

An inside-out perspective to valuation

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An inside-out perspective to valuation:
from valuation inputs and institutional factors
to valuation accuracy and precision

Olga Ihl-Deviv'e

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An inside-out perspective to valuation:
from valuation inputs and institutional factors
to valuation accuracy and precision

Dissertation

to obtain the degree of Doctor at Maastricht University,
on the authority of the Rector Magnificus Prof.dr. Rianne M. Letschert
in accordance with the decision of the Board of Deans,
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by

Olga Ihl-Deviv'e

Supervisor

Dr. Annelies Renders

Assessment Committee

Prof. Dr. Ann Vanstraelen (Chairperson)

Prof. Dr. Peter Sampers

Prof. Dr. Willem Buijink (Open Universiteit in Heerlen, Netherlands)

Prof. Dr. Wayne Landsman (University of North Carolina at Chapel Hill, United States)

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“If you want to go fast, go alone. If you want to go far, go together.”
African proverb

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Olga Ihl-Deviv’e

Aachen, May 2021

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Chapter 1

Introduction

This dissertation explores the relation between the nature of valuation inputs, corporate governance and financial adviser attributes, and the precision and accuracy of valuation estimates. Valuing an asset, or more broadly, a firm as a whole and knowing what determines its value is a pre-requisite for intelligent decision-making (Damodaran, 2008). Valuation is the process of converting a forecast into an estimate of the value of the firm's assets or equity (Palepu et al., 2013). The relevance and indispensability of valuation becomes evident in the fact that valuations are not only conducted by external market participants, but also by internal parties within the firm for various business decisions. For example, small and young enterprises use valuations to attract funding from venture capital or private equity investors to grow and expand their operations (Damodaran, 2008). Once established, firms continue to rely on valuations for investment, financing, dividend payout and strategic decisions (Damodaran, 2008). Besides firms using valuations for various firm-specific needs and decisions, external market participants also conduct firm valuations, primarily for portfolio management and acquisition purposes.

1.1. The use of valuation

From the portfolio management angle, valuations are conducted by external parties to determine the “true” value of the firm. Firm valuations provide market participants with an estimate of the appropriate price to pay or receive when choosing new investments or managing existing stocks in a portfolio. The value of the firm is often related to its financial characteristics such as its growth prospects, risk profile and cash flows. Any deviation from this “true” value signals that a stock is potentially under- or overvalued and market participants can earn profits by adjusting their stock positions in portfolios (Damodaran, 2008). While some investors are sufficiently sophisticated and active to conduct valuations and manage their portfolios, others rely on information intermediaries such as sell- or buy-side analysts or portfolio managers for valuation and investment decisions. Security analysts, for instance, conduct independent research on the competitiveness and financial situation of a company and provide, among other things, earnings estimates, valuations (including target prices), and stock recommendations for the firms they cover. The added value of information intermediaries is that they provide relevant information to investors regarding the quality of various investment opportunities (Palepu et al., 2013).

Valuations are not only the centerpiece of investment and trading decisions, but they are also at the heart of acquisition analyses. Before making a bid, the acquiring firm needs to conduct valuations of potential targets, estimate their values, and select the target that fits best with the firm's strategy and generates the most synergies. On the target side, once the offer is made, the target firm needs to determine its fair value before evaluating the offer price and deciding to accept or reject the offer. Thereby it is of high importance to obtain accurate valuation estimates, which appropriately reflect the inherent value of

the firm. Yet, it is often challenging to determine the fair price of a firm. Prior studies provide support that the information asymmetry between targets and acquirers is associated with mispricing as acquiring firms tend to overpay for targets (Moeller et al., 2004). In a takeover setting, it is equally essential to both target and acquiring firms to obtain an accurate valuation estimate of the target, and with it, the offer price.

To estimate the value of a firm, or an investment, a wide spectrum of valuation models exists. Valuation methods vary in their sophistication and their underlying assumptions about the derivation of firm fundamentals. In general, there are two main approaches to valuation. The first is the direct valuation approach, which derives a firm's value based on the present value of its expected future fundamental value, adjusted for risk and uncertainty. The most common direct valuation models include discounted cash flow analysis or discounted abnormal earnings, although the former is more widely used. The second approach is the relative valuation, which estimates a firm's value based on and relative to a peer group. The underlying premise is that the pricing of the peer group is applicable to the target firm (Palepu et al., 2013). While the relative valuation approach appears to be easier and more straightforward than the direct method, both techniques are well-established and widely used by market participants.

1.2. Factors affecting valuation estimates

Considering that direct and relative valuation approaches differ in their underlying assumptions about fundamentals that determine firm value, it follows naturally that they might yield different valuation estimates. However, it is often not only the valuation method as such that drives the differences in valuation estimates and their properties, but also other factors. Damodaran (2008) discusses the sources of potential biases and errors in valuations and identifies three main categories.

The first category deals with the valuation inputs perspective. Disregarding the choice of the valuation approach, whether direct or relative, the financial information that is used as valuation inputs into the methods is key and can severely affect the obtained valuation estimates. This follows the principle that a model's output is only as good as the inputs that go into it (Damodaran, 2008). The information sources vary from standardized and regulated financial statements to voluntary disclosures by the management or various financial reports disclosed by forecast tracking services such as I/B/E/S. All these represent different valuation inputs, which ultimately result in different firm valuation estimates.

Given the importance of financial analysts and the valuation information they disclose, the second category revolves around the role of institutional factors. Prior research, for instance, suggests that equity research analysts are more likely to issue buy rather than sell recommendations, meaning they are more likely to find firms to be undervalued

than overvalued.¹ In general, valuation estimates provided by financial analysts might be incorrect or biased for two main reasons. First, it might simply be the inherent valuation and forecasting difficulties embedded in firms that analysts cover. Second, analysts might face pressure from portfolio managers, some of whom might have large positions in the stock, and/or from their own firm's investment banking arms which have other profitable relationships with the firms in question (Damodaran, 2008). All in all, institutional factors can substantially affect, and shape valuation estimates provided by tracking services.

The third category refers to a broader strategic decisions and behaviors perspective. As financial analysts face pressure and incentives when issuing valuation estimates, so do managers when disclosing voluntary information or providing management discussions of performance in an annual report. For example, the biased recommendation of financial analysts as to whether a firm is over- or under-valued might motivate managers to issue incorrect or biased valuation estimates too. For example, managers might issue pessimistic management forecasts, and as a result, induce analysts to lower their earnings expectations to an achievable level (Baik and Jiang, 2006). Various external and institutional forces as well as personal incentives might incentivize managers to issue biased, and, thus, incorrect valuation estimates. This is exacerbated in case of acquisitions and takeovers since both parties, being the management and board of directors as well as financial advisers, might pursue their own objectives and incentives. One of such objectives might be to complete the deal, regardless of the fairness and attractiveness of the offer price. Both, financial advisers and board members can design and use valuations strategically to meet their desired objectives and to maximize their own wealth.

Considering the multifaceted nature of firm valuation and the factors affecting it, this dissertation investigates valuation from multiple perspectives. The dissertation incorporates the two main purposes of valuation, namely portfolio management and acquisition analysis, and investigates various factors that are expected to affect the accuracy and precision of valuation estimates. The first study is from the portfolio management perspective and addresses the valuation inputs angle. To be precise, I am interested whether the relative valuation approach improves if financial information provided by the tracking service I/B/E/S is used as the primary valuation input, as opposed to the financials required by GAAP. Hence, I benchmark the two sets of valuation inputs in the relative valuation framework. The second and third study of this dissertation take the perspective of acquisitions and acquisition analysis. In both studies, the focus is on valuations provided by financial advisers in a fairness opinion as these are relevant not only to the board of directors but also to target shareholders when deciding on the proposed offer. Hereby, I focus on the precision of valuation information as it

¹ By mid-2000, the percentage of buy recommendations had reached 74% of total recommendations outstanding while the percentage of sell recommendations had fallen to 2% (Barber et al., 2006).

is one of the key dimensions that investors consider when assessing the credibility of a voluntary disclosure (Mercer, 2004). In the second study, I focus on the strategic decisions angle and examine to what extent the characteristics and incentives of a target board shape the precision of valuations in a fairness opinion. In addition, I investigate how shareholders perceive the usefulness and credibility of fairness opinion valuations, as captured by shareholder class action lawsuits. In the third study, I examine the drivers of the valuation precision and I focus on the role of reputation and expertise of fairness opinion providers, that is financial advisers. I investigate the relation between valuation precision and reputation of an adviser and a timely completion of a deal. I discuss each of these studies in more detail in the next sections.

1.3. Who is my street peer? The relevance of using adjusted accounting metrics for peer selection in multiple valuation

This study, which can be found in chapter two of this dissertation, examines the relevance of street earnings as a basis for peer selection in a multiple valuation framework. Adjusted accounting numbers – so-called street earnings improve multiple-based valuation through two channels. First, street earnings enhance the quality of the primary valuation inputs underlying a valuation model and, thus, form a better basis for valuation. Street earnings are essentially analyst-adjusted accounting numbers provided by the forecast tracking service I/B/E/S and are shown to better reflect the true economic performance (e.g., Liu and Gao, 2016). Analysts filter out accounting distortions and incorporate “soft” information obtained via for instance conference calls, non-GAAP earnings information, and management forecasts (Doyle et al., 2013). Second, next to enhancing the quality of the primary valuation inputs, I argue that street earnings also improve peer-based (i.e., multiple) valuation methods via the identification of more comparable peers. If GAAP numbers do not accurately reflect the underlying business economics in a timely manner, peer selection and the corresponding multiple valuation are distorted. If street earnings are a more reliable indicator of true firm performance, then these numbers should serve as a better basis for selecting comparable benchmark firms – which will then improve multiple valuation. I investigate these research questions using the warranted multiple approach developed by Bhojraj and Lee (2002) and focus on the Enterprise-Value-to-Sales (EVS) as the relevant pricing multiple. I calculate two predicted multiples per target firm, one based on peers identified using GAAP numbers, and one based on peers identified using street earnings.

Using a sample of 7,301 firm-year observations over the period 2003 to 2014, I first show that street earnings lead to a different set of selected peers compared to GAAP. Specifically, I find no (one) common peer for 14% (15%) of our target firm observations. However, this different peer selection does not automatically lead to a superior peer-based valuation, as on average, I do not find support for the relative superiority of street peers compared to GAAP peers. Yet, when significantly different peers are selected, then

street-earnings based EVS explains significantly more variation of the future EVS of the target firm, compared to the predicted GAAP EVS. In a second step, I examine whether the difference between the predicted and actual EVS can signal potential mispricing, and hence is correlated with future returns. If street peers are more comparable to the target firm, then the predicted EVS based on these peers should more accurately reflect what the target firm's performance should be, compared to the predicted EVS based on GAAP peers. The return analyses show that the difference between the predicted street earnings-based and actual EVS is significantly associated with future returns, up to two years in the future. In contrast, the difference between the predicted GAAP-based and actual EVS is not associated with future returns. My analyses further show that street earnings form a better basis for constructing warranted multiples compared to GAAP numbers when target firms are more volatile, R&D intense, or internationally active. Lastly, I test the underlying assumption that the use of street earnings improves peer-based valuation performance through the identification of more comparable peers. My findings indeed indicate that the peers identified using street earnings are more comparable than the peers identified using GAAP numbers.

My findings shed light on the use of street earnings in multiple valuation. Multiple valuation is a quick and unsophisticated substitute for comprehensive valuations, allowing investors to benchmark firms to comparable peers. However, identification of comparable firms and the calculation of multiples are generally based on GAAP numbers, as these are readily available. In general, this is not problematic, as my analyses show that GAAP-based multiple valuation is on average relatively efficient when forecasting a target firm's future EVS using the warranted multiple approach. Yet, especially for complex firms, street earnings are likely to lead to a different peer selection and implied valuation. For these firms, my analyses suggest that street earnings form a better basis for peer selection and the calculation of predicted EVS. My findings provide a relatively easy way for sophisticated investors to improve investment strategies, by identifying circumstances under which street earnings add value.

1.4. Determinants and real effects of “Texas-wide” fairness opinions: Evidence from tender offers

This study, which can be found in chapter three of this dissertation, focuses on the properties of valuations disclosed in a fairness opinion (FO). A fairness opinion is obtained in mergers and acquisitions to help the board of the acquiring or target firm determine the appropriateness or “fairness” of the consideration to be paid or received. It contains various valuation analyses, which serve as the basis for financial advisers to assess whether the price paid or received is fair from a financial point of view to shareholders of the client firm (Liu, 2020). The informational value of an FO to shareholders depends heavily on the properties of these valuation analyses. Prior research shows that investors consider characteristics of a disclosure, such as its precision, when assessing its credibility

and usefulness (e.g., Mercer, 2004). Hence, I examine two key properties of an FO: its precision and fairness. The precision of an FO, which is captured by the wideness of FO ranges, is supposed to provide assurance regarding the offer price and facilitate shareholders' decisions towards accepting the deal. It has received substantial criticism from media and regulators, as very wide ranges do not aid investors in evaluating the suggested offer price. Another key consideration to target shareholders is whether the offer price is fair according to the FO. I investigate the fairness of an FO by examining whether the offer price is at least equal to or below the overall price suggested in an FO. The goal of this study is to gain more insight into the determinants and consequences of the properties of fairness opinion valuation analyses.

Given the prominent role of the target's board of directors in a takeover setting, I analyze to what extent its characteristics and incentives are reflected in FO valuation analyses' properties. In a next step, I examine how these FO properties are perceived by target shareholders, as proxied by shareholder class action lawsuits. To investigate these questions, I focus on a setting in which FOs are likely to be important, namely tender offers, since their completion and success is highly dependent on target shareholders' tendering decisions. In this setting, it is pivotal for shareholders to receive an accurate assessment of the value of their shares and FO valuation analyses can help target shareholders in reaching an informed decision.

I hand-collected all U.S. tender offers and target FO valuation analyses between 2010 and 2018. The average incidence of FO-related lawsuits is 33 percent, corroborating the importance of FOs in tender offers. The results show that firm-specific knowledge and incentives of the board are strong predictors of the precision of valuation estimates provided in an FO. Specifically, I find a strong positive association between the independence of the board and the probability of issuing an imprecise FO. A long-tenured board, on the other hand, is likely to issue a more precise FO as it possesses valuable firm-specific knowledge to value the target firm more precisely. Interestingly, I find that neither financial nor investment banking expertise of the board seems to matter for the FO precision. Lastly, the board's and the CEO's financial incentives to complete the tender offer are positively associated with the probability of issuing imprecise FOs. Turning to the fairness of the FO, I find that the higher the boards' equity stake, the lower the probability that an unfair FO is disclosed. The more equity directors own, the more sensitive these directors become to the offer price, as their payout is directly linked to the price. At the same time, the CEO's prospect of remaining employed at the merged company provides incentives to complete the tender offer, regardless of the fairness of the FO. The analyses further show that class action lawsuits specifically addressing FOs are positively correlated with imprecise and unfair FOs. Additional analyses also reveal that these properties are not only associated with the occurrence but also the amount of class action lawsuits.

My findings contribute to the fairness opinion, corporate governance as well as litigation literature. First, FOs are still a largely unexplored phenomenon and prior studies provide conflicting evidence on FOs' effect on deal and shareholder wealth. My study aims to explain these contradicting prior studies' findings by focusing on underlying FO properties. I show that while targets issue an FO in all completed tender offers, one-third of them is exposed to FO-related class action lawsuits. This implies that it is not just the occurrence of an FO, but rather the underlying valuation analyses that should be examined. Second, this is the first study to incorporate the board's characteristics and incentives in the context of FOs. Prior research so far has been silent on the role of the target board's characteristics in the context of FO properties and how these can be used strategically to achieve the board's desired objectives. Lastly, this is the first study to analyze the association between FO properties and target shareholder class action lawsuits. Shareholder lawsuits are costly and delay the completion of the deal. Given that acquirers often chose a tender offer over a merger because of the faster completion times, it is crucial to understand which FO properties trigger shareholder lawsuits, thereby impeding fast completion of a tender offer.

1.5. As good as it gets? The role of boutique financial advisers in fairness opinions: Evidence from tender offers

This study, which can be found in chapter four of this dissertation, investigates the role of boutique advisers in the context of fairness opinions. Specifically, I am interested whether boutique advisers provide more precise FOs as compared to non-boutique advisers. Second, I investigate the association between the precision of a target-sought FO and boutique advisers and the probability of a timely deal completion.

Over the last years, the popularity of boutique financial advisers has been on the rise. Boutique advisers often specialize in certain industries, focus primarily on providing advisory services in mergers and acquisitions, and are generally viewed as independent (Chessell, 2015; Song, Wei and Zhou, 2013). These generally small but specialized investment banks are stealing M&A market share from the larger well-established banks at increasing rates. In 2019, boutique financial advisers accounted for 32 percent and the top five bulge bracket banks for 34 percent of total M&A advisory fees.² The threat of a perceived (or actual) conflict of interest, and a desire to avoid it, have increased the demand by boards of directors for an independent and unbiased advice provided by boutique advisers. Yet, despite their growing popularity, the evidence regarding the benefits of hiring boutique advisers versus their competitors is still scarce (Song et al., 2013).

² Retrieved from: https://www.refinitiv.com/content/dam/marketing/en_us/documents/gated/reports/refinitiv-boutique-fees-analysis.pdf

Bulge bracket investment banks represent the traditional full-service brokerage houses that offer a wide range of services such as sales, trading, underwriting, research, and lending. In contrast, boutique advisers focus exclusively on providing M&A advice. The differential nature and focus of boutique banks make it interesting to investigate whether they provide different FOs as compared to their counterparts. On the one hand, boutique advisers should provide more precise valuation ranges due to their industry specialization and M&A expertise (Song et al., 2013). On the other hand, except for a few well-known boutique firms, boutique advisers in general tend to be less well known and are much more reliant on fees for advisory services because this is their only line of business. This might provide them with incentives to issue less precise FOs to ensure that the offer price falls within the valuation ranges so that the tender offer is completed, and their compensation is secured. In addition, we also explore whether the existence of prior ties with the acquirer affects the association between boutique advisers and the precision of their FOs. This might arise due to the potential conflict of interest faced by target boutique advisers. In a takeover setting, the primary concern of target advisers might shift to securing future business with the acquirer, with precise target valuations being of second order importance.

I hand-collected all U.S. tender offers and target FO valuation analyses between 2010 and 2018. The results show that 33 percent of target firms in tender offers hire a boutique investment bank, which supports the popularity of and demand for boutique financial advisers. I find that boutique advisers provide more precise FOs as compared to their counterparts, as suggested by their independence and M&A expertise. The results further show that almost 40 percent of financial advisers hired by the target have prior ties with the acquirer. My results reveal that, in general, target advisers with prior ties with the acquirer tend to provide less precise FOs, yet the opposite is true for boutique advisers. These advisers provide more precise FOs if they have prior ties with the acquirer, likely to increase the likelihood that the acquirer rehires them in the future. This is in line with the “service excellence” idea as the provision of precise FOs is likely to improve boutique advisers’ chances of being rehired by the acquirer in the future. With regard to the second research question, I find that the probability of a timely deal completion is positively associated with the precision of an FO, hinting at target shareholders’ preference for more precise FO disclosures. I also find that target shareholders seem to tender their shares faster if the target hires a boutique adviser as compared to other non-boutique investment banks.

This paper contributes to the fairness opinion and financial adviser literature in several ways. First, this is the first paper to analyze how the type of a financial adviser is associated with the properties observed in an FO. While Chapter 3 of this dissertation suggests that the target board’s characteristics and incentives are important determinants of the observed FO properties, this is the first study to explore the characteristics of an FO provider. Second, this is the first study to analyze how FO properties interact with tender offer extensions, which capture the speed of shareholders’ tendering. Similar to

class action lawsuits, extensions of a tender offer delay the completion of the deal and diminish the comparative advantage of faster completion times of tender offers over mergers. Thirdly, rather than exploring the target adviser's prior relationship with the target, I focus on prior ties with the acquirer since the latter has been largely unexplored, especially in the context of FOs.

1.6. Outline of the dissertation

The remainder of my dissertation is organized as follows. Chapter two presents the study on the relevance of street earnings as a basis for peer selection in a multiple valuation framework. Chapter three summarizes the findings on the determinants and consequences of the properties of fairness opinion valuation analyses, with the focus on the target board of directors. Chapter four covers the third study, which investigates the role of boutique advisers for the precision of a target-sought FO and the probability of a timely deal completion. Finally, chapter five concludes.

Chapter 2

Who is my street peer? The relevance of using adjusted accounting metrics for peer selection in multiple valuation^{3,4}

³ This chapter is based on a working paper co-authored with Annelies Renders and Patrick Vorst.

⁴ We thank Han-Up Park (FARS discussant), Wayne Landsman, Cathy Shakespeare, Joachim Gassen, Ole-Kristian Hope, Bjorn Jorgensen, Frank Moers, Steven Young, as well as workshop participants at the 2020 FARS conference in Nashville, the EAA Doctoral Colloquium and Conference, and seminar participants at Lancaster University, Maastricht University, and the University of Amsterdam for their helpful comments.

ABSTRACT

This study benchmarks the use of street earnings versus GAAP numbers in a multiple valuation framework. Specifically, we examine whether multiple valuation using peers identified based on street earnings outperforms multiple valuation using peers identified based on GAAP numbers. To compare the performance of these peer valuations, we examine the predictive ability and valuation accuracy of peer-based multiple estimates. We rely on the warranted multiple approach developed by Bhojraj and Lee (2002), in which Enterprise-Value-to-Sales (EVS) ratios are predicted using a set of peer firms. Using a sample of U.S. listed firms over the period 2003 to 2014, we find that the use of street earnings leads to a completely different set of selected peers for 14% of the observations. When these different peers lead to a different implied valuation, the street earnings-based predicted EVS ratio has a higher predictive power and is more accurate than the GAAP-based predicted EVS ratio. We also provide evidence that the street earnings-based predicted EVS ratio better explains future stock returns and forms a useful benchmark in identifying target firm over- or underperformance. Cross-sectional analyses further show that street earnings' value predominantly materializes in complex firms. Our findings confirm the supremacy of street earnings vis-à-vis GAAP numbers and suggest that the warranted multiple valuation approach may help investors detect mispricing.

2.1. Introduction

This paper examines the relevance of using street earnings as a basis for peer selection in a multiple valuation framework.⁵ The role of financial information in valuing a target firm cannot be underestimated, as it helps investors in selecting and evaluating potential investments. The quality of the financial information is hence of crucial importance (Chen, Young and Zhuang, 2012). However, accounting numbers usually do not perfectly reflect the underlying business processes, for example because of accounting conservatism or a regulatory one-size-fits-all approach (Young, 2014).⁶ Investment strategies based on these numbers will then be biased, as these accounting distortions affect projected firm valuations and make it difficult to compare firms (Young and Zeng, 2015).

We argue that adjusted accounting numbers – so-called street earnings – form a better basis for valuation, as accounting distortions are filtered out and these numbers therefore better reflect true economic performance (Liu and Gao, 2016). Especially for valuation methods that rely on the identification of comparable peer firms, street earnings have the potential to improve valuation (Frankel and Roychodhury, 2005). However, despite the increasing prevalence of street earnings, evidence suggests that next to alternative metrics (un)sophisticated market participants also greatly rely on GAAP-based metrics.⁷ Hence, the goal of this paper is to investigate the superiority of street earnings for multiple valuation methods via improved peer selection.

Street earnings are essentially analyst-adjusted accounting numbers provided by the forecast tracking service I/B/E/S.⁸ Analysts improve the informativeness of accounting numbers in the following ways. First, analysts consider “soft” information obtained via for instance conference calls, non-GAAP earnings information and management forecasts (Doyle et al., 2013).⁹ This information may not be fully captured by the GAAP

5 Multiple valuation is a relatively straightforward valuation method which requires little sophistication on behalf of investors. Multiples of comparable firms are often used as a substitute for more sophisticated valuation methods, because they efficiently capture the essence of these sophisticated methods (Liu et al., 2002).

6 Curtis et al. (2014) identify the increased inability of GAAP numbers to capture a firm’s increasingly complex business environment as one of the reasons why the provision of non-GAAP earnings by management is on the rise.

7 Papa and Peters (2016) show that 63.6% of survey respondents always or often use non-GAAP metrics, while 71.5% of all respondents always or often use GAAP measures. This result suggests that the regulators’ concern about investors ignoring GAAP information and focusing solely on potentially misleading non-GAAP earnings may be overstated. The reasons why investors still greatly rely on GAAP earnings include that investors have concerns around the communication, consistency, comparability across periods and similar companies, and transparency of non-GAAP earnings (Papa and Peters, 2016).

8 I/B/E/S issues adjusted performance metrics and accounting data called “street earnings”. I/B/E/S bases its exclusion decisions on the items excluded by the majority of analysts, approximating analyst consensus (Black et al., 2017^b; Gu and Chen, 2004). Consistent with prior studies, we use I/B/E/S actuals as a proxy for analysts’ consensus assessment of ex-post realized earnings (e.g., Black et al., 2017^b).

9 Note that the voluntary disclosure of non-GAAP information may in principle overcome the problem of uninformative GAAP numbers. However, the calculation of non-GAAP earnings is not standardized, and the discretion afforded in non-GAAP earnings may make identification of comparable firms more difficult. In addition,

financial statements. Second, multiple analysts tend to follow the same firm, leading to a “check” on potential erroneous valuations or judgments (Alford and Berger, 1999). Third, analysts adjust potential biases in GAAP numbers for a relatively large set of firms, thereby facilitating investment by investors and allowing them to reap abnormal returns (Barber et al., 2001). Hence, analysts undo accounting distortions and render the accounting numbers more informative to investors.

Next to enhancing the quality of the financial information, we argue that analyst adjustments and the resulting street earnings also improve peer-based (i.e., multiple) valuation methods via the identification of comparable peers. Multiple valuation entails multiplying a value driver of a target firm (e.g., earnings or sales) by the corresponding multiple from a set of comparable benchmark firms (Bhojraj and Lee, 2002). The identification of comparable firms is key here. However, the multiples and peers are generally selected based on GAAP numbers (Papa and Peters, 2016). Hence, if GAAP numbers do not accurately reflect the underlying business economics in a timely manner, peer selection and the corresponding multiple valuation are distorted. If street earnings are a more reliable indicator of true firm performance, then these numbers should serve as a better basis for selecting comparable benchmark firms – which will then improve multiple valuation.

We investigate our research question using the warranted multiple approach developed by Bhojraj and Lee (2002).¹⁰ Given a valuation multiple, this approach identifies peer firms based on accounting data using a regression analysis. From these peers, a predicted multiple is calculated, which forms the basis for the target firm’s implied valuation. We focus on the Enterprise-Value-to-Sales (EVS) as the relevant pricing multiple, as it is conceptually superior to alternative multiples when firms are differentially leveraged (Bhojraj and Lee, 2002). We calculate two predicted multiples per target firm, one based on peers identified using GAAP numbers, and one based on peers identified using street earnings.

Using a sample of 7,301 firm-year observations over the period 2003 to 2014, we first show that street earnings lead to a different set of selected peers compared to GAAP. Specifically, we find no common peer for 14% of our target firm observations. However, this different peer selection does not automatically lead to a superior peer-based valuation, as on average, we do not find support for the relative superiority of street peers compared to GAAP peers. This finding is driven by target firms for which

not all firms disclose non-GAAP information, leading to the omission of many potential peers. Finally, analysts are able to synthesize both non-GAAP and GAAP numbers and provide a comprehensive picture of the company, going beyond non-GAAP numbers and enhancing comparability even further (Liu and Gau, 2016).

10 This method has been shown to outperform other multiple valuation methods such as selecting peers that are closest to the target firm in size from the same industry (Bhojraj and Lee, 2002; Young and Zeng, 2015). Anecdotal evidence reveals that practitioners view the warranted multiple as a method which adjusts accounting ratios for fundamental drivers of risk, profitability and growth. For more discussion, see e.g. <https://www.institutionalinvestor.com/article/b14zpltb803kb/warranted-multiples-offer-new-clues-to-future-equity-performance>.

the identified peers are different, but the predicted street earnings-based EVS does not differ substantially from the predicted GAAP-based EVS. When street earnings-based predicted EVS significantly differs from GAAP-based predicted EVS, the street-earnings based EVS explains significantly more variation of the future EVS of the target firm, compared to the predicted GAAP EVS. Moreover, the street earnings-based valuation yields more accurate EVS estimates than GAAP-based multiple valuation.

In a second step, we examine whether the difference between the predicted and actual EVS can signal potential mispricing, and hence is correlated with future returns. We expect that, if the difference between the predicted and actual EVS helps explain future stock returns, this association should be stronger for street earnings-based predicted EVS compared to GAAP-based predicted EVS. Specifically, if street peers are more comparable to the target firm, the predicted EVS based on these peers should more accurately reflect what the target firm's performance should be, compared to the predicted EVS based on GAAP peers. We use the difference between the predicted and actual EVS at the end of the year to make inferences about a target firm's over- or underperformance. The return analyses show that the difference between the predicted street earnings-based and actual EVS is significantly associated with future returns, up to two years in the future. In contrast, the difference between the predicted GAAP-based and actual EVS is not associated with future returns. These findings suggest that peer valuation based on street earnings helps identify over- or underperforming firms, allowing investors to reap abnormal buy-and-hold returns.

To further identify circumstances under which street earnings can improve peer-based valuation, we perform several cross-sectional analyses focusing on target firm complexity. These analyses show that street earnings form a better basis for constructing warranted multiples compared to GAAP numbers when target firms are more volatile, R&D intense, or internationally active. These findings hold for both the predictive power of the street-earnings based predicted EVS, as well as the identification of mispricing. The value of using street earnings as a basis for peer selection in a warranted multiple framework seems to predominantly manifest itself when target firms are more complex and difficult to forecast.

Lastly, we test our underlying assumption that the use of street earnings improves peer-based valuation performance and identification of mispricing through the identification of more comparable peers. Similar to Liu and Gao (2016), we use De Franco et al.'s (2011) method to measure the comparability of earnings. Our results indeed show that the peers identified using street earnings are more comparable than the peers identified using GAAP numbers.

Our results shed light on the use of street earnings in multiple valuation. Multiple valuation is a quick and unsophisticated substitute for comprehensive valuations, allowing investors to benchmark firms to comparable peers. However, identification

of comparable firms and the calculation of multiples are generally based on GAAP numbers, as these are readily available. In general, this is not problematic, as our analyses show that GAAP-based multiple valuation is on average relatively efficient. Both street earnings and GAAP numbers have a similar predictive ability when forecasting a target firm's future EVS using the warranted multiple approach. However, our results indicate that street earnings-based multiple valuation yields more accurate EVS estimates than its GAAP-based counterpart. We further show that especially for complex firms, street earnings are likely to lead to a different peer selection and implied valuation. For these firms, our analyses suggest that street earnings form a better basis for peer selection and the calculation of predicted EVS. Our findings provide a relatively easy way for sophisticated investors to improve investment strategies, by identifying circumstances under which street earnings add value.

The remainder of the paper is organized as follows: Section 2.2 describes the prior literature and outlines the research question. Section 2.3 discusses the research design and the sample. Section 2.4, 2.5 and 2.6 present the findings of our main analyses. Section 2.4 delineates the predictive ability and valuation accuracy of peers analyses, while section 2.5 summarizes findings regarding the mispricing and future stock returns. Section 2.6 outlines cross-sectional analyses on target firm complexity, section 2.7 discusses additional analyses on comparability of peers and section 2.8 concludes.

2.2. Prior Literature and Research Question

Firm valuation is a key driver of investment behavior. Popular direct valuation methods such as free-cash-flow-to-equity are generally quite sophisticated, requiring several assumptions, projections and present value calculations. An easier, straightforward "relative" valuation approach involves multiplying a value driver of a target firm (e.g., earnings) by the corresponding multiple from a set of comparable benchmark firms. In essence, a multiple valuation approach involves the following three steps: (1) identifying a value driver (e.g., earnings), (2) selecting comparable firms and calculating the average pricing multiple of the identified peer firms (e.g., price-to-earnings ratio), and (3) applying the average pricing multiple to the value driver of the firm being valued (Palepu et al., 2013). The multiple approach is a relatively unsophisticated valuation method, and bypasses some of the difficulties inherent in direct valuation methods, such as discounting and forecasting. However, the multiple still relies on the same valuation principles underlying the more sophisticated approaches, such as that value is an increasing function of future payoffs (Liu et al., 2002). Hence, multiples of comparable firms are often used because they efficiently capture the essence of the underlying valuation principles (Liu et al., 2002).

Corroborating the efficiency and ease of use of multiple valuation methods, Imam et al. (2008) show that – despite the availability of comprehensive valuation techniques – UK

investment analysts continue to rely on unsophisticated valuation multiples. Moreover, Brown et al. (2015) show that sell-side financial analysts tend to focus on rather simple valuation models such as Price/Earnings-ratios and cash flow models, instead of the more sophisticated residual income and dividend discount models. In practice, the perceived technical difficulties in applying sophisticated direct valuation methods drive the complementary use of valuation multiples (Imam et al., 2008). In short, these studies suggest that valuation multiples are used by sophisticated market participants to complement comprehensive valuations and justify investment recommendations.

A crucial element of the multiple valuation method is the identification of comparable peer firms from which to calculate the average multiple. A different set of peers implies a different projected valuation, which can alter the investment recommendations of analysts and investment decisions by investors. Prior research has indeed highlighted the importance of economic comparability between the target firm and its selected peers for more accurate value estimates. For example, Alford (1992) shows that valuation errors decline when the industry delineation used to select comparable firms is narrowed to two or three-digit SIC codes. Consistent with the idea that firms in the same industry are exposed to similar economic shocks and accounting constraints, Liu et al. (2002) find that industry-level multiples perform better than multiples derived from the entire cross-section. Bhojraj and Lee (2002) build further on these studies and propose the use of a so-called warranted multiple approach in which peers are identified based on accounting variables that explain cross-sectional differences in observed pricing multiples. These and other studies all revolve around the issue of discovering ways to improve the identification of peers, so that “truly” comparable firms are selected to improve the accuracy of the target firm’s value estimates.

The main obstacle in finding firms that share the same fundamental economic comparability is the quantity and quality of information, which boils down to firms’ disclosure and reporting. Comparability of firms can be hindered for two reasons. First, the conservative and backward-looking nature of accounting standards can impair comparability across firms. Their one-size-fits-all approach may fail to capture the economic fundamentals of firms on a timely basis, which creates comparability problems in the context of pricing multiples (Young, 2014). For example, R&D investments are investments in the long-term profitability of the firm but the requirement to expense these investments prohibits firms from recognizing the future benefits of R&D investments on their balance sheet. Consequently, the requirement to expense R&D investments makes firms’ balance sheets more similar, but not more comparable as it does not allow firms to signal the expected future benefits of their investments. Second, accrual accounting and the reliance on estimates allows managers to exercise considerable discretion, which can further reduce the comparability of GAAP earnings across similar firms. Different reporting practices and accounting choices applied to similar transactions can make similar firms appear to be different. Similarly, inappropriately applied accounting methods may cause economically different firms to appear similar in terms of their

reported outcomes (Young and Zeng, 2015). In aggregate, a differential application of accounting rules may have otherwise similar firms appear different, which hampers the usability of multiple valuation methods. This is especially troublesome given that evidence shows that sophisticated investors still heavily rely on GAAP numbers (Papa and Peters, 2016).

