits the ability of managers to use access to inside, non-public information as a lever to force analysts to give a company a better-than-warranted recommendation. Second, Regulation FD may have also reduced the implicit subsidy - a flow of non-public information - provided to analysts by companies. Prior to Regulation FD, analysts that received selective disclosures could earn a return on this information (whether the brokerage firm traded directly on the information or earned the gratitude of institutional investors for passing the information to the investors). Selective disclosures worked to

subsidize analyst research. With Regulation FD, such subsidies are, at least in theory, absent, leading to reduced analyst coverage of smaller reporting companies in particular.

Studies on the impact of Regulation FD demonstrate that after the promulgation of Regulation FD, the degree of analyst accuracy and the standard deviation of analyst forecasts remained unchanged.[171] Mohanram and Sunder (2003) examine the impact of Regulation FD on analysts.[172] Their dataset consists of one year of pre-Regulation FD data (from Oct. 1999 to Sept. 2000) and one year of post-Regulation FD data (from Jan. 2001 to Dec. 2001).[173] Mohanram and Sunder report that both analyst forecast accuracy (defined as the difference between the actual earnings-per-share and the EPS estimate scaled by the price of the firm) and the standard deviation of analyst forecasts (a measure of the dispersion of forecasts) do not differ statistically between the pre and post-Regulation FD periods, once controlling for whether a firm experienced a loss in a given quarter or failed to meet the consensus earnings forecast in a given quarter among other controls (to take into account the impact of a negative environment for firms on forecast accuracy).[174]

The need to engage in greater research raises costs for analysts. Mohanram and Sunder examine whether the increased costs reduced the level of overall analyst coverage in the market. One downside of their study is that it covers only the initial one-year period after the promulgation of Regulation FD. However, brokerage and other research firms may take longer to adjust the resources allocated to analyst research. Nonetheless, they report that analyst coverage decreased particularly for analysts at large brokerage firms (defined as a brokerage firm that was "ranked among the top ten investment banks in 1999").[175] Despite the general drop in coverage at large brokerage firms, all-star analysts (as identified by Institutional Investor magazine in 1999) did not significantly drop their coverage, leaving the drop in coverage mostly attributable to non all-star analysts at the large brokerage firms. Mohanram and Sundar also report that of

[171] See also Helfin F. Subramanyam, K.R., and Y. Zhang, 2003, Regulation FD and the Financial Information Environment: Early Evidence. The Accounting Review 78 (2003) 1-37.
[172] See Partha S. Mohanram and Shyam V. Sunder, How Has Regulation Fair Disclosure Affected the Functioning of Financial Analysts (Working Paper, 2003)
[173] They examine only firms with 4 pre-Regulation FD and 4 post-FD forecasts, allowing for a comparison of how analyst forecasts faired for the same firm in the pre and post-Regulation FD periods. They restrict their sample initially to firms tracked in the I/B/E/S database with at least two analysts covering the firms, giving them 5764 pre-Regulation FD and 5764 post-Regulation FD forecasts covering 1441 firms.
[174] Despite the lack of change in overall forecast accuracy and the standard deviation of forecasts, Mohanram and Sunder report that the amount of analyst herding diminished in their post-Regulation FD dataset. They report that "almost 43% of all forecasts were within a cent of the consensus in the pre-FD period, while only 34% of forecasts are within a cent after post-FD." Id.
[175] They report that "big-brokerage analysts reduced their mean coverage from 11.76 to 11.11, a mean reduction of 0.65, while other analysts had a more modest reduction from 10.93 to 10.66."

the 5,582 firms that had some analyst following in the pre-Regulation FD period, 1,740 lost analyst coverage (resulting in no coverage), in the post-Regulation FD period. This large drop in coverage is indicative that the loss of the implicit subsidies provided through selective disclosures resulted in a large drop in analyst coverage, to the detriment of investors. Nonetheless, Mohanram and Sundar cannot attribute the drop in coverage to a decision by the analyst to drop coverage or, in the alternative, to the elimination of the followed company due to bankruptcy of some other event.[176]

Mohanram and Sundar also report that the analyst accuracy for large brokerage firms converged with the degree of analyst accuracy for non-large brokerage-firm analysts after the promulgation of Regulation FD. In the pre-Regulation FD period, large brokerage firm analysts provide more accurate forecasts than non-large brokerage-firm analysts. In the post-Regulation FD period, the differential between large brokerage firm analysts and other analysts diminishes. This drop is consistent with a loss in preferential access to inside management that large brokerage firms enjoyed in the pre-Regulation FD period, due to the promulgation of Regulation FD. On the other hand, this drop is also consistent with a "flight" to mediocrity. The loss of selective disclosures could have resulted in less information entering into the marketplace, bringing the overall level of analyst accuracy down to a lower level for all analysts.

Summary of Evidence

Analyst forecast accuracy and the standard deviation of analyst forecasts do not change between the periods prior to and after the promulgation of Regulation FD. Analyst coverage, nonetheless, drops in the post-Regulation FD period, particularly for non all-star analysts at the large brokerage firms.

[176] Instead, Mohanram and Sundar focus on the subset of firms that had analyst coverage pre and post-Regulation FD. They report that firms with the greatest analyst following in the pre-Regulation FD period experience the largest drop (from a mean of 15.90 to 15.30 analysts) while firms with the least following see the greatest increase in coverage (from a mean of 1.97 to 2.94). The possibility that many firms with only single analyst coverage may have lost all coverage, however, makes it difficult to conclude that Regulation FD resulted in an overall increase in analyst coverage of smaller, less well-followed firms.

6. Energizing the Market

One can question whether the empirical evidence, primarily dealing with U.S. firms, extends to the Canadian marketplace. Canadian companies are, on average, smaller than U.S. firms. Chang, Khanna, and Palepu (2000) provide a survey of analyst activity in 47 countries around the world (including several emerging market countries).[177] As part of their survey, they provide summary statistics on the average market capitalization of the 30 largest firms for each country (in US dollars) in 1996 and the mean number of analysts providing coverage for these 30 firms. The 30 largest US firms have an average market capitalization of $64.5 billion and had 30.23 analysts providing coverage on average. The 30 largest Canadian firms had an average market capitalization of $4.2 billion and 16.9 analysts providing coverage on average.

Capital is however relatively mobile between the U.S. and Canada. The degree of integration between the two markets likely means that lessons on how analysts operate in the U.S. may also apply in Canada. The limited empirical evidence from Canada, moreover, indicates that the stock market price does respond to new analyst revisions (Hennessey (1995) and that bias exists among Canadian analysts (Hennessey (1994)). As well, for Canadian firms of the same market capitalization as U.S. firms, the numbers of analysts covering the firms are roughly comparable as discussed later in the piece (see the Table below constructed with Adam Pritchard). Given the comparable amount of analyst coverage for firms with the same size, most of the differences between how analyst research affects the Canadian marketplace compared with the U.S. marketplace is likely due to the absolute difference in firm sizes between the two countries. Applying the existing U.S. evidence to Canada therefore requires taking a special focus on the importance of analyst research for smaller firms. In particular, because less is known about smaller firms, an analyst report takes on greater importance in the Canadian marketplace.

