Industry Peer Information and the Equity Valuation Accuracy of Firms Emerging from Chapter 11

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Abstract

We examine the effect of industry peers' information on the valuation accuracy of firms emerging from Chapter 11. Using a composite of four separate measures to infer the availability and relevance of industry peer information for the bankrupt firm, we find that peer information is inversely related to the equity valuation error of firms emerging from Chapter 11. Cross-sectional analyses corroborate our main results. First, we find that the usefulness of peer information in reducing valuation error is more pronounced when firm-specific information is sparse. Second, we find that the effect of peer information is attenuated in the presence of constituencies with strong bargaining influence over Chapter 11 outcomes. Specifically, we report that the presence of unsecured creditors' and equity committees, "debtor-in-possession" (*DIP*) financing, and a newly appointed CEO after the bankruptcy filing attenuate the impact of peer information, suggesting that strong bargaining influences push valuation away from fundamentals towards the preferences of specific constituencies. Third, we find that more reputed bankruptcy valuation advisors and experienced bankruptcy courts better incorporate industry peer information in their value determinations. Finally, we find that lower over-valuation upon emergence from Chapter 11 is associated with better operating performance for emerging firms. Overall, our results suggest that information about industry peers can counteract the opacity in the information environment that often surrounds firms newly emerging from Chapter 11.

Keywords: Peer Information; Bankruptcy; Chapter 11; Valuation; Bargaining Influences

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1. Introduction

The overarching objective of corporate reorganizations — for example, through a Chapter 11 process under the U.S. bankruptcy code — is to provide a "fresh start" to financially troubled but otherwise viable businesses.[1] Prior studies (Armour and Cumming 2006, 2008; Lee, Yamakawa, Peng, and Barney 2011) argue that this "fresh start" feature of modern insolvency resolution regimes encourages entrepreneurial activity and allows for optimal risk-taking without fear of unduly harsh consequences.

The efficacy of the reorganization process relies heavily on the valuation of the debtor company. As a key requirement for approval of a Chapter 11 restructuring plan, the debtor must demonstrate to the bankruptcy court that it is more valuable as a continuing reorganized entity than in a liquidation scenario. In other words, the debtor's going concern valuation should be demonstrably greater than its total liquidation value. In addition, valuation also plays a central role in debtor-creditor negotiations as the going concern value estimates are used in ex-post distribution of value among the various claimants of the bankrupt firm. It is often the most contested part of the reorganization plan as the firm's estimated value determines the size of the pie to be distributed among various claimants (Hart 2000; Ayotte and Morrison 2018; Altman, Hotchkiss, and Wang 2019).[2] If the debtor and the various claimants do not reach a consensus on the value of the

[1] A "fresh start" implies an ability for corporations to reorganize their operations and finances under judicial supervision, relatively free from pressures arising from past encumbrances, and emerging from the legal process as a fresh and presumably healthy entity.

[2] Appendix C provides recent anecdotal evidence concerning the valuations of The Hertz Corporation.

reorganized firm, a valuation trial will be held in bankruptcy court and the estimated value will be determined by a bankruptcy judge, which likely increases the time of the case and the costs of bankruptcy.[3]

However, while crucially important, going concern valuation is undertaken in the backdrop of severe uncertainty about future prospects of the reorganized entity (Newton 2003; Moyer 2005; Gilson, Hotchkiss and Ruback 2000). Prior research suggests that accurate valuation of reorganized firms is difficult, and these studies find large differences between court-approved valuations and the market value of reorganized firms right after emergence, suggesting significant mis-valuations (e.g., Gilson et al. 2000; Lehavy 2002; Butler 2003; Ayotte and Morrison 2018; Demiroglu, Franks, and Lewis 2020).[4] Therefore, it is important to understand the factors that contribute to the accuracy of valuation estimates in reorganization plans approved by bankruptcy courts. In this study, we investigate whether information of the bankrupt company's industry peers is a determinant of their ex-post valuation accuracy.[5] Our notion of industry peer information encompasses both availability of such information and its relevance in the valuation exercise.

Going concern valuation inter alia requires forecasting cash flows of the reorganized firm upon emergence from Chapter 11. However, an accurate estimate of the value of the reorganized firm is challenging due to (1) limited firm-specific market-based information, and (2) conflicting

[3] In this study, we refer to 'court valuation' as the valuation of the reorganized debtor used in a court-approved plan of reorganization. 'Court valuation' does not refer to valuation determined by the court itself, except when a valuation trial occurs.

[4] Valuation error is the difference between court-approved post emergence equity value and the average market value of the stock during the first three months after emergence, discounted back to the confirmation date of the court plan of reorganization using CRSP equal-weighted industry return. Please see Section 3.2.1 for more details.

[5] Numerous legal and institutional mechanisms have evolved to enable the efficient reorganization of companies undergoing insolvency proceedings. One such mechanism is "fresh start accounting" (or FSA) under U.S. GAAP. FSA entails updating the assets and liabilities of the reorganized entity to reflect current fair values. The adoption of FSA could have been an important firm-level determinant of the quality of valuation estimates in this study. However, our empirical analyses and anecdotal accounts indicate that reorganization value estimates provided with Chapter 11 reorganization plans in the U.S. closely match FSA values in a majority of cases (96% in our sample), implying limited usefulness of this firm-specific feature in explaining cross-sectional variation in valuation errors.

incentives of claimholders for achieving low versus high valuations (Ayotte and Morrison 2018; Demiroglu et al. 2020; Gilson, Hotchkiss, and Ruback 2000).[6] Further exacerbating, the valuation uncertainty for emerging firms are potentially significant changes in firms' capital, organizational, and operational structures during the Chapter 11 process. These sweeping changes render firm-specific information from the pre-bankruptcy period significantly less meaningful, if not entirely meaningless. Finally, as Ayotte and Morrison (2018) point out, discounted cash flow-based approaches to valuation are susceptible to self-serving biases of valuation experts due to ad hoc idiosyncratic adjustments to various inputs such as the discount rate. We thus appeal to an institutional factoid: The determination of enterprise valuation in Chapter 11 cases relies heavily upon the multiples of comparable firms or transactions (Moyer 2005; Sontchi 2012). In other words, valuation experts hired by the debtor (and if necessary, the various creditors) and bankruptcy judges rely not only on the uncertain financial forecasts furnished by the bankrupt firm, but also on valuation multiples of peer firms or market transactions involving peer firms (Sontchi 2012).[7] Moreover, the importance of market multiples-based approaches in resolution of valuation disputes seems to have increased as bankruptcy judges have become increasingly adept at evaluating market multiples (Ayotte and Morrison 2018, p. 1823).

We thus argue that the resulting valuation accuracy of the emerging entity will crucially depend upon the peer information inputs available for use in the valuation exercise. Relying on an extensive literature in accounting and finance (e.g., Foster 1981; Clinch and Sinclair 1987; Han and Wild 1990; Tookes 2008; Amiram, Kalay, and Sadka 2017), we contend that post-emergence

[6] The distributions are generally guided, barring few exceptions, by the 'Absolute Priority Rule'. Typically, junior claimants prefer a higher valuation, while senior claimants prefer a lower valuation to obtain a large share of the reorganized value.

[7] Please see Appendix B for anecdotal example concerning the valuation of Seadrill Limited in Chapter 11. The valuation exhibit is obtained from Prime Clerk.

valuation errors are likely a function of the use of peer information in reorganization value determination, especially the information of peer firms from the same industry.[8] We focus on the impact of industry peer companies (rather than other definitions of peers based on various factors) for a couple of reasons: (1) both comparables- and discounted cash-flow-based methods almost invariably use industry as one of the dimensions to define the bankrupt firm's peers and/or determine one or more of the valuation inputs such as projected cash flows or the discount rate (Moyer 2005), and (2) the use of dimensions other than industry (such as size and geography) is prone to significant discretion and result in ad hoc heterogeneity (Ayotte and Morrison 2018).

We use a composite of four empirical measures to assess the availability and the relevance of industry peer information. The first measure reflects the relevance of industry information for the bankrupt firm by measuring the degree of earnings synchronicity at the industry level, capturing the strength of economic linkages among firms in the same industry. We argue that higher earnings synchronicity reflects economic similarity among industry peers. Thus, peer firms' financial information is likely more relevant when valuing the bankrupt firm. Our second measure is an indicator variable that equals one if there is another public firm in the same industry that filed for Chapter 11 bankruptcy previously, reflecting the prior experience of participants in the Chapter 11 process in valuing similar firms. Our third measure reflects the dispersion in Enterprise Value (EV) to EBITDA multiple among firms in the same industry. When using the "comparable company" approach to value the reorganizing firm, the EV to EBITDA multiples obtained from peer firms are most commonly used (e.g., Altman et al. 2019).[9] We argue that the efficacy of this valuing approach depends upon the similarity among comparable firms, as reflected by the dispersion of

[8] See Bushman and Smith (2001) for a detailed review. See also Botosan (1997), Biddle and Hilary (2006), McNichols and Stubben (2008), and Biddle, Hilary, and Verdi (2009).

[9] In practice, EV-EBITDA multiples may be based on trailing twelve months EBITDA, forecasted EBITDA, or a combination thereof.

the EV to EBITDA among peer firms. Our fourth measure utilizes the precedent transactions approach and reflects the number of M&A transactions within the industry of the bankrupt firm.[10] Our primary empirical measure for peer information quality (*PIQ)* aggregates the decile ranks of these four measures.

The empirical analyses indicate that the four components of our *PIQ* measure are negatively related to the ex-post valuation errors of reorganized firms emerging from Chapter 11. The magnitude of the effects is also economically meaningful. One unit increase in *PIQ* is associated with a 23.5% to 28.5% decrease in valuation error. We supplement this main finding with several cross-sectional analyses. First, we analyze the impact of firm-specific information. Consistent with the argument in Shroff et al. (2017), we find that the usefulness of peer information in reducing valuation errors is more pronounced for small firms and firms with lower institutional ownership, suggesting that the lower availability of firm-specific information renders industry peer information more important. Second, we find that the effect of peer information is attenuated in the presence of constituencies with strong bargaining influence over Chapter 11 outcomes. Specifically, we find that the presence of an unsecured creditor committee, an equity committee, a "debtor-in-possession" (*DIP*) lender, and a newly appointed CEO after the bankruptcy filing attenuates the *PIQ*-valuation error relationship, suggesting that strong bargaining influences push valuation away from fundamentals towards the preferences of specific constituencies.[11] Third, we find that reputed bankruptcy valuation advisors and experienced bankruptcy courts (specifically, the Delaware and Southern District of New York courts that handle a disproportionately large

[10] Specifically, we use the number of M&A transactions in which the target firm is in the bankrupt firm's NAICS 3-digit industry.

[11] Debtor-in-possession (*DIP*) financing refers to loans provided to firms during Chapter 11 bankruptcy or similar legal insolvency resolution processes. Typically, *DIP* loans receive seniority to other outstanding claims by way of a court-ordered priming lien on the assets of the bankrupt firm

percentage of all Chapter 11 cases) are better able to incorporate industry peer information in their value determinations, thereby enhancing the effects of peer information on reducing valuation errors.

Next, we study the effects of peer information on ex-post outcomes of firms emerging from bankruptcy. A two-stage regression analysis suggests that higher *PIQ* is associated with lower over-valuation upon emergence from Chapter 11, which in turn is associated with better operating performance for the emerging firms. In addition, our inferences are robust to excluding the recessionary period, using an alternative proxy for *PIQ*, using bankruptcy court fixed effects, controlling for the enhanced price dissemination of over-the-counter corporate bond transactions (Demiroglu et al. 2020), and using different methods to calculate standard errors.

Our paper relates to a central issue for insolvency practitioners and policymakers: As reorganization is justified over liquidation when the firm's reorganization (or going concern) value is greater than its liquidation value, then the accuracy of reorganization value is an *ipso facto* important aspect of the efficiency of these decisions. However, despite the centrality of this issue to modern finance, there is limited research in extant literature regarding the role of valuation on bankruptcy resolutions. Prior studies in the bankruptcy research literature largely focus on the ex-post performance of the reorganized firm and report mixed findings. For example, Hotchkiss (1995) documents an on-average underperformance for firms emerging from bankruptcy that can be attributed to having the same pre-bankruptcy management in place (i.e., a continuation bias of pre-bankruptcy management that favors inefficient reorganization over liquidation). On the other hand, Alderson and Betker (1999) use cash flow measures and do not find evidence of post-bankruptcy underperformance using liquidation values as a benchmark. Similarly, Morrison (2007) finds little evidence of continuation bias in the context of small businesses. In addition, Eberhart, Altman,

and Aggarwal (1999) study a sample of 131 companies emerging from bankruptcy as publicly listed entities and report large excess stock returns. Our research contributes to this strand of literature in two aspects. First, our findings on ex-post performance of emerged firms suggest that over-valuation of reorganized firms leads to the continuation bias in Chapter 11. Second, our results suggest that information of industry peer firms helps reduce mis-valuations, which in turn enhances the efficiency of bankruptcy outcomes.

Our paper also complements prior studies that find large differences between court-approved valuations and the market value of reorganized firms right after emergence, suggesting large mis-valuations of reorganization values (e.g., Gilson, Hotchkiss, and Ruback 2000; Lehavy 2002; Butler 2003). Closer to our research question, Lehavy (2002) reports that relative to the market value of equity immediately upon emergence, the fresh start equity value is, on average, 4% understated and exhibits large cross-sectional variation. Another closely related study is Demiroglu et al. (2020), which examines court-approved valuation errors and reports a substantial reduction in valuation error after availability of market prices of distressed debt securities via the TRACE platform starting 2002. Our paper adds to this literature by examining whether aspects such as the availability and relevance of industry peer information explains the variation in valuation errors of reorganized firms. Our analyses also add to an extensive literature in accounting on how accounting information impacts various real and capital market outcomes by documenting that post-reorganization valuation errors are likely driven by the richness of the information environment.

Our study also complements related studies in other (non-bankruptcy) settings. For example, recent studies (e.g., Yu, Tuo, and Wu 2019; Gao, Rezaee, and Yu 2020) have examined the attributes of peer information such as earnings quality and predictability in determining the

efficiency of IPO pricing. However, the Chapter 11 setting differs from the IPO setting in several ways, most importantly in the extent of underwriter involvement and new institutional and analyst interest in the IPO process, the explicit and central role played by valuation in determination of Chapter 11 outcomes, and the prominent and well documented use of industry comparables by valuation experts in Chapter 11 plans.