Adjusted performance metrics, so-called “street earnings”, may be a solution to this information problem. Street earnings are I/B/E/S earnings metrics which are released after the publication of financial statements and after the post-announcement conference calls took place. These street earnings mitigate the above-mentioned shortcomings in GAAP and incorporate relevant information not captured in the financial statements, for instance by capitalizing R&D on the balance sheet or excluding non-recurring items from the income statement. To compute street earnings, market specialists evaluate firms’ reported earnings and adjust these based on the adjustments by analysts following the firm (Black et al., 2017b).¹¹ I/B/E/S essentially determines the firm’s period-specific street earnings definition based on how the majority of contributing analysts adjust accounting numbers for a particular firm-quarter (Black et al., 2017b).¹² Similarly, we assume that on average street earnings (i.e., I/B/E/S actual earnings) reflect analysts’ consensus opinion on the firm’s realized earnings.¹³ As analysts’ adjustments remove accounting distortions, street earnings may more accurately represent the underlying firm fundamentals.

Prior research supports the notion that street earnings provide a cleaner representation of a firm’s “core” earnings. Bhattacharya et al. (2003) and Brown and Sivakumar (2003) provide evidence that street operating earnings are more persistent than GAAP operating income and that market participants perceive them as more relevant. In a similar vein, Liu and Gao (2016) show that street earnings better reflect core and continuing operations following analysts’ expertise and professional judgment. Frankel and Lee (1998) use analysts’ earnings forecasts to estimate a firm’s fundamental value and document a high correlation with both contemporaneous and future stock returns. Moreover, revisions in analysts’ earnings forecasts explain a substantially larger portion of contemporaneous

11 Analysts’ majority definition might change based on disclosures in the earnings announcement and/or conference call, i.e., if an unexpected impairment occurs during the period, analysts may update their earnings definition (Black et al., 2017^b).

12 Black et al. (2017^b) emphasize that while street earnings are mainly determined by analysts, managers may also influence the calculation of street earnings through e.g. earnings presentations and the question-and-answer (Q&A) sessions of the conference calls. I/B/E/S then examines earnings press releases to determine if managers report a non-GAAP earnings number (Christensen, 2007). When analyst and non-GAAP numbers differ, I/B/E/S examines the reasons for these differences and may decide ex-post to include additional manager exclusions. Although investors may discount manager-provided non-GAAP earnings (Bentley et al., 2016), the I/B/E/S street earnings are generally assumed to be objectively determined (Black et al., 2017^b).

13 The process of determining which items to exclude is at the data provider’s discretion and can be idiosyncratic in some circumstances (Abarbanell and Lehavy, 2007; Brown and Laroque, 2013). However, given that I/B/E/S centralizes the opinions of analysts following the firm, it is reasonable to assume that on average, street earnings approximate analyst consensus (Black et al., 2017^b).

stock returns than earnings surprises based on reported earnings (Liu and Thomas, 2000). Lastly, in a multiple valuation framework, Frankel and Roychowdhury (2005) find that street earnings numbers are more relevant for valuation purposes than GAAP numbers. We consequently argue that street earnings form a superior basis for peer selection compared to GAAP numbers and hence should improve multiple valuation.

The potential added value of using street earnings in a multiple valuation framework may originate from two sources. First, street earnings are more informative as they remove accounting distortions from the financial statements (Black et al., 2017a). For example, while GAAP earnings contain non-recurring items, analysts typically exclude such items because they are usually not part of firms' normal operating activities (Liu and Gao, 2016). Street earnings may hence show a more accurate picture of the target firm's true performance, and consequently serve as a better basis for multiple valuation. Second, we argue that street earnings improve multiple valuation beyond the direct impact of information provided in street earnings themselves. Specifically, street earnings may further improve multiple valuation via the identification of more comparable peers. Liu and Gao (2016) empirically show that, following adjustments by analysts and I/B/E/S, street earnings are significantly more comparable than GAAP earnings. This enhanced comparability among firms should then facilitate benchmarking, thereby improving multiple valuation (Young and Zeng, 2015). Jointly considered, using street earnings as a basis for multiple valuation should yield improved valuation outcomes compared to multiple valuation based on GAAP earnings, because of a higher informativeness as well as a higher comparability.

The superiority of street earnings seems to be obvious given analysts' privileged relationships with firms and their extensive analyzing skills (Barber et al., 2001; Brown et al., 2015). Moreover, Liu and Gau (2016) provide evidence that street earnings are more comparable than GAAP and managers' reported non-GAAP earnings. However, several studies indicate that analysts' numbers used to determine street earnings might not be superior to other information sources because of analyst bias or inherent forecasting difficulties. For example, Gu et al. (2013) document significant pressure from institutional investors on financial analysts to issue optimistic stock recommendations. These biases may decrease the usefulness of street earnings for valuation purposes. Given that the costs of obtaining street earnings are non-trivial, it is important to investigate whether and when these adjusted numbers form a better basis for peer selection and multiple valuation compared to GAAP numbers.

Based on the preceding argumentation, we investigate the following three questions. First, we examine whether a peer-based valuation model based on street earnings yields improved valuation outcomes compared to peer valuation based on GAAP numbers. Second, we examine whether street-based peer valuation allows investors to identify over- and underperforming firms and make inferences about future performance. Third,

we identify different circumstances under which peers selected based on street earnings should lead to the largest improvement in valuation and the identification of mispricing.

2.3. Research Design

2.3.1. Sample Selection

We obtain an initial sample of 117,135 firm-year observations of US listed firms from COMPUSTAT North America over the period 2000 to 2016. To facilitate estimation of a robust model, the same requirements as in Bhojraj and Lee (2002) need to be fulfilled for firms to be included in the sample. Hence, we exclude ADR firms and REITs as well as firms with prices below \$3 per share, sales below \$100 million or a negative book value of common equity. We only keep observations with non-missing price and accounting data needed to estimate the regressions and truncate the accounting variables at 1 and 99%. Finally, we remove observations with a fiscal year-end that is not in December. Similar to Bhojraj and Lee (2002), long-term debt and R&D expenses are assigned a value of zero in case of missing values.

For the remaining observations, operating profit, sales actuals and long-term growth rate forecasts are merged from the I/B/E/S summary history database. Consistent with the requirements imposed on the COMPUSTAT sample, we require non-missing actuals of sales, operating profit and long-term growth rate forecasts, which reduces the sample 10,555 firm-year observations. For the peer selection in the later analyses, we require at least eight firms per industry-year combination. After truncating the industry-adjusted profit margins at 1 and 99% and excluding years with a low number of observations, the final sample consists of 7,301 firm-year observations from 1,782 unique firms over the period 2003 to 2014. Panel A of Table 1 presents the sample selection procedure, while Panel B presents the distribution of the sample over the years.

TABLE 1: Sample Selection

Panel A: Selection process	
Initial firm-year observations obtained from COMPUSTAT	117,135
Remaining observations after excluding ADRs and REITs	113,960
Remaining observations with sales of at least \$100 million, a share price of at least \$3, and a positive book value of equity	54,291
Remaining observations with at least 10 firms per industry	54,021
Remaining observations with non-missing accounting data	45,135
Remaining observations after truncating main accounting variables	35,127
Remaining observations with December fiscal year-end	24,878
Remaining observations with non-missing profit and sales actuals	10,555
Remaining observations after truncating industry-adjusted variables	9,285
Sample used for annual regressions	9,285
Remaining observations with at least 8 firms per industry-year to select peers	7,848
Remaining observations after deleting firms with identical market capitalization	7,830
Remaining observations after deleting years with a low number of observations	7,301
Sample used for warranted multiple estimation & peer selection	7,301
Number of unique firms	1,782

Panel B: Sample by year		
Year	N	%
2003	401	5.49
2004	436	5.97
2005	882	12.08
2006	889	12.18
2007	839	11.49
2008	720	10.00
2009	869	9.86
2010	915	11.90
2011	886	12.53
2012	153	2.10
2013	225	3.08
2014	86	1.18
Total	7,301	100.00

This table presents the sample selection process (Panel A) and the distribution of the firm observations over the sample years (Panel B).

2.3.2. Empirical Model

In a first step, we estimate two models which we run on a yearly basis in line with the warranted multiple approach proposed by Bhojraj and Lee (2002).¹⁴ The first model is based on the reported GAAP numbers, while the second model replaces two of the explanatory variables with the street earnings reported in I/B/E/S. Following this approach, we can compare GAAP and street earnings in predicting current and future EVS.¹⁵

The first model is based on GAAP earnings. The choice of variables is in line with prior valuation research that emphasizes the importance of growth, risk and profitability factors in a valuation setting (Bhojraj and Lee, 2002). Model (1) is summarized as follows:

$$EVS_{it} = \alpha_t + \beta_1 Ind_EVS_{it} + \beta_2 Ind_PB_{it} + \beta_3 Adj_PM_GAAP_{it} + \beta_4 LOSS_GAAP_{it} + \beta_5 LOSS_PM_GAAP_{it} + \beta_6 Adj_LTG_FORECAST_{it} + \beta_7 LEV_{it} + \beta_8 RNOA_{it} + \beta_9 R\&D_{it} + \varepsilon_{it} \quad (1)$$

The variables used in the GAAP model include the following:

EVS: enterprise-value-to-sales ratio, computed as the market value of equity and the sum of total long-term debt and debt in current liabilities scaled by sales;

Ind_EVS: harmonic mean of EVS ratio for all firms with the same two-digit SIC code¹⁶;

Ind_PB: harmonic mean of price-to-book (P/B) ratio for all firms with the same two-digit SIC code;

Adj_PM_GAAP: industry-adjusted profit margin, computed as the difference between the firm's GAAP profit margin and the median industry GAAP profit margin, where profit margin is operating profit after depreciation divided by sales;

14 This method has been shown to outperform other, basic multiple valuation methods (Bhojraj and Lee, 2002; Young and Zeng, 2015).

15 We focus on EVS rather than the price-to-sales (PS) ratio because the EVS ratio is conceptually superior when firms are differentially leveraged (Bhojraj and Lee, 2002). Additionally, this ratio is particularly applicable to loss firms, which is important for firms operating in industries such as technology, telecommunication or pharmaceutical products (Bhojraj and Lee, 2002). Young and Zeng (2015) and Bhojraj and Lee (2002) show that once the warranted multiple approach is used, the choice of a value driver is not a significant factor affecting the results.

16 In line with prior research, we use the harmonic means of industry EVS and PB ratios (e.g., Baker and Ruback 1999; Bhojraj and Lee, 2002; Young and Zeng, 2015). Liu et al. (2002) show that the performance of valuation models improves when multiples are computed using the harmonic mean, relative to the mean or median ratio of the multiple for comparable firms. The harmonic mean is calculated on a year and industry basis, using the following formula:

$$Harmonic\ Mean = \frac{N}{\frac{1}{x_1} + \frac{1}{x_2} + \frac{1}{x_3} + \dots + \frac{1}{x_N}}$$

Where N is the number of firm-year observations per industry-year and X_1, X_N are the corresponding EVS ratios.

LOSS_GAAP: indicator variable that is equal to one if the firm's GAAP profit margin is negative, and zero otherwise;

LOSS_PM_GAAP: this variable is computed as the interaction between *Adj_PM_GAAP* and *LOSS_GAAP*;

Adj_LTG_FORECAST: industry-adjusted long-term growth forecast as reported by I/B/E/S, computed as the difference between the analysts' consensus forecast of the firm's long-term growth rate and the industry average;

LEV: book leverage, computed as total long-term debt scaled by the book value of common equity;

RNOA: return on net operating assets, calculated as a firm's operating profit scaled by net operating assets;

R&D: R&D expenses divided by sales.

The street model is based on the actuals reported by I/B/E/S. The model includes the same variables as Model (1), but replaces *Adj_PM_GAAP*, *LOSS_GAAP*, and *LOSS_PM_GAAP* with the following variables:

Adj_PM_STREET: industry-adjusted profit margin, computed as the difference between the firm's profit margin as reported by I/B/E/S and the median industry profit margin (based on I/B/E/S actuals of operating profit and sales);

LOSS_STREET: indicator variable that is equal to one if the firm's profit margin as reported by I/B/E/S is negative, and zero otherwise;

LOSS_PM_STREET: this variable is computed as the interaction between *Adj_PM_STREET* and *LOSS_STREET*.

2.3.3. Descriptive Statistics

Summary statistics of the variables used in the GAAP and street model are reported in Table 2, Panel A. The median observation has an EVS ratio of 1.8, leverage of 51 percent and a return on net operating assets of 20 percent. The median industry-adjusted profit margins using GAAP and street earnings are both zero. The descriptives of the industry-adjusted profit margins are comparable to prior studies and are expected to have means and medians close to zero (Bhojraj and Lee 2002). The mean and median EVS values in our sample are slightly higher than the mean and median EVS values (1.20 and 0.94, respectively) reported by Bhojraj and Lee (2002). This is consistent with prior studies documenting an increase over time in the accounting-based multiples such as EVS and PB (e.g., Frankel and Lee, 1991; Bhojraj and Lee, 2002).

Table 2, Panel B, presents the correlation matrix. Panel B shows that all the variables except for *LEV*, *RNOA* and *LOSS_PM_STREET* are significantly correlated with *EVS*. The industry *EVS* ratio (*Ind_EVS*) has the highest correlation, followed by *Adj_PM_STREET*. This suggests that *EVS* is positively correlated with street earnings-based profit margins. GAAP's industry adjusted profit margin (*Adj_PM_GAAP*) is also positively correlated with *EVS*, although the correlation coefficient is somewhat lower. The other two variables that are strongly and positively correlated with *EVS* are *R&D* and *Adj_LTG_FORECAST*, which is line with prior research showing that higher growth firms have higher *EVS* ratios (Bhojraj and Lee, 2002).

TABLE 2: Descriptive Statistics

Panel A: Descriptive Statistics								
	N	Mean	Min	Q1	Median	Q3	Max	Std. Dev.
EVS	7,301	2.309	0.167	1.047	1.789	2.930	13.652	1.895
Ind_EVS	7,301	1.409	0.400	0.945	1.299	1.749	3.979	0.634
Ind_PB	7,301	1.887	0.848	1.583	1.866	2.179	4.752	0.436
Adj_PM_GAAP	7,301	0.009	-0.276	-0.039	0.000	0.055	0.260	0.084
Adj_PM_STREET	7,301	0.009	-0.358	-0.041	0.000	0.058	0.308	0.089
Adj_LTG_FORECAST	7,301	2.353	-15.575	-3.125	0.000	4.250	135.500	12.764
LOSS_GAAP	7,301	0.048	0.000	0.000	0.000	0.000	1.000	0.215
LOSS_PM_GAAP	7,301	-0.007	-0.276	0.000	0.000	0.000	0.000	0.033
LOSS_STREET	7,301	0.039	0.000	0.000	0.000	0.000	1.000	0.195
LOSS_PM_STREET	7,301	-0.006	-0.358	0.000	0.000	0.000	0.000	0.034
LEV	7,301	0.771	0.000	0.212	0.509	0.972	7.958	0.947
RNOA	7,301	26.328	-90.041	10.170	19.910	34.434	209.125	26.838
R&D	7,301	0.034	0.000	0.000	0.000	0.031	1.185	0.071

TABLE 2: Descriptive Statistics (continued)

Panel B: Pearson Correlation Coefficients											
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
(1) EVS	1										
(2) Ind_EVS	0.452 (0.00)	1									
(3) Ind_PB	0.206 (0.00)	0.233 (0.00)	1								
(4) Adj_PM_GAAP	0.356 (0.00)	-0.002 (0.86)	0.002 (0.84)	1							
(5) Adj_PM_STREET	0.406 (0.00)	-0.020 (0.09)	0.033 (0.00)	0.900 (0.00)	1						
(6) LOSS_PM_GAAP	-0.052 (0.00)	-0.008 (0.49)	-0.017 (0.16)	0.435 (0.00)	0.359 (0.00)	1					
(7) LOSS_PM_STREET	-0.017 (0.15)	-0.011 (0.34)	-0.006 (0.61)	0.353 (0.00)	0.412 (0.00)	0.757 (0.00)	1				
(8)Adj_LTG_ FORECAST	0.138 (0.00)	0.046 (0.00)	0.031 (0.00)	-0.064 (0.00)	-0.063 (0.00)	-0.109 (0.00)	-0.115 (0.00)	1			
(9) LEV	0.005 (0.69)	0.087 (0.00)	-0.118 (0.00)	-0.068 (0.00)	-0.073 (0.00)	0.015 (0.20)	0.010 (0.41)	0.008 (0.51)	1		
(10) RNOA	-0.015 (0.21)	-0.093 (0.00)	0.143 (0.00)	0.379 (0.00)	0.343 (0.00)	0.260 (0.00)	0.222 (0.00)	-0.094 (0.00)	-0.076 (0.00)	1	
(11) R&D	0.320 (0.00)	-0.017 (0.16)	0.243 (0.00)	-0.011 (0.36)	0.093 (0.00)	-0.225 (0.00)	-0.116 (0.00)	0.088 (0.00)	-0.144 (0.00)	-0.040 (0.00)	1

This table presents descriptive statistics of the variables used in the yearly regression analyses. Panel A provides summary statistics and Panel B shows the correlations among the variables. Variable definitions: *EVS* = (market value of equity + long-term debt + debt in current liabilities)/net sales; *PB* = market value of equity/total common equity; *Ind_EVS* = harmonic mean of the *EVS* ratio for firms in the industry (based on 2-digit SIC codes) estimated per year; *Ind_PB* = harmonic mean of the *PB* ratio for firms in the industry (based on 2-digit SIC codes) estimated per year; *Adj_PM_GAAP* = target GAAP profit margin - GAAP median industry profit margin, where profit margin is operating profit after depreciation/net sales; *Adj_PM_STREET* = target I/B/E/S actual profit margin - I/B/E/S median actual industry profit margin; *LOSS_GAAP* = 1 if target GAAP profit margin is negative, and 0 otherwise; *LOSS_PM_GAAP* = *Adj_PM_GAAP* * *LOSS_GAAP*; *LOSS_STREET* = 1 if target I/B/E/S actual profit margin is negative, and 0 otherwise; *LOSS_PM_STREET* = *Adj_PM_STREET* * *LOSS_ANL*; *Adj_LTG_FORECAST* = I/B/E/S median long-term EPS growth forecast - median I/B/E/S industry forecast; *LEV* = total long-term debt/total stockholders' equity; *RNOA* = operating income after depreciation/(net property, plant and equipment + total current assets - total current liabilities)*100; *R&D* = industry-adjusted R&D, computed in two steps: (1) compute the average R&D level for each industry-year; (2) compute the level of abnormal R&D as a normalized deviation from the industry average level: (R&D - industry median R&D)/industry standard deviation of R&D.

2.4. GAAP versus IBES Peer Selection and Future EVS

2.4.1. Warranted Multiples

Based on our argumentation above, we posit that street numbers substantially affect peer selection via their impact on the warranted multiple. We therefore generate two predicted EVS multiples for each firm-year observation using the warranted multiple approach (Bhojraj and Lee, 2002). This predicted multiple is a prediction of a firm's current year EVS ratio and is the basis for selecting comparable firms to forecast a target firm's future EVS ratios.

For each firm-year observation, four peers from the same two-digit SIC industry are selected. The first set of four peers is selected based on the predicted GAAP EVS ratio, while the second set of four peers is selected based on the predicted street EVS ratio. We focus on peers from the same industry as prior research shows that industry-matched peers are superior in terms of valuation accuracy compared to peers selected from the COMPUSTAT universe (Foster, 1986; Alford, 1992). To estimate the current-year predicted EVS ratio, which then forms the basis for our peer selection, we require a minimum of eight firms per industry-year to ensure that enough potential peers are available. The key variables are defined as follows:

EVS_PRED_GAAP: predicted EVS based on GAAP valuation inputs. This variable is computed using the estimated regression coefficients from the prior year's regression using the GAAP version of Model (1) and accounting and market-based variables from the current year;

EVS_PRED_STREET: predicted EVS based on street earnings valuation inputs. This variable is computed using the estimated regression coefficients from the prior year's regression using the street version of Model (1) and accounting and market-based variables from the current year;

HARM_GAAP: harmonic mean of the actual EVS ratio of the four firms in the industry with the closest GAAP predicted EVS;

HARM_STREET: harmonic mean of the actual EVS ratio of the four firms in the industry with the closest street predicted EVS.

Before selecting peers, it is important to examine the extent to which the predicted EVS ratios, which are used to select peers, are different. A *t*-test on the difference between street and GAAP predicted EVS ratios suggests that the mean of the paired differences is negative (-0.0176) and the difference is significant at 1% (p-value < 0.001). This suggests that on average street predicted EVS ratios are lower than the corresponding GAAP predicted EVS ratios.

The next step is to examine the extent to which the peers selected based on GAAP and street earnings differ from each other. The results indicate that for 86% of the sample at least one common peer is identified, out of four peers. For 14% of the sample, no common peers are identified. The average overlap of peers in our sample is 65%. This implies that out of four peers based on street earnings, on average 1.4 (2.6) of the peers are different (same) as the GAAP-based peers. These results imply that for a non-trivial percentage of firm-year observations, the set of peers is completely different once street instead of GAAP earnings are used.

2.4.2. Predictive Ability and Valuation Accuracy of Street and GAAP Peers

To evaluate whether street earnings are associated with better peer-based valuation performance, we examine two valuation performance dimensions. In line with prior research, the first dimension captures the ability of peers to predict current and future EVS ratios. The second dimension measures the valuation accuracy of peer-based valuation (e.g., Bhojraj and Lee, 2002; Young and Zeng, 2015).

Turning to the predictive ability of peers, we run two models for every firm-year observation to test whether street peers are more predictive of the target firm's current and future EVS. The first model includes the harmonic mean of the street peers as the independent variable and current and future (one-, two-, and three-year ahead) EVS values as the dependent variable. The second model includes the harmonic mean of the GAAP peers as the independent variable. We then compare the adjusted R-squared values of the two models using a Vuong test to determine which model has a significantly larger adjusted R-squared value (Brown and Sivakumar, 2003; Bradshaw and Sloan, 2002). The results are presented in Table 3.

Chapter 2

TABLE 3: Predictive Power of Street and GAAP Harmonic Mean of Peers for Current and Future EVS Ratios

Panel A: Full Sample					
	N	Intercept	HARM_STREET	HARM_GAAP	Adj.R²
<i>EVS_{it}</i>					
STREET model	7,301	0.385 ($<.0001$)	0.980 ($<.0001$)		44.37
GAAP model	7,301	0.370 ($<.0001$)		0.995 ($<.0001$)	43.49
Vuong Z-statistic (p-value)					1.083 (0.279)

<i>EVS_{it+1}</i>					
STREET model	4,839	0.582 ($<.0001$)	0.825 ($<.0001$)		36.77
GAAP model	4,839	0.559 ($<.0001$)		0.846 ($<.0001$)	35.71
Vuong Z-statistic (p-value)					1.213 (0.225)

<i>EVS_{it+2}</i>					
STREET model	3,903	0.689 ($<.0001$)	0.757 ($<.0001$)		32.37
GAAP model	3,903	0.677 ($<.0001$)		0.768 ($<.0001$)	30.79
Vuong Z-statistic (p-value)					1.601 (0.109)

<i>EVS_{it+3}</i>					
STREET model	3,156	0.769 ($<.0001$)	0.700 ($<.0001$)		29.54
GAAP model	3,156	0.732 ($<.0001$)		0.726 ($<.0001$)	29.29
Vuong Z-statistic (p-value)					0.276 (0.783)

Average Adj. R ²					35.76

Average Adj. R ²					34.82

STREET model					
GAAP model					

TABLE 3: Predictive Power of Street and GAAP Harmonic Mean of Peers for Current and Future EVS Ratios (continued)

Panel B: Top Quartile Difference					
	N	Intercept	<i>HARM_STREET</i>	<i>HARM_GAAP</i>	Adj.R ²
<i>EVS_t</i>					
STREET model	1,825	0.999 (<.0001)	0.779 (<.0001)		28.04
GAAP model	1,825	1.063 (<.0001)		0.776 (<.0001)	25.10
Vuong Z-statistic (p-value)					1.496 (0.135)

<i>EVS_{t+1}</i>					
STREET model	1,148	1.192 (<.0001)	0.621 (<.0001)		22.18
GAAP model	1,148	1.271 (<.0001)		0.615 (<.0001)	17.94
Vuong Z-statistic (p-value)					2.044 (0.041)

<i>EVS_{t+2}</i>					
STREET model	898	1.325 (<.0001)	0.576 (<.0001)		18.72
GAAP model	898	1.420 (<.0001)		0.555 (<.0001)	13.86
Vuong Z-statistic (p-value)					2.105 (0.035)

<i>EVS_{t+3}</i>					
STREET model	728	1.523 (<.0001)	0.488 (<.0001)		14.02
GAAP model	728	1.479 (<.0001)		0.516 (<.0001)	12.73
Vuong Z-statistic (p-value)					0.665 (0.506)
Average Adj. R ² STREET model					20.74
Average Adj. R ² GAAP model					17.41

This table provides estimated coefficients from the following prediction models:

$$EVS_{i,t+k} = \alpha_t + \sum_{j=1}^k \text{explanatory variable} + \mu_i$$

Where k = 0, 1, 2, 3 are current, one-, two-, and three-year ahead EVS ratios. *HARM_GAAP* = harmonic mean of the actual EVS ratio of the four firms within the industry with the closest predicted GAAP EVS; *HARM_STREET*= harmonic mean of the actual EVS ratio of the four firms within the industry with the closest predicted street EVS. In Panel A the full sample is used, whereas in Panel B the sample consists of observations in the top quartile of the variable *ABS_DIFF_HARMPEERS*. It captures the absolute difference in the harmonic mean of the peers based on the two different warranted multiples (*HARM_STREET* - *HARM_GAAP*). All other variables are defined below Table 2.

An important first finding is that the harmonic mean of the peers by itself explains a substantial portion of the variation in the EVS ratios. The results in Table 3, Panel A indicate that the harmonic mean of the street peers explains on average 35.76% of the variation in the current and future EVS values, while this is 34.82% for the GAAP peers. The predictive ability of street peers increases slightly with the length of the forecast period. For the current year, these peers explain 0.88% more variation, for the year $t+1$ they explain 1.06%, and for year $t+2$ they explain 1.58% more of the variation in the EVS ratio – though the differences in the explanatory power between the two sets of peers are not statistically significant.

However, it is important to note that even if the identified peers are different, the harmonic mean might not substantially differ between street and GAAP peers. Appendix 2A illustrates how, despite having a different set of peers, the harmonic means are not significantly different when street or GAAP peers are used. We therefore not only consider the number of different peers, but also the absolute difference in the harmonic means of the peers to capture a significantly different set of peers.

To further explore this issue, we focus on firms where street and GAAP peers have a fundamentally different harmonic mean. For every firm-year observation, we create a variable *ABS_DIFF_HARMPEERS*, which captures the absolute difference in the harmonic mean of street peers and that of the GAAP peers. The full sample is then divided in quartiles based on this absolute difference with the top quartile reflecting the highest differences in the harmonic mean of peers.

Results for the top-quartile subsample are presented in Table 3, Panel B and indicate that the street peers explain on average 20.74%, while the GAAP peers explain only 17.41% of the variation in current and future EVS ratios. When significantly different peers are selected, i.e., peers which lead to a different harmonic mean of the EVS ratio, the gap in the explanatory power between the two sets of peers increases. In line with the full sample, the predictive ability of the street peers increases slightly with the length of the forecast period. For the current year, street peers explain 2.94% more variation, for the year $t+1$ they explain 4.24% and for year $t+2$ they explain 4.86% more of the variation in the EVS ratio, compared to GAAP peers. The differences in the explanatory power between the two sets of peers are statistically significant at 5% for the one- and two-year ahead EVS ratios.¹⁷

Taken together, the results indicate that on average street peers do not outperform GAAP peers, unless significantly different peers are selected. The larger the difference in

17 Untabulated results indicate that the higher the difference in the mean of peers (e.g., top decile), the higher the gap in the explanatory power between the two sets of peers. In the top decile, the street peers explain on average 15% and the GAAP peers 9% of the variation in current and future EVS ratios. For the current year, street peers explain 3.21%, for the year $t+1$ they explain 6.89% and for the year $t+2$ they explain 10.72% more of the variation in the EVS ratio.

the harmonic mean of the selected peers, the better street peers explain the target firm's current, one- and two-year ahead EVS ratios.

Besides investigating the predictive ability of peers to forecast future EVS multiples, it is also important to consider the accuracy of these peer-based EVS predictions. Therefore, the second dimension captures absolute valuation errors of both street- and GAAP-based peer valuations. *STREET_AVE* captures valuation errors produced by street-based multiple valuation and *GAAP_AVE* captures those produced by GAAP peers. We then compare the differences in the valuation errors between the two sets of peers to identify which set of peers yields more accurate EVS estimates. The results are presented in Table 4.

TABLE 4: Valuation Accuracy of Street and GAAP Harmonic Mean of Peers for Current and Future EVS Ratios

Panel A: Full Sample			
	N	Mean	Median
<i>EVS_{it}</i>			
STREET_AVE	7,301	0.379	0.285
GAAP_AVE	7,301	0.385	0.288
Difference		-0.006*	-0.003
(p-value)		(0.080)	(0.112)

<i>EVS_{it+1}</i>			
STREET_AVE	4,683	0.355	0.277
GAAP_AVE	4,683	0.367	0.282
Difference		-0.012***	-0.005*
(p-value)		(0.002)	(0.075)

<i>EVS_{it+2}</i>			
STREET_AVE	3,675	0.353	0.274
GAAP_AVE	3,675	0.364	0.279
Difference		-0.011***	-0.005
(p-value)		(0.010)	(0.171)

<i>EVS_{it+3}</i>			
STREET_AVE	2,908	0.352	0.272
GAAP_AVE	2,908	0.373	0.280
Difference		-0.021***	-0.008***
(p-value)		(<.0001)	(0.005)

Panel B: Top Quartile Difference			
	N	Mean	Median
<i>EVS</i> _{<i>i,t</i>}			
STREET_AVE	1,825	0.418	0.302
GAAP_AVE	1,825	0.441	0.329
Difference		-0.023**	-0.027***
(p-value)		(0.047)	(0.005)

<i>EVS</i> _{<i>i,t+1</i>}			
STREET_AVE	1,130	0.356	0.272
GAAP_AVE	1,130	0.384	0.299
Difference		-0.028***	-0.027**
(p-value)		(0.002)	(0.032)

<i>EVS</i> _{<i>i,t+2</i>}			
STREET_AVE	863	0.355	0.283
GAAP_AVE	863	0.370	0.287
Difference		-0.015	-0.004
(p-value)		(0.212)	(0.498)

<i>EVS</i> _{<i>i,t+3</i>}			
STREET_AVE	706	0.332	0.254
GAAP_AVE	706	0.352	0.268
Difference		-0.020*	-0.014
(p-value)		(0.055)	(0.319)

This table presents tests of valuation accuracy for street and GAAP peers, which is captured by absolute valuation errors. Absolute valuation errors capture the difference between actual and peer-based implied EVS. $STREET_AVE_{i,t+k} = (EVS_{i,t+k} - HARM_STREET_{i,t+k}) / EVS_{i,t+k}$. Similarly, $GAAP_AVE_{i,t+k} = (EVS_{i,t+k} - HARM_GAAP_{i,t+k}) / EVS_{i,t+k}$, where $k = 0, 1, 2, 3$ are current, one, two, and three-year ahead actual EVS and peer-based implied EVS ratios. *Difference* captures the mean (median) difference between $STREET_AVE_{i,t+k}$ and $GAAP_AVE_{i,t+k}$. Negative differences suggest that GAAP peers provide less accurate EVS estimates than street peers, while positive differences suggest that street peers exhibit higher valuation errors, and thus less accurate EVS estimates than GAAP peers. In Panel A the full sample is used, whereas in Panel B the sample consists of observations in the top quartile of the variable *ABS_DIFF_HARMMPEERS*. Please refer to Table 3 for definition of *HARM_STREET*, *HARM_GAAP* and *ABS_DIFF_HARMMPEERS* variables. The pairwise differences between $STREET_AVE_{i,t+k}$ and $GAAP_AVE_{i,t+k}$ are tested using a paired t-test (for mean differences) and a paired Wilcoxon signed rank test (for median differences). *, **, and *** represent significance at the 10 percent, 5 percent, and 1 percent levels, respectively.

Panel A of Table 4 depicts differences in the valuation errors for the full sample, while Panel B represents the top-quartile subsample with highest differences in the harmonic mean of the peers. The results in panel A suggest that mean absolute valuation errors decline when street-based peer valuation is used, with the decline being economically significant for all forecasting windows. When street-based peer valuation is used, the decline in mean absolute valuation errors is 1.6% and 5.6% for the current and three-year ahead EVS multiple, respectively. Panel B of Table 4 provides similar and slightly stronger results. The use of street earnings in peer selection is associated with a decline

in mean absolute valuation errors of 5.2% and 5.7% for current and three-year ahead EVS multiples, respectively.

Taken together, the results indicate that street peers are associated with more accurate multiples-based valuation estimates through improved peer selection. Especially when peers are selected that also lead to a different harmonic mean, street-based peers yield more accurate valuation estimates than GAAP peers. In addition, when different peers are selected, street peers are more predictive of the target firm's one- and two-year ahead EVS ratios.

2.4.3. Drivers of Differences in Selected Peers

Given that on average street peers do not outperform GAAP peers, it is important to understand for which firms analysts and their street earnings add value. Hence, besides examining which set of peers better explains the target firm's current and future EVS ratios, it is also important to investigate whether we can find variables that explain the differences in the selected peers. We therefore examine the association between several firm and industry-specific characteristics and the likelihood of finding significantly different peers using a probit model.

The dependent variable of the model is an indicator variable equal to one if the absolute difference in the harmonic means between street and GAAP peers is in the top quartile, and zero otherwise. We include a set of firm-specific variables which are likely to affect forecast accuracy and the ability of GAAP numbers to capture the underlying business economics. These measures proxy for firm complexity. For more complex firms, accounting standards are less likely to capture firms' economic fundamentals on a timely basis. Analysts' firm and industry-specific information advantage is likely to have a larger effect on the difference in the selected peers in complex and opaque firms (e.g., Duru and Reeb, 2002; Lehavvy et al., 2011). As explanatory variables, we include R&D and advertising expenditures, merger and acquisition activities, intangible assets, goodwill and foreign income. We also include the level of inventory build-up following Hutton et al. (2012), as firms with unusual operating situations such as abnormal inventory are particularly difficult to forecast. Further we include industry complexity and opaqueness, industry dispersion, and industry size. We refer to Table 5 for a detailed explanation of the variable definitions.