[177] See James J. Chang, Tarun Khanna, Krishna Palepu, Analyst Activity Around the World (Working Paper, 2000). Other international studies of analysts exist. Kini, Mian, Rebello, and Venkateswaren (2003) (KMRV) examine the country-specific factors that may affect how analysts determine which firms to cover. See Omesh Kini, Shehzad Mian, Michael Rebello, Anand Venkateswaren, On the Determinants of International Analyst Research Coverage (Working Paper, 2003). Their sample consists of 7,106 analysts following almost 9,000 firms across 45 countries in 11 sectors from 1995 to 1996. KMRV report that analysts tend to specialize in a particular country where country-specific factors are important in determining stock returns. Similarly, analysts focus on a single sector where sector-specific factors are important in determining stock returns. KMRV also report, among other things, that smaller country market capitalization results in analysts diversifying their coverage across multiple countries. Specific to Canada, KMRV report that Canada is one of the countries with the highest proportion of single country analysts (with 95.23% of its analysts focusing solely on Canadian companies). KMRV also report that most analysts (60.39% of analysts) in Canada focus on firms in a single sector.

Although the empirical study of analysts still leaves many questions unanswered about analyst behaviour and the impact of analyst research on the stock market and investors, several common themes come out of the research. Analyst research is considered important by the securities markets, and certain types of analyst research are more informative than others. Analyst reports of negative information, although rare (at least prior to recent reforms in the U.S.), result in a much greater market reaction. Simply doing away with all analysts may therefore leave the marketplace with significantly less information, leading to more inaccurate securities prices. Despite the value of analyst research, several problems affect the quality of analyst research. Analysts disproportionately provide coverage for larger market-capitalization companies. Correspondingly, the value of analyst research is greater for companies that trade in a low information environment, such as for smaller market-capitalization companies. Analyst research also displays bias towards more optimistic recommendations. The degree of analyst bias is greater for analysts that are involved as a lead underwriter for a company right around the time of the offering. The degree of bias is also greater (at least when selective disclosures are not prohibited) where analysts value access to information obtained from management more highly.

In addressing the problems with analyst research, regulators should take into account that the accuracy of analyst research is correlated with several observable "cues". Analysts with greater reputation, with greater firm-specific and general experience, and with prior accurate reports tend to produce more accurate research. Analysts from large brokerage houses and that publish more frequent reports also produce more accurate research. Analysts that herd provide less accurate research. The accuracy of analyst research also drops with the age of the forecast and the number of firms and industries followed by the analyst. Regulators should also take into account that unsophisticated investors are less likely to respond appropriately to such cues, compared with more sophisticated investors. More unsophisticated investors place inappropriate weights on the "cues" that relate to the accuracy of analyst forecasts, placing, for example, too little weight on the age of the forecast.

Given the empirical evidence, how should regulators respond to market failures affecting analyst research? Regulators have at their disposal a number of possible interventions with varying costs and benefits. At one end of the spectrum, regulators may seek to simply provide investor education materials. In Canada, the Securities Industry Committee on Analyst Standards Final Report on "Setting Analyst Standards" (referred to as the "SICAS Report"), among other things, recommended greater education of investors. While such efforts pose the lowest risk of regulatory error and impose the least cost on market participants, they are also likely to provide the lowest benefit to investors. At the other end of the spectrum, regulators could, in theory, simply supplant the function of analysts through the provision of

government-supplied research analysis of securities. Indeed, regulators could simply prohibit the securities of companies that do not meet minimum regulatory quality standards from trading in the secondary markets (e.g., merit regulation). While merit regulation offers the greatest promise of protecting investors, such regulation also offers the greatest possibility of regulatory error.

How are regulators to choose among available regulatory options? A move to eliminate conflicts of interest, for example, may have the negative effect of reducing the overall level of sell-side analyst coverage of companies. Investors, left with no other alternative, may either make worse investment decisions or turn to alternative, less accurate and potentially more fraudulent sources of information available through the internet. Legal interventions also may crowd out more market-based innovations to protect investors. The recently created Canadian Public Accountability Board (CPAB) and the U.S. Public Company Accounting Oversight Board (PCAOB) may very well generate increased auditing standards. On the other hand, the very presence of the CPAB and PCAOB may cause the private marketplace to eschew attempts at shoring up the auditing provision out of a fear that the CPAB or PCAOB may co-opt such private attempts and perhaps push them further than the marketplace desires. Alternatively, the CPAB or PCAOB may simply override such private attempts, giving private actors less incentive to engage in such private efforts in the first place.

Legal interventions may also become difficult to reverse once put into place, resulting in regulatory lock-in, particularly for more intrusive forms of regulation. Special interest groups within an industry may benefit from the existence of a particularly regulatory intervention even if the intervention is not good for the marketplace as a whole. A ban on conflicts of interest may increase the profits to independent analysts. Although such analysts may not provide the same magnitude of research as sell-side analysts subsidized through brokerage houses, they will still vocally oppose any move to lift the ban on conflicts of interest. Regulators may also become used to particular schemes of regulation. Once engaging in "structural" fixes to the analyst industry becomes the norm, regulators may approach all future problems with a structural solution first without much consideration of other intervention options. Regulators may also resist any efforts at reducing the scope of regulatory intervention to the extent this reduction reduces the regulator's own authority and influence in the industry (resulting in lower prestige and compensation for the regulators).

Less-intrusive means of intervention, such as education and disclosure, suffer less from the effects of regulatory lock-in. Fewer special interests groups, for example, stand to benefit from investor education or disclosure efforts. The market is less displaced (if at all) through disclosure efforts compared with

more structural innovations, such as prohibitions on conflicts of interest (that eliminate certain market arrangements) and the imposition of quasi-regulatory organizations such as the CPAB and PCAOB (that may chill market-led efforts at reform). Where less-intrusive mechanisms prove ineffective over time, regulators may always later "ramp up" the level of regulation if necessary. Perhaps for these reasons the SICAS Report took the stance that "in developing its recommendations, the Committee chose wherever possible the least intrusive option, favouring mandatory disclosure over more intrusive responses."[178] This Report recommends taking a similar approach: erring on the side of less-intrusive regulatory intervention unless a clearly demonstrable need exists to do more.

Recommendation #1: Presumption toward less-intrusive regulatory options when possible.

Given a desire to use less intrusive responses to defects in the provision of analyst research when possible, this Part discusses three forms of possible regulatory intervention: increased company disclosure; analyst disclosure; and structural reforms aimed at reducing conflicts of interest among analysts.

i. Company Disclosure

In thinking about the value of analyst research, determining the relationship of analyst research and company-provided information is important. First, some analyst information may consist of information obtained directly from the company ahead of a company disclosure announcement. An analyst, for example, may obtain information from the company that gives the analyst guidance on where earnings are going for the particular company, allowing the analyst to publish relatively accurate information on earnings before the company publicly announces its earnings. In such situations, the analyst benefits the market only by moving up in time when the information that otherwise would be disclosed later (by the company) is actually disclosed. Such "time-shift" research, however, does not ultimately provide the market with any new information; information is provided simply earlier in time. It is unclear what value the market obtains from slightly more accurate securities prices earlier in time.[179]

[178] See SICAS Report p. 11.

[179] Secondary market traders unaware of the new earnings guidance may lose. On the other hand, they are just as likely (absent the presence of any insiders or other knowledgeable traders in the market) to gain from this lack of information. More accurate price signals may benefit the economy more generally. However, the benefits of moving up earnings disclosure in time within a quarterly period are unclear.