The findings of this paper will also be potentially useful to regulators and insolvency practitioners. Firms emerging from bankruptcy reorganization operate in an uncertain environment, with their credibility tainted after a prolonged period of distress. By providing evidence on the factors, particularly industry peer information, that explain cross-sectional variation in valuation errors, we complement the menu of information items that can be considered by insolvency regulators and practitioners as they debate the type of regime that leads to ex-post efficient allocations of value among various claimants.

The rest of this document is organized as follows: Section 2 provides a brief institutional background and develops the hypotheses, while endeavoring to avoid overlap with earlier discussions. Section 3 describes the sample and research design. Section 4 discusses the empirical results and Section 5 concludes.

2. Institutional Background and Hypotheses Development

2.1. Institutional Background: The Legal Reorganization Process

Corporations much like individuals and other institutions face inevitable decline and eventual failure. Somewhere along their declining journey, many companies face the state of insolvency and may declare bankruptcy. "Insolvency" (generally defined as "*the inability of a debtor to pay off debt as it becomes due*") is a reality for many businesses at various points in time during their

life cycle. While insolvency as defined above is a financial concept, "Bankruptcy" refers to the federal legal process for resolving the state of insolvency of the borrower. The development of modern legal and institutional structures where "businesses go to rehabilitate or die" is relatively recent. Businesses that find themselves in a state of financial distress should ideally develop a plan to remedy causes behind the problems, contact key creditors and solicit their support to seek waivers or extensions, or locate additional financing (debt or equity). If appropriate steps are taken and additional funding obtained, a business can escape the downward trend and survive.

If additional financing cannot be obtained through customary channels and the company cannot meet its operational cash flow needs, an out-of-court restructuring or workout may be attempted. However, out-of-court restructuring typically involves striking a difficult consensus among the various impaired claimants. If out-of-court restructuring is infeasible, the company may restructure using legal process (e.g., by filing a Chapter 11 petition in the U.S.).[12, 13] These legal processes are court-supervised and are predicated on the assumption that an opportunity for turnaround still exists at this stage if the capital structure can be reorganized and if the underlying operational issues are addressed. Such restructuring arrangements require significant financial and operational flexibility and can take anywhere from a couple of months to multiple years to complete and may involve closure of parts of the business or sale of unused business assets. The reorganizations generally culminate in a formal offer by the debtor to the various claimants to

[12] Financially distressed firms in the U.S. may choose one of the two types of filings: (1) filing under Chapter 7 to liquidate, and (2) filling under Chapter 11 to reorganize, which is the focus of our study. Under Chapter 7, the firm's assets are sold and the proceeds are allocated to claimholders based on the priority scheme established in the Bankruptcy Code. After liquidation, the firm ceases to exist. Under Chapter 11, however, the firm (i.e., the debtor) files a petition for bankruptcy protection to submit a reorganization plan to the court.

[13] The Bankruptcy Code allows businesses to file a petition with a bankruptcy court in the following four locations (Altman, Hotchkiss, and Wang 2019): (1) the state of incorporation, (2) the principal place of business, which in most cases is the state in which the corporate headquarters are located, (3) the state in which corporate assets reside, and (4) any district where a bankruptcy case is pending against the firm's affiliate. In the past two decades, more than 50% of the petitions with at least 50 million in book assets have been filed in District of Delaware and Southern District of New York.

settle debts under conditions other than the original terms. Where applicable, it also explains how the company plans to restructure its business and operations.

While in Chapter 11 (i.e., after filing a petition), management as the "debtor-in-possession" remains in control of the day-to-day activities of the business. In addition, management has the fiduciary duty to protect the assets of the bankruptcy estate and to administer them in the best interest of the residual claimants which now include the creditors. The United States Trustee Program, which is a division of the U.S. Department of Justice, provides oversight on the administration of a bankruptcy case and serves as the watchdog over the bankruptcy process to ensure that the debtor is operating in good faith and in conformity with the Bankruptcy Code (Altman, Hotchkiss, and Wang 2019). In addition to remaining in control of the business, management (i.e., the debtor) is responsible for developing a reorganization plan to restructure the company's equity and debt.

In the proposed plan, the management classifies the claimants, estimates the going concern value of the reorganized firm, and lays out distributions (e.g., cash and/or shares of stock in the reorganized firm) to be made to each class of claimants based on APR as a guideline.[14] Valuation requires forecasting the expected post-bankruptcy free cash flows of the reorganized firm. However, a reliable estimate of value of the reorganized firm is difficult due to (1) lack of market-based information and (2) conflicting incentives of claimholders for estimating low versus high valuations (e.g., Moyer 2005; Demiroglu et al. 2020; Gilson et al. 2000). If the debtor and creditors do not reach a consensus on the value of the reorganized firm, a valuation trial is held in bankruptcy court and the estimated value is determined by the bankruptcy judge.[15]

[14] Claims are grouped into classes that typically include (Altman, Hotchkiss, and Wang 2019): (1) secured creditor claims, (2) priority administrative expense claims, (3) other priority claims, (4) unsecured claims, and (5) prepetition equity holder claims.

[15] Ayotte and Morrison (2018) provide a detailed qualitative synopsis of 143 cases of bankruptcy valuation disputes,

The plan must also include a "disclosure statement" that provides detailed information about the debtor to ensure creditors make an informed decision in their negotiations with the debtor. Management has 120 days after filing the initial petition to submit a reorganization plan to the court.[16] Upon submission, the debtor and the creditors enter into negotiations. The plan typically goes through revisions before a consensual plan is reached and is approved by the bankruptcy court. The restructuring plan requires the sanction of the Court if approved by the creditors. The sanction of the Court will be given if the restructuring plan meets the statutory requirements and is fair and reasonable. It must also provide more opportunity and value than in a liquidation. Once approved, the plan becomes binding. After restructuring, a new reorganized entity emerges as either a privately-held or publicly-listed company.

An overwhelming majority of firms in our sample adopt Fresh Start Accounting (FSA) upon emergence. Fresh-start Accounting refers to the presentation of an entity's assets, liabilities, and equity as a "new entity" upon emergence from Chapter 11 bankruptcy protection. American Institute of Certified Public Accountants (AICPA) Statement of Position 90-7: Financial Reporting by Entities in Reorganization under the Bankruptcy Code (SOP 90-7) governs fresh start accounting rules in U.S. GAAP. Under SOP 90-7, fresh start can be adopted only if certain conditions are met.[17] IFRS does not permit fresh start reporting.

The effects of fresh start accounting such as the impact of debt discharge, and recapitalization and valuation adjustments on the balance sheet are generally included in the disclosure statement

highlighting the various issues that are disputed in court and their resolution. Please also see Appendix C for recent anecdotal evidence concerning The Hertz Corporation.

[16] The Bankruptcy Code permits the debtors to reach an agreement on the reorganization plan with the creditors prior to filing for Chapter 11. These 'prepackaged' filings have the advantage of reducing the time spent in bankruptcy (i.e., from filing the petition to emergence).

[17] These conditions include: (1) reorganization value of the debtor is less than post-petition liabilities and allowed claims (i.e., the debtor is "balance sheet" insolvent), and (2) existing voting shares immediately before confirmation receive less than 50 percent of the voting shares of the emerging entity.

filed with the court. In other words, fresh start accounting resembles purchase accounting for mergers and acquisitions — the key difference, however, is that the reorganization value replaces the purchase price consideration in M&A transactions. Thus, on the one hand, fresh start reporting has the potential to enhance the relevance of the new balance sheet by updating asset values close to the current realizable values. On the other hand, it generally involves the creation of goodwill, which is an incredibly hard to value and opaque intangible asset that is prone to subsequent impairments. In a vast majority of cases examined in our study, the reorganization valuation estimates approved by the court are the same as FSA value estimates.

2.2. Court-Approved Valuation in Chapter 11

Placing an accurate estimate of value on the reorganized firms is difficult due to lack of market-based information and conflicting incentives of junior and senior claimants. Prior studies find large differences between court-approved valuations and the market value of reorganized firms right after emergence, suggesting large court mis-valuations (e.g., Gilson, Hotchkiss, and Ruback 2000; Lehavy 2002; Butler 2003). For example, Lehavy (2002) reports that relative to the market value of equity immediately upon emergence, the fresh start equity value is, on average, 4% understated and exhibits significant cross-sectional variation. He finds that while the misstatement is increasing in relative bargaining power of the claimants and the probability of future reported losses post-emergence, firms that retain their CEO throughout the bankruptcy process and firms that use a prepackaged filing exhibit greater understatement. Related, Gietzmann, Isidro, and Raonic (2018) examine the effect of distress-oriented hedge funds (i.e., "vulture" funds) and find that loan-to-own vulture funds attain bargaining power in the bankruptcy negotiations by acquiring debt positions of the distressed firms and use this power to influence the valuation in

their favor with the prospect to earn large ex-post returns by trading the stock or selling the firm's assets at higher market prices after emergence.

Mis-valuations lead to unintended wealth transfer between claimants (i.e., affects recovery rates to different claimants) resulting in distributional efficiency and fairness problems. To address this problem, scholars have suggested various alternative market-based mechanisms. Roe (1983) proposes that the price of the public offering of a small portion of the newly issued shares prior to emerging from Chapter 11 can serve as a reliable signal of the reorganization value. Baird (1993) suggests direct auction of a firm's assets while the firm is in Chapter 11. Bebchuk (1988, 2002) suggests distributing option-like securities of the reorganized firm that are designed in such a way that all classes of creditors receive their fair share based on the true value of the reorganized firm post emergence. Empirically, Demiroglu et al. (2020) find that court-approved valuation errors are significantly lower for those firms in Chapter 11 with publicly traded bonds whose prices became publicly visible after the introduction of TRACE platform in 2002. They conclude that the presence of verifiable and transparent bond prices is a valuable source of information to accurately estimating the value of a reorganized firm.

2.3. Industry Peer Information and Accuracy of Court-Approved Valuations

A growing literature examines the relevance of earnings information provided by a firm's industry peers. For example, Foster (1981) and Clinch and Sinclair (1987) show that earnings releases by one company are value relevant for stock prices of other companies within the same industry. More recent work by Amiram et al. (2017) provides initial empirical evidence on the relevance of industry risk forecasts to debt pricing.[18] Foster (1981) explains these arguments rather

[18] Information transfers have also been documented in other contexts such as nuclear accident news (Bowen, Castanias and Daley 1983) and merger announcements (Eckbo 1983).

intuitively: "earnings of companies are affected by (a) economy factors, (b) industry factors, and (c) company-specific factors…. The earnings releases of other companies in the same industry are one source of information on the impact of [these] industry-wide trends for any single company."

Prior research in strategy and industrial organization also highlights the importance of industry factors for a firm's core strategies on innovation and marketing (Mauri and Michaels 1998). For example, firms operating in the same industry face similar technological and innovative opportunities (Cohen and Klepper 1992). Companies operating in different industries face different levels of regulatory oversight, industry growth, sensitivity to external shocks, and industry structures (e.g., Mauri and Michaels 1998; Amiram et al. 2017).

Estimating reorganization (going concern) value requires forecasting the expected post-reorganization cash flows of the reorganized firm. As discussed earlier, an accurate estimate of the reorganized firm value is particularly difficult as it is evident in large on-average mis-valuations documented in prior research (e.g., Gilson et al. 2000; Lehavy 2002; Butler 2003; Demiroglu et al. 2020). The reason is twofold. First, emerging firms undergo significant changes in their capital, organizational, and operational structures during the Chapter 11 process making firm-specific information from their pre-bankruptcy period significantly less relevant. Second, the conflicting incentives of various claimholders (i.e., junior claimants prefer a higher valuation, while senior claimants prefer a lower valuation) further impact valuation accuracy. As discussed in Section 1, industry information plays a central role in various elements of the Chapter 11 valuation exercise. For example, as Moyer (2005) argues, the bankrupt firm's industry is often the starting point in choosing peers for a comparable-based analysis. Further, even in a DCF exercise, various valuation inputs such as future cash flows and discount rates hinge crucially on the valuation expert's understanding of industry conditions (Ayotte and Morrison 2018). In other words, while peers can

be selected based on various dimensions such as size and geography, these attributes are prone to significant discretion, and thus, ad hoc heterogeneity (Ayotte and Morrison 2018). Building on prior research on the relevance of industry peer information, we argue that the valuation error is, on average, negatively associated with peer information quality (*PIQ*). Accordingly, we state our first hypothesis in the alternative form, as follows:

H1: ***Peer information quality is negatively associated with errors in court-approved valuation for firms emerging from Chapter 11.***

However, the predicted relation in H1 is not tautological. First, while valuation experts may use a more refined peer group in practice, our choice of the peer group is coarse (i.e., those in the NAICS 3-digit industry), which likely biases against us finding the predicted results. Second, as we argue in later sections, the usefulness of peer information may be affected by other sources of information, such as available firm-specific information. Third, the choice of relevant industry peers is subjective and subject to biases, especially in the context of our study with the conflicting incentives of various claimholders. Fourth, a weak form of market efficiency is implicitly assumed in our prediction. In other words, we assume the market gets it right over the course of three months upon emergence from bankruptcy. Market inefficiency would work against us finding results consistent with H1. Related, to the extent that emergence market value itself reflects industry peer information, lower valuation errors could imply the congruence between management/bankruptcy courts' and investors' reliance on the same underlying valuation inputs, regardless of their accuracy.[19] As such, the effect of peer information on error in court-approved valuation remains an empirical question.

[19] We thank an anonymous conference referee for pointing this out.