TABLE 5: Drivers of Systematic Differences in Selected Peers

	Coefficient	p-value	Marginal effects
<i>INTERCEPT</i>	-1.877	<.0001	
<i>R&D</i>	0.162	<.0001	0.043
<i>ADV</i>	2.216	0.009	0.586
<i>INT</i>	0.046	0.677	0.012
<i>M&A</i>	0.109	0.027	0.029
<i>FOREIGN_INC</i>	0.493	0.082	0.130
<i>INV_BUILD</i>	0.055	0.006	0.014
<i>GOODWILL</i>	0.085	0.531	0.023
<i>INDUSTR_DISPR</i>	0.362	<.0001	0.096
<i>INDUSTR_IND</i>	0.278	<.0001	0.073
<i>N_INDYEAR</i>	0.012	0.262	0.003
Number of observations		7,097	
Industry FE		YES	
Year FE		YES	
Pseudo R-square		16.45	

This table presents the results of a probit model on the drivers of systematic differences in the selected peers. The dependent variable is an indicator variable equal to one if the target firm's absolute difference in the EVS mean of peers is in the top quartile and zero otherwise. *R&D*= industry-adjusted R&D, computed in two steps: (1) compute the average R&D level for each industry-year; (2) compute the level of abnormal R&D as a normalized deviation from the industry average level: $(R\&D - \text{industry median } R\&D) / \text{industry standard deviation of } R\&D$; *ADV*= advertising expense divided by net sales; *INT*= net intangible assets scaled by total assets; *M&A*= indicator variable equal to one if a firm has merger and acquisition-related (M&A) costs, and zero otherwise; *FOREIGN_INC*= foreign income divided by sales; *INV_BUILD* = computed in three steps: (1) compute for each firm-year day's inventory, where day's inventory is equal to $(\text{inventory}/\text{cost of goods sold}) \times 365$; (2) compute the average day's inventory for each industry-year; (3) compute the level of abnormal inventory as a normalized deviation from the industry average day's inventory: $(\text{days inventory} - \text{industry median days inventory}) / \text{industry standard deviation of days inventory}$; *GOODWILL*= indicator variable equal to one if a firm has goodwill, and zero otherwise; *INDUSTR_IND*= indicator variable equal to one if a firm belongs to one of the more complex and opaque industries, and zero otherwise, where more complex industries include the following sectors: computer software; electronic equipment; pharmaceutical products and drugs; chemicals; petroleum and natural gas; health services; utilities; communications; business services; hardware computers; measuring and control equipment; financial trading; restaurants, hotels and motels; precious metals; non-metallic and industrial metal mining; *INDUSTR_DISPR*= industry dispersion, calculated as the interquartile range of the EVS of all firms for a given industry-combination; *N_INDYEAR*= number of firms per industry-year available for the peer selection. Standard errors are clustered by firm.

Table 5 presents the results of the probit model and the accompanying marginal effects. All predictors, except for intangibles and goodwill, are significant at 10%. All firm and industry-specific characteristics are positively related to the likelihood of having different peers. The strongest predictor for having significantly different peers is the intensity of advertising expenditures. A one-percent increase in advertising expenditures is associated with a 58.6% higher likelihood of having different peers. The second strongest predictor for having different peers is foreign income exposure. A one-percent increase in foreign income is associated with a 13% higher likelihood of having different peers. The third strongest predictor for having different peers is industry dispersion,

which emphasizes the role of industry characteristics in peer-based valuation (Alford, 1992). R&D expenditures and M&A related costs are also strong predictors for having different peers. This is in line with our expectations since GAAP, with its required expensing of R&D investments, is unable to fully capture the economic fundamentals of an R&D-intense firm on a timely basis (Healy et al., 2002). For firms operating in one of the more complex industries, the likelihood of having different peers is 7% higher than for firms operating in less complex industries. These results support the industry-specific knowledge and expertise of analysts.

Overall, these results suggest that for firms with more complex operations and firms operating in more complex industries, analysts' expertise and information advantage are more likely to result in a different set of peers and a better prediction of current and future EVS ratios.

2.5. GAAP versus Street Peers and Implications for Future Returns

Peer-based valuation is widely used by investors when making investment decisions. Doukas et al. (2010) argue that peer-based valuation affects investor beliefs and thus stock prices, as it provides relevant information about other stocks and the economy. Moreover, peer-based valuation allows investors to categorize securities as “underpriced” or “overpriced” and make inferences about future performance. The underlying assumption is that investors have imperfect information about expected returns or cash flows and therefore learn about it using relative industry performance information (Doukas et al., 2010).

One would expect that analyst coverage and the large extent of information disclosure would allow professional investors to identify mispricing, bringing the market into equilibrium. However, anecdotal evidence suggests that these sophisticated investors still strongly rely on GAAP numbers when conducting valuation analyses (Papa and Peters, 2016). Given our prior arguments on GAAP numbers being a flawed basis for valuation analyses, an implication is that mispricing is still likely to exist. Prior research indeed suggests that the market does not fully incorporate accounting and analyst information into stock prices and consequently has flawed expectations (Piotroski and So, 2012). We hence posit that street earnings-based multiple valuation can help address mispricing in the market.

The essence of peer-based multiple valuation is to identify peers that are similar to the target firm, and then take the average multiple of these peers as an indication of what the multiple of the target firm should be. The predicted EVS reflects what the target firm's performance should be, as it is the mean predicted EVS of its comparable peers. Similar to Doukas et al. (2010), we expect any gap between the actual EVS of the target firm and the predicted EVS to be reflective of over- or under-performance, as the target

firm's multiple is not in line with that of its peers.¹⁸ The difference between the predicted and actual EVS may then help in identifying potential mispricing and should correlate with future returns.¹⁹ In our setting, we have two different predicted EVS ratios: One using street peers and one using peers identified based on GAAP numbers. Following our reasoning and findings, we expect that if the difference between the predicted and actual EVS helps explain future stock returns, this association should predominantly (or even only) exist for street earnings-based predicted EVS. To test this conjecture, we use the difference between the predicted and actual EVS at the end of the year (*DIFFEVS*) to make inferences about a target firm's over- or under-performance, where *DIFFEVS* is calculated separately for the street earnings-based predicted multiple and the GAAP-based predicted multiple.²⁰ Next, we run the following model:

$$\begin{aligned}
 BHR_{it} = & \alpha_t + \beta_1 DIFFEVS_{it} + \beta_2 LOG(MVE)_{it} + \beta_3 ROA_{it} + \beta_4 LEV_{it} + \beta_5 MTB_{it} + \beta_6 CAP_ \\
 INT_{it} + & \beta_7 SALES_GROWTH_{it} + \beta_8 R\&D_{it} + \beta_9 M\&A + \beta_{10} FOREIGN_INC_{it} + \beta_{11} INT_{it} \\
 + \beta_{12} INV_BUILD_{it} + & \beta_{13} Adj_LTG_FORECAST_{it} + \beta_{14} PM_DIFF_{it} + \beta_{15} ABS_DIFF_ \\
 HARMMPPEERS_{it} + & \beta_{16} GOODWILL_{it} + \beta_{17} MKT_RF_t + \beta_{18} SMB_t + \beta_{19} HML_t + \varepsilon_{it} \quad (2)
 \end{aligned}$$

The dependent variable represents the buy-and-hold-returns for different holding periods, ranging from 12, 24 to 36 months – so t up to $t+3$. We refer to Table 6 for a detailed explanation of the variable definitions.

We run model (2) separately for the street earnings and GAAP scenarios. To disentangle the role of the differential peer selection from the direct impact of analyst adjustments as such, we control for I/B/E/S adjustments that are used as key input variables in the peer selection process. Specifically, we include the difference between I/B/E/S and GAAP profit margins (*PM_DIFF*) in the model to capture the aggregate impact analyst adjustments.²¹ We further adjust the buy-and-hold returns for risk using the Fama-French three-factors. Industry and year fixed effects are included in the model and standard errors are clustered at the firm level.²² The results are presented in Table 6.

18 Using the ratio of the firm's actual value relative to its industry-based predicted value to capture mispricing, Doukas, Kim and Pantzalis (2010) find that the peer-based implied mispricing is related to future abnormal returns. Hence, any gap between our predicted multiple and the firm's actual EVS should be associated with future returns.

19 Note that a negative difference between the predicted and actual EVS implies that the target firm exceeded the peer-based expectations, which should be associated with higher returns in the future (e.g., actual EVS of 12 whereas the implied EVS is 10). In contrast, a positive difference reveals that the target firm under-performed and fell short of its peer-based expectations, which is expected to be associated with lower future returns (e.g., an actual EVS of 10, whereas the predicted EVS is 12).

20 The results reported in Table 6 are based on a sample where *DIFFEVS_STREET* is not equal to *DIFFEVS_GAAP* to capture differential peer-based valuation. Our inferences remain unaffected when using the full sample.

21 To filter out the effect of analyst adjustments and ensure that our results are driven by the peer selection, we use total I/B/E/S adjustments in untabulated analyses. We replace *PM_DIFF* with the scaled difference in EPS, which is measured as $(EPS_{I/B/E/S} - EPS_{GAAP}) / EPS_{GAAP}$. Our inferences are unaffected.

22 Our inferences remain unaffected if we cluster standard errors by industry and year.

TABLE 6: Buy-and-Hold Returns

Panel A: STREET Model			
	12-month BHR	24-month BHR	36-month BHR
<i>DIFFEVS_STREET</i>	-0.013** (-2.20)	-0.021* (-1.83)	-0.020 (-1.13)
<i>LOG(MVE)</i>	-0.010* (-1.94)	-0.039*** (-3.68)	-0.046*** (-3.27)
<i>ROA</i>	0.132 (1.01)	0.063 (0.28)	-0.082 (-0.26)
<i>LEV</i>	0.024** (2.23)	0.045** (2.30)	0.043 (1.58)
<i>MTB</i>	-0.009** (-2.24)	-0.010 (-1.26)	0.002 (0.18)
<i>CAP_INT</i>	-0.010 (-0.92)	-0.019 (-1.09)	-0.007 (-0.29)
<i>SALES_GROWTH</i>	-0.008 (-0.33)	-0.018 (-0.62)	-0.034 (-1.02)
<i>R&D</i>	0.004 (0.58)	0.019 (1.50)	0.040** (2.24)
<i>M&A</i>	0.008 (0.46)	0.029 (0.89)	0.001 (0.03)
<i>FOREIGN_INC</i>	0.117 (1.04)	0.053 (0.28)	-0.145 (-0.53)
<i>INT</i>	-0.110*** (-2.88)	-0.091 (-1.23)	0.026 (0.25)
<i>GOODWILL</i>	0.004 (0.13)	0.069 (1.29)	0.119* (1.75)
<i>INV_BUILD</i>	-0.001 (-0.09)	-0.002 (0.17)	-0.003 (-0.19)
<i>Adj_LTG_</i>	-0.002**	-0.005**	-0.007***
<i>FORECAST</i>	(-2.14)	(-3.87)	(-4.64)
<i>PM_DIFF</i>	0.223 (1.06)	0.268 (0.85)	0.130 (0.33)
<i>ABS_DIFF_</i>	0.008	0.006	-0.019
<i>HARMMPEERS</i>	(0.67)	(0.28)	(-0.70)
<i>MKT_RF</i>	-0.023*** (-7.71)	-0.046*** (-10.40)	-0.023*** (-7.56)
<i>SMB</i>	0.043*** (6.64)	0.070*** (7.75)	0.020*** (5.44)
<i>HML</i>	0.014*** (4.84)	0.010** (2.20)	-0.007* (-1.79)
Industry and year fixed effects	Yes	Yes	Yes
N	3,751	3,575	3,399
Adjusted R ²	30.05%	30.87%	21.61%

TABLE 6: Buy-and-Hold Returns (*continued*)

Panel B: GAAP Model			
	12-month BHR	24-month BHR	36-month BHR
<i>DIFFEVS_GAAP</i>	-0.004 (-0.67)	-0.011 (-0.95)	-0.017 (-0.98)
<i>LOG(MVE)</i>	-0.010** (-1.98)	-0.040*** (-3.71)	-0.046*** (-3.27)
<i>ROA</i>	0.126 (0.97)	0.055 (0.24)	-0.088 (-0.28)
<i>LEV</i>	0.022** (2.04)	0.042** (2.20)	0.043 (1.57)
<i>MTB</i>	-0.006 (-1.64)	-0.007 (-0.89)	0.003 (0.27)
<i>CAP_INT</i>	-0.001 (-0.13)	-0.010 (-0.80)	-0.005 (-0.18)
<i>SALES_GROWTH</i>	-0.005 (-0.21)	-0.010 (-0.59)	-0.032 (-0.95)
<i>R&D</i>	0.004 (0.55)	0.019 (1.51)	0.041** (2.28)
<i>M&A</i>	0.008 (0.47)	0.030 (0.90)	0.001 (0.02)
<i>FOREIGN_INC</i>	0.110 (0.98)	0.041 (0.22)	-0.155 (-0.57)
<i>INT</i>	-0.113*** (-2.94)	-0.095 (-1.29)	0.023 (0.22)
<i>GOODWILL</i>	0.006 (0.18)	0.071 (1.32)	0.119* (1.76)
<i>INV_BUILD</i>	-0.001 (-0.16)	-0.003 (-0.23)	-0.003 (-0.21)
<i>Adj_LTG_ FORECAST</i>	-0.002** (-2.16)	-0.005*** (-3.88)	-0.007*** (-4.63)
<i>PM_DIFF</i>	0.179 (0.86)	0.187 (0.59)	0.042 (0.11)
<i>ABS_DIFF_ HARMMPEERS</i>	0.003 (0.23)	0.000 (0.02)	-0.023 (-0.82)
<i>MKT_RF</i>	-0.023*** (-7.69)	-0.046*** (-10.45)	-0.023*** (-7.52)
<i>SMB</i>	0.043*** (6.59)	0.070*** (7.78)	0.020*** (5.43)
<i>HML</i>	0.014*** (4.82)	0.010** (2.18)	-0.007* (-1.81)
Industry and year fixed effects	Yes	Yes	Yes
N	3,751	3,575	3,399
Adjusted R ²	29.98%	30.81%	21.59%

This table reports buy-and-hold returns (BHR) for different holding periods using the following model:

$$BHR_{i,t} = \alpha_t + \sum_{j=1}^{19} \text{explanatory variable} + \mu_{i,t}$$

Where $t = 12, 24$ and 36 month holding periods. The holding period returns are calculated as $BHR_{i,t} = [\prod_{t=1}^T (1 + R_{i,t}) - 1]$, where $R_{i,t}$ is the CRSP monthly return on stock i . In Panel A $DIFFEVS_STREET_{i,t}$ measured as $HARM_STREET-EVS_{i,t}$ is used, while in Panel B the variable is replaced by $DIFFEVS_GAAP_{i,t} = HARM_GAAP-EVS_{i,t}$. The control variables in both models include: $LOG(MVE)_{i,t}$ is the natural logarithm of market value of equity; $ROA_{i,t}$ = net

income scaled by total assets; LEV_{it} = total long-term debt scaled by the book value of common equity; MTB_{it} = market-to-book ratio; CAP_INT_{it} = total assets scaled by sales; $SALES_GROWTH_{it} = (\text{Sales}_{it} - \text{Sales}_{i,t-1}) / \text{Sales}_{i,t-1}$; $R\&D_{it}$ = industry-adjusted R&D, computed in two steps: (1) compute the average R&D level for each industry-year; (2) compute the level of abnormal R&D as a normalized deviation from the industry average level: $(R\&D - \text{industry median } R\&D) / \text{industry standard deviation of } R\&D$; $M\&A$ = indicator variable equal to one if a firm has merger and acquisition-related (M&A) costs, and zero otherwise; $FOREIGN_INC_{it}$ = foreign income divided by sales; INT_{it} = net intangible assets scaled by total assets; $GOODWILL$ = indicator variable equal to one if a firm has goodwill, and zero otherwise; INV_BUILD = computed in three steps: (1) compute for each firm-year day's inventory, where day's inventory is equal to $(\text{inventory} / \text{cost of goods sold}) \times 365$; (2) compute the average day's inventory for each industry-year; (3) compute the level of abnormal inventory as a normalized deviation from the industry average day's inventory: $(\text{days inventory} - \text{industry median days inventory}) / \text{industry standard deviation of days inventory}$; $Adj_LTG_FORECAST_{it}$ = industry-adjusted I/B/E/S long-term growth forecasts; PM_DIFF_{it} = I/B/E/S profit margin-GAAP profit margin; $ABS_DIFF_HARMMPPEERS = HARM_STREET - HARM_GAAP$; MKT_RF_t = value-weighted market index return- risk free rate, obtained from Kenneth French's website; SMB_t = excess returns of small-cap companies over large-cap companies, obtained from Kenneth French's website; HML_t = excess returns of value stocks (high book-to-price ratio) over growth stocks (low book-to-price ratio), obtained from Kenneth French's website. Coefficient estimates and t-statistics are presented within the columns. Standard errors are clustered by firm. *, **, and *** represent significance at the 10 percent, 5 percent, and 1 percent levels, respectively.

Panel A of Table 6 presents the results for the street earnings-based multiple valuation model, while Panel B presents the findings for the GAAP-based multiple valuation model. The results in Table 6 reveal that $DIFFEVS_STREET$ helps to explain one- and two-year ahead buy-and-hold returns, whereas $DIFFEVS_GAAP$ is not associated with future returns. Panel A shows that, for a 12-month holding period, target firms that exceed their peer-based expectations by one point have 1.3% higher buy-and-hold returns (p-value=0.028). Similarly, for the 24-month holding period, target firms exceeding their peer-based expectations have 2.1% higher buy-and-hold returns (p-value=0.068). In contrast, the results presented in Panel B fail to provide evidence of an association between the predicted GAAP EVS and future target firm returns.

In line with our expectations, significant results only exist for the street-based predicted EVS. Phrased differently, the market does not appear to fully integrate the information provided in street earnings into stock prices. Over-performing target firms (i.e., negative difference between predicted and actual EVS) realize higher future returns, whereas under-performing firms (i.e., a positive difference between predicted and actual EVS) realize lower future holding returns. These results suggest that the predicted street EVS forms a measure of what the target firm's EVS should be. If the target firm's EVS is below the predicted EVS, the firm is underperforming, which is indicative of negative future returns. If the target firm's EVS is above the predicted EVS, the target firm is exceeding its peers-based expectations, which is indicative of higher future returns.

2.6. Target Firm Complexity

2.6.1. Predictive Ability of Street Peers for Complex Target Firms

The probit analysis in Section 2.4.3 suggests that for complex firms or firms operating in a complex industry, the street peers are more likely to differ from the GAAP peers. Hence, we perform cross-sectional analyses using three different proxies to capture the complexity of a target firm. First, we use the volatility of operating income measured on a rolling basis over a three-year period (*VOL*). Previous research shows that volatility is a very relevant dimension in predicting earnings. Dichev and Tang (2009) show that even analysts find it difficult to fully understand and incorporate the implications of earnings volatility. Second, we use the level of foreign income (*FOREIGN_INC*) as international diversification represents a unique dimension of the forecasting and valuation difficulty (Duru and Reeb, 2002). Lastly, we use the level of industry-adjusted R&D (*R&D*). R&D activities are highly risky investments and the economic benefits that firms receive from R&D activities tend to be very difficult to predict. Prior research shows that investors do not fully understand the cash-flow implications of R&D investments (Chan et al., 2001). In addition, GAAP accounting for R&D leads to accounting data that is less informative about the future economic benefits, so the need for analysts is greater for R&D-intensive firms.

We investigate the predictive ability of street versus GAAP peers on complex firms, which are identified as firms with above-median values on our complexity characteristics. The results are reported in Panels A and B of Table 7.

TABLE 7: Complexity of Target Firms

Panel A: Complex Target Firms - Above Median Subsample			
	<i>VOL</i>	<i>FOREIGN_INC</i>	<i>R&D</i>
	Adj.R ²	Adj.R ²	Adj.R ²
<i>EVS_t</i>			
<i>HARM_STREET</i>	44.92	44.44	42.05
<i>HARM_GAAP</i>	43.33	42.10	40.96
Vuong Z-statistic	1.312	1.564	1.066
(p-value)	(0.190)	(0.118)	(0.287)
N	3,562	1,991	4,424

<i>EVS_{t,1}</i>			
<i>HARM_STREET</i>	36.31	37.50	34.24
<i>HARM_GAAP</i>	33.97	32.43	32.94
Vuong Z-statistic	2.074	3.235	1.256
(p-value)	(0.038)	(0.001)	(0.209)
N	2,465	1,417	2,962

<i>EVS_{t,2}</i>			
<i>HARM_STREET</i>	31.31	29.51	30.17
<i>HARM_GAAP</i>	29.01	27.08	28.07
Vuong Z-statistic	1.703	1.584	1.795
(p-value)	(0.089)	(0.113)	(0.073)
N	2,023	1,202	2,373

<i>EVS_{t,3}</i>			
<i>HARM_STREET</i>	27.07	30.08	28.04
<i>HARM_GAAP</i>	26.86	26.58	26.89
Vuong Z-statistic	0.188	2.269	1.107
(p-value)	(0.851)	(0.023)	(0.268)
N	1,687	1,000	1,860

TABLE 7: Complexity of Target Firms (*continued*)

Panel B: Complex Target Firms - Below Median Subsample			
	<i>VOL</i>	<i>FOREIGN_INC</i>	<i>R&D</i>
	Adj.R ²	Adj.R ²	Adj.R ²
<i>EVS_i</i>			
<i>HARM_STREET</i>	43.30	44.15	45.52
<i>HARM_GAAP</i>	43.00	43.74	45.21
Vuong Z-statistic	0.282	0.420	0.250
(p-value)	(0.778)	(0.674)	(0.803)
N	3,562	5,310	2,877

<i>EVS_{i+1}</i>			
<i>HARM_STREET</i>	37.39	36.24	39.83
<i>HARM_GAAP</i>	36.96	36.71	39.03
Vuong Z-statistic	0.314	-0.434	0.470
(p-value)	(0.754)	(0.664)	(0.638)
N	2,264	3,422	1,877

<i>EVS_{i+2}</i>			
<i>HARM_STREET</i>	33.28	33.24	35.46
<i>HARM_GAAP</i>	31.96	31.93	34.89
Vuong Z-statistic	0.935	1.018	0.302
(p-value)	(0.350)	(0.309)	(0.763)
N	1,802	2,701	1,530

<i>EVS_{i+3}</i>			
<i>HARM_STREET</i>	32.83	28.75	31.67
<i>HARM_GAAP</i>	32.31	29.98	33.68
Vuong Z-statistic	0.317	-1.134	-1.024
(p-value)	(0.751)	(0.266)	(0.306)
N	1,409	2,156	1,296

TABLE 7: Complexity of Target Firms (continued)

Panel C: Complex Target Firms and Buy-and-Hold Returns						
	(1)	(2)	(3)	(4)	(5)	(6)
	HIGH VOL	HIGH FOREIGN_ INC	HIGH R&D	LOW VOL	LOW FOREIGN_ INC	LOW R&D
12-month BHR						
<i>DIFFEVS_STREET</i>	-0.017** (-2.50)	-0.015* (-1.75)	-0.011* (-1.84)	0.001 (0.13)	-0.009 (-1.15)	0.011 (0.64)
N	2,302	2,249	3,228	1,998	2,120	1,141
Adjusted R ²	35.86%	34.40%	28.76%	26.53%	27.72%	36.94%
24-month BHR						
<i>DIFFEVS_STREET</i>	-0.036*** (-2.89)	-0.027* (-1.78)	-0.020* (-1.79)	0.016 (0.86)	-0.018 (-1.27)	0.008 (0.29)
N	2,224	2,162	3,071	1,879	2,007	1,098
Adjusted R ²	35.98%	35.14%	28.52%	27.77%	27.46%	39.04%
36-month BHR						
<i>DIFFEVS_STREET</i>	-0.033* (-1.74)	-0.014 (-0.64)	-0.022 (-1.31)	0.026 (0.91)	-0.022 (-1.04)	0.033 (0.99)
N	2,114	2,054	2,915	1,787	1,908	1,047
Adjusted R ²	27.81%	24.93%	22.28%	19.71%	21.56%	23.49%

Panel A and B provide estimated coefficients from the estimation model as in Table 3, except that *DIFFEVS_STREET* is used as an independent variable. For every proxy, we use observations that are either above or below the corresponding median. $DIFFEVS_STREET_{it}$ is measured as $HARM_STREET - EVS_{it}$. VOL = three-year rolling standard deviation of operating income after depreciation; $FOREIGN_INC$ = foreign income divided by sales; $R\&D_{it}$ = industry-adjusted R&D, computed in two steps: (1) compute the average R&D level for each industry-year; (2) compute the level of abnormal R&D as a normalized deviation from the industry average level: $(R\&D - \text{industry median } R\&D) / \text{industry standard deviation of } R\&D$. All other variables are defined below Table 3. Panel C reports buy-and-hold returns for different holding periods using the same estimation model as in Table 6. All variables are defined below Table 6. For every proxy of complexity, we use observations that are either above (columns 1-3) or below (columns 4-6) the corresponding median. For the sake of brevity, only the main variable of interest, *DIFFEVS_STREET*, is reported. We truncate *VOL* at 1 and 99%. Coefficient estimates and t-statistics are presented within the columns. Standard errors are clustered by firm. *, **, and *** represent significance at the 10 percent, 5 percent, and 1 percent levels, respectively.

In line with our expectations, the results show that for complex firms, street peers are better able to capture future EVS ratios. More specifically, for volatile and internationally diversified firms, street peers significantly outperform GAAP peers, as measured by the Vuong test. In these circumstances, analysts' fundamental adjustments to the accounting numbers are particularly important. Turning to less complex firms in Panel B, we find no effect of street earnings outperformance. In sum, these analyses show that street earnings' added value is predominantly concentrated among more complex firms.

2.6.2. Complexity of Target Firms and Future Returns

Considering the results in Table 6, which suggest that the street-based EVS of comparable peers helps in identifying over- or under-performance, we next examine whether the mispricing implications are stronger for complex target firms. For these firms, the street peer-based information might be even more important than for less complex firms, due to the inherent forecasting difficulty of complex firms. Hence, we expect the value of

using street-based peer valuation to materialize mostly for complex firms. We therefore regress future stock returns on the difference between the predicted street EVS and the actual EVS (*DIFFEVS_STREET*), dividing the sample using the same complexity proxies as in panels A and B of Table 7. Complex firms are identified as those firms with above-median values on our complexity characteristics. Conversely, less complex firms are identified as firms with below-median values on the chosen complexity characteristics.

The results are reported in Table 7, Panel C. Columns (1) to (3) present the results for complex firms and columnn (4) to (6) those for less complex target firms. In line with our expectations, the relationship between the different peers and future returns is only significant for complex target firms and holds most strongly for volatile firms (*VOL*). Panel C shows that, for a 24-month holding period, volatile target firms that exceed their peer-based expectations by one point have 3.6% higher buy-and-hold returns (p-value = 0.004). Similarly, for the 36-month holding period, volatile target firms that over-perform have 3.3% higher buy-and-hold returns (p-value = 0.083). For diversified (*FOREIGN_INCOME*) and R&D intense (*R&D*) firms, the peer-based implied mispricing is also associated with future returns. For a 24-month holding period, diversified target firms that exceed their peer-based expectations by one point have 2.7% higher buy-and-hold returns (p-value = 0.076). For less complex target firms, the coefficient on *DIFFEVS_STREET* is insignificant for all three complexity proxies and holding periods. In sum, the value of using street peers in predicting EVS especially holds for complex and difficult-to-forecast target firms.

2.7. Peer Comparability

The key assumption underlying our analyses is that the use of street earnings improves peer-based valuation performance via the identification of more comparable peers, as the shortcomings originating in accounting rules are mitigated. This assumption has been validated by prior research, which shows that street earnings are inherently more comparable than GAAP numbers (Liu and Gao, 2016). However, given that the enhanced comparability of street earnings-based peers is a crucial assumption in the interpretation of our results, we aim to empirically validate this proposition.²³

Similar to Liu and Gao (2016), we use De Franco et al.'s (2011) method to measure the comparability of earnings. This method measures accounting comparability based on the similarity of the mapping between earnings and stock returns.²⁴ We generate two firm-year comparability scores, namely *STREET_SCORE* and *GAAP_SCORE*.

23 In untabulated analyses, we explore alternative sources of comparability such as growth. These analyses show that peers identified using street earnings are more similar to the target firm in terms of sales growth, compared to the GAAP-based peers.

24 Despite potential drawbacks, the measure has been commonly used in the literature and has been validated in many settings (e.g., Kim et al., 2013).

STREET_SCORE captures average comparability between the target firm and its street peers. Similarly, *GAAP_SCORE* represents the average comparability between the target firm and its GAAP peers. Since comparability scores are defined as negative values, a more negative comparability score indicates a higher comparability between the peers and the target firm. We evaluate the differences in the comparability between different sets of peers by employing pair-sample tests of the equality of mean (median) comparability scores. A negative difference between *GAAP_SCORE* and *STREET_SCORE* indicates that street peers are more comparable to the target firm than the corresponding GAAP peers. Table 8 presents the comparability scores of street- and GAAP-based peers.

TABLE 8: Comparability of Street and GAAP Peers

	Mean	Median
<i>STREET_SCORE</i>	-2.277	-1.174
<i>GAAP_SCORE</i>	-2.312	-1.216
Difference	-0.035***	-0.042**
(p-value)	(0.008)	(0.022)

This table presents comparability scores for a target firm and its street- and GAAP-based peers. *STREET_SCORE* captures the average comparability score between the target firm and its street peers. Similarly, *GAAP_SCORE* captures the average comparability between the target firm and its GAAP peers. Comparability scores closer to zero indicate greater comparability. A negative difference indicates that street peers are more comparable to the target firm than the corresponding set of GAAP peers. A positive difference indicates that street peers are less comparable to the target firm than GAAP peers. The pairwise differences between *GAAP_SCORE* and *STREET_SCORE* are tested using a paired t-test (for mean differences) and a paired Wilcoxon signed rank test (for median differences). *, **, and *** represent significance at the 10 percent, 5 percent, and 1 percent levels, respectively. For detailed explanations on the computation of comparability scores, please refer to Liu and Gao (2016).

The results in Table 8 indicate that peers selected based on street earnings are more comparable to the target firm than peers selected based on GAAP earnings (-2.277 vs. -2.312). The mean difference in comparability scores is -0.035 (p-value 0.008), which represents a 1.5% improvement in comparability between the target firm and its selected peers once street earnings instead of GAAP earnings are used. The results provide support for our assumption that street earnings improve multiple valuation through the identification of more comparable peers.

2.8. Conclusion

Multiple approaches exist for valuing potential investments, some of which forecast the value of a firm directly, while others use relative valuation, which involves multiplying a value driver of a target firm (e.g., earnings) by the corresponding multiple from a set of comparable benchmark firms. The latter approach is relatively unsophisticated, easy to implement, and is used by investors and analysts around the world (e.g., Brown et al., 2015; Imam et al., 2008). The performance of a relative valuation approach crucially

hinges on the identification of comparable benchmark firms, as a different set of peer firms will imply a different valuation. Here an important information problem arises: The selection of peer firms is based on observable data, which is generally obtained from the financial statements. This implicitly assumes that the accounting standards provide a comprehensive and accurate picture of the underlying firm fundamentals. However, the rising complexity of firms and their environment nowadays reduces the ability of GAAP numbers to provide an accurate depiction of firm business processes (Young, 2014). Using GAAP numbers as the basis for selecting peer firms may as a consequence not result in the selection of economically similar peers.

This paper examines a potential solution to this information problem, being the use of street earnings as a basis for peer selection. Street earnings are GAAP earnings adjusted for accounting shortcomings, such as e.g., the capitalization of leases. Street earnings may hence be more reflective of “true” firm performance. Moreover, street earnings may further improve multiple valuation via the identification of more comparable peers, as it facilitates benchmarking different firms (Frankel and Roychowdhury, 2005). We consequently expect the identification of peers based on street earnings to outperform peer identification based on GAAP earnings in a multiple valuation setting.

We obtain data on U.S. listed firms from 2003 to 2014. We identify four peers using GAAP earnings and four peers using street earnings to form the basis of multiple valuation. The results show that for 14% of the sample firms, no common peers are identified. These statistics show that the use of street earnings impacts the identification of peer firms. Surprisingly, this different peer selection does not improve valuation, as on average, both street and GAAP peers perform equally well when forecasting a target firm’s future EVS using the warranted multiple approach. However, investigating a subset of firms where the different peers do lead to a significantly different valuation, the results show that street peers outperform GAAP peers in predicting future EVS. We show further that street earnings-based valuation yields more accurate EVS estimates than GAAP-based multiple valuation. In a next step, we show that the difference between predicted street EVS and the actual EVS helps explain future stock returns, suggesting that street-earnings based peer valuation help identify target firm over- and under-performance and consequently mispricing. Further analyses show that the superiority of street earnings-based peers materializes specifically when target firms are more volatile, R&D intense and have a high level of foreign income.

Our findings contribute to the relative valuation literature, in particular the research stream on the relevance of peer selection in obtaining accurate value estimates. We show that GAAP-based multiple valuation is on average relatively efficient, as both street earnings- and GAAP-based peers perform equally well when forecasting a target firm’s future EVS multiple using the warranted multiple approach. Street earnings’ added value seems to materialize mostly for complex firms, which adds to the growing body of research contributes on the role and potential superiority of analysts. Moreover,

street earnings-based multiple valuation allows investors to recognize over- and under-performing firms and realize higher buy-and-hold returns.

The findings of our study are subject to several limitations. One limitation is that we only focus on firms followed by analysts, reducing the pool of potential peers. The most representative peers may be firms not followed by analysts, which would work against our findings. However, the proportion of firms not followed by analysts is considerably low, with 8% of firms in S&P 500 and 22% of non-S&P 500 firms not being followed by analysts. The most visible and important peer firms are likely included in our data. A second limitation originates in analyst characteristics. The current design does not take into account personal attributes of the analysts, such as analyst incentives (Baik et al., 2009; De Franco et al., 2015) or affiliation. These personal factors may significantly impact analyst adjustments, which will then feed back into the selection of similar peers. The further exploration of these caveats is left to future research.