Second, other analyst information may represent new information different from information that a company may supply directly. Analysts may use their expertise and broader industry knowledge to synthesize information obtained from a particular company to an earnings outlook more accurate and different from that supplied from within a company. Analysts may also use their expertise to boil down company-supplied information (together with information on competitors in the same industry) to come up with a "bottom-line" recommendation that investors, particularly individual investors, may find easier to digest than the information provided by a company in a periodic disclosure filing. Similarly, analysts may engage in detailed research of "outside" information important to the valuation of a particular company. Information on the economy in general and the activities of competitors are examples of "outside" information that may prove salient to the valuation of a particular company. Where analyst research is comprised of a greater percentage of such new information (as opposed to time-shift information obtained from a covered company), analysts provide greater long-term improvements to overall price accuracy in the marketplace.

In comparison with these two avenues of analyst research value, the empirical literature indicates that a large part of the value sell-side analysts provide is based on the collection of information from inside followed companies. See Ivkovic and Jegadeesh (2004) discussed above. If a major part of the benefit analysts provide to the market is to channel information from inside the company to the marketplace, regulators may consider simply requiring companies to supply more information directly to the marketplace. The Report therefore makes the following recommendation:

<u>Recommendation #2</u>: Increase the scope of mandatory disclosure from covered firms as a means of reducing the "information gap" to which analysts now supply needed information to the markets.

Providing more company information directly to the marketplace may have the effect of reducing the importance of analyst research. Importantly, even for companies without any analyst coverage, the provision of company-supplied information may lead to more accurate securities prices, to the benefit of all investors. For larger companies with several analysts providing coverage, the provision of company-supplied research may also reduce duplicative research efforts on the part of analysts that otherwise would have been expended to uncover the company-specific information.[180] The provision of research may then give such analysts an incentive (and subsidy) to expand their research into other areas, shifting

[180] Jack Coffee makes this point in his seminal 1984 piece on mandatory disclosure. See John C. Coffee, Jr., Market Failure and the Economic Case for a Mandatory Disclosure System, 70 VA. L. REV. 717, 728-29 (1984).

more attention for example to analysis of company-supplied and other information, rather than simply waiting for inside information disclosure from management.[181]

The U.S. has been moving steadily toward requiring Exchange Act reporting issuers to supply more information to the market. The U.S. Congress in the Sarbanes-Oxley Act imposed a mandate on the SEC to move towards a system of continuous disclosure. The SEC responded with a shortened timeframe (now four business days), in which Exchange Act reporting companies have to file with the SEC a Form 8-K detailing certain important events after they occur. The SEC also expanded the number of items that require disclosure under Form 8-K.[182]

Limits, nonetheless, exist on how much company-supplied information is net beneficial to the marketplace. Requiring disclosure of competitive-related information may result in companies either actively hiding such information or choosing not to engage in new competitive projects. Similarly, requiring too-detailed and personal disclosure of the backgrounds of executives may prove of little use to investors while imposing large personal costs on executives (who may choose not to serve as executives in the first place as a result).

The level of company disclosure in Canada already is quite high. Presently, Canada has a system of continuous disclosure of all "material" changes that may affect a corporation, including off-balance sheet arrangements, related-party transactions, and accounting policy changes.[183] In addition, Ontario Securities Act secondary market liability provisions reinforce these requirements by defining a "misrepresentation" to include "an omission to state a material fact that is required to be stated or that is necessary to make a statement not misleading in light of the circumstances in which it was made".[184] Gains from requiring additional mandatory disclosure from reporting companies may therefore be only marginal in Canada.

ii. Analyst Disclosure

In theory, if investors in the marketplace have good information on the presence of bias or other problems with analyst research, they may choose not to rely on such research. This, in turn, will have at least two consequences. First, investors will not lose money based on poor research. Second, analysts will face a

[181] See id.
[182] See Form 8-K, Securities Exchange Act.
[183] See Canada National Instrument 51-102, *Continuous Disclosure Obligation.*
[184] See Ontario Securities Act §1(1).

greater incentive to provide unbiased and higher-quality research, leading to more accurate securities prices. Not surprisingly, regulators in both the U.S. and Canada have moved toward requiring greater disclosure on the part of analysts.

The U.S. SEC has moved recently to increasing the amount of disclosure required of analysts under Regulation AC.[185] Regulation AC requires analysts to certify that the reports reflect the analyst's "personal views" and disclose conflicts of interest. It is unclear whether such disclosure will have much effect on investors and indirectly, therefore, on analyst behaviour. Regulation AC disclosures provide no comparative information between analysts (e.g., a relative rankings) and give investors little with which to compare analysts. Moreover, in the absence of any private liability under Regulation AC, investors are left with only SEC enforcement to ensure the credibility of the reports. Canada has moved similarly to requiring analysts to disclose their conflicts of interest. Stemming out of the SICAS Report, IDA Policy 11 provides that each member must "prominently disclose" in their research reports "any information regarding its, or its analyst's business with or relationship with any issuer which is the subject of the report, which might reasonably be expected to indicate a potential conflict of interest…."[186] Such conflicts include any paid-for services provided by the member to an issuer for "other than normal course investment advisory or trade execution services."[187] Members must also disclose any compensation paid to analysts based on investment banking revenues.[188] In the United States, the NASD and NYSE also both imposed rules requiring analysts to disclose the meaning of their investment rating categories and the distribution of their ratings across these categories.[189]

Providing greater information on conflicts of interest certainly provides useful information (at least if the information is not already known) for institutional investors. Whether such information is useful for individual, unsophisticated investors, where bias in analyst research arguably has the greatest impact, is unclear. At the time of this report, I was unable to find evidence on the impact of Policy 11 on Canadian firms. If the target of information is individual investors, regulators must take into account the potential

[185] See Regulation Analyst Certification, 17 C.F.R. § 242 (2002).
[186] See IDA Policy 11, 26 OSCB 7007 (2003).
[187] See id.
[188] See id.
[189] See NASD Conduct Rule 2711(h)(4) & (5) (2003); N.Y.S.E. Rule 472(k)(2)(iv) (2003). Whether greater disclosure of investment ratings distributions will have an appreciable effect on the percentage of negative, sell-type recommendations is unclear. Baird U.S. Equity Research for example reported that: "As of February 28, 2006, Baird U.S. Equity Research covered 458 companies, with 49% rated Outperform, 50% rated Neutral and 1% rated Underperform." See http://www.rwbaird.com/ecm/fr3_ecm_fr_research_disclosure.aspx (last visited on Mar. 3, 2006). Similarly, William Blair & Company disclosed that as of Dec. 31, 2005 its ratings were distributed as follows: Outperform (Buy): 59%; Market Perform (Hold): 37%; and Underperform (Sell): 4%. See http://www.williamblair.com/Pages/news_story_dept.asp?uid=963&depID=4 (last visited on Mar. 3, 2006).

lack of resources and time on the part of such investors. In addition, investors may suffer from a number of behavioural biases that may weaken the effect of disclosure. Overconfident investors may simply ignore boilerplate regulatory warnings.[190] Investors may pay too much attention to more recent salient information while ignoring potentially informative, less salient information.[191] Simply providing certifications of accuracy and detailed lists of conflicts of interest, may not have much impact on the behaviour of individual investors.