2.4. Cross-sectional Predictions

The effect of peer information is likely to depend on the availability of other sources of information. As documented by Shroff et al. (2017), peer information and firm-specific information serve as substitutes in the bond issuance setting, and the usefulness of peer information becomes weaker when firm-specific information environment is richer. Accordingly, we predict that the effect of peer information in reducing valuation error in the Chapter 11 setting is more pronounced in presence of less firm-specific information. Hence, we state our next hypothesis in the alternative form, as follows:

H2a: ***The effect of peer information on reducing error in court-approved valuation is lower when more firm-specific information is available.***

Next, we consider the role played by conflicting incentives of the negotiating claimholders for estimating low versus high valuations (Gilson et al. 2000; Demiroglu et al. 2020). A finite distributable value, along with the Absolute Priority Rule implies that junior claimants such as unsecured creditors and pre-petition equity holders typically prefer a higher valuation, while senior claimants such as secured creditors prefer a lower valuation to obtain a large share of the distributable value. Similarly, a newly appointed CEO during the Chapter 11 process is often a turnaround specialist with incentives to overvalue and ensure plan confirmation (Lehavy 2002, p. 64).

In this paper, we consider the bargaining strength of different claimholders, as reflected by the presence of unsecured creditors' or equityholders' committees, a debtor-in-possession (*DIP*) lender, and a newly appointed CEO after the Chapter 11 filing.[20] Ayotte and Morrison (2009)

[20] Note, however, that this prediction is not tautological. In particular, junior and senior claimholder constituencies could have countervailing influence on valuation accuracy as junior (senior) claimants generally prefer higher (lower) plan valuation.

suggest that committees representing interests of junior claimants can gain negotiating leverage using objections and other court motions. Further, as Demiroglu et al. (2020) suggest, the effect of junior claim-/interest-holder committees on valuation errors could go either way. On the one hand, they may enhance the reliability of valuation process by bringing in valuable expert testimony; on the other hand, these are powerful bargaining parties that can indirectly influence the court process in their favored direction. With regards to the senior claimholders, *DIP* lenders are often granted super-priority status, often priming existing prepetition secured creditors through a court order. As Ayotte and Morrison (2009) and Eckbo, Li, and Wang (2020) argue, *DIP* lenders receive extensive control rights and can exercise significant influence on the course of the Chapter 11 process through highly restrictive covenants and performance benchmarks – potentially resulting in a monopolistic bargaining position with the debtor.

Our directional prediction is based on the arguments and qualitative evidence in Ayotte and Morrison (2018) that valuation expert testimony is often self-servingly and blatantly biased in favor of their clients. We thus predict that the effect of peer information will be attenuated in the presence of these constituencies with strong bargaining influence over Chapter 11 outcomes. In other words, strong bargaining influences push valuation away from fundamentals to the preferences of those specific constituencies. Therefore, we state our next hypothesis in the alternative form, as follows:

H2b: ***The effect of peer information on reducing error in court-approved valuation is weaker in the presence of constituencies with strong bargaining influence over Chapter 11 outcomes.***

Finally, we consider the role played by valuation advisors employed by the debtor (and in some cases, the creditors). Disclosure statements that accompany Chapter 11 plans typically include a valuation exhibit, which gives details about the valuation approaches used and range of

reorganization value estimates (Newton 2003). For industry peer information to be useful in generating accurate valuation estimates, an important assumption is that the weighting and use of such information by valuation experts is appropriate. Ayotte and Morrison (2018) stress the weighting issue in valuation disputes and suggest that weights are often self-servingly and arbitrarily chosen. We expect this tendency to be mitigated for experienced valuation advisors for whom reputational costs are likely to be more salient. We argue that advisors with more experience in valuing bankrupt firms will not only have the necessary incentives and expertise, but also access to relevant proprietary databases concerning peer information (e.g., information from prior bankruptcy cases). Thus, we predict that more experienced/reputed bankruptcy valuation advisors are better able to incorporate industry peer information in their value determinations, thereby enhancing the effect of peer information. Further, relying upon the qualitative analyses in Ayotte and Morrison (2018) concerning bankruptcy courts' increasing reliance on market-based evidence in resolving valuation disputes, we argue that the ability of courts to accurately incorporate industry peer information increases with their own experience in handling such valuation dispute cases. Thus, we state our next hypothesis in the alternative form, as follows:

H2c: ***The effect of peer information on reducing error in court-approved valuation is stronger for cases with more experienced valuation advisors and in more experienced bankruptcy courts.***

3. Sample Selection, Variable Definitions, and Research Design

3.1 Sample and Data

Our main data source for bankruptcy information is the UCLA-LoPucki Bankruptcy Research Database (BRD). The information available in this dataset includes filing type (e.g., Chapter 11 or Chapter 7), bankruptcy court, filing date, plan confirmation date, whether the reorganization plan was prepackaged, whether the debtor obtains debtor-in-possession financing, whether the firm

emerges from bankruptcy, emergence date, and the outcome of emergence (e.g., whether the firms emerge as a public or private firm). We supplement BRD using data obtained from bankruptcydata.com (New Generation Research) as necessary.

To construct the sample, we first obtain a list of Chapter 11 bankruptcy reorganizations by US public firms over the 2000-2018 period and require the firm to successfully emerge from Chapter 11 as a publicly-listed company.[21] This process leaves us with 530 cases. Since these cases may include firms that are acquired by another public firm or emerge as private firms with public debt, we manually verify and keep firms that emerge as a standalone firm with public equity. We require that the firms have post-emergence accounting information from COMPUSTAT, market value of newly issued equity from CRSP or COMPUSTAT security, and pre-bankruptcy analyst coverage from I/B/E/S. This filtering process reduces the number of bankruptcy cases to 183.

Next, we hand collect the court-approved valuation of each emerged firm's newly issued common stock either from the firms' first 10-K report after emergence obtained from SEC EDGAR or from court disclosure statement obtained from bankruptcydata.com. Following Demiroglu et al. (2020), we obtain "fresh-start" equity values from post-emergence 10-K reports, obtained through the SEC EDGAR system. We supplement this data by estimated equity values collected from court disclosure statements obtained from bankruptcydata.com. We use the mid-point value if the disclosure statement provides a range estimate of equity value. Our final sample includes 135 cases in which the firm emerges from Chapter 11 with publicly traded stock and has

[21] We start our sample from year 2000 because court documents are more widely available in the New Generation Research Database starting in 2000.

non-missing post-emergence accounting and stock market information. We note that the sample size is comparable to that in recent studies such as Demiroglu et al. (2020).

3.2 Definition of Key Variables

3.2.1 Valuation Error

Following Demiroglu et al. (2020), we calculate court-approved valuation error as:

$$\textit{Valuation Error}=|V_{court} - V_{market}| \,/\, [(V_{court} + V_{market})/2]$$

where V_{court} is the court-approved post-emergence equity value. We use "fresh-start" equity values obtained from the first 10-K after emergence if the firm adopts fresh start accounting. If firm is not qualified for fresh-start accounting, we instead use plan equity values obtained from Chapter 11 disclosure statements. If the firm makes a rights offering and includes the issue amount in the "fresh-start" value, we subtract value of the offering from the fresh-start value. V_{market} is the average market value of the stocks during the first three months after the emergence, discounted back to the confirmation date of the court plan of reorganization using CRSP equal-weighted industry return. The stock market value is intended to capture the intrinsic value of the newly issued equity. Using the average equity value over the three-month horizon reduces concerns that the value might be temporarily depressed immediately after emergence (Gilson et al. 2000).[22]

An alternative approach to measuring valuation error is to calculate the deviation from a "warranted multiple" as suggested in Bhojraj and Lee (2002). However, we do not follow this approach as it serves different purposes and requires different assumptions about market efficiency.

[22] Our inferences are robust to using a six-month horizon after emergence. The results are available upon request.

First, Bhojraj and Lee's (2002) approach is prescriptive in nature in that it tries to address *how* peers should be selected, whereas our paper assumes that valuation practitioners often *start with industry* to determine comparables and other valuation inputs. Second, our approach assumes that the market gets it right over the course of weeks and months that follow emergence from bankruptcy, whereas Bhojraj and Lee's (2002) approach chooses firms based on a set of variables that are theoretically expected to drive variation in specific valuation multiples. In other words, the argument in Bhojraj and Lee (2002) is that valuation theory is the appropriate benchmark. Although we acknowledge the conceptual and ex-post superiority of this approach, we did not explicitly find references to this approach by bankruptcy practitioners as cited in legal papers such as Ayotte and Morrison (2018) and Sontchi (2012).

3.2.2 Industry Peer Information Measures

We use four empirical measures to capture the availability and relevance of industry peer information for valuing the bankruptcy firm. First, we estimate the relevance of industry peer information for the bankrupt firm by measuring the synchronicity of its earnings with industry peer firms' earnings in the year prior to bankruptcy. This measure captures the strength of economic links among firms in the same industry. We follow Shroff, Verdi, and Yost (2017) and measure *Earnings Synchronicity* as the mean value of adjusted R-squared obtained from regressing each firm's quarterly earnings on the aggregate quarterly earnings in its NAICS 3-digit industry. Specially, for each firm-year, we regress the firm's *ROA* on the aggregate NAICS 3-digit industry-level *ROA* using the previous sixteen quarters of data and obtain the adjusted R-squared value.[23] Then, we take the mean value of adjusted R-squared for all firms in the same industry-year. The

[23] We require at least 8 observations for these regressions. Our inferences are robust to using previous 12 or 20 quarters for the estimation.

Earnings Synchronicity measure is at the industry-year level and we use the value in the year prior to bankruptcy in our regressions.

Second, we infer the availability of valuation information available to the court by examining the prior experience that the court obtained from other similar firms. As argued by Iverson, Madsen, Wang and Xu (2020), bankruptcy judges' ability improves over time through exposure to prior relevant cases in the industry. *Prior Bankruptcy* is an indicator variable that equals one if there is another public firm in the same NAICS 3-digit industry that filed for Chapter 11 bankruptcy in the prior three-year window.

Third, we measure the difficulty in determining the firm's valuation estimates by measuring the distance between its *EV/EBITDA* multiple and its industry peers in the year prior to the Chapter 11 filing. Specifically, we first calculate the mean value of the *EV/EBITDA* multiple for each NAICS 3-digit industry-year, denoted as $\frac{EV_{j,t}}{EBITDA_{j,t}}$, where *j* indicates industry *j* and *t* represents year *t*. Following prior studies (e.g., Loughran and Wellman 2011), we estimate *EV* as market value of equity plus total debt (DLC+DLTT) plus preferred stock value (PSTKRV) minus cash and short-term investments (CHE) and use OIBDP as *EBITDA*. We then multiply the mean multiple value with each firm's *EBITDA* to obtain a predicted *EV* value and calculate a predicted equity value based on the predicted *EV* value:

$$\widehat{MEq_{i,j,t}} = \frac{EV}{EBITDA_{j,t}} \text{ x } EBITDA_{i,j,t} + CHE_{i,j,t} - DLC_{i,j,t} - DLTT_{i,j,t} - PSTKRV_{i,j,t},$$

where *i* denotes firm *i*, *j* indicates industry *j*, and *t* represents year *t*. We obtain the valuation gap for each firm by taking the absolute difference between the actual equity value and predicted equity value, scaled by the average of the two: $|\widehat{MEq_{i,j,t}} - MEq_{i,j,t}|/[(\widehat{MEq_{i,j,t}} + MEq_{i,j,t})/2]$. Finally,

we obtain an industry-year level valuation gap measure, *Multiple Valuation Gap*, by taking the average valuation gap for each firm in the industry for each year.

Fourth, we calculate *Precedent M&A Deals* as the number of completed M&A deals within the industry of the bankrupt firm (with the acquirer obtaining more than 50% of shares) in each NAICS 3-digit industry, over the 5-year window prior to each bankruptcy case.[24]

Finally, we create an aggregate *Peer Information Quality* (*PIQ*) measure based on the four individual measures. Specifically, we sort the raw values of *Earnings Synchronicity*, *Multiple Valuation Gap*, and *Precedent M&A Deals* into deciles. We multiply *Multiple Valuation Gap* by -1 before the transformation to make it increase in valuation accuracy. We normalize each rank so that each has a minimum value of 0 and a maximum value of 1. *Peer Information Quality* (*PIQ*) index is our aggregate measure that is the sum of these four measures, and thus, ranges from 0 to 4.[25, 26]

3.3 Research Design

Following Demiroglu et al. (2020), we estimate the following OLS regression to test our hypotheses:

[24] We choose the 5-year window to allow for sufficient variation in this measure. However, our inferences remain if we use a shorter three-year window.

[25] Our findings are robust to using the first principal component of the four individual measures. These results are tabulated in Table 8.

[26] We additionally considered the use of analyst coverage in a bankrupt firm's industry as an alternative measure. However, we believe that the analysts play an important role in collecting, evaluating, and disseminating industry peer information, rather than generating new industry information. Thus, we use analyst coverage in cross-sectional analyses rather than a component of our main measure.

$$Valuation\ Error = \alpha + \beta Peer\ Information\ Quality\ + \lambda Controls + Year\ FEs + \\ + Industry\ FEs + \epsilon \qquad (1)$$

where *Peer Information Quality* (*PIQ*) is either one of the individual four measures or the aggregate index described in section 3.2.2. and is the variable of interest. Consistent with our main hypothesis (H1), we expect *PIQ* to load negatively, implying higher *PIQ* is associated with lower *Valuation Error*.

Building on prior research (e.g., Demiroglu et al. 2020), we control for characteristics of emerged firm that have been shown to affect court-approved plan valuation errors, including *Size*, *Leverage*, *Earnings Volatility*, and *Goodwill.* We also control for the percentage of the debtor's debt that are secured at the time of default to capture the effects of the firm's debt structure. We further control for bankruptcy characteristics, such as whether the reorganization plan is prepacked, whether the debtor obtains debtor-in-possession financing, the presence of unsecured creditors' or equity holders' committees, whether the firm replaces the CEO after its bankruptcy filing, and whether the firm adopts fresh-start accounting. To account for the potential effects of the firm's information environment prior to bankruptcy, we control for the debtor's analyst coverage in the year prior to the bankruptcy filing. Detailed variable descriptions are available in Appendix A. We also include industry fixed effects to control for time-invariant industry-level characteristics, and year fixed effects to account for time-period and macro effects.[27]

[27] Industry fixed effects are measured at the Fama-French 12 industries level and year fixed effects are based on the year that firm emerges from bankruptcy. Our inferences are robust to using either NAICS 2-digit industry fixed effects or SIC 2-digit industry fixed effects. Similarly, our findings are robust to using bankruptcy-year fixed effects.

