Empty Creditors and Distressed Debt Exchanges

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Abstract: Empty creditors – bondholders who insure against default using credit default swap (CDS) contracts, face incentives to holdout from distressed exchanges (DEs) of debt that aim to avoid bankruptcy because their payoffs are higher in bankruptcy. We provide direct evidence that empty creditors act on these incentives and holdout from DEs. Furthermore, we provide evidence that firms structure and execute DEs to mitigate empty creditor holdout, and by doing so, successfully reduce debt through the DE and avoid bankruptcy. Our evidence indicates that the firm's response to empty creditor holdout is critical to understanding the role of CDS and empty creditors in distress resolution.

Keywords: Credit Default Swaps (CDSs), Empty Creditors, Debt Restructuring, Distressed Exchange, Bankruptcy, Holdout, and Financial Distress

JEL Classification: G10, G30, G33, G34

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1. Introduction

Over the last decade, markets for default insurance have developed dramatically and credit default swaps (CDSs) have become the instrument of choice when it comes to hedging default risk. The expanded hedging opportunities CDSs provide and the allied benefits of better risk-sharing notwithstanding, concerns over their economic role arise from their ability to engender "empty creditors" – creditors whose CDS hedge decouples their cash flows from the associated control rights. Legal scholars Lubben (2007) and Hu and Black (2008a, b) argue that empty creditors will holdout from distressed exchanges of debt (DEs) that aim to avoid bankruptcy because the CDS hedge alters their payoffs to be higher in bankruptcy relative to DEs.[1] Bolton and Oehmke (2011) advance the argument further by showing that even if CDS insurance is fairly priced (i.e. CDS counterparties anticipate empty creditor holdout and price it into CDS spreads), empty creditors will holdout from DEs. The larger implication of these arguments is that empty creditor holdout raises the costs associated with resolving distress by making bankruptcy more likely.

In this paper, we examine the influence of empty creditors on DEs. The empirical challenge that confronts such an examination arises from the fact that empty creditors are unobservable. To overcome this problem we use the quasi-exogenous variation in the cost of becoming an empty creditor to identify their effect on DEs. When a credit event (such as bankruptcy) occurs, the payout to an empty creditor is the difference between the par value of the CDS reference obligation and its price determined at the settlement auction. In the CDS market, the predominant reference obligation is the senior unsecured bond (Schneider, Sögner and Veža, 2010), and in our sample, it is so without exception. When the senior bond is the CDS reference obligation, it is more expensive for junior bondholders to become empty creditors relative to

[1] Industry analysts Yavorsky et al. (2009) express a similar view.

senior bondholders because they have to purchase a higher notional amount of CDS to obtain the same level of protection as senior bondholders. We therefore contrast reference and non-reference entity DEs at the bond level where this cost-differential is reflected to examine the influence of empty creditors on DEs. Given that firms are selected to be reference entities (for CDS trading) and the criteria used for selection (such as the propensity to experience distress) t may be correlated with DE characteristics, we instrument for CDS trading to ensure that our findings are robust to endogeneity concerns.

We analyze a sample of 81 DEs involving 268 outstanding debt securities conducted by 74 firms between 2004 and 2011. The potential for empty creditor holdout exists in the 23 DEs that are conducted by CDS reference entities. If empty creditors holdout from DEs the cost differential in becoming an empty creditor should lower tendering rates for senior unsecured bonds relative to junior bonds in reference entity DEs when compared to non-reference entity DEs. Consistent with the presence of empty creditor holdout, we find tendering rates for senior unsecured bonds to be lower in reference entity DEs when compared to non-reference entity DE, but tendering rates for junior bonds to be similar across reference and non-reference entity DEs.

Firms typically address holdout problems in DEs by targeting bondholders who are more likely to tender in the DE (Gertner and Scharfstein, 1991). For instance, firms often target junior/unsecured bondholders because, compared to senior/secured bondholders, junior/unsecured bondholders stand to lose more in bankruptcy and hence are more likely to tender in the DE. If it is more expensive for junior bondholders to become empty creditors relative to senior unsecured bondholders, junior bondholders should be more likely to tender in the DE. Hence, all else equal, reference entities should target junior bondholders more relative to senior bondholders in their DEs when compared to similar non-reference entities. Consistent

with firms responding to the potential for empty creditors to holdout by targeting bondholders more likely to tender, we find that reference entities target a greater proportion of their outstanding junior debt compared to non-reference entities in their DEs.