Given the existing research on the behavioural biases that affect individual investors and the lack of resources and time that individual investors have to process analyst disclosures, determining an optimal set of disclosures aimed at individual investors is difficult. No one unified theory of how behavioural biases affect investor decision-making exists. Absent such a unifying theory, predictions on how regulatory reforms will affect investors become difficult. Nonetheless, it is possible to make some limited suggestions as follows:

Simple disclosure will be the most effective. Flooding individual investors with extremely detailed disclosures on a particular analyst (or a laundry list of conflicts) will likely tax the bounded rationality of most investors (and lead overconfident investors to simply determine that the high cost of digesting the information is not worthwhile for investors with their high expertise). Any disclosure based approach aimed at individual investors must therefore take a simple approach, providing only one or, at most, a few salient pieces of information on analysts.

The approach taken in both the U.S. and Canada of requiring greater disclosure of conflicts of interest is not likely to provide much useful information to individual investors. Lacking expertise, individual investors may also fail to appreciate the magnitude of the various conflicts and how such conflicts should affect their willingness to rely on analyst research. Over time, the repeated reference to the same set of conflicts (investment banking, stock ownership, etc) may become akin to boilerplate. Even if the information on conflicts is new information, individual investors may simply ignore such information. Where the decision-making of individual investors is important, either because the market price is determined in part by the activities of such individuals or because such individuals may make trades based on flawed analyst research to their own detriment, regulators should consider a more simple approach to disclosure.

[190] For a discussion of behavioural biases that may plague investors see Stephen J. Choi and A.C. Pritchard, Behavioural Economics and the SEC, Behavioural Economics and the SEC, 56 Stan. L. Rev. 1 (2003).
[191] See id.

Focus on cues related to analyst accuracy. Given the constraint that disclosure must be simple, what exactly should regulators require analysts to disclose? The empirical studies indicate that different types of investors (e.g., more sophisticated institutional investors compared with less-sophisticated individual investors) react differently to information obtained from analysts. Regulators may therefore wish to focus disclosure aimed at individual investors on those factors demonstrated in the empirical studies to correlate with analyst accuracy.

The bottom line for why investors look to analyst research is the accuracy of the analyst's predictions about a company. Focusing disclosure on conflicts of interest only gets at accuracy indirectly. Indeed, some conflicts of interest may, on net, improve on overall accuracy. Investment banking conflicts may result in a bias on research. However, if greater investment banking revenues are allocated to research as a result, enabling the employment of more skilled analysts for example, overall accuracy may increase. Likewise, at least prior to Regulation FD in the United States, analysts may add an optimistic bias to their research in an effort to please company management, thereby affording the analysts access to selective disclosures of inside information. Such information may lead to an overall increase in accuracy of analyst research despite the optimistic bias.

Since accuracy is the end goal for most investors looking at research, regulators may avoid having to consider the magnitude of different conflicts and the potential for conflicts to increase accuracy. Instead, regulators may simply require the disclosure of information closely tied as "cues" of analyst accuracy. Importantly, not all the cues are alike. The mere act of publishing factors may lead to a market response that undermines the value of the factor. Studies have shown that larger brokerage firms typically produce more accurate analyst forecasts. However, if this factor is highlighted to investors and investors respond by focusing more on large brokerage house forecasts, opportunism may arise. For example, smaller firms may aggregate to form larger firms simply to appear larger on rankings based on brokerage firm size. Consider the following factors identified in the empirical studies:

Prior analyst forecast accuracy.

Studies have shown that prior analyst earnings-per-share forecast accuracy is significantly correlated with the accuracy of an analyst's current earnings-per-share forecast. Brown (2001) reports a correlation between the prior one-year forecast accuracy and the current-year accuracy.[192] Sinha,

[192] See Lawrence D. Brown, How Important is Past Analyst Forecast Accuracy?, Financial Analyst Journal, Nov/Dec 1991, p. 44.

Brown, and Das (1997) report a correlation between prior earnings-per-share forecast accuracy (as measured for a one- to four-year time period) and the subsequent one-year earnings-per-share forecast accuracy. Analysts that were accurate in the past tend to be accurate into the future. Importantly, reporting on an analyst's past accuracy in its earnings-per-share forecasts is not susceptible to opportunistic manipulation on the part of analysts. The only way to improve an analyst's rating is to improve on prior accuracy of forecasts (an objective that helps investors relying on the analyst's forecasts). Regulators should consider requiring analysts to report on the accuracy of their past earnings-per-share forecasts. While the exact number of prior years of forecast accuracy that correlate with subsequent earnings-forecast accuracy is not certain, regulators may wish to start with a moderate term of years (for example, three to four years) and expand the number of years if providing such data proves useful for investors and subsequent research indicates that less-recent accuracy data also correlates with subsequent forecast accuracy.

Number of industries and firms followed by an analyst.

The empirical evidence demonstrates that analysts that follow a large number of industries are less accurate than those that follow only a small number of industries. Intuitively, an analyst that actively learns about and covers numerous industries will have less time and attention to devote to analyzing a particular company in one industry. Unsophisticated investors are less aware of the number of industries or firms that an analyst follows and the importance of such information. Providing such information may improve on the ability of investors to rely on investor research. On the other hand, brokerage firms may react opportunistically to a regulatory reliance on such a cue. Firms may hire greater numbers of less-expert analysts (at low salaries) simply to maintain a lower industry covered-to-analyst ratio.

Analyst firm-specific and general experience.

Studies have shown that analysts with greater experience covering a particular firm and greater overall experience are more accurate in their forecasts. Unlike the size of the brokerage firm, analysts have less ability to manipulate disclosures based on years of experience. If experience is touted as an important factor, brokerage firms nonetheless may keep analysts on the payroll longer than warranted to boost the experience rating.

Analyst forecast frequency.

Studies show that analysts providing frequent forecasts are more accurate in their forecasts. Frequent forecasts may indicate greater attention to a particular firm, leading to greater accuracy. Unfortunately, like forecast age, brokerage firms may manipulate the forecast frequency. Although no evidence exists of such behaviour today, under a regime that made forecast frequency the focus of analyst disclosure, regulators would have to focus on the possibility that analysts might re-issue older forecasts without additional analysis simply to improve on their forecast frequency score.

Age of forecast.

Studies demonstrate that forecasts grow stale with time. Older forecasts provide less information than newer forecasts. Studies also indicate that unsophisticated investors pay too little attention to the age of a forecast. One problem with using forecast age as a factor for disclosure is that analysts may easily update the forecast (with a simple cut and paste) without changing any information simply to lower the age of the forecast. While informative, shifting the focus of disclosure on the age of the forecast may not improve on investor decision-making as a result.

Bold forecasts and herding.

Analysts have strong incentives to herd. While being better than average may result in a pay increase, an analyst that does significantly worse than average may get fired. This asymmetrical payoff leads analysts to ignore private information and put too heavy a weight on simply following the consensus forecast (out of a desire to avoid being the worst analyst). Studies indicate that those analysts that do deviate from the consensus (with "bold" forecasts) tend to provide more accurate earnings-per-share forecasts. Once regulators focus on "bold" forecasts however as an indicator of accuracy, analysts may opportunistically shift toward providing overly bold forecasts different from the consensus. Such forecasts, rather than reflect any true private information, may simply reflect the desire of analysts to score well on a disclosure measure based on boldness.