4. Empirical Results

4.1 Descriptive Statistics

Table 1 presents the descriptive statistics for the sample of 135 bankrupt firms that emerge as publicly traded firms over the 2000-2018 sample period. The sample size is consistent with prior literature in the Chapter 11 bankruptcy setting. Panel A reports the summary statistics for the variables used in our analyses. All variables are defined in Appendix A. The average (median) firm has a valuation error of 0.71 (0.55). The variable of interest for this study is *Peer Information* (*PIQ*), which is an aggregate index ranging from 0 to 4, created using *Earnings Synchronicity*, *Prior Bankruptcy*, *Multiple Valuation Gap*, and *Precedent M&A Deals* measures (that themselves range from 0 to 1). The mean (median) *PIQ* is 1.88 (2.00). The interquartile range for *PIQ* is 1.45 (= 2.56 – 1.11), indicating considerable clustering around the median. The log of post-emergence total assets has a mean (median) of 7.02 (7.08). The average (median) firm has a leverage ratio (post-emergence book value of total debt scaled by total assets) of 0.37 (0.33), a goodwill ratio (post-emergence goodwill value scaled by total assets) of 0.06 (0.00), and earnings volatility (standard deviation of quarterly earnings during the first two years post-emergence) of 0.37 (0.15). The mean (median) of *Fresh Start Accounting* (an indicator variable) is 0.96 (1.00), indicating that 96% of the sample firms adopted fresh start accounting upon emergence. The mean (median) analyst coverage (analyst coverage in the year prior to bankruptcy) is 6.34 (5.92) and the mean (median) secured debt ratio (secured debt divided by total liabilities in the year prior to bankruptcy) is 0.30 (0.03). The data shows that an official unsecured creditor committee is present in 70% of our sample cases, and an official equity committee is appointed in 14% of the cases. In 56% of the cases, the debtor obtains financing from a *DIP* lender. The firm's CEO is replaced after the filing in 79% of the cases. These characteristics are largely consistent with those reported in related

contemporary studies (e.g., Demiroglu et al. 2020). In addition, we manually collected data on the use of valuation models for 67 out of the 135 cases (untabulated). The results show that DCF and comparable firm multiple models are used in 91% of the cases. Precedent M&A transactions approach is used in 49% of the cases. 21% of the cases also use other valuation models such as the Risked NAV model.

Panel B presents the sample distribution by year (2000-2018). The observations are more concentrated in the years 2000, 2002-2003, 2009, and 2016-2017 with year 2009 representing the highest number of observations (i.e., 16% of the sample). Panel C reports the sample distribution by industry using Fama-French 12-industry classification scheme. Firms are distributed evenly across industries, with no industry representing more than 20% of the sample.

Table 2 presents the Pearson and Spearman correlations. By construction, *PIQ* is positively correlated with each of its four subcomponents (*Prior Bankruptcy*, *Earnings Synchronicity*, *Multiple Valuation Gap,* and *Precedent M&A Deals*). Consistent with our expectation, *PIQ* and its subcomponents exhibit negative pairwise correlations with *Valuation Error* and the correlations are statistically significant, except that for *Precedent M&A Deals.*

4.2 Univariate Analyses of the Relation between Peer Information and Valuation Error

Table 3 reports the results of univariate analyses of the association between industry information (i.e., *PIQ* and its four subcomponents) and *Valuation Error*. We partition the sample based on above/below median values for *PIQ* and each of its four components and compare the average *Valuation Error* for each subsample. The first row presents the results for *PIQ*, while subsequent rows document the results for *Earnings Synchronicity*, *Prior Bankruptcy*, *Multiple Valuation Gap*, and *Precedent M&A Deals,* respectively. Consistent with our hypothesis, the high *PIQ* subsample has lower *Valuation Error* (0.6) compared to the low *PIQ* subsample with *Valuation*

Error of (0.82). The third column indicates that the difference between the mean *Valuation Error* for the two subsamples is statistically significant at the 5% level (Difference = – 0.22, t = 2.33), suggesting that industry peer information is an important determinant of valuation accuracy for bankrupt firms that emerge from bankruptcy as publicly traded firms. Similarly, the univariate results for the *Earnings Synchronicity*, *Prior Bankruptcy*, and *Multiple Valuation Gap* subcomponents are supportive of H1, while the result for *Precedent M&A Deals* is not statistically significant.

4.3 Regression Analyses of the Relation between Peer Information and Valuation Error

Our primary argument is that industry peer information is an important factor of generating the valuation estimate, and accordingly, we hypothesize a negative association between industry peer information (*PIQ*) and equity valuation error for firms emerging from Chapter 11. Table 4 reports the results of OLS regression analyses. Column 1 reports the results without any controls or fixed effects. Column 2 reports the results with controls, but no fixed effects. Columns 1 and 2 are important to show that the results are not driven by model overfitting due to fixed effects. In subsequent analyses, we use the empirically more restrictive fixed effects specification, while noting that the fixed effects themselves do not affect the statistical significance of our test variables in a meaningful way. Column 3 documents the results with controls and industry fixed effects, while Column 4 presents the results with controls and both industry and year fixed effects. Consistent with our prediction in H1, the coefficient on *PIQ* is negative and statistically significant at the 1% level in all four columns.[28] The fact that the effect of peer information remains with the presence of the extensive set of firm, time, and bankruptcy controls also mitigates potential sample

[28] Though the coefficients on the control variables are mostly insignificant, expect that for *Size* and *Secured Debt,* the results are largely consistent with the coefficients reported in prior research (e.g., Demiroglu et al. 2020).

selection concerns. Focusing on the fourth column, the coefficient estimate on *PIQ* is negative and statistically significant (–0.202, t = –2.89), suggesting an inverse relation between industry peer information and valuation error.[29] The results are also economically meaningful. A unit increase in *PIQ* index is associated with a 23.5% to 28.5% reduction in valuation error using different specifications, compared to the sample mean value.[30]

Next, we replicate Table 4 analyses using *PIQ* subcomponents. Table 5 reports the results for *Earnings Synchronicity, Prior Bankruptcy, Multiple Valuation Gap,* and *Multiple Valuation Gap*. We use the same regression specification as in Column 4 of Table 4 for all columns in Table 5. The results show that the coefficient for each component is negative, and with the exception of *Prior Bankruptcy*, the coefficients are statistically significant at the 10% or better.

Taken together, the results in Tables 3-5 are supportive of H1, suggesting that peer information quality is negatively associated with court-approved valuation errors for firms emerging from Chapter 11.

4.4 Cross-Sectional Analyses

We complement our main analyses with several cross-sectional analyses. Specifically, we exploit cross-sectional variation on (1) the availability of firm-specific information, (2) the role played by conflicting incentives of the negotiating claimholders for estimating low versus high valuations (i.e., creditor structure) as well as role played by a newly appointed CEO, and (3) the role played by the expertise of valuation advisors employed by the debtor and the experience of the bankruptcy courts used.

[29] We calculate Variance Inflation Factors (VIF) for each of the independent variables. The mean value of VIF is 1.33 with a maximum of 1.86, thereby mitigating multicollinearity concerns.

[30] The percentage is calculated as the magnitude of the coefficient divided by the sample mean value. For example, the economic magnitude for *PIQ* in Column 1 of Table 4 is 0.167/0.71=23.5%. Similarly, the percentages for Columns 2 to 4 are 0.176/0.71=24.8%, 0.187/0.71=26.3, and 0.202/0.71=28.5%, respectively.

For the firm-specific information environment analyses, we follow Shroff et al. (2017) and predict that the usefulness of peer information in reducing valuation error is more pronounced when firm-specific information is less available. We use the regression specification in Column 4 of Table 4, and interact *PIQ* with *Small*, *Low Coverage*, and *Low IO* (i.e., three measures that proxy for firm-specific information availability).[31]

Panel A of Table 6 presents the results. In Column 1, the coefficient on *PIQ* x *Small* is negative and statistically significant (–0.169, t = –1.93). In Column 2, the coefficient on *PIQ* x *Low Coverage* is negative but statistically insignificant (–0.075, t = –0.73), while in Column 3 the coefficient on *PIQ* x *Low IO* is negative and statistically significant (–0.212, t = –1.80). Taken together, these findings our consistent with H2a that peer information has a larger effect on reducing valuation error when there is less firm specific information.

For the bargaining influence analyses, we exploit the observations that junior claimants (e.g., unsecured creditors and equity-holders) generally prefer higher valuation than senior claimants (e.g., secured creditors) and that a newly appointed CEO after the bankruptcy filing is often a turnaround specialist with incentives to overvalue to ensure plan confirmation (Lehavy 2002). We predict that strong bargaining influence may push the valuation away from fundamentals to the preferences of those specific constituencies. We proxy for the bargaining strength of different constituencies using the presence of (1) an unsecured creditors' committee, (2) an equity committee, (3) a debtor-in-possession (*DIP*) lender, and (4) appointment of a replacement CEO after the bankruptcy filing. Panel B of Table 6 presents the results consistent with H2b. In Column

[31] *Small (Low Coverage*) is an indicator variable equal to one if the firm's total assets value (analyst coverage) is lower than the sample median. Similarly, *Low IO* is an indicator variable equal to one if the firm's institutional ownership is below the sample median.

1, the coefficient on *PIQ* x *Creditor Committee* is positive and statistically significant (0.137, *t* = 1.86). Similarly, in Columns 2 to 4, the coefficients are all positive and statistically significant for the interaction terms *PIQ* x *Equity Committee* (0.356, *t* = 1.91), *PIQ* x *DIP* (0.221, *t* = 1.72), and *PIQ* x *CEO Replaced* (0.182, t=1.94). Overall, the results are consistent with H2b, suggesting that the effects of peer information become weaker in the presence of constituencies with strong bargaining influence over Chapter 11 outcomes.

The analyses regarding the role of financial advisors and bankruptcy courts are tabulated in Panel C of Table 6. We contend that advisors with more experience in valuing distressed firms have both the necessary expertise and access to more relevant proprietary industry peer information. Therefore, we predict a stronger inverse relation between industry peer information and equity valuation error in the presence of experienced financial advisors. In Column 1, the coefficient on *PIQ* x *Experienced Advisor* is negative and statistically significant (–0.597, *t* = –1.75).

Next, we turn to examine the effects of bankruptcy courts valuation experience. Ayotte and Morrison (2018) argue that bankruptcy courts are increasingly relying on evidence from market-based transactions, which usually involve information from peer companies in the same industry. The authors also show that a disproportionately large percentage of valuation dispute cases are decided in the District of Delaware and the Southern District of New York.[32] This is also consistent with other anecdotal observations that these two jurisdictions are the most popular venues for bankruptcy filings and that have developed considerable experience and expertise dealing with complex cases (LoPucki 2005). Accordingly, we expect that the effects of peer information to be stronger for cases filed in the District of Delaware and the Southern District of

[32] Specifically, in the Ayotte and Morrison (2018) study, out of the total of 94 bankruptcy courts, District of Delaware and the Southern District of New York bankruptcy courts handled 47 out of the total of 143 valuation dispute cases.

New York. *Experienced Court* is an indicator variable if the case is filed in these two districts. The results are tabulated in Column 2 of Panel C of Table 6. The coefficient on *PIQ* x *Experienced Court* is negative and statistically significant (–0.159, t = –1.79).

Overall, the findings are consistent with H2c, suggesting that the effect of industry peer information on valuation errors is stronger in the presence of more experienced valuation advisors and bankruptcy courts.

4.5 Ex-Post Performance of Firms emerging From Bankruptcy

Next, we examine the effect of industry peer information on ex-post performance of firms that emerge from bankruptcy. Critics argue that Chapter 11 might enable the reorganization of otherwise unviable business (e.g., Weiss and Wruck 1998). Hotchkiss (1995) shows firms emerging from Chapter 11 underperform compared with industry averages. This is surprising given the "feasibility test" requirement for Chapter 11 reorganization plans. The feasibility test requires the plan to demonstrate that the plan value (or proforma "going concern" value) is greater than hypothetical liquidation value. Thus, if reorganization value is overstated, it is more likely that firms are inefficiently reorganized. In our setting, to the extent that *PIQ* reduces the likelihood of over-valuation in reorganization plans, we expect *PIQ* to be positively associated with the ex-post performance of emerged firms. We examine this argument using a two-stage regression approach. In the first stage, we estimate the impact of *PIQ* on over-valuation (measured as the unsigned valuation error if plan value is higher than market value, and zero otherwise). In the second stage, we regress ex-post *ROA* of emerged firms on the over-valuation measure inferred from the first stage. The first stage and second stage regression results are presented in Columns 1 and 2 of Table 7, respectively. Consistent with our main results in Table 4, Column 1 reports a

negative and statistically significant association between *PIQ* and over-valuation (–0.105, t = –1.70). In line with our arguments above, Column 2 documents a negative and statistically significant association between ex-post *ROA* of emerged firms and the predicted over-valuation measure (–0.70, t = –2.30). Thus, these results suggest that peer information is associated with better ex-post performance of emerged firms, via the reduction of over-valuation in reorganization plans.

For completeness, we also examine the effect of *PIQ* on ex-post *ROA* through the occurrence of under-valuation (measured as the unsigned valuation error if the court-approved value is lower than the market value, and zero otherwise). The results are tabulated in Columns 3 and 4 of Table 7. Consistent with our main results in Table 4, Column 3 reports a negative and statistically significant association between *PIQ* and under-valuation (–0.129, t = –1.77). Column 4, however, documents a positive but statistically insignificant association between ex-post *ROA* of emerged firms and predicted under-valuation measure (1.598, t = 1.05).

4.6 Robustness Analyses

We conduct a battery of sensitivity analyses to gauge the robustness of our primary results. Table 8 reports these results. First, we exclude recessionary period observations and repeat the analysis in Column 4 of Table 4. We define recessions as periods between the peak and through months using the business cycle dates from National Bureau of Economic Research's (NBER). We continue to observe a negative and statistically significant coefficient on *PIQ* (–0.180, t = –2.32) as reported in Column 1 of Panel A of Table 8.

Second, we examine whether our inferences are robust to the inclusion of court fixed effects. In Column 2, we further include bankruptcy court fixed effects and the coefficient on *PIQ* remains negative and statistically significant (–0.181, t = –2.32).