The goals of a DE are to reduce outstanding debt and avoid bankruptcy. We conduct two tests to examine whether disproportionally targeting junior debt helps reference entities mitigate the effects of empty creditor holdout on their ability to reduce debt and avoid bankruptcy. We restrict our examination to the subsample of firms with senior unsecured bonds that additionally either have junior debt (multiple class firms) or do not (single class firms). Multiple class reference entities have the ability to target junior debt while single class ones do not. If the ability to target junior debt helps mitigate the effects of empty creditor holdout on debt reduction, we should observe the effects of empty creditor holdout only with single class reference entities and not with multiple class ones. We find that, among multiple class firms, the reduction in debt is similar across reference and non-reference entity DEs. In contrast, we find that, among single class firms, the reduction in debt is lower in reference entity DEs when compared to non-reference entity DEs. We also examine whether the ability to target junior debt affects the incidence of bankruptcy. We find that reference entities that are single class firms are more likely to file for bankruptcy compared to reference entities that are multiple class firms. In contrast, among non-reference entities, there is no difference in the probability of a bankruptcy filing across single and multiple class firms. These results provide evidence that the ability to target junior debt helps firms mitigate the effect empty creditor holdout has on their ability to reduce debt through the DE and avoid bankruptcy.

Collectively, our findings provide evidence that empty creditors holdout from DEs. Furthermore, they provide evidence that firms structure their DEs to address empty creditor

holdout by disproportionately targeting junior debt, and by doing so, mitigate the effects empty creditor holdout has on their ability to remedy distress through the DE.

These findings contribute to our understanding of the influence of empty creditors in distress resolution in three ways. First, they provide direct evidence that empty creditors holdout from DEs. This is in contrast to the extant evidence on empty creditor holdout, which is both indirect and inconclusive. Subrahmanyam, Tang, and Wang (2014) find that the inception of CDS trading increases the credit (bankruptcy) risk of the reference entity which they argue is consistent with empty creditor holdout in DEs. Danis (2013) who finds that tendering rates are, on average, lower in reference entity DEs compared to non-reference entity DEs. However, Mengle (2009) and Bedendo, Cathcart, and El-Jahel (2014) find that there is no difference in the proportion of DEs relative to bankruptcies between reference and non-reference entities, which they argue is not consistent with empty creditor holdout in DEs.

Second, our findings provide previously undocumented evidence that firms structure their DEs to address empty creditor holdout. Although there is anecdotal evidence that firms structure their DEs to mitigate empty creditor holdout, the current literature lacks a formal analysis of whether, and if so, how firms structure and execute their DEs in response to empty creditor holdout.[2] Our evidence that firms disproportionately target junior debt to address empty creditor holdout thus adds to our understanding of the influence of empty creditors on DEs.

Third, our findings show that accounting for the firm's response to empty creditor holdout is critical to understanding the effect empty creditor holdout has on distress resolution. The extant

[2] For instance, the Financial Times (July 23, 2009) observes that with DEs, " ... *the CDS market has become such a big part of the calculus that when advisers try to structure deals, their starting point is often to look at how many CDS holders there are and try to structure deals that address their concerns*." It goes on to provide the example of Unisys's restructuring: *"... to get CDS holders to support the deal, Unisys had to offer to exchange bonds into senior secured debt at a ratio of 95 cents on the dollar and 20 per cent in cash - a deal so generous that the bonds were worth more than par. Since the most investors can get in the event of a default is 100 cents on the dollar, even holders of the credit insurance happily accepted the offer.*"

evidence suggests that empty creditor holdout increases the risk of bankruptcy. However, it also suggests that empty creditor holdout is not associated with a larger incidence of bankruptcy relative to DEs. Our evidence reconciles these two seemingly inconsistent pieces of evidence by showing that firms structure their DEs to mitigate the effect empty creditor holdout has on their ability to resolve distress through a DE and avoid bankruptcy.

The rest of the paper is organized as follows. The next section provides institutional details on CDSs and DEs. Section 3 reviews the literature on empty creditor holdout in DEs. Section 4 describes the sample and provides descriptive statistics. Section 5 presents our analyses and a discussion of issues that arise in the analysis. Section 6 concludes with a summary of our findings.