The Report therefore recommends the following:

<u>Recommendation #3</u>: Require analysts to disclose simple, standardized, and relative comparison (against other analysts) information relating to "cues" on analyst accuracy.

Given the constraint that any disclosure-based scheme aimed at individual investors must remain simple, I suggest that regulators in Canada focus initially solely on prior analyst forecast accuracy. While academic studies show that other cues are related to analyst accuracy, the possibility of opportunism on the part of brokerage firms makes these other cues less workable as a method of ranking analysts in practice.

Accessibility and Comparability

Given the importance of certain cues in determining analyst accuracy, a question exists as to how to present such information. A regulatory requirement that analysts provide such information in that same standardized format prominently displayed at the front of the analyst report will both make the information accessible for investors and allow for comparability across different analysts. Regulators may also consider placing analyst cue information together in one centralized website for investors to search and compare different analysts. Providing information at one centralized location will assist investors that face bounded rationality and high costs of collecting and processing information.

As one possible standardized format, regulators should consider providing a relative disclosure format for the accuracy cues. Presently, Canada does not require such relative disclosure. Instead, under IDA Policy 11, members must provide information on their own system of rating categories and "the percentage of its recommendations that fall into each category."[193] A relative comparison among analysts, nonetheless, offers many advantages.[194] Much like energy ratings are placed on a relative and easily understandable scale for consumers of appliances in the United States, analyst rankings based on prior accuracy (and, possibly, other cues such as an analyst's coverage of firms and industries, and frequency and type of downgrades) could be placed on a linear scale relative to other analysts and displayed prominently on the cover page of every analyst report.

Consider the prior accuracy cue. Unlike the present *Institutional Investor* ranking, which relies on subjective polling (and therefore may be subject to lobbying pressures by particular brokerage firms), an objective ranking based on prior analyst performance is harder to corrupt. Regulators could give each analyst a score based on how many percentage points on average the analyst's prior earnings-per-share

[193] See IDA Policy 11, 26 OSCB 7007 (2003).
[194] The Wall Street Journal provides a ranking of analysts annually. My proposal would be to format a similar ranking in a easily-understood scale format (much like the energy usage scale for home appliances). The ranking scale would then be included prominently on the cover of every analyst research report, making such information salient for individual investors.

forecasts were different from the actual earnings-per-share for each company on which the analyst provides forecasts (averaged over the prior one- and five-year time horizons). Given this score, regulators could then determine how the analyst compared against a comparison group of analyst. This comparison group could be the pool of all active analysts, or it could be more tailored, such as the pool of all active analysts covering firms in the same type of industry (as defined based on 2 or 3-digit SIC groupings). To the extent that the primary concern is with coverage of smaller issuers, one could use the group of analysts covering firms below a certain market capitalization as the comparison group. Investors that seek to invest in smaller-capitalization issuers could then refer to the ranking of analysts that deal in this sector of publicly traded firms to determine how to value research.

Relative comparisons have the advantage of packaging a large amount of information into one easily digestible form for investors. An accuracy range scale combined with where an analyst fits on the scale tells an investor about overall analyst accuracy, as well as about the particular analyst whose report the investor is considering. Providing a relative comparison form of disclosure will also generate competition among analysts to provide more accurate forecasts. Analysts receive greater compensation and better opportunities the higher they rank compared with other analysts. Institutionalizing a common framework for comparison will further spur such competition to provide more accurate research.

One criticism of this proposal is that the identified factors may only crudely predict future accuracy. It is possible for an analyst who was not accurate in the past to increase in accuracy into the future. Even where the identified factors related to analyst accuracy are not completely related to accuracy, they impose a burden on analysts who score poorly to explain why their reports are nonetheless accurate. Imposing relative ranking disclosure may work more to help investors to avoid the worst analysts in the marketplace rather than necessarily pinpoint the very best analyst in terms of accuracy of forecasts.

It is also possible that some analysts may seek to act opportunistically even with a measure based on past accuracy. An analyst that receives a high past-accuracy ranking, for example, may seek to "cash in" on their credibility by offering to provide biased research to the highest-bidding company. At least two factors weigh against such a possibility. First, cashing in on credibility will provide only a short-lived advantage (as the analyst's performance ranking will drop as a result in the next ranking period). To the extent that analysts receive a high return from a higher performance ranking, in the form of greater investor attention for the brokerage firm, they will hesitate to cash in on their reputation in this manner. Second, regulators may look for dramatic swings in rankings as a sign of such opportunism and shift their

investigatory resources toward such situations, providing a background level of public deterrence against fraudulent reports in such instances.

Other Measures

In addition to providing cue-based relative rankings of analysts (and brokerage firms overall), regulators may also wish to highlight specific events that relate to the reliability of analyst recommendations to the marketplace. Canada has already moved in this direction with IDA Policy 11. IDA Policy 11 requires that members "must issue notice of their intention to suspend or discontinue coverage of an issuer."[195] Because analysts may choose to drop coverage rather than provide a negative recommendation for an issuer, the requirement of notice to the market serves two purposes. First, it highlights to the market that an important informational event has occurred (the dropping of coverage). Second, it may lead some firms to choose not to drop coverage (out of a desire not to tarnish their reputation as an objective research source).

Regulators may go farther than IDA Policy 11. For example, empirical studies indicate that downgrades provide greater informational content for investors. Moreover, unsophisticated investors tend to place too little weight on the downgrade information. Regulators may require that analysts post downgrades in recommendations at a centralized web site (such as the regulatory bodies' homepage) and aggregate all such downgrades in one place. Investors may then easily find and compare such downgrades, increasing the informational impact of such downgrades.

Ironically, a successful disclosure policy may result in another problem for regulators. Where disclosure allows investors to avoid analysts corrupted with a conflict of interest (by focusing on the relevant cues associated with analyst accuracy), such conflicts may become less prevalent. However, as discussed in the next section, if conflicts of interest arise from a financing problem on the part of analysts, a successful disclosure policy may drastically reduce the amount of analyst coverage in the economy. Just as with conflict-of-interest prohibitions, regulators may therefore wish to consider financing solutions in conjunction with greater analyst disclosure requirements.

[195] See id.

iii. Structural Changes and Subsidies

As a more intrusive regulatory option than requiring greater disclosure, regulators may seek to make structural changes in how sell-side analyst research is provided. In the United States, regulators have implemented several recent structural changes. As part of a 2002 settlement between New York State Attorney General Eliot Spitzer, the SEC, NASD, and ten Wall Street brokerage firms, the Wall Street firms agreed, among other things, to some separation of analyst research from the investment banking business, including "prohibiting analysts from receiving compensation for investment banking activities and prohibiting analysts' involvement in investment banking 'pitches' and 'roadshows'".[196] Under the settlement, the analyst research department's budget must be determined to be independent of any revenues obtained from investment banking.[197]

The Sarbanes-Oxley Act of 2002 requires the SEC or self-regulatory organizations in the U.S. (such as the NYSE and NASD) to adopt rules "reasonably designed to address conflicts of interest that can arise when securities analysts recommend equity securities in research reports and public appearances…."[198] In response to the Sarbanes-Oxley Act, the NYSE and NASD adopted rules targeting conflicts of interest. The rules place education requirements on analysts on ethics and professional responsibility-related topics. The rules prohibit analysts from offering favourable research as an inducement to firms to generate investment banking business. Analysts associated with the manager or co-manager of a securities offering are prohibited from issuing a research report within 40 days after an initial public offering. The rules also restrict the ability of investment banking personnel at a brokerage firm to

[196] See SEC Joint Press Release, available at http:// www.sec.gov/news/press/2003-54.htm (last visited Jan. 28, 2004). The list of other settling Wall Street firms includes Bear Stearns & Co. Inc, Credit Suisse First Boston LLC, Lehman Brothers Inc., J.P. Morgan Securities Inc., Morgan Stanley & Co. Inc., Citigroup Global Markets Inc., UBS Warburg LLC, and U.S. Bancorp Piper Jaffray Inc. See id.