Third, we replace our aggregate peer information quality (*PIQ*) measure with the first principal component of its four subcomponents, *Earnings Synchronicity*, *Prior Bankruptcy*, *Multiple Valuation Gap,* and *Precedent M&A Deals,* and repeat the analysis presented earlier in Column 4 of Table 4. We continue to observe a negative and statistically significant coefficient on *PIQ* (–0.145, t = –2.47) as reported in Column 3.[33]

Fourth, we conduct additional subsample analyses to mitigate concerns that our results might be driven by the public dissemination of over-the-counter corporate bond transactions via the TRACE platform (Demiroglu et al. 2020). Specifically, Demiroglu et al. (2020) show that the dissemination of bond transaction information by TRACE during the 2002 to 2005 period leads to lower valuation errors. To account for this effect, we re-run our main analyses using a subsample of firms that went bankrupt after the February 2005, when transaction data had been disseminated for 99% of corporate bonds. The results are tabulated in Columns 4 and 5, which report the results for the pre-2005 and post-2005 data, respectively. The coefficients on *PIQ* are negative and statistically significant at the 5% level for both subsamples (with the difference between the two coefficients being statistically insignificant), suggesting that our inferences are not affected by the availability of bond transaction data.

Fifth, we further control for the effects of competition within each industry to ensure that the industry peer information measure is not simply capturing the intra-industry competition effects. We use the concentration of sales for each NAICS 3-digit industry-year as the measure of competition and include the measure as an additional control in our main regression model. The results are tabulated in Column 6. Consistent with our main results in Table 4, the coefficient on *PIQ* remains negative and statistically significant (–0.221, t = –2.95).

[33] On average, the first principal component explains 63% of the corresponding cross-sectional variance.

Sixth, we replicate the results in Columns 1-4 of Table 4 using different methods to calculate standard errors. We cluster the standard errors at the industry level for our main analyses because factors that affect plan valuation errors might be correlated within industries. In robustness checks, we report regression results (in Panel B of Table 8) using alternative standard error estimation approaches. Our inferences are robust to clustering standard errors by year or using robust standard errors that are not clustered. In addition, our inferences remain unchanged using the wild bootstrap method, which allows us to conduct bootstrap tests that are robust to the presence of heteroskedasticity of unknown form in samples of moderate size (MacKinnon 2013).[34] Overall, the results show that our findings are not sensitive to the methods used in estimating standard errors.

Last, we conduct several untabulated robustness checks. First, we examine whether peer firm financial reporting quality (*FRQ*) impacts valuation errors in a way that is similar to our *PIQ* measures. Using an average *FRQ* measure based on the modified Jones (1992) approach, we find that industry peer *FRQ* does not influence valuation errors in the same way as our *PIQ* measures. This could be attributable to our earlier argument that for peer information to be able to reduce Chapter 11 valuation errors, it has *to be relevant* to the valuation of the bankrupt firm – an industry average accrual quality measure potentially does not reflect valuation-relevance. Second, we examine whether the equity valuation error is simply a reflection of allocation errors between debt and equity in an otherwise accurate enterprise value. While we cannot completely rule out this argument, we observe no significant evidence of credit rating downgrades or repeat bankruptcy filings (colloquially known as "Chapter 22") in the three or five years following emergence,

[34] Specifically, we draw 1,000 samples of the same size as the original sample with replacement. The "wild weight" used to generate the bootstrapped sample is drawn from the Rademacher distribution (Roodman, Nielsen, MacKinnon, and Webb 2019).

suggesting that egregious debt valuation errors are unlikely to explain away the equity valuation errors observed in our study.

5. Conclusion

We examine the accuracy of going concern value estimates used in court-approved Chapter 11 reorganizations. Typically, these value estimates reflect Fresh Start Accounting (FSA) values, and are used in ex-post distribution of value among the various claimants of the firm as per the reorganization plan. Thus, it is not surprising that they are often contentious and reflect the various competing incentives and pressures from the different claimants. Inaccurate valuation estimates could potentially lead to inefficient reorganized value distribution outcomes upon emergence. Therefore, we examine the ex-post accuracy of Chapter 11 reorganization value estimates. Specifically, we predict and find that information about bankrupt firms' industry peers is associated with lower ex-post court-approved plan valuation errors. Cross-sectional analyses indicate that the relation between industry peer information and court-approved plan valuation accuracy varies predictably with firm specific information environment, the bargaining power of different constituencies (e.g., the presence of powerful senior and junior claimants, and newly appointed CEOs), and the role of experienced valuation advisors and bankruptcy courts. Finally, we document a positive association between reduced over-valuation (due to peer information) and higher post-emergence operating performance.

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Appendix A: Variable Definitions

Variables	Definition	Source
Valuation Error	The absolute difference between court's determined equity value and the average market value in the first three months after emergence, scaled by the average of the two values. Plan equity value is obtained from the first 10-K after emergence if the firm adopts fresh start accounting and it is obtained from court documents otherwise. Market value of stocks is obtained from CRSP and Compustat and is measured by the third month after emergence, discounted back to the confirmation date of the reorganization plan using CRSP equal-weighted industry return.	10-K, case filings from Bankruptcydata.com, CRSP, COMPUSTAT
Peer Information Quality (PIQ)	An aggregate index that ranges from 0 to 4 that is based on earnings synchronicity,	COMPUSTAT, CRSP, UCLA-LoPucki Bankruptcy

	prior bankruptcy cases, prior M&A activity, and multiple valuation gap.	Research Database, Bankruptcydata.com
Earnings Synchronicity (Raw)	Earnings synchronicity for each NAICS3-digit industry-year, which is the mean value of adjusted r-squared of regressing each firm's earnings on industry level earnings. The value is calculated in the year prior to bankruptcy.	COMPUSTAT
Prior Bankruptcy	An indicator variable that equals one if another public firm in the same NAICS 3-digit industry files bankruptcy and emerges as a publicly traded firm in the three-year window prior to bankruptcy.	UCLA-LoPucki Bankruptcy Research Database, Bankruptcydata.com
Multiple Valuation Gap (Raw)	The average valuation error for firms in each NAICS 3-digit industry-year using the mean value of EV/EBITDA multiple of all firms in the same industry. The value is calculated in the year prior to bankruptcy.	COMPUSTAT, CRSP
Precedent M&A Deals (Raw)	The number of the number of completed M&A deals (with the acquirer obtaining more than 50% of shares) in each NAICS 3-digit industry, over the 5-year window prior to each bankruptcy case. We require the target firm to be in the same NAICS 3-digit industry as the bankrupt firm.	Securities Data Corporation (SDC)

Appendix A: Variable Definitions (continued)

Variables	Definition	Source
Leverage	Book value of total debt divided by total assets upon emergence from Chapter 11. The value is calculated using the first 10-K after emergence.	COMPUSTAT
Goodwill	Goodwill divided by total assets upon emergence from Chapter 11. The value is calculated using the first 10-K after emergence.	COMPUSTAT
Fresh Start Accounting	An indicator variable that equals one if the firm adopts fresh start accounting.	10-K
Size	Natural logarithm of total assets, upon emergence from Chapter 11. The value is calculated using the first 10-K after emergence.	COMPUSTAT

Earnings Volatility	Standard deviation of quarterly earnings during the first two years after emergence.	COMPUSTAT
Pre-Bankruptcy Coverage	Analyst coverage in the year prior to bankruptcy.	IBES
Prepackaged Bankruptcy	An indicator variable that equals one if the plan of reorganization is prepackaged.	UCLA-LoPucki Bankruptcy Research Database, Bankruptcydata.com
Secured Debt	Secured debt divided by total liabilities, measured in the year prior to bankruptcy.	COPMUSTAT
Creditor Committee	An indicator variable that equals one if an unsecured creditors committee is formed during bankruptcy.	UCLA-LoPucki Bankruptcy Research Database, Bankruptcydata.com
Equity Committee	An indicator variable that equals one if equityholders form a committee during bankruptcy.	UCLA-LoPucki Bankruptcy Research Database, Bankruptcydata.com
CEO Replaced	An indicator variable that equals one if the CEO is replaced after the bankruptcy filing.	UCLA-LoPucki Bankruptcy Research Database
DIP Financing	An indicator variable that equals one if the debtor obtains debtor-in-possession (DIP) financing.	UCLA-LoPucki Bankruptcy Research Database, Bankruptcydata.com

Appendix A: Variable Definitions (continued)

Variables	Definition	Source
Small	An indicator variable that equals one if the firm's total assets value is lower than the sample median.	COMPUSTAT
Low Coverage	An indicator variable that equals one if the firm's analyst coverage is lower than the sample median.	IBES
IO	The percentage of shares held by institutions in the year prior to bankruptcy.	Thomson/Refinitiv
Low IO	An indicator variable that equals one if the firm's institutional ownership is lower than the sample median.	Thomson/Refinitiv

Experienced Advisor	An indicator variable that equals one if the financial advisor is among the top 3 advisors based on sample frequency.	Manually collected from case filings in bankruptcydata.com
Experienced Court	An indicator variable that equals one if the filing is in the District of Delaware or the Southern District of New York	UCLA-LoPucki Bankruptcy Research Database, Bankruptcydata.com
Over Valuation	Over valuation equals the value of valuation error if court -approved value is higher than the market value, and equals zero other wise	10-K, case filings from Bankruptcydata.com, CRSP, COMPUSTAT
Under Valuation	Over valuation equals the value of valuation error if court -approved value is lower than the market value, and equals zero other wise	10-K, case filings from Bankruptcydata.com, CRSP, COMPUSTAT
Ex-Post ROA	Return on assets measured as income before extraordinary items divided by total assets. The value is calculated using the first 10-K after emergence.	COMPUSTAT
Industry Competition	The concentration of sales for each NAICS 3-digit industry-year, measured by the Herfindahl-Hirschman (HHI) index.	COMPUSTAT

Appendix B: Valuation Exhibit from Seadrill's Chapter 11 Plan (2018)

Source: Prime Clerk
https://cases.primeclerk.com/seadrill/HomeDownloadPDF?id1=ODQ3MzU2&id2=-1

Valuation Methodology
i. Discounted Cash Flow Analysis

The discounted cash flow ("DCF") analysis is a forward-looking enterprise valuation methodology that estimates the value of an asset or business by calculating the present value of expected future cash flows to be generated by that asset or business. Houlihan Lokey's DCF analysis used the Consolidated Operating Company's and the Non-Consolidated Entities' projections of its debt-free, after-tax cash flows through December 31, 2022. These cash flows were then discounted at a range of estimated weighted average costs of capital, which was determined by reference to, among other things, the cost of debt of selected companies that are similar to the Consolidated Operating Company and the Non-Consolidated Entities in certain respects and the estimated cost of equity of selected publicly traded companies that are similar to the Consolidated Operating Company and the Non-Consolidated Entities in certain respects. Houlihan Lokey's DCF analysis also included

an estimate of the value of the Consolidated Operating Company and the Non-Consolidated Entities for the period beyond December 31, 2022, known as the terminal value. The terminal value was derived by applying a multiple to the Consolidated Operating Company's and respective Non-Consolidated Entities' terminal year EBITDA. The discounted cash flow analysis involves complex considerations and judgments concerning appropriate terminal values and discount rates.

ii. Precedent Transactions Analysis

The precedent transactions analysis is based on the implied enterprise values of companies and assets involved in publicly disclosed merger and acquisition transactions that have operating and financial characteristics comparable in certain respects to the Consolidated Operating Company and/or the Non-Consolidated Entities. In connection with this analysis, Houlihan Lokey reviewed relevant transactions announced during the current oil and gas industry environment. Under this methodology, the enterprise value of each such company is determined by an analysis of the consideration paid and the debt assumed in the merger or acquisition transaction. Such enterprise values for operating businesses are typically expressed as multiples of financial and operating statistics, most commonly EBITDA.

iii. Comparable Company Analysis

The comparable company analysis estimates the value of a company based on a relative comparison with other publicly traded companies with similar operating and financial characteristics. Under this methodology, the enterprise value for each selected public company is determined by examining the trading prices for the equity securities of such company in the public markets and adding the outstanding net debt for such company. Such enterprise values are typically expressed as multiples of various measures of financial and operating statistics, most commonly EBITDA, including projected levels of EBITDA. The Consolidated Enterprise Value of the Reorganized Debtors is calculated by applying these relevant selected multiples to the Consolidated Operating Company and Non-Consolidated Entities historical financials and Financial Projections.

iv. Other Methodologies

On certain other assets of the Debtors' such as receivables or stakes in newbuilds, an assessment of the collectability of the receivable was made or third-party indications of value were considered.

Valuation Conclusions
i. Consolidated Operating Company Value

The Debtors' consolidated operating business consists of the operations of Seadrill Limited, NADL, Sevan, AOD, and their respective subsidiaries. These operations were valued on a consolidated basis except with respect to AOD where the value of the minority interest held by a non-affiliated third party was deducted. The estimated value available to the Reorganized Debtors from the Consolidated Operating Company Value is $7.316 billion to $8.468 billion.

ii. Non-Consolidated Entities Value

The Debtors hold (and on upon emergence from chapter 11, the Reorganized Debtors will hold) minority interests in the NCEs and in certain instances are an obligor with respect to certain debt owed by the NCEs. The NCEs were primarily valued using the methodologies described above, adjusted for the Debtors' ownership of each respective NCE, including reflecting marketability and minority discounts where applicable and including any debt owed to the Debtors from the applicable NCE. The estimated value available to the Reorganized Debtors from the NCEs is $1.906 billion to $2.286 billion.

iii. Other Assets Value

The Debtors also hold certain non-operating assets that contribute to the Reorganized Debtors' Total Distributable Value. These include (a) interests in Archer, including a 15% equity interest and a $45 million principal amount convertible note, (b) certain receivables payable to the Debtors on account of historical sale transactions, (c) certain newbuild assets, and (d) excess cash. The estimated value of these other assets was estimated at $1.016 billion consisting of $212 million in non-cash other asset value and $804 million of excess cash.

