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Creditor Coalitions in Bankruptcy

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Abstract

We provide a first look at the economics of creditor coalitions in U.S. Chapter~11 bankruptcies using novel coalition membership and holdings data. We find that coalition formation intensities are correlated with variables such as debt size, creditor dispersion, creditor type, market liquidity, and creditor familiarity. Bond prices increase following coalition announcements, suggesting that markets associate coalitions with improved recovery. Using a landmark 2017 court ruling, we show that weakened creditor protections are associated with increased coalition formation and class recovery, but also more litigious and lengthier bankruptcy proceedings. Our results shed light on key factors affecting creditor coordination behavior.

Keywords: Distressed debt, ad-hoc creditor groups, Chapter 11, hedge funds, Peabody ruling, bond recoveries, creditor-on-creditor violence

JEL Classifications: G33, G34, G11, G32, D71, K22

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Creditor Coalitions in Bankruptcy*

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We provide a first look at the economics of creditor coalitions in U.S. Chapter 11 bankruptcies using novel coalition membership and holdings data. We find that coalition formation intensities are correlated with variables such as debt size, creditor dispersion, creditor type, market liquidity, and creditor familiarity. Bond prices increase following coalition announcements, suggesting that markets associate coalitions with improved recovery. Using a landmark 2017 court ruling, we show that weakened creditor protections are associated with increased coalition formation and class recovery, but also more litigious and lengthier bankruptcy proceedings. Our results shed light on key factors affecting creditor coordination behavior.

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1 Introduction

Coordination problems are ubiquitous in corporate bankruptcy cases.[1] In a typical U.S. Chapter 11 bankruptcy case, multiple classes of dispersed creditors bargain with the debtor and with each other over shares of a relatively fixed pie. Effective bargaining in this setting requires strong coordination among creditors to avoid free-riding, hold-up, and information frictions, among others. However, despite the central role of coordination issues in bankruptcy, little is currently known about the frequency and efficacy of creditor coordination within U.S. Chapter 11 cases.

Our paper fills this gap. To identify creditor coordination, we collect novel data from court filings on creditor holdings and creditor group membership in U.S. Chapter 11 bankruptcy proceedings. We use this data to explore creditor coalition formation in U.S. Chapter 11 cases. Economic theory suggests that coalitions can be self-sustaining as long as the coalition is as efficient as any subset of its partitions, whether individual agents or subgroups of agents (see, e.g., Demange, 2005).[2] Applied to bankruptcy, this logic suggests that creditors should coordinate by forming groups if and only if coordinating creditors can achieve similar or better recoveries relative to individual blockholders at a lower effective cost. As such, the existence or absence of creditor coalitions within/across bankruptcy cases (along with their characteristics) may provide clues about the main factors associated with the value of creditor coordination in corporate bankruptcies.

To identify such factors, we must isolate creditor groups that arise due to specific characteristics of the bankrupt firm or its claims. Many creditor groups in Chapter 11 cases are official creditor committees that are formed *by law* as part of the bankruptcy process, with

[1] See, e.g., Bolton and Scharfstein (1996) and Bris and Welch (2005).

[2] In cases where all agents find it optimal to join a single group, the setting is said to be superadditive. However, any number of assumptions can cause superadditivity to break down and can cause agents to form multiple groups or no groups at all (Demange, 2005). In the case of bankruptcy, anecdotal evidence suggests that a wide range of outcomes are observed, ranging from no groups to the existence of one large group containing many creditors investing in a single class of claims.

committee members approved by the U.S. bankruptcy trustee. Because such groups do not form endogenously, official creditor committees are arguably of limited value in isolating the factors related to creditors' coordination incentives.[3] However, recent years have witnessed the rise of so-called "ad hoc" creditor committees, which arise endogenously and are not subject to strict legal or fiduciary requirements, making such committees potentially more appealing to "active" creditors such as hedge funds (Waldock, 2022). Perhaps for this reason, ad hoc coalitions have exploded in popularity, with more than 84% of cases within our sample period having at least one ad hoc creditor group.[4] According to leading bankruptcy lawyers, "[i]t is not an overstatement to declare that ad hoc committees now rule the restructuring world" (Peck, 2020, p.2). Since these creditor coalitions are both informal and voluntary, they can be used to identify the factors associated with creditor coordination incentives in bankruptcies.[5]

To identify such factors, we augment standard bankruptcy datasets with novel data on ad hoc group membership and holdings based on court-required regulatory disclosures. These disclosures stem from a December 2011 amendment to Rule 2019 of the U.S. Bankruptcy code, which created a consistent mandatory requirement for members of ad hoc groups to disclose their identities, holdings, and other relevant information.[6] To the best of our knowledge, our study is the first to utilize this post-2011 data to examine the formation of ad hoc groups and its implications for bankruptcy outcomes.

We begin by providing basic descriptive evidence regarding creditor coalitions in Chapter 11 bankruptcy cases. Guided by a stylized model of coalition formation incentives, we show that coalition formation intensities are increasing in case (and class) total liabilities,

[3]In addition, creditors serving on official committees are subject to enhanced responsibilities, such as the fiduciary duty to general unsecured creditors, and trading restrictions. These restrictions often deter hedge funds from participating in the official committees.

[4]For example, in the case of SandRidge Energy, which filed for Chapter 11 protection on 5/16/2016, there were ad hoc committees for second-lien secured and unsecured bond holders. The second-lien secured group consisted of 11 hedge funds holding 68% of the class, while the unsecured group consisted of four hedge funds holding 44% of the unsecured class. See Appendix A for more details.

[5]We believe it is also independently interesting to explore the characteristics of ad hoc committees. Peck (2020, p.2) writes that "learning about the inner workings of these informal and opaque [ad hoc] committees is essential to a better understanding of the global restructuring market."

[6]Prior to December 1, 2011, different courts interpreted the scope of Rule 2019 in different ways. The 2011 amendments to Rule 2019 clarified the scope of the rule nationwide and made disclosure requirements mandatory for ad hoc creditor committees. See https://natlawreview.com/article/supreme-court-adopts-amended-bankruptcy-rule-2019 for further details.

increasing in the number of creditors (as proxied by the fraction of bond debt in the capital structure and the number of mutual funds investors), decreasing in the fraction of debt held by banks in the capital structure, increasing in price impact, and increasing in the average past familiarity between creditors in the sample.[7] These correlations match the correlations predicted by our model, which focuses on creditors' tradeoff between achieving value improvements through coalition formation versus directly purchasing the bankrupt company's claims. While these results are purely suggestive, they support the idea that coalitions are more likely to form when it is costlier for individual creditors to obtain bargaining power on their own.

To extend our understanding of creditor coalition formation beyond correlations, we need to identify a setting containing unexpected news about either coalition formation incentives or intensities. We identify two such settings. First, we explore the value implications of creditor groups by performing an event study analysis around group formation announcements using bond price data from the Trade Reporting and Compliance Engine (TRACE) database. These tests use plausibly unexpected news about group formation to estimate the extent to which markets believe group formation will affect bankruptcy outcomes. Consistent with group formation being associated with value improvements, we find that markets expect recovery rates to improve after groups are formed: group announcements in a given creditor class are associated with an abnormal daily return of 69 basis points (bps) on bonds of the same class and an abnormal return of 58 bps on bonds of other classes of the same firm. This result suggests that markets expect creditor groups to boost not only expected recoveries in the group's own class, but also to boost the recoveries of other classes.

We next examine a plausibly exogenous shock to coalition formation incentives stemming from a landmark 2017 bankruptcy court ruling (Peabody Energy Corporation, or *Peabody*). The Peabody ruling significantly weakened long-standing equal-treatment protections in the U.S. bankruptcy code by allowing restructuring plans to grant preferential

[7]The intuition behind our model is that in equilibrium, creditors will form ad hoc coalitions when the net benefit of doing so exceeds the net benefit of increasing bargaining power by purchasing a "blocking position" (or a controlling stake) in a given class of claims. While our empirical results are simply correlations, the magnitudes are large; for example, a one-standard-deviation increase in leverage is associated with a 27.9% increase in the fraction of debt held by ad hoc coalitions.

treatment to certain creditors or creditor groups within a specific creditor class.[8] This ruling arguably increased the marginal benefit of joining or forming a large, influential group, since large groups typically have greater negotiating leverage with the debtor, the judge, and other creditors. As such, we argue that the Peabody ruling – which was widely unexpected – should be followed by increases in group participation, average group size, and the formation of influential groups with significant bargaining power. In addition, we argue that the Peabody ruling should have a stronger effect on cases or classes with *larger* total pre-petition indebtedness (the "treatment" group), as these are the scenarios where it would be most expensive for individual creditors to obtain bargaining power by directly purchasing claims. As such, a weakening of creditor protections in these cases and classes should arguably be associated with stronger group formation incentives after the Peabody ruling relative to other, smaller-sized cases and classes (the "comparison" group).

For this setting to yield convincing evidence, the treatment and comparison groups must exhibit parallel trends prior to the Peabody ruling, the ruling must not have been anticipated, the treatment group definition must be exogenous with respect to the Peabody ruling, and any Peabody-related changes in bankruptcy outcomes must have occurred because of changes in *group formation* caused by the ruling (and not other factors). We argue that such conditions are met in our setting. First, we provide evidence of parallel trends prior to the ruling. Second, we do not observe any changes in group formation before the Peabody ruling was announced, suggesting (along with anecdotal evidence) that the ruling was not anticipated. Third, we define our treatment group well before the Peabody ruling, and in one test, before Peabody even filed for bankruptcy. Finally, we report *class-level* evidence suggesting that larger debt size predicts higher creditor group formation following Peabody (which in turn correlates with outcomes), but indebtedness does not predict changes in other covariates after Peabody that are correlated with changes in outcomes. This suggests that the most likely cause of differential bankruptcy outcomes following Peabody is the shock to

[8]Section 1123(a)(4) of the bankruptcy code requires all creditors in a given class to receive the same "treatment" under restructuring plans. *Peabody* made it legal for some creditors in a class to receive additional economic benefits as part of a court-approved plan, provided the additional benefits are not directly related to creditors' holdings of pre-petition claims. As the leading law firm Cadwalader, Wickersham, and Taft plainly stated, "Peabody ... suggest[s] that debtors have considerable latitude to provide special treatment to particular creditor groups in exchange for support, so long as this unequal treatment plausibly can be characterized as being in exchange for some form of 'new value' contribution" (Bagby et al., 2020, p. 36).

group formation incentives.

We present evidence that the Peabody ruling differentially increased group formation incentives in more indebted cases and classes, and that such an increase in group formation likely affected recoveries and case lengths following the ruling. First, we find that group formation intensities are indeed higher after Peabody for "treated" (larger) cases and classes. Interestingly, while we find that the increase in class-level recoveries post-Peabody is relatively higher in larger classes, we also find significant increases in overall case length and docket size after Peabody for larger cases. One interpretation is that the Peabody ruling and the corresponding increase in creditor groups has also resulted in increased creditor-on-creditor violence within classes, as powerful creditor groups attempt to prey on smaller, less-powerful creditors and creditor groups. Thus, while group formation appears to be associated with improved recovery rates, it may have a dark side as well.

Overall, our findings suggest that creditor coalitions play an important role in the Chapter 11 restructuring process, a role that to date has largely escaped attention from the academic literature. Our event study and quasi-natural experiment confirm that creditors and markets seem to pay attention to creditor groups and group formation incentives, and that creditor coalitions can have meaningful effects on bankruptcy outcomes. As such, our paper's evidence supports the practitioner view that creditor coalitions "have become leading actors in global restructurings" and have claimed a role as "essential market participants" (Peck, 2020, pp.1-2).

Although our analysis focuses on group formation activities *after* a firm has filed for Chapter 11 petition, we also find a positive correlation between post-petition group formation activities and the presence of pre-petition creditor coordination, as proxied by a restructuring support agreement (RSA) or a prepackaged filing. A natural interpretation is that informal coordination before a petition is filed often continues (and becomes formalized) after the petition is filed. This suggests that the central tradeoff in our model, that between coordination and buying claims, may also operate in pre-petition settings, with many of the same forces potentially at play.

The rest of the paper is structured as follows. Section 2 describes related literature and our contribution to this literature. Section 3 provides institutional background on creditor

coalitions and Chapter 11 more generally. Section 4 introduces factors potentially correlated with group formation that are motivated by our stylized model. Section 5 describes our data and summary statistics. Section 6 presents our main empirical results, Section 7 considers additional analysis for robustness, and Section 8 concludes.

2 Related literature

Our paper relates to several strands of the literature on bankruptcy, coalitions, and investor activism. First, the paper contributes to the emerging literature on ad hoc creditor groups. Ellias (2018) examines creditors' trading behavior in large Chapter 11 cases between 2002 and 2012 and shows that activist/ad hoc investor groups typically form towards the beginning of bankruptcy cases and tend to be stable over time. Lim (2015) examines the general involvement of hedge funds in restructuring from 2001–2011 and documents hedge fund participation in official and ad hoc creditor committees as one of several ways that hedge funds can influence bankruptcy outcomes. Relative to these studies, our paper contributes by focusing specifically on ad hoc creditor coalitions, developing a stylized model of coalition formation, and empirically examining both factors associated with coalition formation and the effects of coalitions on various bankruptcy outcomes. To our knowledge, our paper is the first to examine the factors correlated with creditor group formation, the first to measure the market reaction to creditor group formations, and the first to examine the relationship between creditor groups and bankruptcy outcomes. Our paper is also the first to utilize post-2011 disclosure data from the amended Rule 2019, which created uniform reporting requirements for members of ad hoc creditor groups.

Our work also adds to the voluminous literature on restructuring and bankruptcy (see Hotchkiss, Thorburn, and Wang, 2023 for a recent survey). For example, our results on creditor concentration and group formation intensities complement existing theoretical (Bolton and Scharfstein, 1996; Bris and Welch, 2005; Zhong, 2021) and empirical (Ivashina, Iverson, and Smith, 2016; Giannetti and Meisenzahl, 2023) work on creditor concentration and debt ownership structure by showing that creditor coalitions can potentially improve bargaining

outcomes in cases or classes with dispersed ownership.[9] Our results linking creditor coalitions to both market-driven recovery expectations and court-approved recovery rates complement a significant literature on recovery rates in Chapter 11 bankruptcy (see, e.g. Hotchkiss and Mooradian, 1997, Demiroglu, Franks, and Lewis, 2022, and Seth, 2022). In addition, our results on coalitions are related to recent work on creditor-creditor and creditor-debtor conflicts in bankruptcy (see, e.g., Dou, Taylor, Wang, and Wang, 2021, Buccola and Nini, 2022, and Antill, Wang, and Jiang, 2024).[10] Specifically, we show that while creditor groups appear to largely improve dispersed creditors' bargaining positions, they may also lead to additional creditor conflicts that increase litigation and delay debtors' exits. Moreover, our result about how different creditor types (e.g., bank vs. hedge fund creditors) correlate with group formation is related to Li and Wang (2016), who document the difference in restructuring activities between loan-to-loan creditors (typically banks) and loan-to-own creditors (typically activists hedge funds and private equity funds). We also contribute to the bankruptcy literature by utilizing a novel identification strategy (the unexpected Peabody court ruling) as a shock to creditor protections in Chapter 11 cases.

Finally, our paper relates to the literature on investor coalitions outside of bankruptcy. For example, Zwiebel (1995), Pi (2020), Doidge, Dyck, and Yang (2021), and Brav, Dasgupta, and Mathews (2022) theoretically model investors' collective action problems and the factors that lead to the formation of investor coalitions. While the specific setups in these models differ, all suggest that coordination among investors can potentially lead to more profitable investments or higher firm value. We provide empirical evidence consistent with the broad themes of these models.[11] We also contribute to this literature by hypothesizing and testing a unique trade-off between buying claims and group formation, which we believe is a salient

[9] Other recent theories of bankruptcy such as Povel (1999), Antill and Grenadier (2019), and Donaldson, Morrison, Piacentino, and Yu (2020), while broadly related to our paper, do not specifically address coalition formation.

[10] Our paper is also broadly related to other restructuring topics such as auctions in bankruptcy (Thorburn, 2000; Gilson, Hotchkiss, and Osborn, 2016; Antill, 2022), the role of hedge funds in bankruptcy (Jiang, Li, and Wang, 2012; Lim, 2015), the value of control for vulture claims (Feldhütter, Hotchkiss, and Karakaş, 2016), the assignment of lawyers and judges (Goyal, Madsen, and Wang, 2021; Hüther and Kleiner, 2022), Debtor-In-Possession financing (Eckbo, Li, and Wang, 2023), exit financing as gifting (Miller, 2025), and dealer intermediation (Baumann, Kakhbod, Livdan, Nazemi, and Schürhoff, 2025).

[11] While our setting is different, our work is also broadly consistent with the literature on investor networks, which has generally found that better-connected investors tend to make more profitable investments (see, e.g., Hochberg, Ljungqvist, and Lu, 2007, Cohen, Frazzini, and Malloy, 2008, and He and Li, 2022).

but previously overlooked feature of restructuring activism.

3 Institutional background

Chapter 11 of the U.S. Bankruptcy Code offers a legal pathway for businesses in financial distress to reorganize and restructure their debts. This form of bankruptcy is distinct in that it primarily targets reorganization rather than liquidation (Chapter 7). In Chapter 11 bankruptcy, debtors and creditors file reorganization plans with the court. Each plan's approval is determined by a voting process involving different classes of creditors. Each class votes separately on the proposed reorganization plans. For a class to accept a plan, it must receive affirmative votes from at least two-thirds in value and one-half in number of the claim holders in that class. This voting structure means that a creditor or creditor group owning *one-third* or more of the claims of any class can effectively block a restructuring plan from being approved (Altman, Hotchkiss, and Wang, 2019).

The market for distressed claims includes bonds, bank loans, trade credit, and other claims such as tort claims or derivatives. Bonds in this market are generally traded over-the-counter through large broker-dealers and are reasonably liquid. A robust secondary market for distressed loans also exists, which has gained momentum since the 1990s with the establishment of the Loan Syndications and Trading Association (LSTA) and the Loan Pricing Corporation (LPC) (Altman, Hotchkiss, and Wang, 2019).

Hedge funds play a significant role in Chapter 11 bankruptcies. Many hedge funds buy distressed assets at a discount and profit from the eventual restructuring or liquidation of the debtor. These activities are often passive. However, some hedge funds actively attempt to influence bankruptcy negotiations, plan proposals, and voting outcomes (Jiang, Li, and Wang, 2012; Lim, 2015). For example, one strategy used by such funds is to accumulate a blocking position (by owning more than a third of the claims in a given class) and then leverage their blocking position to increase the recovery of the claims they own (Hotchkiss and Mooradian, 1997). We refer to such funds as "active vulture funds."

3.1 Ad hoc creditor groups

Rather than purchasing claims, active vulture funds and passive creditors can also form ad hoc creditor groups that use their *collective* ownership to influence the court, the debtor, and other creditors. Walsh and Rowles (2020) provide a detailed overview of ad hoc group formation which we summarize below; a detailed example of group formation in the case of SandRidge Energy is summarized in Appendix A.

An ad hoc committee is defined as an "unofficial committee" of creditors or equity interest holders with similar claims or interests who unite to collaborate in a bankruptcy case. Distinct from "official committees," these ad hoc committees are not formally appointed by the United States Trustee or the bankruptcy court and often contain entirely different types of creditors.[12] Importantly, unlike official committees, ad hoc groups represent only *their members'* interests rather than the interests of the broader creditor class as a whole.

While ad hoc committees are informal, their existence is often formalized through engagement letters with legal counsel. Upon establishment, these groups act collectively in future court proceedings. The composition of such groups can vary across cases and classes, but often includes both active vulture funds and passive creditors. Key decisions within the committee might be assigned to a selected subset of members or might be decided through supermajority voting, whereby two-thirds or three-quarters of group members based on holdings must agree before a decision is taken. Committees often incur expenses for legal, financial, and other advisory services, with these expenses typically shared among members proportionally to their respective interests in the relevant debt.

Creating or joining an ad hoc coalition provides creditors with numerous potential benefits. First, the relative bargaining power of the group should be greater than the independent bargaining power of each individual member. Second, ad hoc group members can share legal and advisory costs, making it more economically feasible for these creditors to assert their rights and interests. Third, members of an ad hoc group can share information and opinions that can collectively improve the group's bargaining power and/or can

[12] In our sample, official unsecured creditor or equity holder committees mostly consist of large trade creditors (67%); hedge funds only constitute 9% of official committee members. In contrast, 81% of group members in ad hoc creditor committees are hedge funds.

increase the value of the restructured firm. This collective effort is likely to be more effective than individual efforts because it reduces the tendency for free-riding and leverages the complementary nature of creditors' expertise.

However, joining an ad hoc coalition also has costs. First, members of ad hoc groups are subject to the Federal Rule of Bankruptcy Procedure 2019 (Rule 2019), which requires any entity or committee representing more than one creditor or equity security holder to disclose information about its claims. The amendments to Rule 2019, effective on December 1, 2011, significantly enhanced its disclosure requirements and clarified that the rule applies to ad hoc committees. More specifically, the amended rule requires each committee that represents multiple creditors or equity security holders in court to file a disclosure statement about (1) the identity of the group members, and (2) the nature and amount of holdings of each group member.[13] Ad hoc group members are also subject to a series of (often severe) trading restrictions: if an ad hoc group decides to obtain material non-public information about the debtor, group members may not be able to trade their positions without restriction. Finally, despite acting as a group, ad hoc members may still have conflicting interests due to creditors' diverse viewpoints and objectives.[14] Joining a group to act collectively may imply giving away some personal interests in the ultimate restructuring plan.

Trade-offs between group formation and buying claims

An alternative to group formation is for a single creditor to simply purchase securities from other creditors. In doing so, the creditor could obtain similar bargaining power relative to the alternative of forming a group. However, there are trade-offs to this approach. On the one hand, the claims might be expensive to purchase, as sellers should optimally set prices such that they will be able to obtain most or all of the purchaser's expected bargaining rents. In addition, the creditor would be responsible for all expenses related to the bargaining process and would not be able to share expenses (or knowledge) with other creditors. On the

[13] "Represents" means "to take a position before the court or to solicit votes regarding the confirmation of a plan on behalf of another." See https://www.law.cornell.edu/rules/frbp/rule_2019 for the formal rule.

[14] For example, vulture funds holding secured term loans may prefer to receive the new equity after emergence, while commercial banks holding the same loan may prefer to receive new debt. Conflicts of interest may also arise due to cross-holding of another position and different "buy-in" prices. See Sum and Hollingshead (2020, p. 28).

other hand, the consolidating creditor would not be required to disclose their positions under Rule 2019. In equilibrium, each creditor will assess the expected net benefits from group formation versus attempting to consolidate claims through open-market transactions, and will choose the option that gives them the highest expected payoff in present value terms.

3.2 Peabody ruling

In our analysis, we also consider an important court ruling in 2017 that significantly changed the landscape and incentives around group formation in bankruptcy. Peabody Energy Corporation filed for bankruptcy on April 13, 2016 and emerged from bankruptcy in April 2017. Peabody's restructuring plan was confirmed on March 17, 2017, in a landmark ruling that normalized debtors' ability to offer differential treatment to different creditors within the same class of claims, altering the traditional norm of equal treatment across creditors within a single class of claims. In the Peabody ruling, more favorable treatment was afforded to certain creditors who agreed to support the proposed reorganization plan. Dissenting creditors argued that the plan failed to provide the "same treatment" to all claims within "a particular class," as required by section 1123(a)(4) of the Bankruptcy Code. The bankruptcy court ruled in favor of the consenting creditors and against the dissenting creditors, effectively supporting differential treatment to creditors holding the same class (see Appendix B for details of the ruling).

In recent years, the ruling has led to a phenomenon termed "exclusive opportunism" whereby certain creditors are offered financial opportunities not available to all creditors of the same class in return for their support of the debtor's reorganization plan.[15] Initially considered an outlier, the Peabody case has since evolved into a standard strategy for debtors.[16] Since the ruling, practitioners and scholars have raised concerns about the negative conse-

[15] According to Miller (2025), "There is a throughline from Peabody to LATAM to ConvergeOne with Peabody providing permission to discriminate, LATAM refining the legal support, and ConvergeOne wrapping it up in a prepackaged case."

[16] See https://creditorcoalition.org/the-peabody-award-exclusive-opportunism-in-bankruptcy/. A few similar rulings followed the Peabody ruling, including the *In re TPC Group Inc. (Del 2022)*, where favored creditors were given exclusive opportunity to purchase 45% of $450 million exit financing; *In re LATAM Airlines Grp. S.A. (SDNY 2022)*, where favored creditors were given exclusive right to purchase 50% of $3.269 billion private placement; *In re Grupo Aeromexico, SAB (SDNY 2022)*, where favored creditors were given exclusive right to purchase $580 million of $720 million rights offering.

quences of disparate intra-class creditor treatment, and in particular, whether this ruling has contributed to the sharp rise in "creditor-on-creditor violence" within creditors of the same class (Buccola and Nini, 2022; Antill, Wang, and Jiang, 2024; Miller, 2025).[17] Many recent bankruptcies have seen warfare between the "majority group creditors" with larger holdings and "minority group creditors" with smaller holdings, where the former leveraged their strong bargaining power to achieve higher recoveries at the latter's expense.[18]

In this study, we are interested in the potential implications of the Peabody ruling for group formation and bankruptcy outcomes. The ruling potentially amplifies the influence of majority creditors over minority ones within the same class, suggesting a strategic shift towards forming larger, more dominant groups. This trend towards bigger alliances could significantly alter the landscape of creditor negotiations post-Peabody. Our empirical analysis delves into these dynamics, among other effects, to understand the broader implications of the ruling on group formation strategies and outcomes in bankruptcy cases.

4 Group formation hypotheses

4.1 Factors correlated with group formation

Our main set of hypotheses examines factors correlated with group formation. To guide our hypotheses, we construct a stylized model with one activist and multiple non-activist creditors within the same class (detailed in Appendix C). The activist can increase class-level recoveries if he/she controls a sufficient amount of claims, while non-activists cannot improve recovery on their own. There are two competing strategies for the activist to achieve a controlling position: (1) buying claims from non-activist creditors, or (2) forming a group with non-activists and acting as a single entity in court.

Our model predicts that group formation intensity is stronger when it is less costly for the activist to form groups than to purchase claims. In the model, this occurs under the

[17] Buccola and Nini (2022) document the controversial "drop-down" and "uptiering" practices that favored a subset of creditors against of the rest of the creditors in the same class. Miller (2025) argues that the preferential treatment to a subset of creditors within a class in exit financing is a new form of gifting. Antill, Wang, and Jiang (2024) build a model on the out-of-court "creditor-on-creditor violence" among secured creditors and show that the creditor-conflict trend could increase investment and ex-ante firm value.

[18] See www.debevoise.com/-/media/files/insights/publications/2023/06/rbfs_article_june2023.pdf.

following five scenarios:

1. **The size of the debt class is sufficiently large.**

   All else equal, an activist seeking a controlling stake in a large ($) class of claims will need more capital and will need to make larger purchases, leading to higher trading expenses. Thus, we would expect higher group formation intensities when the dollar size of the class is large or when the debtor has higher leverage (and thus, a higher dollar value of claims outstanding).

2. **The number of creditors is sufficiently large.**

   Intuitively, greater creditor dispersion implies that the activist likely owns a smaller fraction of the class. Therefore, the activist will need to purchase more claims from a wider range of creditors, which will be more expensive. This suggests that group formation intensity should be higher when creditor dispersion is higher.

3. **The fraction of debt held by non-banks is high.**

   Non-activists often value defaulted claims at a discount—for example, banks often sell defaulted debt at a discount to avoid high capital requirements. This allows activists to purchase claims inexpensively from non-activists and reduces the need to form a group. Hence, group formation intensity should be higher when the fraction of debt held by banks is low.

4. **Illiquidity is high.**

   All else equal, higher illiquidity will produce larger price impacts, making the process of obtaining a controlling position increasingly costly. As such, we would expect higher illiquidity to be associated with an increased intensity for group formation.

5. **Creditor familiarity is high.**

   Intuitively, if creditors are more familiar with one another from past restructuring experiences, they will be able to generate higher joint productivity given the same effort cost (relative to potential groups consisting of less-familiar creditors). Thus, group formation intensity will be an increasing function of creditor familiarity.

4.2 Bankruptcy outcomes

We are also interested in whether group formation affects average bankruptcy outcomes, such as recovery rates, bankruptcy delays, and the volume of litigation. Group formation leads to the consolidation of claims, which in turn should reduce free-riding among creditors and increase restructuring effort, leading to higher firm value. On the other hand, the consolidation of debt ownership also gives rise to increased bargaining effort, leading to higher rent extractions from other creditors. Meanwhile, heightened bargaining across creditors may come at the expense of additional litigation and longer case lengths, since it is likely to induce higher levels of creditor-on-creditor and creditor-on-debtor fighting. Ultimately, we view the question of how ad hoc creditor groups affect bankruptcy outcomes as largely an empirical one.[19]

5 Data and summary statistics

5.1 Sample and data

We obtain our sample of bankruptcy cases from the Florida-UCLA-LoPucki Bankruptcy Research Database (LoPucki BRD). Our sample period is from January 1, 2016 to December 31, 2021. The LoPucki BRD includes data on all large, public company bankruptcies, such as the length of each bankruptcy case, asset size, and total liabilities. A company is considered "public" if it filed an Annual Report (form 10-K or form 10) with the Securities and Exchange Commission within the three years before the filing of the bankruptcy case. A company is considered "large" if the last Annual Report within the three years before the filing date reported assets worth $100 million or more, measured in 1980 dollars. We limit our sample to Chapter 11 cases but exclude four cases for which we cannot find accurate holding data and group formation data.[20] The sample size is 171 cases, which is consistent

[19] Our model predicts that recovery is higher when group formation is chosen by the activist compared to when neither buying claims nor group formation occurs. However, recovery under group formation may not always exceed recovery under buying claims because the activist selects whichever option is more profitable. This endogenous selection ensures that each scenario's recovery reflects the best possible outcome for the activist. As a result, the equilibrium recoveries in these two cases are likely similar.