[197] See id. The settlement goes on to provide that "[r]esearch management will make all company-specific decisions to terminate coverage, and investment bankers will have no role in company-specific coverage decisions." Id. The settlement also provides that "the ten firms have collectively entered in to a voluntary agreement restricting allocations of securities in hot IPOs--offerings that begin trading in the aftermarket at a premium--to certain company executive officers and directors, a practice known as 'spinning.'" Id.

[198] See Section 501, Sarbanes-Oxley Act.

determine the compensation of analysts.[199] Importantly, the rules do not prohibit brokerage firms from running both investment banking and research analyst businesses within the same corporate organization.

In Canada, certain types of structural conflicts of interest are prohibited outright. IDA Policy 11 provides that members may not provide an analyst research report where the analyst (or any associate of the analyst) "serves as an officer, director, or employee of the issuer or serves in any advisory capacity to the issuer."[200] Those directly involved with the preparation of an analyst report also face restrictions on their ability to engage in trades of a security of the issuer that is the subject of the report.[201] Analysts are also prohibited from receiving pay in the form of "any bonus, salary or other form of compensation … that is directly based upon one or more specific investment banking services transactions."[202] IDA Policy 11 also imposes minimum structural safeguards to limit the influence of investment banking on analysts within the same brokerage firm. These safeguards include, among others, prohibiting any requirement of approval of research reports by the investment banking department.[203] To limit the bias of analyst reports of brokerage firms playing an investment banking role, IDA Policy 11 provides for a blackout period for research reports near in time to a public offering where the brokerage firm acted as the managing or co-managing underwriter.[204] The blackout period is 40 calendar days following the date of an initial public offering.[205] IDA Policy 11 also requires analysts to comply with the Association for Investment Management and Research (AIMR) Code of Ethics and Standards of Professional Conduct.[206]

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[199] See Order Approving Proposed Rule Changes by the National Association of Securities Dealers, Inc. and the New York Stock Exchange, Inc. and Notice of Filing and Order Granting Accelerated Approval of Amendment No. 2 to the Proposed Rule Change by the National Association of Securities Dealers, Inc. and Amendment No. 1 to the Proposed Rule Change by the New York Stock Exchange, Inc. Relating to Research Analyst Conflicts of Interest, Exch. Act Rel. No. 34-45908, May 10, 2002, http://www.sec.gov/rules/sro/34-45908.htm; Self-Regulatory Organizations; Order Approving Proposed Rule Changes by the New York Stock Exchange, Inc. Relating to Exchange Rules 344 ("Supervisory Analysts"), 345A ("Continuing Education for Registered Persons"), 351 ("Reporting Requirements") and 472 ("Communication s with the Public") and by the National Association of Securities Dealers, Inc. Relating to Research Analyst Conflicts of Interest and Notice of Filing and Order Granting Accelerated Approval of Amendment No. 3 to the Proposed Rule Change by the New York Stock Exchange, Inc and Amendment No. 3 to the Proposed Rule Change by the National Association of Securities Dealers, Inc. Relating to Research Analyst Conflicts of Interest, Exch. Act. Rel. No. 34-48252 (July 29, 2003), http://www.sec.gov/rules/sro/34-48252.htm.

[200] See IDA Policy 11, 26 OSCB 7008 (2003).

[201] See id.

[202] See id.

[203] See id.

[204] See id.

[205] See id.

[206] See id. AIMR is now known as the CFA Institute. See http://www.cfainstitute.org/ (last visited on Feb. 21, 2006). Among other things, the Code of Ethics and Standards of Professional Conduct provides that analysts should: "[P]repare research reports, make investment recommendations, and take investment actions; and develop policies, procedures, and disclosures that always place the interests of investing clients before their employees' or the firm's interests."

At first glance, structural changes offer the promise of directly addressing the conflict-of-interest problem in analyst research. If cross-subsidies from investment banking business compromise the quality of sell-side analyst research, then regulators may simply prohibit brokerage firms to house both an investment banking division and a sell-side analyst division. Focusing regulations solely on eliminating conflicts of interest, however, is not a panacea. First, not all conflicts of interest are as easily prohibited as investment banking conflicts. Conflicts that involve large institutional investor clients of brokerage firms (versus other investors) are, for example, more difficult to prohibit.

Second, as discussed above, simply prohibiting conflicts of interest may leave sell-side analysts with no funding for their research.[207] The ultimate result of conflict-of-interest prohibitions, therefore, may be a reduction in the overall supply of analyst research. For larger companies with multiple analysts following the company, the prospect of brokerage commissions alone may lead at least some firms to continue to supply sell-side research. However, the loss of financing may lead analysts to drop coverage, particularly for smaller companies. The implementation of Regulation FD, which had the effect of reducing informational subsidies to analyst firms, resulted in a drop in analyst coverage. See Mohanram and Sunder (2003) as discussed above. The reduction of analyst-supplied research may then lead retail investors to turn to other, less informative and potentially more misleading sources of information. In addition, institutional investors may expand the amount of in-house, buy-side analyst research they perform. More buy-side analysts in the face of reduced sell-side coverage will raise information disparities between institutional and retail investors, putting retail investors at a greater disadvantage.[208] Any solution that seeks to reduce or eliminate conflicts of interest must therefore also focus on the funding issue.

The problem of diminished analyst coverage is particularly acute in Canada. The following table details a comparison of analyst coverage for comparable size U.S. and Canadian firms. To construct the table, I (together with Adam Pritchard) randomly sampled 10 U.S. and 10 Canadian firms in each market-capitalization segment (based on market capitalization in December, 2005). We then collected the number of analyst recommendations available for each company from I/B/E/S for December, 2005.

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[207] Anecdotal evidence exists that analyst coverage is dropping in the U.S. See, e.g., Joseph A. Giannone, Wall St. Research Suffers Since Spitzer Deal, Wash. Post, Feb 25, 2006 (available at http://www.washingtonpost.com/wp-dyn/content/article/2006/02/25/AR2006022500529.html),

[208] Greater buy-side research may also result in duplicative research costs. Rather than having a more centralized source of research (sell-side analysts) providing research broadly to the market, dispersed buy-side research may result in a large number of in-house analysts at different institutions all racing with one another (and engaged in the same research effort) to become the first to uncover useful trading-related information on a public company. While privately valuable, this race may result in only a marginal increase in the speed with which the market learns of the new information and thus be socially wasteful.