Total Distributable Value and Implied Equity Value

As a result of the analysis described herein, Houlihan Lokey estimated the Total Distributable Value and Equity Value of the Effective Date of June 30, 2018 to be:

$ in millions	Low	High
Consolidated Operating Company Value	7,316	8,468
Plus: NCE Value	1,906	2,286
Plus: Other Asset Value, excluding Excess Cash	212	212
Plus: Other Asset Value, Excess Cash	804	804
Total Distributable Value	**$10,239**	**$11,770**
Less: Reorganized Company Total Debt[2]	7,015	7,121
Total Reorganized Company Equity Value	**$3,224**	**$4,650**

The estimate of Total Distributable Value set forth herein is not necessarily indicative of actual outcomes, which may be significantly more or less favorable than those set forth herein depending on the results of the Debtors' operations or changes in the financial markets. Additionally, these estimates of value represent hypothetical enterprise and equity values of the Reorganized Debtors as the continuing operator of their businesses and assets, and do not purport to reflect or constitute appraisals, liquidation values or estimates of the actual market value that may be realized through the sale of any securities to be issued pursuant to the Plan, which may be significantly different than the amounts set forth herein. Such estimates were developed solely for purposes of formulation and negotiation of the Plan and analysis of implied relative recoveries to creditors thereunder. The value of an operating business such as the Debtors' businesses is subject to uncertainties and contingencies that are difficult to predict and will fluctuate with changes in factors affecting the financial condition and prospects of such businesses.

Houlihan Lokey's estimated valuation range of the Reorganized Debtors does not constitute a recommendation to any Holder of Allowed Claims or Interests as to how such person should vote or otherwise act with respect to the Plan. The estimated value of the Reorganized Debtors set forth herein does not constitute an opinion as to the fairness from a financial point of view to any person of the consideration to be received by such person under the Plan or of the terms and provisions of the Plan. Because valuation estimates are inherently subject to uncertainties, none of the Debtors, Houlihan Lokey or any other person assumes responsibility for their accuracy or any differences between the estimated valuation ranges herein and any actual outcome.

Appendix C: The Hertz Corporation Chapter 11 Plan Negotiations

Summary

- The Chapter 11 filing of Hertz and subsequent reorganization plan renegotiations between the various stakeholders illustrates the importance of valuation in determining post-reorganization distributional outcomes.
- Hertz filed for Chapter 11 bankruptcy with the District of Delaware Bankruptcy Court on May 22, 2020 citing decline in travel demand after the onset of the Covid-19 pandemic. The filing followed credit rating downgrades, hiring of restructuring advisors, (eventually unsuccessful) forbearance and waiver agreements with creditors, and going concern doubts in SEC filings during the two months leading up to the Chapter 11 filing.
- Hertz's Chapter 11 process culminated with Court confirmation of its Second Modified Third Amended Plan (the "Plan") on June 10, 2021. Hertz emerged from Chapter 11 on June 30, 2021.
- The reorganization outcome was unprecedented and a result of excruciatingly uncertain and painful valuation negotiations and fights. Especially notable was the recovery to prepetition shareholders that were long deemed to be out of the money.
- Hertz's case illustrates the central role played by valuation in determining distributional outcomes in Chapter 11. An increase in EV from $4.8bn to $6.9bn was able to support improvements in recovery to unsecured creditors from about 70% to 100%, and existing common stockholders who were initially out of money ended up receiving distributions worth more than $1bn.

Is Old Equity Worthless?

- Hertz announced in a press-release on June 10, 2020 that NYSE had begun the process of delisting its common stock. Hertz had appealed the decision. In a vast majority of Chapter 11 outcomes, prepetition shareholders receive zero recovery. That could well have been the case for Hertz as well based on its total debt at the filing date. However, Hertz's shareholders had other ideas. A Reddit-fueled trading frenzy implied equity market valuation that was far from worthless.
- Not only was Hertz not in agreement with NYSE's delisting of its stock, Hertz sought to take advantage of the market frenzy by filing a motion with the court to permit issuance of common stock worth approximately $1billion at prevailing market prices. Conceivably, if the share offering were to go through, it would have been at terms that were far more advantageous and less onerous than any potential DIP financing. The SEC, however, struck down the new equity offering plan.

Grind through Chapter 11

- In October 2020, Hertz was successful in obtaining DIP financing worth $1.65 billion from its old first-lien creditors, which set August 1, 2021 as the deadline for filing a reorganization plan. Unsecured creditors objected to this proposal, but the objections were subsequently set aside by the Court.
- In February 2021, Hertz concluded the sale of its subsidiary Donlen Corp. to an affiliate of Apollo Insurance Solutions Group for $875 - $900 million through a 'stalking horse' bidding procedure.

Let the Battle Begin

- On March 2, 2021, Hertz filed a disclosure statement and an initial plan of reorganization. The Plan total enterprise value (EV) of reorganized Hertz was estimated, with the help of Moelis & Co., to be approximately $4. billion. The EV was to be financed by (i) issuance of new first lien debt (exit financing) of approximately $1 billion, and the sale of new common stock to the Plan Sponsors (Knighthead Capital Management and Certares Opportunities LLC). The Plan envisaged extinguishment of the existing old common stock. Plan Sponsors committed to acquisition of a majority of new common stock through a combination of a direct investment ($2.3 billion) and backstopped a $1.9 billion Rights Offering to be made available to the holders of Unsecured Funded Debt Claims. The Plan proposed a 70% cash recovery to unsecured creditors, subject to the right of the holders of funded unsecured debt claims to elect to take a portion of their recovery in the form of common equity in reorganized Hertz. The plan enhanced liquidity by proposing a new $1.5 billion revolving credit facility and eliminated around $4 billion of debt. To summarize, the proposed valuation waterfall ran out in the unsecured claims classes, with existing equity interests receiving zero distribution. Existing equity interests were thus deemed impaired and were entitled to vote on the plan. However, alternative sponsorship proposals were swirling around which had to be considered and vetted before the disclosure statement hearing that was set for April 16, 2021.
- On March 29, 2021, Hertz filed an amendment to the initial plan, outlining consideration of a yet to be finalized ongoing competitive process between the Plan Sponsors mentioned above and an Alternate Sponsor Group comprising Centerbridge Partners, Warburg Pincus, and Dundon Capital Partners. The First Amended Plan outlined that the new proposals from the existing and alternate sponsor groups implied an improved recovery to unsecured claims of between 75% to 80%, while suggesting recovery to existing equity interests at zero without entitlement to vote.
- On April 2, 2021, Hertz filed its Second Amended Plan and Disclosure Statement selecting the Centerbridge/Warburg Pincus/Dundon Capital Group as the new PE Sponsors. The new Plan implied a total EV of approximately $5.4 billion and plan equity value of $4.5 billion

as prepared by Moelis and Co. The choice was enabled by the decision of certain noteholders to cancel $2.75 billion of allowed Class 5 "Unsecured Funded Debt Claims" and to team up with the PE Sponsors in exchange for 48.2% of emerged equity or a 75% recovery (based on a $4.2 billion valuation for common equity) This treatment of Unsecured Funded Debt Claims was deemed superior to the treatment proposed by a revised plan proposed by the initial sponsors (that provided for an 80% recovery to these claims, but a lower 41% of a higher plan equity value of $5.7 billion).

- On April 14, 2021, Hertz filed a Second Modified Second Amended Plan, increasing recoveries to General Unsecured up to 82%, while emphasizing the valuation analysis presented that led to selection of the new PE sponsors on April 2, 2021: Enterprise Value of approximately $5.5 billion supported by $1.3 billion of new first lien debt, $385 million of new preferred stock, and new common equity value of $4.525 billion, less excess cash of approximately $700 million.
- On April 16, 2021, on the scheduled disclosure statement hearing date, the initial Plan Sponsors (Knighthead + Certares) put forward an enhanced sponsorship proposal, triggering a series of counterproposals. This led Hertz to request postponement of the hearing to April 21, 2021.
- On April 21, 2021, Hertz filed a Fourth Amended Plan and Disclosure Statement. Hertz stuck with the PE Sponsors in the new plan, but with significantly better terms for existing equity. Enterprise Valuation was largely unchanged. Not only were the General Unsecureds made whole, but the distribution now tricked down to existing equityholders, who were awarded six-year term warrants representing 4% of an estimated equity value of $6.1 billion.
- On April 22, 2021, the Court issued an order approving the Disclosure Statement, and Plan solicitation and voting procedures and setting a June 10, 2021 confirmation hearing. The Court order endorsed the April 21 Plan, but left open the possibility that a superior transaction may be tabled subsequently.

The Endgame

- On May 3, 2021, press reports suggested that the initial sponsor group comprising Knighthead and Certares raised the stakes with a sweetened offer with a suggested enterprise value of over $6.2 billion. On May 4, Hertz confirmed receipt of the revised proposal from Knighthead, Certares, and Apollo Global Management reflecting revised direct common and preferred stock investments worth $2.9 billion and $1.5 billion, respectively, in addition to a rights offering worth $1.36 billion. The proposed Plan envisaged full payment of all secured and unsecured funded debt and, importantly, improved recovery to existing common equityholders with $0.5 per share in either of 10-year warrants for an aggregate of 10% of the reorganized company or, for eligible

institutional stockholders, the possibility of subscribing for shares of common stock in the rights offering.

- A competitive bidding process was held through a 36-hour auction that ended on May 12, 2021. With the help of Moelis & Co., the proposal put forward by Kinghthead, Certares, and Apollo was deemed to be the winner. In addition to 100% recovery in cash for General Unsecureds, the Plan implied distribution of $8.01 per share to existing common equity holders by way of warrants (30 year term, 18% of equity with $6.5bn strike price).
- On May 14, 2021, Hertz filed an amended Plan based on a total enterprise value of approximately $6.9 billion. and a Plan common equity value of approximatelty $4.7 billion. All eyes were on recovery by existing Hertz common equityholders, who were set to receive $1.53 per share in cash, plus Pro Rata shares of (a) 3% of the Reorganized Hertz Parent Common Interests and (b) either (i) 30-year warrants for 18% of the equity in the Reorganized Debtors struck at an equity value of $6.5 billion, or (ii) rights to participate in a $1.635 billion offering for approximately 35% of Reorganized Hertz Parent Common Interests at a per share price based on a total equity value of approximately $4.7 billion.
- On June 10, the Court confirmed the Plan sponsored by Knighthead, Certares, and Apollo. In confirming the plan, Judge Mary Walrath described the outcome as a "fantastic result' that "surpasses any result that I've seen in any Chapter 11 case that I've faced in my 20-plus years."
- Hertz emerged from Chapter 11 on June 30, 2021. A company press release dated June 30, 2021 notes the salient features of Hertz's reorganization plan: "With over $5.9 billion of new equity capital being provided by Hertz's new investor group, led by Knighthead Capital Management LLC, Certares Opportunities LLC, and certain funds managed by affiliates of Apollo Capital Management, L.P., Hertz has reduced its corporate debt by nearly 80% and significantly enhanced its liquidity to fund operations and future growth. Specifically, Hertz has eliminated nearly $5.0 billion of debt, including all of Hertz Europe's corporate debt. In addition, Hertz has emerged with a new $2.8 billion exit credit facility (including an undrawn $1.3 billion revolving credit facility) and a $7.0 billion asset-backed vehicle financing facility, each having terms the Company views as extremely favorable. The aggregate interest rate on the Company's new ABS financing is less than 2.0%.....Following its successful restructuring process, Hertz's creditors will receive payment in cash in full and existing shareholders will receive more than $1 billion of value."

Table 1: Descriptive Statistics

Panel A: Summary Statistics

Variables	N	Mean	Sd	P25	P50	P75
Valuation Error	135	0.71	0.56	0.25	0.55	1.05
PIQ	135	1.88	0.90	1.11	2.00	2.56
Prior Bankruptcy	135	0.47	0.50	0.00	0.00	1.00
Earnings Synchronicity (Raw)	135	0.24	0.16	0.10	0.21	0.39
Multiple Valuation Gap (Raw)	135	-1.02	0.33	-1.25	-0.92	-0.81
Precedent M&A Deals (Raw)	135	30.93	47.66	3.00	12.00	31.00
Leverage	135	0.37	0.26	0.20	0.33	0.49
Goodwill	135	0.06	0.11	0.00	0.00	0.06
Fresh Start Accounting	135	0.96	0.21	1.00	1.00	1.00
Size	135	7.02	1.86	6.16	7.08	7.97
Earnings Volatility	135	0.37	0.83	0.05	0.15	0.31
Pre-Bankruptcy Coverage	135	6.34	5.46	1.29	5.92	10.83
Prepackaged Bankruptcy	135	0.50	0.50	0.00	1.00	1.00
Secured Debt	135	0.30	0.37	0.00	0.03	0.60
Creditor Committee	135	0.70	0.46	0.00	1.00	1.00
Equity Committee	135	0.14	0.35	0.00	0.00	0.00
CEO Replaced	135	0.79	0.41	1.00	1.00	1.00
DIP Financing	135	0.56	0.50	0.00	1.00	1.00
IO	135	0.29	0.36	0.00	0.05	0.64
Experienced Advisor	75	0.36	0.48	0.00	0.00	1.00
Experienced Court	135	0.67	0.47	0.00	1.00	1.00

This table presents the summary statistics for the sample of bankrupt firms that emerge as publicly traded firms over the 2000-2018 period. Panel A shows the summary statistics, Panel B presents the sample distribution by year, and Panel C shows the sample distribution by industry using the Fama-French 12-industry classification scheme. The list of bankrupt firms in the sample is obtained from the UCLA-LoPucki Bankruptcy Research Database and bankruptcydata.com. Variables are defined in Appendix A.