[20] The dropped cases are Chesapeake Energy Corporation, J. C. Penney Company, Inc., Paragon Offshore plc (2017), and First NBC Bank Holding Company.

with the sample sizes of other studies of the bankruptcy process (e.g., Ivashina, Iverson, and Smith, 2016; Demiroglu, Franks, and Lewis, 2022).

We obtain data on group membership, group formation dates, and creditor holdings from the federal PACER (Public Access to Court Electronic Records) system based on post-2011 creditor disclosures under Rule 2019 of the bankruptcy code. We also obtain data on debtors' capital structure, the number of legal documents filed, and rights offerings from PACER. In addition, we search through notices of appearance, restructuring/plan support agreements, and disclosure statements to identify (1) creditors who took an active position in court but were not ad hoc group members, and (2) ad hoc groups that never filed under Rule 2019 because they never took a position in court.[21] We further verify these variables using the Restructuring Data product offered by the private data provider Debtwire.

We also use data from a number of other sources. We obtain data on recovery rates for each claim from BankruptcyData, which extracts this information from the disclosure statements and plans filed in PACER. We use data from Capital IQ to manually obtain CUSIPs for each bond in our sample based on coupon rates and maturity dates. We also manually match 751 prepetition debt instruments in our sample from PACER to Capital IQ Debt Structure database to obtain the dynamic debt structure of each firm. We combine COMPUSTAT and Capital IQ to find the historical total debt sizes. We obtain price and trading volume information from TRACE (standard and enhanced) and use this data to construct measures of price impact, transaction costs (i.e., bid-ask spreads), holding return around the announcement date of group formation, and average bond price near the confirmation date. We use the ICE BofA US High Yield Index Total Return Index Value downloaded from the St. Louis Fed website as the benchmark return of distressed bonds to calculate the abnormal return around the announcement dates of group formation.[22] We use CRSP Mutual Fund data to obtain a measure of creditor holding dispersion, which represents the number of mutual funds who hold claims issued by a bankrupt firm. We use I/B/E/S

[21]The case of (2) is mostly likely to arise in prepackaged cases or plan sales, where most group restructuring activities are likely done before the bankruptcy filing. Out of 57 cases being either plan sales or prepackaged, we find: Rule 2019 reports of group membership and holdings in 40 cases; group membership (but without holdings) in 9 cases, group identity (but without membership or holdings) in 2 cases, and no group information in 6 cases, all by searching through legal documents other than Rule 2019 reports.

[22]https://fred.stlouisfed.org/series/BAMLHYH0A0HYM2TRIV.

database to find the analyst forecast dispersion and coverage. Lastly, we use TreasuryDirect data to find the total amount of Treasury bonds and notes purchased by primary dealers, as a measure of illiquidity of the distressed claim markets.

5.2 Main variables

In this subsection, we outline the key variables used in our empirical analysis (a complete list of variables is provided in Appendix D). We construct these variables at three levels of granularity: the bankruptcy case level, the case-class level, and the CUSIP level. A "case-level" variable is derived using data from all creditor classes within a single bankruptcy case. A "case-class level" variable is created at the level of an individual creditor class within a specific bankruptcy case. Finally, a "CUSIP-level" variable is constructed at the bond level, applicable exclusively to publicly traded bonds.

Within each bankruptcy case, we divide pre-petition instruments held by creditors into five general creditor classes: first-lien secured (if the claim is secured and first lien), non-first-lien secured (if the claim is secured but not first lien), unsecured, equity, and other. In addition, we categorize debtor-in-possession (DIP) financing as a separate class. See Appendix E for the formal definition of these six creditor classes and Figure 3 for an illustration of their seniority within a given case.

5.2.1 Measures of group formation

We measure the group formation intensity (the importance of groups for a case or class) using four proxies. At the case level, we use the fraction of total debt collectively held by all ad hoc group members (*GroupHolding%*). At the case-class level, we use the following three proxies: the fraction of total debt of the class held by all ad hoc group members (*GroupHolding%Class*); an average ad hoc group's holding fraction of a class (*GroupSize-Class*); and an indicator of whether there is at least one influential ad hoc group in the class, i.e., holding more than 1/3 of the class (*ClassInfluGroup*).

5.2.2 Factors correlated with group formation

Our stylized model suggests that group formation intensites are associated with variables such as debt size, creditor dispersion, creditor type, market liquidity, and creditor familiarity. We construct proxies for each of these variables. To measure debt size, we use *Leverage* at the case level and *LnPrinClass* (natural log of total principal of the class's debt) at the case-class level. To measure creditor holding dispersion at the case level, we use *Bond%* (fraction of the firm's debt held being bonds) and *LnNumOfMF* (natural log of the number of mutual fund creditors who hold the firm's claims). The case-class level measure of creditor dispersion is *Bond%Class* (fraction of the class's debt being bonds). To measure creditor type – which we define as the fraction of pre-petition debt held by bank creditors – we use a case-level variable, *BankDebt%*, which is the fraction of total pre-petition debt that is illiquid bank debt such as revolvers, letter of credit facilities, account receivables facilities, asset-backed lending, or reserve-based lending.[23] At the case-class level, the corresponding measure is *BankDebt%Class*. To measure the pre-petition illiquidity of the distressed claim market, we use *PriceImpact* (the Amihud, 2002 measure) and *TreasAucDealerSize* (primary dealers' purchase of Treasury notes and bonds) at the case level. To measure creditor familiarity, we use *LnCloseness* (a proxy for how often creditors in the case have been in the same group in past restructurings) at the case level and *LnClosenessClass* at the case-class level. To measure information asymmetry, we use *Dispersion* (analysts' forecast dispersion), *Coverage* (analysts' forecast coverage), and *TranCost* (bid-ask spread of bonds) at case level.

5.2.3 Bankruptcy outcomes

We focus on three main bankruptcy outcomes: recovery, delay, and litigation. We measure recovery rates using both court-approved and market-driven recovery variables. To measure court-approved recovery at the case level, we use *RecoveryCase* (total recovery rate of the case's debt based on the court-confirmed reorganization plan). To measure court-approved recovery at the case-class level, we use *RecoveryClass* (the class's recovery rate). To measure market-based expected recovery rates, we use *PriceNearConfirm* (bond prices

[23] We exclude term loans from *BankDebt%*, because they are very often held by non-banks (Hotchkiss, Thorburn, and Wang, 2023). Including term loans yields similar but weaker results.

near confirmation dates, from TRACE). To measure delay and litigation, we construct the following case-level variables: *LnCaseLength* (natural log of length of bankruptcy proceeding) and *LnNumOfDocket* (natural log of total number of legal documents filed in the case).

We also consider a variety of other outcome variables that are potentially related to group formation. At the case level, we construct *VerticalAPR* as an indicator of Absolute Priority Rule (APR) violations across classes, *DebtReduc%* as a fraction of pre-petition principal reduced after emergence, and *CompensationPlan* as an indicator of whether an incentive plan such as a Key Employee Incentive Plan (KEIP) was filed. We also define *RightsIndicCase* as an indicator of whether rights offerings or private placements are a part of the reorganization plan. At the case-class level, we construct *RightsIndicClass* as an indicator of whether the holders of the class are entitled to receive rights offerings, or certain holders of the class are members of the backstop party of a private placement, and *RightsRatioClass* as the ratio of the amount of rights offerings plus private placements to the principal of the class.

5.3 Summary statistics

In this subsection, we provide summary statistics on creditor characteristics, group characteristics, and the main variables used in our empirical analysis.

5.3.1 Creditor type

Table 1 reports the fraction of creditors in a case belonging to each major type of creditor, where "Other" is defined as the creditor being one of the following: an individual person, real estate company, mortgage company, government, religious organization, or school. Panel A presents summary statistics with respect to the full sample, while Panel B restricts the sample to only include creditors that are members of ad hoc groups. In each panel, we calculate the fraction of claims in each creditor category at the case level and then average across cases. Both panels indicate active involvement of hedge funds, private equity/debt funds, and asset management companies in Chapter 11 bankruptcy, consistent with existing literature (Jiang, Li, and Wang, 2012; Lim, 2015). The fraction of creditors being hedge funds/private equity or private debt funds/asset management firms is higher (0.814) among group members than for the full sample (0.669), while the opposite is true for commercial

banks, investment banks, and mutual funds. This implies that hedge funds/private equity or private debt funds/asset management firms are more likely to form groups than commercial banks, investment banks, and mutual funds.[24]

5.3.2 Ad hoc group characteristics

Table 2 presents summary statistics for group characteristics. In our sample, 84% of the cases have at least one group (*CaseWithGroup*=1), and there are 8 creditors (*NumOfCreditorGroup*) in an average group. Variables *DaysFirstGroup*, *DaysSecondGroup*, and *DaysThirdGroup* represent the number of days elapsed between the bankruptcy filing dates and group formation dates for the first, second, and third groups, respectively. For a typical case, the first, second, and third ad hoc groups are formed about 16, 49, and 103 days after the bankruptcy filing, respectively. Groups may occasionally form before the bankruptcy filing dates. There are eight such cases in our sample, five of which are prepackaged.

At the class level, *Top3GrMemHolding%* measures the average holdings fraction of a class, for the top-three group members holding that class. The average top-three group member in our sample holds approximately 10% of a given class, indicating that group members typically do not own large fractions of a class's total claims. Consistent with group membership being a substitute for buying claims, we see that very few ad hoc group members own enough of a class to have a blocking position (33% ownership), even among the largest group members within a given class.[25]

Rule 2019 reports are required to be updated if creditors take a position in court after adjusting their holdings or group membership since their previous report. As such, the group characteristics reported in Rule 2019 disclosures may change over time. Figure 4 plots the dynamics of group characteristics for the sample of bankruptcy cases with more than one report filed in each case, by comparing the first report and the last report filed in every case. Panel (a) shows that an average group holds 14% (22%) of a class in the first (last) report. This result implies that group members continue to consolidate their holdings

[24]We identify creditors using court filings from PACER and Debtwire. Therefore, if a creditor never filed a docket to take a position in court (e.g. a passive creditor), we cannot identify the creditor.

[25]In addition, we find that being a group member is negatively correlated with being a blockholder (i.e., a creditor holding more than 1/3 of a class), providing further evidence of the trade-off between buying claims and become a blockholder and forming a group.

during bankruptcy, which is related to the finding by Ivashina et al. (2016) that trading of claims during bankruptcy concentrates ownership further. Panel (b) shows that the first report reveals 1.56 groups and the last report reveals 2.90 groups, implying that additional groups are formed as the bankruptcy case proceeds.

5.3.3 Key case-level and case-class level variables

Table 3 summarizes key case-level variables (Panel A) and case-class level variables (Panel B). These summary statistics are based on the *last* reported Rule 2019 filings for each case, as the last report is closest in time to the final voting for the bankruptcy plan. Panel A shows that on average, firms in our sample have total assets of $3.182 billion and a leverage ratio of 1.079. Debt held by banks, which we define as revolvers, credit lines, accounts receivable facilities, asset-backed lending, and reserve-based lending, constitutes 17.2% of the total pre-petition (case level) principal. Bonds account for 47.5% of such principal. On average a defaulted bond is held by about 61 mutual funds.

On average, group members collectively hold 35.8% of total principal at the case level. On average, there are 1.620 groups, 3.696 classes, and 16.515 creditors per case. The average familiarity measure, *Closeness*, is around 218, meaning that, on average, a creditor pair in a group at the case level has been in a group 0.218 times in past bankruptcies in our sample.

Turning to bankruptcy outcomes, on average, the case-level recovery rate is 61.9%, the length of bankruptcy cases is about 189 days, and the total number of legal documents filed is about 1,057. There are frequent (vertical) violations of the APR: 49.7% of the time, a class receives positive recovery before a more senior class receives full recovery.

Regarding the case-class level variables shown in Panel B, on average, a class in a given case has a total principal of 0.893 billion. Groups collectively hold an average of 29.9% of the total principal of the case (*GroupHolding%Class*), and 38.4% of classes have at least one influential group collectively holding over one-third of the class (*ClassInfluGroup*= 1). An average group holds 19.1% of a debt class (*GroupSizeClass*). There are on average about seven creditors per class. A creditor pair in a class has been in the same group in

past bankruptcies for 0.259 times, and a class is a fulcrum class 35.5% of the times.[26] The average bond price in the [-45,+45] days around the confirmation date (*PriceNearConfirm*), which is only available for classes with bonds, is 33 (i.e., 33% of the face value). The average court-approved recovery rate for a class, as stated in the confirmed plan, is 60.1%.

6 Empirical results

This section presents our empirical results. We begin by examining whether any of the covariates associated with group formation intensity in our model are correlated with actual group formation intensity in the data. While these tests are purely descriptive, they allow us to gain a better understanding of the tradeoffs creditors may face when deciding whether to form (or join) a coalition. We then move on to potentially more informative tests – an event study and a difference-in-differences analysis – which provide support for our descriptive correlations and suggest that group formation is value-relevant and affects recoveries and other outcomes associated with the Chapter 11 process.

6.1 Descriptive evidence

We test the model implications described in Section 4.1 using case-level data. Group-related measures are calculated in this subsection using holdings data from the last report filed by each firm, since these reports should be closest in time to the final voting on the bankruptcy plan.

We examine factors associated with case-level group formation intensity using cross-sectional regressions. The intensity measure we use is *GroupHolding%* (fraction of total debt collectively held by all group members in the case). We consider six covariates in this analysis: *Leverage* as a measure of debt size (normalized by assets), *Bond%* or *LnNumOfMF* as measures of creditor dispersion, *BankDebt%* as a measure of the fraction of claims held by bank creditors, *PriceImpact* (the Amihud, 2002 measure) as a measure of the illiquidity

[26] A fulcrum class is the most senior class that receives partial recovery. Creditors of those classes are entitled to vote and enjoy substantial bargaining power in bankruptcy procedures. In contrast, classes that are unimpaired or fully impaired according to the bankruptcy reorganization plan are not entitled to vote for the plan (Altman, Hotchkiss, and Wang, 2019).

of the distressed claims market, and *LnCloseness* as a measure of creditor familiarity.[27] The model predicts that all of these covariates except *BankDebt%* should be associated with higher group formation intensities.

We begin with the following cross-sectional regression of *GroupHolding%* on each of the six covariates separately:

$$GroupHolding\%_{ijt} = \alpha + \beta' Factors_{ijt} + \gamma' Controls_{ijt} + \delta_{jt} + \varepsilon_{ijt}, \quad (1)$$

where i indexes firms, j indexes industries, and t indexes years. $Factors$ is one of the aforementioned six covariates we believe may be correlated with group formation. We include *LnAssets* and *LnNumOfClass* to control for the log firm size and log number of creditor classes in the case, respectively. We also include industry × year fixed effects, where *industry* is the two-digit SIC code of the bankrupt firm and *year* is the year the firm filed for bankruptcy. Standard errors are clustered by industry and year. However, the number of clusters is small in some of our tests. Accordingly, we also report estimation results in the Internet Appendix for all tables that follow in Section 6 using robust standard errors and (separately) without including industry fixed effects.

Columns (1) to (6) of Table 4 present the regression results for each of the six *Factors* variables, respectively. Consistent with our stylized model, we find that a higher *GroupHolding%* is associated with a higher *Leverage*, a higher *Bond%* or *LnNumOfMF*, a lower *BankDebt%*, a higher *PriceImpact* (illiquidity), and a higher *LnCloseness* (creditor familiarity). The economic magnitudes of these effects are all sizable. For example, column (1) suggests that a one-standard deviation increase in *Leverage* is associated with an increase of 0.1 (0.188×0.532) in *GroupHolding%* or that of 27.9% relative to its sample mean of 0.358. Columns (2), (4), and (5) indicate that a one-standard deviation increase in *Bond%*, decrease in *BankDebt%*, and increase in *PriceImpact* are associated with a 39.5%, 31.9%, and 17.2% increase in *GroupHolding%* relative to its sample mean, respectively. It follows from columns (3) and (6) that a one-standard deviation increase in *NumOfMF* and

[27] We use *Leverage* instead of liabilities as our proxy for debt size in this analysis because we include (log) assets as a control variable. Replacing leverage with the log of liabilities yields quantitatively and qualitatively similar results. Additionally, replacing *LnNumOfMF* with the log of the number of mutual funds rather than fund families leads to similar results.

Closeness is associated with a 23.4% and 9.3% increase in *GroupHolding%* relative to its sample mean, respectively.

Next, we run the following specification that includes all of the above covariates (except *Bond%*) together and report regression results in Column (7):

$$\begin{aligned} GroupHolding\%_{ijt} &= \alpha + \beta_1 Leverage_{ijt} + \beta_2 LnNumOfMF_{ijt} + \beta_3 BankDebt_{ijt}\% \\ &\quad + \beta_4 PriceImpact_{ijt} + \beta_5 LnCloseness_{ijt} + \beta_0 Controls_{ijt} + \gamma_{jt} + \varepsilon_{ijt} \end{aligned}$$

Note that while *BankDebt%* and *LnCloseness* become statistically insignificant, *LnNumOfMF*, *Leverage*, and *PriceImpact* remain statistically and economically significant, indicating that debt size, creditor holdings dispersion, and trading costs are perhaps the strongest class-level covariates related to creditor coalition formation.[28]

We then examine the factors associated with the group formation intensity at the case-class level. This analysis is analogous to the tests above, and the results are reported in Internet Appendix Tables IA.1–IA.3. The regression results largely mirror the case-level results discussed earlier, indicating that coalition formation in bankruptcy is correlated with variables such as the size of a given class, the dispersion and composition (i.e. type) of creditors, and a creditor's past familiarity with others involved in the class.

Though motivated by a theory of group formation, the analysis in Section 6.1 is descriptive in nature. To provide more informative results, we now examine group formation using two alternative and arguably more robust settings: an event study around group formation announcements and an unexpected court ruling that significantly changed creditors' group formation incentives.

6.2 Group formation and bankruptcy outcomes: An event study

Having examined the factors correlated with group formation, we now investigate the impact of group formation on bankruptcy outcomes. We begin by examining corporate bond returns around group formation announcements using an event study approach.

[28] In an untabulated analysis, we replace *GroupHolding%* with *CaseWithGroup* (an indicator equaling one if there exists at least one group in the case) in our regressions. The regression results are qualitatively similar to those for *GroupHolding%* but weaker, because there is little variation in *CaseWithGroup*, which is equal to one in 84% of the cases.

The bond market's reaction to the announcement of a new creditor group should reflect *incremental* information contained in the announcement about the expected effects of the creditor group on the amount or timing of eventual recoveries. If the market already anticipated such a group to form, and/or if the group is not expected to materially affect outcomes, the market's reaction to a group formation announcement may be muted.[29] On the other hand, if a group formation announcement contains new information about either the magnitude or the timing of expected recoveries, this could lead market participants to increase or decrease bond prices accordingly.[30] In addition, group announcements in one class may also result in bond price changes in other classes of claims. For example, group formation might improve effort provision and increase firm value (benefiting all classes), but a group could also use their increased bargaining power to extract more rents at the expense of other classes.

Our events consist of the *first* announcement of the formation of a group holding a strictly positive amount of a given class of claims. We focus on corporate bond returns within a [-3, +3] day window around group formation announcement dates. The start date (end date) of the window reflects the closest date before (after) the announcement date with bond prices available. To distinguish group formation announcement effects from the market's reaction to bankruptcy petition filings, we drop group announcements if the announcement date is within a [-3, +3] day window around the case's bankruptcy petition date.[31]

Column (1) of Table 5 presents event study results for bonds in the *same* class as the newly-announced group. Consistent with the hypothesis that group formation enhances bond-level recoveries, we find that the announcement of a new group within the bond's class is associated with a daily raw (abnormal) return of 86 bps (69 bps, relative to the ICE BofA US High Yield Total Return Index). Both returns are statistically significant at the 95%

[29]The possibility of anticipation suggests that our findings, if anything, likely *understate* the true magnitudes of group formations on outcomes.

[30]For example, suppose that the creditor base in a given class is too dispersed to influence the restructuring procedure, and markets do not know whether creditors in the class intend to form a group, buy out claims, or doing neither. The announcement of a group formation within this class would resolve uncertainty and substantially enhance the expected bargaining power of the class, thereby improving its expected recovery.

[31]The formation of groups before the bankruptcy filing date is arguably less publicized than the formation of groups after the bankruptcy filing dates. This is because such groups are not required to file Rule 2019 disclosures until they become active in the bankruptcy court. However, we only have eight such cases in our sample. Excluding these eight cases from the sample does not qualitatively change our event study results.

confidence interval (standard errors are clustered by case).

Panels (a) and (b) of Figure 5 plot the histograms of the gross and abnormal return distributions, respectively.[32] Similarly, Figure 6 shows that bond prices increase by 1.81 cents on the dollar on average in the first week after the first announcement of a group investing a positive amount in the bond's class, relative to the average price level four weeks before the announcement.[33] If interpreting the bond price as a market expectation of recovery rates, this result implies an increase in the expected recovery rate on the bond of 1.81 percentage points. Figure 6 also shows that the prices remain elevated (and actually continue rising) for at least eight weeks following the group announcement, suggesting that the returns we document are not simply caused by price pressure and other transitory factors, but rather by a revaluation of the underlying bonds.[34]

Column (2) of Table 5 presents the event study results for the prices of bonds in *other* classes than the class where the group was formed. Interestingly, we find that bond prices in other classes also experience positive returns, with a gross (abnormal) daily return of 78 bps (58 bps), both significantly positive at the 95% confidence interval. Panels (c) and (d) of Figure 5 plot the histograms of the two return distributions, respectively. While there is a small mass below zero, the overwhelming majority of returns are positive.

We also conduct a subsample analysis of column (2) based on whether the group is announced in a debtor-in-possession (DIP) class or other classes. The results reported in column (3) indicate that when a group is announced in a DIP class, the bond returns on other classes within the same firm are no longer positive, with an abnormal daily return of -13 bps, though this result is not statistically significant. In contrast, column (4) shows that when a group is announced in classes other than a DIP class, the abnormal daily return for

[32]In untabulated analysis, we also investigate the bond return around the first announcement of a group holding a blocking position of the bond's class (i.e., a collective position greater than one-third of the class's principal amount). The results are qualitatively similar to those in column (1) of Table 5.

[33]The change in bond price during week t is equal to the difference between (a) the average price from day $7(t-1)+1$ after the announcement date to the average price from day $7(t-1)+7$, and (b) the benchmark price, which is the average price from day -22 to day -28. We first compute the change in bond price for each CUSIP at each week, collapse this measure to case-class-week level, and then average this measure across different case-classes within each week.

[34]Note that the effect of group formation on bond prices captured in the event study may underestimate the true impact, as the market may possess information about pre-petition creditor coordination before the first group is formally filed post-petition.

bonds in other classes of the same firm is 88 bps, which is significantly positive at the 99% confidence level. Column (5) presents the results of a one-sided t-test confirming that the large difference in returns across columns (3) and (4) (-102 bps) is statistically significant at the 95% confidence level. Collectively, these findings suggests that group formation in DIP classes may enhance DIP returns by extracting value from other classes, consistent with Eckbo, Li, and Wang (2023)'s finding that DIP creditors extract rents from other creditors. As DIP is the most senior class, these results also support the findings of Hotchkiss and Mooradian (1997), who demonstrate that announcement abnormal returns related to vulture claim purchases are negatively correlated with the priority of the claim. Finally, in an untabulated analysis, we confirm that the abnormal returns documented in columns (1) through (5) are not a function of class size, measured as either the total principal of the class or as the ratio of the class's principal to the case's total pre-petition principal. Thus, the abnormal returns documented here do not appear to be caused by (say) hedge fund buying (and accompanied price pressure) within small, highly illiquid classes of bonds.

Overall, the results of our event study suggest that expected recoveries at the class level are boosted by the announcement of new groups, both in the focal class and in other classes within the same case.

6.3 Natural experiment: Peabody Energy ruling

Our empirical results so far suggest that group formation is correlated with multiple factors and that groups can significantly affect restructuring outcomes. However, one may wonder whether our results truly capture factors affecting group formation, or whether such results can be at least partially explained by other economic forces. To examine this concern, we need a setting that offers plausibly exogenous variation in group formation incentives that are not related to the characteristics of the cases in question. We argue that the *Peabody Energy* ruling—a landmark 2017 judicial decision in bankruptcy court that normalized the ability of debtors to offer differential treatment to creditors within the *same* class—meets such a criterion. Accordingly, in this subsection we conduct a difference-in-differences (DiD) analysis to examine the effect of the Peabody Energy ruling on group formation as well as

certain bankruptcy outcomes.[35]

6.3.1 Difference-in-differences analysis

In the Peabody case, the bankruptcy judge approved the debtor's reorganization plan with an exclusive sale of preferred stock to a subset of creditors in a class (i.e., those supporting the plan). The plan was confirmed over the objections of a minority ad hoc group *from the same class* who was not allowed to participate in the sale, and this ruling was upheld in subsequent cases. Following this ruling, minority creditors in a given class could no longer expect to always receive the same amount as majority creditors from the same class. This, in turn, arguably increases the marginal benefit of bargaining power, since creditors will not want to be "left behind." Since bargaining power is closely correlated with position size, the Peabody ruling thus arguably created a stronger incentive for creditors to form or join larger groups to surpass the blocking position threshold, that is, to collectively hold over one-third of a class. We therefore propose that post-Peabody creditors will have an increased incentive to participate in larger, more influential groups.

Since the Peabody ruling applies to all future cases, we expect a stronger group formation intensity (larger group sizes; more influential groups formed) across all post-Peabody cases. However, this effect should be particularly strong in cases or classes with higher total debt size. Intuitively, while the marginal benefit from consolidating claims may increase similarly across large and small cases/classes, the heightened trading costs associated with buying a blocking position in larger cases/classes make forming groups a less expensive way to obtain similar potential benefits. As such, we should see differentially higher group formation intensity (and associated effects on outcomes) following Peabody in classes with large pre-petition principal sizes.[36]

We formalize this intuition by constructing a difference-in-differences test around the Peabody ruling. Specifically, we classify cases (or case-classes) in the top tercile of total principal size as the "treated" group — those with stronger expected exposure to the

[35]In all DiD analysis, group-related measures are calculated using the last holdings report, since these reports are arguably the closest in time to the final voting on the bankruptcy plan.

[36]Similar intuition would apply to many other factors implied by the model to affect group formation, such as (for example) creditor dispersion. However, we do not have sufficient *class*-level data for any of these variables except debt size.

intervention.[37] The comparison group consists of cases in the bottom tercile of principal size, where treatment intensity is expected to be weakest. We focus on the top and bottom terciles to ensure a stark contrast in treatment intensity between the two groups. We then compare outcomes pre- and post-Peabody across the treated and comparison groups. Our hypothesis is that both groups will experience higher group formation intensities following the Peabody court ruling, but that the increase in group formation intensity will be particularly large for the treated group.

To avoid the endogeneity concern that the Peabody ruling could affect a firm's debt size choice, thus affecting the definition of treated and comparison groups, we define treatment status based on principal sizes measured *before* the Peabody ruling. At the case level, we define *DebtSize* as the sum of long-term and short-term debt measured five years before the bankruptcy filing date, and use it to compute the terciles. This ensures all debt size measures precede the Peabody confirmation date (March 17, 2017), even for the latest filer in our sample (October 31, 2021). At the case-class level, we define *IssueSizeClass* as the total principal at issuance (in 2016 dollars) for all instruments within the class that were issued prior to the Peabody confirmation date, and use this measure to compute terciles. In Section 7.1, we provide a number of robustness checks around these treatment group definitions, and show among other things that our results remain robust even when treatment is defined before the date that Peabody filed for bankruptcy (April 13, 2016).

6.3.2 Group formation

We implement this test as a DiD design with differential treatment intensity. We define the treatment group ($TreatDebt = 1$) as cases where *DebtSize* exceeds the top tercile among all firms with *DebtSize* measured in the same year, while we define the comparison group ($TreatDebt = 0$) as cases where *DebtSize* is smaller or equal to the bottom tercile. We estimate the following regression:

$$Y_{ijt} = \alpha + \beta_1 PostPeabody_t + \beta_2 TreatDebt_{ij} + \beta_3 PostPeabody \times Debt_{ijt} + \gamma_{jt} + \varepsilon_{ijt}, \quad (2)$$

[37] It is worth noting that we are constrained in our choice of treatment variables because we need a variable for which data exists at the class level for the majority of the cases and classes in our sample. Unfortunately, this constraint eliminates the overwhelming majority of potential treatment intensity variables, including all of the other potential group formation factors implied by our model.

where i, j, and t index firms, industries, and time, respectively; Y is the case-level group formation intensity (*GroupHolding%*); $PostPeabody = 1$ if and only if the bankruptcy case is filed after the confirmation date of the Peabody case, March 17, 2017; and $PostPeabody \times Debt$ is the product of *PostPeabody* and treatment group indicator *TreatDebt*. The regression includes industry $\times$ year fixed effects.[38] Standard errors are clustered by industry or by industry and year. Given our empirical design and single treatment date, the recent issues documented with two-way fixed effects estimators do not apply to our setting.[39]

Our empirical design relies on a handful of identifying assumptions. In particular, (1) the parallel trends assumption must hold, (2) the Peabody ruling must be unanticipated, (3) the "treatment" group (in our case, a measure of treatment intensity) must be defined in a manner plausibly exogenous to the shock, and (4) there cannot be correlated omitted variables that could explain why the treatment and control groups behave differently after the shock.[40] We believe these assumptions are generally met in our sample.

First, Figures 7 and 8 examine the parallel trends assumption for our key outcome variables at the case and case-class levels, respectively. The figures show no pre-trends prior to the semi-year when the Peabody ruling occurs ($t = 0$), suggesting the parallel trends assumption is likely to hold.[41] Second, we verified with numerous practitioners and legal scholars who worked on the Peabody case that the court ruling was surprising and was not anticipated by creditors, and our parallel trends tests show no evidence of anticipation.[42] Third, since treatment is defined before the Peabody ruling (or even before Peabody filed for bankruptcy), we believe that our treatment definition is exogenous with respect to the Peabody ruling itself. Finally, we believe it is unlikely for our results to be explained by

[38] *PostPeabody* is identified based on variation within 2017, the year of the Peabody ruling. We include this term to capture the post-Peabody reactions of the comparison group during 2017 following the ruling in March.