2. Institutional Details

2.1. Distressed Exchanges (DEs)

Firms often seek to remedy distress by restructuring their public debt outside of bankruptcy rather than rely on costlier in-court proceedings. But, to do so, they must comply with the Trust Indenture Act of 1939. This Act requires that any changes to the core terms of the bond indenture (principal amount, interest rate or maturity) that the firm proposes be approved by each bondholder, effectively giving a single bondholder veto power over the proposed change. To overcome the potential for a single bondholder to preclude a value increasing transaction (and not violate the provisions of the Trust Indenture Act of 1939) firms therefore restructure their public debt outside of bankruptcy through a distressed exchange (DE) wherein bondholders voluntarily tender their bonds in exchange for a package of new securities (cash, bonds, equity, or some combination thereof).

However, DEs also face a holdout problem that arises from a coordination failure among bondholders (Gertner and Scharfstein, 1991). Collectively, bondholders stand to gain if they tender in the DE by avoiding the deadweight costs associated with bankruptcy. However, when non-tendering bondholders can benefit by free riding on tendering bondholders who bear the costs, each individual bondholder's incentives to tender in the DE are diminished. Consequently, a sufficient number of bondholders may not tender for the DE to succeed.

To mitigate holdout problems and ensure that the DE succeeds, firms structure their DEs by targeting particular bond classes and by offering a package that has a market value lower than the par value but higher than the current value of the targeted debt (Gertner and Scharfstein, 1991). Firms target junior/unsecured bondholders because, compared to senior/secured bondholder, junior/unsecured bondholders stand to lose more in bankruptcy and hence are more likely to tender in the DE. They also use coercive techniques (e.g. conditioning the offer on a threshold tendering rate, exit consents, limited proration rights) along with the type of securities offered in the DE (cash, senior, shorter maturity securities) to induce bondholders to tender in the DE. Gilson, John and Lang (1990), Brown, James and Mooradian (1993), Asquith, Gertner and Scharfstein (1994), Franks and Torous (1994), James (1996) and Chatterjee, Dhillon and Ramirez (1996) all provide empirical evidence on how firms mitigate holdout problems in DEs. Although firms rarely restructure all their outstanding bonds, the DE nevertheless allows the firm to remedy its distress by reducing its debt burden outside of bankruptcy.[3]

[3] Chatterjee, Dhillon and Ramirez (1995, 1996) report that, on average, only 52% of the outstanding public debt is restructured in a DE.

2.2. Credit Default Swaps (CDSs)

A single-name CDS is a bilateral contract between a buyer and a seller of protection that references an entity (a firm) and an obligation (typically the senior unsecured bond). Under the contract terms, the protection buyer makes periodic payments (generally quarterly) to the seller. These payments, called the fee, spread, or premium, are a percentage of the nominal amount of the reference obligation. In exchange for these payments, the buyer receives a settlement from the seller equal to the difference between the par and the recovery on the reference obligation when the reference entity experiences a credit event. While CDS contracts are privately negotiated between the counterparties, the majority adheres to standardized protocols developed by the International Swaps and Derivatives Association (ISDA). The contractual features associated with a CDS – the reference entity, reference obligation, effective date and scheduled termination date, are documented in a "confirmation" that references ISDA definitions.

More importantly for our purpose, CDS confirmations also specify what constitutes a credit event. ISDA defined credit triggers include bankruptcy, failure to pay (after a specified grace period), obligation acceleration, obligation default, repudiation or moratorium, and restructuring.[4] Under the Modified Restructuring (Mod-R) clause introduced in 2003, ISDA defined a restructuring as one where a firm in financial distress engages in one or a combination of the following actions to improve its creditworthiness - principal reduction, coupon reduction, maturity extension, or a change in subordination. However, the restructuring would be considered a credit event only if the terms on an existing bond or loan (same CUSIP identifier) were changed and the changes were voluntary and binding on all holders of the obligation. Under this definition, a DE would not qualify as a credit event because it issues new claims to tendering bondholders even if non-tendering claims were subordinated to tendered claims. Altman and

[4] ISDA Credit Derivatives Definitions are available at www.isda.org/credit

Karlin (2009) confirm that DEs did not trigger a credit event. In 2009, the ISDA eliminated the Mod-R clause altogether formally recognizing that DEs do not constitute a credit event.