Appendix 2A: Illustration peer selection and peer-based implied valuation

In 2005, for the target company Consol Energy Inc (IBES ticker CNX) four I/B/E/S (FNDC, PEAB, ARLP and ANRI) and four GAAP (JRCC, ACI, ANRI and FLR) industry peers are selected. The target firm's yearly predicted street EVS is 3.77 and the corresponding predicted GAAP EVS is 2.93, while the actual EVS is 1.90. The overview below shows that three different peers are selected once analyst information is used as opposed to GAAP and the common peer is ANRI. Even though three different peers are selected, the harmonic mean of the peers selected is not significantly different under the two valuation inputs. The street harmonic mean EVS is 1.647, while the GAAP harmonic mean is 1.664. Therefore, not only the number of different peers matters but also how different the selected peers are, which we capture by the absolute difference in the harmonic mean of peers selected (0.017 in this case).

All industry peers available	FNDC	JRCC	ACI	PEAB	ARLP	ANRI	FLR
I/B/E/S peers selected	X			X	X	X	
GAAP peers selected		X	X			X	X
Actual EVS of the peers	1.779	1.733	2.577	2.646	1.808	1.070	1.988
Harmonic mean of I/B/E/S peers				1.647			
Harmonic mean of GAAP peers				1.664			

Chapter 3

**Determinants and real effects of
“Texas-wide” fairness opinions:
Evidence from tender offers**

ABSTRACT

This study focuses on the properties of fairness opinions (FO), their determinants, and subsequent shareholders' decisions to initiate FO-oriented class action lawsuits. An FO outlines the underlying analyses of the opinion provider used to evaluate the financial fairness of a deal. At the heart of the FO lie the valuation analyses with the corresponding per-share valuation ranges, which represent the spectrum of possible price estimates within which the offer price can fall. I focus on two FO properties that are important to target shareholders: The wideness of FO ranges and the fairness of FOs. Using a hand-collected sample of US tender offers and target FO valuation analyses from 2010 to 2018, I find that firm-specific knowledge and incentives of the board of directors are strong predictors of the wideness of FO ranges. For the fairness of the FO, I find that the higher the boards' equity stakes, the lower the probability that an unfair FO is disclosed. At the same time, the CEO's prospect of remaining employed at the merged company is positively associated with the probability of an unfair FO. Lastly, I find that wide ranges and unfair FOs are more likely to trigger class action lawsuit complaints. Overall, my results show that the role of FOs in tender offers is complex and contingent on various governance factors and incentives.

3.1. Introduction

An fairness opinion (FO) is obtained in mergers and acquisitions (M&As) and going-private transactions to help the board of the acquiring or target firm determine the appropriateness or “fairness” of the consideration to be paid or received. An FO is meant to serve as an objective assessment of the transaction, as it is delivered by a financial adviser evaluating the target and transaction price. On the basis of various valuation analyses, the financial adviser states whether the price paid or received in the transaction is fair from a financial point of view to shareholders of the client firm (Liu, 2020). These valuation analyses are at the heart of the FO and serve as an important basis for decision-making by the board of directors. Both regulators and courts have therefore called for more detailed disclosures on the underlying valuation analyses used in forming an FO (Liu, 2020).²⁵ Yet, despite the central role of the FO valuation analyses, prior studies have mainly focused on the determinants of obtaining an FO – which is still largely voluntary – and have largely ignored the underlying properties of FOs. However, the informational value of an FO to shareholders depends heavily on its underlying properties and anecdotal evidence suggests a large heterogeneity in the properties of FOs. For instance, one judge presiding over shareholder litigation concluded that the valuation ranges presented in an FO are so wide that “even a Texan would feel at home on [them]”.²⁶ This paper aims to shed more light on the determinants and consequences of the properties of FOs.

This study focuses on the role of two relevant FO properties: the wideness of FO ranges and fairness of FOs. Both wideness and fairness are central to deal success. When confronted with a takeover bid, the boards’ and target shareholders’ key consideration is whether the offer price is fair and attractive. Apart from the deal premium, the ranges in an FO can also be used to evaluate the attractiveness of the offer price since they signal the spectrum of possible valuations within which the offer price can fall. Thus, the wideness of the ranges is supposed to provide assurance regarding the offer price and facilitate shareholders’ decisions towards accepting the deal. This wideness has further received substantial criticism from media, regulators and courts, as implausibly wide ranges do not aid investors in evaluating the suggested offer price. Duff and Phelps (2017), for instance, note that FOs are mostly criticized for producing valuation ranges that are too wide to provide meaningful information.²⁷ The wideness of the ranges therefore

25 In the decision of *Pure Resources* in 2002, the Court of Chancery stated that “stockholders are entitled to a fair summary of the substantive work performed by the investment bankers upon whose advice the recommendations of their board as to how to vote on a merger or tender rely”. The court noted that, “the real informative value of the banker’s work is not in its bottom-line conclusion, but in the valuation analysis that buttresses that result” (Liu, 2019).

26 Time’s investment banker predicted per-share trading ranges of \$159–\$247 for 1991, \$230–\$332 for 1992, and \$208–\$402 for 1993. See *Paramount Communications v. Time, Inc.* (CivilActionNo.10866, Del.Ch.LEXIS77).

27 Retrieved from: <https://www.duffandphelps.com/insights/publications/transaction-opinions/in-defense-of-fairness-opinions-an-empirical-review-of-ten-years-of-data>

seems to be a core property used to determine the usefulness of an FO. Another key consideration to target shareholders is whether the offer price is fair according to the FO. Cain and Denis (2013), for instance, find that some target-sought FOs indicate that the offer price is lower than the target's value based on the FO valuations. This is positive news to acquiring firm shareholders, but not for the target shareholders. Therefore, I also investigate the fairness of FOs by examining whether the offer price is at least equal to or above or below the overall price suggested in an FO.

Despite the great visibility of FOs and the prevalent criticism towards their properties, little is known about the determinants and key players shaping these properties. This is the first study to examine the board of directors and their characteristics as the main determinants of the observed FO properties. The board of directors plays an important role in the takeover setting. It is responsible for deciding to obtain an FO, choosing the FO provider, and delivering firm-specific data to be used in valuation analyses. Hence, I expect FO properties to reflect board's characteristics and incentives.

In a next step, I examine how both FO properties, namely FO wideness and fairness, are perceived by target shareholders. Specifically, I examine the association between wideness and fairness and FO-oriented shareholder class action lawsuits. Despite the high incidence of lawsuits, which are initiated in about 10% of all M&A offers, little is known about the role of FOs and their properties as the drivers of these class action lawsuits (Krishnan et al., 2012).

To investigate these questions, I focus on a setting in which fairness opinions are likely to be important, namely tender offers, since their completion and success is highly dependent on target shareholders' tendering decisions. Tender offers often have the so-called minimum conditions, which implies that a deal can only be completed if a certain percentage of target shareholders' shares is tendered within a specified time frame. Hence, it is pivotal for shareholders to receive an accurate assessment of the value of their shares and FO valuation analyses can help target shareholders in reaching an informed decision.

I hand-collected all U.S. tender offers and target FO valuation analyses between 2010 and 2018. The average incidence of FO-based lawsuits is 33%, corroborating the importance of FOs in tender offers. I estimate a simultaneous equation framework modelling the fairness and wideness of FOs, as well as subsequent class action lawsuits. The results show that firm-specific knowledge and incentives of the board are strong predictors of the wideness of FO valuation analyses. Specifically, I find a strong positive association between the independence of the board and the probability of issuing a wide FO. Independent board members may lack firm-specific knowledge and thus provide less precise target valuation estimates or inputs to advisors, which is in line with prior research (e.g., Karamanou and Vafeas, 2005; Faleye, 2015). A long-tenured board, on the other hand, is likely to issue a narrow-ranged FO as it possesses valuable firm-

specific knowledge to value the target firm more precisely. Lastly, the board’s and the CEO’s financial incentives to complete the tender offer are positively associated with the probability of issuing wide-ranged FOs. Turning to the fairness of the FO, I find that the higher the boards’ equity stake, the lower the probability that an unfair FO is disclosed. The more equity directors own, the more sensitive these directors become to the offer price, as their payout is directly linked to the price. At the same time, if the CEO is retained at the merged company, the probability of an unfair FO is higher. The analyses further show that class action lawsuits specifically addressing FOs are positively correlated with wide-ranged and unfair FOs. I find that non-sophisticated investors are more likely to initiate a FO-oriented class action lawsuit. These investors might need to rely more on the FO due to a lack of sophistication to conduct their own valuations and fair price assessments. Additional analyses also reveal that wide-ranged and unfair FOs are not only associated with the occurrence but also the amount of class action lawsuits.

Overall, my findings shed light on why differences among FOs are observed and how these are perceived by shareholders. I take on a holistic approach by integrating various characteristics of the parties involved on the supply as well as demand side. On the supply side, the characteristics and incentives of the board of directors are important inputs into the FO and its underlying properties. On the demand side, it is ultimately the shareholders and their respective characteristics that are related to the perceived usefulness of FOs and their properties. My study shows that, contrary to the criticism of FOs being merely rubber stamps without providing any incremental information, FOs in tender offers represent a relevant information source to target shareholders.

My findings contribute to the fairness opinion, corporate governance as well as litigation literature. First, FOs are still a largely unexplored phenomenon and prior studies provide conflicting evidence on FOs’ effect on deal and shareholder wealth. My study aims to explain these contradicting prior studies’ findings by focusing on underlying FO properties. I show that while targets issue an FO in all completed tender offers, one-third of them is exposed to FO-related class action lawsuits. This implies that it is not just the occurrence of an FO, but rather their underlying valuation analyses that should be examined. Second, this is the first study to incorporate the board’s characteristics and incentives in the context of FOs. Prior research so far has been silent on the role of the target board’s characteristics in the context of FO properties and how these can be used strategically to achieve the board’s desired objectives. My study also contributes to the research on the role of CEOs’ incentives. Lastly, this is the first study to analyze the association between FO properties and target shareholder class actions. Shareholder lawsuits are costly and delay the completion of the deal. Given that acquirers often chose a tender offer over a merger due to faster completion times, it is crucial to understand which FO properties trigger shareholder lawsuits, thereby impeding fast completion of a tender offer.

The remainder of the paper is organized as follows: Section 3.2 outlines prior literature. Section 3.3 summarizes theoretical predictions. Section 3.4 discusses the research design and sample. Section 3.5 presents the findings, while section 3.6 presents the additional analysis. Section 3.7 concludes.

3.2. The use of fairness opinions

3.2.1. Institutional background

FOs find their origin in the Smith vs. Van Gorkom case and Delaware law that institutionalized an “outside” opinion within the M&A context in the U.S. In the Smith vs. Van Gorkom (1985) case, the Delaware Supreme Court declared the board of the Trans Union Corporation guilty because it approved an acquisition without obtaining anything more than a “rough” and unquestioned estimate of a possible value from its CFO. According to the Delaware Supreme Court, a target board, as part of its greater duty of care in a corporate control transaction, is obliged to thoroughly inform itself about its corporation’s value by means of a well-prepared financial analysis. Even though FOs are not required by law, over the period 1996 to 2013, over 90 percent of the M&A transactions have obtained an FO (Liu, 2020). In an M&A setting, once the merger is publicly announced, the FO is included in the proxy statements and mailed to shareholders for voting approval of the merger. The opinions are publicly disclosed once the proxy statements are mailed and submitted electronically to the SEC.

Whereas FOs are largely voluntary, the information content included in FOs has been regulated – albeit to a limited extent. In 2007, the SEC approved the proposed rules by the National Association of Securities Dealers, Inc. (NASD) to increase disclosure requirements for FOs. As of 2007, firms requesting an FO have to disclose whether the adviser will receive compensation contingent on the successful completion of the underlying transaction, whether the adviser has had a material relationship with the company in the last two years, and what information was provided to the adviser by the board of directors in deriving the opinion. The SEC further monitors the quality of FO disclosures. Liu et al. (2019) examine SEC comment letters for M&A transactions and find that the most frequent comment letters relate to fairness opinions and their valuations, general compliance, and transaction background. Despite the somewhat increased regulatory scrutiny regarding the disclosure of FOs, board of directors and opinion providers are still left to their own devices in terms of the underlying information content of the FO.

3.2.2. The role of the board of directors in issuing an FO

The target board of directors plays a central role in the context of FOs because it is involved in all stages of the FO preparation and issuance. It is the central party charged with receiving, evaluating, and acting on the takeover bid. Upon receiving the offer, the target board needs to assess the value of the target firm to evaluate the fairness and

attractiveness of the offer price. FOs then are a useful second opinion from a financial adviser, providing an independent valuation of the target firm. The board is the initiator of the decision to obtain an FO, selects and hires an FO provider, provides the FO provider with all relevant firm-specific information and internal forecasts, and ultimately verifies the fairness of the deal. The board is hence heavily involved throughout the FO process.

Since boards vary substantially in their knowledge and expertise, some boards are more likely than others to hire an FO provider to assist in valuation matters and the assessment of the offer price. A survey by Duff and Phelps (2009) reveals that the main motivations for obtaining an FO indeed include receiving an objective analysis of the proposed offer and fulfilling the board’s fiduciary duties. The board perceives the valuation analyses and valuation-related matters to be the most valuable insights received from the FO analysis (Duff and Phelps, 2009). Prior studies provide further evidence that the necessity of an FO is especially great when the board’s knowledge and expertise is limited (Kisgen et al., 2009; Frye and Wang, 2010). Besides the board’s desire to obtain an objective assessment of the offer price, FOs are also obtained to shield liability and protect the board from potential criticism and shareholder lawsuits. Duff and Phelps (2009) point out that 64% of senior executives and board members in the US use FOs to protect themselves from potential shareholder lawsuits. The greater scrutiny of the deals has indeed resulted in boards defending their decisions more frequently, and FOs can provide further support for directors’ deal recommendations.

One setting in which fairness opinions are likely to be important to target boards of directors are tender offers. A tender offer is a public bid for stockholders to sell their stock, in which the bidder directly approaches target stockholders with an offer to buy their shares without necessarily informing or involving the target board of directors. Tender offers are a common acquisition method– they accounted for 32% of the deals between 2007 and 2012– since they provide the advantage of a substantially faster completion time compared to mergers (Offenberg and Pirinsky, 2015). Tender offers often have so-called minimum conditions. This implies that the deal can only be completed if a certain percentage of target shareholders’ shares is tendered within a specified time frame – otherwise the bidder cannot proceed with the transaction. The completion and success of tender offers is highly dependent on target shareholders’ tendering decisions and thus it is crucial for them to receive an accurate assessment of the value of their shares. FO valuation analyses are an important form of information to target shareholders since they can help them in reaching an informed tendering decision.

I argue that FOs are particularly relevant for tender offers for two reasons. First, during negotiated M&As target shareholders receive a great amount of deal-related information before the disclosure of the final FO and the required shareholder voting. In a tender offer setting, very few relevant details are available to target shareholders prior to the

disclosure of the FO.²⁸ Second, not only the amount and timing of the information differs, but also the time shareholders have to incorporate this information. During negotiated M&As, target shareholders have a great amount of time to evaluate the attractiveness of the deal and incorporate multiple information sources before their vote is required. For tender offers, once target shareholders receive the FO, they are required to make their tendering decision within a specified time frame, which is typically much shorter than the time given to shareholders of negotiated M&As. Hence, FOs are of great relevance in tender offers as they bundle relevant information into a single document, allowing investors to make informed decisions regarding the tender offer in a short period of time.

The SEC has recognized the importance of FOs in providing information to shareholders in tender offers. In the case of tender offers, the target company's board of directors is required to disclose whether it has relied on an FO but does not have to disclose the FO (Liu, 2020). The Delaware disclosure requirements however encourage tender offer targets to disclose the FO valuations. In the decision of Pure Resources in 2002, the Court of Chancery further emphasized that “[A] minority stockholder engaging in the before-the-fact decision whether to tender would find it material to know the basic valuation exercises that the investment banker undertook, the key assumptions that they used in performing them, and the range of values that were thereby generated.”

The importance of an FO for target shareholders and the heterogeneity in the properties of disclosed FOs increase the need to understand how the characteristics of the key players shape the properties of FOs. Given the central role of the board, I expect that the observed FO properties largely reflect the board's characteristics and incentives. Moreover, it is important to analyze how the observed FO properties are perceived by target shareholders who are the ultimate users of the FOs.

3.3. Theoretical predictions

I argue that a combination of different factors is associated with the properties of an FO. In this study, I focus on two FO properties that are important to shareholders: the wideness of FO ranges and the fairness of the FO. Both properties enable target

28 Offenberg and Pirinsky (2015) find that the completion time of tenders is on average 73 days shorter than the completion time of mergers. In case of a tender offer, a bidder must file a tender offer statement (SC-TO) with the SEC as soon as the tender offer is initiated. Within 10 business days of the commencement of a tender offer, the target company's board of directors must disclose a statement (Schedule 14D-9) to its security holders (Bell, 2016). Under SEC Rule 14d-1, the tender offer can end 20 calendar days after the initial filing. In case of mergers, which require a vote by shareholders to approve the merger, the bidder must first file a preliminary and later a definitive proxy statement to shareholders (Offenberg and Pirinsky, 2015).

shareholders to evaluate the key dimensions of the offer price in a takeover bid, namely whether it is fair and attractive.

The ranges in an FO represent the spectrum of possible values for the target firm’s shares. The wideness of the ranges is meant to provide assurance regarding the offer price and facilitate shareholders’ decisions towards accepting the deal. The main criticism from media, regulators and courts towards FOs revolve around FO wideness because it seems to be the core property to evaluate the usefulness of an FO. FOs are often criticized for including valuation ranges that are too wide to provide meaningful information.²⁹ Another key consideration to target shareholders is whether the offer price is fair according to the FO. Cain and Denis (2013), for instance, find that some target-sought FOs, which contain the target board’s recommendation to tender and FO provider fairness verdict, reveal that the offer price is lower than the target’s value based on the FO valuations. Therefore, I investigate the fairness of FOs by examining whether the offer price is above (or at least equal to) or below the overall average price suggested in an FO.

3.3.1. Determinants of FO properties - wideness of price ranges

3.3.1.1. Knowledge and expertise of the board

First, I focus on the firm-specific knowledge of the target board. Several studies emphasize the importance of the board’s firm-specific knowledge, in both its monitoring and advising functions. For instance, firms with boards that are dominated by outside directors tend to make less precise management forecasts, suggesting that outside directors lack firm-specific knowledge (Karamanou and Vafeas, 2005). Faleye (2015) finds that fully independent boards are associated with a reduction in firm performance because these boards lack regular access to firm-specific information. In a similar vein, Duchin, Matsusaka, and Ozbas (2010) shows that the effectiveness of outside directors is influenced by the cost of acquiring firm-specific information.

In the case of tender offers, the target board’s role is to correctly value the target firm and evaluate the fairness and attractiveness of the offer price. The target board is primarily responsible for providing shareholders with information that is useful for their tendering decisions. I posit that there is a negative relation between the board’s level of firm-specific knowledge and the width of the ranges in an FO. Boards with greater firm-specific knowledge are likely to provide more precise earnings forecasts to be used in valuing the target. These boards should also be able to provide FO providers with more relevant, precise, and detailed target specific information due to their accumulated internal knowledge. Hence, I hypothesize that:

29 See for example Footnote 25 or a news article by Financial Times in 2017: <https://www.ft.com/content/0c20446c-17eb-11e7-a53d-df09f373be87>

H1: The board's firm-specific knowledge is negatively associated with the wideness of the ranges in an FO.

It is not only the firm-specific knowledge of the board that is found to be critical for its performance, but also directors' accumulated experience and knowledge in general. Kroll, Walters and Wright (2008) contends that, in case of acquisitions, director experience in the target industry and in making acquisitions in general facilitates the development of knowledge useful in making profitable acquisitions. Accordingly, a higher number of board members with acquisition experience is positively associated with the acquiring firms' abnormal returns (Kroll et al., 2008). Considering that target firm directors need to value the target firm, I expect that valuation and financial expertise of the target board is negatively related to the width of the ranges in an FO. Boards with financial expertise are likely to be better able to process and synthesize financial information to more precisely value the target firm compared to boards without this knowledge. In addition, financially experienced boards can better monitor the work performed by opinion providers and potentially challenge FO valuations. Based on these arguments, I hypothesize that:

H1a: The board's financial expertise is negatively associated with the wideness of the ranges in an FO.

3.3.1.2. Incentives of the board

Not only do directors and boards vary in their knowledge and expertise, but also in their incentives to protect and represent shareholders' interests. One of the main objectives of the board is to monitor management on behalf of shareholders to ensure that management acts in the interests of shareholders. Yet, in the case of a takeover bid, target firm directors face a conflict of interest between their fiduciary responsibilities as shareholder representatives and their own potential wealth changes. Directors who believe that a tender offer is in the best interest of their shareholders are still very likely to lose their board seat following a successful tender offer (Harford, 2003). Given that the target firm directors might pursue their personal incentives in the course of a tender offer, they can use the FO as a strategic tool to meet their desired objectives.

The target board can have strong personal incentives to either accept or reject the offer. The board's incentives to complete a takeover bid include equity-related payments, which the board receives upon completion of the tender offer. These equity-related payments often represent substantial amounts, and since they only become available when the tender succeeds, it is in the economic interests of the board to complete the deal. Apart from the tangible financial benefits, there are also intangible rewards such as influence, networking, or prestige that board members derive from their board memberships (Harford, 2003). These nonfinancial rewards, while hard to quantify, can also have substantial value for directors and might incentivize them to reject the takeover bid. Depending on the incentives of the board, the board can use an FO strategically

to convince target shareholders to follow its recommendation. Therefore, besides firm-specific knowledge and financial expertise, I also examine the incentives of the board when issuing an FO. I first consider equity-related payments that directors enjoy upon a successful completion of the tender offer. Next, I also examine the tender offer related benefits of the CEO.

Board of directors’ compensation typically consists of cash and equity compensation, which serves the purpose of aligning the interests of board members with those of shareholders. In the case of tender offers, common equity ownership of the board aligns the interests of the board and its target shareholders, because board members tender their shares at the same price as shareholders. Boards however also enjoy additional benefits upon completion of the tender offer such as accelerated equity vesting benefits.³⁰ The boards’ total equity benefits represent strong incentives to complete the tender offer.

Du et al. (2011) show that as the ranges of earnings forecasts become wider, they are more likely to contain the actual EPS, thereby increasing the probability that the firm meets its earnings forecast. In a similar vein, I argue that wide ranges might help the target board to complete the tender offer since these ranges are more likely to contain the offer price. Hence, in the case of strong incentives to complete the tender offer, the board is incentivized to issue wide-ranged FOs to justify the offer price more easily. I therefore posit the following hypothesis:

H2: The boards’ equity benefits are positively associated with the wideness of the ranges in an FO.

CEOs face a similar conflict of interest when their company is acquired. Upon a tender offer, CEOs and top executives receive a golden parachute compensation, typically consisting of cash severance payments, accelerated equity awards and some additional cash benefits (e.g., tax gross-up payments). Golden parachutes intend to align top executives’ and shareholder incentives by lowering the likelihood that a target firm’s management will resist a shareholder-wealth-maximizing takeover bid (Buchholtz and Ribbens, 1994). However, these golden parachute compensations can sometimes represent substantial amounts and might incentivize CEOs to complete unfavorable tender offers.³¹ Similar to the argumentation above, the higher the CEO’s golden parachute, the greater the incentives to complete the tender offer, which is facilitated by wide-ranged FOs.

30 Tender offer related disclosures (Schedule 14D-9) typically explicitly refer to these benefits as potential conflict of interest. Schedule 14D-9 disclosures commonly acknowledge that “certain members of management and the board may be deemed to have interests in the offer that are different from and/or in addition to their interests as shareholders generally. Stockholders should be aware of these interests as these may create potential conflicts of interest”.

31 For instance, in a tender offer by Pfizer Inc to acquire Anacor Pharmaceuticals in 2016, the CEO of the target was entitled to a golden parachute compensation as high as \$51,5 million.

CEOs may also have career incentives to push for an acquisition. Specifically, CEOs often lose their position following a tender offer. If a CEO can bargain for a lower premium, she may hope to retain his function (Bargeron et al., 2009).³² A position at the merged company shields the CEO from job loss and represents a secured stream of income, at least in the short run. A potential loss in CEO's wealth due to a lower offer price might then be partially offset by the income secured through retention at the merged company. Even if the offer price is not in the best interest of shareholders, the CEO is then more likely to accept it if she remains employed at the merged company. Hence, if the CEO remains employed at the merged company, she is more inclined to verify any offer price as attractive as opposed to a CEO who loses his job upon the completion of the tender offer. To justify the offer price and convince target shareholders, the CEO is incentivized to issue wide-ranged FOs, which increase the probability that the offer price falls within valuation ranges. In sum, I hypothesize that:

H3: The CEO's golden parachute and a position at the merged company are positively associated with the wideness of the ranges in an FO.

3.3.2 The determinants of the FO properties - fairness of the FO

From the perspective of target shareholders, an FO is fair only if the offer price exceeds, or at least is equal to, the overall average price suggested in an FO. FOs that reveal that the offer price is not fair in combination with the board's recommendation to tender seem to provide little assurance and confidence to target shareholders. Therefore, it is important to analyze what drives the board to disclose an unfair FO. I expect the fairness of an FO to be primarily driven by the board's incentives, being the benefits that directors and the CEO enjoy upon a successful completion of the tender offer, rather than a lack of knowledge or expertise. As discussed above, the higher the boards' equity benefits upon completion of the tender offer, the greater its incentives to complete the tender offer. Yet, the more equity the directors themselves own, the more sensitive they become to the offer price, since their payout is directly linked to the offer price. Therefore, I argue that the incentives to accept an unfair offer price decrease as the amount of equity that directors own increases. I expect the boards' equity benefits upon completion of the tender offer to be negatively associated with the issuance of an unfair FO. In sum, I hypothesize that:

H4: The boards' benefits upon completion of the tender are negatively associated with the unfairness of an FO.

32 The courts and the press have long recognized this conflict of interests faced by CEOs. For instance, one judge concluded that a CEO "had powerful interests to agree to a price and terms suboptimal for public investors so long as the resulting deal" gave him some benefits including "the chance to continue his managerial positions for a reasonable time". In Re: Lear Corporation Shareholder Litigation, Opinion, Court of Chancery, Delaware, June 15, 2007.

In contrast, the golden parachute of the CEO and a position at the merged company provide the CEO with strong incentives to complete the tender offer, regardless of the fairness of the offer price. Hence, I formulate the following hypotheses:

H5: The CEO’s golden parachute compensation and a position at the merged company are positively associated with the unfairness of an FO.

3.3.3. Shareholder class action lawsuits and the FO properties

The previous section has focused on the determinants of FO properties. Yet, it is also important to examine the consequences of FOs, and particularly shareholders’ reaction to these FO properties. Public announcements of M&A proposals are associated with a non-trivial number of target shareholder class action lawsuits against boards of directors’ decisions. Krishnan et al. (2012) show that about 10% of all M&A offers result in shareholder class action lawsuits, most of which revolve around complaints against the board of directors and managers for providing misleading information that results in shareholder losses (Rogers, Van Buskirk and Zechman, 2011).³³ Prior studies indeed show that the drivers of a class action lawsuit often relate to the firm’s failure to disclose material information (e.g., Kellog, 1984; Francis et al., 1994). A clear link with fairness opinions consequently exists. This also holds for tender offers, where shareholders often allege that target firm directors have breached their fiduciary duties by recommending the sale of the target for a too low price (Krishnan et al., 2012).³⁴

The estimated ranges of fair prices for target shares are the centerpiece of an FO. These ranges help target shareholders evaluate the offer price, and the amount of uncertainty that exists regarding that price. The wideness of the ranges is supposed to provide assurance regarding the offer price and facilitate shareholders’ decisions towards accepting the deal. The class action complaints provide evidence that investors use the provided price ranges to make an informed decision whether to tender their shares.³⁵

Prior studies on the earnings forecasts and precision further suggest that investors in general prefer narrow ranges to wide ranges due to the informative advantage of narrow ranges (e.g., Du et al., 2011). On the one hand, wide ranges make it extremely difficult

33 In the case of tender offers in my sample, the percentage of lawsuit initiation increases to 33%.

34 For example, in a complaint against *Bronco Drilling Company, Inc.*, the plaintiffs argue that “The \$11.00 per share consideration offered in the Proposed Transaction is grossly inadequate. The merger price represents an inadequate 6% premium—particularly in view of the promising growth. Indeed, at least one analyst has set a price target of \$13.50 per share. Bronco, if properly exposed to the market for corporate control, would bring a price materially in excess of the amount offered in the Proposed Transaction”.

35 For example, the plaintiffs in *Khalil v. Santarus, Inc.* argue that “Although the Fairness Opinion omits important information, it is nevertheless evident from the Fairness Opinion that the Offer Price undervalues the Company, because ranges derived by Stifel’s analysis are above that of the Offer Price of \$32 per share. For example, the Discounted Cash Flow Analysis in the Fairness Opinion derives a range of values between \$35.54 and \$49.89 per share. Selected Companies Analysis produced upper multiple ranges of between \$35.16 and \$38.49 per share”. Retrieved from: <https://www.sec.gov/Archives/edgar/data/1009356/000119312513474739/d642746dex99a5n.htm>

for investors to assess the attractiveness of the deal and whether the board made the right decision in accepting the deal. On the other hand, wide ranges might simply signal the complexity of the target and reflect the inherent uncertainty of the target's firm value. Hence, narrow-ranged FOs are more useful for target shareholders to assess the deal's attractiveness, especially for complex and difficult-to-value targets. I therefore expect a positive association between the initiation of target shareholder class action lawsuits and the wideness of an FO. I further expect a positive association between the initiation of class action lawsuits and the issuance of an unfair FO. Unfair deals are unfair because the valuation analyses in the FO suggest that the offer price accepted by the board is too low. These deals are likely to trigger shareholders' skepticism towards the board's inconsistent recommendation to tender and its motivation to do so. Hence, I hypothesize that:

H6: The wideness and unfairness of an FO is positively associated with the initiation of a class action lawsuit.

3.4. Research design

3.4.1. Sample Selection

I gather data on all tender offers identified in the Thomson Reuters Securities Data Corporation (SDC) database involving deals of publicly traded U.S. firms (acquirers and targets) between 2010 and 2018. Starting from this selection, I exclude deals where the transaction value is lower than \$1 million, or where deals have a pending or intended status. Both the target and acquirer must be listed on the NYSE, AMEX, or NASDAQ (Kisgen et al., 2009; Cain and Denis, 2013). I exclude buybacks and recapitalizations from the sample, which leads to an initial sample of 214 tender offers. I exclude tender offers that were withdrawn or involved FOs without valuation analyses (17 deals). I exclude tender offers with multiple target FOs (21 deals) and one tender offer where all except one target board's board members are also board members of the acquiring firm, which leads to a final sample of 175 deals.³⁶

I manually collect FO data from Schedule 14D-9 filings on the Security and Exchange Commission (SEC) EDGAR Web site. These filings include the target's board recommendation on how shareholders should respond to a tender offer. In addition, they include fairness verdicts, valuation methods and the corresponding valuation ranges, the fees paid to opinion providers as well as their preexisting relationships with client firms. I also obtain board of directors' characteristics from the Schedule 14D-9 filings.

36 The number of tender offers in my sample is in line with prior research. In the time period between 2007 and 2012, Offenber and Pirinsky (2015) show that 126 deals were structured as tender offers, which means, on average, 21 tender offers per year. Using this estimation, the expected number of tender offers for my sample is approximately 168 tender offers. Liu et al. (2019) find that about 17% of the deals are structured as tender offers for the deals announced between 2005 and 2017. Using my sample construction criteria and sample period, a total of 1,087 M&A deals were completed. My sample of 175 tender offers, thus, represents about 16% of this M&A figure.

If boards’ characteristics are missing in the Schedule 14D-9 filing, I either use the proxy statement that is referenced in the filing itself or the most recent proxy statement available prior to the disclosure of the Schedule 14D. Institutional ownership data is obtained from Thomson Reuters Institutional Holdings (13f). I use the most recent institutional ownership figures available immediately prior to the disclosure of the FO. Target and deal related variables are all based on either the SDC database or Schedule 14D-9 filings, with the exception of Research and Development expenditures, which are obtained from Compustat.

For the class action complaints specifically addressing FOs, I manually examine all target SEC filings found on the EDGAR Web site after the disclosure of the FO. Commonly, these class action complaints are filed in combination with either amended FOs, SC 14D9/A, or amended tender offer statements, SC TO-T/A. In general, firms need to “describe briefly any material pending legal proceedings” to which the company is a party according to Item 103 of Regulation S-K (Krishnan et al., 2012). This rule poses two limitations to my identification of FO related class action complaints. First, only “material” litigation must be disclosed, with materiality being a legal term that different lawyers may interpret in different ways. The rule only requires disclosure of information if “there is a substantial likelihood that a reasonable shareholder would consider it important” (Krishnan et al., 2012). Therefore, it could be the case that not all FO related class action complaints are included in the sample, as legal counsels may deem these immaterial. Nonetheless, given the size of the transactions in my sample, these complaints are likely to be material. Second, the rule mentions a brief description of the legal proceedings. Whereas many firms provide detailed disclosures, some do not disclose any further details regarding the basis of shareholders’ complaints. I exclude these complaints from my sample as these legal actions may be the result of shareholders’ general dissatisfaction with the board’s recommendation, irrespective of the FO.

3.4.2. Empirical models

In the first model I focus on notably wide-ranged FOs and their determinants. Since there are multiple valuation methods in an FO, I first calculate the mean scaled wideness of each method and then I calculate the average wideness across all the methods in an FO. The dependent variable *WIDE_FO* is equal to one if the FO’s average wideness is above the sample median average wideness, and zero otherwise. The second model captures unfair FOs and their drivers. Similar to the wideness, I first calculate the average price estimate for each method and then I calculate the overall average price estimate across all the methods in an FO. The dependent variable in the second model *UNFAIR_FO* is equal to one if an FO suggests a higher overall price estimate than the accepted offer price, and zero otherwise. In the third model, I investigate shareholder class action lawsuit initiation, how this is triggered by the FO wideness and the board’s characteristics. The dependent variable in the third model *LAWSUIT_FO* equals one

if there is at least one class action lawsuit specifically addressing the FO, and zero otherwise.³⁷

I use the average tenure of the board's directors (*TENURE*) and the percentage of independent directors on the board (*IND*) to capture the board's firm-specific knowledge. Both long tenured and inside directors are expected to possess substantial internal knowledge about the firm. For the financial expertise of the board members, I manually collect their prior working experience from either Schedule 14D or proxy statements. From all the job positions of the board members, I especially focus on whether they held positions which require valuation skills. First, I use the percentage of board members with investment banking experience (*INV_BANK_EXP*). Second, I include the percentage of board members who held positions in the finance division such as chief investment officer, or worked as analyst, venture capitalist, manager/partner of investment firms, investment funds or private equity firms (*FIN_EXP*). Board members with such experience are likely to have been involved in the valuation and assessment of investment opportunities, and should, therefore, possess valuation skills. To capture the incentives of the board, I use the total equity-related payments that target directors enjoy upon a successful completion of the tender offer (*DIR_PAYOUT*). An indicator variable *CEO_RETAIN* is used to capture whether the CEO remains employed at the merged company. I expect the magnitude of the cash-based proportion of the golden parachute (*CASH_GOLD*) to be particularly important. The higher the cash component of the golden parachute, the lower the CEO's sensitivity to the offer price since he is not affected by the offer price to the same extent as shareholders. In line with Fich, Cai and Tran (2011) I argue that the cash component makes the CEO less sensitive to the offer prices since his payoff is fixed, to a large extent, and does not change with the offer price.³⁸

In all three models, I control for the target firm's profitability in the fiscal year prior to the takeover bid (*ROA*) and I include an indicator variable if the target operates in one of the litigious industries (*LITIG_IND*), which is based on prior going-concern research by DeFond et al. (2002) and Lim and Tan (2008). The CEO who also serves as the chairman of the board has more power and influence over the board as compared to a CEO executive only. Therefore, I control for the combined roles of the CEO (*CEO_CHAIR*). Lastly, I control for the existence of any prior relationship with the target. This

37 I recognize that the filing of a class action lawsuit complaint does not necessarily imply that the case is ultimately taken to court and a hearing is scheduled. I use lawsuits as a proxy of how investors perceive the usefulness of a disclosure. Consistent with prior research, I view lawsuits as relevant mechanisms to express shareholder dissatisfaction (e.g., Brochet and Srinivasan, 2014).