[39] See, e.g., De Chaisemartin and d'Haultfoeuille (2020); Borusyak, Jaravel, and Spiess (2022); Callaway and Sant'Anna (2021); Goodman-Bacon (2021); Sun and Abraham (2021); Gardner (2022) and De Chaisemartin and d'Haultfoeuille (2023).

[40] The Stable Unit Treatment Value Assumption (SUTVA) must also hold, but this should not be a concern in our setting.

[41] We use semi-years as the units for the parallel trends test because we only have one year of data before the Peabody ruling and the sample size within each quarter is otherwise not large enough to estimate dynamic DiD coefficients.

[42] News articles from the time of the court case also point to significant uncertainty about how the bankruptcy court would rule. See, e.g., https://tinyurl.com/peabodyruling.

correlated omitted variables. For this to be true in a setting where parallel trends hold, the shock is unanticipated, and most time-invariant characteristics are absorbed by fixed effects, the omitted variable would have to become significantly more relevant for the outcome variable(s) we study *only* after Peabody, only for the cases (*and classes*) in the treatment group, and only within (say) industry-year and class type. While we cannot fully rule out this possibility, it is not clear what variable(s) would meet these criteria.

Columns (1) and (2) of Table 6 present the results of estimating equation (2), with standard errors clustered by industry in column (1) and by industry and year in column (2). Consistent with our Peabody hypothesis, the coefficients on *PostPeabody* and *PostPeabody*×*Debt* are both positive. These results imply that the Peabody ruling indeed served as a shock to group formation incentives across all types of cases, with evidence suggesting that the increase in group participation activity may have been especially strong in cases with larger debt size.

Next, we conduct a similar DiD analysis on group formation at the case-class level. We first find the top and bottom terciles of *IssueSizeClass* (i.e., the class's total issuance size in 2016 dollars, for all instruments issued before the Peabody confirmation date). We then define a class to be in the treatment group (*TreatIssueClass*= 1) if this class's *IssueSizeClass* is strictly above the top tercile, while we define the comparison group (*TreatIssueClass* = 0) as cases where *IssueSizeClass* is smaller or equal to the bottom tercile. We run the following regressions:

$$\begin{aligned} Y_{cijt} &= \alpha + \beta_1 PostPeabody_t + \beta_2 TreatIssueClass_{cij} + \beta_3 PostPeabody \times IssueClass_{cijt} \\ &\quad + \gamma_{jt} + \delta_c + \varepsilon_{cijt}, \end{aligned} \tag{3}$$

where c indexes classes within a case, *PostPeabody*× *IssueClass* is the product of *PostPeabody* and the treatment group indicator *TreatIssueClass*, and Y is one of the three case-class level group formation intensity measures: *GroupHolding%Class*, *GroupSizeClass*, or *ClassInfluGroup*. Here, *GroupHolding%Class* is the fraction of the class's total principal held by all group members collectively; *GroupSizeClass* is the fraction of a class held by an average group in the case; and *ClassInfluGroup* is whether a class has at least one influential group holding a blocking position in the class (i.e., over one-third of the class). The regression incor-

porates industry × year fixed effects and class fixed effects.[43] Standard errors are clustered by industry or by industry and year.

Columns (3) to (8) of Table 6 report the regression results for the aforementioned three case-class level intensity measures, respectively, with standard errors clustered by industry in columns (3), (5), and (7) and by industry and year in columns (4), (6), and (8). The coefficients on *PostPeabody*× *IssueClass* in columns (3) and (4) are positive, consistent with our hypothesis that Peabody should lead to higher group formation intensity when total debt size is larger. Magnitudes are large. After removing industry-year- and class- specific shocks, group holding fraction per class (*GroupHolding%Class*) increased by 0.32 (or by 100%) for treatment classes with top tercile total debt size post-Peabody, but barely changed for comparison classes with bottom tercile total debt size.

Columns (5) and (6) examine *GroupSizeClass* (the average group's holding fraction of a given debt class), and columns (7) and (8) examine *ClassInfluGroup* (whether a group holds a blocking position), respectively. As expected, the coefficients on *PostPeabody*× *IssueClass* are positive in most columns. Economic magnitudes are again significant: for example, after removing industry × year- and class-specific shocks, the average group size increased from 17% to 32% of the class's principal for the treatment group post-Peabody (a rate of increase of 94%), while this measure barely changed for the comparison group.

Collectively, columns (1)–(8) of Table 6 show that the Peabody ruling is associated with increased group participation, group size, and the number of influential groups, especially for the treatment cases/classes where total debt size is larger. The increases in group sizes are substantial and suggest that a weakening of creditor rights can promote strong bargaining power.[44]

6.3.3 Bankruptcy outcomes

In addition to potentially affecting group formation incentives, the Peabody ruling may also be associated with differential bankruptcy outcomes. For example, increased group

[43]Note that industry × year fixed effects absorb any effects caused by broad economic shocks such as the COVID-19 pandemic. Our results are qualitatively similar if we only use data before the year 2020.

[44]In untabulated analysis, we find that the holdings by cross-groups (i.e., groups holding blocking positions in more than one class in the same case) also increased for the treatment group post-Peabody relative to the comparison group, which is similar to our main result using generic group holdings.

formation intensity may have incentivized creditors to avoid free-riding and exert more effort to improve firm value, leading to higher overall recoveries. On the other hand, by creating and amplifying within-class creditor conflicts, the Peabody ruling may have led to more intense and complicated negotiations that served to prolong the bankruptcy process. We examine these potential trade-offs in Table 7 using similar case-class regressions to those outlined in equation (3). We focus on two types of recovery rates: expected recovery rates based on market prices, and expected recovery rates contained in court-approved bankruptcy plans (which are negotiated and may differ wildly from actual recovery rates; see, e.g., Demiroglu, Franks, and Lewis, 2022). All regressions include industry × year fixed effects and class fixed effects. Standard errors are clustered by industry in columns (1), (3), and (5), or by industry and year in columns (2), (4), and (6).

Columns (1) and (2) focus on the market-expected recovery rate, *PriceNearConfirm*, defined as the average bond price expressed as percentage points of par value over the [-45, +45] day window surrounding the confirmation date. Consistent with our main conjecture, we find that the interaction term *PostPeabody*× *IssueClass* is positive, suggesting that larger classes (which observed stronger group formation intensity post-Peabody) also experienced increases in recovery rates. The magnitude is sizable: the interaction term coefficient of 35 (percent of par value) is comparable to the sample mean, which is 33.[45] Interestingly, we also find that the main effect of Peabody for smaller classes (*PostPeabody*) is negative; one possible explanation for this is that Table 6 shows almost no post-Peabody changes in *overall* group holding fractions for smaller classes, suggesting that such classes' bargaining power may have been reduced after Peabody, negatively affecting recovery rates.

Next, we examine the court-approved recovery rates from the confirmed reorganization plan. We emphasize again that such recovery rates are the outcome of negotiations

[45]The magnitudes of the reported effects of group formation on expected recoveries differ significantly across the bond-level event study and the Peabody difference-in-differences tests. Multiple factors may account for this difference. First, the samples and variables used in the event study and Peabody tests are themselves quite different, and thus difficult to directly compare. Second, recoveries may respond nonlinearly to group formation: larger group holdings could have a disproportionate effect on recoveries through stronger bargaining power. Finally, the event study may underestimate the true impact of group formation on expected recoveries because of anticipation: in pre-packaged bankruptcies or cases with restructuring support agreements, pre-petition coordination is often disclosed prior to the first post-petition group announcement (the event captured by our tests).

between many different stakeholders and may differ significantly from the true recovery rates.[46] We consider court-approved recovery rates in the full sample and in the bond classes sub-sample (i.e., classes that include at least one bond instrument), and report results from regressions of these two recovery rates in columns (3)–(4), and (5)–(6) of Table 7, respectively. Similar to columns (1)–(2), the coefficients on *PostPeabody*×*IssueClass* are positive and economically large, suggesting that both market-based and court-approved recovery rates increase after Peabody in larger classes.

We then examine the effect of group formation on a variety of other bankruptcy outcome variables defined at the case level. We do so using regressions similar to those in equation (2). Table 8 reports the results for the following outcome variables: (a) the court-approved recovery rate, *RecoveryCase* (columns (1)–(2)); (b) violations of the absolute priority rule (APR) (columns (3)–(4)), with *VerticalAPR*= 1 implying that a class receives strictly positive recovery before a more senior class receives full recovery; (c) the logarithm of the number of days the firm is in bankruptcy, *LnCaseLength* (columns (5)–(6)); and (d) the logarithm of the total number of legal documents filed during the bankruptcy process, *LnNumOfDocket* (columns (7)–(8)). A higher *LnNumOfDocket* likely indicates more intensive litigation in the bankruptcy case. All regressions include industry × year fixed effects. Standard errors are clustered by industry in columns (1), (3), (5), and (7), or by industry and year in columns (2), (4), (6), and (8).

The results show that in columns (1)–(2), the coefficient on *PostPeabody*×*Debt* is statistically insignificant, which contrasts the case-class level recovery results in Table 7. In columns (3)–(4), the coefficient on *PostPeabody*×*Debt* is negative, indicating that the treatment group saw fewer violations of the absolute priority rule post-Peabody relative to the comparison group. In columns (5)–(6), the coefficient on *PostPeabody*× *Debt* is positive, which implies that the Peabody ruling is associated with longer bankruptcies, most acutely in cases with high total debt size and cases with high group formation intensity. In terms of magnitudes, bankruptcy case lengths increased by 37% for cases with top tercile total

[46]For instance, senior classes may push for a firm valuation below true value to retain more of the firm's value for themselves, while junior classes may argue for a higher valuation to claim a larger share. Nonetheless, in cases where bond prices are available, such mis-valuations can be mitigated due to the availability of market prices (Demiroglu, Franks, and Lewis, 2022).

debt size and decreased by 8% for cases with bottom tercile total debt size. In columns (7)–(8), the coefficient on *PostPeabody*× *Debt* is positive and large in magnitude (although statistically insignificant), suggesting that the number of court filings increases after the Peabody ruling, and weakly most significantly for cases with high total debt size.[47]

Collectively, the results in Tables 6–8 reveal both the bright side and the dark side of group formation: while heightened group formation is correlated with higher class-level recoveries, the larger number of influential groups may be associated with additional litigation and lengthier restructuring processes. This is consistent with the ongoing debate about "creditor-on-creditor" violence or class warfare (Buccola and Nini, 2022; Antill et al., 2024; Miller, 2025).

7 Additional analysis

7.1 Alternative empirical specifications

Alternative clustering strategy: We repeat the analysis in Tables 4 except that we cluster standard errors using industry instead of industry and year. The results reported in Tables IA.4, show that our main findings are robust to this alternative clustering strategy.

Alternative treatment group definition in DiD: We now consider alternative ways to define the treatment and comparison groups in our DiD analysis. Table IA.5 re-runs the DiD exercises in Tables 6–8, except that the treatment at the case levels (*TreatDebt2*) and case-class levels (*TreatIssueClass2*) are determined as the treatment group being the top 2/5 percentile and the comparison group being the bottom 2/5 percentile instead of the top 1/3 vs. bottom 1/3. The coefficients of the interaction terms are qualitatively and quantitatively similar to those in Tables 6–8.

Table IA.6 runs the DiD exercises in Tables 6–8, except that the treatment at the case and case-class levels is determined before the Peabody bankruptcy filing date (April

[47]In the Internet Appendix, we report the DiD estimation results using robust standard errors, as well as those results without industry fixed effects. We find that our main findings still hold qualitatively. Additionally, we plot time trends using raw data averaged within each of the following four time periods for the treatment and comparison groups: (1) Pre-Peabody (before March 17, 2017), (2) Post-Peabody during the year of 2017, (3) year 2018-2019, (4) year 2020-2021 (COVID years). As can be seen from Figure IA.1, the time trends are consistent with our estimation results.

13, 2016) instead of the Peabody confirmation date (March 17, 2017). At the case level, we define the "treatment" group ($TreatDebt3 = 1$) as those cases in which the total debt size around six years before the bankruptcy filing date is above the top tercile (top 1/3) level within all firms of which the debt size data is taken in the same year, $TreatDebt3 = 0$ if the total debt size is smaller or equal to the bottom tercile (bottom 1/3), and $TreatDebt3$ is missing if in the middle tercile. At the case-class level, we first find the terciles of the class's issuance size (total inflation-adjusted issuance size of the class in 2016 dollar of all instruments issued before the Peabody filing date, April 13, 2016) among all case-classes. We then define a class to be in the "treatment" group (*TreatIssueClass3*= 1) if this class's issuance size is above the top tercile (top 1/3), and a class to be in the "comparison" group (*TreatIssueClass3*= 0) if this class's issuance size is smaller or equal to the the bottom tercile (bottom 1/3). *TreatIssueClass3* is missing if in the middle tercile. The coefficients of the interaction terms are qualitatively and quantitatively to those in Tables 6–8.[48]

Table IA.7 repeats the four DiD regressions at the case-class level (columns (4), (6), and (8) of Table 6 and column (3) of Table 7), except that instead of using inflation-adjusted issuance size, we use the inflation-adjusted total principal amount outstanding five years prior to the bankruptcy filing, summed over instruments existing at that time within each case-class. Note that the sample sizes drop by 44% as compared to the regressions in Tables 6 and 7. This is because many instruments do not exist five years prior to the bankruptcy filing date.[49] Note that the coefficients of the interacting terms are qualitatively and quantitatively similar to their counterparts in the main analysis but statistically less significant.

7.2 Alternative covariates associated with group formation

In this subsection, we explore alternative covariates that could be plausibly associated with group formation, such as measures of information asymmetry and illiquidity. The extent of information asymmetry about the firm's prospects among creditors could potentially affect group formation: for example, creditors may form groups to share information when

[48]In Table IA.5 and Table IA.6, we show results when clustering by industry and year. Results are robust if clustering only by industry.

[49]Compared to our main analysis, which includes 557 instruments issued before the Peabody confirmation date (out of 889 pre-petition instruments), only 311 instruments existed five years prior to the bankruptcy filing.

information asymmetry is high. We consider three case-level measures related to information asymmetry: (1) *Dispersion* (standard deviation of one-quarter-ahead earnings per share forecast divided by the absolute value of the mean, averaged across the year prior to the bankruptcy filing date), (2) *Coverage* (number of analyst forecasts averaged across the year prior to the bankruptcy filing date), and (3) *TranCost* (effective bid-ask-spreads of bonds issued by the firm, averaged across the year prior to bankruptcy filing and across bonds of the same firm). Intuitively, higher analyst forecast dispersion, lower analyst coverage, and higher transaction costs for bonds are likely associated with higher information asymmetry of the firm's prospects.

In addition, to alleviate the concern that the measure *PriceImpact* could be correlated with unobservable variables that correlate with group formation, we use another case-level measure of illiquidity of the distressed debt market: *TreasAucDealerSize*, which is the total dollar amount in trillions of US Treasury bonds and notes accepted by primary dealers in Treasury auctions that were held within the year prior to the case's bankruptcy filing date. Intuitively, when primary dealers purchase larger amounts of Treasury bonds, they may have less capacity to intermediate the trading of distressed corporate debt. Therefore, the distressed claim market under such conditions may be more illiquid. Reverse causality is unlikely: it is unlikely that a single distressed debtor's claims would influence primary dealer demand in Treasury auctions.

Table IA.8 repeats the analysis in Table 4 except that (1) we now control for *Dispersion* in every regression, and (2) we include *TreasAucDealerSize* as an alternative measure of illiquidity in columns (6) and (9). It shows that the results in Table 4 are robust when controlling for *Dispersion*; additionally, the coefficients for the two measures of illiquidity—*PriceImpact* and *TreasAucDealerSize*—are both positive. Tables IA.9 and IA.10 use *Coverage* and *TranCost* as alternative measures of information asymmetry, respectively. They yield similar results to those in Table IA.8.

7.3 Asymmetric information and abnormal returns

In this subsection, we address the endogeneity concern that the positive bond price reactions to group formation announcements (Table 5, column (1)) may reflect previously

unobserved information about the firm's prospects. The concern is that insider creditors may be more likely to form a group when they privately believe the firm has stronger recovery potential, prompting other creditors to revise their expectations of the firm's prospects upon observing the group's formation. This hypothesis implies that the abnormal return following group formation should be higher when stronger information asymmetries exist about the firm's prospects.

Table IA.11 investigates whether the abnormal returns in column (1) of Table 5 are correlated with measures of information asymmetry. Columns (1) to (3) consider *TranCost-Bond*, defined as the bond-level effective bid-ask-spread averaged across the year prior to bankruptcy filing, as the measure of information asymmetry, while controlling for different fixed effects. Columns (4) and (5) use case-level measures of information asymmetry, *Dispersion* and *Coverage*. Consistent with our main hypothesis, none of these coefficients is statistically significant, implying that learning about the firm's prospects is unlikely to be driving the abnormal returns reported in column (1) of Table 5.

7.4 Hedge fund involvement

This subsection examines whether our results on group formation and bankruptcy outcomes are driven by higher hedge fund presence, as hedge fund involvement in bankruptcy is found to be associated with better restructuring outcomes (Jiang et al., 2012; Lim, 2015).

We first examine the event study results in Table 5 to confirm that these are not driven by higher hedge fund involvement. Columns (1) to (4) of Table IA.12 demonstrate that event study returns around group formation announcements in the same class (as shown in column (1) of Table 5) are not driven by hedge fund involvement, using CUSIP-level (i.e., bond level) regressions. The dependent variable is the abnormal return of the bond's class which the group invests in. The key independent variables are *FirstGroupHolding*%, which represents the group's holding fraction of the bond's class at the time of announcement, *OverOneThird*, an indicator equal to one if *FirstGroupHolding*% is greater than or equal to the one-third controlling threshold, and *HighHFHolding*, an indicator equal to one if the fraction of the bond's class held by hedge funds at the time of group formation is above the median. The regressions include case, class, and year fixed effects, with standard errors

clustered by case and year. Column (1) shows that the coefficient on *FirstGroupHolding%* is significantly positive, indicating a stronger announcement effect for larger groups, which may have greater bargaining power. Column (2) confirms that this result holds even when controlling for hedge fund involvement through the inclusion of *HighHFHolding*. Columns (3) and (4) show that replacing *FirstGroupHolding%* with the indicator *OverOneThird* (whether the group holds a blocking position) produces similar results. Moreover, the coefficients on *HighHFHolding* in columns (2) and (4) are insignificant, indicating that higher hedge fund involvement without increased group formation does not improve recovery.

Second, we examine the robustness of our Peabody DiD results in columns (5) and (6) of Table IA.12. *HFHolding%Class* is the fraction of a class's principal held by hedge funds, private equity, private debt, or asset management companies. *NonCoalHF%Class* is the fraction of creditors who invest in the class being non-coalition hedge funds (including hedge funds, private equity, private debt, or asset management companies that do not participate in ad hoc groups) over all creditors investing in the class.[50] The coefficient on the interaction term in column (5) is statistically insignificant, indicating that the treatment group does not see an increase in general hedge fund investment post-Peabody relative to the comparison group. The coefficient on the interaction term in column (6) is negative, indicating a decline in hedge fund involvement outside of ad hoc group formation in the treatment group post-Peabody relative to the comparison group, which contrasts the positive effect on ad hoc group formation in Table 6. Taken together with results of the higher recovery for the treatment group in Table 7, the results in columns (5) and (6) of Table IA.12 show that the higher recovery in the treatment group with higher group formation is not driven by an increase in hedge fund involvement outside of ad hoc group formation, as such involvement is shown to have declined in the treatment group post-Peabody relatively to the comparison group.[51]

[50] We calculate the fraction using the headcount of non-coalition hedge funds over all investors in the class instead of their holding fractions of the class, because the holding data for non-coalition hedge funds are often not disclosed.

[51] Results are similar if clustering by industry only.

7.5 Rights offerings and private placements

We next examine whether the DiD results are driven by more rights offerings and private placements instead of ad hoc group formation in Table IA.13 in the Internet Appendix. We conduct the DiD regressions in Table 6 while replacing the dependent variables of group formation intensity with measures of rights offering and private placement. At the case level, we use *RightsIndicCase*, an indicator equal to one if rights offerings or private placements were a part of the confirmed plan in the bankruptcy case. At the case-class level, we use *RightsIndicClass*, which is an indicator equal to one if the holders of the class are entitled to receive rights offerings, or certain holders of the class are members of the backstop party of a private placement, and *RightsRatioClass*, which is the ratio of the amount of rights offerings plus private placements to the principal of the class. Contrasting the results in Table 6, the coefficients on the interacting terms *PostPeabody*×*Debt* and *PostPeabody*× *IssueClass* are not statistically significant, indicating that the treatment group does not observe more rights offerings or private placement post-Peabody relative to the comparison group. Thus, rights offerings and private placements are unlikely driving the higher class-level recoveries and longer delays demonstrated in Tables 7 and 8 for the treatment group.[52]

7.6 Pre-bankruptcy coordination

The focus of our paper is on post-petition creditor coordination in U.S. Chapter 11 cases, and the usual external validity disclaimer applies – our results on post-petition coordination may not be valid in other settings, such as bankruptcy cases in different countries, Chapter 7 cases, or distressed U.S. firms that never file for bankruptcy. However, we are cautiously optimistic about the external validity of our results with respect to pre-petition coordination via restructuring support agreements (RSAs) and prepackaged bankruptcy filings (prepacks), due to evidence suggesting that such pre-petition coordination often continues into post-petition group formation. Specifically, we find that in our sample, cases involving an RSA or a prepackaged filing are (if anything) positively correlated with our group formation intensity measure, *GroupHolding%*. Additionally, we observe that 84% of the first

[52]Results are robust if clustering by industry only.

creditor group disclosures in each case occur within the first 30 days of the bankruptcy filing, providing further support for the view that informal coordination may begin before the petition date and carry over into the post-petition period.

With respect to other forms of out-of-court workouts (e.g., in cases that never enter bankruptcy), we are unfortunately constrained by severe data limitations, as private pre-petition coordination is not subject to disclosure requirements. However, conceptually, the main tradeoff in our model (coordination versus buying claims) is also likely to be a consideration in pre-petition settings, suggesting that some or all of the factors described in the model may also apply to pre-petition coordination.

Nevertheless, given that the focus of our paper is on post-petition coordination, it is possible that other factors may contribute to pre-petition coordination, and/or such factors may lead to different outcomes than the ones we obtain. We are hopeful that future data availability will allow us to address pre-petition group formation as well. In a similar vein, we leave Chapter 7 cases and international applications to future work.

8 Conclusion

This paper provides a first look at the formation and composition of ad hoc creditor groups in U.S. Chapter 11 bankruptcy proceedings using novel data on post-petition creditor holdings and ad hoc creditor groups across 171 major bankruptcy cases from 2016–2021. Consistent with our hypotheses, we document significant heterogeneity in group formation intensity and group structure, which vary with (1) total debt size, (2) creditor holding dispersion, (3) the fraction of debt held by banks, (4) liquidity in the distressed claim market, and (5) creditor familiarity. We also find that bond prices increase significantly around the announcement of a group holding a positive amount of the bond's class, indicating that group formations are perceived by investors to enhance class-level recoveries. Moreover, we find that group formation in one class also boosts the bond prices in other classes of the firm.

Lastly, our analysis of a major change in court precedent (the 2017 Peabody ruling) reveals the dark side of group formation: while the Peabody ruling encouraged the formation

of larger and more influential groups and boosted class-level recovery, the intense litigation by these groups likely lead to delays in the restructuring process. Overall, our paper suggests that ad hoc creditor coalitions play an important yet previously undocumented role in U.S. Chapter 11 bankruptcy proceedings.

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A An Example of Ad Hoc Groups: SandRidge Energy, Inc.

SandRidge Energy filed for Chapter 11 Bankruptcy on May 16, 2016, with a total prepetition debt of $4.1 billion. The capital structure of SandRidge Energy includes: $459 million of first-lien secured debt (Reserve-Based First Lien Revolving Creditor Facility), $1,328 million of second-lien secured debt (8.75% Senior Secured Second Lien Notes due 2020), $2,314 million of unsecured debt (USD 396.00 8.75% Senior Unsecured Notes due 2020, USD 41.00 8.125% Convertible Senior Notes due 2022, USD 47.00 7.5% Convertible Senior Notes due 2023, USD 528.00 8.125% Senior Unsecured Notes due 2022, USD 544.00 7.5% Senior Unsecured Notes due 2023, USD 758.00 7.5% Senior Unsecured Notes due 2021), and equity.

Two ad hoc groups were formed in the case: Ad Hoc Second Lien Group (formed on May 27, 2016), and Ad Hoc Group of Unsecured Noteholders (formed on June 23, 2016). As of June 23, 2016, each group member's holding percentages of the three debt classes are documented in Table A1. Ad Hoc Second Lien Group has 11 members, collectively holding a blocking position of 67.87% of second-lien secured debt, while Ad Hoc Group of Unsecured Noteholders has 4 members, collectively holding a blocking position of 44.06% of unsecured debt.

The two groups worked collectively to propose a reorganization plan that swapped the current second-lien debt and unsecured debt with new equity of the firm after emergence, extended new debt, and injected new capital through rights offering. In addition, the two groups negotiate between themselves to split the new equity, resulting in the outcome of the second-lien class receiving 83% of the new equity and the unsecured class receiving 17% of the new equity.

Table A1: Group Member Holding Percentage of Each Class

Group	Creditor	Class	Holding (%)
Ad Hoc Second Lien Group	Group Total (11 Members)	1st-Lien Secured	0
		2nd-Lien Secured	67.87
		Unsecured	4.01
	Apollo Global Management	1st-Lien Secured	0
		2nd-Lien Secured	4.67
		Unsecured	0
	Benefit Street Partners	1st-Lien Secured	0
		2nd-Lien Secured	4.07
		Unsecured	0.17
	Black Maple Capital	1st-Lien Secured	0
		2nd-Lien Secured	0.30
		Unsecured	0
	Broadbill Investment Partners	1st-Lien Secured	0
		2nd-Lien Secured	0.96
		Unsecured	0.25
	EIG Global Energy Partners	1st-Lien Secured	0
		2nd-Lien Secured	5.87
		Unsecured	0
	GSO Capital Partners	1st-Lien Secured	0
		2nd-Lien Secured	7.35
		Unsecured	0
	Guggenheim Partners Investment Management	1st-Lien Secured	0
		2nd-Lien Secured	14.06
		Unsecured	0.35
	Magnetar Capital	1st-Lien Secured	0
		2nd-Lien Secured	6.31

Continued on next page

TableA1 – continued from previous page

Group	Creditor	Class	Holding (%)
		Unsecured	0
	Susquehanna	1st-Lien Secured	0
	International Group	2nd-Lien Secured	5.30
		Unsecured	3.24
	Tyrus Capital S.A.M.	1st-Lien Secured	0
		2nd-Lien Secured	15.06
		Unsecured	0
	Whitebox Advisors	1st-Lien Secured	0
		2nd-Lien Secured	3.91
		Unsecured	0
Ad Hoc Group of	Group Total	1st-Lien Secured	0
Unsecured Noteholders	(4 Members)	2nd-Lien Secured	9.81
		Unsecured	44.06
	Akanthos Capital	1st-Lien Secured	0
	Management	2nd-Lien Secured	2.03
		Unsecured	4.32
	Fir Tree Partners	1st-Lien Secured	0
		2nd-Lien Secured	0
		Unsecured	28.95
	Paulson & Co.	1st-Lien Secured	0
		2nd-Lien Secured	2.64
		Unsecured	4.81
	Solus Alternative	1st-Lien Secured	0
	Asset Management	2nd-Lien Secured	5.14
		Unsecured	5.98

B The Peabody Bankruptcy Case

Peabody Energy Corporation, a coal mining and energy company, filed for Chapter 11 on April 13, 2016. Pre-petition capital structure consists of 11 instruments that can be divided into four groups (types) of securities: loan (3), bond note (6), other (1), and equity (1). Among those 10 debt instruments, five are secured, including all three loans, one bond note, and the lone "other" instrument, and five unsecured. Peabody and a group of creditors (the "Noteholder Co-Proponents") crafted a restructuring plan. This plan was confirmed on March 17, 2017, over the objection of an ad hoc committee of creditors (the "Ad Hoc Committee of Non-Consenting Creditors"). The company emerged from Chapter 11 in April 2017. The Ad Hoc Committee (of Non-Consenting Creditors) appealed to the District Court, and the appeal was dismissed on equitably mootness grounds. The Ad Hoc Committee then appealed to the Eighth Circuit of Appeals, which affirmed the confirmation of Peabody's restructuring plan.

Below, we first provide a summary of the Peabody ruling by the Eighth Circuit, following by a detailed list of the time line and major court decisions in connection with this case in Section B.2. Next, Sections B.3 and B.4 show lists of ad-hoc and official committees, respectively. Then, Sections B.5 and B.6 provide details of the Noteholder Co-Proponents and the Ad Hoc Committee, respectively.

B.1 Summary of the Peabody Ruling and the Background

The discussion in this subsection is based on Bagby, Maman, Waxman, Servais, and Solow (2020) and the court document, "*Ad Hoc Committee of Non-Consenting Creditors v. Peabody Energy Corporation (In re Peabody Corp.), et al.*," Appellate Case No. 18-1302.[53]

The restructuring plan proposed by Peabody and the Noteholder Co-Proponents include two fundraising elements.

First, it required the reorganized Debtors to engage in a $750 million "Rights Offering," which allowed certain creditors to purchase new common stock in the reorganized

[53]https://www.govinfo.gov/content/pkg/USCOURTS-ca8-18-01302/pdf/USCOURTS-ca8-18-01302-0.pdf.

company at a 45% discount. This element was not challenged on appeal.

Second, "qualifying" creditors can invest in $750 million "Private Placement" of preferred stock, an exclusive sale of preferred stock at a 35% discount to such creditors. One condition for a creditor to qualify was that the creditor held second-lien or Class-5B (senior-unsecured) notes. Both the Noteholder Co-Proponents and members of the Ad Hoc Committee were such note holders. Another condition is that creditors agree to support the reorganization plan in the confirmation process.

While all classes of Peabody's creditors voted to approve the reorganization plan and approximately 95% of unsecured creditors agreed to participate in the Private Placement, the Ad Hoc Committee chose to do neither. The Private Placement arrangement awarded the Noteholder Co-Proponents, who held approximately one-third of the claims in the relevant classes, over two-thirds of the preferred stock offered in the Private Placement. The Bankruptcy Court confirmed the plan and approved the Private Placement agreement over the Ad Hoc Committee's objection.