When disputes arise over what constitutes a credit event, the ISDA's Credit Derivatives Determinations Committee's decisions are binding. When a credit event occurs, the CDS contract is settled physically or in cash. In a physical settlement, the protection buyer delivers the reference obligation in return for the agreed notional amount. With physical settlement, a sudden increase in demand for the debt obligation in the case of credit event may cause a temporary shortage of the security and result in an artificial increase in its price. Consequently, cash settlements have become the preferred method of settlement, because they reconcile the short-term demand and supply mismatch problems faced in a physical delivery. In a cash settlement, the protection buyer receives the difference between the face value and the market price of the cheapest-to-deliver reference security.[5]

3. Literature Review

Legal scholars Lubben (2007) and Hu and Black (2008a, b) point out that when bondholders purchase CDS protection, they not only insure their cash flows but also decouple them from the associated control rights, effectively becoming empty creditors. Empty creditors, they argue, face incentives to holdout from DEs because bankruptcy, which would trigger payments on their CDS contracts, would provide them with a higher payoff.

Bolton and Oehmke (2011) formalize this argument in a limited commitment model of debt to show that even if CDS insurance is fairly priced (i.e. counterparties anticipate empty creditors'

[5] In a physical settlement, CDS contracts require that the buyer deliver to the seller a bond of the same seniority as that referenced in the contract. Because bonds in the same seniority class may have different prices (say because of accrued interest), the buyer has the option to deliver the cheapest bond in the class to the seller. In a cash settlement, the cheapest-to-deliver equivalent price is used to determine the market price of the reference obligation.

incentives and price it into CDS spreads), empty creditors will still holdout from DEs. In their model, the limited ability of firms to commit to fulfilling their payment obligations leads to the possibility that default may occur for liquidity reasons as well as strategic ones. Empty creditors' reluctance to renegotiate debt out-of-court because they are protected in bankruptcy generates two opposing effects. On the one hand, it provides ex-ante benefits by allowing the firm to commit against strategic default. On the other hand, it entails ex-post costs associated with inefficient default. The socially optimal level of insurance balances the ex-ante commitment benefits against the ex-post costs of inefficient default. However, because empty creditors do not fully internalize the cost of the foregone renegotiation surplus, the equilibrium outcome is one in which empty creditors over-insure and holdout from DEs, and the incidence of bankruptcy is inefficiently high compared to the social optimum.

Empirical evidence on whether empty creditors holdout from DEs is inconclusive. Anecdotal evidence in the form of press commentary surrounding the distress of firms such as General Motors, Chrysler, Six Flags, Lyondell Basell, Abitibi Bowater and General Growth Properties suggests that empty creditors holdout from DEs.[6] Subrahmanyam, Tang, and Wang (2014) find that the credit risk of the reference entity, measured both as the propensity for a credit rating downgrade and the probability of bankruptcy, increases after the inception of CDS trading which they argue is consistent with empty creditor holdout in DEs. In contrast, in an industry study

[6] As an example, the Wall Street Journal reports that in the case of trucking company YRC "*Union members were getting frustrated by the lack of support they seemed to get from some investors despite their own compromises to keep the company a going-concern including an additional 5% wage reduction and a cessation of pension contributions for 18 months with no repayment. Upon further investigation, they seemed to conclude that the central issue preventing certain bondholders from tendering their bonds was the fact that these investors had owned the bonds and had purchased credit default swaps to hedge (or ultimately profit from) the possible bankruptcy of YRC's bonds*." (January 5, 2010).

conducted for ISDA, Mengle (2009) finds that the frequency of DEs relative to bankruptcies shows no change after the development of CDS markets. Moreover, he finds that there is no difference in the proportion of DEs relative to bankruptcies between reference and non-reference entities after the development of CDS markets, leading him to argue that there is no evidence of empty creditor holdout in DEs. Bedendo, Cathcart, and El-Jahel (2014) conduct a more formal analysis employing probit specifications to examine whether reference entities exhibit a greater propensity to restructure in bankruptcy as opposed to through a DE. They too find no difference between reference and non-reference entities, leading them to conclude that the evidence does not support empty creditor holdout in DEs. Danis (2013), who examines the issue more directly finds that bond-level tendering rates are, on average, lower in reference entity DEs compared to non-reference entity DEs, which he argues is consistent with empty creditor holdout in DEs.