38 According to Fich, Cai and Tran (2011), golden parachutes are often based on the regular cash components of the annual salary and bonus paid to the executive. Therefore, they study the differential incentives provided by golden parachutes (assumed to be mainly cash-based and offer price insensitive) and stock options, which increase in value with the takeover offer. The evidence in my sample, however, reveals that cash payments make up, on average, only 38% of the CEO's golden parachute compensation.

is captured by an indicator variable *PRIOR_REL* that is equal to one if the target adviser provided services to the target in the past, and zero otherwise.

Models (1), (2) and (3) are summarized as follows:

$$WIDE_FO_i = \alpha_t + \beta_1 TENURE_i + \beta_2 IND_i + \beta_3 INV_BANK_EXP_i + \beta_4 FIN_EXP_i + \beta_5 DIR_PAYOUT_i + \beta_6 CEO_RETAIN_i + \beta_7 CASH_GOLD_i + \beta_8 CEO_CHAIR_i + \beta_9 PRIOR_REL_i + \beta_{10} ROA_i + \beta_{11} LITIG_IND_i + \beta_{12} TOP_ADV_i + \beta_{13} R\&D_i + \beta_{14} UNFAIR_FO_i + \beta_{15} MEET_FREQ_i + \varepsilon_i \quad (1)$$

$$UNFAIR_FO_i = \alpha_t + \beta_1 TENURE_i + \beta_2 IND_i + \beta_3 INV_BANK_EXP_i + \beta_4 FIN_EXP_i + \beta_5 DIR_PAYOUT_i + \beta_6 CEO_RETAIN_i + \beta_7 CASH_GOLD_i + \beta_8 CEO_CHAIR_i + \beta_9 PRIOR_REL_i + \beta_{10} ROA_i + \beta_{11} LITIG_IND_i + \beta_{12} TOP_ADV_i + \beta_{13} INST_OWN_i + \beta_{14} PAY_EQUITY_j + \varepsilon_i \quad (2)$$

$$LAWSUIT_FO_i = \alpha_t + \beta_1 TENURE_i + \beta_2 IND_i + \beta_3 INV_BANK_EXP_i + \beta_4 FIN_EXP_i + \beta_5 DIR_PAYOUT_i + \beta_6 CEO_RETAIN_i + \beta_7 CASH_GOLD_i + \beta_8 CEO_CHAIR_i + \beta_9 PRIOR_REL_i + \beta_{10} ROA_i + \beta_{11} LITIG_IND_i + \beta_{12} UNFAIR_FO_i + \beta_{13} INST_OWN_i + \beta_{14} WIDE_FO_i + \beta_{15} PAY_EQUITY_j + \beta_{16} DEAL_PREM_j + \beta_{17} VOLATILE_i + \varepsilon_i \quad (3)$$

In addition to the common set of control variables, I also include model-specific controls particularly relevant for each of the models.

In Model (1) I additionally control for the reputation of the FO provider. Similar to Kisgen et al. (2009), I categorize top-tier opinion providers based on the number of deals in my sample in which the adviser provides an FO. An opinion provider is classified as a top-tier adviser (*TOP_ADV*) if he is among the top five advisers in my sample: Goldman Sachs & Co, JP Morgan, Centerview Partners, Morgan Stanley and Citi. Moreover, I incorporate the board meeting frequency (*MEET_FREQ*) to proxy for the level of monitoring activity of the target board (e.g., Vafeas, 1999; Greco, 2011). Lastly, I include the level of R&D expenditures (*R&D*) of the target and I control for the fairness of the FO (*UNFAIR_FO*).

In Model (2), similar to Model (1) I control for the reputation of the FO provider (*TOP_ADV*). I also include the institutional ownership of the target (*INST_OWN*) and whether the payment method includes the use of the acquiring firm’s stock (*PAY_EQUITY*).

The main variables of interest in Model (3) are, among others, the properties of an FO, namely its wideness (*WIDE_FO*) and fairness (*UNFAIR_FO*). I also control for the deal premium (*DEAL_PREM*) and whether the payment method includes the use of the acquiring firm’s stock (*PAY_EQUITY*). These factors represent important considerations to target shareholders when evaluating not only the deal, but likely also the fairness

opinion. Similar to Model (2) I include the investor base of the target (*INST_OWN*) and I control for the volatility of the target firm (*VOLATILE*) since especially for these firms the need for an FO is expected to be high. Appendix 3A contains more detailed descriptions of the variables used in my empirical tests.

In all models, the denotations *i* and *j* capture the unit of analysis, which is either the target firm (*i*) or in some cases the deal level (*j*). I include industries fixed effects based on Fama-French 5 factors industry classification. I winsorize *VOLATILE* at 1 and 99 percent. Since the explanatory variables and residuals may exhibit serial correlation due to the multiple industry observations, I use industry-clustered standard errors (e.g., Krishnan et al., 2012).

Given the nature of my research question, which is the analysis of both the determinants and consequences of wide ranges FOs at the same time, a simultaneous equations framework is used. I focus on a specific type of the simultaneous equation framework, the Seemingly Unrelated Regressions (SUR). The basic intuition behind this framework is that the simultaneous estimation of the models generates additional information above the information available when considering the individual equations separately. The estimation approach also accounts for the interdependencies among the models and the potential correlation between the error terms in all models (Larcker and Rusticus, 2010; Lennox et al., 2012).

3.5. Results

3.5.1. Descriptive statistics

Table 1 presents summary statistics for all the variables. It is noteworthy to point out that, on average, in approximately one-third (33%) of all tender offers target shareholders initiate an FO oriented class action lawsuit. This illustrates the importance and relevance of FOs, not only for regulators, as evidenced by the SEC comment letters addressing FOs, but also for target shareholders. Untransformed statistics indicate that the number of lawsuits initiated after the FO disclosure ranges from as low as 1 to as high as 23. In addition, it is striking that 13% of all FOs are unfair from the perspective of target shareholders, since these deals have been completed with the FO suggesting a higher offer price than the price accepted by the target board.

Untransformed statistics show that the average tenure of the board members is around seven years and the average percentage of independent directors is 80%. On average, target boards consist of 10% of the board members with investment banking expertise and of 36% of financially experienced directors. The average and median equity-related payment for the board has a log value of 7.70 Untransformed statistics reveal an average total payment of approximately \$163 million and a median total payout of around \$55 million. This highlights the importance of equity-related benefits for

target directors. The average board size in my sample has mean and median values of 7.6 and 7, respectively. Hence, target board members, on average, receive a payout of approximately \$21 million per member upon completion of the tender offer. The median payout for individual directors amounts to approximately \$8 million.³⁹ Cash severance payments make up 38% of the CEO’s golden parachute compensation. The CEO remains employed at the merged company in 15% of the tender offers and 27% of the targets have a CEO serving as the chairman of the board. Jointly considered, these descriptive statistics suggest an important role of board and CEO incentives. Top advisers are hired in 42% and advisers with a prior relationship in 57% of the tender offers. Institutional investors hold, on average, 59% of the target common stock.

The correlation matrix in Table 2 suggests that there is no significant association between the FO wideness and fairness and the probability of an FO-oriented class action lawsuit. However, these correlations should be treated with caution as they ignore important covariates relevant for the class-action lawsuit initiation. The correlation analysis reveals that the target board’s firm-specific knowledge is negatively correlated to FO wideness, while the financial expertise seems to play a less significant role. The decision to approve an unfair fairness opinion is strongly correlated to the equity held by the target board members.

³⁹ Target boards in my sample as a group hold relatively large equity stakes with a mean percentage of 14.6% and a median of 7.5% of common stock.

TABLE 1: Descriptive Statistics

	N	Mean	Min	Q1	Median	Q3	Max	Std. Dev.
<i>WIDE_FO</i>	175	0.50	0.00	0.00	0.00	1.00	1.00	0.50
<i>UNFAIR_FO</i>	175	0.13	0.00	0.00	0.00	0.00	1.00	0.34
<i>LAWSUIT_FO</i>	175	0.33	0.00	0.00	0.00	1.00	1.00	0.47
<i>N_LAWSUITS</i>	175	0.48	0.00	0.30	0.48	0.70	1.38	0.32
<i>TENURE</i>	175	0.79	0.11	0.69	0.80	0.94	1.33	0.24
<i>IND</i>	175	0.80	0.43	0.75	0.83	0.88	1.00	0.10
<i>INV_BANK_EXP</i>	175	0.10	0	0	0	0.17	0.67	0.13
<i>FIN_EXP</i>	175	0.36	0.00	0.22	0.33	0.50	1.00	0.21
<i>DIR_PAYOUT</i>	174	7.70	5.80	7.27	7.69	8.16	9.49	0.67
<i>CEO_RETAIN</i>	175	0.15	0.00	0.00	0.00	0.00	1.00	0.36
<i>CASH_GOLD</i>	165	0.38	0.00	0.18	0.35	0.57	1.00	0.25
<i>INST_OWN</i>	170	0.59	0.00	0.40	0.67	0.83	1.24	0.32
<i>TOP_ADV</i>	175	0.42	0.00	0.00	0.00	1.00	1.00	0.50
<i>PRIOR_REL</i>	175	0.57	0.00	0.00	1.00	1.00	1.00	0.50
<i>R&D</i>	173	0.13	0.00	0.00	0.07	0.16	1.11	0.19
<i>ROA</i>	173	-0.07	-1.49	-0.13	0.01	0.09	1.55	0.32
<i>DEAL_PREM</i>	175	0.61	-0.87	0.28	0.45	0.69	4.85	0.65
<i>PAY_EQUITY</i>	175	0.09	0.00	0.00	0.00	0.00	1.00	0.28
<i>LITIG_IND</i>	175	0.40	0.00	0.00	0.00	1.00	1.00	0.49
<i>CEO_CHAIR</i>	175	0.27	0.00	0.00	0.00	1.00	1.00	0.44
<i>MEET_FREQ</i>	167	0.96	0.48	0.85	0.95	1.08	1.49	0.21
<i>SWEET_TERMS</i>	175	0.09	0.00	0.00	0.00	0.00	1.00	0.28
<i>VOLATILE</i>	168	23.05	2.46	4.99	11.41	34.81	74.01	23.71

This table presents summary statistics of all variables used in empirical models. All variables are defined in Appendix 3A.

TABLE 2: Correlation table

Variables	WIDE_	UNF_IR_	L_ABYUT	N_L_ABY	UTS	TENURE	IND	INV_BANK	FIN_EXP	DIR_	CFO_	CASHV_	CFO_	CHIR	MEET_	INST_	TOP_	PROK_	R&D	ROA	DEAL_	PAY_EQ	LITG_	SWEET_	VOLATILE
	FO	FO	_FO	_FO				_EXP	PAYOUT	RETAIN	GOLDEN	GOLDEN	CHIR	FREQ	OWN	ADV	REL			PREM	UTY	IND	TERMS		
WIDE_	1.000																								
UNF_IR_	0.087	1.000																							
L_ABYUT	0.084	0.085	1.000																						
N_L_ABY	0.044	0.044	0.039	1.000																					
UTS	-0.124*	-0.023	0.030	-0.044	1.000																				
TENURE	0.186**	-0.025	0.048	0.066	-0.175**	1.000																			
IND	0.015	-0.027	0.041	-0.122*	-0.246***	-0.042	1.000																		
INV_BANK_EXP	0.028	0.057	-0.086	-0.075	-0.284***	0.080	0.404***	1.000																	
FIN_EXP	0.033	0.099	0.055	-0.013	-0.055	-0.013	-0.028	0.086	1.000																
DIR_PAYOUT	0.035	0.075	0.013	-0.131*	-0.176**	-0.056	-0.041	-0.055	-0.376***	1.000															
CFO_RETAIN	0.062	-0.001	0.074	-0.011	0.045	-0.072	-0.077	-0.055	-0.245***	-0.025	1.000														
CASHV_GOLDEN	0.024	-0.010	0.024	-0.010	0.024	-0.010	0.024	-0.010	0.024	-0.010	0.066	1.000													
CHIR	-0.074	0.110	-0.030	-0.022	-0.107**	0.200***	0.067	0.057	-0.245***	-0.090	0.066	-0.028	1.000												
MEET_FREQ	0.024	-0.026	-0.114	-0.039	0.008	0.068	-0.028	-0.031	0.098	-0.015	-0.224***	0.054	0.071	1.000											
INST_OPEN	0.121	0.009	-0.013	0.087	-0.071	0.149**	-0.071	0.149**	0.289***	-0.065	-0.195**	0.029	0.014	0.271***	1.000										
TOP_ADV	-0.109	0.063	0.095	0.134*	-0.025	0.164**	-0.041	-0.038	0.137*	-0.060	-0.041	0.134*	0.143*	0.239***	0.204***	1.000									
PROK_REL	0.207***	-0.020	-0.055	0.037	-0.043	0.148*	-0.187**	-0.056	-0.207***	0.072	0.091	-0.118	0.125*	-0.193**	0.017	-0.147*	1.000								
R&D	-0.258***	0.061	0.158**	0.000	0.232***	-0.120	0.106	-0.207***	-0.018	0.115	0.000	0.041	-0.029	0.209***	-0.099	0.166**	-0.453***	1.000							
ROA	0.184**	0.045	-0.157**	-0.108	-0.073	0.137*	-0.072	0.079	0.003	0.029	-0.141*	-0.128*	0.031	-0.080	0.091	-0.179**	0.454***	-0.539***	1.000						
DEAL_PREM	0.051	0.062	-0.079	0.192**	0.066	-0.018	0.210***	-0.025	0.025	0.116	-0.079	-0.163**	-0.100	0.188**	-0.027	0.128*	0.358***	-0.260***	0.260***	1.000					
PAY_EQ	-0.100	0.183**	-0.129*	-0.234***	-0.118	0.210***	-0.220**	0.159**	-0.025	0.091	-0.289***	0.116	-0.079	-0.163**	-0.027	0.128*	0.358***	-0.260***	0.260***	-0.083	1.000				
LITG_IND	0.051	0.062	-0.079	0.192**	0.066	-0.018	0.210***	-0.025	0.025	0.116	-0.079	-0.163**	-0.100	0.188**	-0.027	0.128*	0.358***	-0.260***	0.260***	-0.083	0.042	1.000			
SWEET_TERMS	0.014	-0.079	-0.003	-0.129*	-0.234***	-0.118	0.210***	0.159**	-0.025	0.091	-0.289***	0.116	-0.079	-0.163**	-0.027	0.128*	0.358***	-0.260***	0.260***	-0.083	0.030	0.028	1.000		
VOLATILE	0.014	-0.079	-0.003	-0.129*	-0.234***	-0.118	0.210***	0.159**	-0.025	0.091	-0.289***	0.116	-0.079	-0.163**	-0.027	0.128*	0.358***	-0.260***	0.260***	-0.083	0.046	-0.097	0.036	-0.085	1.000

This table presents a correlation matrix between variables used in empirical models. All variables are defined in Appendix 3A. ***, **, *, correspond to statistical significance at the 1, 5, and 10 percent levels, respectively.

3.5.2. Wideness and fairness of the FO

Table 3 reports marginal effects for the three probit regressions. Column 1 presents the determinants of the FO widenness (Model 1) and Column 2 the FO fairness (Model 2), while Column 3 summarizes the results for the determinants of the FO-oriented class action lawsuit initiation (Model 3). The results are reported separately for each model, but remember that these models are estimated simultaneously.

The results in column 1 reveal that firm-specific knowledge is indeed a strong predictor of wide-ranged FOs, which provides support for H1. The higher the tenure of the board members, and thus the accumulated firm-specific knowledge, the lower the likelihood that a wide-ranged FO is disclosed. The board's independence is the strongest predictor of the FO widenness, with independent board members being more likely to disclose a wide-ranged FO. This supports prior studies that independent board members lack firm-specific knowledge and thus tend to provide less precise information such as earnings forecasts, or in the case of tender offers, target valuation estimates. My results suggest that it is in fact mainly the firm-specific knowledge of the board that is relevant for the widenness of ranges observed in FOs. I find no support for H1a since neither financial nor investment banking expertise seems to substantially matter for the FO widenness.

The boards' equity benefits upon completion of the tender offer are positively associated with the widenness of the ranges in an FO, providing support for H2. Similarly, the cash component of the golden parachute represents strong incentives for the CEO to complete the tender offer, resulting in wide-ranged FOs. There is no evidence that the retention of the CEO is related to FO widenness, so that there is only partial support for H3. In addition, FOs tend to have wider valuation ranges in the case of less profitable firms and when FOs are unfair. This suggests that the FO widenness might be used strategically to distract from information such as poor performance of the target in the past or unattractive offer price accepted by the board. R&D intense target firms also tend to have wide FO valuation ranges, which simply reflects the valuation difficulty and uncertainty inherent in this type of firms. Lastly, I find that the meeting frequency of the board is negatively related to the FO widenness. This is in line with the target board monitoring activity providing benefits to shareholders. Overall, Model 1 yields evidence that firm-specific knowledge and incentives of the board as well as the CEO are relevant determinants of the FO widenness.

The results in Model 2 reveal that the higher the boards' equity stake, the lower the probability that an unfair FO is disclosed, which supports H4. CEO incentives also play an important role for the fairness of an FO. I find that the retention of the CEO is positively associated with the probability of an unfair FO, while the cash component of the golden parachute is unrelated to the FO fairness. Thus, H5 is partially supported. Interestingly, my results also show that the opinion provider's pre-existing relationship with the target is positively associated with the unfairness of an FO, hinging at the potential conflict of interest. Institutional ownership seems to serve as a disciplining

mechanism for the target board since it is less likely to disclose an unfair FO if its investor base consists primarily of sophisticated investors. Overall, the results in Model 2 suggest that the sensitivity of the board towards the offer price is an important determinant of the fairness of the FO. The more the directors are affected by the offer price themselves, the greater the alignment of the interests with those of target shareholders. I also find that retention at the merged company may lead the CEO to promote unfavorable deals to shareholders, giving rise to important agency costs.

Table 3: Empirical models

	Model 1: Wideness	Model 2: Fairness	Model 3: Lawsuit initiation
<i>IND</i>	1.019*** (0.003)	-0.046 (0.817)	
<i>TENURE</i>	-0.166* (0.057)	0.055 (0.519)	-0.058 (0.752)
<i>FIN_EXP</i>	-0.182 (0.588)	-0.009 (0.967)	-0.471** (0.013)
<i>INV_BANK_EXP</i>	0.161 (0.533)	-0.107 (0.735)	0.426*** (0.000)
<i>DIR_PAYOUT</i>	0.098* (0.093)	-0.095*** (0.006)	0.115** (0.024)
<i>CASH_GOLD</i>	0.351*** (0.004)	-0.041 (0.728)	0.092 (0.338)
<i>CEO_RETAIN</i>	0.036 (0.623)	0.101** (0.024)	0.046 (0.596)
<i>CEO_CHAIR</i>	-0.135† (0.108)	-0.112* (0.094)	-0.075 (0.270)
<i>ROA</i>	-0.277*** (0.000)	-0.010 (0.801)	0.104 (0.368)
<i>PRIOR_REL</i>	-0.069 (0.443)	0.126*** (0.000)	0.135† (0.159)
<i>LITIG_IND</i>	-0.069 (0.506)	0.035** (0.047)	-0.098† (0.147)
<i>TOP_ADV</i>	0.128** (0.039)	0.016 (0.810)	
<i>R&D</i>	0.243† (0.170)		
<i>UNFAIR</i>	0.192* (0.092)		0.128*** (0.010)
<i>MEET_FREQ</i>	-0.421*** (0.006)		
<i>INST_OWN</i>		-0.075*** (0.009)	-0.155* (0.069)

Table 3: empirical models (*continued*)

PAY_EQUITY		0.202***	-0.115
		(0.001)	(0.330)
WIDE_FO			0.070*
			(0.075)
DEAL_PREM			-0.166**
			(0.013)
VOLATILE			0.001
			(0.970)
Industry FE	YES	YES	YES
Year FE	NO	NO	NO
Observations	155	158	152
Pseudo R ²	17.32%	14.50%	15.45%

This table reports marginal effects of probit regressions of the determinants of the wideness (Model 1), fairness of the FO (Model 2) and the determinants of the FO-oriented class action lawsuit initiation (Model 3). The dependent variable in Model 1, *WIDE_FO*, is a dummy variable that equals 1 if the average wideness in an FO is higher than the sample median average wideness, and zero otherwise. The dependent variable in Model 2, *UNFAIR_FO*, is a dummy variable that equals 1 if the average price as suggested by an FO is higher than the accepted offer price, and zero otherwise. The dependent variable in Model 3, *LAWSUIT_FO*, is a dummy variable that equals 1 if there is at least one class action lawsuit specifically addressing the FO, and zero otherwise. Definitions of all variables are provided in Appendix 3A. P-values are reported in parentheses (***) $p < 0.01$, ** $p < 0.05$, * $p < 0.1$, † one-sided significance) and standard errors are clustered at industry level, using Fama French 5 factors. The SUR estimation technique is applied to control for the correlation of the error terms across models.

3.5.3. Shareholder class action lawsuit initiation

The main findings in column 3 are that wide-ranged and unfair FOs are more likely to trigger shareholder class action lawsuits, providing support for H6. These findings clearly indicate that the attributes of FOs matter to investors, despite prior evidence suggesting that FOs are “window-dressing” (e.g., Makhija and Narayanan, 2007; Davidoff, 2006).⁴⁰

Overall, the results suggest that target shareholders consider the valuation and finance expertise of the board as well as its incentives when evaluating the FO and its usefulness. The firm-specific knowledge and the CEO’s incentives seem to be less relevant for the FO-oriented class action lawsuit initiation.⁴¹ It is interesting to note that shareholders’ FO lawsuit initiation is different for the different types of the board’s expertise. While financial expertise of the board reduces the probability of an FO class action lawsuit, the opposite is true for investment banking. Target shareholders might be more skeptical towards FOs disclosed by the boards with investment banking experience due to the potential conflict of interest arising from directors’ affiliation with investment banks in the past. Directors with prior affiliations in the investment banking industry are

⁴⁰ See, for example, a news article by Financial Times in 2005 “You Can Call It a Fairness Opinion, but That Wouldn’t Be Fair”, retrieved from: <https://www.nytimes.com/2005/07/10/business/yourmoney/you-can-call-it-a-fairness-opinion-but-that-wouldnt-be.html>

⁴¹ Since independence of the target board is the strongest predictor of the FO wideness, I exclude it from the model. However, the inferences remain unaffected if I include the boards’ independence in the model.

argued to pursue the interests of those affiliated institutions rather than maximizing shareholder value (Güner, Malmendier & Tate, 2008). Moreover, target shareholders are more skeptical towards FOs disclosed by target directors with large equity benefits upon completion of the tender offer as these represent strong incentives to complete the deal.

I find that institutional owners are less likely to initiate a FO-oriented class action lawsuit. While both sophisticated and non-sophisticated investors incorporate FOs into their decisions, non-sophisticated investors might need to rely more on the FO due to a lack of sophistication to conduct own valuations and fair price assessments. The existence of prior ties between the target firm and the FO provider seems to trigger shareholders’ skepticism towards FOs as it is positively related to the class action lawsuit initiation. Lastly, target shareholders are less likely to initiate a class action lawsuit the higher the deal premium offered by the acquirer. In sum, the evidence shows that the board’s characteristics and FO properties trigger target shareholder’s skepticism towards FOs.

3.6. Additional analysis

Besides examining whether a class action lawsuit is initiated, I also consider the number of class action lawsuits as there is a remarkable variation in the number of class action lawsuits initiated. I analyze whether FO properties exacerbate shareholders’ dissatisfaction towards disclosed FOs. Model (4) is summarized as follows:

$$N_LAWSUITS_i = \alpha_t + \beta_1 TENURE_i + \beta_2 INV_BANK_EXP_i + \beta_3 FIN_EXP_i + \beta_4 DIR_PAYOUT_i + \beta_5 CEO_RETAIN_i + \beta_6 CASH_GOLD_i + \beta_7 CEO_CHAIR_i + \beta_8 PRIOR_REL_i + \beta_9 ROA_i + \beta_{10} LITIG_IND_i + \beta_{11} UNFAIR_FO_{ii} + \beta_{12} INST_OWN_i + \beta_{13} WIDE_FO_i + \beta_{14} VOLATILE_i + \beta_{15} SWEET_TERMS_i + \varepsilon_i \quad (4)$$

The dependent variable in Model (4) is the logarithm of the number of class action lawsuits initiated ($N_LAWSUITS$).⁴² I additionally include an indicator variable ($SWEET_TERMS$) to capture deals where the offer price was increased prior to the disclosure of an FO as it is likely to affect shareholders’ evaluation of the offer price, and, thus, the FO. All variables are defined in Appendix 3A. The results are reported in Table 4.

The main finding is that both the wideness of the ranges in an FO and its fairness do not only trigger the initiation of class action lawsuits, but also their prevalence. In addition, the investment banking expertise of the board and sweet terms are the strongest predictors of the number of class action lawsuits, both suggesting a negative

⁴² I consider the total number of lawsuits initiated after the disclosure of an FO. Untransformed statistics indicate that the number of lawsuits initiated after the FO disclosure ranges from as low as 0 to as high as 23.

relation. The number of lawsuits seems to be higher when the CEO serves as chairman of the board and when target firms are volatile. Overall, the findings provide support that wide-ranged and unfair FOs trigger significant dissatisfaction among target shareholders with regard to the FO disclosure.

Table 4: Number of class action lawsuits

	Model 4: Number of lawsuit initiations
<i>TENURE</i>	-0.115 (0.769)
<i>FIN_EXP</i>	-0.230 (0.284)
<i>INV_BANK_EXP</i>	-0.420 [†] (0.125)
<i>DIR_PAYOUT</i>	-0.079 [†] (0.180)
<i>CASH_GOLD</i>	-0.195 (0.498)
<i>CEO_RETAIN</i>	-0.180* (0.089)
<i>CEO_CHAIR</i>	0.083** (0.042)
<i>ROA</i>	0.095 (0.628)
<i>PRIOR_REL</i>	0.082 (0.408)
<i>LITIG_IND</i>	0.318*** (0.000)
-----	-----
<i>WIDE_FO</i>	0.091** (0.044)
<i>UNFAIR_FO</i>	0.166* (0.052)
-----	-----
<i>SWEET_TERMS</i>	-0.627*** (0.000)
<i>INST_OWN</i>	-0.156 [†] (0.189)
<i>VOLATILE</i>	0.006*** (0.007)
-----	-----
Industry FE	YES
Year FE	NO
-----	-----
Observations	152
Adjusted R ²	13.56%

This table reports the results for the OLS model capturing the number of class action lawsuits (Model 4). The dependent variable is the logarithm of the number of class action lawsuits initiated (*N_LAWSUITS*). Definitions of all variables are provided in Appendix 3A. P-values are reported in parentheses (***) $p < 0.01$, ** $p < 0.05$, * $p < 0.1$, [†] one-sided significance) and standard errors are clustered at industry level, using Fama French 5 factors. The SUR estimation technique is applied to control for the correlation of the error terms across models.

3.7. Conclusion

This study examines the properties of the obtained FOs, their determinants and how shareholders perceive them. I find that the board’s and the CEO’s incentives to complete the tender offer shape both the wideness of the FO as well as the decision to accept an unfavorable deal. In addition, the board’s firm-specific knowledge is a strong predictor of the FO wideness, which highlights the importance and benefits of accumulated firm-specific knowledge. Both FO properties matter to target shareholders. Target shareholders do not perceive wide-ranged and unfair FOs as useful as these FOs are more likely to trigger class action lawsuits. There is also a difference in the perception among the different types of investors. Non-institutional investors are more likely to initiate a FO-oriented class action lawsuit as compared to sophisticated shareholders. The former might lack sophistication to conduct their own valuations and thus might need to rely more on FOs.

My findings contribute to the fairness opinion, corporate governance as well as litigation literature. First, prior studies mainly focus on the use of FOs in M&As and outcomes for the acquiring firm shareholders. I investigate the role of FOs in the tender offer setting where I expect FOs to be of greatest importance. Target shareholders are required to make their tendering decisions within a short period of time. Hence, target FO and its underlying valuation analyses help target shareholders in reaching an informed decision. Second, despite the great importance of FO analyses, prior studies mainly focus on the determinants of the use of an FO. My study, however, shows that while all targets issue an FO in tender offers, one-third of them is exposed to class action lawsuits. This implies that it is not the decision to obtain an FO that should be examined for deal outcomes and shareholder implications, but the underlying valuation analyses. My study further shows that contrary to the criticism of FOs being merely rubber stamps without providing any incremental information, FOs in tender offers represent a relevant information source to target shareholders. Third, this is the first study to investigate the board’s characteristics and incentives in the context of FOs. Given that it is primarily the target board who is responsible for the FO disclosure, it is important to investigate the extent to which the board can use the FOs strategically to achieve its desired objectives. Lastly, this is the first study to analyze the association between the properties of a FO and target shareholder class actions. Shareholder lawsuits are costly and delay the completion rate of the deals. Therefore, it is crucial to understand which FO properties trigger shareholder lawsuits, thereby impeding the fast completion rate of tender offers.

The findings of the study are subject to several limitations. First, in addition to the examined characteristics and incentives of the board, future research can incorporate some additional factors such as age and/or industry experience of the board members. Second, while I capture the investor base of the target firm, I do not explicitly analyze the identity of the lead plaintiff filing the shareholder class action lawsuit. Given that some plaintiff types are more likely to be strategic and interested in pursuing stringent

case outcomes (Brochet and Srinivasan, 2014), it is interesting to explore it in future research. Third, I examine adviser related characteristics at an aggregate level. Future research can explore the individual level of adviser related characteristics, for example, which reputable advisers issue wide versus narrow ranged FOs. Additionally, the type and the extent of the prior relationship can be examined to get a better understanding of the strength of a potential bond between the adviser and the target firm. Lastly, while I expect FOs to matter more in the case of tender offers as opposed to friendly M&A deals, this, nevertheless, results in a relatively small sample size.

Appendix 3A: Variable definitions with the corresponding data-sources

Dependent Variables		Data Source
<i>WIDE_FO</i>	I first calculate the mean scaled wideness of each method, $wide_1$ to $wide_n$ as, for instance, $wide_1 = [Upper\ bound\ range_1 - Lower\ bound\ range_1] / ((Upper\ bound\ range_1 + Lower\ bound\ range_1) / 2)$. I then calculate the average wideness across all methods in an FO, as $AV_WIDE = (wide_1 + wide_2 + \dots + wide_n) / N$, where N is the total number of methods with a range in an FO. $WIDE_FO = 1$ if AV_WIDE of an FO is higher than or equal to the sample median AV_WIDE and zero otherwise.	Schedule 14D-9
<i>UNFAIR_FO</i>	Similar to $WIDE_FO$, I first calculate the average price estimate for each method, $mean_1$ to $mean_n$ as, for instance, $mean_1 = (Upper\ bound\ range_1 + Lower\ bound\ range_1) / 2$. I then calculate the overall average price estimate across all the methods in an FO, as $AV_MEAN = (mean_1 + mean_2 + \dots + mean_n) / N$, where N is the total number of methods with a range in an FO. $UNFAIR_FO = 1$ if AV_MEAN is higher than the accepted offer price, and zero otherwise.	Schedule 14D-9
<i>LAWSUIT_FO</i>	=1 if there is at least one class action lawsuit specifically addressing the FO, and zero otherwise.	Target SEC filings on the EDGAR Web site
<i>N_LAWSUITS</i>	=Logarithm of (1 + total number of lawsuits initiated after the disclosure of an FO).	Target SEC filings on the EDGAR Web site

Board variables		Data Source
<i>TENURE</i>	=Logarithm of [total number of years of service of all board members / total number of board members].	Schedule 14D-9/ DEF 14A
<i>IND</i>	=Number of independent board members / total number of board members.	Schedule 14D-9/ DEF 14A
<i>INV_BANK_EXP</i>	=Number of board members with investment banking experience/ total number of board members.	Schedule 14D-9 / DEF 14A
<i>FIN_EXP</i>	=Number of board members with finance experience / total number of board members.	Schedule 14D-9/ DEF 14A
<i>DIR_PAYOUT</i>	=Logarithm of the total equity related payments of target directors. This includes the payments for the common stock held by the board and the accelerated equity vesting. In case these accelerated vesting benefits are not explicitly given, I calculate them manually as (offer price-average option's exercise price) multiplied by the equity amount to be accelerated. In the case of restricted stock, I multiply the amount of stock with the offer price. This is in line with prior research (e.g., Fich, Cai and Tran, 2011).	Schedule 14D-9
<i>CEO_RETAIN</i>	=1 if CEO remains employed at the merged company, and zero otherwise.	Schedule 14D-9
<i>CASH_GOLD</i>	=Cash component of the golden parachute / total amount of the golden parachute.	Schedule 14D-9

Chapter 3

Control variables		Data Source
<i>INST_OWN</i>	=Total number of shares owned by institutions / total number of shares outstanding. I use the most recent institutional ownership figure available immediately prior to the disclosure of a FO.	Thomson Reuters Institutional Holdings (13f)
<i>TOP_ADV</i>	=1 if the target adviser is among Goldman Sachs & Co, JP Morgan, Centerview Partners, Morgan Stanley and Citi, and zero otherwise.	Schedule 14D-9
<i>PRIOR_REL</i>	=1 if the target adviser provided services in the past, and zero otherwise.	Schedule 14D-9
<i>R&D</i>	=A three-year moving average of R&D expenditures/total assets of the target.	Compustat / SDC
<i>ROA</i>	=EBIT of the target firm/total assets of the target.	SDC
<i>DEAL_PREM</i>	=(Offer price – target share price 4 weeks prior to the tender offer announcement)/ target share price 4 weeks prior to the tender offer announcement.	SDC
<i>PAY_EQUITY</i>	=1 if the payment method includes the use of the acquiring firm's stock, and zero otherwise. This variable captures the use of the acquiring firm's equity only and a hybrid payment method, consisting of both cash and equity. (The base level, PAY_EQUITY=0 captures deals where only cash is used as a payment method).	Schedule 14D-9
<i>LITIG_IND</i>	=1 if the target operates in one of the litigious industries (SIC codes 2833-2836, 3570-3577, 3600-3674, 5200-5961 and 7370), and zero otherwise.	SDC
<i>CEO_CHAIR</i>	=1 if the CEO is also the chairman of the board, and zero otherwise.	Schedule 14D-9/ DEF 14A
<i>MEET_FREQ</i>	=Logarithm of the total number of target board meetings held in the year prior to the tender offer. I use the most recent figure available prior to the disclosure of the FO.	Schedule 14D-9/ DEF 14A
<i>SWEET_TERMS</i>	=1 if the offer price was increased prior to the disclosure of an FO, and zero otherwise.	Target SEC filings on the EDGAR Web site
<i>VOLATILE</i>	=Standard deviation of net income measured on a rolling basis over a three-year period. This variable is winsorized at 1 and 99%.	Compustat

Chapter 4

**As good as it gets? The role of boutique
financial advisers in fairness opinions:
Evidence from tender offers⁴³**

⁴³ This chapter is based on a working paper co-authored with Annelies Renders.