In their appeal of the (reorganization) plan confirmation order to the District Court, the Ad Hoc Committee argued that the Private Placement violated the "equal treatment" requirement in section 1123(a)(4) of the Bankruptcy Code that all claims in a particular class be treated the same. Moreover, the Ad Hoc Committee maintained that the plan violated the "good faith" requirement under section 1129(a)(3), arguing that the Debtors used coercive tactics to pressure holders into voting in favor of the plan. However, the District Court dismissed the appeal as equitably moot. The Ad Hoc Committee then appealed to the Circuit Court.

The Eighth Circuit Court overruled the objection of the Ad Hoc Committee and affirmed the approval of the reorganization plan. In particular, the court agreed with the bankruptcy court that "the right to participate in the Private Placement was not 'treatment for' a claim" and held that "the plan did not violate the equal-treatment rule of §1123(a)(4)." Despite the Eighth Circuit's sympathy for the argument that the Debtors coercively solicited votes and concern over constraints in creditor participation, the Court ultimately accepted the Debtors' position that the plan process was necessary due to the urgency created by the volatile coal market.

B.2 The Time Line and Major Court Decisions

On December 22, 2016, the Debtors submitted the initial filing of a reorganization plan. The Ad Hoc Committee objected to the plan, and the bankruptcy court (the Bankruptcy Court for the Eastern District of Missouri) set a hearing for January 26, 2017.

The Debtors received alternative proposals by the Ad Hoc Committee, including two submitted on January 16 and January 20, 2017, and one proposal made on March 1, 2017. The Debtors consulted with the Unsecured Creditors Committee about these alternative proposals and rejected them.

The Ad Hoc Committee objected to confirmation of the reorganization plan on March 9, 2017. The Ad Hoc Committee also made an oral motion to stay the Confirmation Order pending appeal, pursuant to Federal Rule of Bankruptcy Procedure 8007, during a confirmation hearing held by the bankruptcy court on March 16, 2017.

On March 17, 2017, the bankruptcy court approved the Debtors' reorganization plan, over the objection of the Ad Hoc Committee of Non-Consenting Creditors.

The Ad Hoc Committee filed a notice of appeal in the District Court on March 22, 2017, and filed an emergency motion for a stay pending appeal or to expedite the appeal (to complete the proceedings before April 15) on March 23, 2017.

The District Court heard argument on the motion on March 29, 2017 and denied the motion on March 30, 2017. The District Court did not believe that an expedited appeal is warranted under Federal Rule of Bankruptcy Procedure 8013 in this case.

The Ad Hoc Committee appealed the confirmation order entered by the Bankruptcy Court on March 17, 2017. The Debtors moved to dismiss the Ad Hoc Committee's appeal as equitably moot on April 21, 2017. The Official Committee of Unsecured Creditors and other creditors that supported the reorganizatio plan later joined the motion to dismiss. On September 20, 2017, the District Court heard oral arguments on both sides.

On December 29, 2017, the District Court affirmed the rulings of the Bankruptcy Court on the merits, holding that the reorganization plan "(1) comforted with the requirement in 11 U.S.C. § 1123(a)(4) that all claims in a particular class be treated the same; and

(2) was proposed in good faith."[54]

The Ad Hoc Committee then appealed to the Eighth Circuit. On August 9, 2019, the Court of Appeals For the Eighth Circuit overruled the objections from the dissenting creditors and affirmed the confirmation of the reorganization plan.

B.3 Ad Hoc Creditor Groups

- Ad Hoc Group of Term Loan B Lenders and Second Lien Noteholders
  The group consists of 4 members: 3 entered the group in September 2016; 1 in November 2016
- Ad Hoc Committee of Convertible Noteholders
  12 members: 5 entered in December 2016; 6 in January 2017 (1 exit on February 27, 2017); 1 on February 27, 2017
- Ad Hoc Group of DIP Lenders and 6.25% Noteholders
  6 members: 4 entered in May 2016 (1 exit on January 19, 2017; 1 exit on September 12, 2016); 2 on September 9, 2016
- Ad Hoc Group of Unsecured Noteholders
  The group consists of 2 members: both entered on January 18, 2017
- Ad Hoc Crossholder Committee
  4 members: all entered on December 28, 2016

B.4 Official Creditor Committee and Equity Holder Committee

- Unsecured Creditors Committee (Unsecured Creditor Group)
  9 members: all entered on January 4, 2017
- Committee of Equity Security Holders
  1 member: entered on December 8, 2016

[54]https://www.govinfo.gov/content/pkg/USCOURTS-ca8-18-01302/pdf/USCOURTS-ca8-18-01302-0.pdf.

B.5 The "Noteholder Co-Proponents" Group of Creditors

A group of seven holders of second-lien and senior-unsecured notes and Peabody (the "Debtors") participated in a mediation that began after the Chapter 11 filing, and reached a reorganization plan ("Plan"). This group of creditors is referred to as the "Noteholder Co-Proponents" group.

According to the August 9, 2019 filing (submitted on April 16, 2019),[55] these seven debtholders are Aurelis Capital Management; Elliott Management; South Dakota Investment Council; Panning Capital Management; PointState Capital; Contrarian Capital Management; and Discovery Capital Management. Among these seven creditors,

- four—Contrarian Capital Management, Panning Capital Management, PointState Capital, and South Dakota Investment Council—belong to the Ad Hoc Group of Term Loan B Lenders and Second Lien Noteholders, and
- the remaining three—Aurelis Capital Management, Discovery Capital Management, and Elliott Management—belong to the Ad Hoc Group of DIP Lenders and 6.25% Noteholders.[56]

However, the names of these two ad hoc groups do not fully reflect the natures of holdings by the group members. For instance, consider the Ad Hoc Group of DIP Lenders and 6.25% Noteholders. The holdings data as of March 15, 2017 indicate that this group collectively holds

- 1.96% of USD 1000.00 10% Senior Secured Second Lien Notes due 2022
- 25.26% of USD 1650.00 Revolving Credit Facility
- 2.50% of USD 1371.00 Swap Obligations
- 16.83% of USD 650.00 6.50% Senior Unsecured Notes due 2020
- 38.20% of USD 1500.00 6.00% Senior Unsecured Notes due 2018
- 59.01% of USD 1300.00 6.25% Senior Unsecured Notes due 2021
- 12.51% of USD 250.00 7.875% Senior Unsecured Notes Due 2026

[55] https://www.govinfo.gov/content/pkg/USCOURTS-ca8-18-01302/pdf/USCOURTS-ca8-18-01302-0.pdf.

[56] Capital Group and Centerbridge Partners exited this ad hoc group in January 2017 and Septermber 2016, respectively. AllianceBernstein is the only member of the same ad hoc group who did not join the "Noteholder Co-Proponents" group.

- 27.69% of USD 732.50 4.75% Convertible Junior Subordinated Debentures due 2066

These results imply that this ad hoc group holds both secured and unsecured debt. Furthermore, the 6.25% note is mentioned in the name of this ad hoc group because, among its unsecured note holdings, the group has the highest ownership in the 6.25% note. In addition, AllianceBernstein holds only 7.03% of the 6.00% note, which may be why the firm did not join the "Noteholder Co-Proponents" group.

In the case of the Ad Hoc Group of Term Loan B Lenders and Second Lien Noteholders, the group collectively holds

- 36.92% of USD 1000.00 10% Senior Secured Second Lien Notes due 2022
- 1.45% of USD 650.00 6.50% Senior Unsecured Notes due 2020
- 10.96% of USD 1500.00 6.00% Senior Unsecured Notes due 2018
- 6.37% of USD 1300.00 6.25% Senior Unsecured Notes due 2021
- 13.32% of USD 250.00 7.875% Senior Unsecured Notes Due 2026

These results indicate that this group also holds both secured and unsecured debt, but its name reflects the fact that the group has the highest ownership in the second lien note.

B.6 Ad Hoc Committee of Non-Consenting Creditors

According to the January 26, 2018 filing by the ad hoc committee, the committee consists of the following six members: Citadel Equity Fund, OZ Management, OZ Management II, Solus Alternative Asset Management, TIG Advisors, and York Capital Management Global Advisors.[57]

All these six members belong to the Ad Hoc Committee of Convertible Noteholders (an unsecured creditor group). The members of this ad hoc committee who did not join the "Non-Consenting Creditors" group are AMCI Group, Balyasny Asset Management, Jaz Ventures, Mangrove Partners, Pine River Capital Management, and Sound Point Capital Management. One original member, Scopia Capital Management, exited the Ad Hoc Committee of Convertible Noteholders in Febuary 2017.

The holdings data as of March 15, 2017 indicate that this group collectively holds

[57] https://www.spglobal.com/marketintelligence/en/news-insights/trending/9cHaFLC-8Z9SODn8aTzBXw2

- 0.19% of USD 1000.00 10% Senior Secured Second Lien Notes due 2022
- 2.53% of USD 1650.00 Revolving Credit Facility
- 7.15% of USD 650.00 6.50% Senior Unsecured Notes due 2020
- 3.82% of USD 1500.00 6.00% Senior Unsecured Notes due 2018
- 4.95% of USD 1300.00 6.25% Senior Unsecured Notes due 2021
- 4.26% of USD 250.00 7.875% Senior Unsecured Notes Due 2026
- 34.23% of USD 732.50 4.75% Convertible Junior Subordinated Debentures due 2066

Clearly, the name of this ad hoc group reflects its highest ownership in the convertible note. Also, as its ownership in the secured debt is very low, this ad hoc group is largely an unsecured credit group.

C A Stylized Model of Group Formation

In Section 4.1 of the main text, we motivate five potential factors affecting group formation incentives using a stylized model on the tradeoff between buying claims and group formation. In this section, we present this model in detail.

C.1 Setup

We model the group formation decisions among creditors holding a particular class (e.g., unsecured class). Suppose there are n creditors, each endowed with $\frac{1}{n}$ of the total face value of the class. The first creditor is an *activist* who can improve the total class value with costly effort (e.g., through proposing a reorganization plan and/or effectively bargaining with other classes), while the rest $n-1$ creditors are *non-activists* who cannot improve class value unless working together with the activist in a creditor group. The model is a three-date sequential game with perfect information.

At $t = 0$, the activist chooses between three options: (1) making a take-it-or-leave-it offer to buy each non-activists' claim at a price p per creditor, (2) making a take-it-or-leave-it offer to invite each non-activist to join a group and share $\frac{1}{n}$ of the total effort cost, which will be exerted by the activist to improve class value on the final date, or (3) doing nothing.[58] Trading is costly for the activist due to low liquidity in the distressed claim market.[59] We capture this trading cost with a quadratic cost function on the total expenditure on buying claims: if the activist chooses to offer to buy out non-activists at price p for each of the $n-1$ creditors at $t = 0$, then the activist's total cost related to this purchase is $p(n-1)+\frac{k(p(n-1))^2}{2}$, where $k > 0$. The term $\frac{k(p(n-1))^2}{2}$ can be interpreted as the dead-weight loss from illiquidity (e.g., due to search costs).

At $t = 1$, each non-activist decides whether to accept the offer made by the activist at $t = 0$. For simplicity, we assume that, if faced with a buy-claim offer by the activist, a non-activist either sells the entirety of his claim or sells nothing.

[58] Motivated by the anecdotal evidence in Morris, Van de Graaff, and Peck (2020), we assume cost sharing to be pro rata according to each creditor's holding amount. The qualitative results are unchanged if we allow the activist to optimally choose the cost-sharing rule.

[59] It could also be due to the cost of raising capital to finance the purchase of claims.

At $t = 2$, the activist chooses the effort to improve class recovery, and each creditor's profit is realized. This effort may include both the restructuring effort to improve the total firm value, or the bargaining effort to extract rent from other classes. To improve class value, the activist must control 100% of the class. That is, the activist must either buy out claims from all $n-1$ non-activists or have all of them join the group before being able to improve class recovery. In addition, if the offer made by the activist is to buy the non-activists' claims, then trades are executed only if all non-activists accept the offer.[60] The activist can improve the total class recovery from V to $V+\Delta$ after exerting a quadratic effort cost of $\frac{\Delta^2}{2\phi_i}$. The term $\phi_i > 0$, $i \in \{buy,\ group\}$ measures the productivity of value-adding, which may vary depending on whether a group is formed. That is, ϕ_{buy} is the activist's value-adding productivity if buying out the non-activists, while ϕ_{group} is the activist's value-adding productivity if being assisted by group members. Relating to Implication 5 of Section 4.1, a higher ϕ_{group} corresponds to a higher creditor familiarity between these n creditors, as more familiar creditors can form a more productive group.

While the activist values the claim held by its full value, the non-activists potentially value the claim by a discount, that is, $1-d$ fraction of the full value, where $d \in [0,1]$. A high discount d resembles a scenario where most creditors are commercial banks, who are highly regulated and value defaulted claims less than non-banks (Implication 3 of Section 4.1). In addition, a higher number of creditors (a higher n) represents a higher holding dispersion, which corresponds to Implication 2 of Section 4.1. A large V indicates a larger size of the class (Implication 1 of Section 4.1). Lastly, a larger k indicates a higher cost of trading claims, which corresponds to the higher illiquidity in Implication 4 of Section 4.1. All players are patient and do not discount over time. Table A2 lists the key parameters in the model and their counterparts in Section 4.1.

[60] In practice, the activist may just need to control one-third of the class to influence the restructuring procedure. By assuming the activist must obtain 100% control in order to influence class recovery, we rule out the free-riding issues in buying claims (i.e., the hold-out issue) and in group formation by making each non-activist pivotal. We make this simplifying assumption because the free-riding motive does not affect the *relative* attractiveness of buying out claims and forming a group; it reduces both the non-activists' incentives to tender their claims and their incentives to join a group. Therefore, it is not an important determinant of the activist's tradeoff between the two choices.

Table A2: Mapping Model Parameters into Section 4.1

Parameter in Model	**Corresponding Hypothesis**
V	Section 4.1, Implication 1, debt size
n	Section 4.1, Implication 2, creditor holding dispersion
d	Section 4.1, Implication 3, fraction of debt held by banks
k	Section 4.1, Implication 4, illiquidity of distressed claims market
ϕ_{group}	Section 4.1, Implication 5, creditor familiarity

C.2 The Equilibrium

The equilibrium concept is subgame perfect Nash equilibrium. We solve the equilibrium backwards. At $t = 2$, if the activist offers to buy out each non-activists' claims at price p in $t = 0$ and those non-activists accept the offer, then activist chooses optimal value added Δ_{buy} to maximize her profit; if the activist offers to invite non-activists to join the group in $t = 0$ and those non-activists accept the invitation, then activist chooses optimal value added Δ_{group} to maximize her profit. At $t = 1$, each non-activist chooses between accepting and rejecting the activist's offer made at $t = 1$ to maximize his payoff, based on his anticipation of the activist's optimal value added Δ in $t = 2$. At $t = 0$, the activist sets the optimal price p, and then compares across the three options of (a) buying claims at the optimal price p, (b) group formation, and (c) doing nothing, to find the best offer to make, given that each non-activist optimizes in $t = 1$ and the activist optimizes at $t = 2$.

We first compute the activist's payoff if choosing to buy out claims at $t = 0$. At $t = 2$, the activist chooses Δ to maximize her profit, which is

$$\max_{\Delta} \quad V + \Delta - \frac{\Delta^2}{2\phi_{buy}} - p(n-1) - \frac{k(p(n-1))^2}{2}. \tag{4}$$

The sum of the first two terms $V + \Delta$ is the total value of claims held by the activist; the second term $\frac{\Delta^2}{2\phi_{buy}}$ is the effort cost if the value added is Δ; the last two terms are the trading-related cost, which consists of the total priced paid $p(n-1)$ and the extra cost $\frac{k(p(n-1))^2}{2}$ due to the illiquidity in the market for distressed claims. The first order condition with respect to Δ implies that the optimal value added is

$$\Delta_{buy} = \phi_{buy}. \tag{5}$$

At $t = 1$, a non-activist accepts to sell his claim if and only if the price p is no less than his status quo payoff $\frac{V(1-d)}{n}$. This is because each creditor is pivotal, implying that not selling the claim makes it impossible for the activist to add value. At $t = 0$, the activist sets the optimal price p to maximize her payoff if choosing to buy out claims:

$$\begin{aligned} \max_{p} \quad & V + \Delta - \frac{\Delta^2}{2\phi_{buy}} - p(n-1) - \frac{k(p(n-1))^2}{2}, \\ s.t. \quad & \Delta = \phi_{buy} \\ & p \geq \frac{V(1-d)}{n}. \end{aligned}$$

The optimal price p makes each non-activist indifferent between accepting and rejecting the offer. That is,

$$p = \frac{V(1-d)}{n}. \tag{6}$$

Plug (5) and (6) in to (4), the activist's profit if choosing to buy out the non-activists is

$$\text{Profit}_{buy} = \underbrace{V + \frac{\phi_{buy}}{2}}_{\text{class recovery - effort cost}} \underbrace{- \left(\frac{V(1-d)}{n}(n-1) + \frac{k((n-1)V(1-d)/n)^2}{2} \right)}_{\text{trading-related cost}}. \tag{7}$$

To interpret the expression, the first two terms represent total class recovery $V + \Delta_{buy}$ net of the effort cost $\frac{\Delta_{buy}^2}{2\phi_{buy}}$. The third and fourth terms are the total trading-related cost $p(n-1) + \frac{k(p(n-1))^2}{2}$, where price $p = \frac{V(1-d)}{n}$. This cost increases in the size of the class, V, because larger V implies a higher price p paid. It also increases in the number of creditors (or holding dispersion), n, as a higher n indicates a lower initial position held by the activist (i.e., $1/n$ fraction of the class), implying that the activist has to buy a larger fraction of the class (i.e., $(n-1)/n$ fraction of the class) to obtain control.

Next, we calculate the activist's payoff if choosing to form a group at $t = 0$. At $t = 2$, given each non-activist accepts the invitation to join the group, the activist chooses optimal value added Δ to maximize profit:

$$\max_{\Delta} \quad \frac{(V + \Delta)}{n} - \frac{\Delta^2}{2\phi_{group}} \cdot \frac{1}{n}. \tag{8}$$

The first term is the value of claims held by activist, which is $1/n$ of the total class value.

The second term is the part of the effort cost borne by the activist, since she distributes the total cost $\frac{\Delta^2}{2\phi_{group}}$ equally among all n group members. The first order condition with respect to Δ implies that the optimal value added is

$$\Delta_{group} = \phi_{group}.$$

Plugging into (8), the activist's profit if successfully forming the group is

$$\frac{V + \frac{\phi_{group}}{2}}{n}.$$

At $t = 1$, the non-activist accepts the invitation to join the group if only if

$$\frac{(V + \Delta)(1 - d)}{n} - \frac{\Delta^2}{2\phi_{group}} \cdot \frac{1}{n} \geq \frac{V(1 - d)}{n}, \tag{9}$$

that is, when the value of claims held, $\frac{(V+\Delta)(1-d)}{n}$, minus the shared effort cost, $\frac{\Delta^2}{2\phi_{group}} \cdot \frac{1}{n}$, is no less than the non-activist's payoff if rejecting the offer, which is the status quo value $\frac{V(1-d)}{n}$. This is because each activist's cooperation is required for any improvement in the class recovery. Plugging $\Delta = \phi_{group}$ into (9), we must have the following condition held in order for each non-activist to join the group:

$$0 \leq d \leq \frac{1}{2}.$$

Therefore, the activist's profit if choosing to form a group is

$$\text{Profit}_{group} = \begin{cases} \frac{V + \frac{\phi_{group}}{2}}{n}. & 0 \leq d \leq \frac{1}{2} \\ \frac{V}{n} & \frac{1}{2} < d \leq 1 \end{cases} \tag{10}$$

To interpret the expression, when the discount parameter d is sufficiently small, such that $0 \leq d \leq \frac{1}{2}$, all non-activists agree to join the group, because the increases in the (discounted) values of the non-activists' claims are large enough to cover the effort cost they have to share with the activist (that is, (9) is satisfied). The activist's profit in this case is $\frac{1}{n}$ of the total class recovery net of effort cost. When $\frac{1}{2} < d \leq 1$, the non-activists reject the invitation, so the activist's payoff is what she obtains under status quo.

Lastly, we compare the activist's profit if buying out claims as in (7), if forming a

group as in (10), and her status quo profit $\frac{V}{n}$ to determine her optimal decision at $t = 0$. The next proposition predicts the scenarios under which the activist chooses to form a group over the other two options.

Proposition 1. *Suppose* $V > \max\{-\frac{n\phi_{group}}{dn-\sqrt{n(d^2n+2(-1+d)^2k(-1+n)\phi_{group})}}, \frac{dn}{(-1+d)^2k(-1+n)}\}$.[61] *The activist chooses to form a group when:*

(a) the size of the class, V*, is large enough; or*

(b) the number of creditors, n*, is large enough; or*

(c) each non-activists' discount in value, d*, is sufficiently small; or*

(d) the illiquidity of the distressed claim market, k*, is large enough; or*

(e) the creditor familiarity, ϕ_{group}*, is large enough.*

Proof. It can be verified separately when $0 \leq d \leq \frac{1}{2}$ and when $\frac{1}{2} < d \leq 1$, the derivative of $\text{Profit}_{group} - \text{Profit}_{buy}$ with respect to d is negative, and its derivatives with respect to n, V, k, and ϕ_{group} are positive. In addition, the difference between Profit_{group} and the status quo payoff V/n does not violate this pattern. ■

Mapping back to Section 4.1, part (a) to (e) of Proposition 1 motivates Implication 1 to 5 of Section 4.1. Figure 2 illustrates the predictions in Proposition 1 with numerical results. When V is large, n is large, d is small, k is large, or ϕ_{group} is large, the profit of group formation, as represented by the solid line, is higher than the profit of buying out claims, as represented by the dashed line, implying a higher attractiveness of the option to form a group over the option to buy out claims. Intuitively, when d is smaller so that non-activists value the claims higher, the activist has to pay more to buy out their claims, implying that forming a group is a better choice. When n is higher, the activist has to acquire a higher fraction of the total class (i.e., $(n-1)/n$ fraction), indicating higher illiquidity costs. When V is larger, the activist's trading expenditure is also larger due to a larger class size. When k is larger, the illiquidity cost is larger due to a more illiquid market. When ϕ_{group} is higher,

[61] We require this condition for part (b) and (c) to hold. This is because when V is small so that the condition does not hold, higher n or higher V implies that the value of claims held by the activist in the case of group formation (which is only $1/n$ of the class) is so much smaller than the value of claims she holds if buying out claims (which is 100% of the class). Therefore, a higher n or a higher V implies buying claims is more attractive in this case. When V is sufficiently large so that this condition holds, the effect from the quadratic illiquidity cost dominates the aforementioned effect, resulting in the conclusions in parts (b) and (c).

the ability of a group to add value is enhanced due to higher creditor familiarity, increasing the profit of forming a group.

At a high level, the comparison between the two choices involves the following trade-offs for the activist. The benefits of buying claims involve (1) higher gains from trade realized, as non-activists, who value the claims at a discount, sell their claims to the activist, and (2) the activist extracts all the surplus from the non-activists and leaves them break-even. The cost of buying claims involves the dead-weight trading loss from illiquidity (e.g., due to search frictions). On the other hand, the benefit of forming group involves the avoidance of the dead-weight trading loss, while the costs include (1) the gains from trade not realized because the non-activists do not sell, and (2) the non-activists may retain some rent.

D Variable Measurement

Variable	Definition	Data Source
Dependent variables:		
GroupHolding%	At case level. The total amount of principal in the case held by group members, divided by the sum of the total principal of the case's pre-petition debt reported at bankruptcy filing and the principal of DIP. Truncated to be one if higher than one.	PACER, Debtwire
GroupHolding%Class	At case-class level. The total amount of principal of the class held by ad hoc group members, divided by the total principal of the class reported at bankruptcy filing. Measure calculated for DIP classes and pre-petition debt classes only. Truncated to be one if higher than one.	PACER, Debtwire
GroupSizeClass	At case-class level, a measure of average ad hoc group size that calculates the holding fraction of a class by an average group in the case. That is, for each group in a case, first calculate the group's total holding fraction of the class; then average across all groups in the case. Available for prepetition debt classes and DIP classes only. Truncated to be one if higher than one.	PACER, Debtwire
ClassInfluGroup	At case-class level. Indicator variable = 1 if this class has at least one influential ad hoc group holding a controlling position of the class (i.e., greater or equal to one-third of the class); = 0 otherwise. Measure calculated for DIP classes and pre-petition debt classes only.	PACER, Debtwire
CaseLength	At case level. Number of days in distress, "DaysIn" from Lopucki database. The number of days between (1) date filed for bankruptcy, and (2) either date the bankruptcy case is confirmed, or date the bankruptcy case is converted to Chapter 7 or dismissed. Winsorized at 0.01.	Lopucki BRD
LnCaseLength	At case level, $Ln(CaseLength)$.	Lopucki BRD
NumOfDocket	At case level. The docket number of order confirming the plan of reorganization. This variable measures the number of documents filed in the case up to plan confirmation, "DktNumConf." from Lopucki database.	Lopucki BRD
LnNumOfDocket	At case level, equaling $Ln(NumOfDocket)$.	PACER, Debtwire

VerticalAPR	At case level, indicator = 1 if there exists a vertical violation of absolute priority rule (i.e., less senior class receiving strictly positive recovery before more senior class receiving full recovery); = 0 otherwise.	PACER, Debtwire, BankruptcyData
RecoveryCase	At case level, recovery in dollars of the case divided by the total principal of the case.	PACER, Debtwire, BankruptcyData
PriceNearConfirm	At case-class level, the average bond prices of the class [-45 days,+45 days] the confirmation date. In rare cases where the case is dismissed, the confirmation date is not available, so it is replaced with the dismissal date. Note that the prices are reported percentage of the par value or face value. There are two steps to develop this variable. Step 1, for each CUSIP, find average prices during [-45 days,+45 days] of the confirmation/dismissal date. Step 2, average the prices across different CUSIPs of the same case-class.	PACER, Debtwire, TRACE, Capital IQ
PriceNearConfirm(*Vol−Weighted*)	At case-class level, the average bond prices of the class [-45 days,+45 days] the confirmation date. In rare cases where the case is dismissed, the confirmation date is not available, so it is replaced with the dismissal date. Note that the prices are reported percentage of the par value or face value. There are two steps to develop this variable. Step 1, for each CUSIP, find the volume-weighted average price during the [-45 days,+45 days] window around the confirmation/dismissal date, calculated as $\frac{\Sigma_t p_t Vol_t}{\Sigma_t Vol_t}$, where p_t is the price of a trade occurring at time t within the window, and Vol_t is the trading volume. Trading volume tagged as $1MM+$ ($5MM+$) are replaced by 1 millon (5 million) respectively. Step 2, average the weighted prices across different CUSIPs of the same case-class.	PACER, Debtwire, TRACE, Capital IQ
RecoveryClass	At case-class level, recovery in dollars of the class divided by the total principal of the class.	PACER, Debtwire, BankruptcyData
RightsIndicClass	At case level, indicator = 1 if the holders of the class are entitled to receive rights offering, or certain holders of the class are members of the backstop party of a private placement.	PACER, Debtwire
RightsRatioClass	At case-class level, the ratio of the amount of rights offering plus private placement to the principal of the class.	PACER, Debtwire
RightsIndicCase	At case level, indicator = 1 if rights offering or private placement occurred in the case; = 0 otherwise.	PACER, Debtwire

DebtReduc%	At case level, the fraction of principal reduced after bankruptcy emergence, equaling the difference between total principal after emergence and total principal before emergence, divided by the total principal before bankruptcy.	PACER, Debtwire
CompensationPlan	At case level, indicator = 1 if management incentive plan (MIP), Key Employee Retention Plan (KERP), or Key Employee Incentive Plan (KEIP) occurred in the case; = 0 otherwise.	PACER, Debtwire
GrossReturn	At CUSIP level. The average gross daily return of bond, around the announcement of the formation of a group holding 1/3 of the bond's class, or, alternatively, of the formation of a group holding strictly positive amount of the bond's class. Step 1, for each CUSIP i, find the earliest date a group holding more than 1/3 (or strictly positive amount) of the class is announced, t_i. Step 2, download TRACE standard daily pricing data and winsorize last price of day at 0.05. For each CUSIP, keep the pricing data within $+/-3$ days of the announcement date t_i. Determine the event window, $[t_i - t_{i,l}, t_i + t_{i,u}]$, where $t_i - t_{i,l} < t_i$ is the latest date before the announcement date t_i that has price data, and $t_i + t_{i,u} > t_i$ is the earliest date after the announcement date t_i that has price data. Step 3, generate holding return for each CUSIP i over the event window, $GrossReturn_i = \frac{p_+ - p_-}{p_-}$, where p_+ is the last price on the event window starting date $t_i - t_{i,l}$, and p_- is the last price on the event window ending date $t_i + t_{i,u}$. Then convert this return to daily return. This measure is then winsorized at 0.05.	PACER, Debtwire, TRACE, Capital IQ
AbnormalReturn	At CUSIP level. The average abnormal daily return of bond, around the announcement of the formation of a group holding 1/3 of the bond's class, or, alternatively, of the formation of a group holding strictly positive amount of the bond's class. Step 1, 2, and 3: the same as those of *GrossReturn*. Step 4, abnormal return for CUSIP i: $AbnormalReturn_i = GrossReturn_i - R_{benchmark}$, where $R_{benchmark}$ is the daily holding return of 5-year high yield bond index from St. Louis website, winsorized at 0.05. Lastly, this measure is winsorized at 0.05.	PACER, Debtwire, TRACE, Capital IQ, ICE BofA US High Yield Index Total Return[62]