Table 1: Descriptive Statistics (continued)

Panel B: Sample Distribution by Year

Bankruptcy Year	N	Percent	Mean Valuation Error (%)
2000	11	8.15	79.43
2001	8	5.93	54.06
2002	19	14.07	97.86
2003	14	10.37	45.83
2004	5	3.7	54.75
2005	3	2.22	70.55
2006	3	2.22	51.78
2007	1	0.74	20.25
2008	2	1.48	9.18
2009	22	16.3	57.39
2010	2	1.48	40.34
2011	4	2.96	107.54
2012	3	2.22	85.04
2013	2	1.48	105.26
2014	4	2.96	23.08
2015	2	1.48	122.05
2016	17	12.59	93.08
2017	12	8.89	73.16
2018	1	0.74	48.70
Total	**135**	**100**	

Table 1: Descriptive Statistics (continued)

Panel C: Sample Distribution by Industry

Fama-French 12-Industry Classification Scheme	N	Percent	Mean Valuation Error (%)
Consumer Non-Durables – Food, Tobacco, Textiles, Apparel, Leather, Toys	5	3.7	79.39
Consumer Durables – Cars, TVs, Furniture, Household Appliances	9	6.67	71.82
Manufacturing – Machinery, Trucks, Planes, Office Furniture, Paper, Com Printing	11	8.15	56.43
Oil, Gas, and Coal Extraction and Products	26	19.26	84.52
Chemicals and Allied Products	5	3.7	34.35
Business Equipment – Computers, Software, and Electronic Equipment	11	8.15	59.04
Telephone and Television Transmission	19	14.07	69.26
Utilities	4	2.96	41.71
Wholesale, Retail, and Some Services (Laundries, Repair Shops)	8	5.93	56.43
Healthcare, Medical Equipment, and Drugs	9	6.67	87.82
Finance	4	2.96	73.36
Other – Mines, Construction, BldMt, Transport, Hotels, Bus Serv, Entertainment	24	17.78	77.94
Total	**135**	**100**	

Table 2: Correlation Table

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
(1) *Valuation Error*		-0.275***	-0.198**	-0.156*	-0.218**	-0.075	0.146*	-0.119	-0.082	-0.204**
(2) *PIQ*	-0.270***		0.712***	0.637***	0.524***	0.564***	-0.008	0.149*	-0.028	0.138
(3) *Prior Bankruptcy*	-0.198**	0.717***		0.122	0.118	0.221**	-0.123	0.192**	-0.014	0.064
(4) *Earnings Synchronicity*	-0.150*	0.634***	0.122		0.304***	0.323***	0.091	-0.028	-0.039	0.131
(5) *Multiple Valuation Gap*	-0.220**	0.533***	0.118	0.301***		0.005	-0.073	0.124	0.079	0.150*
(6) *Precedent M&A Deals*	-0.088	0.578***	0.237***	0.322***	0.017		0.112	0.026	-0.145*	0.002
(7) *Leverage*	0.176**	0.016	-0.124	0.137	-0.049	0.166*		-0.033	-0.134	-0.101
(8) *Goodwill*	-0.090	0.169*	0.177**	0.022	0.098	0.085	-0.060		0.045	0.333***
(9) *Fresh Start Accounting*	-0.108	-0.041	-0.014	-0.039	0.078	-0.143*	-0.290***	0.079		0.046
(10) *Size*	-0.309***	0.001	-0.017	0.022	0.095	-0.096	-0.228***	0.086	0.136	
(11) *Earnings Volatility*	0.173**	-0.059	-0.067	0.078	-0.132	-0.010	0.236***	-0.121	-0.138	-0.398***
(12) *Pre-Bankruptcy Coverage*	-0.022	-0.218**	-0.095	-0.084	-0.238***	-0.156*	-0.177**	-0.110	-0.090	0.349***
(13) *Prepackaged Bankruptcy*	0.052	-0.169*	-0.141	-0.190**	-0.009	-0.064	0.041	-0.100	0.217**	-0.003
(14) *Secured Debt*	-0.126	-0.065	-0.002	-0.090	-0.048	-0.044	0.028	-0.021	0.108	0.000
(15) *Creditor Committee*	-0.170**	-0.113	-0.043	-0.095	-0.019	-0.149*	-0.203**	0.055	0.017	0.404***
(16) *Equity Committee*	-0.092	0.110	0.048	0.118	0.146*	-0.033	-0.152*	0.010	-0.119	0.156*
(17) *CEO Replaced*	-0.024	0.171**	-0.053	0.138	0.305***	0.133	0.012	0.158*	0.062	-0.001
(18) *DIP Financing*	-0.179**	0.193**	0.090	0.254***	0.157*	-0.009	-0.194**	-0.061	0.169*	0.322***
(19) *Low IO*	0.070	-0.058	-0.051	-0.009	-0.040	-0.036	0.144*	0.047	0.145*	-0.343***
(20) *Experienced Advisor*	-0.179	0.040	-0.033	0.110	0.169	-0.149	-0.073	-0.065	0.054	0.100
(21) *Experienced Court*	-0.075	-0.001	-0.078	-0.082	0.229***	-0.032	-0.082	-0.009	0.003	0.183**

Table 2: Correlation Table (continued)

	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)	(21)
(1) *Valuation Error*	0.140	-0.048	0.095	-0.121	-0.134	-0.140	-0.048	-0.167*	0.012	-0.200*	-0.071
(2) *PIQ*	-0.166*	-0.204**	-0.163*	-0.115	-0.102	0.103	0.166*	0.184**	-0.061	0.043	-0.013
(3) *Prior Bankruptcy*	-0.119	-0.072	-0.141	-0.037	-0.043	0.048	-0.053	0.090	0.036	-0.033	-0.078
(4) *Earnings Synchronicity*	-0.020	-0.105	-0.190**	-0.150*	-0.095	0.118	0.138	0.254***	-0.221**	0.110	-0.082
(5) *Multiple Valuation Gap*	-0.155*	-0.222***	-0.008	-0.057	-0.020	0.146*	0.305***	0.157*	-0.018	0.170	0.227***
(6) *Precedent M&A Deals*	-0.114	-0.166*	-0.058	-0.089	-0.153*	-0.035	0.130	-0.019	-0.039	-0.162	-0.038
(7) *Leverage*	0.080	-0.216**	0.074	0.012	-0.173**	-0.150*	0.019	-0.167*	0.067	-0.051	-0.041
(8) *Goodwill*	-0.162*	-0.057	-0.141	-0.047	0.172**	0.071	0.195**	0.086	0.117	-0.098	0.128
(9) *Fresh Start Accounting*	0.088	-0.064	0.217**	0.136	0.017	-0.119	0.062	0.169*	-0.029	0.054	0.003
(10) *Size*	-0.169*	0.376***	-0.139	-0.126	0.378***	0.212**	0.053	0.269***	0.109	0.177	0.118
(11) *Earnings Volatility*		0.072	0.032	-0.001	0.009	-0.203**	-0.026	-0.244***	-0.057	0.185	-0.028
(12) *Pre-Bankruptcy Coverage*	0.067		-0.026	-0.053	0.182**	0.082	-0.162*	0.102	-0.042	0.010	0.049
(13) *Prepackaged Bankruptcy*	-0.160*	-0.035		0.277***	-0.222***	-0.067	-0.122	-0.202**	-0.067	-0.113	0.037
(14) *Secured Debt*	-0.050	-0.066	0.299***		-0.043	-0.087	-0.269***	0.047	-0.099	-0.105	0.083
(15) *Creditor Committee*	-0.044	0.124	-0.222***	-0.072		0.076	0.016	0.268***	0.238***	0.056	0.033
(16) *Equity Committee*	-0.133	0.062	-0.067	-0.066	0.076		0.160*	0.105	0.165*	0.084	-0.037
(17) *CEO Replaced*	-0.042	-0.159*	-0.122	-0.263***	0.016	0.160*		0.113	0.154*	0.075	0.098
(18) *DIP Financing*	-0.130	0.075	-0.202**	0.011	0.268***	0.105	0.113		0.096	0.089	0.141
(19) *Low IO*	0.191**	-0.328***	0.022	0.080	-0.222***	-0.195**	0.202**	-0.172**		-0.122	-0.153*
(20) *Experienced Advisor*	0.141	-0.025	-0.113	-0.086	0.056	0.084	0.075	0.089	0.117		0.098
(21) *Experienced Court*	-0.093	0.051	0.037	0.044	0.033	-0.037	0.098	0.141	0.046	0.098	

This table presents the correlations among variables used in this study. The sample includes bankrupt firms that emerge as publicly traded firms over the 2000-2018 period. The list of bankrupt firms in the sample is obtained from the UCLA-LoPucki Bankruptcy Research Database and bankruptcydata.com. ***, **, and * denote significance at the 1%, 5% and 10% levels, respectively. Variables are defined in Appendix A.

Table 3: Univariate Analyses

	High			Low			Δ = High – Low	t-stat
PIQ	N	Mean	Sd	N	Mean	Sd		
	66	0.6	0.50	69	0.82	0.60	-0.22	-2.33**
	High			Low			Δ = High – Low	t-stat
Earnings Synchronicity	N	Mean	Sd	N	Mean	Sd		
	68	0.63	0.51	67	0.79	0.60	-0.16	-1.67*
	High			Low			Δ = High – Low	t-stat
Prior Bankruptcy	N	Mean	Sd	N	Mean	Sd		
	63	0.59	0.51	72	0.81	0.58	-0.22	-2.35**
	High			Low			Δ = High – Low	t-stat
Multiple Valuation Gap	N	Mean	Sd	N	Mean	Sd		
	68	0.63	0.53	67	0.78	0.58	-0.15	-1.55*
	High			Low			Δ = High – Low	t-stat
Precedent M&A Deals	N	Mean	Sd	N	Mean	Sd		
	70	0.74	0.57	65	0.68	0.55	0.06	0.62

This table presents the results of univariate analyses. The sample includes bankrupt firms that emerge as publicly traded firms over the 2000-2018 period. The list of bankrupt firms in the sample is obtained from the UCLA-LoPucki Bankruptcy Research Database and bankruptcydata.com. ***, **, and * denote significance at the 1%, 5% and 10% levels using two-sided tests, respectively. Variables are defined in Appendix A.

Table 4: The Effects of Peer Information Quality on Errors in Court-Approved Valuation

Dep. Var = Valuation Error	(1)	(2)	(3)	(4)
PIQ	-0.167***	-0.176***	-0.187***	-0.202***
	(-3.79)	(-4.14)	(-3.58)	(-2.89)
Leverage		0.199	0.268	0.247
		(0.84)	(1.12)	(1.00)
Goodwill		0.002	0.082	0.334
		(0.00)	(0.17)	(0.54)
Earnings Volatility		0.017	0.020	0.027
		(0.19)	(0.20)	(0.25)
Fresh Start Accounting		-0.136	-0.058	-0.052
		(-0.55)	(-0.23)	(-0.16)
Pre-Bankruptcy Coverage		0.001	0.000	-0.004
		(0.13)	(0.02)	(-0.39)
Size		-0.073**	-0.112**	-0.117***
		(-2.48)	(-2.65)	(-2.72)
Prepackaged Bankruptcy		0.051	-0.001	-0.027
		(0.55)	(-0.01)	(-0.22)
Secured Debt		-0.246*	-0.222	-0.309*
		(-1.90)	(-1.60)	(-1.97)
Creditor Committee		-0.110	-0.047	-0.046
		(-0.91)	(-0.36)	(-0.34)
DIP Financing		0.022	-0.005	0.029
		(0.22)	(-0.04)	(0.17)
Equity Committee		-0.023	0.034	0.033
		(-0.19)	(0.37)	(0.39)
CEO Replaced		-0.008	-0.009	-0.000
		(-0.09)	(-0.09)	(-0.00)
Constant	1.024***	1.717***	1.870***	1.972***
	(10.26)	(4.69)	(4.76)	(4.14)
Observations	135	135	135	135
Industry FE	No	No	Yes	Yes
Year FE	No	No	No	Yes
Clustering	Yes	Yes	Yes	Yes
Adj. R-squared	0.066	0.129	0.112	0.125

This table presents the results of OLS regression analyses examining the effect of peer information on court-approved plan valuation errors. The sample includes bankrupt firms that emerge as publicly traded firms over the 2000-2018 period. The list of bankrupt firms in the sample is obtained from the UCLA-LoPucki Bankruptcy Research Database and bankruptcydata.com. ***, **, and * denote significance at the 1%, 5% and 10% levels using two-sided tests, respectively. Variables are defined in Appendix A.

Table 5: Components of Peer Information Quality (PIQ) and Errors in Court-Approved Valuation

Dep. Var = Valuation Error	(1)	(2)	(3)	(4)
Earnings Synchronicity	-0.450**			
	(-2.27)			
Prior Bankruptcy		-0.175		
		(-1.55)		
Multiple Valuation Gap			-0.399*	
			(-1.87)	
Precedent M&A Deals				-0.412***
				(-3.55)
Leverage	0.344	0.273	0.228	0.305
	(1.40)	(1.21)	(0.93)	(0.99)
Goodwill	0.303	-0.645	0.171	0.272
	(0.56)	(-0.90)	(0.28)	(0.38)
Earnings Volatility	0.073	-0.034	0.024	0.023
	(0.82)	(-0.34)	(0.27)	(0.25)
Fresh Start Accounting	-0.062	0.038	-0.088	-0.083
	(-0.22)	(0.14)	(-0.27)	(-0.24)
Pre-Bankruptcy Coverage	-0.006	-0.005	-0.004	-0.001
	(-0.56)	(-0.62)	(-0.39)	(-0.10)
Size	-0.080**	-0.117**	-0.108***	-0.113**
	(-2.32)	(-2.21)	(-2.83)	(-2.42)
Prepackaged Bankruptcy	0.009	0.063	0.039	-0.011
	(0.07)	(0.55)	(0.29)	(-0.08)
Secured Debt	-0.388**	-0.128	-0.304**	-0.345*
	(-2.49)	(-1.14)	(-2.06)	(-2.04)
Creditor Committee	-0.010	-0.056	-0.014	-0.042
	(-0.07)	(-0.46)	(-0.10)	(-0.42)
Equity Committee	0.043	0.049	0.066	0.040
	(0.27)	(0.38)	(0.44)	(0.21)
CEO Replaced	0.044	0.097	0.048	0.019
	(0.48)	(1.03)	(0.48)	(0.25)
DIP Financing	0.009	-0.017	-0.063	-0.076
	(0.08)	(-0.15)	(-0.57)	(-0.64)
Constant	1.491***	1.524***	1.744***	1.785***
	(4.23)	(3.48)	(4.01)	(4.14)
Observations	135	135	135	135
Industry FE	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes
Clustering	Yes	Yes	Yes	Yes
Adj. R-squared	0.108	0.123	0.0796	0.0832

This table presents the results of OLS regression analyses examining the effect of each of the four components of the peer information quality (*PIQ*) measure on court-approved plan valuation errors. The sample includes bankrupt firms that emerge as publicly traded firms over the 2000-2018 period. The list of bankrupt firms in the sample is obtained from the UCLA-LoPucki Bankruptcy Research Database and bankruptcydata.com. ***, **, and * denote significance at the 1%, 5% and 10% levels using two-sided tests, respectively. Variables are defined in Appendix A.