ABSTRACT

This study investigates the role of boutique advisers in the context of the provision of fairness opinions (FO). First, we are interested whether boutique advisers provide more precise FOs as compared to non-boutique investment banks. Second, we investigate the association between the precision of a target-sought FO and the type of a financial adviser and the probability of a timely tender offer execution. Our findings suggest that boutique advisers provide more precise FOs as compared to their counterparts. The recent popularity of boutique advisers seems to be warranted in terms of the precision of their FOs. In general, we find that target advisers with prior ties with the acquirer provide less precise FOs, potentially to facilitate the success of the acquirer's takeover attempt. Our results, however, reveal that the opposite is true for boutique advisers as they are likely to provide more precise FOs if they have prior ties with the acquirer. This is in line with the "service excellence" idea as the provision of a precise FO increases the likelihood that the acquirer rehires a boutique adviser in the future. We find that less precise FOs tend to delay the completion of the tender offer, suggesting that target shareholders prefer more precise FO disclosures.

4.1. Introduction

Over the last years, the popularity of boutique financial advisers has been on the rise. Boutique advisers often specialize in certain industries, focus primarily on providing advisory services in mergers and acquisitions (M&A) and are generally viewed as independent (Chessell, 2015; Song, Wei and Zhou, 2013). These generally small but specialized investment banks are stealing M&A market share from the larger well-established banks at increasing rates. In 2016, boutique financial advisers accounted for 34 percent of total M&A advisory fees, an increase of 20% compared to 2007.⁴⁴

The threat of a perceived (or actual) conflict of interest, and a desire to avoid it, have increased the demand by boards of directors for an independent and unbiased advice provided by boutique advisers. Yet, despite their growing popularity, the evidence regarding the benefits of hiring boutique advisers versus their competitors is still scarce (Song et al., 2013). Therefore, this study investigates the role of boutique advisers in the context of the provision of fairness opinions (FO). Specifically, this study attempts to address two research questions. First, we are interested whether boutique advisers provide more precise FOs as compared to non-boutique advisers. Second, we investigate the association between the precision of a target-sought FO and boutique advisers and the probability of a timely deal completion.

A fairness opinion is obtained in M&As and going-private transactions to help the board of the acquiring or target firm determine the appropriateness or “fairness” of the consideration to be paid or received. An FO is meant to serve as an objective assessment of the transaction, as it is delivered by a financial adviser evaluating the target and transaction price. On the basis of various valuation analyses, the financial adviser states whether the price received in the transaction is fair from a financial point of view to shareholders of the client firm (Liu, 2019). These valuation analyses are at the heart of the FO and serve as an important basis for decision-making by the board of directors. Yet, despite the central role of the FO valuation analyses, prior studies have mainly focused on the determinants of obtaining an FO and have largely ignored the underlying properties of FOs. However, the informational value of an FO to shareholders depends heavily on its underlying properties, and anecdotal evidence suggests a large heterogeneity in the properties of FOs.⁴⁵

We focus on a key FO property, the precision of an FO, which is captured by the wideness of valuation ranges in an FO. When confronted with a takeover bid, the boards’ and target shareholders’ key consideration is whether the offer price is fair and attractive. The

44 Retrieved from: <https://www.reuters.com/article/us-banks-boutiques-strategy-idUSKBN1432WH>

45 For instance, one judge presiding over shareholder litigation concluded that the valuation ranges presented in an FO are so wide that “even a Texan would feel at home on them. Per-share prices ranged from \$159–\$247 for 1991, \$230–\$332 for 1992, to \$208–\$402 for 1993. See *Paramount Communications v. Time, Inc.* (CivilActionNo.10866, Del.Ch.LEXIS77).

ranges in an FO can be used to evaluate the attractiveness of the offer price since they signal the spectrum of possible valuations within which the offer price can fall. Thus, the wideness of the ranges is supposed to provide assurance regarding the offer price and facilitate shareholders' decisions towards accepting the deal. This wideness has received substantial criticism from media, regulators and courts. Duff and Phelps (2017), for instance, note that FOs are mostly criticized for producing valuation ranges that are too wide to provide meaningful information.⁴⁶ The wideness of the ranges seems to be a core property used to determine the usefulness of an FO. We refer to more precise FOs in case of narrower and less precise FOs in case of wider valuation ranges in an FO.

To investigate our research questions, we focus on a setting in which fairness opinions and their properties are likely to be very important, namely tender offers. The completion and success of tender offers is highly dependent on target shareholders' tendering decisions. Tender offers often have so-called minimum conditions, which implies that a deal can only be completed if a certain percentage of target shareholders' shares is tendered within a specified time frame. Hence, it is pivotal for shareholders to receive an accurate assessment of the value of their shares, and FO valuation analyses can help target shareholders in reaching an informed decision. Considering the central role of FOs and their underlying properties in tender offers, it is important to analyze whether prestigious boutique investment banks provide more precise FO target valuations as suggested by their independence and expertise. Since tender offers are often chosen due to faster completion times, it is crucial to not only understand the relation between the different types of advisers and FO properties but also how these FO properties relate to the timeliness of a deal completion.

Bulge bracket investment banks represent the traditional full-service brokerage houses that offer a wide range of services such as sales, trading, underwriting, research and lending. In contrast, boutique advisers are generally smaller, independent, often industry specialists and focus exclusively on providing M&A advice. The differential nature and focus of boutique banks make it interesting to investigate whether they provide different FOs as compared to their counterparts. On the one hand, boutique advisers should provide more precise valuation ranges due to their industry specialization and M&A expertise (Song et al., 2013). On the other hand, except for a few well-known boutique firms, boutique advisers in general tend to be less well known and are much more reliant on fees for advisory services because this is their only line of business. This might provide them with incentives to issue less precise FOs to ensure that the offer price falls within the valuation ranges so that the tender offer is completed, and their compensation is secured. In addition, we also explore whether the existence of prior ties with the acquirer affects the association between boutique advisers and the precision of their FOs. This

⁴⁶ Retrieved from: <https://www.duffandphelps.com/insights/publications/transaction-opinions/in-defense-of-fairness-opinions-an-empirical-review-of-ten-years-of-data>

might arise due to the potential conflict of interest faced by target boutique advisers. In a takeover setting, the primary concern of target advisers might shift to securing future business with the acquirer, with precise target valuations being of second order importance.

We hand-collected all U.S. tender offers and target FO valuation analyses between 2010 and 2018. The results show that 33% of target firms in tender offers hire a boutique investment bank, which supports the popularity of and demand for boutique financial advisers. We find that boutique advisers provide more precise FOs as compared to their counterparts, as suggested by their independence and M&A expertise. The results further show that almost 40% of financial advisers hired by the target have prior ties with the acquirer. Our results reveal that, in general, target advisers with prior ties with the acquirer tend to provide less precise FOs, yet the opposite is true for boutique advisers. These advisers provide more precise FOs if they have prior ties with the acquirer, likely to increase the likelihood that the acquirer rehires them in the future. This is in line with the “service excellence” idea as the provision of precise FOs is likely to improve boutique advisers’ chances of being rehired by the acquirer in the future.

With regard to the second research question, we find that the probability of a timely deal completion is positively associated with the precision of an FO, hinging at target shareholders’ preference for more precise FO disclosures. We also find that target shareholders seem to tender their shares faster if the target hires a boutique adviser as compared to other non-boutique investment banks. Overall, our results reveal that target firms benefit from hiring boutique advisers since they provide more precise FOs, which in turn facilitates a timely deal completion.

This paper contributes to the fairness opinion and financial adviser literature in several ways. First, this is the first paper to analyze how the type of a financial adviser is associated with the properties observed in an FO. Boutique financial advisers and FOs both still represent unexplored phenomena despite their remarkable prevalence in the M&A arena. Prior studies mainly focused on the decision to obtain an FO and therewith associated deal and shareholder wealth implications (Kisgen et al., 2009; Frye and Wang, 2010; Liu, 2018; Liu, 2019). Yet, as prior research suggests it is not the occurrence of an FO, but rather its underlying valuation analyses that should be examined. For instance, the results in chapter 3 reveal that class action lawsuits are more likely to be initiated if less precise FOs are issued. This highlights the importance of FO properties and the need to explore their determinants and consequences in the M&A setting.

While chapter 3 shows that the target board’s characteristics and incentives are important determinants of the observed FO properties, this is the first study to explore the characteristics of an FO provider. Especially the role and superiority of boutique advisers in the context of FO provision has been so far unexplored. So far there are two studies examining the role of boutique advisers and deal outcomes. Song, Wei and Zhou

(2013) examine the choice and role of boutique advisers for deal outcomes in the US setting, while Loyeung (2019) investigates the performance of boutique advisers in the Australian market. Both studies show that the benefits of hiring a boutique adviser flow to both the acquirers and the target firms, which to some extent validates the increasing popularity of boutique advisers.⁴⁷ This study differs from these studies in at least two aspects. First, we examine the role of boutique advisers in the context of FO provision. Both prior studies focus on the initial stage, being the choice of a boutique adviser, and the final step, namely deal outcomes. While the adviser itself, and thus its choice, is an important determinant of deal outcomes, we argue that it is the intermediate step in the M&A chain, which is the provision of an FO disclosure, that is equally relevant. In both M&As and tender offers target shareholders rely on FOs for either their M&A approval and voting, or tendering decisions in the case of tender offers. Therefore, rather than investigating the type (and choice) of an adviser and deal outcomes directly, we first focus on the type of an adviser and FO properties, and in a second step how these properties relate to certain deal outcomes. Additionally, we integrate characteristics of the target board when examining the decision to hire a boutique adviser and also the precision of an FO. This enables us to have a full picture on the determinants of the FO precision.

Second, this is the first study to analyze how FO properties interact with tender offer extensions, which capture the speed of shareholder's tendering. Similar to class action lawsuits, extensions of a tender offer delay the completion of the deal and diminish the comparative advantage of faster completion times of tender offers over mergers. Thirdly, rather than exploring the target adviser's prior relationship with the target, we focus on prior ties with the acquirer since the latter has been largely unexplored, especially in the context of FOs.

The remainder of the paper is organized as follows: Section 4.2 outlines prior literature. Section 4.3 summarizes theoretical predictions. Section 4.4 discusses the research design and sample. Section 4.5 presents the findings, while section 4.6 concludes.

⁴⁷ Song et al. (2013) find that deal premiums are lower when acquirers hire boutique advisers and that these advisers lengthen the duration of a deal because they are likely to spend more time on due diligence and negotiation to complete deals. Loyeung (2019) shows that acquiring firms benefit in terms of improved post-merger performance, while target firms benefit in terms of higher completion of value-enhancing deals and positive cumulative abnormal returns when boutique advisers are involved.

4.2. The use of fairness opinions

4.2.1. *Institutional background*

FOs find their origin in the Smith vs. Van Gorkom case and Delaware law that institutionalized an “outside” opinion within the M&A context in the U.S. In the Smith vs. Van Gorkom (1985) case, the Delaware Supreme Court declared the board of the Trans Union Corporation guilty because it approved an acquisition without obtaining anything more than a “rough” and unquestioned estimate of a possible value from its CFO. According to the Delaware Supreme Court, a target board, as part of its greater duty of care in a corporate control transaction, is obliged to thoroughly inform itself about its corporation’s value by means of a well-prepared financial analysis. Even though FOs are not required by law, over the period 1996 to 2013, over 90 percent of the M&A transactions have obtained an FO (Liu, 2019). In an M&A setting, once the merger is publicly announced, the FO is included in the proxy statements and mailed to shareholders for voting approval of the merger. The opinions are publicly disclosed once the proxy statements are mailed and submitted electronically to the SEC.

Whereas FOs are largely voluntary, the information content included in FOs has been regulated – albeit to a limited extent. In 2007, the SEC approved the proposed rules by the National Association of Securities Dealers, Inc. (NASD) to increase disclosure requirements for FOs. As of 2007, firms requesting an FO have to disclose whether the adviser will receive compensation contingent on the successful completion of the underlying transaction, whether the adviser has had a material relationship with the company in the last two years, and what information was provided to the adviser by the board of directors in deriving the opinion. The SEC further monitors the quality of FO disclosures. Liu et al. (2019) examine SEC comment letters for M&A transactions and find that the most frequent comment letters relate to fairness opinions and their valuations, general compliance, and transaction background. Despite the somewhat increased regulatory scrutiny regarding the disclosure of FOs, board of directors and financial advisers are still left to their own devices in terms of the underlying information content of the FO.

4.2.2. *The role of financial advisers in issuing an FO*

Financial advisers play the second most important role in the context of FOs. The target board of directors is responsible for evaluating and acting on the takeover bid. Upon receiving the offer, the target board needs to assess the value of the target firm to evaluate the fairness and attractiveness of the offer price. FOs are a useful second opinion from a financial adviser, providing an independent valuation of the target firm. The board selects and hires an FO provider to deliver target valuations and provides the FO provider with all relevant firm-specific information and internal forecasts. It is then the financial adviser who delivers FO target valuations and verifies the fairness of the offer price and bundles all relevant valuation information into a single document for target shareholders to make informed decisions regarding the tender offer.

Previous research has primarily focused on two aspects of the advisory relationship: 1) the fee structure and contract terms, and 2) the adviser's reputation and deal outcomes (e.g., Kisgen et al., 2009; Cain and Denis, 2013; Song et al., 2013).

Kisgen et al. (2009) examine the relation between the fee structure and reputation of an adviser and the objectivity and quality of FOs. They find that acquisitions with FO providers who also receive a fee contingent on deal completion have significantly lower announcement-period returns. They also show that the reputation of acquirers' FO advisers positively affects deal quality, namely the use of top-tier FO advisers on the acquirer side reduces the deal premium. At the same time, the use of lower-tier FO advisers is associated with a higher probability of completing the deal, higher premiums paid, and lower announcement returns. This suggests that the incentives of lower-tier advisers might not be aligned with those of the acquirer shareholders, which is to complete a high-quality transaction at a reasonable price.

Cain and Denis (2010) analyze target firm valuations disclosed in the FOs by both acquiring and target firms' financial advisers in negotiated mergers. Their findings show that acquirer-side investment banks tend to systematically over-value, while target-side advisers tend to under-value the target firm, although the results for the target side are more mixed. In addition, they show that the reputation of financial advisers is positively related to the valuation accuracy in FOs since top-tier advisers produce more accurate valuations compared to their lower-tier counterparts. Further they show that financial advisers with a pre-established relationship with the target produce more accurate FO valuations than do unaffiliated and independent third-party investment banks. Thus, adviser reputation and relationship-based information appear to play a role in the accuracy of FO valuations. Further, they find no evidence that valuation accuracy is associated with the contingency structure of advisory fees, suggesting that FO valuations might not be driven by conflicts of interest.

In general, the previous literature mainly focuses on the reputation of financial advisers based on their market share. Accordingly, highly reputable and top-tier investment banks represent the large and well-established bulge bracket banks such as Morgan Stanley or Goldman Sachs. Yet, the growing investors' enthusiasm towards independent investment banks, especially since the financial crisis, increased the demand for boutique advisers in the last years. While in 2005 bulge bracket firms accounted for nearly 95% of the global M&A volume, by 2016 their share had shrunk to 87.6%.⁴⁸ These developments challenge the traditional definition of reputation and quality of financial advisers. Despite the remarkable prevalence of boutique advisers, to our knowledge, Song et al. (2013) is the only study to examine the role of boutique advisers in the US setting.

⁴⁸ Retrieved from: <https://www.forbes.com/sites/mergermarket/2017/03/29/battling-the-bulge-boutique-banks-gaining-ground/?sh=740ce2e565e5>

Loyeung (2019) investigates the performance of boutique advisers in the Australian market.

Song et al. (2013) investigates firms' choice between boutique and full-service advisers and the impact of adviser choice on deal outcomes. They find that boutique advisers are likely to be hired when deals are complex, suggesting that boutique advisers are selected for their skill and expertise. They also show that deal premiums are lower when acquirers hire boutique advisers and that these advisers lengthen the duration of a deal because they are likely to spend more time on due diligence and negotiation to complete deals. The favorable deal outcomes are found to be stronger on the acquirer side than that on the target side. Loyeung (2019) finds that acquiring firms benefit in terms of improved merger performance, while target firms benefit in terms of higher completion of value-enhancing deals and positive cumulative abnormal returns when boutique advisers are involved.

Our study is the first to examine the role of boutique advisers in the context of FOs in tender offers. Considering the central role of FOs and their underlying properties for target shareholders' tendering decisions, we analyze whether boutique investment banks provide more precise FOs as would be expected from their independence and expertise, compared to non-boutique advisers.

4.2.3. Boutique financial advisers

The firms engaged in the investment banking industry are commonly classified based on size, types of services provided and therewith associated diversification of revenue streams. Bulge bracket investment banks represent the traditional full-service brokerage that offer a wide range of services and have a full spectrum of diversified business lines such as sales, trading, underwriting, asset management services, research and lending. Recognizable names in this category include Goldman Sachs or J.P. Morgan Chase. Full-service advisers have great resources and are diversified, but they have been criticized for suffering from potential conflicts of interest (e.g., Allen et al., 2004; Ertugrul and Krishnan, 2014).

Boutique advisers are generally smaller and less well known, independent, often industry specialists and have expertise in M&A (Song et al., 2013). Boutique advisers are different from their full-service counterparts at least in two important aspects. First, unlike full-service advisers, boutique advisers are not a brokerage house and not associated with commercial banks. This allows them to operate independently and to focus exclusively on providing advice to their clients rather than trying to cross-sell other products (Loyeung, 2019). As boutique adviser Lazard states on its Web site, one of the main competitive advantages of this type of financial adviser is its independence: "We are an independent firm, free of many of the conflicts that can arise at larger financial institutions as a result of their varied sales, trading, underwriting, research, and lending activities. We believe that recent instances of perceived or actual conflicts of interest... have increased the

demand by managements and boards of directors for trusted, unbiased advice from professionals whose main product is advice.” Thus, one of the main distinctions between bulge bracket and boutique investment banks is that the latter focus solely on advisory services as their main business line and revenue stream. For instance, in 2019, 82% of Evercore’s (boutique bank) total net revenues came from advisory services,⁴⁹ while J.P. Morgan’s advisory fees accounted for 2% of their total net revenues.⁵⁰ The second distinction is that boutique advisers often specialize in a certain industry. For example, Torrey Partners mainly serves the life science companies, while Endeavor Financial operates exclusively in the natural resource industry. This enables each advisory firm to better understand the businesses they advise as well as identify opportunities within that industry (Loyeung, 2019). Through repeated transactions, boutique advisers acquire skills and expertise in both M&As as well as a thorough understanding of the industry within which their clients operate (Kadan et al., 2012). The differential nature and focus of boutique advisers make it interesting to investigate whether they provide different FOs as compared to their counterparts.

4.3. Theoretical predictions

4.3.1 *Boutique advisers and fairness opinion precision*

Boutique advisers operate independently and claim to be free of conflicts of interest that are otherwise inherent in full-service investment banks (e.g., Allen et al., 2004; Asker and Ljungqvist, 2010; Ertugrul and Krishnan, 2014; Kolasinski and Kothari, 2008). This enables them to focus exclusively on the provision of advice rather than trying to cross-sell other products. In addition, many boutique advisers are industry specialists, who have developed a thorough understanding of the industry within which their clients operate. This allows them to provide better and more specialized advisory services. Therefore, on the one hand, boutique advisers might provide more precise FOs as compared to non-boutique financial advisers. On the other hand, boutique advisers are greatly reliant on fees for advisory services because this is their only line of business. This may provide them with an incentive to complete deals that might not be in the best interest of their clients and clients’ shareholders (Shore, 2013; Song et al., 2013). Rau (2000) shows that valuations of the deals tend to be of secondary importance since investment banks face strong deal completion incentives in their contingent fee structure. This suggests that financial advisers are often primarily concerned with completing deals to receive fees rather than creating value for their clients. Thus, boutique advisers might be incentivized to issue less precise FOs to ensure that the offer price falls within valuation ranges so that the tender offer is completed, and their compensation is secured. Based on these opposing arguments, we formulate the following null hypothesis:

49 Retrieved from: <https://investors.evercore.com/static-files/70463eac-3adb-4f50-92ad-f8f0c4e90419>

50 Retrieved from: <https://www.jpmmorganchase.com/content/dam/jpmc/jpmorgan-chase-and-co/investor-relations/documents/annualreport-2019.pdf>

H1: There is no difference in the precision of an FO provided by a boutique investment bank compared to non-boutique investment banks.

In addition, we examine whether the existence of prior ties with the acquirer mitigates the association between boutique advisers and the precision of their FOs. Cain and Denis (2013) show that banks with prior relationship with target firms provide more accurate target valuations in FOs. Yet little is known about the role of target advisers' prior ties with the acquirer. In general, hiring merger counterparty's ex-adviser entails two considerations, namely the benefits of information transmission and the costs of a potential conflict of interests. On the target side, the information advantage of hiring acquirers' ex-advisers is rather limited⁵¹, while the potential conflict of interest is expected to be strong. The potential conflict of interest stems from target advisers' desire to be hired by the acquirer in the future, which is embedded into the asymmetric feature of M&A transactions. While targets normally cease to exist as standalone companies after a successful takeover, acquiring firms continue to survive and thus represent a lure of future business to target advisers. Considering that 58% of target's ex-advisers are hired by acquirers in future M&A transactions, acquirers' ex-advisers hired by targets might be concerned about losing future business from the acquirers if their involvement reduces acquirers' overall gain from the merger (Chang et al., 2016). The conflict of interest also suggests that the target's adviser might even be inclined to cooperate with the bidder at the expense of its client to improve its prospects of procuring future business from the acquiring firm (Bhattacharya et al., 2019). In addition, Francis et al. (2014) shows that acquirers' past relationships with their advisers have a significant impact on their current choice of M&A advisers. Taken together, this suggests that the potential conflict of interest might be more severe for boutique advisers with a prior relationship with the acquirer. Therefore, on the one hand, boutique advisers with prior ties with the acquirer might issue less precise FOs to facilitate shareholders' tendering and to ensure the success of the acquirer's takeover attempt in the hope to be hired by the acquirer in the future.

Bhattacharya et al. (2019) explore the factors that affect the combined firm's choice to hire the target financial adviser. They find that the likelihood of hiring the target's adviser improves when it provides superior service to the target and if it is a reputable investment bank. Their findings suggest that the "service excellence" demonstrated by investment banks is valuable for securing future business. The industry expertise of a financial adviser has been shown to improve its chances of being hired for a multitude of investment banking transactions (e.g., Graham et al., 2017). Given that boutique

51 Chang et al. (2016) shows that hiring targets' ex-advisers enables acquiring firms to reduce the cost of acquiring information about target firms, achieve better understanding of the true value of targets and more accurate estimation of potential synergies. Thus, the acquirers hiring targets' ex-advisers may enjoy a bargaining advantage in deal negotiations between merging firms due to their better understanding of targets' firm value and outside options. They, however, find that hiring of acquirers' ex-advisers is not associated with superior deal outcomes on the target side. This indicates that the information advantage of acquirers' ex-advisers hired by targets is weaker than that of targets' ex-advisers hired by acquirers.

advisers are regarded as reputable investment banks and industry as well as M&A experts, the provision of “excellent” FOs improves their chances of being hired by the combined firm in the future even further. While Bhattacharya et al. (2019) focus on a setting where the acquiring firm has no prior relationship with the target adviser, we expect these incentives to also hold for acquiring firms with such a prior relationship. Thus, on the other hand, boutique advisers with prior ties with the acquirer might issue more precise FOs to increase their chances of a potential rehiring by the acquirer in the future. Hence, we formulate the following null hypothesis:

H2: There is no difference in the precision of an FO provided by a boutique investment bank with or without a prior relationship with the acquirer.

4.3.2 Tender offer extensions

In this study, we focus on tender offer extensions rather than the time-to-completion, which is often analyzed in M&A studies (e.g., Offenberg and Pirinsky, 2015). The traditional time-to-completion is measured from the day the deal is announced to the day the deal is effective. This measure is often chosen as it reflects, among others, the complexity of the deal, the time target and acquirer advisers spend on due diligence, structuring the transaction and negotiating the deal (Song et al., 2013). To address our second research question however this measure is less appropriate. As opposed to the entire time span of the deal, we are interested in the period after the disclosure of an FO. FOs are not disclosed at the same time as the tender offer is announced, thus the time-to-completion is a rather noisy measure given our setting of tender offers. Our goal is to investigate the extent to which FOs and their properties facilitate target shareholders’ tendering decisions. Therefore, we focus on tender offer extensions, which take place after the FO disclosure and represent the time that target shareholders need to make their tendering decisions. The tender offer is extended mainly if not enough of the target’s shareholders have tendered their shares, which means the minimum condition is not satisfied, in the originally specified time period.⁵²

Our underlying premise is that target shareholders use FOs to decide whether to tender their shares. This premise is supported by the insights from chapter 3, which show that less precise FOs are more likely to trigger class action lawsuits. Class-action lawsuits reflect how investors perceive the usefulness and credibility of a disclosure and are thus relevant mechanisms to express shareholder dissatisfaction (Brochet and Srinivasan, 2014). Similarly, we argue that tender offer extensions also reflect how target shareholders perceive the usefulness and credibility of an FO. If an FO delivers useful information to target shareholders, they might need less time to evaluate the offer, which implies that they tender their shares relatively fast. This increases the probability that the

52 The second reason why a tender offer might be extended is if the bidder makes a material change in the terms of the tender offer, to ensure that the target’s shareholders have the opportunity and time to decide whether to tender shares.

minimum condition is satisfied within the specified time period. If an FO provides less useful information, target shareholders are likely to need more time to decide whether to tender their shares. This suggests that the minimum condition is unlikely to be satisfied within the specified period and the acquirer needs to extend the expiration time of the offer. In our sample of tender offers, 29% of the deals have at least one extension. Despite the non-trivial occurrence of tender offer extensions, little is known about their drivers.

Prior studies on earnings forecasts and precision suggest that investors in general prefer more precise information, which means narrow ranges, due to its informative advantage over less precise, that is wide ranges, disclosures (e.g., Du et al., 2011). Imprecise disclosures are viewed as less credible because they signal uncertainty and prior studies find that investors perceive precise forecasts to be more credible than imprecise forecasts (e.g., Hirst et al., 1999).

In the case of tender offers, the precision of FOs is of critical importance as target shareholders only have a defined, often a short, period of time to decide whether to tender their shares. Less precise FOs make it extremely difficult for target shareholders to assess the attractiveness of the deal and whether the board actually made the right decision in accepting the deal. Similar to prior research, we expect more precise FOs to be more useful for target shareholders to assess the deal's attractiveness, especially for complex and difficult-to-value targets. Hence, we formulate the following hypothesis:

H3: Precision of an FO is negatively related to the probability of a tender offer extension.

Turning to the adviser type, we expect target shareholders to be less skeptical towards FOs disclosed by boutique investment banks. Mercer (2004) identifies factors that investors consider when assessing the credibility of a voluntary disclosure. Apart from the characteristics of the disclosure itself, such as its precision, investors also take into account the credibility of the party responsible for the disclosure. The competence, trustworthiness and reputation of the issuer play thereby an important role. An investment bank's reputation can for example favorably affect the pricing of shares when it serves as underwriter of an IPO (e.g., Michaely and Shaw, 1994). Golubov et al. (2012) show that reputable advisers are associated with higher bidder announcement returns compared with less reputable advisers in public acquisitions. Kale, Kini and Ryan (2003) document that when the client firm (bidder or target) employs a more reputable financial adviser, it enjoys a greater wealth gain. We posit that boutique advisers are viewed as competent and trustworthy due to their M&A and industry specialization as well as their independence. Thus, target shareholders are likely to perceive the credibility of their FOs issued by a boutique adviser to be higher as compared to non-boutique investment banks. If this is the case, then shareholders are likely to tender their shares

relatively fast, suggesting a negative relation with the probability of a tender offer extension. We formulate the following hypothesis:

H4: There is a negative association between the probability of a tender offer extension and boutique investment banks as compared to non-boutique investment banks.

4.4. Research design

4.4.1. Sample Selection

We gather data on all tender offers identified in the Thomson Reuters Securities Data Corporation (SDC) database involving deals of publicly traded U.S. firms (acquirers and targets) between 2010 and 2018. Starting from this selection, we exclude deals where the transaction value is lower than \$1 million, or where deals have a pending or intended status. Both the target and acquirer must be listed on the NYSE, AMEX or NASDAQ (Kisgen et al., 2009; Cain and Denis, 2013). We exclude buybacks and recapitalizations, which leads to an initial sample of 214 tender offers. We exclude tender offers that were withdrawn or involved FOs without valuation analyses (17 deals) and tender offers with multiple target FOs (21 deals). One tender offer, where all except one target board's board members are also board members of the acquiring firm, is also excluded, which leads to a sample of 175 deals. We remove tender offers that involve multiple advisers that provide one joint FO (7 deals), which leads to a final sample of 168 deals. For these deals, we manually collect FO data from Schedule 14D-9 filings on the Security and Exchange Commission (SEC) EDGAR Web site. These filings include the target's board recommendation on how shareholders should respond to a tender offer. In addition, they include fairness verdicts, valuation methods and the corresponding valuation ranges, the fees paid to opinion providers as well as their preexisting relationships with client firms.

To classify an adviser as boutique, we follow the classification of Song and Wei (2010).⁵³ Hereby, we focus on two aspects. First, we manually inspect the spectrum of the services provided by advisers from their official websites. Second, we analyze the financial reports of advisers (either from websites or SEC) to determine the business line that represents the most substantial revenue stream. Additionally, we examine if there is financing or lending (and also the extent thereof) on the balance sheets of advisers. Boutique advisers represent banks that do not have a full spectrum of services such as trading, underwriting, or lending. These banks have one or two business lines with the most financially significant line representing the M&A advisory services as evidenced from websites and income statements. Boutique banks also have very small balance

⁵³ We are grateful to Weihong Song and Diana Wei for sharing with us their list of advisers classified as boutiques. Compared to their sample period ending in 2006, there have been changes in the market of boutique investment banks. Our updated list of financial advisers and their classifications as of 2018 is available upon request.

sheets since they commonly have no financing or lending. We also examine the news and the history of transactions of boutique advisers to ensure that these banks serve primarily in advisory roles. For tender offer extensions, we manually examine all target SEC filings found on the EDGAR Web site after the disclosure of an FO. Commonly, the information on the extensions is filed either under amended FOs, SC 14D9/A, or amended tender offer statements, SC TO-T/A.

We also obtain board of directors' characteristics from the Schedule 14D-9 filings. In case these characteristics are missing in the Schedule 14D-9 filing, we either use the proxy statement that is referenced in the filing itself or the most recent proxy statement available prior to the disclosure of Schedule 14D. Target and deal related variables are all based on either the SDC database or Schedule 14D-9 filings, with the exception of Research and Development expenditures and net income, which are obtained from Compustat.

4.4.2. Empirical models

When examining the association between boutique advisers, the precision of an FO and the probability of a timely deal completion, we recognize that the choice of boutique advisers is itself endogenously determined by the target firms. Prior research finds the use of boutique advisers to be correlated with characteristics of the merging firms and the M&A transactions (e.g., Song et al., 2013). This endogenous selection process therefore has the potential to bias estimates of the impact of boutique advisers on the merger outcomes that we investigate. Therefore, to control for potential self-selection bias, we employ a two-stage procedure.⁵⁴

Similar to Song et al. (2013), our two-stage model consists of a treatment equation and regression equations on the transaction outcomes (Maddala, 1983). The use of variables in the treatment equation (probit, whether or not a boutique adviser is hired) is motivated by previous research and revolves around deal and merging firms' characteristics. In addition, we proxy for the knowledge of the board since this is likely to be related not only to the decision to obtain an FO, but also to the choice of the adviser. We obtain probit estimates of the treatment equation and compute the hazard rate (denoted by λh_i), which we include in second-stage models. Since the choice of boutique advisers does not represent our core research question, for brevity reasons, we do not extensively discuss these results. The treatment equation with accompanying results is reported in Table 1.

⁵⁴ Both Kisgen et al. (2009) and Song et al. (2013) use a two-step treatment procedure to control for endogeneity of either the use of fairness opinion or the use of boutique advisers in M&As, respectively.

Table 1: The choice of a boutique adviser

	<i>BOUTIQUE</i>
<i>ACQ_BOUTIQUE</i>	-0.173** (0.012)
<i>IND</i>	-0.754** (0.033)
<i>ACC_EXP</i>	-0.384 [†] (0.194)
<i>FIN_EXP</i>	0.234 [†] (0.139)
<i>INV_BANK_EXP</i>	-0.154** (0.045)
<i>CEO_PART</i>	-0.427*** (0.000)
<i>R&D</i>	-0.628*** (0.004)
<i>VOLAT</i>	0.005*** (0.001)
<i>SIZE</i>	-0.164 (0.262)
<i>LITIG_IND</i>	-0.116*** (0.007)
<i>DIFF_IND</i>	0.082 (0.582)
<i>DEAL_PREM</i>	0.254*** (0.000)
<i>SAME_IND</i>	0.057 (0.537)
<i>PAY_EQUITY</i>	-0.135 (0.217)
Industry FE	YES
Year FE	NO
Observations	160
Pseudo R ²	19.59%

This table reports marginal effects of the probit regression of the choice of a boutique adviser. The dependent variable, *BOUTIQUE*, is a dummy variable that equals 1 if the target firm hires a boutique investment bank, and zero otherwise. All variables are defined in Appendix 4A. P-values are reported in parentheses (*** p<0.01, ** p<0.05, * p<0.1, [†] one-sided significance) and standard errors are clustered at industry level, using Fama French 5 factors.