[62]https://fred.stlouisfed.org/series/BAMLHYH0A0HYM2TRIV

Independent variables:		
BankDebt%	At case level. The total amount of principal in the case that are revolvers, letter of credit facilities, account receivables facilities, asset-backed lending, or reserve-based lending, divided by the total pre-petition principal of the case reported at bankruptcy filing.	PACER, Debtwire
BankDebt%Class	At case-class level. The total amount of principal in the class that are revolvers, letter of credit facilities, account receivables facilities, asset-backed lending, or reserve-based lending; divided by the total principal of the class reported at bankruptcy filing.	PACER, Debtwire
Bond%	At case level. The total amount of principal in the case that are bonds, divided by the total pre-petition principal of the case reported at bankruptcy filing.	PACER, Debtwire
Bond%Class	At case-class level. The total amount of principal in the class that are bonds, divided by the total principal of the class reported at bankruptcy filing.	PACER, Debtwire
NumOfMF	At case level. The total number of mutual fund management companies (i.e., "mgmt_name" in the CRSP database) holding bonds issued by the bankrupted firm, during the one year prior to the firm's bankruptcy filing date. If the case is not found in the mutual fund holding database, then this variable is missing.	CRSP Mutual Fund Holding Data
LnNumOfMF	At case level, $Ln(NumOfMF)$.	CRSP Mutual Fund Holding Data
Assets	At case level. "AssetsBefore" in LoPucki BRD. This is the total assets of the bankrupted firm in its most recent 10k filing before bankruptcy filing, within the last three years before bankruptcy.	LoPucki BRD
LnAssets	At case level, the natural logarithm of *Assets*.	LoPucki BRD
Liabilities	At case level. "LiabBefore" in LoPucki BRD. This is the total liabilities of the bankrupted firm in its most recent 10k filing before bankruptcy filing, within the last three years before bankruptcy.	LoPucki BRD
DebtSize	At case level, the annual long-term plus short-term debt in millions, measured at the date that is closest to the date five years before the bankruptcy filing date, among all dates before (1) the Peabody confirmation date (March 17, 2017) and (2) the firm's own bankruptcy filing date. Note that in 97% of the cases, this variable is measured within one year from the date five years before the bankruptcy filing date.	COMPUSTAT, Capital IQ

DebtSize3	At case level, the annual long-term plus short-term debt in millions, measured at the date that is closest to the date six years before the bankruptcy filing date, among all dates before (1) the Peabody bankruptcy filing date (April 13, 2016) and (2) the firm's own bankruptcy filing date. Note that in 95% of the cases, this variable is measured within one year from the date six years before the bankruptcy filing date.	COMPUSTAT, Capital IQ
Leverage	At case level, the ratio of *Liabilities* over *Assets*.	LoPucki BRD
PrinClass	At case-class level, the amount of principal of the class in millions.	PACER, Debtwire
LnPrinClass	At case-class level, $Ln(PrinClass)$.	PACER, Debtwire
IssueSizeClass	At case-class level, the total inflation-adjusted issuance size of the class in 2016 dollar of all instruments issued before the Peabody confirmation date, March 17, 2017. Step 1, match each pre-petition debt instrument at the bankruptcy filing date to the debt instrument at the Capital IQ Debt Structure database. Step 2, drop instruments issued after the Peabody confirmation date (March 17, 2017). Step 3, adjust the principal amount at issuance of these instruments from their issuance year dollar value to 2016 dollar value, using CPI data from U.S. Bureau of Labor Statistics. Step 4, for each case-class, find the total inflation-adjusted issuance amount across instruments within that case-class.	Capital IQ Debt Structure, PACER, Debtwire, U.S. Bureau of Labor Statistics
IssueSizeClass3	At case-class level, the same as *IssueSizeClass* except that in Step 2, drop instruments issued after the Peabody bankruptcy filing date (April 13, 2016).	Capital IQ Debt Structure, PACER, Debtwire, U.S. Bureau of Labor Statistics

PriceImpact	At case level, the daily price impact based on Amihud (2002), averaged across the one year prior to the bankrupted firm's bankruptcy filing. Step 1, combine trades executed at the same time with the same CUSIP as one trade, by taking the average of the prices and taking the summation of the trading volume. For each case-class i, pool all trades by all CUSIPs within case-class i to be the observations of case-class i. Step 2, for each date t, compute the total trading volume for all trades of the case-class i, $Q_{i,t}$, and divide the amount by the amount of the principal of the case-class, Principal_i, then scale up by one hundred. This generates the normalized trading volume of case-class i at date t, $q_{i,t} = \frac{Q_{i,t}}{\text{Principal}_i} \cdot 100$. Step 3, compute the daily return for case-class i at date t, $R_{i,t} = \frac{p_{i,t} - p_{i,t-}}{p_{i,t-}}$, where $p_{i,t}$ is the price of the last trade at date t of case-class i, and $p_{i,t-}$ is the last trade on the most recent day prior to date t that has trading data for case-class i. Step 4, for each date t and case-class i, generate the daily price impact measure $PI_{i,t} = \frac{R_{i,t}}{q_{i,t}}$, and winsorize at 0.05. Step 5, for each case j, keep if the date is within one year prior to bankruptcy filing. Generate $PriceImpact_j$ for case j by averaging across the days and classes of case j: $PriceImpact_j = \frac{1}{N_{classes,j}} \sum_i \frac{1}{N_{days,j}} \sum_t PI_{i,t}$.	TRACE Enhanced, Capital IQ
TreasAucDealerSize	At case level, the total dollar amount (in trillions) of US Treasury Bonds and Notes accepted by primary dealers in Treasury auctions that were held within the year prior to the case's bankruptcy filing date.	TreasuryDirect[63], Debtwire
Closeness	At case level, a measure of creditor familiarity. Step 1, for each creditor pair (i, j) in the case, find the instances they have been in the same group in the past. Step 2, average the instance across all pairs of creditors in the case and scale it up by multiplying with 1000, to generate creditor *Closeness* for the case. For cases with only one creditors, $Closeness = 0$, as this indicates very low familiarity.[64]	PACER, Debtwire
LnCloseness	At case level, $LnCloseness = ln(1 + Closeness)$.	PACER, Debtwire

[63] https://treasurydirect.gov/auctions/auction-query/

[64] Results are qualitatively and quantitatively similar if *Closeness* is defined as missing for such scenarios.

ClosenessClass	At case-class level, a measure of creditor familiarity. Step 1, for each creditor pair (i, j) in the case-class, find the instances they have been in the same group in the past. Step 2, average the instance across all pairs of creditors in the case-class and scale it up by multiplying with 1000, to generate creditor *Closeness-Class* for the case-class. For case-class with less than two creditors, $ClosenessClass = 0$.[65] This measure is missing if no creditor was identified to have invested in the class.	PACER, Debtwire
LnClosenessClass	At case level, $LnClosenessClass = ln(1 + ClosenessClass)$.	PACER, Debtwire
PostPeabody	At case level, indicator = 1 if the case is filed after the confirmation date of Peabody case, 2017-03-17; = 0 otherwise.	PACER, Debtwire, BankruptcyData
TreatDebt	At case level, indicator = 1 if the case's *DebtSize* (total debt five years before bankruptcy filing) is strictly higher than the top tercile among firms whose *DebtSize* is measured in the same year; = 0 if the case's *DebtSize* measure is smaller or equal to bottom tercile; missing if between the top and bottom tercile.	COMPUSTAT, Capital IQ, PACER, Debtwire
PostPeabody × *Debt*	At case level, the product of *PostPeabody* and *TreatDebt*.	COMPUSTAT, Capital IQ, PACER, Debtwire
TreatDebt2	At case level, the same as *TreatDebt* except using top and bottom 2/5 as cutoffs instead of 1/3.	COMPUSTAT, Capital IQ, PACER, Debtwire
PostPeabody × *Debt2*	At case level, the product of *PostPeabody* and *TreatDebt2*.	COMPUSTAT, Capital IQ, PACER, Debtwire
TreatDebt3	At case level, the same as *TreatDebt* except using *DebtSize*3 (total debt six years before bankruptcy) instead of *DebtSize* (total debt five years before bankruptcy) to compute terciles.	COMPUSTAT, Capital IQ, PACER, Debtwire
PostPeabody × *Debt3*	At case level, the product of *PostPeabody* and *TreatDebt3*.	COMPUSTAT, Capital IQ, PACER, Debtwire
TreatIssueClass	At case-class level, indicator = 1 if the case-class's *IssueSizeClass* (total size at issuance for instruments issued before Peabody confirmation date) is strictly higher than the top tercile; = 0 if the case's $IssueSizeClass$ measure is smaller or equal to bottom tercile; missing if between the top and bottom tercile.	Capital IQ Debt Structure, PACER, Debtwire

[65] Results are qualitatively and quantitatively similar if *ClosenessClass* is defined as missing in this scenario.

PostPeabody× *IssueClass*	At case-class level, the product of *PostPeabody* and *TreatIssueClass*.	Capital IQ Debt Structure, PACER, Debtwire
TreatIssueClass2	At case-class level, the same as *TreatIssueClass* except that using top and bottom 2/5 as cutoffs instead of 1/3.	Capital IQ Debt Structure, PACER, Debtwire
PostPeabody× *IssueClass2*	At case-class level, the product of *PostPeabody* and *TreatIssueClass2*.	Capital IQ Debt Structure, PACER, Debtwire
TreatIssueClass3	At case-class level, the same as *TreatIssueClass* except that using *IssueSizeClass3* (total issuance size of instruments issued after the Peabody bankruptcy filing date) instead of *IssueSizeClass* (total issuance size of instruments issued after the Peabody confirmation date) to compute terciles.	Capital IQ Debt Structure, PACER, Debtwire
PostPeabody× *IssueClass3*	At case-class level, the product of *PostPeabody* and *TreatIssueClass3*.	Capital IQ Debt Structure, PACER, Debtwire
TreatClass5y	At case-class level, the same as *TreatIssueClass* except that instead of using inflation-adjusted issuance size to compute terciles, we use inflation-adjusted principal size five years ago before bankruptcy filing date. Step 1, retain instruments that existed within one year of the date five years prior to bankruptcy filing, calculate their principal amounts, and convert them to 2016 dollars to adjust for inflation. Step 2, sum the inflation-adjusted principal amounts within each case-class to obtain the total. Step 3, define a class to be in the "treatment" group (*TreatClass5y*= 1) if this class's principal size five year prior to bankruptcy filing is above the top tercile (top 1/3), and a class to be in the "comparison" group (*TreatClass5y*= 0) if this amount is smaller or equal to the the bottom tercile (bottom 1/3); *TreatClass5y* is missing if in the middle tercile.	Capital IQ Debt Structure, PACER, Debtwire
PostPeabody× *Size5y*	At case-class level, the product of *PostPeabody* and *TreatClass5y*.	Capital IQ Debt Structure, PACER, Debtwire
Dispersion	At case level, the standard deviation of one-quarter-ahead earnings per share forecast divided by the absolute value of the mean, averaged across the year prior to the bankruptcy filing date. Step 1, download I/B/E/S summary statistics data and keep the one-quarter-ahead forecast data ($FPI = 6$), and keep only if the data is reported within one year prior to bankruptcy filing date. Step 2, calculate forecast dispersion as $stdev/\|meanest\|$ following Diether, Malloy, and Scherbina (2002). Step 3, average within the year before the bankruptcy filing date.	I/B/E/S, PACER, Debtwire

Coverage	At case level, the number of analyst forecasts about earnings per share, averaged across the year prior to the bankruptcy filing date. Step 1, download I/B/E/S summary statistics data and keep the one-quarter-ahead forecast data ($FPI = 6$), and keep only if the data is reported within one year prior to bankruptcy filing date. Step 2, average *numest* within the year.	I/B/E/S, PACER, Debtwire
TranCost	At case level, the bid-ask-spreads of bonds issued by the firm, averaged across the year prior to bankruptcy filing and across bonds of the same firm. Step 1, for each bond, and each trading day, find the average customer buy price (bid) and customer sell price (ask) within that day. The mid price is the mid point between the average bid and average ask. The transaction cost at bond level for each day is then $\frac{average\ bid - average\ ask}{mid\ price}$. Winsorize by 0.05. Step 2, keep data within the year prior to bankruptcy filing, then take an average across the days during the year for each CUSIP, then average across CUSIP within each instrument, then average across instruments within each case. Truncate values below zero at zero.	Trace enhanced, Capital IQ, PACER, Debtwire
TranCostBond	At CUSIP level, the bid-ask-spread of the bond averaged across the year prior to bankruptcy filing. Step 1, for each bond, and each trading day, find the average customer buy price (bid) and customer sell price (ask) within that day. The mid price is the mid point between the average bid and average ask. The transaction cost at bond level for each day is then $\frac{average\ bid - average\ ask}{mid\ price}$. Winsorize by 0.05. Step 2, keep data within the year prior to bankruptcy filing, then take an average across the days during the year for each CUSIP.	Trace enhanced, Capital IQ, PACER, Debtwire
FulcrumClass	At case-class level, indicator = 1 if the class is the most senior class that receives less than 100% recovery (i.e., the classes more senior to this class all receive full recovery but this class receives partial recovery).	PACER, Debtwire, BankruptcyData
NumOfClass	At case level, the number of classes of the bankrupted firm. There are five possible pre-petition classes (first-lien secured, non-first-lien secured, unsecured, equity, and other), and a DIP class.	PACER, Debtwire
LnNumOfClass	At case level, $Ln(NumOfClass)$.	PACER, Debtwire

Other variables:		
NumOfGroup	At case level. The number of groups in the case.	PACER, Debtwire
NumOfCreditor	At case level, the number of creditors in the case.	PACER, Debtwire
NumOfCreditorClass	At case-class level, the number of creditors with non-zero investment in the class of the case.	PACER, Debtwire
NumOfCreditorGroup	At group level, the number of creditors in a group.	PACER, Debtwire
DaysFirstGroup	At case level, the number of days between the bankruptcy filing date, and the formation of the first group.	PACER, Debtwire
DaysSecondGroup	At case level, the number of days between the bankruptcy filing date, and the formation of the second group.	PACER, Debtwire
DaysThirdGroup	At case level, the number of days between the bankruptcy filing date, and the formation of the third group.	PACER, Debtwire
CaseWithGroup	At case level, = 1 if the case has at least one ad hoc group formed; = 0 otherwise.	PACER, Debtwire
Top3GrMemHolding%	At case-class-group level, measures the average holding fraction of a class, for the top-three group members holding that class. Step 1, for each creditor, calculate the holding fraction of a given class in a case. Winsorize the holding fractions by 0.001 to account for the reporting errors that result in more than 100% holding fraction. Step 2, for each group that has group members with non-zero holdings of that class, find the top three group members holding that class, and collapse to case-class-group level. The measure is calculated for DIP classes and pre-petition debt classes.	PACER, Debtwire
FirstGroupHolding%	At CUSIP level, for the first group announced to hold a strictly positive amount of the bond's class, this measure captures the the fraction of the class held by this group.	PACER, Debtwire, Capital IQ
OverOneThird	At CUSIP level, an indicator that is equal to one if *FirstGroupHolding%* is higher or equal to the one-third controlling threshold.	PACER, Debtwire, Capital IQ
HighHFHolding	At CUSIP level, an indicator that is equal to one if the fraction of the bond's class invested by hedge funds at the time of group announcement is higher or equal to the median.	PACER, Debtwire, Capital IQ
HFHolding%Class	At CUSIP level, the fraction of a bond's class's principal held by hedge funds, private equity, private debt, or asset management companies. This is measured only for pre-petition debt classes or DIP class.	PACER, Debtwire

NonCoalHF%Class	At CUSIP level, the fraction of creditors who invest in the bond's class being non-coalition hedge funds (including hedge funds, private equity, private debt, or asset management companies that do not participate in ad hoc groups) over all creditors investing in the bond's class. This is measured only for pre-petition debt classes or DIP.	PACER, Debtwire

E Definition of Classes

We categorize all instruments into the following six classes.

- **DIP**. An instrument belongs to a DIP class if it is a debtor-in-possession financing instrument.
- **First-Lien secured**. An instrument belongs to a first-lien secured class if it is secured and has the first lien on collateral. If lien information is not specified, we also categorize the secured instrument as first-lien.
- **Non-first-lien secured**. An instrument belongs to a non-first-lien secured class if it is secured and is second-lien, third-lien, fourth-lien, etc. An instrument is also non-first-lien secured if it is a junior secured claim.
- **Unsecured**. An instrument belongs to an unsecured class if it is unsecured.
- **Equity**. An instrument belongs to an equity class if it is common stock, preferred stock, or warrant.
- **Other**. An instrument belongs to an "other" class if it does not belong to either of the aforementioned five classes.

Table 1: Creditor Categories

Panel A: Creditor Categories, Full Sample

	Mean	Std. Dev.	Count	Min	p25	p50	p75	Max
Hedge Funds/Private Equity								
Private Debt/Asset Management	0.669	0.258	171	0	0.545	0.720	0.833	1
Commercial Banks	0.120	0.175	171	0	0	0.045	0.182	0.889
Investment Banks	0.055	0.098	171	0	0	0.022	0.091	1
Mutual Funds	0.045	0.099	171	0	0	0	0.062	1
Insurance	0.020	0.063	171	0	0	0	0	0.484
Trade Creditors	0.019	0.071	171	0	0	0	0	0.667
Trust	0.007	0.041	171	0	0	0	0	0.500
Pension	0.001	0.007	171	0	0	0	0	0.077
Other	0.012	0.042	171	0	0	0	0	0.250

Panel B: Creditor Categories, Ad Hoc Group Members

	Mean	Std. Dev.	Count	Min	p25	p50	p75	Max
Hedge Funds/Private Equity								
Private Debt/Asset Management	0.814	0.151	142	0.258	0.750	0.822	0.909	1
Commercial Banks	0.044	0.096	142	0	0	0	0.059	0.645
Investment Banks	0.046	0.074	142	0	0	0	0.077	0.500
Mutual Funds	0.041	0.064	142	0	0	0	0.077	0.250
Insurance	0.026	0.072	142	0	0	0	0	0.484
Trade Creditors	0.005	0.021	142	0	0	0	0	0.182
Trust	0.003	0.014	142	0	0	0	0	0.091
Pension	0	0.004	142	0	0	0	0	0.050
Other	0.009	0.038	142	0	0	0	0	0.250

Table 1 measures the fraction of creditors in a case belonging to each major creditor category, where "Other" is defined as the creditor being one of the following: individual person, real estate companies, mortgage company, government, religious organization, or school. In each panel, we calculate the total fraction of the case's debt held by each creditor category, and then average across cases. Panel A presents summary statistics with respect to the full sample, while Panel B restricts the sample to only include creditors that are members of ad hoc groups.

Table 2: Group Size, Formation Timing, and Group Member Holdings

	Mean	Std. Dev.	Count	Min	p25	p50	p75	Max
CaseWithGroup	0.842	0.366	171.000	0.000	1.000	1.000	1.000	1.000
NumOfCreditorGroup	8.148	9.195	311	1	3	6	10	82
DaysFirstGroup	16.357	45.363	140	-207	0.5	5	24	245
DaysSecondGroup	48.730	73.202	74	-20	8	28	60	392
DaysThirdGroup	103	114.915	33	0	33	57	160	515
Top3GrMemHolding%	0.1	0.112	446	0	0.024	0.069	0.139	1

Table 2 reports summary statistics for certain creditor group characteristics. *CaseWithGroup* is an indicator equal to one if there exists at least one ad hoc group in the case. *NumOfCreditorGroup* is the number of creditors in the group. The variables *DaysFirstGroup*, *DaysSecondGroup*, and *DaysThirdGroup* represent the difference in days between the group formation dates and bankruptcy filing dates (i.e., formation date minus bankruptcy filing date), for the first group, second group, and third group, respectively. *Top3GrMemHolding%* measures the average holding fraction of a class, for the top-three group members holding that class. See Appendix D for variable definitions.

Table 3: Summary Statistics

Panel A: Summary Statistics at the Case Level

	Mean	Std. Dev.	Count	Min	p25	p50	p75	Max
Assets ($mm)	3181.718	6779.102	171	294.389	668.580	1327.798	2710	76995
Liabilities ($mm)	3177.508	6175.988	171	162.599	586.100	1451.785	2904.429	64092
Leverage	1.079	0.532	171	0.363	0.766	0.983	1.232	4.080
BankDebt%	0.172	0.215	171	0	0	0.105	0.241	1
Bond%	0.475	0.350	171	0	0.122	0.471	0.817	1
NumOfMF	60.764	69.354	110	1	12	31	79	309
GroupHolding%	0.358	0.283	171	0	0	0.395	0.597	1
NumOfGroup	1.620	1.351	171.000	0.000	1.000	1.000	2.000	8.000
NumOfClass	3.696	1.001	171	1	3	4	4	6
NumOfCreditor	16.515	18.171	171	0	6	11	21	142
Closeness	218.049	285.903	164	0	11.946	105.263	297.619	1600
PriceImpact	2.847	2.528	108	0.069	1.113	1.879	4.148	13.252
Dispersion	0.828	1.167	113	0	0.171	0.410	1.018	7.607
Coverage	6.001	5.387	129	1	1.917	4.333	7.917	25.333
TranCost	0.007	0.003	108	0	0.005	0.007	0.008	0.015
TreasAucDealerSize ($Tn)	0.768	0.105	171	0.596	0.701	0.761	0.816	1.146
VerticalAPR	0.497	0.501	171	0	0	0	1	1
CaseLength	189.175	156.639	171	4	72	144	261	744
NumOfDocket	1057.280	1163.121	168	67	343.500	769	1256	8053
RecoveryCase	0.619	0.265	154	0.004	0.413	0.652	0.830	1
RightsIndicCase	0.271	0.448	171	0	0	0	1	1
CompensationPlan	0.860	0.348	171	0	1	1	1	1
DebtReduc%	0.563	0.427	142	-1.294	0.399	0.683	0.872	1

Panel B: Summary Statistics at the Case-Class Level

	Mean	Std. Dev.	Count	Min	p25	p50	p75	Max
PrinClass ($mm)	893.638	1841.107	489	0	124.900	341.900	931.336	22046.998
BankDebt%Class	0.144	0.314	479	0	0	0	0.048	1
Bond%Class	0.365	0.463	479	0	0	0	1	1
GroupHolding%Class	0.299	0.354	479	0	0	0.021	0.640	1
GroupSizeClass	0.191	0.269	479	0	0	0.015	0.322	1
ClassInfluGroup	0.384	0.487	479	0	0	0	1	1
FirstGroupHolding%	0.380	0.252	107	0.000	0.175	0.352	0.582	0.801
ClosenessClass	259.519	479.637	366	0	0	66.667	321.429	4333.333
FulcrumClass	0.355	0.479	369	0	0	0	1	1
NumOfCreditorClass	6.959	10.665	489	0	0	4	9	114
PriceNearConfirm	33.08	34.58	149	0.03	3.78	18.39	52.58	111.42
RecoveryClass	0.601	0.395	306	0	0.189	0.675	1	1.429
RightsIndicClass	0.167	0.373	366	0	0	0	0	1
RightsRatioClass	0.040	0.140	366	0	0	0	0	0.574

See Appendix D for variable definitions.

Table 4: Factors Correlated with Group Formation Intensity, Case Level

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
	Dependent Variable: *GroupHolding%*						
Leverage	0.188**						0.0361*
	(0.0532)						(0.0148)
Bond%		0.404***					
		(0.0839)					
LnNumOfMF			0.110**				0.112***
			(0.0284)				(0.0254)
BankDebt%				-0.532***			-0.201
				(0.0867)			(0.119)
PriceImpact					0.0243**		0.0181***
					(0.00629)		(0.00391)
LnCloseness						0.0398*	0.00649
						(0.0157)	(0.0220)
LnAssets	0.0758***	0.0220	-0.123***	0.0285	-0.0405***	0.0234	-0.0882***
	(0.0134)	(0.0326)	(0.0144)	(0.0228)	(0.00881)	(0.0297)	(0.0161)
LnNumOfClass	-0.0400	-0.0732	-0.0380	-0.0868	-0.0198	-0.0823	-0.0528
	(0.0808)	(0.0666)	(0.0701)	(0.0562)	(0.0599)	(0.0492)	(0.0766)
Constant	-0.343	0.0889	0.993***	0.374	0.683***	0.147	0.641***
	(0.212)	(0.282)	(0.0687)	(0.246)	(0.0276)	(0.310)	(0.0191)
Fixed Effect	Ind×Year	Ind×Year	Ind×Year	Ind×Year	Ind×Year	Ind×Year	Ind×Year
# of F.E.	29	29	13	29	12	27	12
Cluster	Ind,Year	Ind,Year	Ind,Year	Ind,Year	Ind,Year	Ind,Year	Ind,Year
# of Ind Clusters	17	17	8	17	7	17	7
# of Year Clusters	6	6	6	6	6	6	6
N	111	111	62	111	60	104	59
R^2	0.457	0.454	0.421	0.454	0.323	0.377	0.460

Standard errors in parentheses
* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table 4 examines factors correlated with group formation using case-level measures. The dependent variable is group formation intensity (*GroupHolding%*), which equals the fraction of the case's total principal collectively held by all ad hoc group members. Independent variables include: *Leverage* (total assets over total liabilities pre-bankruptcy-filing) as a measure of debt size, *Bond%* (fraction of total debt made up of bonds) and *LnNumOfMF* (natural logarithm of the total number of mutual fund creditors) as measures of creditor holdings dispersion, *BankDebt%* as a measure of the fraction of debt held by bank creditors, *PriceImpact* as a measure of the illiquidity of distressed claims markets, and *LnCloseness* as a measure of creditor familiarity based on the frequency of creditors being in the same group in past cases. We include *LnAssets* and *LnNumOfClass* as controls; the first controls for firm size while the second controls for the number of classes of the case. See Appendix D for details on the construction of these measures. All regressions include industry × year fixed effects, where industry is defined as the two-digit SIC code of the bankrupt firm and year is the year the firm filed for bankruptcy. Standard errors are clustered by industry and year.

Table 5: Daily Bond Returns around Group Formation Announcements

	(1)	(2)	(3)	(4)	(5)
	Effect on Own Class	Effect on Other Classes			
	Full Sample	Full Sample	DIP: Yes	DIP: No	(3) - (4)
GrossReturn	0.0086**	0.0078***	0.0004	0.0111***	-0.0106**
	(0.0032)	(0.0025)	(0.0033)	(0.0031)	(0.0047)
AbnormalReturn	0.0069**	0.0058**	-0.0013	0.0088***	-0.0102**
	(0.0026)	(0.0025)	(0.0035)	(0.0030)	(0.0046)
N	107	96	29	67	96
Cluster	Case	Case	Case	Case	Case
# of Clusters	42	24	24	24	24

This table presents the results of an event study around group formation announcements using bond prices from TRACE. The event window is within [-3, +3] days of the group formation announcement date. The start date (end date) of the window is the date strictly before (after) the announcement date that is closest to the announcement date and has bond pricing data available. To distinguish the announcement effect of group formation from the announcement effect of the firm entering bankruptcy, we drop group announcements where the announcement date is within the [-3 days, 3 days] window of the bankruptcy petition filing date. In column (1), we study whether bond prices increase following the first announcement of the formation of a group holding a strictly positive position of the bond's class. In column (2), we examine how bond prices respond to group announcements involving creditors from *other* classes of the same firm. Columns (3) and (4) examine this effect separately in scenarios where the group announcement involves debtor-in-possession (DIP) creditors versus announcements involving non-DIP creditor classes. Column (5) presents the results from one-sided t-tests for the means of gross returns and abnormal returns between columns (3) and (4). The hypothesis of the one-sided t-test is Yes - No < 0. Standard errors are clustered at the case level for means of returns. ***, **, and * denote statistical significance at the 1%, 5%, and 10% level, respectively, for the two-tailed and one-tailed tests as described above.

Table 6: Peabody Ruling and Group Formation

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Dependent Variable: Group Formation Intensity							
	at the case level		at the case-class level					
	GroupHolding%		GroupHolding%Class		GroupSizeClass		ClassInfluGroup	
PostPeabody	0.247***	0.247**	-0.0543	-0.0543	0.00474	0.00474	0.0592	0.0592
	(0.0769)	(0.0802)	(0.0399)	(0.0508)	(0.0213)	(0.0455)	(0.0612)	(0.0710)
TreatDebt	-0.0319	-0.0319						
	(0.0779)	(0.0180)						
Postpeabody×Debt	0.319**	0.319**						
	(0.126)	(0.0953)						
TreatIssueClass			0.0730*	0.0730**	0.0512***	0.0512***	0.166**	0.166***
			(0.0420)	(0.0192)	(0.0164)	(0.0105)	(0.0599)	(0.0276)
Postpeabody×IssueClass			0.370***	0.370**	0.152***	0.152	0.446***	0.446*
			(0.114)	(0.132)	(0.0484)	(0.0969)	(0.138)	(0.175)
Constant	0.117**	0.117***	0.240***	0.240***	0.115***	0.115***	0.205***	0.205***
	(0.0439)	(0.0290)	(0.0288)	(0.0110)	(0.0135)	(0.00612)	(0.0362)	(0.0106)
Fixed Effect: Ind×Year	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
# of Ind×Year F.E.	18	18	34	34	34	34	34	34
Fixed Effect: Class	No	No	Yes	Yes	Yes	Yes	Yes	Yes
# of Class F.E.	–	–	3	3	3	3	3	3
Cluster	Ind	Ind,Year	Ind	Ind,Year	Ind	Ind,Year	Ind	Ind,Year
# of Ind Clusters	11	11	22	22	22	22	22	22
# of Year Clusters	–	6	–	5	–	5	–	5
N	70	70	134	134	134	134	134	134
R^2	0.494	0.494	0.421	0.421	0.312	0.312	0.413	0.413

Standard errors in parentheses; * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table 6 investigates the impacts of the Peabody ruling on group formation intensity at both the case level (columns (1) and (2)) and the case-class level (columns (3)–(8)). In columns (1) and (2), *GroupHolding%* is the case-level fraction of claims held by members of ad hoc creditor groups. We define the "treatment" group ($TreatDebt = 1$) as cases in which the total debt size (*DebtSize*, long-term debt plus short-term debt) around five years before the bankruptcy filing date is above the top tercile (top 1/3) level within all firms of which the debt size data is taken in the same year, $TreatDebt = 0$ if *DebtSize* is smaller or equal to the bottom tercile (bottom 1/3), and $TreatDebt$ is missing if in the middle tercile. For each case, the variable $PostPeabody = 1$ if and only if the case is filed after the confirmation date of the Peabody case (March 17, 2017). The variable *PostPeabody*×*Debt* is the product of *PostPeabody* and the treatment group indicator *TreatDebt*. This regression includes industry × time fixed effects, and standard errors (in parentheses) are clustered by industry in (1) and industry and year in (2). Columns (3)-(8) present similar results at the case-class level. *GroupHolding%Class* is the fraction of the class's principal held by group members. *GroupSizeClass* is the holding fraction of a class by an average group in the case. *ClassInfluGroup* is whether this class has at least one influential group holding at least a blocking position (i.e., over one-third ownership) in the class. We first find the terciles of *IssueSizeClass* (total inflation-adjusted issuance size of the class in 2016 dollar of all instruments issued before the Peabody confirmation date, March 17, 2017) among all case-classes. We then define a class to be in the "treatment" group (*TreatIssueClass*= 1) if this class's *IssueSizeClass* is above the top tercile (top 1/3), and a class to be in the "comparison" group (*TreatIssueClass*= 0) if this class's *IssueSizeClass* is smaller or equal to the the bottom tercile (bottom 1/3). *TreatIssueClass* is missing if in the middle tercile. The variable *PostPeabody*×*IssueClass* is the product of *PostPeabody* and *TreatIssueClass*. These regressions incorporate class and industry × year fixed effects. Standard errors are clustered by industry in (3), (5), and (7), and by industry and year in (4), (6), and (8).