4. Data and Sample Characteristics

4.1. Data

To construct our sample, we obtain from Moody's Default and Recovery Database (DRD) a list of DEs that occurred between January 2004 and December 2011. We merge this list with the list of DEs from the database maintained by NYU's Salomon Center to obtain the largest possible set of DEs.[7] We begin in 2004 as this year marked a turning point in the CDS market with the initiation of ISDA Credit Derivatives Definitions (and clarification under Mod-R as to when restructurings would be classified as a credit event) and the introduction of CDX and iTraxx credit indices in 2003. We identify unique DEs based on the ultimate guarantor of the restructured debt. We use Bloomberg, Moody's company searching tools, and the underlying

[7] We thank Ed Altman for providing us this dataset of DEs conducted by high-yield bond issuers from January 2004 to March 2010. This database adds 13 firms conducting DEs and 2 additional DEs conducted by William Lyon Homes Inc. (10/23/2009) and Hovnanian Enterprises Inc. (11/24/2008) to those identified using Moody's DRD.

bond indentures to identify the guarantor information. We consider DEs that occurred within 6 months of each other to represent a single DE because the precipitating factors, firm characteristics, and the nature of reorganization are unlikely to have changed within this short period.[8] Clustering such observations and eliminating financial and non-US companies produces an initial sample of 132 DEs conducted by 123 firms.

We compile the requisite financial data on firms conducting DEs from the first available annual report prior to the DE from COMPUSTAT, EDGAR, Bloomberg, and firm websites.[9] We obtain details on the debt structure from FactSet and firms' annual financial reports. We drop 39 DEs (37 firms) with missing financial information required for our analysis. For the remaining DEs, we collect details on the exchange (the securities targeted, the amount exchanged etc.) from Moody's DRD, and when unavailable on Moody's DRD, directly from the firm's 10-K and 8-K SEC filings. We refer to company press releases and LEXIS-NEXIS news search results when further clarification and/or details are needed. Throughout the data collection process, we

[8] DEs by Energy Future Holdings (EFH),and Texas Competitive Electric Holdings (TCEH) occur within 6 months of each other. EFH is the parent company of Energy Future Competitive Holdings (EFC) that fully and unconditionally guarantees the debt issued by its wholly owned subsidiary, TCEH. Although EFH is not the guarantor for the debt issued by TCEH, we nevertheless combine both these DEs into a single observation because they are part of the same reorganization plan, and because EFH's financial statements consolidate the financial statements of EFC and TCEH.

[9] There are two cases where obtaining firm level details required accounting for the mergers the firms had entered into prior to their DEs. Caesars Entertainment Corporation was involved in a merger in January 2008. It conducted a DE in December 2008, which included securities from the merger that were not reported in its 2007 annual report. In order to match firm characteristics with the securities restructured as closely as possible, we use balance sheet information from the second quarter of 2008 and the 12-month trailing income statement from the same quarter. We also confirm that the debt table as of the second quarter of 2008 included all of the securities restructured. Similarly, Clear Channel Communications, Inc. was involved in a merger in June 2008 and conducted a DE in August 2009. The first post-merger annual report was available only in 2010. To obtain financial information on the company at the end of 2008, we sum up the pre-merger (from January 1 through July 30, 2008) and post-merger (from July31 through December 31, 2008) income statement items reported in 2009 annual report to obtain the company's 2008 annual operating performance. The company's balance sheet as of December 2008 was available in the 2009 annual report.

confirm that all of the sample firms are indeed financially distressed and that their debt structure details reported in annual financial statements include the securities involved in the DEs.[10]

For each security involved in the DE, we obtain prices from Bloomberg or FINRA's TRACE database, and recovery rates from Moody's DRD. We obtain stock returns, prices, and number of shares outstanding prior to the DE from the Center for Research in Security Prices (CRSP) database. Eliminating 11 DEs (11 firms) that include non-rated securities for which security characteristics and prices are unavailable results in a final sample that consists of 74 firms conducting 81 DEs involving 268 outstanding debt securities. [11]

We identify whether a sample firm is a CDS reference entity when it conducts a DE using Bloomberg data feeds.[12] To increase the probability that we capture economically significant effects associated with empty creditors at the time of the DE, we ensure that there is a CDS price (spread) available in the 6 months prior to the DE completion date. We also crosscheck if these reference entities appear in the Depository Trust & Clearing Corporation's (DTCC) Top 1,000 Reference Entities list in the same time period.[13] We identify the reference obligation for the CDSs using Markit's reference obligation identifiers (RED Codes) on Bloomberg. For all our reference entities, the reference obligation is the senior unsecured bond. Our sample consists of 23 DEs conducted by reference entities and 58 DEs conducted by non-reference entities.