Market Capitalization in millions (Canadian dollars in parentheses)	Average # Analysts U.S.	Average # Analysts Canada	% with no analysts U.S.	% with no analysts Canada
$1,000-$2,000 ($1,150-$2,300)	10.7	8.3	0	0
$900-$1,000 ($1,000-$1,150)	8.2	7.1	0	0
$800-$900 ($920-$1,000)	5.4	7	10	0
$700-$800($800-$920)	8.6	7.7	0	0
$600-$700($690-$800)	4.6	3.6	10	0
$500-$600($575-$690)	4.9	3.9	0	10
$400-$500($460-$575)	4	3.7	10	30
$300-$400($345-$460)	5.6	5.8	10	0
$200-$300($230-$345)	3.7	2.5	10	20
$75-$200($85-$230)	1.8	3.2	10	20
Overall	**5.8**	**5.3**	**6**	**8**

For Canadian companies with a market capitalization of under US$700 million, corresponding to the cut-off for Well-Known Seasoned Issuer (WKSI) status in the U.S., the average number of analysts is less than four per company. In addition, the fraction of firms without any analyst coverage is significant (reaching as high as 30% without coverage) for companies with a market capitalization of under US$600 million. The relative lack of analyst coverage for smaller market-capitalization companies is particularly important given the smaller average size of companies in Canada. While a couple hundred Canadian firms are cross-listed in the U.S. and have a relatively large analyst following, most firms in Canada are relatively small in market capitalization and have few if any analyst coverage. For example, 30% of the listed issuers in the United States qualify as a Well-Known Seasoned Issuer; only 17% of TSX issuers would qualify.[209] Any solution that seeks to reduce conflicts of interest in Canada must therefore provide a substitute means of funding analyst research.

The data in the Table opens up the question of what minimum number of analysts is necessary for quality research. As discussed above, the empirical literature indicates that a correlation exists between a large number of analysts covering a company and increased analyst accuracy. See Lys and Soo (1995). Several possible reasons exist for this relationship: It could be that larger firms have more analysts and

[209] See Adam Pritchard study on WKSI status for Canadian Issuers commissioned by the Task Force.

larger firms tend to disclose more information voluntarily to the marketplace; competition among analysts keeps them on their toes; or analysts provide research which enriches the information environment, increasing the precision for all other analysts. In theory, two analysts in competition with one another may be enough to keep analysts honest in their research. However, often for smaller issuers, analysts choose to cover the firms only where the brokerage firm has some other relationship with the issuer (e.g., an investment banking relationship). Where conflicts exist, greater numbers of analysts may be necessary to ensure a competitive and relatively bias-free environment. The SEC set the WKSI threshold at US$700 million based on an implicit assumption that such companies have sufficient analyst coverage to ensure a rich information environment. From the Table above, note that in both the U.S. and Canada, firms with a market capitalization of over US$700 million have at least five analysts covering the firm (and generally more than seven analysts). One answer to the minimum number of analysts is therefore that the SEC viewed at least five (and more likely seven) analysts as the minimum number of analysts to ensure a rich information environment.

Regulators in the U.S. have largely ignored the problem of financing analyst research. One notable exception is the Spitzer settlement with ten Wall Street brokerage firms. Under the terms of the Spitzer settlement, Wall Street firms agreed to set aside US$432.5 million for independent securities analyst research for a period of five years.[210] During that five year period, each Wall Street firm is required to contract with at least three independent research firms to provide securities research to customers of that firm and give an "independent consultant" the final decision-making authority in selecting the research firms.[211]

Any attempt to prohibit conflicts of interest (or, indeed, a successful analyst disclosure regime aimed at conflicts of interest) must take into account the negative impact on analyst financing as follows:

<u>Recommendation #4:</u> Regulations aimed at prohibiting conflicts of interest should be accompanied with alternative means to subsidize sell-side analyst research

Together with any prohibitions on conflicts of interest, regulators should consider providing subsidies for greater independent research. A subsidy plan must take into account two issues: who should pay the subsidy and the magnitude of the subsidy; and how to distribute the subsidies. First, consider who

[210] See SEC Joint Press Release, available at http:// www.sec.gov/news/press/2003-54.htm (last visited Jan. 28, 2004).
[211] See id.

should pay the subsidy and what amount the subsidy should be. In theory, investors directly benefit from greater information flows to the extent they may make more-informed investment decisions. This will in turn reduce the risk facing investors in making an investment in any one company. Investors however may face a collective action problem in providing funding for analyst research.[212] The traded firms provide a possible collectivizing agent. Money taxed from each firm comes pro rata out of the wealth of the shareholders of the firms.

Precedent exists for taxing public companies for services provided for the benefit of shareholders. Securities exchanges fund themselves partly through listing fees imposed on listed firms.[213] ADP provides services relating to proxy voting (distributing proxy materials and collecting shareholder votes) in return for fees imposed on traded companies according to a rate schedule provided by NYSE rules and approved by the SEC.[214] As established under the Sarbanes-Oxley Act,[215] The Public Company Accounting Oversight Board in the U.S. is funded through a fee imposed on publicly traded companies. The fee, moreover, varies in proportion to the market capitalization of the firms.[216] Regulators could also support analyst research through such a fee based on market capitalization. While beyond the scope of this Report, regulators could first set a fixed total amount of subsidy dollars – say $50 million per year. A pro rata fraction of this amount could be assessed from all firms with publicly traded stock in Canada above a cut-off market capitalization (say $100 million market cap). Regulators may then gradually adjust the fee over time as they gain experience on the degree to which conflict-of-interest prohibitions affect the overall coverage of analyst research

Second, consider the question of how to distribute the subsidy dollars. Ideally, a central planner with perfect expertise would allocate analyst research dollars to their highest-value use (from the perspective of improving the information environment for investors). Investors face particularly weak information environments in smaller firms. Faced with the prospect of reduced cross-subsidies from the prohibition of selective disclosures and investment banking fees, analysts are likely to disproportionately reduce their

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[212] For example, an individual investor may choose not to provide money for research when the investor can instead free-ride on the payment of other investors for research.

[213] The NYSE charges a maximum original listing fee of $250,000 and a maximum continuing annual fee of $500,000. See N.Y. Stock Exch., Inc., Listed Company Manual § 902.02 (2002).

[214] See id. § 402.10(A); N.Y. Stock Exch., Inc., supra note 150, R. 451.90; id. R. 465.20; see also Proxy Reimbursement 2002, supra note 149, at 15,444 (approving the NYSE's proposed proxy distribution rate schedule).

[215] See Sarbanes-Oxley Act of 2002 § § 101-109, 15 U.S.C.A. § § 77s, 78m, 7211-7219 (West Supp. 2003).

[216] See id. § 109(d)(2) (stating that "[t]he rules of the Board under paragraph (1) shall provide for the equitable allocation, assessment, and collection by the Board (or an agent appointed by the Board) of the fee established under paragraph (1), among issuers, in accordance with subsection (g), allowing for differentiation among classes of issuers, as appropriate"); id. § 109(g) (allocating support fees according to relative market capitalization).

coverage of small firms. Yet, not all small firms warrant analyst coverage. A firm that trades in an extremely illiquid market with only one transaction every month does not warrant the expenditure of resources in providing analyst research distributed out to the public marketplace. A central planner would have to determine which firms investors, if they could act collectively, would pay for research and which firms investors would not pay. Even with this decision made, a central planner would then have to determine which analyst research firms should receive the subsidy.