Table 7: Peabody Ruling and Class Recoveries

	(1)	(2)	(3)	(4)	(5)	(6)
	PriceNearConfirm in % of Par		RecoveryClass in %		RecoveryClass (Bond) in %	
PostPeabody	-65.19***	-65.19***	-20.82*	-20.82***	-44.06***	-44.06***
	(8.150)	(4.706)	(11.99)	(1.342)	(6.609)	(5.674)
TreatIssueClass	-24.36***	-24.36***	-11.19***	-11.19**	-0.962	-0.962
	(6.151)	(0.382)	(3.086)	(2.829)	(5.125)	(8.115)
PostPeabody×IssueClass	35.37**	35.37***	10.02	10.02**	27.24**	27.24**
	(12.22)	(7.060)	(8.751)	(2.493)	(9.913)	(8.511)
Constant	80.38***	80.38***	72.91***	72.91***	56.48***	56.48***
	(4.747)	(0.587)	(7.167)	(1.682)	(3.864)	(6.130)
Fixed Effect	Ind×Year,Class	Ind×Year,Class	Ind×Year,Class	Ind×Year,Class	Ind×Year,Class	Ind×Year,Class
# of Ind×Year F.E.	15	15	30	30	17	17
# of Class F.E.	3	3	3	3	3	3
Cluster	Ind	Ind,Year	Ind	Ind,Year	Ind	Ind,Year
# of Ind Clusters	9	9	21	21	10	10
# of Year Clusters	–	5	–	5	–	5
N	60	60	114	114	66	66
R^2	0.572	0.572	0.670	0.670	0.609	0.609

Standard errors in parentheses
* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table 7 examines the effects of the Peabody ruling on case-class-level recovery rates. We run case-class level regressions following equation (3). Columns (1) and (2) focus on the market-expected recovery rate, *PriceNearConfirm*, defined as the average bond price over the [-45, +45] day window surrounding the bankruptcy plan's confirmation date, expressed as a percentage of par value. Columns (3) to (6) present results for court-approved recovery rates across different types of creditor classes. The dependent variables in columns (3) and (4) are *RecoveryClass* (for all classes), and the dependent variables in columns (5) and (6) are *RecoveryClass (Bond)* for bond classes (i.e., classes that include at least one bond instrument), in percentage points. See Table 6 for the definitions of the independent variables. All regressions include industry × year and class fixed effects, and we cluster standard errors by industry or by industry and year.

Table 8: Peabody Ruling and Case-Level Bankruptcy Outcomes

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	RecoveryCase (in %)		Vertical-APR		LnCaseLength		LnNumOfDocket	
PostPeabody	-8.944	-8.944*	0.302**	0.302***	-0.0816	-0.0816	0.0716	0.0716*
	(8.032)	(3.764)	(0.115)	(0.0416)	(0.223)	(0.122)	(0.368)	(0.0326)
TreatDebt	-1.980	-1.980	0.340***	0.340***	-0.177***	-0.177	0.147***	0.147
	(14.57)	(11.46)	(0.0945)	(0.0520)	(0.0108)	(0.129)	(0.0389)	(0.161)
PostPeabody×Debt	-0.874	-0.874	-0.425**	-0.425**	0.400**	0.400**	0.467	0.467
	(15.60)	(11.52)	(0.167)	(0.119)	(0.157)	(0.143)	(0.275)	(0.237)
Constant	64.54***	64.54***	0.349***	0.349***	4.876***	4.876***	6.275***	6.275***
	(7.535)	(4.700)	(0.0825)	(0.0418)	(0.150)	(0.100)	(0.310)	(0.169)
Fixed Effect	Ind×Year	Ind×Year	Ind×Year	Ind×Year	Ind×Year	Ind×Year	Ind×Year	Ind×Year
# of Ind×Year F.E.	14	14	18	18	18	18	17	17
Cluster	Ind	Ind,Year	Ind	Ind,Year	Ind	Ind,Year	Ind	Ind,Year
# of Ind Clusters	9	9	11	11	11	11	10	10
# of Year Clusters	–	6	–	6	–	6	–	6
N	59	59	70	70	70	70	68	68
R^2	0.337	0.337	0.399	0.399	0.269	0.269	0.378	0.378

Standard errors in parentheses

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table 8 investigates the impact of the Peabody ruling on case-level bankruptcy outcomes. In columns (1) and (2), the dependent variables are the case-level court-approved recovery rate (*RecoveryCase*), measured in percentage points. In columns (3) and (4), the dependent variables are indicator of vertical violations of the absolute priority rule ($VerticalAPR$), that is, whether a class receives positive recovery before a more senior class receives full recovery. In columns (5) and (6), the dependent variables are the log number of days between the beginning and end of the bankruptcy case (*LnCaseLength*). In columns (7) and (8), the dependent variables are the log number of legal documents filed during the bankruptcy process ($LnNumOfDocket$). See definitions of the independent variables in Table 6. All regressions include industry×year fixed effects, and standard errors are clustered by industry or by industry and year.

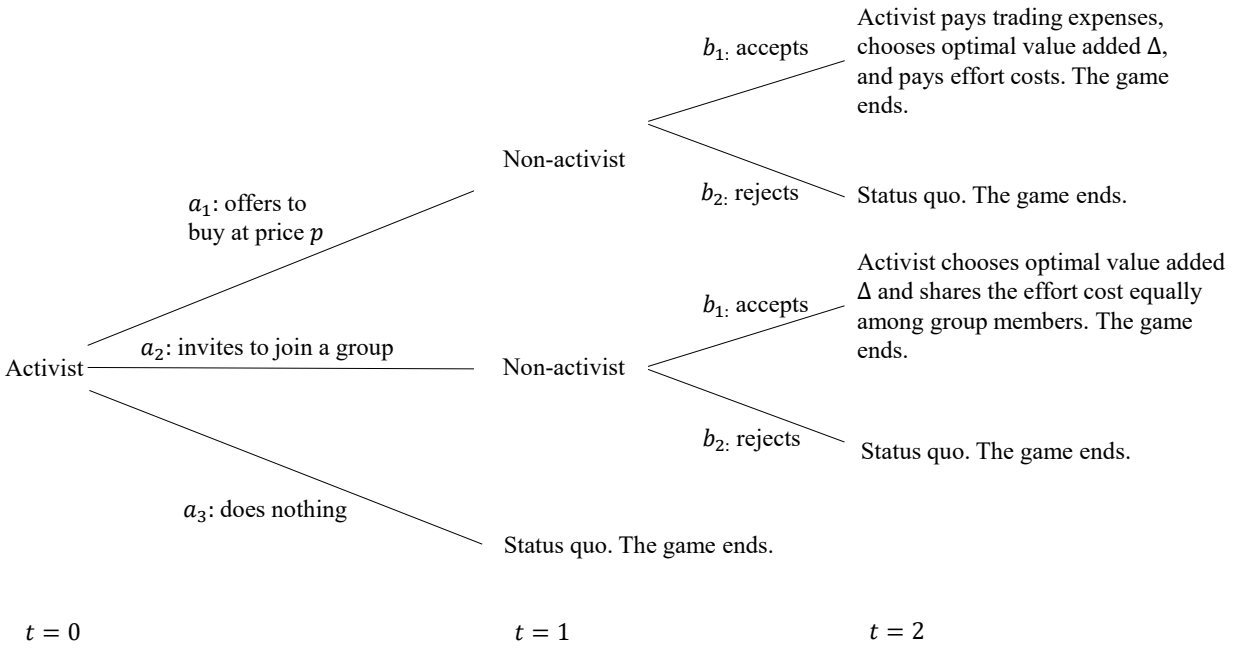
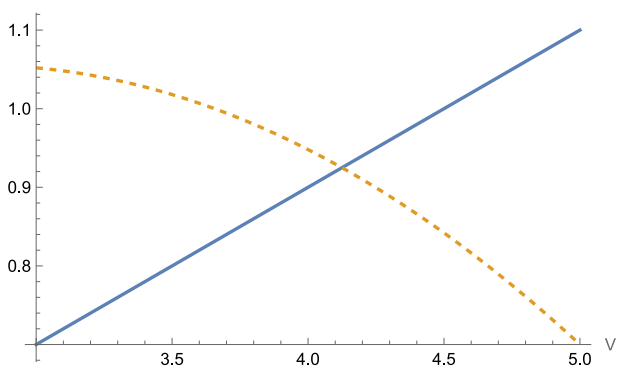
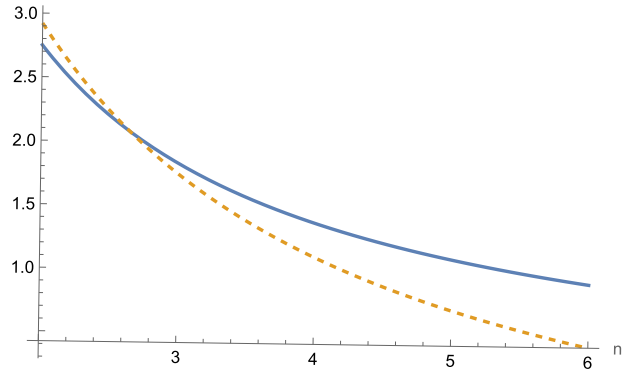


Figure 1: Timeline, Group Formation v.s. Buying Claims

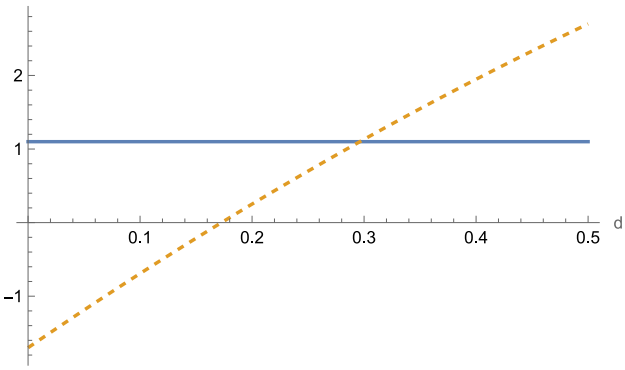
At time $t = 0$, the activist moves first and chooses one of three actions $\{a_1, a_2, a_3\}$. Here, a_1 means making a "take-it-or-leave-it" offer to buy the non-activists' claims at price p per creditor; a_2 making a "take-it-or-leave-it" offer to the non-activists and inviting them to form a group; and a_3 doing nothing. The non-activists move next and, at $t = 1$, take either action b_1 to accept or action b_2 to reject $a_i, i = 1, 2$. If the non-activists accept a_1 (a_2), then the activist makes an effort to improve class recovery from V to $V + \Delta$ at $t = 2$ and pays trading and effort costs (shares the total effort cost equally with the non-activists).



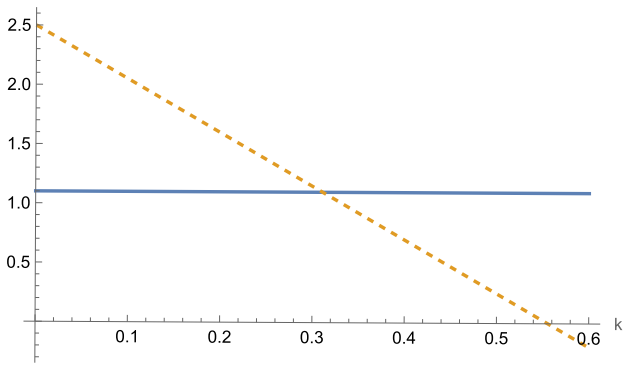
(a) Comparative statics with class size V



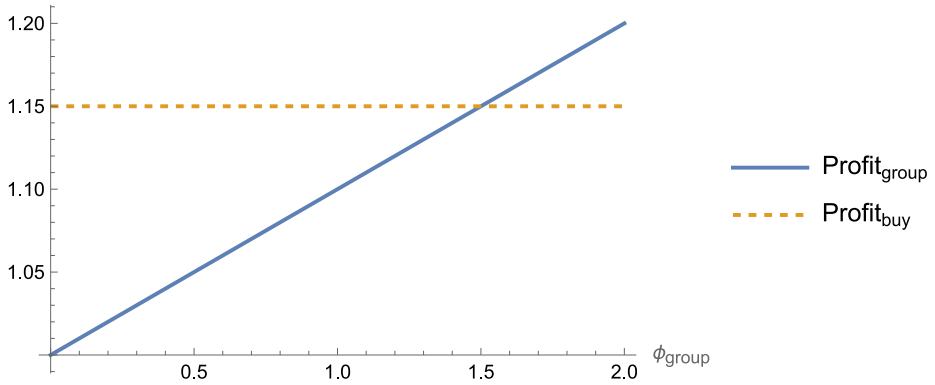
(b) Comparative statics with number of creditors n



(c) Comparative statics with discount d



(d) Comparative statics with illiquidity k



(e) Comparative statics with creditor familiarity ϕ_{group}

Figure 2: Illustration of Proposition 1: Profit_{group} (solid line) v.s. Profit_{buy} (dashed line). Panel (a) assumes $n = 5$, $d = 0.25$, $\phi_{buy} = 1$, $\phi_{group} = 1$, and $k = 0.4$. Panel (b) assumes $V = 5$, $d = 0.25$, $\phi_{buy} = 1$, $\phi_{group} = 1$, and $k = 0.4$. Panel (c) assumes $V = 5$, $n = 5$, $\phi_{buy} = 1$, $\phi_{group} = 1$, and $k = 0.4$. Panel (d) assumes $n = 5$, $d = 0.25$, $\phi_{buy} = 1$, $\phi_{group} = 1$, and $V = 5$. Panel (e) assumes $n = 5$, $d = 0.25$, $\phi_{buy} = 1$, $k = 0.3$, and $V = 5$.

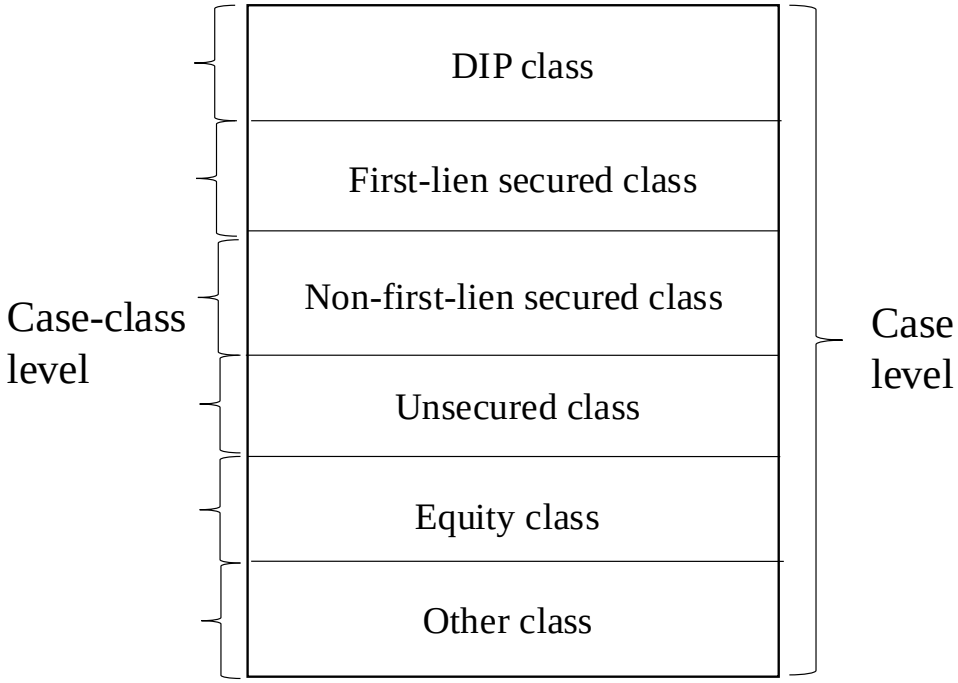
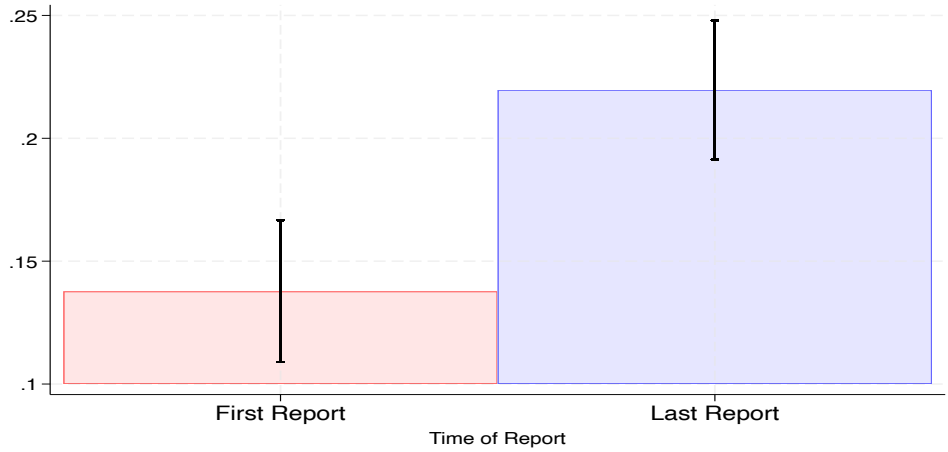
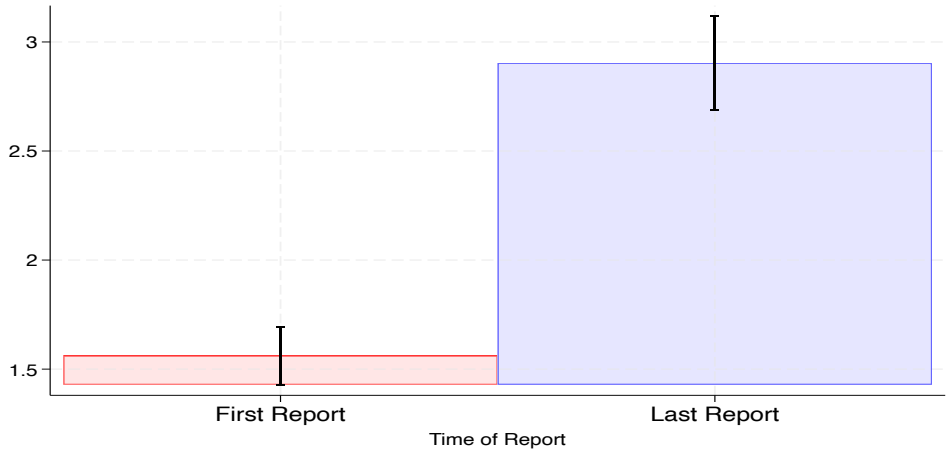


Figure 3: Illustration of Data Granularity: Case Level and Case-Class Level.



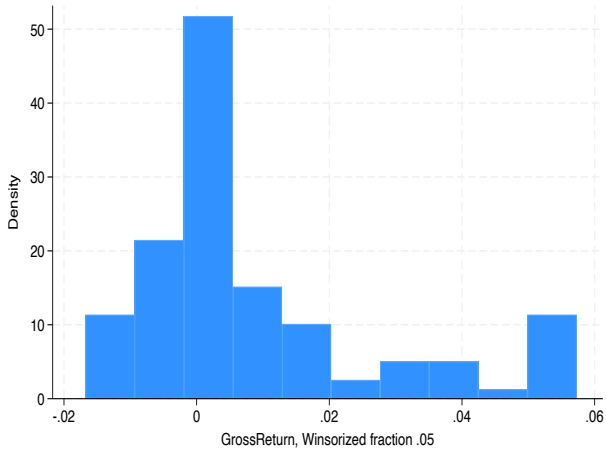
(a) A Group's Holding % of a Class



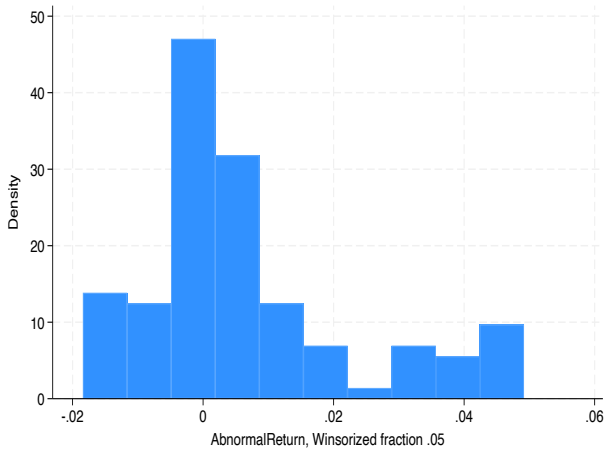
(b) Number of Groups

Figure 4: Holding Fraction of Class Per Group and Number of Groups: First Report vs. Last Report.

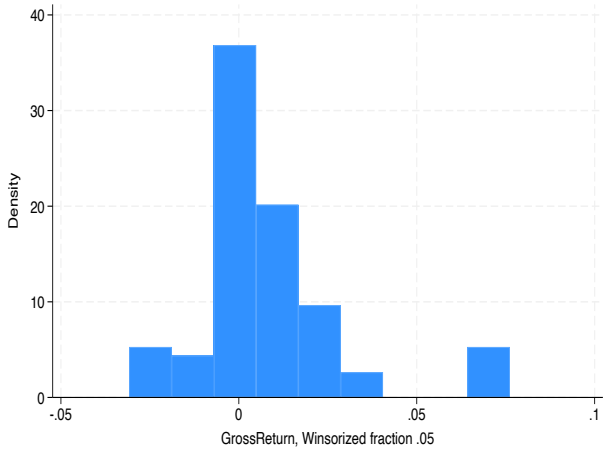
This figure uses cases with updates on holding reports involving ad hoc groups (i.e., cases with only one report is excluded). Panel (a) shows that an average group holds 14% of a class in the first report of the case while holding 22% in the last report. Panel (b) shows that the first report reveals 1.56 groups and the last report reveals 2.90 groups. To construct the measure in panel (a), the first step is for each group in a case, we compute the group's holding % of each class in the case at each reporting date; second, we then take an average of the group's holding % of a class across all groups investing in each case-class at a given reporting date; third, for each case, we find the first reporting date and the last reporting date of investors' holdings; fourth, we drop cases with only one reporting date, and observations that are from neither the first nor the last reporting date of the case; lastly, we average the measure from the second step across two categories—from the first report and from the last report. To construct the measure in panel (b), first, for each case, we compute the number of groups at each reporting date; second, for each case, we find the first reporting date and the last reporting date of investors' holdings; third, we drop cases with only one reporting date, and observations that are from neither the first nor the last reporting date; lastly, we average the measure from the first step across two categories—from the first report and from the last report. The figure reports both the mean levels and the 95% confidence intervals of means.



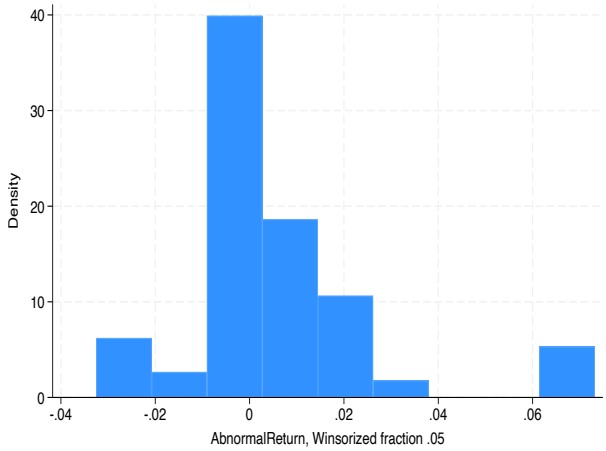
(a) Effect on Own Class: Gross Return



(b) Effect on Own Class: Abnormal Return



(c) Effect on Other Classes: Gross Return



(d) Effect on Other Classes: Abnormal Return

Figure 5: Event Study—Bond Daily Returns around the First Announcement of Formation of a Group Holding Strictly Positive Amount of a Class

This figure plots histograms of bond daily returns and abnormal returns around the first announcement of formation of an ad hoc group in a given creditor class. Abnormal returns here are measured relative to the ICE BofA US High Yield Total Return Index. Panels (a) and (b) show the histograms of raw and abnormal returns for bonds in the same class as the newly-announced group, respectively. Panels (c) and (d) plot the histograms of raw and abnormal returns for bonds in other classes than the class where the group was formed, respectively.

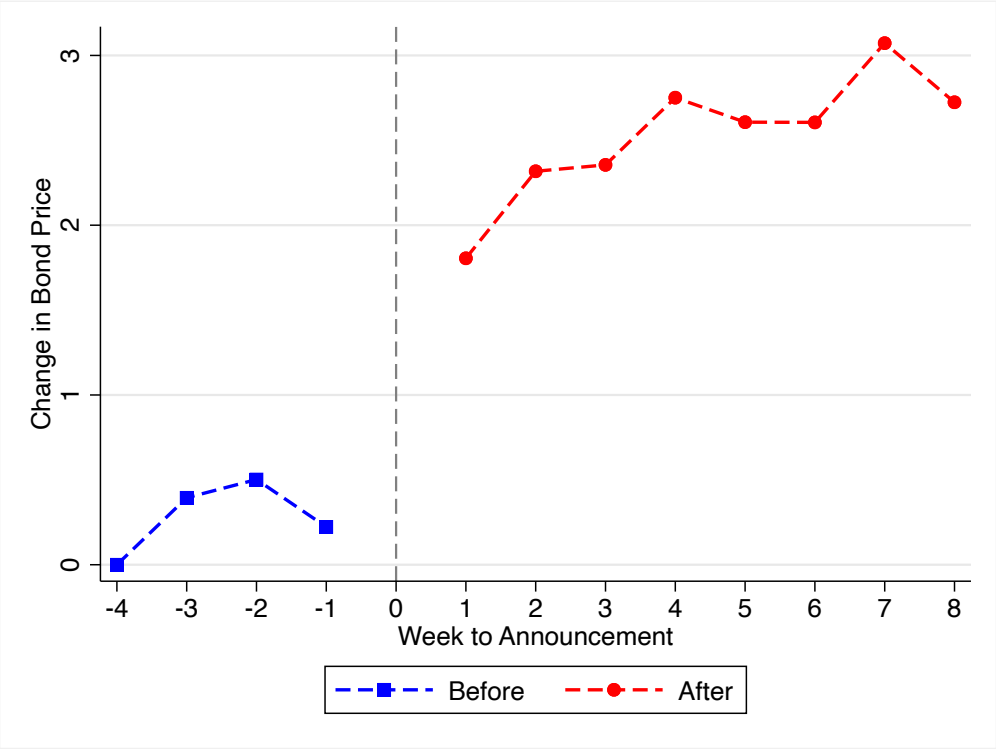
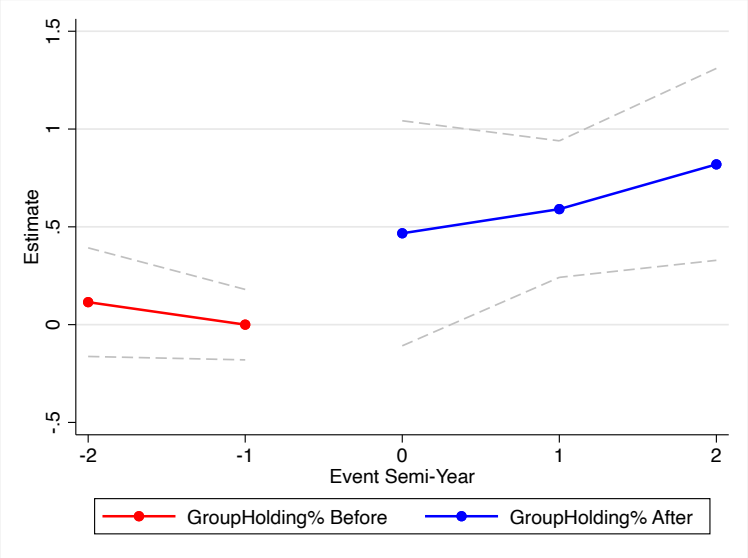
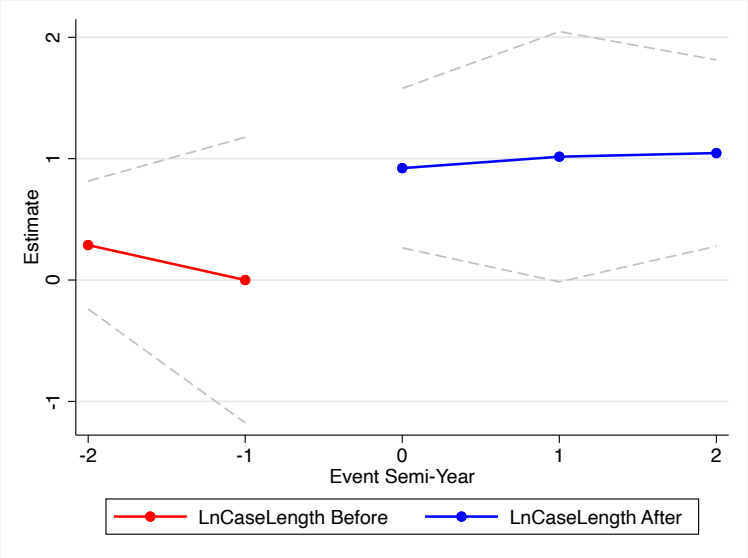


Figure 6: Event Study—Changes in the Bond Price around the First Announcement of Formation of a Group Holding Strictly Positive Amount of the Bond's Own Class

The change in a bond price during week t is equal to the difference between (a) the average price during the tth week after the announcement date (i.e., from day $7(t-1)+1$ to day $7(t-1)+7$), and (b) the benchmark price, which is the average price in week -4 (i.e., from day -22 to day -28). We first compute bond price changes for each CUSIP at each week, take average of this measure across all CUSIPs of the same case-class, and then average across different case-classes at each week to obtain the week-level measure as plotted in the figure.