Table 6: Cross-Sectional Analyses

Panel A: Firm-specific Information Environment

Dep. Var = Valuation Error	(1)	(2)	(3)
*PIQ*Small*	-0.169*		
	(-1.93)		
*PIQ*Low Coverage*		-0.075	
		(-0.73)	
*PIQ*Low IO*			-0.212*
			(-1.80)
PIQ	-0.130**	-0.159**	-0.059
	(-2.29)	(-2.34)	(-0.63)
Leverage	0.196	0.278	0.313
	(0.73)	(1.18)	(1.23)
Goodwill	0.187	0.358	0.464
	(0.30)	(0.57)	(0.70)
Earnings Volatility	0.015	0.032	0.023
	(0.16)	(0.32)	(0.21)
Fresh Start Accounting	-0.044	-0.058	-0.115
	(-0.13)	(-0.17)	(-0.33)
Pre-Bankruptcy Coverage	-0.001	-0.010	-0.000
	(-0.13)	(-0.82)	(-0.00)
Size	-0.162**	-0.113**	-0.116**
	(-2.36)	(-2.52)	(-2.55)
Prepackaged Bankruptcy	-0.023	-0.015	-0.009
	(-0.20)	(-0.11)	(-0.08)
Secured Debt	-0.292*	-0.320*	-0.329**
	(-1.72)	(-1.87)	(-2.09)
Creditor Committee	-0.050	-0.043	-0.019
	(-0.36)	(-0.30)	(-0.13)
Equity Committee	-0.038	0.019	0.067
	(-0.18)	(0.11)	(0.45)
CEO Replaced	0.063	0.041	0.011
	(0.64)	(0.45)	(0.11)
DIP Financing	-0.019	-0.008	-0.001
	(-0.15)	(-0.07)	(-0.01)
Small	0.148		
	(0.66)		
Low Coverage		0.059	
		(0.22)	
Low IO			0.517*
			(1.91)
Constant	2.228***	1.933***	1.609***
	(3.11)	(4.11)	(3.03)
Observations	135	135	135
Industry FE	Yes	Yes	Yes
Year FE	Yes	Yes	Yes
Clustering	Yes	Yes	Yes
Adj. R-squared	0.130	0.110	0.134

Table 6: Cross-Sectional Analyses (continued)

Panel B: Bargaining Influence of Specific Constituencies

Dep. Var = Valuation Error	(1)	(2)	(3)	(4)
*PIQ*Creditor Committee*	0.137*			
	(1.86)			
*PIQ*Equity Committee*		0.356*		
		(1.91)		
*PIQ*DIP*			0.221*	
			(1.72)	
*PIQ*CEO Replaced*				0.182*
				(1.94)
PIQ	-0.298***	-0.255***	-0.277**	-0.353***
	(-5.27)	(-4.35)	(-2.32)	(-3.73)
Leverage	0.213	0.227	0.454	0.220
	(0.81)	(0.80)	(1.63)	(0.85)
Goodwill	0.358	0.264	0.335	0.341
	(0.70)	(0.37)	(0.52)	(0.54)
Earnings Volatility	0.048	0.015	0.056	0.012
	(0.46)	(0.15)	(0.49)	(0.11)
Fresh Start Accounting	-0.232	0.019	-0.065	-0.074
	(-0.76)	(0.05)	(-0.20)	(-0.21)
Pre-Bankruptcy Coverage	-0.006	-0.003	-0.011	-0.003
	(-0.51)	(-0.26)	(-0.97)	(-0.36)
Size	-0.073*	-0.136**	-0.100**	-0.120***
	(-2.09)	(-2.81)	(-2.20)	(-2.73)
Prepackaged Bankruptcy	0.040	-0.052	-0.002	-0.025
	(0.42)	(-0.48)	(-0.01)	(-0.19)
Secured Debt	-0.347*	-0.279	-0.243	-0.311**
	(-1.75)	(-1.35)	(-1.42)	(-2.03)
Creditor Committee	-0.325	0.035	-0.027	-0.049
	(-1.64)	(0.36)	(-0.18)	(-0.36)
Equity Committee	-0.023	-0.682*	-0.028	0.046
	(-0.15)	(-1.79)	(-0.18)	(0.28)
CEO Replaced	0.056	0.081	0.087	-0.264
	(0.63)	(0.77)	(0.81)	(-1.54)
DIP Financing	0.056	-0.064	-0.352	-0.007
	(0.49)	(-0.61)	(-1.26)	(-0.05)
Constant	1.990***	2.086***	1.835***	2.264***
	(5.87)	(4.28)	(3.17)	(5.14)
Observations	135	135	135	135
Industry FE	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes
Clustering	Yes	Yes	Yes	Yes
Adj. R-squared	0.131	0.143	0.120	0.127

Table 6: Cross-Sectional Analyses (continued)
Panel C: Valuation Experience of Financial Advisors and Bankruptcy Courts

Dep. Var = Valuation Error	(1)	(2)
*PIQ*Experienced Advisor*	-0.597*	
	(-1.75)	
*PIQ*Experienced Court*		-0.159*
		(-1.79)
PIQ	-0.041	-0.075
	(-0.19)	(-0.82)
Experienced Advisor	1.068**	
	(2.26)	
Experienced Court		0.275
		(1.22)
Leverage	-1.052*	0.208
	(-2.00)	(0.77)
Goodwill	-0.202	0.219
	(-0.14)	(0.35)
Earnings Volatility	-0.057	0.029
	(-0.18)	(0.29)
Fresh Start Accounting	-1.297	-0.155
	(-1.39)	(-0.48)
Pre-Bankruptcy Coverage	-0.004	-0.006
	(-0.33)	(-0.55)
Size	0.082	-0.087
	(0.92)	(-1.66)
Prepackaged Bankruptcy	-0.468**	0.002
	(-2.46)	(0.01)
Secured Debt	0.130	-0.312**
	(0.73)	(-2.45)
Creditor Committee	-0.111	-0.026
	(-0.65)	(-0.27)
Equity Committee	-0.219	-0.036
	(-0.74)	(-0.25)
CEO Replaced	0.049	0.042
	(0.12)	(0.49)
DIP Financing	0.140	0.026
	(0.51)	(0.24)
Constant	2.007*	1.633***
	(1.97)	(3.14)
Observations	75	135
Industry FE	Yes	Yes
Year FE	Yes	Yes
Clustering	Yes	Yes
R-squared	0.656	0.359

This table presents the results of OLS regression analyses examining the cross-sectional effects of peer information on court-approved plan valuation errors. Panel A presents the effects of firm's information environment, Panel B documents the effects of bargaining influence of different constituencies, and Panel C presents the effects of valuation experience of financial advisors and bankruptcy courts. The sample includes bankrupt firms that emerge as publicly traded firms over the 2000-2018 period. The list of bankrupt firms in the sample is obtained from the UCLA-LoPucki Bankruptcy Research Database and bankruptcydata.com. ***, **, and * denote significance at the 1%, 5% and 10% levels using two-sided tests, respectively. Variables are defined in Appendix A.

Table 7: Ex-Post Performance of Firms Emerging from Chapter 11

	(1)	(2)	(3)	(4)
	First Stage:	Second Stage:	First Stage:	Second Stage:
Dep. Var =	Over-Valuation	Ex-post ROA	Under-Valuation	Ex-post ROA
PIQ	-0.105*		-0.129*	
	(-1.70)		(-1.77)	
Over-Valuation		-0.700**		
		(-2.30)		
Under-Valuation				1.598
				(1.05)
Fresh Start Accounting	-0.466	1.438**	0.308	1.251*
	(-1.29)	(2.46)	(1.15)	(1.88)
Pre-Bankruptcy Coverage	-0.007	0.052	-0.002	0.052
	(-0.78)	(1.06)	(-0.21)	(1.01)
Size	-0.025	-0.288**	-0.067**	-0.155
	(-0.65)	(-2.29)	(-2.10)	(-1.45)
Prepackaged Bankruptcy	0.134	-0.941	-0.123	-0.846
	(1.42)	(-1.33)	(-0.89)	(-1.15)
Secured Debt	-0.215	-0.012	-0.049	0.315
	(-1.55)	(-0.01)	(-0.33)	(0.33)
Creditor Committee	0.009	0.326	-0.088	0.455*
	(0.08)	(1.31)	(-0.58)	(1.81)
Equity Committee	0.016	-0.130	-0.132	-0.090
	(0.14)	(-0.42)	(-0.79)	(-0.30)
CEO Replaced	-0.130	-0.602	0.234***	-0.767
	(-1.00)	(-1.63)	(2.97)	(-1.68)
DIP	-0.022	0.163	-0.057	0.316
	(-0.24)	(0.51)	(-0.54)	(0.70)
Constant	1.335***	1.798**	0.779**	0.045
	(3.28)	(2.40)	(2.05)	(0.06)
Observations	135	135	135	135
Industry FE	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes
Clustering	Yes	Yes	Yes	Yes
Adj. R-squared	0.217	0.125	0.0113	0.0925

This table presents the results of ex-post performance of firms emerging from bankruptcy. The sample includes bankrupt firms that emerge as publicly traded firms over the 2000-2018 period. The list of bankrupt firms in the sample is obtained from the UCLA-LoPucki Bankruptcy Research Database and bankruptcydata.com. ***, **, and * denote significance at the 1%, 5% and 10% levels using two-sided tests, respectively. Variables are defined in Appendix A.

Table 8: Robustness Tests

Panel A: Various Sensitivity Analyses

Dep. Var = Valuation Error	(1) Recession Period Excluded	(2) Court FE	(3) First Principal Component	(4) Pre-2005	(5) Post-2005	(6) Control for Competition (HHI Index)
PIQ	-0.180**	-0.181**	-0.145**	-0.321**	-0.170**	-0.221***
	(-2.32)	(-2.32)	(-2.47)	(-2.60)	(-2.25)	(-2.95)
Leverage	0.225	0.208	0.262	-0.125	-0.075	0.265
	(0.57)	(0.64)	(1.11)	(-0.14)	(-0.35)	(1.05)
Goodwill	-0.719	0.830	0.350	0.828	0.850*	0.276
	(-0.98)	(1.39)	(0.58)	(0.74)	(1.74)	(0.46)
Earnings Volatility	-0.038	-0.075	0.035	-0.121*	0.440***	0.016
	(-0.62)	(-0.95)	(0.37)	(-1.91)	(4.17)	(0.15)
Fresh Start Accounting	-0.157	0.117	-0.028	-0.116	-0.255	-0.032
	(-0.29)	(0.22)	(-0.08)	(-0.20)	(-0.52)	(-0.10)
Pre-Bankruptcy Coverage	0.005	-0.001	-0.004	-0.018	-0.004	-0.003
	(0.43)	(-0.07)	(-0.46)	(-0.45)	(-0.42)	(-0.35)
Size	-0.150***	-0.116*	-0.118***	-0.259***	0.047	-0.121***
	(-2.81)	(-1.81)	(-2.94)	(-3.19)	(1.25)	(-2.83)
Prepackaged Bankruptcy	-0.019	-0.062	-0.010	0.085	0.033	-0.039
	(-0.11)	(-0.34)	(-0.08)	(0.42)	(0.14)	(-0.33)
Secured Debt	-0.343	-0.376*	-0.302*	-0.527**	-0.087	-0.295*
	(-1.58)	(-1.89)	(-1.91)	(-2.23)	(-0.40)	(-1.92)
Creditor Committee	0.040	-0.087	-0.030	-0.204	-0.130	-0.027
	(0.26)	(-0.48)	(-0.21)	(-0.70)	(-0.69)	(-0.19)
Equity Committee	-0.067	0.015	0.061	0.147	0.251	0.056
	(-0.29)	(0.07)	(0.38)	(0.44)	(0.98)	(0.32)
CEO Replaced	0.129	-0.037	0.048	0.170	-0.012	0.041
	(0.91)	(-0.29)	(0.51)	(0.97)	(-0.08)	(0.48)
DIP Financing	-0.030	-0.110	0.005	0.356	0.020	0.017
	(-0.19)	(-0.63)	(0.04)	(1.09)	(0.16)	(0.14)
Industry Competition						-1.308
						(-0.73)
Constant	2.213***	1.954***	1.529***	3.180***	0.870*	2.043***
	(3.44)	(3.78)	(3.73)	(3.84)	(1.72)	(4.12)
Observations	102	135	135	57	78	135
Industry FE	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Court FE	No	Yes	No	No	No	No
Clustering	Yes	Yes	Yes	Yes	Yes	Yes
Adj. R-squared	0.179	0.162	0.114	0.220	0.126	0.120

Table 8: Robustness Tests (continued)

Panel B: Alternative Standard Error Methods

Dep. Var = Valuation Error	(1)	(2)	(3)	(4)
PIQ	-0.167	-0.176	-0.187	-0.202
Cluster by Industry p-value	0.000	0.000	0.001	0.006
Cluster by Year p-value	0.002	0.002	0.010	0.024
Robust p-value	0. 003	0.001	0.001	0.005
Wild Bootstrapped p-value	0.001	0.001	0.001	0.001
Observations	135	135	135	135
Controls	No	Yes	Yes	Yes
Industry FE	No	No	Yes	Yes
Year FE	No	No	No	Yes
Adj. R-squared	0.0658	0.129	0.112	0.125

This table presents the results of robustness analyses. Panel A presents the results various robustness analyses. Panel B presents the results using different methods to estimate standard errors. The sample includes bankrupt firms that emerge as publicly traded firms over the 2000-2018 period. The list of bankrupt firms in the sample is obtained from the UCLA-LoPucki Bankruptcy Research Database and bankruptcydata.com. ***, **, and * denote significance at the 1%, 5% and 10% levels using two-sided tests, respectively. Variables are defined in Appendix A.