Perhaps because of the daunting informational requirements of a subsidy program, neither the U.S. nor Canada (outside of the Spitzer settlement) provides for an explicit subsidy program for analyst research. Simpler subsidy programs, nonetheless, are possible. Mandatory disclosure acts as a subsidy for analyst research (and also reduces the overall societal need for such research). Outside of forcing issuers to provide more information, Jill Fisch and I have elsewhere made the argument that the market could be harnessed in determining where to allocate subsidy dollars through an analyst research voucher program.[217]

An even simpler subsidy approach is possible based on utilizing competitive forces. Regulators may divide publicly-traded companies in Canada into deciles by market capitalization. Regulators may then establish a tournament, awarding a "prize" out of the subsidy fund of, for example, $1 million each, to the top 10 analysts in a particular market-capitalization decile of the Canadian market. Such an award is likely to have only a minimal direct effect for the highest decile of largest firms. Nonetheless, the mere establishment of a tournament will have reputational effects that will give analysts a greater incentive to publish more accurate research for the largest firms. For smaller decile firms, such a tournament will both provide research dollars and give incentives to provide accurate research. Alternative tournaments are possible. Regulators may establish a tournament for all firms in a particular sector where evidence exists that the analysts provide a disproportionately low amount of research in the sector. Regulators could also establish a tournament solely for the smallest firms, concentrating subsidy dollars on those public companies that presently have the least amount of research. To the extent that investors view the range of small companies as substitute investments for one another, such a grouping would lead to active competition among such analysts for both subsidy dollars and investor attention. For all the different variations of a subsidy tournament, the tournament has the advantage of using objective factors, including for example prior analyst accuracy, to determine where research dollars flow rather than any direct decision on the part of regulators.

[217] See Stephen J. Choi & Jill E. Fisch, How to Fix Wall Street: A Voucher Financing Proposal for Securities Intermediaries, 113 Yale L.J. 269 (2003).

7. Conclusion

An easy solution to the problem of potentially biased analyst research exists. Regulators may simply prohibit all sell-side research from brokerage firms. The difficulty with analysts is that investors find research valuable and may, in the absence of research, turn to even more biased (and potentially fraudulent) sources of information on the internet that may arise in the resulting vacuum. Given this difficult task, this Report echoes the recommendation of the SICAS Report in taking the least-intrusive regulatory path necessary to address a perceived defect in the analyst market. While potentially less effective, choosing disclosure over mandatory prohibitions, for example, results in a lower risk of regulatory error. Moreover, less-intrusive measures pose a reduced risk of generating regulatory "lock-in".

Canada must also to take into account the overall competitiveness of its capital markets. On the one hand, additional regulatory measures that provide a net benefit to investors will increase the attractiveness of Canadian issuers to investors. With a reduced fear of purchasing a "lemon" company, investors will raise the price they are willing to pay for such issuers, increasing the competitiveness of the Canadian capital markets. On the other hand, blindly imposing new regulatory requirements may raise regulatory costs without much net benefit to investors, reducing the competitiveness of the Canadian capital markets. The difficulty in determining the "optimal" balance of regulatory protections further reinforces the necessity of a "take-it-slow" approach to introducing new regulations (**Recommendation #1**). Regulators should start with more disclosure-oriented approaches (including relative ranking disclosures based on prior analyst performance). Regulators may also ease into a subsidy system for analysts with both relatively small subsidies and objective, tournament-based methods of distributing the subsidies. With experience and greater empirical evidence (such as the degree with which analyst coverage responds to the subsidy amounts), regulators may then adjust both disclosure- and subsidy-based regulations while taking into account the competitiveness of the Canadian securities markets.

Focusing on specific regulatory measures, the Report makes three suggestions for lines of potential regulatory reform. First, empirical literature indicates that much of the value analysts provide results not from information obtained independent of management, but rather from information obtained directly from covered firms. The Report therefore suggests that regulators consider increasing (incrementally) the scope of mandatory disclosure from covered firms as a means of reducing the "information gap" to which analysts now supply needed information to the market (**Recommendation #2**).

Second, disclosure on analyst quality has the potential of harnessing market forces to discipline analysts who, because of conflicts of interest and other deficiencies, provide flawed research. The Report nonetheless suggests that regulators have focused on the wrong types of disclosure. If the audience is made up of truly less-sophisticated investors, then the Report suggests that regulators require analysts to provide short, standardized, and relative comparison (against other analysts) information relating to "cues" on analyst accuracy. Regulators should focus on cues, such as prior analyst accuracy, that are relatively difficult for analysts to manipulate. Such cues will allow investors to easily digest the value of a particular analyst's reports, while utilizing competitive forces to give analysts an incentive not to end up at the bottom of the relative ranking (**Recommendation #3**).

Lastly, the Report critiques suggestions to prohibit outright various conflicts of interest that may lead to biased analyst research. Such reforms may both reduce conflicts and the availability of financing for analyst research. The Report therefore suggests that, should regulators pursue such a strategy, that regulators also provide an alternative financing strategy to bolster the overall amount of research in the marketplace (**Recommendation #4**).

Statistical Glossary

Abnormal (or Excess) Returns	The difference between a stock's return and a benchmark return for the same time period. Often the benchmark return will be calculated based on a market model of the expected returns for the stock in question. The benchmark may also be based on portfolios of companies of the same size or risk.
Adjusted R2	A measure of how much of the variation in the dependent variable is explained by a regression adjusted for the degrees of freedom (based on the number of independent variables) in the model.
Cumulative Abnormal Return	Sum of abnormal returns over a particular event window relating to an Event Study.
Dependent Variable	The variable of interest or the response variable to which a researcher is attempting to relate various independent variables.
Event Study	Statistical test of the abnormal return of a particular stock in reaction to a particular public release of new information. Typically an Event Window of a particularly number of trading days is specified around the public information release date.
Independent (or Explanatory) Variables	The variables in a statistical model (see Multivariate Model below) a research is attempting to relate (typically in a linear combination such as in an Ordinary Least Squares Model) to a variable of interest (the Dependent Variable)
Logit Model	Statistical model that relates a binary dependent variable (taking on a value of 0 or 1) with several independent variables. A probit model is a related binary dependent variable model.
Market Model	Statistical model relating a particular stock's past returns with the past returns for a market index. The market model (once estimated for a prior time period) is often used to calculate expected returns for a particular stock into the future for purposes of determining the abnormal return.
Multivariate Model	Statistical model relating a dependent variable with a number of independent variables. Such a model often is estimated as an ordinary least squares model or Logit Model.

Ordinary Least Squares Regression Model	Statistical model that assumes that a dependent variable is a linear function of the independent variables. The coefficients of the independent variables are determined so as to minimize the sum of the squared residuals between the actual dependent variable values and the predicted values of the dependent variable based on the linear combination of the independent variables.
Standard Industrial Classification (SIC) Code	Standard industry grouping codes. For more information see http://www.osha.gov/pls/imis/sicsearch.html.
Standard Deviation	A measure of the dispersion of observations around the mean. Defined as the square root of the average of the square of the difference between each observation and the mean of the data (with an adjustment for the number of degrees of freedom in the data). The standard deviation is the square root of the variance.
Time Series Model	Statistical Model examining a dependent variable that is based on a series of time indexed data (e.g., monthly sales).
Variance	A measure of the dispersion of observations around the mean. Defined as the average of the square of the difference between each observation and the mean of the data (with an adjustment for the number of degrees of freedom in the data).

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