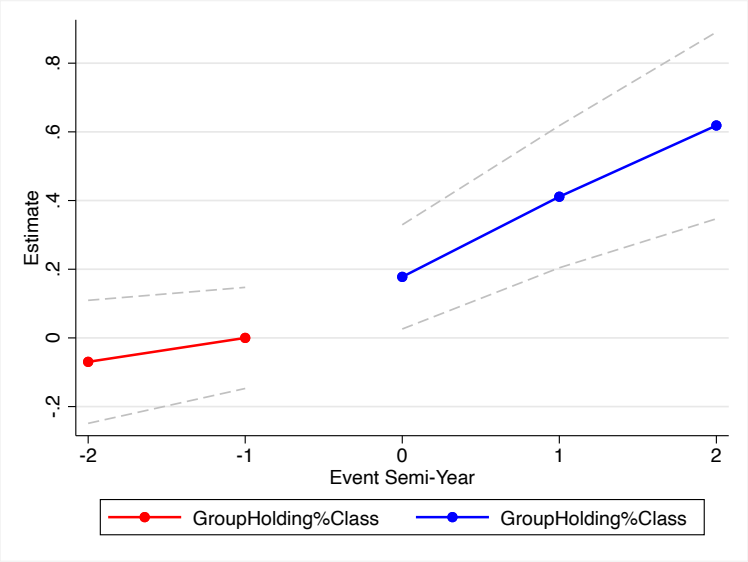
(a) *GroupHolding%*



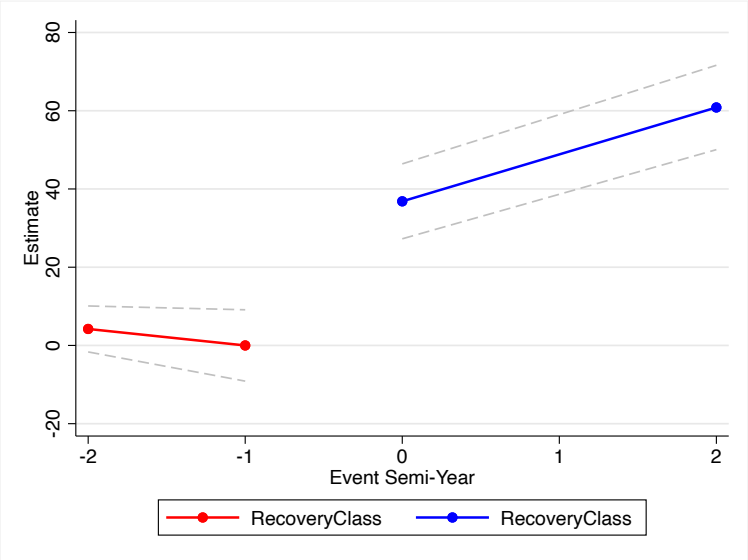
(b) *LnCaseLength*

Figure 7: Parallel Trend at the Case Level

We regress *GroupHolding%* and *LnCaseLength* on the number of semi-years (182 days) from the Peabody ruling, treatment indicator, and the interacting terms between these event semi-years and the treatment indicator. We control for industry and year fixed effects and cluster standard errors at industry and year levels. The value at $-t$ is the coefficient of the interacting term regarding the tth semi-year before the Peabody ruling minus the corresponding coefficient at semi-year -1 (one semi-year before the Peabody ruling quarter), the value at semi-year -1 is normalized to zero, and the value at semi-year t is the coefficient of interacting term regarding t semi-years after the ruling minus the corresponding coefficient at semi-year -1, for $t = 1, 2$. The confidence intervals are at 95%.



(a) *GroupHolding%Class*



(b) *RecoveryClass*

Figure 8: Parallel Trend at the Case-Class Level

We regress *GroupHolding%Class* and *RecoveryClass* on the number of semi-years (182 days) from the Peabody ruling, treatment indicator, and the interacting terms between these event semi-years and the treatment indicator. We control for industry×year and class fixed effects and cluster standard errors at industry and year levels. The value at $-t$ is the coefficient of the interacting term regarding the tth semi-year before the Peabody ruling minus the corresponding coefficient at semi-year -1 (one semi-year before the Peabody ruling quarter), the value at semi-year -1 is normalized to zero, and the value at semi-year t is the coefficient of interacting term regarding t semi-years after the ruling minus the corresponding coefficient at semi-year -1, for $t = 1, 2$. The confidence intervals are at 95%. Note that for Panel (b), the coefficient at $t = 1$ cannot be estimated due to collinearity.

Internet Appendix

Creditor Coalitions in Bankruptcy

Case-class level covariates of group formation

We examine the factors correlated with the intensity of group formation at the case-class level. The measure of this intensity we use is *GroupHolding%Class*. We focus on the following four covariates: *LnPrinClass* (natural log of total principal of the class in millions) as a measure of debt size, *Bond%Class* (the fraction of principal in that class made up of bonds) as a measure of class-level creditor holdings dispersion, *BankDebt%Class* as a measure of the fraction of the class's principal held by bank creditors, and *LnClosenessClass* as a measure for the prior familiarity of creditors investing in that class.

We first regress *GroupHolding%Class* on each of these four variables (X) separately:

$$GroupHolding\%Class \;=\; \alpha + \beta X + \; F.E. + \varepsilon, \tag{11}$$

where the case fixed effects are included to allow us to identify the factors correlated with group formation based on within-case variation across different classes of claims. We do not include measures of price impact or the number of mutual fund creditors at the case-class level due to a lack of within-case variation for these variables. Columns (1) through (4) of Table IA.1 present the regression results for each X variable, where standard errors are clustered at the industry and year levels. We find that a higher *GroupHolding%Class* is associated with a higher *LnPrinClass*, a higher *Bond%Class*, a lower *BankDebt%Class*, and a higher *LnClosenessClass*, consistent with the predictions of our stylized model. The impact of these four covariates is also economically significant. For example, from column (1) it follows that a one-standard deviation increase in *PrinClass* corresponds to an approximately 35.6% increase in *GroupHolding%Class* relative to its sample mean of 0.299. Column (4) shows that a one-standard deviation increase in *ClosenessClass* leads to a 12.2% increase in *GroupHolding%Class* relative to its sample mean. Other magnitudes are similarly large.

We then include the four covariates together in the following "horse race" regression:

$$\begin{aligned} GroupHolding\%Class \;=\; & \alpha + \beta_1 LnPrinClass + \beta_2 Bond\%Class + \beta_3 BankDebt\%Class \\ & + \beta_4 LnClosenessClass + \; F.E. + \varepsilon \end{aligned} \tag{12}$$

The results reported in column (5) of Table IA.1 indicate that while the coefficients on

Bond%Class and *LnClosenessClass* become statistically insignificant, the coefficients on *BankDebt%Class* and *LnPrinClass* remain statistically and economically significant.[66] Hence, these results largely mirror the case-level results from the prior subsection and indicate that coalition formation in bankruptcy are correlated with factors such as the size of a given case or class, the dispersion and composition (i.e. type) of creditors, price impact, and a creditor's past familiarity with other creditors involved in the case.

We then repeat the exercise in Table IA.1 using two other proxies for the group formation intensity at the case-class level. One is an average group's holding fraction of a class (*GroupSizeClass*). The other one is an indicator variable, *ClassInfluGroup*, that equals one if there exists at least one "influential" group in the class, that is, holding over one-third of the class (a blocking position according to the bankruptcy code). The regression results are qualitatively similar to those in Table IA.1. See Tables IA.2 and IA.3 in the Internet Appendix.

[66]In untabulated analysis, we also explore the interplay between official Unsecured Creditor Committees (UCC) and ad hoc groups. We find no relationship between the formation of a UCC and ad hoc group formation in the same (unsecured) creditor class. However, we do observe stronger group formation intensity in more senior classes (i.e., DIP, secured first-lien, and secured non-first-lien) if a UCC is formed. In addition, conditional on a UCC being formed, ad hoc group formation intensity is higher if a larger fraction of UCC members are hedge funds or banks (active creditors), and if a smaller fraction of UCC members are trade creditors (passive creditors). This suggests that ad hoc groups in secured classes may be formed (in part) as a counterweight to active UCC members represent the unsecured class.

Table IA.1: Factors Correlated with Group Formation Intensity, Case-Class Level

	(1)	(2)	(3)	(4)	(5)
	Dependent Variable: *GroupHolding%Class*				
LnPrinClass	0.0953***				0.0413**
	(0.0105)				(0.0140)
Bond%Class		0.246***			0.0732
		(0.0266)			(0.0427)
BankDebt%Class			-0.246**		-0.273**
			(0.0659)		(0.0816)
LnClosenessClass				0.0350*	0.0331
				(0.0144)	(0.0172)
Constant	-0.254***	0.209***	0.333***	0.275***	0.0273
	(0.0611)	(0.00969)	(0.00929)	(0.0449)	(0.0602)
Fixed Effect	Case	Case	Case	Case	Case
Cluster	Ind,Year	Ind,Year	Ind,Year	Ind,Year	Ind,Year
N	465	465	465	324	324
R^2	0.506	0.516	0.470	0.569	0.622

Standard errors in parentheses

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table IA.1 examines factors correlated with group formation using case-class level measures. The dependent variable is group formation intensity (*GroupHolding%Class*), which equals the fraction of the class's principal collectively held by all ad hoc group members. The independent variables include: *LnPrinClass* (total principal of the class in millions) as a measure for debt size, *Bond%Class* (the fraction of the class's principal made up of bonds) as a measure for class-level creditor holding dispersion, *BankDebt%Class* as a measure of the fraction of the class's principal held by bank creditors, and *LnClosenessClass* as a measure of the familiarity of creditors based on the frequency of creditors being in the same group in past cases. See Appendix D for construction of these measures. All regressions include case fixed effects. Standard errors are clustered by industry and year, where industry is measured using the two-digit SIC code of the bankrupt firm and year is the year the firm filed for bankruptcy.

Table IA.2: Factors Correlated with Average Group Size: Case-Class Level

	(1)	(2)	(3)	(4)	(5)
	Dependent Variable: *GroupSizeClass*				
LnPrinClass	0.0674***				0.0337**
	(0.00693)				(0.0103)
Bond%Class		0.160***			0.0293
		(0.0299)			(0.0426)
BankDebt%Class			-0.191***		-0.212*
			(0.0406)		(0.0840)
LnClosenessClass				0.0257*	0.0228
				(0.0122)	(0.0144)
Constant	-0.199***	0.133***	0.218***	0.157***	-0.0289
	(0.0402)	(0.0109)	(0.00573)	(0.0382)	(0.0217)
Fixed Effect	Case	Case	Case	Case	Case
Cluster	Ind,Year	Ind,Year	Ind,Year	Ind,Year	Ind,Year
N	465	465	465	324	324
R^2	0.471	0.468	0.446	0.556	0.600

Standard errors in parentheses

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table IA.2 tests factors correlated with group formation using the case-class level measures. The dependent variable is a measure of group formation intensity - *GroupSizeClass* - the holding fraction of a class by an average ad hoc group in the case. The independent variables include: *LnPrinClass* (total principal of the class in millions) as a measure for debt size, *Bond%Class* (the fraction of principal being bond in that class) as the measure for creditors holding dispersion in the class, *BankDebt%Class* as the measure for fraction of the class's principal held by bank creditors, and *LnClosenessClass* as a measure for the familiarity of creditors based on the frequency creditors being in the same group in past cases. See Appendix D for construction of these measures. Our fixed effects are at the Case level. Standard errors are clustered at Industry level and Year level, where Industry is the two-digit SIC code of the bankrupt firm, and Year is the year the firm filed for bankruptcy.

Table IA.3: Factors Correlated with a Class Being Represented by at Least One Group: Case-Class Level

	(1)	(2)	(3)	(4)	(5)
	Dependent Variable: *ClassInfluGroup*				
LnPrinClass	0.129***				0.0615**
	(0.0205)				(0.0228)
Bond%Class		0.353***			0.158**
		(0.0280)			(0.0558)
BankDebt%Class			-0.312***		-0.250**
			(0.0749)		(0.0858)
LnClosenessClass				0.0525*	0.0513*
				(0.0228)	(0.0242)
Constant	-0.364**	0.256***	0.429***	0.330***	-0.0793
	(0.119)	(0.0102)	(0.0106)	(0.0711)	(0.150)
Fixed Effect	Case	Case	Case	Case	Case
Cluster	Ind,Year	Ind,Year	Ind,Year	Ind,Year	Ind,Year
N	465	465	465	324	324
R^2	0.481	0.499	0.442	0.538	0.591

Standard errors in parentheses

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table IA.3 tests factors correlated with group formation using the case-class level measures. The dependent variable is a measure of group formation intensity - *ClassInfluGroup* - whether this class has at least one influential ad hoc group holding a controlling position of the class (i.e., over one-third of the class). The independent variables include: *LnPrinClass* (total principal of the class in millions) as a measure for debt size, *Bond%Class* (the fraction of principal being bond in that class) as the measure for creditors holding dispersion in the class, *BankDebt%Class* as the measure for fraction of the class's principal held by bank creditors, and *LnClosenessClass* as a measure for the familiarity of creditors based on the frequency creditors being in the same group in past cases. See Appendix D for construction of these measures. Our fixed effects are at the Case level. Standard errors are clustered at Industry level and Year level, where Industry is the two-digit SIC code of the bankrupt firm, and Year is the year the firm filed for bankruptcy.

Table IA.4: Factors Correlated with Group Holding %: Case Level, Clustering by Industry Only

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
	Dependent Variable: *GroupHolding%*						
Leverage	0.188***						0.0361*
	(0.0293)						(0.0176)
Bond%		0.404***					
		(0.0820)					
LnNumofMF			0.110***				0.112**
			(0.00989)				(0.0304)
BankDebt%				-0.532***			-0.201
				(0.0921)			(0.114)
PriceImpact					0.0243***		0.0181***
					(0.00444)		(0.00126)
LnCloseness						0.0398**	0.00649
						(0.0153)	(0.0246)
LnAssets	0.0758***	0.0220	-0.123***	0.0285	-0.0405*	0.0234	-0.0882*
	(0.0163)	(0.0310)	(0.0142)	(0.0229)	(0.0166)	(0.0305)	(0.0364)
LnNumofClass	-0.0400	-0.0732	-0.0380	-0.0868	-0.0198	-0.0823	-0.0528
	(0.0920)	(0.0663)	(0.0446)	(0.0851)	(0.0484)	(0.0847)	(0.0723)
Constant	-0.343	0.0889	0.993***	0.374	0.683***	0.147	0.641***
	(0.222)	(0.247)	(0.0702)	(0.255)	(0.101)	(0.328)	(0.172)
Fixed Effect	Ind×Year	Ind×Year	Ind×Year	Ind×Year	Ind×Year	Ind×Year	Ind×Year
Cluster	Ind	Ind	Ind	Ind	Ind	Ind	Ind
N	111	111	62	111	60	104	59
R^2	0.457	0.454	0.421	0.454	0.323	0.377	0.460

Standard errors in parentheses

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table IA.4 runs the same regression to Table 4 except that standard errors are only clustered by industry.

Table IA.5: DiD, Treatment Definition Robustness

	(1) Group Holding%	(2) Recovery Case	(3) Vertical APR	(4) LnCase Length	(5) LnNum ofdkt	(6) GroupHolding %Class	(7) Group SizeClass	(8) Class InfluGroup	(9) PriceNear Confirm	(10) Recovery Class	(11) Recovery Class (Bond)
PostPeabody	0.252**	-7.048*	0.320***	-0.0776	0.0901	0.0116	0.0108	0.145**	-72.95***	-20.60***	-44.59***
	(0.0817)	(3.312)	(0.0503)	(0.140)	(0.0622)	(0.0396)	(0.0245)	(0.0497)	(10.37)	(3.613)	(5.245)
TreatDebt2	-0.0317	-1.874	0.341***	-0.177	0.148						
	(0.0184)	(11.41)	(0.0582)	(0.118)	(0.176)						
PostPeabody×Debt2	0.305**	-5.670	-0.472***	0.390**	0.420***						
	(0.112)	(11.11)	(0.0948)	(0.133)	(0.101)						
TreatIssueClass2						0.0685*	0.0237	0.148**	-38.89**	-12.80***	-3.183
						(0.0329)	(0.0134)	(0.0380)	(10.20)	(2.333)	(6.383)
PostPeabody×IssueClass2						0.302*	0.170*	0.341*	51.78***	14.32***	26.55**
						(0.126)	(0.0683)	(0.154)	(9.562)	(3.359)	(8.997)
Constant	0.104**	67.38***	0.313***	4.845***	6.261***	0.222***	0.131***	0.192***	92.61***	71.77***	59.85***
	(0.0268)	(4.658)	(0.0330)	(0.101)	(0.156)	(0.0227)	(0.00991)	(0.0226)	(9.676)	(0.243)	(4.263)
F.E. Ind×Year	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
F.E.Class	No	No	No	No	No	Yes	Yes	Yes	Yes	Yes	Yes
Cluster: Ind,Year	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
N	88	74	88	88	86	179	179	179	55	150	83
R^2	0.469	0.427	0.392	0.332	0.402	0.429	0.308	0.427	0.549	0.714	0.654

Standard errors in parentheses
* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table IA.5 shows the difference-in-difference result in Tables 6, 7, and 8, except that the treatment at case (*TreatDebt2*) and case-class level (*TreatIssueClass2*) are determined as treatment group being the top 2/5 percentile and the comparison group being the bottom 2/5 percentile. In this table, we show results when clustering by industry and year. Results are robust if clustering only by industry.

Table IA.6: DiD, Treatment Determined before Peabody Filing Date

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
	Group Holding%	Recovery Case	Vertical APR	LnCase Length	LnNum ofdkt	GroupHolding %Class	Group SizeClass	Class InfluGroup	PriceNear Confirm	Recovery Class	Recovery Class (Bond)
PostPeabody	0.188**	-8.889*	-0.0553	-0.103	0.112**	0.0344	0.0856***	0.145**	-106.8***	-21.05***	-52.97***
	(0.0533)	(3.622)	(0.0529)	(0.0636)	(0.0337)	(0.0311)	(0.0163)	(0.0502)	(6.595)	(1.774)	(5.630)
TreatDebt3	-0.0620***	-3.079	0.262***	-0.0927	0.248						
	(0.00406)	(12.60)	(0.0479)	(0.0973)	(0.130)						
PostPeabody×Debt3	0.397***	-9.370	-0.264**	0.566***	0.794***						
	(0.0470)	(14.50)	(0.102)	(0.0842)	(0.148)						
TreatIssueClass3						0.0337	0.0444**	0.122*	-45.78***	-5.972*	-7.593***
						(0.0391)	(0.0127)	(0.0473)	(6.143)	(2.335)	(1.643)
PostPeabody×IssueClass3						0.382**	0.106	0.441*	55.46***	0.574	20.61*
						(0.125)	(0.0691)	(0.179)	(6.595)	(6.171)	(8.863)
Constant	0.136***	72.56***	0.587***	4.814***	6.131***	0.220***	0.102***	0.206***	108.2***	69.00***	62.29***
	(0.0156)	(4.461)	(0.0402)	(0.0750)	(0.104)	(0.0196)	(0.00564)	(0.0217)	(5.977)	(0.943)	(1.088)
F.E. Ind×Year	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
F.E.Class	No	No	No	No	No	Yes	Yes	Yes	Yes	Yes	Yes
Cluster: Ind,Year	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
N	69	60	69	69	69	122	122	122	42	100	57
R^2	0.585	0.447	0.366	0.415	0.557	0.417	0.298	0.378	0.591	0.710	0.603

Standard errors in parentheses
* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table IA.6 shows the difference-in-difference result in Tables 6, 7, and 8, except that the treatment at case and case-class level are determined before the Peabody filing date (April 13, 2016) instead of the Peabody confirmation date (March 17, 2017). At the case level, we define the "treatment" group ($TreatDebt3 = 1$) as cases in which the total debt size around six years before the bankruptcy filing date is above the top tercile (top 1/3) level within all firms of which the debt size data is taken in the same year, $TreatDebt3 = 0$ if the total debt size is smaller or equal to the bottom tercile (bottom 1/3), and $TreatDebt3$ is missing if in the middle tercile. At the case-class level, we first find the terciles of the class's issuance size (total inflation-adjusted issuance size of the class in 2016 dollar of all instruments issued before the Peabody filing date, April 13, 2016) among all case-classes. We then define a class to be in the "treatment" group (*TreatIssueClass3*= 1) if this class's issuance size is above the top tercile (top 1/3), and a class to be in the "comparison" group (*TreatIssueClass3*= 0) if this class's issuance size is smaller or equal to the the bottom tercile (bottom 1/3). *TreatIssueClass3* is missing if in the middle tercile. In this table, we show results when clustering by industry and year. Results are robust if clustering only by industry.

Table IA.7: DiD, Treatment Based on Class Size Five Years before Bankruptcy Filing Date

	(1) GroupHolding%Class	(2) GroupSizeClass	(3) ClassInfluGroup	(4) RecoveryClass
PostPeabody	0.0706	-0.00299	0.143	-46.17**
	(0.0995)	(0.0420)	(0.153)	(11.70)
TreatClass5y	0.245**	0.103***	0.340*	-12.32
	(0.0843)	(0.0210)	(0.151)	(9.393)
PostPeabody-	0.115	0.0747**	0.186	10.80*
×Size5y	(0.0722)	(0.0254)	(0.101)	(4.331)
Constant	0.0578	0.0726	0.000731	89.49***
	(0.125)	(0.0390)	(0.188)	(11.20)
Fixed Effects Ind×Year	yes	yes	yes	yes
Cluster Ind,Year	yes	yes	yes	yes
N	75	75	75	64
R^2	0.427	0.412	0.369	0.749

Standard errors in parentheses

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

This table repeats the four case-class level DiD regressions—in columns (4), (6), and (8) of Table 6 and column (3) of Table 7), respectively—except that instead of using inflation-adjusted issuance size, we use inflation-adjusted principal size five years ago before bankruptcy filing date. We begin by identifying the principal size of each class five years prior to the bankruptcy filing. Specifically, we retain instruments that existed within one year of that date, calculate their principal amounts, and convert them to 2016 dollars to adjust for inflation. We then sum the inflation-adjusted principal amounts within each case-class to obtain the total. We then define a class to be in the "treatment" group (*TreatClass5y*= 1) if this class's principal size five year prior to bankruptcy filing is above the top tercile (top 1/3), and a class to be in the "comparison" group (*TreatClass5y*= 0) if this amount is smaller or equal to the the bottom tercile (bottom 1/3). *TreatClass5y* is missing if in the middle tercile. The term *PostPeabody*×*Size5y* is the product of *PostPeabody* and *TreatClass5y*. In this table, we show results when clustering by industry and year. Results are similar if clustering only by industry. Note that the sample sizes drop by 44% compared to the regressions in Table 6 and 7. This is because many instruments do not exist five years ago before the bankruptcy filing date.

Table IA.8: Factors Correlated with Group Holding %: Case Level, Analyst Forecast Dispersion as the Measure of Information Asymmetry

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
	Dependent Variable: *GroupHolding%*								
Leverage	0.145***							0.0270***	0.0565**
	(0.0200)							(0.00548)	(0.0129)
Bond%		0.382***							
		(0.0417)							
LnNumofMF			0.125***					0.126***	0.0998***
			(0.00641)					(0.00582)	(0.00816)
BankDebt%				-0.404*				-0.145	-0.155
				(0.169)				(0.142)	(0.137)
PriceImpact					0.0146*			0.0102	
					(0.00628)			(0.00536)	
TreasAucDealerSize						1.257**			1.015***
						(0.429)			(0.0526)
LnCloseness							0.0241**	-0.00415	-0.00367
							(0.00682)	(0.0317)	(0.0250)
LnAssets	0.0510**	-0.0106	-0.104***	0.0119*	-0.0228**	0.0193	0.0102	-0.0830***	-0.0581**
	(0.0177)	(0.0152)	(0.00674)	(0.00447)	(0.00820)	(0.0197)	(0.00898)	(0.0146)	(0.0204)
LnNumofClass	-0.237***	-0.242***	-0.141**	-0.255***	-0.139*	-0.248**	-0.261***	-0.143*	-0.158**
	(0.0467)	(0.0156)	(0.0489)	(0.0155)	(0.0643)	(0.0581)	(0.0231)	(0.0631)	(0.0345)
Dispersion	-0.00615	0.00844	-0.0183	0.00325	-0.00118	-0.00410	-0.00557	-0.0150	-0.0168
	(0.0220)	(0.0162)	(0.0137)	(0.0226)	(0.0297)	(0.0243)	(0.0250)	(0.0166)	(0.0176)
Constant	0.185	0.563**	0.960***	0.719***	0.768***	-0.382	0.566***	0.776***	-0.0724***
	(0.137)	(0.134)	(0.00614)	(0.00522)	(0.0563)	(0.426)	(0.0559)	(0.0143)	(0.00608)
Fixed Effect	Ind×Year	Ind×Year	Ind×Year	Ind×Year	Ind×Year	Ind×Year	Ind×Year	Ind×Year	Ind×Year
Cluster	Ind,Year	Ind,Year	Ind,Year	Ind,Year	Ind,Year	Ind,Year	Ind,Year	Ind,Year	Ind,Year
N	71	71	51	71	50	71	71	50	51
R^2	0.339	0.366	0.405	0.321	0.233	0.282	0.268	0.401	0.451

Standard errors in parentheses
* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table IA.8 examines factors correlated with group formation using case-level measures. The dependent variable is group formation intensity (*GroupHolding%*), which equals the fraction of the case's total principal collectively held by all ad hoc group members. Independent variables include: *Leverage* (total assets over total liabilities pre-bankruptcy-filing) as a measure of debt size, *Bond%* (fraction of total debt made up of bonds) and *LnNumOfMF* (natural logarithm of the total number of mutual fund creditors) as measures of creditor holdings dispersion, *BankDebt%* as a measure of the fraction of debt held by bank creditors, *PriceImpact* and *TreasAucDealerSize* (total amount of Treasury bonds and notes primary dealers purchased over the year prior to bankruptcy filing) as a measures of the illiquidity of distressed claims markets, *LnCloseness* as a measure of creditor familiarity based on the frequency of creditors being in the same group in past cases, and *Dispersion* (average analyst forecast dispersion during the year prior to bankruptcy filing) as a measure of information asymmetry. We include *LnAssets* and *LnNumOfClass* as controls; the first controls for firm size while the second controls for the number of classes of the case. See Appendix D for details on the construction of these measures. All regressions include industry × year fixed effects, where industry is defined as the two-digit SIC code of the bankrupt firm and year is the year the firm filed for bankruptcy. Standard errors are clustered by industry and year.

Table IA.9: Factors Correlated with Group Holding %: Case Level, Analyst Coverage as the Measure of Information Asymmetry

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
	Dependent Variable: *GroupHolding%*								
Leverage	0.141***							0.00736	0.0488*
	(0.0297)							(0.00989)	(0.0201)
Bond%		0.405***							
		(0.0513)							
LnNumofMF			0.126***					0.132***	0.108***
			(0.0166)					(0.0161)	(0.0158)
BankDebt%				-0.451**				-0.163	-0.158
				(0.157)				(0.148)	(0.114)
PriceImpact					0.0238**			0.0191***	
					(0.00795)			(0.00260)	
TreasAucDealerSize						1.278**			1.032***
						(0.467)			(0.167)
LnCloseness							0.0293	-0.00646	-0.0000539
							(0.0158)	(0.0197)	(0.0181)
LnAssets	0.0390	-0.0153	-0.110***	0.00626	-0.0523***	0.0143	0.0102	-0.0987***	-0.0815**
	(0.0204)	(0.0180)	(0.00786)	(0.0124)	(0.00820)	(0.0263)	(0.0238)	(0.00575)	(0.0235)
LnNumofClass	-0.130***	-0.129**	-0.106**	-0.173**	-0.0519	-0.131	-0.157***	-0.102	-0.130**
	(0.0276)	(0.0384)	(0.0381)	(0.0643)	(0.0818)	(0.0777)	(0.0171)	(0.0616)	(0.0372)
Coverage	0.00231	0.000610	-0.00401	0.00143	0.00319	0.00288	0.00179	-0.00230	-0.00240
	(0.00291)	(0.00338)	(0.00312)	(0.00342)	(0.00267)	(0.00471)	(0.00341)	(0.00194)	(0.00346)
Constant	0.103	0.435**	0.963***	0.644***	0.801***	-0.550	0.381	0.824***	0.00443
	(0.154)	(0.135)	(0.0783)	(0.0528)	(0.0825)	(0.276)	(0.207)	(0.0154)	(0.00387)
Fixed Effect	Ind×Year	Ind×Year	Ind×Year	Ind×Year	Ind×Year	Ind×Year	Ind×Year	Ind×Year	Ind×Year
Cluster	Ind,Year	Ind,Year	Ind,Year	Ind,Year	Ind,Year	Ind,Year	Ind,Year	Ind,Year	Ind,Year
N	82	82	56	82	56	82	82	55	56
R^2	0.389	0.426	0.451	0.400	0.321	0.348	0.342	0.473	0.498

Standard errors in parentheses
* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table IA.9 examines factors correlated with group formation using case-level measures. The dependent variable is group formation intensity (*GroupHolding%*), which equals the fraction of the case's total principal collectively held by all ad hoc group members. Independent variables include: *Leverage* (total assets over total liabilities pre-bankruptcy-filing) as a measure of debt size, *Bond%* (fraction of total debt made up of bonds) and *LnNumOfMF* (natural logarithm of the total number of mutual fund creditors) as measures of creditor holdings dispersion, *BankDebt%* as a measure of the fraction of debt held by bank creditors, *PriceImpact* and *TreasAucDealerSize* (total amount of Treasury bonds and notes primary dealers purchased over the year prior to bankruptcy filing) as a measures of the illiquidity of distressed claims markets, *LnCloseness* as a measure of creditor familiarity based on the frequency of creditors being in the same group in past cases, and *Coverage* (average number of analyst forecasts during the year prior to bankruptcy filing) as a measure of information asymmetry. We include *LnAssets* and *LnNumOfClass* as controls; the first controls for firm size while the second controls for the number of classes of the case. See Appendix D for details on the construction of these measures. All regressions include industry × year fixed effects, where industry is defined as the two-digit SIC code of the bankrupt firm and year is the year the firm filed for bankruptcy. Standard errors are clustered by industry and year.