In the first second-stage model we focus on the precision of an FO, which is captured by the wideness of valuation ranges in an FO. Since there are multiple valuation methods in an FO, we first calculate the mean scaled wideness of each method and then we calculate the average wideness across all the methods in an FO. Given that FOs are

mostly criticized for producing wide valuation ranges, we focus on very wide- versus very narrow-ranged FOs rather than the average FO wideness. Thus, our dependent variable *PRECISE_FO* is equal to one if the FO's average wideness is below the sample median average wideness, and zero otherwise.

In the second model, we investigate the probability that a tender offer is extended. This is captured by a dependent variable *EXTEND* that is equal to one if there is a tender offer extension, and zero otherwise. Boutique advisers are represented by an indicator variable *BOUTIQUE* that is equal to one if the target board hires a boutique adviser, and zero otherwise. The existence of a prior relationship with the acquirer is captured by an indicator variable *PRIOR_ACQ*. To investigate if the existence of prior ties between the acquirer and boutique adviser mitigates FO precision, we include an interaction term, *BOUTIQUE_PRIOR*, by interacting *BOUTIQUE* with *PRIOR_ACQ*.

In both models, we include several control variables. First, we control for the level of R&D expenditures (*R&D*) of the target and whether the acquirer and target operate in the same industry (*SAME_IND*). Additionally, we include the profitability of the target in the fiscal year prior to the takeover bid, which is represented by (*ROA*), and the number of FO valuation methods with a valuation range (*N_METH*). Lastly, we account for the use of the acquirer's stock as the payment method (*PAY_EQUITY*). Deal complexity is greater when the medium of payment includes acquirer's stocks, and thus it is in general more difficult to value stock offers. Stock offers also have different tax implications for target shareholders than do cash offers, potentially affecting the timeliness of the tender offer execution (Offenberg and Pirinsky, 2015).⁵⁵

Models (1) and (2) are summarized as follows:

$$\begin{aligned}
 PRECISE_FO_i = & \alpha_t + \beta_1 BOUTIQUE_i + \beta_2 PRIOR_ACQ_i + \\
 & \beta_3 BOUTIQUE_PRIOR_i + \beta_4 R\&D_i + \beta_5 ROA_i + \beta_6 N_METH_i + \beta_7 SAME_IND_j + \\
 & \beta_8 PAY_EQUITY_j + \beta_9 ACQ_BOUTIQUE_j + \beta_{10} LITIG_IND_i + \beta_{11} FEES_i + \\
 & \beta_{12} CONTING_PERC_i + \beta_{13} IND_i + \beta_{14} MEET_FREQ_i + \beta_{15} BOARD_SIZE_i + \\
 & \beta_{16} CEO_CHAIR_i + \lambda h_i + \varepsilon_i
 \end{aligned} \tag{1}$$

$$\begin{aligned}
 N_EXTEND_i = & \alpha_t + \beta_1 BOUTIQUE_i + \beta_2 PRECISE_FO_i + \beta_3 R\&D_i + \beta_4 ROA_i + \\
 & \beta_5 N_METH_i + \beta_6 SAME_IND_j + \beta_7 PAY_EQUITY_j + \beta_8 \%_SOUGHT_j + \beta_9 DEAL_ \\
 & PREM_j + \beta_{10} SIZE_i + \beta_{11} DIFF_IND_i + \beta_{12} FO_AMEND_i + \beta_{13} N_METH_PAGE_i + \\
 & \beta_{14} BORD_EQUITY_i + \lambda h_i + \varepsilon_i
 \end{aligned} \tag{2}$$

55 When a target shareholder receives cash in exchange for her shares, she could owe taxes on capital gains. However, when the same shareholder receives stock for her shares, there are no taxes due. Huang and Walking (1987) note that deals with cash payments could require higher premiums to help shareholders offset the taxes due.

In addition to the common set of control variables in both models, we also include model-specific controls particularly relevant for either FO precision or execution speed of the tender.

In Model (1) we additionally control for the effort and incentives of the FO provider. We include the fees that the adviser receives (*FEES*), and we also incorporate the percentage of these fees that is contingent upon completion of the offer (*CONTING_PERC*). This fee structure is often argued to create conflicts of interest between advisers and their clients' shareholders as it provides strong deal completion incentives, which might be reflected in a lower precision of an FO. The use of a boutique investment bank on the acquirer side might have some spill-over effects on the target adviser, potentially affecting the precision of a target-sought FO. Thus, we include an indicator variable (*ACQ_BOUTIQUE*) that is equal to one if the acquiring firm also hires a boutique investment bank. Duff and Phelps (2009) show that 64% of senior executives and board members in the US use FOs to protect themselves from potential shareholder lawsuits. Thus, the precision of an FO might reflect the desire of the target board to shield from liability and protect from potential criticism and shareholder lawsuits. We include an indicator variable to capture targets operating in one of the litigious industries (*LITIG_IND*), based on prior going-concern research (DeFond et al., 2002; Lim and Tan, 2008). Lastly, we include some corporate governance controls. The results in chapter 3 suggest that the knowledge of the board of directors is a strong predictor of the FO precision, with the independence of the board members having the greatest impact. Therefore, to control for the effect of the board's independence, we include the percentage of independent directors on the board (*IND*). Moreover, we incorporate the board meeting frequency (*MEET_FREQ*) to proxy for the level of monitoring activity of the target board (e.g., Vafeas, 1999; Greco, 2011). The CEO who also serves as the chairman of the board has more power and influence over the board. Therefore, we control for the combined roles of the CEO and use an indicator variable *CEO_CHAIR* that is equal to one if the CEO is also the chair of the board, and zero otherwise. While larger boards are likely to possess diversified expertise, they at the same time suffer from communication and coordination problems (Eisenberg, Sundgren & Wells, 1998). Frye and Wang (2010) find that larger boards are more likely to obtain an FO due to the lack of knowledge dissemination and exchange among board members, which is likely to be also manifested in the precision of an FO. Hence, we control for the size of the target board (*BOARD_SIZE*).

In Model (2) we control for the percentage of the target's stock that the acquirer intends to acquire (*%_SOUGHT*), target firm's size (*SIZE*) and whether the target belongs to one of the more complex, opaque, and difficult-to-value industries (*DIFF_IND*). Amendments of an FO represent additional relevant information for target shareholders, and, hence, another reason why a tender offer might be extended. To single out the effect of the FO precision on tender offer extensions, we include an indicator variable (*FO_AMEND*) that is equal to one if the FO is amended after its disclosure. Considering

that the amount of supporting information is important to shareholders when assessing the credibility of a disclosure, we control for the extent of information and assumptions provided for each method (*N_METH_PAGE*). We also include the equity held by the target board (*BOARD_EQUITY*) since the more equity the board owns, the sooner the minimum condition is satisfied, which results in a timelier completion of the deal. Lastly, we account for the deal premium (*DEAL_PREM*) since its attractiveness is likely to be related to target shareholders' tendering decisions. Appendix 4A contains more detailed descriptions of the variables used in empirical tests.

Both models are estimated by means of a probit regression model. In both models, the denotations *i* and *j* capture the unit of analysis, which is either the target firm (*i*) or in some cases the deal level (*j*). We include industries fixed effects based on Fama-French 5 factors industry classification.⁵⁶ We winsorize the volatility of the target firm (*VOLAT*) at 1 and 99%.

4.5. Results

4.5.1. Descriptive statistics

Table 2 presents summary statistics for all the variables. The results show that 33% of target firms hire a boutique investment bank, which provides support for their growing popularity. Interestingly, the demand for and popularity of boutique advisers are also reflected in their compensation. Song et al. (2013) find that the average fees charged by boutique advisers amounted to \$2.7 million in the period between 1995 to 2006. Boutique advisers in our sample charge on average \$14.5 million and their median compensation is \$7.8 million.⁵⁷ On average, 80% of the advisers' compensation is contingent upon the completion of the deal, while the median is 87%. This suggests that advisers have strong incentives to complete the deal, which might cast some doubts on their independence and objectivity. Almost 40% of target financial advisers have prior ties with the acquirer. It is also interesting to note that 57% of FOs are amended and 29% of the deals have at least one extension. This implies that the minimum condition is not satisfied within the originally specified time period in almost one-third of the tender offers.

The correlation matrix in Table 3 suggests that there is no significant association between boutique advisers and the precision of an FO. However, this bivariate relation should be treated with caution as it ignores important covariates relevant for the FO precision. The type of a financial adviser and FO precision should be examined in combination

56 Our results are robust to the inclusion of year fixed effects. However, given our sample size, we report results excluding these fixed effects to increase statistical power of our models.

57 It should be noted that the compensation of full-service advisers in our sample is also higher than the compensation reported by Song et al. (2010), which might hinge at the time trend. Full-service advisers charged on average \$7.22 million between 1995 and 2006 and an average of \$15.2 million between 2010 and 2018.

with other relevant factors, rather than in isolation. We find that the contingent pay percentage of boutique advisers is lower than that of non-boutique counterparts. It should be noted that boutique banks, nevertheless, greatly depend on the successful completion of the deal.⁵⁸ We find that boutique advisers tend to provide more valuation methods containing valuation ranges and also more information and explanations supporting FO valuation analyses. Table 3 further reveals that there is a negative correlation between the precision of an FO and the probability of a tender offer extension. A timelier completion of the deal is also more likely when the target hires a boutique adviser.

Table 2: Descriptive Statistics

	N	Mean	Min	Q1	Median	Q3	Max	Std. Dev.
<i>PRECISE_FO</i>	168	0.49	0.00	0.00	0.00	1.00	1.00	0.50
<i>EXTEND</i>	168	0.29	0.00	0.00	0.00	1.00	1.00	0.45
<i>BOUTIQUE</i>	168	0.33	0.00	0.00	0.00	1.00	1.00	0.47
<i>PRIOR_ACQ</i>	168	0.39	0.00	0.00	0.00	1.00	1.00	0.49
<i>FEES</i>	164	6.88	5.00	6.62	6.92	7.27	7.77	0.53
<i>CONTING_PERC</i>	152	0.80	0.00	0.78	0.87	0.92	1.00	0.22
<i>N_METH</i>	168	0.81	0.00	0.67	1.00	1.00	1.00	0.25
<i>N_METH_PAGE</i>	168	1.26	0.50	1.00	1.20	1.50	2.67	0.38
<i>FO_AMEND</i>	168	0.57	0.00	0.00	1.00	1.00	1.00	0.50
<i>SIZE</i>	166	2.39	0.85	1.99	2.35	2.77	4.21	0.58
<i>R&D</i>	166	0.13	0.00	0.00	0.07	0.16	1.11	0.19
<i>ROA</i>	166	-0.06	-1.49	-0.12	0.01	0.09	1.55	0.31
<i>VOLAT</i>	162	22.69	2.46	4.96	11.41	30.49	73.49	23.37
<i>LITIG_IND</i>	168	0.39	0.00	0.00	0.00	1.00	1.00	0.49
<i>DIFF_IND</i>	168	0.69	0.00	0.00	1.00	1.00	1.00	0.46
<i>DEAL_PREM</i>	168	0.59	-0.87	0.28	0.45	0.69	3.47	0.57
<i>PAY_EQUITY</i>	168	0.09	0.00	0.00	0.00	0.00	1.00	0.29
<i>SAME_IND</i>	168	0.79	0.00	1.00	1.00	1.00	1.00	0.41
<i>%_SOUGHT</i>	168	98.06	14.30	100	100	100	100	10.56
<i>ACQ_BOUTIQUE</i>	168	0.10	0.00	0.00	0.00	0.00	1.00	0.30
<i>IND</i>	168	0.80	0.43	0.72	0.83	0.86	1.00	0.10
<i>ACC_EXP</i>	168	0.21	0.00	0.13	0.20	0.29	0.57	0.12
<i>INV_BANK_EXP</i>	168	0.10	0.00	0.00	0.00	0.17	0.67	0.13
<i>FIN_EXP</i>	168	0.36	0.00	0.22	0.33	0.50	1.00	0.21
<i>CEO_PART</i>	168	0.95	0.00	1.00	1.00	1.00	1.00	0.21
<i>CEO_CHAIR</i>	168	0.27	0.00	0.00	0.00	1.00	1.00	0.45
<i>BOARD_EQUITY</i>	165	7.68	5.80	7.24	7.65	8.14	9.49	0.67
<i>MEET_FREQ</i>	160	0.96	0.48	0.78	0.95	1.08	1.49	0.21
<i>BOARD_SIZE</i>	168	7.50	4.00	6.50	7.00	8.00	13.00	1.62

This table presents summary statistics of all variables used in empirical models. All variables are defined in Appendix 4A.

58 Bulge bracket banks have on average 86% of their payout being contingent upon the completion of the offer (median is 88%). The average (median) contingent pay percentage of boutique investment banks is 73% (83%), respectively.

TABLE 3: Correlation table

Variables	PRESENCE_LO	EXTEND	FO	D	BANK	PRORQ_ACQ	R&D	ROA	PAY_EQUITY	SAME_IND	N_METH	ACQ_BOUTIQUE	ITTINGIND	FEES	CONTING_PERC	IND	MEET_FREQ	CEO_CHAIR	BOARD_SIZE	%_SOUGHT	DEAL_PREM	BOARD_EQUITY	SIZE	FO_LAME_IND	DIF_IND	N_METH_PAGE	
PRESENCE_LO	1.000																										
EXTEND	-0.124*	1.000																									
FO	0.021	-0.132*	1.000																								
D	-0.198**	0.039	-0.3169**	1.000																							
BANK	0.268**	0.159**	-0.041	0.048	1.000																						
PRORQ_ACQ	-0.059	0.125*	-0.041	-0.206**	0.091	1.000																					
R&D	-0.064	-0.023	-0.038	0.022	0.231**	0.003	1.000																				
ROA	-0.018	-0.139*	0.197**	-0.092	-0.076	-0.076	-0.162**	1.000																			
PAY_EQUITY	-0.055	0.006	-0.024	-0.104	0.099	-0.068	-0.056	-0.091	1.000																		
SAME_IND	-0.016	0.095	-0.024	0.086	0.169**	0.049	-0.056	-0.022	-0.113	1.000																	
N_METH	-0.032	0.065	-0.124	0.288**	-0.135*	0.048	0.115	0.169**	0.169**	0.230**	1.000																
ACQ_BOUTIQUE	-0.052	0.065	-0.223**	0.115	0.042	-0.028	0.148*	0.115	0.169**	0.230**	0.230**	1.000															
ITTINGIND	-0.159**	-0.044	-0.171**	0.037	0.136*	-0.097	-0.119	0.048	0.169**	0.230**	0.230**	0.162**	1.000														
FEES	0.082	-0.066	-0.092	-0.075	0.146*	-0.036	0.102	0.048	0.169**	0.230**	0.162**	0.162**	0.145*	1.000													
CONTING_PERC	0.168**	-0.063	-0.059	0.060	-0.102	0.015	-0.005	-0.070	0.049	0.070	0.006	-0.102**	0.215**	0.095	1.000												
IND	-0.162**	0.042	-0.092	0.178**	-0.069	0.026	0.026	-0.029	0.049	-0.048	0.049	-0.048	0.171**	0.443**	0.256**	1.000											
MEET_FREQ	0.068	-0.177**	-0.007	0.023	0.068	-0.086	-0.086	-0.275**	0.063	0.014	0.062	0.062	0.064	0.016	0.177**	0.238**	1.000										
CEO_CHAIR	0.008	-0.177**	0.004	0.043	0.043	0.043	0.043	0.043	0.043	0.043	0.043	0.043	0.043	0.043	0.043	0.043	0.043	1.000									
BOARD_SIZE	0.001	-0.177**	0.004	0.043	0.043	0.043	0.043	0.043	0.043	0.043	0.043	0.043	0.043	0.043	0.043	0.043	0.043	0.043	1.000								
%_SOUGHT	0.076	0.266**	-0.091	0.112	-0.227**	0.002	0.002	0.189**	0.189**	0.177*	0.177*	0.177*	0.177*	0.177*	0.177*	0.177*	0.177*	0.177*	0.177*	1.000							
DEAL_PREM	0.076	0.266**	-0.091	0.112	-0.227**	0.002	0.002	0.189**	0.189**	0.177*	0.177*	0.177*	0.177*	0.177*	0.177*	0.177*	0.177*	0.177*	0.177*	0.177*	1.000						
BOARD_EQUITY	0.076	0.266**	-0.091	0.112	-0.227**	0.002	0.002	0.189**	0.189**	0.177*	0.177*	0.177*	0.177*	0.177*	0.177*	0.177*	0.177*	0.177*	0.177*	0.177*	0.177*	1.000					
SIZE	0.076	0.266**	-0.091	0.112	-0.227**	0.002	0.002	0.189**	0.189**	0.177*	0.177*	0.177*	0.177*	0.177*	0.177*	0.177*	0.177*	0.177*	0.177*	0.177*	0.177*	0.177*	1.000				
FO_LAME_IND	-0.131*	0.042	-0.114	0.120	0.101	-0.019	-0.019	-0.066	0.027	0.013	-0.164**	-0.164**	-0.085	0.085	0.081	-0.021	-0.021	-0.021	-0.021	-0.021	-0.021	-0.021	-0.021	1.000			
DIF_IND	-0.137*	-0.044	-0.027	-0.050	0.372**	-0.263**	-0.263**	0.029	0.152**	0.050	0.011	0.188**	0.188**	0.084	0.085	0.174**	0.174**	0.174**	0.174**	0.174**	0.174**	0.174**	0.174**	0.174**	1.000		
N_METH_PAGE	-0.002	0.088	-0.204**	0.166**	-0.026	0.047	-0.051	0.047	-0.051	0.002	-0.188**	-0.188**	-0.019	0.129*	0.114	0.101	0.136*	-0.014	0.067	0.064	0.026	0.000	0.103	0.069	0.044	1.000	

This table presents a correlation matrix between variables used in empirical models (1) and (2). All variables are defined in Appendix 4A. ***, **, * correspond to statistical significance at the 1, 5, and 10 percent levels, respectively.

4.5.2. FO precision

Column 1 of Table 4 reports marginal effects for the precision of the FO model (Model 1), while Column 2 summarizes the results for the timeliness of the deal execution (Model 2). Note that these models include the hazard variable estimated from a first-stage regression to control for potential selection bias.

The results in Column 1 show that boutique investment banks provide more precise FOs relative to non-boutique advisers, which leads us to reject *H1*. Our results suggest that boutique advisers' superior M&A expertise seems to outweigh their potential incentives to complete the deal. Therefore, the recent popularity of boutique advisers seems to be warranted with regard to the precision of their FOs. Next, we find that target advisers with prior ties with the acquirer tend to provide less precise FOs, while the opposite is true for boutique advisers. We, thus, reject *H2*. Boutique advisers with prior ties with the acquirer provide more precise FOs likely to increase the likelihood of their rehiring by the acquirer in the future, in line with the "service excellence" idea. Even though both relations are not significant, it seems that the compensation of an adviser is positively, while the contingent pay percentage is negatively related to the precision of an FO.

Our findings further indicate that target advisers provide more precise FOs when the acquirer hires a boutique investment bank, providing support for the spillover effect among the advisers of merging firms. Not surprisingly, we find that deal and target firm complexity are negatively related to the precision of an FO. R&D intense target firms are likely to have less precise FOs, which reflects the valuation uncertainty embedded in this type of firms. Similarly, FOs tend to be less precise when the acquirer's equity is used as the payment method, in line with a greater deal and valuation complexity for stock offers. Interestingly, less profitable firms tend to have less precise FOs, suggesting that the target board might use the precision of an FO strategically to conceal the poor performance in the past. Target firms operating in litigious industries are more likely to have precise FOs compared to target firms operating in non-litigious industries, which highlights the role of the scrutiny and litigation risk for target boards. Lastly, in line with the insights from chapter 3, we find that corporate governance characteristics are strong predictors of the precision of an FO. The coefficient estimate on the inverse mills ratio is insignificant, suggesting that self-selection bias is not an issue.

Table 4: FO precision and timeliness of the deal completion

	Model 1: FO precision	Model 2: Completion timeliness
<i>PRECISE_FO</i>		-0.151** (0.006)
<i>BOUTIQUE</i>	0.060* (0.056)	-0.124** (0.034)
<i>PRIOR_ACQ</i>	-0.093† (0.120)	
<i>BOUTIQUE_PRIOR</i>	0.194* (0.065)	

<i>R&D</i>	-0.519** (0.023)	0.527** (0.003)
<i>ROA</i>	0.467** (0.001)	0.128** (0.020)
<i>PAY_EQUITY</i>	-0.166** (0.016)	-0.134** (0.013)
<i>SAME_IND</i>	-0.130† (0.167)	-0.096** (0.036)
<i>N_METH</i>	-0.097 (0.271)	-0.209** (0.004)

<i>ACQ_BOUTIQUE</i>	0.180† (0.146)	
<i>LITIG_IND</i>	0.173** (0.028)	
<i>FEES</i>	0.111 (0.635)	
<i>CONTING_PERC</i>	-0.163 (0.738)	
<i>IND</i>	-0.776† (0.163)	
<i>MEET_FREQ</i>	0.523** (0.005)	
<i>CEO_CHAIR</i>	0.110† (0.129)	
<i>BOARD_SIZE</i>	-1.171† (0.107)	

<i>%_SOUGHT</i>		0.006 (0.482)
<i>DEAL_PREM</i>		-0.197** (0.001)
<i>BOARD_EQUITY</i>		-0.139* (0.087)
<i>SIZE</i>		0.340*** (0.000)
<i>FO_AMEND</i>		0.007 (0.576)
<i>DIFF_IND</i>		0.067† (0.189)
<i>N_METH_PAGE</i>		0.016 (0.853)

Table 4: FO precision and timeliness of the deal completion (*continued*)

λh_i	-0.119	-0.145**
	(0.241)	(0.037)
Year FE	NO	NO
Industry FE	YES	YES
Observations	137	157
Pseudo R ²	24.39%	21.25%

This table reports marginal effects of the probit regressions of the determinants of the precision of an FO (Model 1) and the determinants of a timely tender offer completion (Model 2). The dependent variable in Model 1, *PRECISE_FO*, is a dummy variable that equals 1 if the average wideness in an FO is lower than the sample median average wideness, and zero otherwise. The dependent variable in Model 2, *EXTEND*, is an indicator variable that is equal to one if there is a tender offer extension, and zero otherwise. λh_i represents the hazard rate obtained using the treatment equation depicted in Table 3. Definitions of all variables are provided in Appendix 4A. P-values are reported in parentheses (** $p < 0.01$, * $p < 0.05$, † one-sided significance) and standard errors are clustered at industry level, using Fama French 5 factors.

4.5.3. Probability of a tender offer extension

Column 2 in Table 4 reveals that FO precision matters for the execution speed of a tender offer. Specifically, we find that less precise FOs tend to delay the completion of the deal, providing support for *H3*. Target shareholders seem to take more time to decide whether to tender their shares if less precise FOs are disclosed. In line with our expectations, we find that FOs disclosed by boutique investment banks are perceived as credible. Target shareholders tender their shares faster if FOs are issued by boutique advisers as compared to non-boutique investment banks, which yields support for *H4*.

In line with our expectations, the probability of a tender offer extension is higher for larger and R&D intense targets and for targets operating in one of the more complex and difficult-to-value industries. This collectively indicates that target shareholders need more time to evaluate the offer for complex and difficult-to-value targets. Additionally, our results indicate that target shareholders tender their shares faster in the case of less profitable targets. We also find that the deal premium and the use of acquirer's stock facilitate the timely execution of the tender offer since both factors increase the attractiveness of the deal. Same industry tender offers tend to be completed faster likely because both sides are familiar with the regulatory nature of the industry and also its common valuation practices and specifics. In addition, we find that target shareholders seem to consider another FO property, namely the number of valuation methods containing valuation ranges.⁵⁹ Valuation analyses with concrete per share-based valuation ranges make the assessment of the offer price more accessible, thereby facilitating the timely execution of the deal.

⁵⁹ It should be noted that not all valuation analyses yield concrete per-share price estimates. For example, in an FO of Synergetics USA in 2015, there are four valuation methods, yet only one contains a specific per-share valuation range and a reference to the offer price (the discounted cash flow analysis yields ranges from \$5.08 per share to \$6.73 per share, while the merger consideration is \$6.50 per share). The other methods refer to the implied valuation multiples, without concrete per share valuation ranges. The FO can be accessed via: <https://www.sec.gov/Archives/edgar/data/836429/000119312515321177/d42595dsc14d9.htm>

The self-selection bias becomes apparent in Model (2). The negative and significant coefficient on the inverse mills ratio implies that without the correction, the model would produce downwardly biased estimates for boutique investment banks.

4.6. Conclusion

This study investigates the role of boutique advisers in the context of FO provision. First, we show that boutique advisers provide more precise FOs as compared to non-boutique advisers. In addition, we also find that boutique advisers with prior ties with the acquirer provide more precise FOs than do boutique banks without such ties. Second, we find evidence that FO precision matters for the probability of a tender offer extension and that target shareholders prefer precise FO disclosures. We also find that target shareholders seem to tender their shares faster if the target hires a boutique adviser as compared to other non-boutique investment banks.

This paper contributes to the fairness opinion and financial adviser literature in several ways. First, this is the first paper to analyze how the type of a financial adviser is associated with the properties observed in an FO, especially the role and superiority of boutique advisers. Fairness opinions and boutique advisers both still represent unexplored phenomena despite their remarkable prevalence in the M&A arena. Second, this is the first study to analyze how FO properties interact with tender offer extensions, which capture how target shareholders perceive the usefulness and credibility of an FO and diminish the comparative advantage of faster completion times of tender offers over merger.

The findings of the study are subject to several limitations. First, in addition to the examined characteristics of the FO provider, future research can incorporate some additional factors such as industry specialization of the investment bank. Second, future research can examine the different incentives and conflicts of interest of financial advisers in more detail. Lastly, while we expect FOs to matter more in the case of tender offers as opposed to friendly M&A deals, this, nevertheless, results in a relatively small sample size.

Appendix 4A: Variable definitions with the corresponding data-sources

Dependent Variables		Data Source
<i>PRECISE_FO</i>	Since there are multiple valuation methods in a FO, we first calculate the mean scaled wideness of each method, $wide_1$ to $wide_n$ as, for instance, $wide_1 = [Upper\ bound\ range_1 - Lower\ bound\ range_1] / ((Upper\ bound\ range_1 + Lower\ bound\ range_1) / 2)$. Then we calculate the average wideness across all the methods in an FO, as $AV_WIDE = (wide_1 + wide_2 + \dots + wide_n) / N$, where N is the total number of methods with a range in an FO. <i>PRECISE_FO</i> =1 if <i>AV_WIDE</i> of an FO is lower than the sample median <i>AV_WIDE</i> , and zero otherwise.	Schedule 14D-9
<i>EXTEND</i>	=1 if there is at least one tender offer extension, and zero otherwise.	Target SEC filings on the EDGAR Web site
Explanatory variable		Data Source
<i>BOUTIQUE</i>	=1 if the target adviser is classified as a boutique investment bank, and zero otherwise.	Official websites / SEC filings of investment banks on EDGAR
<i>PRIOR_ACQ</i>	=1 if the target adviser provided services to the acquirer in the past, and zero otherwise.	Schedule 14D-9 / Target SEC filings on EDGAR
Firm and deal complexity control variables		Data Source
<i>SIZE</i>	=Logarithm of the total assets of the target.	SDC
<i>R&D</i>	=A three-year moving average of R&D expenditures / total assets of the target.	Compustat / SDC
<i>VOLAT</i>	=Standard deviation of net income measured on a rolling basis over a three-year period. This variable is winsorized at 1 and 99%.	Compustat
<i>ROA</i>	=EBIT of the target firm / total assets of the target.	SDC
<i>LITIG_IND</i>	=1 if the target operates in one of the litigious industries (SIC codes 2833-2836, 3570-3577, 3600-3674, 5200-5961 and 7370), and zero otherwise.	SDC
<i>DIFF_IND</i>	=1 if a firm belongs to one of the more complex and opaque industries (SIC codes 28, 36, 38 and 73) zero otherwise.	SDC
<i>DEAL_PREM</i>	=(Offer price – target share price 4 weeks prior to the tender offer announcement) / target share price 4 weeks prior to the tender offer announcement.	SDC
<i>PAY_EQUITY</i>	=1 if the payment method includes the use of the acquiring firm's stock, and zero otherwise. This variable captures the use of the acquiring firm's equity only and a hybrid payment method, consisting of both cash and equity. (The base level, <i>PAY_EQUITY</i> =0 captures deals where only cash is used as a payment method).	Schedule 14D-9

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<i>SAME_IND</i>	=1 if the acquirer and target operate in the same industry (based on 5 factors Fama French industry classification), and zero otherwise.	SDC
<i>ACQ_BOUTIQUE</i>	=1 if the acquiring firm hires a boutique investment bank, and zero otherwise.	SDC / Schedule 14D-9
<i>%_SOUGHT</i>	=Percentage of the target's stock that the acquirer intends to acquire.	SDC

Adviser and fairness opinion control variables		Data Source
<i>ENG_FEES</i>	=Logarithm of the total fees paid to the adviser.	Schedule 14D-9/ Target SEC filings on EDGAR
<i>CONTING_PERC</i>	=Adviser's fees received upon completion of the offer / total fees received by the adviser.	Schedule 14D-9 / Target SEC filings on EDGAR
<i>N_METH</i>	=Number of valuation methods with a range / total number of valuation methods in an FO.	Schedule 14D-9
<i>N_METH_PAGE</i>	=Total number of valuation methods / total number of pages summarizing the valuation methods in an FO.	Schedule 14D-9
<i>FO_AMEND</i>	=1 if there are FO amendments after the disclosure of the FO, and zero otherwise.	Target SEC filings on EDGAR

Board controls		Data Source
<i>IND</i>	=Number of independent board members / total number of board members.	Schedule 14D-9 / DEF 14A
<i>INV_BANK_EXP</i>	=Number of board members with investment banking experience/ total number of board members.	Schedule 14D-9 / DEF 14A
<i>FIN_EXP</i>	=Number of board members with finance experience / total number of board members.	Schedule 14D-9/ DEF 14A
<i>ACC_EXP</i>	=Number of board members with accounting expertise/ total number of board members	Schedule 14D-9/ DEF 14A
<i>BOARD_EQUITY</i>	=Logarithm of the total equity related payments of target directors. This includes the payments for the common stock held by the board and the accelerated equity vesting.	Schedule 14D-9
<i>CEO_PART</i>	=1 if CEO is part of the target board, and zero otherwise.	Schedule 14D-9 / DEF 14A
<i>CEO_CHAIR</i>	=1 if the CEO is also the chairman of the board, and zero otherwise.	Schedule 14D-9/ DEF 14A
<i>MEET_FREQ</i>	=Logarithm of the total number of target board meetings held in the year prior to the tender offer.	Schedule 14D-9/ DEF 14A
<i>BOARD_SIZE</i>	=Logarithm of the total number of target board members.	Schedule 14D-9

Chapter 5

Conclusion

5.1. Summary

A pre-requisite for a sound investment or a firm acquisition is the accurate estimation of a firm's value so that investors or companies do not overpay (Damodaran, 2008). However, valuation has become more complex over the years. This is partially due to an excessive level of information available to market participants. The vast amount of information sources, which often provide conflicting information, might lead to incorrect choices of valuation inputs, resulting in poor valuation estimates, and ultimately wealth losses for investors. In this dissertation, I explore the relation between several factors, including the nature of valuation inputs, corporate governance and institutional factors, and the precision and accuracy of valuation estimates.

In the first study (chapter two), I examine whether valuation performance improves if street earnings, as opposed to GAAP earnings, are used as a basis for peer selection in a multiple valuation framework. If street earnings represent a better reflection of the true economic performance of a firm, then they should also serve as a better basis for selecting comparable benchmark firms. Thus, I benchmark the use of street earnings versus GAAP numbers and examine whether multiple valuation using peers identified based on street earnings outperforms multiple valuation using peers identified based on GAAP numbers. To compare the performance of these peer valuations, I examine the predictive ability and valuation accuracy of peer-based multiple estimates.

I find that street earnings lead to a different set of selected peers compared to GAAP, which is not surprising given the fundamental differences in the derivation of these two sets of earnings. However, it is interesting to note that this different peer selection does not automatically lead to a superior peer-based valuation. On average, I do not find support for the relative superiority of street peers compared to GAAP peers. It is only when significantly different peers are selected that street-earnings based multiples outperform their GAAP counterparts. In addition, I explore whether the difference between the predicted and actual multiple signals potential mispricing, and hence is correlated with future returns. My findings reveal that while the use of street earnings indeed has the potential for identifying mispricing, no such evidence is found in the case of GAAP earnings. My analyses further show that street earnings are particularly superior in terms of valuation performance and identification of mispricing when target firms are volatile, R&D intense, or internationally active. Lastly, I find that the peers identified using street earnings are more comparable to the target firm than peers identified using GAAP numbers.

In the second study (chapter three), I focus on target-sought valuations provided in a fairness opinion in the setting of tender offers. Target valuations are not only valuable to the acquiring firm to avoid overpayment, but also to the target firm to ensure that it is not sold at a discount. Therefore, fairness opinions have successfully established themselves in the merger and acquisition arena and are widely used by acquirees and

acquirers. Despite the prevalence of fairness opinions, prior research so far provides inconclusive evidence on the value of these opinions. I argue that the value of a fairness opinion to shareholders depends on the properties of valuation analyses underlying the opinion. Anecdotal evidence reveals that there is a large heterogeneity in the properties of valuations disclosed. Hence, this study sheds more light on the determinants and consequences of valuation properties. Considering the prominent role of the target board of directors in the takeover setting, I particularly focus on the characteristics and incentives of a target board as the primary determinant.

My findings reveal that firm-specific knowledge and incentives of the board are strong predictors of the precision of fairness opinion valuations. Specifically, it is the firm-specific knowledge of the board that is crucial for the precision of valuations. In addition, I find that it is not only the knowledge of the board that is reflected in the precision of a fairness opinion, but also the board's and CEO's financial incentives to complete the deal. The stronger these incentives, the greater the likelihood that imprecise valuations are disclosed, potentially to facilitate the justification of the fairness of the offer price. I also find that these financial incentives are strong determinants of the fairness of a fairness opinion. Another main finding of this study is that, in line with my expectations, valuation properties in a fairness opinion matter to target shareholders. I find that target shareholders are more likely to initiate class action lawsuits specifically addressing fairness opinions if these are imprecise or unfair. This suggests that target shareholders use fairness opinions to decide on their tendering decisions, and that they consider valuation properties when assessing the usefulness of a fairness opinion.