Table IA.10: Factors Correlated with Group Holding %: Case Level, Bond Transaction Cost as the Measure of Information Asymmetry

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
	Dependent Variable: *GroupHolding%*								
Leverage	0.0903*							0.0124	0.0610*
	(0.0427)							(0.0249)	(0.0267)
Bond%		0.531***							
		(0.0935)							
LnNumofMF			0.137***					0.128***	0.101***
			(0.0237)					(0.0313)	(0.0150)
BankDebt%				-0.415				-0.195	-0.185
				(0.267)				(0.105)	(0.0971)
PriceImpact					0.0246***			0.0221***	
					(0.00447)			(0.00393)	
TreasAucDealerSize						1.661***			1.093***
						(0.0608)			(0.150)
LnCloseness							0.0115	0.00608	0.0141
							(0.0205)	(0.0156)	(0.0182)
LnAssets	-0.0177	-0.0430***	-0.139***	-0.0415**	-0.0407**	-0.0566**	-0.0606***	-0.108***	-0.0850**
	(0.0216)	(0.00240)	(0.0126)	(0.0139)	(0.0113)	(0.0166)	(0.0113)	(0.0127)	(0.0252)
LnNumofClass	-0.0426	-0.0172	-0.0532	-0.0899***	-0.0338	-0.0520	-0.0516	-0.0738	-0.102**
	(0.0628)	(0.0598)	(0.0480)	(0.0219)	(0.0587)	(0.0309)	(0.0309)	(0.0655)	(0.0324)
TranCost	-0.141	3.529	14.76	4.894	6.066	5.101	5.960	14.77	9.702
	(6.028)	(1.941)	(9.598)	(5.118)	(9.720)	(5.116)	(10.47)	(11.12)	(11.12)
Constant	0.505*	0.362*	0.918***	0.879***	0.658***	-0.398***	0.853***	0.671***	-0.207***
	(0.223)	(0.152)	(0.0411)	(0.0433)	(0.0111)	(0.000413)	(0.0130)	(0.0411)	(0.00282)
Fixed Effect	Ind×Year	Ind×Year	Ind×Year	Ind×Year	Ind×Year	Ind×Year	Ind×Year	Ind×Year	Ind×Year
Cluster	Ind,Year	Ind,Year	Ind,Year	Ind,Year	Ind,Year	Ind,Year	Ind,Year	Ind,Year	Ind,Year
N	60	60	59	60	60	60	60	59	59
R^2	0.322	0.434	0.418	0.344	0.326	0.341	0.292	0.474	0.473

Standard errors in parentheses
* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table IA.10 examines factors correlated with group formation using case-level measures. The dependent variable is group formation intensity (*GroupHolding%*), which equals the fraction of the case's total principal collectively held by all ad hoc group members. Independent variables include: *Leverage* (total assets over total liabilities pre-bankruptcy-filing) as a measure of debt size, *Bond%* (fraction of total debt made up of bonds) and *LnNumOfMF* (natural logarithm of the total number of mutual fund creditors) as measures of creditor holdings dispersion, *BankDebt%* as a measure of the fraction of debt held by bank creditors, *PriceImpact* and *TreasAucDealerSize* (total amount of Treasury bonds and bills primary dealers purchased over the year prior to bankruptcy filing) as a measures of the illiquidity of distressed claims markets, *LnCloseness* as a measure of creditor familiarity based on the frequency of creditors being in the same group in past cases, and *TranCost* (average bid-ask-spread of bonds during the year prior to bankruptcy filing) as a measure of information asymmetry. We include *LnAssets* and *LnNumOfClass* as controls; the first controls for firm size while the second controls for the number of classes of the case. See Appendix D for details on the construction of these measures. All regressions include industry × year fixed effects, where industry is defined as the two-digit SIC code of the bankrupt firm and year is the year the firm filed for bankruptcy. Standard errors are clustered by industry and year.

Table IA.11: Abnormal Returns and Asymmetric Information

	(1)	(2)	(3)	(4)	(5)
	Dependent Variable: *Abnormal Return (Own)*				
TranCostBond	0.562	0.312	-0.750		
	(0.783)	(0.641)	(0.629)		
Dispersion				0.00128	
				(0.00189)	
Coverage					-0.000151
					(0.000536)
Constant	0.00253	0.00426	0.0112**	0.00515	0.00779
	(0.00589)	(0.00481)	(0.00552)	(0.00311)	(0.00787)
F.E.	Class,Case	Case	Class,Year	Class,Year	Class,Year
Cluster	Case	Case	Case	Case	Case
N	67	69	84	93	93
R^2	0.523	0.522	0.092	0.067	0.067

Standard errors in parentheses

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table IA.11 examines whether the abnormal return to own class, as in column (1) of Table 5, varies with the extent of information asymmetry. We use three alternative measures of information asymmetry in this analysis: (i) the average bid-ask-spread of the bond during the year prior to bankruptcy filing (*TranCostBond*), (ii) the average analyst forecast dispersion during the year prior to bankruptcy filing (*Dispersion*), and (iii) the average number of analyst forecasts during the year prior to bankruptcy filing (*Coverage*). See Appendix D for definitions of these variables.

Table IA.12: Hedge Fund Involvement

	(1)	(2)	(3)	(4)	(5)	(6)
	Dependent Variable					
	AbnormalReturn (Own Class)				HFHolding-%Class	NonCoalHF-%Class
FirstGroupHolding%	0.0591**	0.0697**				
	(0.0196)	(0.0251)				
OverOneThird			0.00820**	0.00892**		
			(0.00241)	(0.00345)		
HighHFHolding		-0.00978		0.0115		
		(0.0108)		(0.0115)		
PostPeabody					-0.00684	0.352***
					(0.0538)	(0.0413)
TreatIssueClass					0.0280	-0.00268
					(0.0339)	(0.0334)
PostPeabody×IssueClass					0.219	-0.206*
					(0.130)	(0.0924)
Constant	-0.0134	-0.0126	0.00376**	-0.00216	0.272***	-0.00386
	(0.00713)	(0.00865)	(0.00127)	(0.00738)	(0.0234)	(0.0268)
F.E.: Case,Class,Year	Yes	Yes	Yes	Yes	No	No
F.E.: Ind×Year,Class	No	No	No	No	Yes	Yes
Cluster	Case,Year	Case,Year	Case,Year	Case,Year	Ind,Year	Ind,Year
N	89	89	89	89	134	107
R^2	0.594	0.595	0.574	0.577	0.471	0.446

Standard errors in parentheses

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table IA.12 examines whether the event study and Peabody results are potentially driven by increased hedge fund involvement in affected classes. In columns (1) to (4), the dependent variable is the *AbnormalReturn* on the same class the group invests in, as in column (1) of Table 5. *FirstGroupHolding%* is the group's holding fraction of the bond's class at the time of announcement, *OverOneThird* is an indicator that is equal to one if *FirstGroupHolding%* is higher or equal to the (one-third ownership) blocking position threshold, and *HighHFHolding* is an indicator that is equal to one if the fraction of the bond's class owned by hedge funds at the time of group announcement is above median. In column (5), *HFHolding%Class* is the fraction of a bond's class's principal held by hedge funds, private equity, private debt, or asset management companies. In column (6), *NonCoalHF%Class* is the fraction of creditors in the bond's class who are non-coalition hedge funds (i.e., hedge funds, private equity, private debt, and asset management companies that do not participate in ad hoc groups). See Appendix D for definitions of these variables. For definition of *PostPeabody*, *TreatIssueClass*, and *PostPeabody×IssueClass*, see the table notes in Table 6.

Table IA.13: Rights Offerings and Private Placements

	(1)	(2)	(3)
	RightsIndic-Case	RightsIndic-Class	RightsRatio-Class
PostPeabody	-0.527***	-0.296***	-0.0783***
	(0.0384)	(0.0250)	(0.0162)
TreatDebt	-0.0374		
	(0.141)		
PostPeabody×Debt	0.335		
	(0.305)		
TreatIssueClass		0.165***	0.0525***
		(0.0249)	(0.00435)
PostPeabody×IssueClass		0.0436	0.0349
		(0.0634)	(0.0447)
Constant	0.607***	0.239***	0.0682***
	(0.0610)	(0.0153)	(0.00381)
F.E.	Ind×Year	Ind×Year	Ind×Year
Cluster	Ind, Year	Ind, Year	Ind, Year
N	70	135	135
R^2	0.332	0.331	0.380

Standard errors in parentheses

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

This table examines whether the DiD results are driven by more rights offerings and private placements instead of ad hoc group formation. The dependent variable in column (1) is a case level measure *RightsIndicCase*, which is an indicator equal to one if rights offerings or private placements were a part of the confirmed plan in the bankruptcy case. The dependent variable in column (2) is a case-class level measure *RightsIndicClass*, which is an indicator equal to one if the holders of the class are entitled to receive rights offerings, or certain holders of the class are members of the backstop party of a private placement. The dependent variable in column (3) is a case-class level measure *RightsRatioClass*, which is the ratio of the amount of rights offerings plus private placements to the principal of the class. See the definition of the indepedent variables in Table 6.

Table IA.14: Factors Correlated with Group Formation Intensity: Case Level, Alternative Specifications

Panel A: With Robust Standard Errors							
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
	Dependent Variable: *GroupHolding%*						
Leverage	0.188***						0.0361
	(0.0412)						(0.0760)
Bond%		0.404***					
		(0.107)					
LnNumofMF			0.110***				0.112*
			(0.0337)				(0.0621)
BankDebt%				-0.532***			-0.201
				(0.109)			(0.256)
PriceImpact					0.0243**		0.0181
					(0.0103)		(0.0154)
LnCloseness						0.0398**	0.00649
						(0.0168)	(0.0231)
LnAssets	0.0758***	0.0220	-0.123***	0.0285	-0.0405	0.0234	-0.0882
	(0.0206)	(0.0259)	(0.0373)	(0.0229)	(0.0393)	(0.0277)	(0.0545)
LnNumofClass	-0.0400	-0.0732	-0.0380	-0.0868	-0.0198	-0.0823	-0.0528
	(0.104)	(0.115)	(0.119)	(0.112)	(0.125)	(0.118)	(0.142)
Constant	-0.343	0.0889	0.993***	0.374	0.683*	0.147	0.641
	(0.222)	(0.238)	(0.306)	(0.251)	(0.386)	(0.259)	(0.470)
Fixed Effect	Ind×Year	Ind×Year	Ind×Year	Ind×Year	Ind×Year	Ind×Year	Ind×Year
# of F.E.	29	29	13	29	12	27	12
Robust S.E.	Yes	Yes	Yes	Yes	Yes	Yes	Yes
N	111	111	62	111	60	104	59
R^2	0.457	0.454	0.421	0.454	0.323	0.377	0.460

Standard errors in parentheses
* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

(*Continued*)

Table IA.14—*Continued*

Panel B: With Robust Standard Errors and No Industry Fixed Effects							
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
	Dependent Variable: *GroupHolding%*						
Leverage	0.181***						0.0234
	(0.0330)						(0.0445)
Bond%		0.275***					
		(0.0605)					
LnNumofMF			0.0772***				0.0588**
			(0.0206)				(0.0248)
BankDebt%				-0.507***			-0.374***
				(0.0765)			(0.140)
PriceImpact					0.0321***		0.0261**
					(0.00838)		(0.0103)
LnCloseness						0.0391***	0.0192
						(0.0104)	(0.0172)
LnAssets	0.0545***	0.0232	-0.0747***	0.0252	-0.0122	0.0209	-0.0570*
	(0.0204)	(0.0211)	(0.0265)	(0.0214)	(0.0237)	(0.0234)	(0.0305)
LnNumofClass	0.00697	0.0143	-0.0185	-0.000728	-0.0383	-0.0468	-0.0631
	(0.0715)	(0.0681)	(0.0952)	(0.0751)	(0.0941)	(0.0723)	(0.0977)
Constant	-0.245	0.0395	0.761***	0.262	0.484**	0.123	0.611**
	(0.151)	(0.146)	(0.180)	(0.170)	(0.208)	(0.159)	(0.241)
Fixed Effect	Year	Year	Year	Year	Year	Year	Year
# of F.E.	6	6	6	6	6	6	6
Robust S.E.	Yes	Yes	Yes	Yes	Yes	Yes	Yes
N	171	171	110	171	108	164	106
R^2	0.213	0.210	0.189	0.242	0.184	0.167	0.317

Standard errors in parentheses
* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Panel A of this table is the same as Table 4 except that robust standard errors are used instead of clustered standard errors. Panel B of this table is the same as Table 4 except that robust standard errors are used instead of clustered standard errors, and fixed effects are Year instead of Industry×Year.

Table IA.15: Event Study: Announcement Effect of Group Formation

Panel A: Daily Bond Returns around Group Formation Announcements, Robust Standard Errors

	(1)	(2)	(3)	(4)	(5)
	Effect on Own Class	Effect on Other Classes			
	Full Sample	Full Sample	DIP: Yes	DIP: No	(3) - (4)
GrossReturn	0.0086***	0.0078***	0.0004	0.0111***	-0.0106***
	(0.0018)	(0.0022)	(0.0021)	(0.0030)	(0.0037)
AbnormalReturn	0.0069***	0.0058**	-0.0013	0.0088***	-0.0102***
	(0.0017)	(0.0022)	(0.0024)	(0.0029)	(0.0038)
N	107	96	29	67	96
Robust S.E.	Yes	Yes	Yes	Yes	Yes

Panel B: Abnormal Returns and Asymmetric Information, No Fixed Effects

	(1)	(2)	(3)
	Dependent Variable: *Abnormal Return (Own)*		
TranCostBond	-0.759		
	(0.487)		
Dispersion		-0.000202	
		(0.00212)	
Coverage			-0.0000101
			(0.000433)
Constant	0.0110**	0.00623*	0.00620
	(0.00498)	(0.00330)	(0.00662)
Cluster	Case	Case	Case
N	85	93	93
R^2	0.029	0.000	0.000

Standard errors in parentheses

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Panel A of this table is the same as Table 5 except that robust standard errors are used instead clustered standard errors by case. Panel B of this table is the same as Table IA.11 except that no fixed effects are included.

Table IA.16: DiD: Robust Standard Errors, with and without Industry Fixed Effects

Panel A: with Robust Standard Errors

	(1) Group Holding%	(2) Recovery Case	(3) Vertical APR	(4) LnCase Length	(5) LnNum ofdkt	(6) GroupHolding %Class	(7) Group SizeClass	(8) Class InfluGroup	(9) PriceNear Confirm	(10) PriceNear Confirm (Vol-Weighted)	(11) Recovery Class	(12) Recovery Class (Bond)
PostPeabody	0.247***	-8.944	0.302	-0.0816	0.0716	-0.0543	0.00474	0.0592	-65.19***	-65.64***	-20.82	-44.06
	(0.0824)	(9.962)	(0.226)	(0.267)	(0.410)	(0.244)	(0.222)	(0.278)	(20.44)	(20.65)	(14.47)	(26.57)
TreatDebt	-0.0319	-1.980	0.340	-0.177	0.147							
	(0.133)	(12.40)	(0.237)	(0.444)	(0.413)							
PostPeabody×Debt	0.319**	-0.874	-0.425	0.400	0.467							
	(0.151)	(14.80)	(0.274)	(0.514)	(0.493)							
TreatIssueClass						0.0730	0.0512	0.166	-24.36**	-24.02**	-11.19	-0.962
						(0.137)	(0.0779)	(0.159)	(11.39)	(11.08)	(9.357)	(18.93)
PostPeabody×IssueClass						0.370**	0.152	0.446**	35.37**	34.84**	10.02	27.24
						(0.159)	(0.101)	(0.194)	(14.72)	(14.50)	(14.22)	(20.66)
Constant	0.117*	64.54***	0.349*	4.876***	6.275***	0.240*	0.115	0.205	80.38***	81.35***	72.91***	56.48***
	(0.0659)	(7.453)	(0.178)	(0.217)	(0.302)	(0.135)	(0.107)	(0.149)	(11.50)	(11.71)	(9.322)	(20.96)
F.E. Ind×Year	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
# of Ind×Year F.E.	18	14	18	18	17	34	34	34	15	15	30	17
F.E.Class	No	No	No	No	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes
# of Class F.E.	–	–	–	–	–	3	3	3	3	3	3	3
Robust S.E.:	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
N	70	59	70	70	68	134	134	134	60	60	114	66
R^2	0.494	0.337	0.399	0.269	0.378	0.421	0.312	0.413	0.572	0.564	0.670	0.609

Standard errors in parentheses
* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

(*Continued*)

Table IA.16—*Continued*

Panel B: with Robust Standard Errors, No Industry Fixed Effects

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
	Group Holding%	Recovery Case	Vertical APR	LnCase Length	LnNum ofdkt	GroupHolding %Class	Group SizeClass	Class InfluGroup	PriceNear Confirm	PriceNear Confirm (Vol-Weighted)	Recovery Class	Recovery Class (Bond)
PostPeabody	-0.166	14.51	0.112	-0.643	-0.383	-0.179	-0.0641	-0.171	-29.97	-28.94	-11.44	3.970
	(0.161)	(14.06)	(0.237)	(0.434)	(0.426)	(0.122)	(0.0925)	(0.154)	(23.26)	(23.46)	(9.206)	(21.57)
TreatDebt	0.0578	-1.088	0.404**	-0.249	0.0935							
	(0.105)	(10.28)	(0.165)	(0.316)	(0.316)							
PostPeabody×Debt	0.128	-0.170	-0.271	0.466	0.399							
	(0.121)	(12.02)	(0.201)	(0.361)	(0.373)							
TreatIssueClass						0.151*	0.0649	0.199*	7.355	8.623	-12.26	12.29
						(0.0824)	(0.0547)	(0.113)	(14.96)	(15.21)	(7.435)	(11.41)
PostPeabody×IssueClass						0.190*	0.0474	0.249*	16.85	15.61	18.46*	5.104
						(0.102)	(0.0718)	(0.146)	(17.08)	(17.30)	(10.27)	(14.63)
Constant	0.393***	52.64***	0.340*	5.416***	6.764***	0.317***	0.178***	0.365***	45.54**	45.21**	68.25***	32.52**
	(0.119)	(11.15)	(0.177)	(0.334)	(0.311)	(0.0823)	(0.0562)	(0.104)	(17.87)	(18.20)	(6.466)	(16.03)
F.E. Year	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
# of Year F.E.	6	6	6	6	6	6	6	6	5	5	6	5
F.E.Class	No	No	No	No	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes
# of Class F.E.	–	–	–	–	–	3	3	3	3	3	3	3
Robust S.E.:	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
N	114	104	114	114	112	172	172	172	83	83	144	92
R^2	0.137	0.069	0.071	0.072	0.138	0.279	0.102	0.234	0.250	0.248	0.466	0.340

Standard errors in parentheses
* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Panel A of this table shows the difference-in-difference results in Tables 6, 7, and 8, except that robust standard errors are used instead clustered standard errors, and that an alternative measure of recovery, *PriceNearConfirm(Vol-Weighted)* (volumn-weighted prices near confirmation dates) is added to the analysis in column (10).
Panel B of this table shows the difference-in-difference results in Tables 6, 7, and 8, except that robust standard errors are used instead clustered standard errors, industry fixed effects are removed (so only year or year and class fixed effects are included), and that an alternative measure of recovery, *PriceNearConfirm(Vol-Weighted)* (volume-weighted prices near confirmation dates) is added to the analysis in column (10).

Table IA.17: DiD: Different Windows of Price Around Confirmation

Panel A: Window of Price Around Confirmation [-60, +60] Days								
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	PriceNear Confirm	PriceNear Confirm (Vol-Weighted)	PriceNear Confirm	PriceNear Confirm (Vol-Weighted)	PriceNear Confirm	PriceNear Confirm (Vol-Weighted)	PriceNear Confirm	PriceNear Confirm (Vol-Weighted)
PostPeabody	-66.20***	-65.94***	-66.20***	-65.94***	-66.20***	-65.94***	-30.87	-29.91
	(7.765)	(7.919)	(4.450)	(5.143)	(20.65)	(20.61)	(23.23)	(23.49)
TreatIssueClass	-26.38***	-25.06***	-26.38***	-25.06***	-26.38**	-25.06**	7.173	7.944
	(6.059)	(5.689)	(0.808)	(0.514)	(11.18)	(10.96)	(15.03)	(15.38)
PostPeabody×IssueClass	38.02**	36.74**	38.02***	36.74***	38.02**	36.74**	17.36	16.49
	(11.65)	(11.88)	(6.675)	(7.715)	(14.50)	(14.24)	(17.15)	(17.44)
Constant	81.77***	81.82***	81.77***	81.82***	81.77***	81.82***	46.16**	46.07**
	(4.708)	(4.388)	(0.919)	(0.119)	(11.48)	(11.46)	(17.89)	(18.30)
F.E. Ind×Year	Yes	Yes	Yes	Yes	Yes	Yes	No	No
# of Ind×Year F.E.	15	15	15	15	15	15	–	–
F.E. Year	No	No	No	No	No	No	Yes	Yes
# of Year F.E.	–	–	–	–	–	–	5	5
F.E.Class	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
# of Class F.E.	3	3	3	3	3	3	3	3
Cluster	Ind	Ind	Ind,Year	Ind,Year	–	–	–	–
# of Ind Clusters	9	9	9	9	–	–	–	–
# of Year Clusters	–	–	5	5	–	–	–	–
Robust S.E.	No	No	No	No	Yes	Yes	Yes	Yes
N	60	60	60	60	60	60	83	83
R^2	0.576	0.570	0.576	0.570	0.576	0.570	0.251	0.251

Standard errors in parentheses
* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

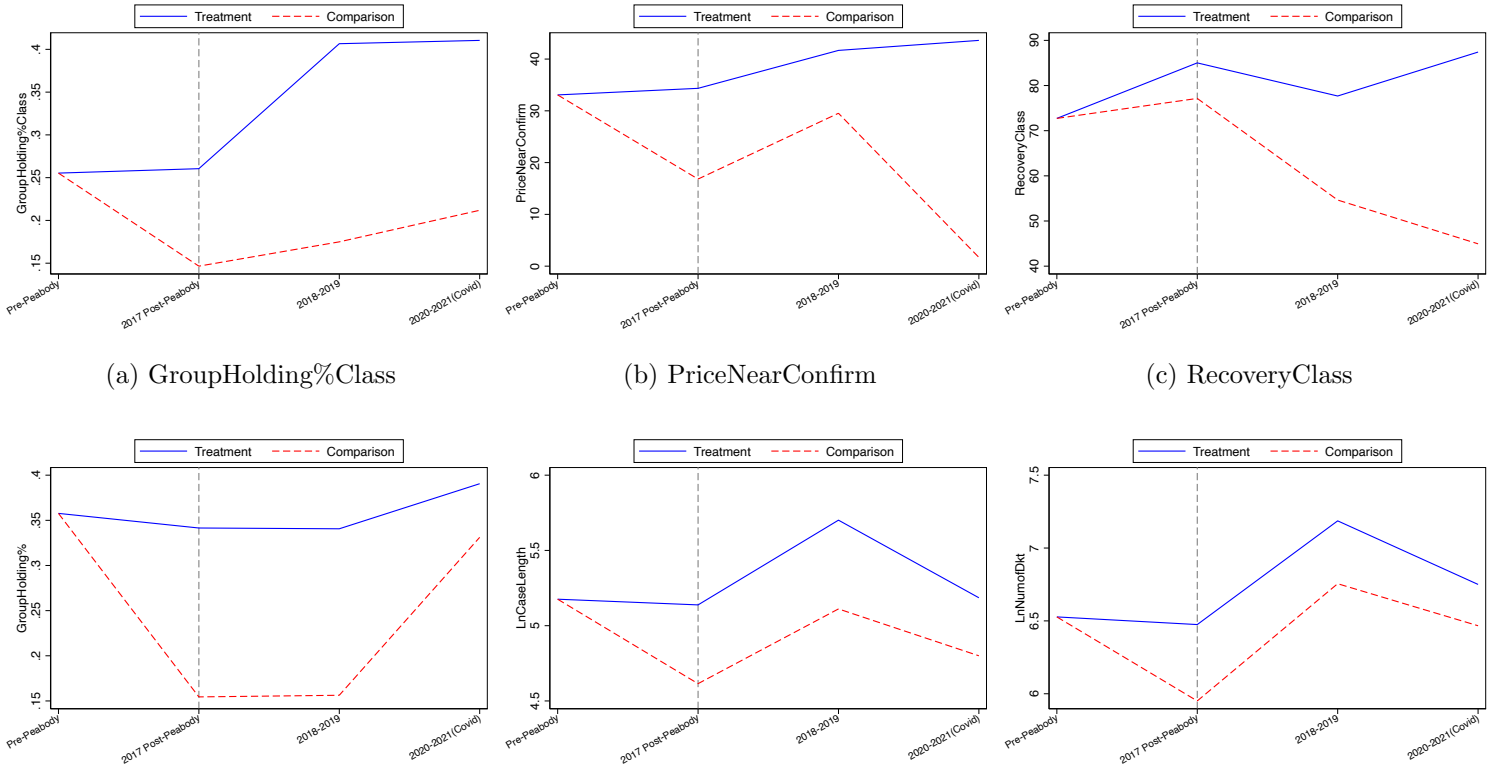
(*Continued*)

Table IA.17—*Continued*

Panel B: Window of Price Around Confirmation [-90, +90] Days								
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	PriceNear Confirm	PriceNear Confirm (Vol-Weighted)	PriceNear Confirm	PriceNear Confirm (Vol-Weighted)	PriceNear Confirm	PriceNear Confirm (Vol-Weighted)	PriceNear Confirm	PriceNear Confirm (Vol-Weighted)
PostPeabody	-61.86***	-61.69***	-61.86***	-61.69***	-61.86***	-61.69***	-31.84	-31.03
	(8.061)	(7.925)	(5.002)	(4.853)	(21.36)	(21.14)	(21.29)	(21.40)
TreatIssueClass	-23.97**	-23.44***	-23.97***	-23.44***	-23.97*	-23.44*	3.178	3.833
	(7.443)	(7.077)	(0.988)	(0.766)	(12.07)	(11.96)	(11.95)	(12.10)
PostPeabody×IssueClass	36.46**	35.49**	36.46***	35.49***	36.46**	35.49**	21.74	20.99
	(12.09)	(11.89)	(7.503)	(7.279)	(15.31)	(15.08)	(14.62)	(14.74)
Constant	76.66***	77.27***	76.66***	77.27***	76.66***	77.27***	48.53***	48.55***
	(5.524)	(5.244)	(1.046)	(0.866)	(11.37)	(11.22)	(14.95)	(15.12)
F.E. Ind×Year	Yes	Yes	Yes	Yes	Yes	Yes	No	No
# of Ind×Year F.E.	16	16	16	16	16	16	–	–
F.E. Year	No	No	No	No	No	No	Yes	Yes
# of Year F.E.	–	–	–	–	–	–	5	5
F.E.Class	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
# of Class F.E.	3	3	3	3	3	3	3	3
Cluster	Ind	Ind	Ind,Year	Ind,Year	–	–	–	–
# of Ind Clusters	10	10	10	10	–	–	–	–
# of Year Clusters	–	–	5	5	–	–	–	–
Robust S.E.	No	No	No	No	Yes	Yes	Yes	Yes
N	63	63	63	63	63	63	85	85
R^2	0.574	0.568	0.574	0.568	0.574	0.568	0.264	0.263

Standard errors in parentheses
* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

This table expands the difference-in-difference results in columns (1) and (2) of Table 7 for *PriceNearConfirm*, with two different windows around confirmation: [-60, + 60] days (Panel A) and [-90, + 90] days (Panel B). Columns (1), (3), (5), (7) use dependent variable *PriceNearConfirm*, which is the average of prices within the window. Columns (2), (4), (6), (8) use dependent variable *PriceNearConfirm (Vol-Weighted)*, which is the volume-weighted average of prices within the window. Columns (1) and (2) include Industry×Year and Class fixed effects and cluster standard errors by Industry; columns (3) and (4) include Industry×Year and Class fixed effects and cluster standard errors by Industry and by Year; columns (5) and (6) include Industry×Year and Class fixed effects and robust standard errors; columns (7) and (8) include Year and Class fixed effects and robust standard errors.



(a) GroupHolding%Class (b) PriceNearConfirm (c) RecoveryClass

(d) GroupHolding% (e) LnCaseLength (f) LnNumofDkt

Figure IA.1: Plotting of the time trends using raw data averaged within each of the following four time periods for the treatment and comparison groups: (1) Pre-Peabody (before March 17, 2017), (2) Post-Peabody during the year of 2017, (3) year 2018-2019, (4) year 2020-2021 (COVID years). For simplicity of illustration, the treatment average values in the Pre-Peabody category are normalized to be equal to the comparison level. Comparing between the "Pre-Peabody" level and the "2017 Post-Peabody" levels, this figure shows that around the Peabody ruling, the difference between the treatment and the comparison average levels increased by 11 percentage points for *GroupHolding%Class*, increased by 18 percentage points of par value for *PriceNearConfirm*, increased by 8 percentage points of par value for *RecoveryClass*, and increased by 19 percentage points for *GroupHolding%*. The ratio of the treatment *CaseLength* over the comparison *CaseLength* increased from 0.77 to 1.3, while the ratio of the treatment *NumofDkt* over the comparison *NumofDkt* increased from 1.11 to 1.87.

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