In the third study (chapter four), I extend our understanding of the determinants and consequences of valuation properties in fairness opinion. The target board of directors and, ultimately, financial advisers are the two key players responsible for the disclosure of a fairness opinion. Therefore, to obtain a more complete picture of the sources of variation in valuation properties, I focus on the role of financial advisers. In particular, I focus on boutique advisers since these have gained in popularity and demand in recent years. Yet, despite their growing popularity, the evidence regarding the benefits of hiring boutique advisers versus their competitors is still scarce, especially in the context of fairness opinions. Boutique advisers have a different nature and focus as compared to large investment banks because they are independent, often industry specialists and focus exclusively on providing M&A advice. This makes it interesting to investigate whether they provide different fairness opinions as compared to their counterparts.

I find that boutique advisers provide more precise fairness opinion valuations as compared to their counterparts. The recent popularity of boutique advisers seems to be warranted in terms of the precision of their valuation estimates. In general, I find that target advisers with prior ties with the acquirer provide less precise valuations, yet the opposite is true for boutique advisers. They tend to provide more precise valuations if they have prior ties with the acquirer potentially to increase their chances that the acquirer rehires

them in the future. Another important finding of the study is that valuation properties are not only associated with shareholder class action lawsuits (see Chapter 3), but also with shareholders' general assessment of fairness opinions' credibility. My findings reveal that less precise fairness opinions tend to delay the completion of the tender offer. This suggests that target shareholders need more time to decide whether to tender their shares if a fairness opinion contains less precise valuation estimates. Altogether, my study shows that target firms benefit from hiring boutique advisers since they provide more precise valuations in a fairness opinion, which in turn facilitates a timely deal completion.

5.2. Contributions and Future Research

Overall, the three studies in my dissertation enhance our understanding of the role of various explicit and implicit factors that are relevant for the properties of valuation outcomes. My dissertation provides several important contributions to the body of knowledge and research about drivers of valuation performance. The insights from the research questions examined in this dissertation are relevant to market participants of different nature, ranging from individual investors, firms engaged in acquisitions, regulators and standard-setters to the investment community in general.

The results of the first study (chapter two) contribute to the research on the role of alternative performance metrics, in particular street earnings, for forecasting and valuation purposes. Prior research has extensively examined the persistence and informativeness of street earnings in general as well as the individual adjustments made by analysts to arrive at street earnings. Compared to prior studies, I focus explicitly on the valuation angle and examine the performance of street earnings as direct valuation inputs into a multiple-based model. This is motivated by two important observations. First, anecdotal evidence reveals that a substantial portion of investors still relies to a large extent on GAAP earnings. A proprietary survey by Clermont Partners in 2017 reveals that nearly 30% of active investors rely on GAAP reporting more than non-GAAP when analyzing a company's performance or making a buy or sell decision.⁶⁰ This figure might even be higher for passive investors with a long-term oriented buy-and-hold mentality. Second, multiple sources show that multiple-based valuations are widely used by both sophisticated and non-sophisticated market participants. For instance, almost 85% of equity research reports rely on multiple-based valuation, and more than 50% of all acquisition valuation analyses are based on multiples.⁶¹ Altogether, this emphasizes the relevance of my study on the role of street earnings in the multiple-based valuation framework. My finding that street earnings are not unconditionally superior to GAAP earnings in terms of valuation performance, but predominantly when the firm-to-value is complex and difficult to forecast, should be of interest to all types of investors.

⁶⁰ Retrieved from: <https://www.clermontpartners.com/documents/ActiveInvestorsRelyonNon-GAAPs.pdf>

⁶¹ Retrieved from: <http://people.stern.nyu.edu/adamodar/pdfiles/eqnotes/packet2spr17.pdf>

The second study (chapter three) of this dissertation provides important contributions to the acquisition literature and, more importantly, the role of the target board of directors for valuations obtained in the course of an acquisition. Prior studies examined the relation between various characteristics of the board, such as its financial expertise or acquisition experience and acquisition outcomes, often captured by announcement or post-acquisition returns (e.g., Field and Mkrtchyan, 2017; Güner et al., 2008). Most of these studies, however, focus on acquiring firms and their boards to examine the relation between their characteristics and the value they create for acquiring firm shareholders. Hence, little is known about the target side and the target firms' board of directors, which are equally important in an acquisition. My study is one of the few studies to explore the interplay between characteristics and incentives of the target board and the value they create for target shareholders. Whether a negotiated merger or a hostile tender offer, target shareholders rely on the target board of directors to provide its recommendation towards the offer. Thus, the target board of directors creates value for target shareholders essentially by issuing its recommendation towards the proposed offer, and valuations that support the board's conclusion. Despite the central role of valuations underlying the target board's recommendation, evidence on the factors affecting these valuations is rather scarce. Moreover, while shareholder class action lawsuits are often initiated in the acquisition process to express shareholders' dissatisfaction with disclosures made by the boards of directors, so far little is known on the relation between class action lawsuits and the properties of such disclosures. I fill these research gaps and provide insights on how the target board's characteristics and incentives shape the valuations provided in the board's recommendation and, then in turn, how target shareholders perceive these valuations. The findings in this chapter are not only of interest to firms engaged in acquisitions, but also to regulators as recent studies show that valuations supporting the board's recommendation are closely monitored by regulators. Most of the SEC comment letters for merger and acquisition transactions revolve around fairness opinions and their valuations (Liu et al., 2019).

The third study (chapter four) contributes to the body of research on financial advisers, i.e., investment banks in merger and acquisitions. There is a considerable amount of research on the role of investment banks' attributes, degree and type of involvement, incentives and compensation structure and M&A outcomes. This study focuses on two angles that so far have been unexplored. First, prior literature mainly uses market share league tables to proxy for financial advisers' reputation. In these league tables, investment banks are ranked based on the value of the target companies in all M&A deals that they advised during a specified period. The market share league tables are widely publicized by both the media and investment banks themselves and are often used by both academics and practitioners as a measure of expertise (Bao and Edmans, 2011). However, the rise of independent and specialized investment banks, the so-called boutique advisers, has shaken up the M&A landscape and, thus, challenges the traditional definition of reputation and quality of financial advisers. The acquisition of LinkedIn by Microsoft in 2016 is said to mark the rise of boutique investment banks.

One of the largest tech deals in history with a transaction value of \$26 billion involved boutique investment banks as advisers. Most M&A transactions close to this transaction value typically involve the well-established giants in the investment banking industry such as J.P. Morgan or Goldman Sachs. Yet LinkedIn decided to hire two much smaller boutique investment banks, Qatalyst and Allen Co., to assist in the acquisition.⁶² Considering the growing importance of and interest in boutique advisers, there is a need for a more detailed understanding on the benefits of hiring a boutique adviser. Second, while prior research examined the relation between boutique advisers and some direct deal outcomes, such as deal premium, my study focuses on a more understudied value creation source of boutique advisers. This is the first study to investigate the role of boutique advisers for valuations underlying a fairness opinion. Since fairness opinion valuations are of great importance to target shareholders, this study provides important insights into the relation between the different types of advisers and the properties of valuations they disclose. This enhances our understanding on when the investment in fairness opinions actually pays off with regard to the precision of the valuation information disclosed by a fairness opinion provider.

The studies in this dissertation are subject to certain limitations, which at the same time can be viewed as possible avenues for future research. The first study uses industry membership based on two-digit SIC codes for the selection of peers. Given the existence and emergence of new alternatives to identify related peer firms, future research could extend the first study and incorporate alternative membership classifications. For instance, Lee, Ma and Wang (2015) propose a new way to identify economically related peers by using a “co-search” algorithm applied to EDGAR’s website traffic. Hence, it is interesting to investigate the role of street earnings for alternative groupings and benchmarking of firms. Additionally, future research could examine the role of non-GAAP earnings issued by managers, either in addition to or instead of street earnings, for peer selection in a multiple valuation framework.

In the second study, I focus on the characteristics and incentives of board members in the setting of an acquisition. While I do capture some of the relevant attributes of the board, future research can explore additional factors such as age, industry experience or busyness of the board members. In addition to the financial incentives examined in the study, career concerns can also be examined since mergers represent serious setbacks to target CEOs’ and board members’ careers. Prior research shows that acquiring firms are more likely to target firms with retirement-age CEOs, likely due to these CEOs’ greater willingness to accept a takeover bid (Jenter and Lewellen, 2015). Future research can delve into a potentially disciplining role of career concerns by examining whether young target boards are more likely to provide precise valuations in a fairness opinion as opposed to a board dominated by retirement-age directors. Moreover, while I do

62 Retrieved from: <https://www.firmex.com/resources/blog/does-microsofts-acquisition-of-linkedin-mark-the-rise-of-boutique-investment-banks/>

focus on class action lawsuits explicitly addressing fairness opinions, I do not explicitly examine the content and grounds of these lawsuits and complaints. Hence, future research can provide some additional insights into the specific valuation aspects of a fairness opinion that shareholders most frequently complain about in their class action lawsuit complaints.

In the third study of this dissertation, I examine the role of boutique advisers in the context of fairness opinions. As prior studies provide support for the industry specialization of boutique advisers, I do not explicitly integrate industry specialization in my study. Therefore, future research could more closely inspect the role of industry specialization of boutique advisers for the precision of fairness opinion valuations. In addition, future research could explore the variation within the market of boutique advisers. Considering that boutique banks vary substantially in their size and reputation, it is interesting to analyze if top-tier boutique advisers provide more precise fairness opinions as compared to lower tier boutique banks. Overall, in both studies (study two and three) I focus on a setting where I expect fairness opinions to be of great importance, namely tender offers. The relevance of the setting, however, comes at a cost of a relatively small sample size. Future research could, therefore, investigate the examined research questions in a setting of mergers and acquisitions to increase the statistical power of the tests.

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Impact

Impact

Firm valuation is the foundation of numerous decisions, all of which vary in their level of magnitude and impact. Individual investors rely on stock valuations to identify an investment opportunity, firms evaluate their financial health and value-generating sources when deciding on their dividend policies, and acquiring firms value potential targets and estimate their prices to make a value-creating acquisition. At the heart of all these decisions lies the attempt to obtain an estimate of the true value of a firm. Yet, firm valuation is a very complex and challenging task because it is affected by many factors, which often make it difficult to accurately estimate a company's intrinsic value. Information asymmetry, the various sources of information and the incentives and attributes of different parties responsible for the disclosures of relevant information are only a few examples. The accuracy of an estimate of a firm's value, and consequently the quality of an investment decision or acquisition, is not only relevant to various capital market participants, but is also of great importance to the economy as a whole. For instance, the total value of mergers and acquisitions announced by a U.S. acquirer in 2015 reached \$2.5 trillion, which is 13% of GDP.⁶³ While successful mergers create value for shareholders, misguided acquisitions, which are those that incorrectly determined the offer price or the potential for synergies, can lead to a substantial misallocation of capital and destruction of shareholder value. Hence, it is pivotal to continue expanding our knowledge on what drives the accuracy and precision of valuation, and how it can be improved.

This dissertation has social, economic and scientific relevance as it provides insights on the factors related to the performance of valuation from perspectives that have been so far unexplored. The findings from this dissertation are relevant to investors for their valuations, investments, and ultimately capital allocation decisions, to firms engaged in mergers and acquisitions, and to standard-setters, in terms of the requirements for valuation disclosures.

The insights from Chapter two should be of particular interest to investors, the provider of forecast tracking services I/B/E/S and investment community in general. The findings reveal that while the use of street earnings impacts the identification of comparable firms, surprisingly, this different peer selection does not, on average, improve the performance of valuation when using the warranted multiple approach. Street earnings' added value seems to materialize mostly for complex and difficult-to-value firms. This suggests that investors might optimize their investment strategies and use the various information sources in a more efficient and less costly way, depending on the complexity of the firm to value. In addition, my dissertation has a scientific impact as it shows that the warranted multiple approach itself is a robust and efficient valuation model, and thus, street earnings do not unconditionally outperform GAAP earnings in terms of

63 Retrieved from: <https://economics.com/corporate-mergers-strangle-economy-jordan-brennan/>

valuation performance. Given that the warranted multiple approach is a regression-based approach that allows to consider the simultaneous effect of various variables, it already by itself yields more accurate valuation estimates than relative valuations using industry or size matches (Bhojraj, Lee and Ng, 2003). Hence, whether for portfolio management purposes or acquisition analyses, this study encourages the use of the warranted multiple approach to increase the accuracy of obtained valuation estimates and ultimately the efficiency of investments and capital allocation decisions.

The insights from Chapter three and four are particularly relevant for the key players in the merger and acquisition industry since they address a relevant and timely phenomenon of fairness opinions. First, the findings of Chapter four should be of interest to the firms obtaining a fairness opinion and their shareholders given that fairness opinion fees are ultimately costs borne by shareholders. Typically, firms pay a substantial fee to obtain a fairness opinion, and as evidenced in the setting of tender offers, these fees have substantially increased over time. For instance, in 2010 firms paid on average approximately \$9 million for a fairness opinion, while in 2016 they paid approximately \$16 million. Yet, these substantial investments in fairness opinions are not always value generating since they might contain imprecise valuation information. This is not particularly useful for the board of directors and shareholders when assessing the attractiveness of the offer price. The findings in this dissertation show that while boutique and bulge bracket advisers, on average, charge similar fees for a fairness opinion, the former tend to provide more precise valuations. Therefore, holding fairness opinion expenditures constant, firms can increase their return on investments in fairness opinions by hiring a boutique adviser and obtaining valuations that are more precise. Hence, my dissertation has also a social and economic impact as it provides insights into how to maximize the value created during mergers and acquisitions. This has positive implications for social welfare since the created surplus ultimately circulates back into the community and economy.

Second, the findings of Chapter three might be of special interest to shareholders and standard-setters. One of the main findings of the study is that the incentives of the board and the CEO are related to the imprecision of valuations in a fairness opinion, which in turn can trigger shareholder class action lawsuits. One explanation for shareholder class action lawsuits is that it is often difficult for shareholders to disentangle valuation uncertainty from strategic motives. It is often not clear to fairness opinion users to what extent the imprecision in valuations reflects the inherent uncertainty of the target (and thus the different sets of projections) as opposed to the incentives of the parties involved in the preparation of the fairness opinion. According to the current state of fairness opinion disclosure requirements, neither Delaware courts nor the SEC perceives the review or receipt of projections by the board or financial advisers to be material

for purposes of disclosure.⁶⁴ In general, during the course of an acquisition, boards often provide some disclosures of financial forecasts to fulfill their duty of disclosing material information within the board's control. Yet, even if boards disclose financial projections in fairness opinions, the assessment of the materiality of various projections, and thus their disclosure, is highly subjective. Based on the findings in this dissertation, one suggestion to standard-setters is to mandate and harmonize the disclosure of financial projections, which are used as primary inputs in fairness opinion valuations. To increase transparency and credibility of fairness opinion valuations, a more extensive and transparent discussion of the underlying factors responsible for the precision of valuation estimates is needed. Financial advisers and boards of directors should be more transparent about the financial projections underlying valuations and provide more information on the impact of various projections, valuation factors and assumptions on the precision of valuations disclosed in a fairness opinion.

Overall, this dissertation provides interesting and relevant insights into the drivers and consequences of valuation properties. Specifically, the relation between the nature of valuation inputs, corporate governance and institutional attributes, and the precision and accuracy of valuation estimates is examined. This dissertation provides several suggestions on how to improve valuation outcomes, which is of interest not only to capital markets and investment community in general, but also to regulators and standard-setters, who guard the economic wealth of a society.

⁶⁴ Retrieved from: <http://media.staffordpub.com/products/financial-projection-disclosure-requirements-in-manda-deals-preparing-using-and-disclosing-projections-2016-07-20/presentation.pdf>

Summary of the dissertation

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Firm valuation is the foundation of numerous decisions, all of which vary in their level of magnitude and impact. At the heart of all these decisions lies the attempt to obtain an accurate estimate of the value of a firm. Yet, firm valuation is a very complex and challenging task because it is affected by many factors, which often make it difficult to accurately estimate a company's intrinsic value. The accuracy of an estimate of a firm's value, and consequently the quality of an investment decision or acquisition, is not only relevant to various capital market participants, but is also of great importance to the economy as a whole. Hence, it is important to continue expanding our knowledge on what drives the accuracy and precision of valuation, and how it can be improved.

In this dissertation, I explore the relation between the nature of valuation inputs, corporate governance and financial adviser attributes, and the precision and accuracy of valuation estimates. In the first study I investigate whether the relative valuation approach improves if financial information provided by the tracking service I/B/E/S is used as the primary valuation input, as opposed to the financials required by GAAP. Hence, I benchmark the two sets of valuation inputs in the relative valuation framework. In second and third study of this dissertation, the focus is on valuations provided by financial advisers in a fairness opinion as these are relevant not only to the board of directors but also to target shareholders when deciding on the proposed offer. In the second study, I examine to what extent the characteristics and incentives of a target board shape the precision of valuations in a fairness opinion. In addition, I investigate how shareholders perceive the usefulness of fairness opinion valuations, as captured by shareholder class action lawsuits. In the third study, I focus on the role of reputation and expertise of fairness opinion providers, that is financial advisers. I investigate the association between advisers' expertise and valuation precision and timeliness of deal completion.

Concerning the role of valuation inputs (study one), I find that street earnings lead to a different set of selected peers compared to GAAP, which is not surprising given the fundamental differences in the derivation of these two sets of earnings. However, this different peer selection does not automatically lead to a superior peer-based valuation. On average, I do not find support for the relative superiority of street peers compared to GAAP peers. It is only when significantly different peers are selected that street-earnings based multiples outperform their GAAP counterparts. In addition, my findings reveal that while the use of street earnings has the potential for identifying mispricing, no such evidence is found in the case of GAAP earnings. The analyses further show that street earnings are particularly superior in terms of valuation performance and identification of mispricing when target firms are volatile, R&D intense, or internationally active. Lastly, I find that the peers identified using street earnings are more comparable to the target firm than peers identified using GAAP numbers.

With regard to the characteristics and incentives of a target board of directors (study two), I find that firm-specific knowledge and incentives of the board are strong predictors of the precision of fairness opinion valuations. Specifically, it is the firm-specific knowledge of the board that is crucial for the precision of valuations. In addition, I find that it is not only the knowledge of the board that is reflected in the precision of a fairness opinion, but also the board's and CEO's financial incentives to complete the deal. I also find that these financial incentives are strong determinants of the fairness of a fairness opinion. Another main finding of this study is that valuation properties in a fairness opinion matter to target shareholders. I find that target shareholders are more likely to initiate class action lawsuits specifically addressing fairness opinions if these are imprecise or unfair. This suggests that target shareholders use fairness opinions to decide on their tendering decisions, and that they consider valuation properties when assessing the usefulness of a fairness opinion.

The results of study three reveal that the reputation and expertise of financial advisers also play an important role for the precision of valuations. I find that boutique advisers provide more precise fairness opinion valuations as compared to their counterparts. The recent popularity of boutique advisers seems to be warranted in terms of the precision of their valuation estimates. In general, I find that target advisers with prior ties with the acquirer provide less precise valuations, yet the opposite is true for boutique advisers. They tend to provide more precise valuations if they have prior ties with the acquirer potentially to increase their chances that the acquirer rehires them in the future. Another important finding of the study is that valuation properties are not only associated with shareholder class action lawsuits, but also with shareholders' general assessment of fairness opinions' usefulness. My findings reveal that less precise fairness opinions tend to delay the completion of the tender offer. This suggests that target shareholders need more time to decide whether to tender their shares if a fairness opinion contains less precise valuation estimates. Altogether, my study shows that target firms benefit from hiring boutique advisers since they provide more precise valuations in a fairness opinion, which in turn facilitates a timely deal completion.

The results of the first study contribute to the research on the role of alternative performance metrics, in particular street earnings, for forecasting and valuation purposes. The study addresses a relevant question since a substantial portion of investors still greatly relies on GAAP earnings and multiple-based valuations are now as before widely used by both sophisticated and non-sophisticated market participants. The insights from study two suggest that investors might optimize their investment strategies and use the various information sources in a more efficient and less costly way, depending on the complexity of the firm to value. In addition, I show that the warranted multiple approach is a robust and efficient valuation model, which by itself yields more accurate valuation estimates than relative valuations using industry or size matches. Hence, whether for portfolio management purposes or acquisition analyses, this study encourages the use of the

warranted multiple approach to increase the accuracy of obtained valuation estimates and ultimately the efficiency of investments and capital allocation decisions.

The second study of this dissertation provides important contributions to the acquisition literature and, more importantly, the role of the target board of directors for valuations obtained in the course of an acquisition. Despite the central role of valuations underlying the target board's recommendation, evidence on the factors affecting these valuations is rather scarce. The findings in this chapter might be of special interest to shareholders and standard-setters. One of the main findings of the study is that the incentives of the board and the CEO are related to the imprecision of valuations in a fairness opinion, which in turn can trigger shareholder class action lawsuits. Hence, one suggestion to standard-setters might be to mandate and harmonize the disclosure of financial projections, which are used as primary inputs in fairness opinion valuations. To increase transparency and credibility of fairness opinion valuations, a more extensive and transparent discussion of the underlying factors responsible for the precision of valuation estimates is needed. Financial advisers and boards of directors should be more transparent about the financial projections underlying valuations and provide more information on the impact of various projections, valuation factors and assumptions on the precision of valuations disclosed in a fairness opinion.

The third study contributes to the body of research on financial advisers, i.e., investment banks in merger and acquisitions. The rise of independent and specialized investment banks, the so-called boutique advisers, has shaken up the M&A landscape and, thus, challenges the traditional definition of reputation and quality of financial advisers. Considering the growing importance of and interest in boutique advisers, there is a need to for a more detailed understanding on the benefits of hiring a boutique adviser. The findings of this study should be of interest to the firms obtaining a fairness opinion and their shareholders given that fairness opinion fees are ultimately costs borne by shareholders. The results suggest that while boutique and bulge bracket advisers, on average, charge similar fees for a fairness opinion, the former tend to provide more precise valuations. Therefore, holding fairness opinion expenditures constant, firms can increase their return on investments in fairness opinions by hiring a boutique adviser and obtaining valuations that are more precise. This enhances our understanding on when the investment in fairness opinions actually pays off with regard to the precision of the valuation information disclosed by a fairness opinion provider.

Samenvatting van het proefschrift

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De waardering van een onderneming ligt aan de basis van talrijke beslissingen, die alle variëren in omvang en impact. Aan de basis van al deze beslissingen ligt de poging om een nauwkeurige schatting van de waarde van een onderneming te verkrijgen. De waardering van een onderneming is echter een zeer complexe en uitdagende taak, omdat zij door vele factoren wordt beïnvloed, die het vaak moeilijk maken de intrinsieke waarde van een onderneming nauwkeurig te schatten. De nauwkeurigheid van een schatting van de waarde van een onderneming, en bijgevolg de kwaliteit van een investeringsbeslissing of overname, is niet alleen van belang voor diverse deelnemers aan de kapitaalmarkt, maar is ook van groot belang voor de economie in haar geheel. Daarom is het belangrijk onze kennis te blijven uitbreiden over wat de nauwkeurigheid en precisie van de waardering bepaalt, en hoe deze kan worden verbeterd.

In dit proefschrift onderzoek ik de relatie tussen de aard van de waarderingsinputs, kenmerken van ondernemingsbestuur en financiële adviseurs, en de precisie en nauwkeurigheid van waarderingsramingen. In de eerste studie onderzoek ik of de relatieve waarderingsbenadering verbetert als de financiële informatie van de tracking service I/B/E/S wordt gebruikt als de primaire waarderingsinput, in tegenstelling tot de door GAAP vereiste financiële gegevens. Daarom vergelijk ik de twee reeksen waarderingsinputs in het kader van de relatieve waardering. In de tweede en derde studie van dit proefschrift ligt de nadruk op waarderingsramingen die worden verstrekt door financiële adviseurs in een fairness opinion, aangezien deze niet alleen relevant zijn voor de raad van bestuur, maar ook voor de doelaandeelhouders wanneer zij beslissen over het voorgestelde bod. In de tweede studie onderzoek ik in welke mate de kenmerken en incentives van het bestuur van een doelvennootschap de nauwkeurigheid van de waarderingsramingen in een fairness opinie bepalen. Daarnaast onderzoek ik hoe aandeelhouders de bruikbaarheid van fairness opinions inschatten, zoals die tot uiting komt in collectieve rechtszaken van aandeelhouders. In de derde studie concentreer ik me op de rol van de reputatie en expertise van de verstrekkers van fairness opinies, namelijk financiële adviseurs. Ik onderzoek het verband tussen de expertise van adviseurs en de nauwkeurigheid van de waardering en de tijdigheid van de afronding van transacties.

Wat de rol van de waarderingsinputs (studie één) betreft, stel ik vast dat de straatwinst leidt tot een andere reeks van geselecteerde “peers” dan de GAAP, hetgeen niet verrassend is gezien de fundamentele verschillen in de afleiding van deze twee reeksen van winstcijfers. Deze verschillende selectie van vergelijkbare ondernemingen leidt echter niet automatisch tot een betere waardering op basis van vergelijkbare ondernemingen. Over het algemeen vind ik geen steun voor de relatieve superioriteit van “street peers” ten opzichte van “GAAP peers”. Alleen wanneer er significant andere peers worden geselecteerd, presteren de op straatwinst gebaseerde multiples beter dan hun GAAP-tegenhangers. Bovendien blijkt uit mijn bevindingen dat, terwijl het gebruik van straatwinsten het potentieel heeft om mispricing te identificeren, er geen dergelijk

bewijs wordt gevonden in het geval van GAAP-winsten. De analyses tonen verder aan dat straatwinsten bijzonder superieur zijn in termen van waarderingsprestaties en identificatie van mispricing wanneer de doelondernemingen volatiel, R&D-intensief of internationaal actief zijn. Ten slotte vind ik dat de peers die aan de hand van straatwinsten worden geïdentificeerd, beter vergelijkbaar zijn met de doelonderneming dan peers die aan de hand van GAAP-getallen worden geïdentificeerd.

Met betrekking tot de kenmerken en motieven van de raad van bestuur van een doelonderneming (studie twee), vind ik dat bedrijfsspecifieke kennis en motieven van de raad van bestuur sterke voorspellers zijn van de nauwkeurigheid van fairness opinion waarderungen. Het is met name de bedrijfsspecifieke kennis van de raad die cruciaal is voor de nauwkeurigheid van de waarderungen. Bovendien vind ik dat niet alleen de kennis van de raad van bestuur de nauwkeurigheid van een fairness opinion beïnvloedt, maar ook de financiële stimulansen van de raad van bestuur en de CEO om de deal te voltooien. Ik vind ook dat deze financiële prikkels sterk bepalend zijn voor de eerlijkheid van een fairness opinie. Een andere belangrijke bevinding van deze studie is dat de waarderingseigenschappen in een fairness opinie van belang zijn voor de aandeelhouders van het doelwit. Ik vind dat aandeelhouders die het doelwit zijn van een transactie eerder geneigd zijn om collectieve rechtszaken aan te spannen die specifiek gericht zijn tegen fairness opinies indien deze onnauwkeurig of oneerlijk zijn. Dit suggereert dat doelaandeelhouders fairness opinions gebruiken om te beslissen over hun biedingsbeslissingen, en dat zij waarderingskenmerken in overweging nemen bij het beoordelen van de bruikbaarheid van een fairness opinie.

De resultaten van studie drie tonen aan dat de reputatie en expertise van financiële adviseurs ook een belangrijke rol spelen voor de nauwkeurigheid van waarderungen. Ik stel vast dat boutique adviseurs nauwkeuriger fairness opinie-waarderungen geven dan hun tegenhangers. De recente populariteit van boutique advisers lijkt gerechtvaardigd te zijn wat de nauwkeurigheid van hun waarderingsramingen betreft. In het algemeen stel ik vast dat adviseurs die reeds banden hebben met de overnemer minder nauwkeurige waarderungen geven, maar dat het omgekeerde waar is voor de boutique advisers. Zij zijn geneigd preciezere waarderungen te geven als ze al banden hebben met de overnemer, mogelijk om hun kansen te vergroten dat de overnemer hen in de toekomst opnieuw aanwerft. Een andere belangrijke bevinding van de studie is dat waarderingskenmerken niet alleen geassocieerd zijn met collectieve rechtszaken van aandeelhouders, maar ook met de algemene beoordeling door aandeelhouders van de bruikbaarheid van fairness opinions. Mijn bevindingen tonen aan dat minder nauwkeurige fairness opinions de voltooiing van het overnamebod vertragen. Dit suggereert dat aandeelhouders van een doelwit meer tijd nodig hebben om te beslissen of ze hun aandelen willen aanbieden als een fairness opinie minder nauwkeurige waarderungen bevat. Al bij al toont mijn studie aan dat doelwitondernemingen voordeel halen uit het inhuren van boutique adviseurs, aangezien zij in een fairness opinie nauwkeuriger waarderungen geven, wat op zijn beurt een tijdige afronding van de deal vergemakkelijkt.

De resultaten van de eerste studie dragen bij tot het onderzoek naar de rol van alternatieve prestatiemaatstaven, met name straatwinsten, voor prognose- en waarderingsdoeleinden. De studie behandelt een relevante vraag aangezien een aanzienlijk deel van de beleggers nog steeds sterk vertrouwt op de GAAP-winst en op multiple gebaseerde waarderungen nu net als vroeger op grote schaal worden gebruikt door zowel geavanceerde als niet-geavanceerde marktdeelnemers. De inzichten uit studie twee suggereren dat investeerders hun investeringsstrategieën zouden kunnen optimaliseren en de verschillende informatiebronnen op een efficiëntere en minder dure manier zouden kunnen gebruiken, afhankelijk van de complexiteit van het te waarderen bedrijf. Bovendien toon ik aan dat de warranted multiple benadering een robuust en efficiënt waarderingsmodel is, dat op zichzelf meer accurate waarderingschattingen oplevert dan relatieve waarderungen die gebruik maken van industrie- of grootte-matches. Of het nu gaat om portefeuillebeheer of overnameanalyses, deze studie moedigt het gebruik van de warranted multiple benadering aan om de nauwkeurigheid van de verkregen waarderingsramingen te verhogen en uiteindelijk de efficiëntie van investeringen en kapitaalallocatiebeslissingen.

De tweede studie van dit proefschrift levert belangrijke bijdragen tot de overnameliteratuur en, belangrijker nog, tot de rol van de raad van bestuur van het doelwit voor waarderungen die in de loop van een overname worden verkregen. Ondanks de centrale rol van waarderungen die ten grondslag liggen aan de aanbeveling van de raad van bestuur van het doelwit, is bewijsmateriaal over de factoren die deze waarderungen beïnvloeden eerder schaars. De bevindingen in dit hoofdstuk kunnen van bijzonder belang zijn voor aandeelhouders en normbepalers. Een van de belangrijkste bevindingen van de studie is dat de stimulansen van de raad van bestuur en de CEO verband houden met de onnauwkeurigheid van de waarderungen in een fairness opinie, die op haar beurt aanleiding kan geven tot collectieve rechtszaken van aandeelhouders. Daarom zou een suggestie aan de normstellers kunnen zijn om de openbaarmaking van financiële projecties, die als primaire input worden gebruikt in de waarderungen van fairness opinions, verplicht te stellen en te harmoniseren. Om de transparantie en geloofwaardigheid van fairness opinion-waarderungen te vergroten, is een uitgebreidere en transparantere bespreking nodig van de onderliggende factoren die verantwoordelijk zijn voor de nauwkeurigheid van waarderingsramingen. Financiële adviseurs en raden van bestuur zouden transparanter moeten zijn over de financiële projecties die aan de waarderungen ten grondslag liggen en meer informatie moeten verstrekken over de impact van verschillende projecties, waarderingsfactoren en veronderstellingen op de nauwkeurigheid van de in een fairness opinion bekendgemaakte waarderungen.

De derde studie draagt bij tot het corpus van onderzoek over financiële adviseurs, d.w.z. investeringsbanken bij fusies en overnames. De opkomst van onafhankelijke en gespecialiseerde investeringsbanken, de zogenaamde boutique advisers, heeft het fusie- en overnamelandschap door elkaar geschud en stelt bijgevolg de traditionele definitie van reputatie en kwaliteit van financiële adviseurs op de proef. Gezien het groeiende belang van en de groeiende belangstelling voor boutique advisers, is er nood

aan een meer gedetailleerd inzicht in de voordelen van het inhuren van een boutique adviser. De bevindingen van deze studie zouden van belang moeten zijn voor de ondernemingen die een fairness opinion aanvragen en hun aandeelhouders, aangezien de honoraria voor fairness opinions uiteindelijk kosten zijn die door de aandeelhouders worden gedragen. De resultaten suggereren dat, terwijl boutique en bulge bracket adviseurs gemiddeld vergelijkbare vergoedingen vragen voor een fairness opinion, de eerstgenoemde de neiging hebben om nauwkeuriger waarderingsinformatie te geven. Bijgevolg kunnen ondernemingen, wanneer de uitgaven voor fairness opinions constant blijven, hun rendement op investeringen in fairness opinions verhogen door een boutique adviseur in te huren en preciezer waarderingsinformatie te verkrijgen. Dit vergroot ons inzicht in wanneer de investering in fairness opinions werkelijk loont met betrekking tot de nauwkeurigheid van de waarderingsinformatie die door een aanbieder van fairness opinions wordt bekendgemaakt.

Curriculum Vitae

Curriculum Vitae

Olga Ihl-Deviv'e was born on April 9, 1991 in Kerch, Ukraine. In 2014, she received her Bachelor of Science degree from Maastricht University, where she studied International Business. During her bachelor studies, she spent a semester abroad at Singapore Management University. After completion of her bachelor studies, Olga did a six months traineeship in the controlling department at Robert Bosch in Munich. Following the traineeship, she completed her Master studies at Maastricht University, where she obtained her Master of Science degree in International Business (specialization accountancy) in 2016.

Subsequently she joined the Department of Accounting and Information Management at Maastricht University as a PhD student. During her doctoral studies, she was a visiting PhD student at the Kenan-Flagler Business School, the University of North Carolina at Chapel Hill (U.S.). She presented her research at workshops at Maastricht University, Lancaster University and University of Amsterdam, and at several international conferences, such as the Financial Accounting and Reporting Section (FARS) in Nashville in 2020, the European Accounting Association (EAA) Doctoral Colloquium and conference in Milan in 2018, the XIII International Accounting Symposium in Madrid in 2017, and the Emerging Researchers Consortium in Accounting in Bolzano in 2017.

As of March 2021, Olga holds an assistant professor position at the Department of Accounting and Finance at the Open University in Heerlen.