[10] We exclude Century Aluminum Company's DE on September 30, 2009 because the restructuring information in Moody's DRD was incomplete and we were unable to reconcile the details using the company's SEC filing.

[11] Such sample sizes are typical of studies of distressed debt restructurings. For instance, Gilson, John, and Lang (1990), Brown, James, and Mooradian (1993), Franks and Torous (1994), Chatterjee, Dhillon, and Ramirez (1995) and James (1996) examine 80, 35, 45, 46, and 68 DEs respectively.

[12] Bloomberg feeds include CBGL/LON, CBGN/NYC, CBGT/TYO, CBED/OTH, CBIL/LON, CBIN/NYC, CBIT/TYO, CMAL/OTH, and CMAN/OTH.

[13] Using a one-year window for the availability of CDS spreads or excluding firms not on the DTCC list (available at http://www.dtcc.com/products/derivserv/data_table_i.php?tbid=5) does not change our findings in any material way. Our sample contains two reference entities that are not on the DTCC list.

4.2. Sample Characteristics

Table 1, Panel A presents the time distribution of DEs in the sample. Majority of the DEs in the sample occur during 2008-09. Of the 81 DEs in the sample, 55 occur in 2008 and 2009. This time concentration is mirrored in sub-samples of reference and non-reference entity DEs. Of the 23 DEs by reference entities, 17 occur in these two years. Similarly, of the 58 DEs by non-reference entities, 38 occur in the same time period. Altman and Karlin (2009) report a similar increase in DEs post 2007 which they attribute to the reduced availability of debtor-in-possession financing for bankruptcy reorganizations during the financial crisis of 2008-09.[14]

Table 1, Panel B presents the industry distribution of DEs in the sample based on the Fama-French aggregation of SIC codes into 5 representative sectors (Consumer, Manufacturing, High-tech, Health and Other). Sample DEs occur almost uniformly in all sectors, except the Health sector. This industry pattern is the same whether the firm conducting the DE is a reference entity or not. Panel B also reports the number of DEs conducted by public firms in the sample. Among the 31 DEs conducted by public firms, nearly half (14) are by reference entities. The majority of the firms conducting DEs are private.

Table 1, Panel C identifies DEs in our sample based on their industry's (2-digit SIC code level) growth prospects. The median industry Tobin's Q in the year prior to the DE is above one irrespective of whether the firm conducting the DE is a reference entity or not, indicating that DEs occur in industries with growth options.[15] Panel C also identifies whether DEs in the sample occur in distressed industries using a median one-year industry return of less than -30% prior to

[14] We discuss the implications of the financial crisis for our analysis in section 5.

[15] Following Acharya, Bharath, and Srinivasan (2007), we construct the proxy for Tobin's Q as the ratio of the market value of the firm (estimated as book value of total assets – book value of equity + market value of equity) to the book value of its total assets.

the DE to classify industry distress. Approximately half of the reference entity DEs and a third of the non-reference entity DEs in the sample occur in distressed industries.

Table 2 presents various financial characteristics for reference and non-reference entities conducting the DEs in the sample. Consistent with the fact that CDS contracts are typically written on large firms, sample reference entities are larger than sample non-reference entities. Although they do not differ in terms of their overall profitability (ROA), sample reference entities have higher profit margins (EBITDA/Sales) relative to non-reference entities.

Sample reference entities are similar to sample non-reference entities in terms of their distress characteristics based both on book value and market value measures. Typical of firms experiencing financial distress, both reference and non-reference entities in the sample are solvent on a book value basis (the leverage ratio, Total Debt/Total Assets is below 1), generate sufficient earnings from their operating activities to cover interest expenses (EBITDA/Interest expense ratio is greater than 1), but are cash constrained (cash ratios are lower than interest expense ratios).

Computing a market-based measure of distress, such as the distance-to-default based on a structural model of credit risk, requires the market value of equity as a key input. In the absence of the market value of equity for a number of our sample observations (62% of our sample consists of private firms), we adopt an alternate approach. We randomly select a bond for every firm in our sample and calculate the credit spread as the difference between the yield-to-maturity of the bond and a benchmark risk-free rate one-month before the announcement of the DE. We calculate the benchmark risk free rate by linearly interpolating the maturity-matched interest rate swap curve. We also calculate an alternative risk-free benchmark in a similar fashion from the treasury yield curve. Similar to what is observed with book value based measures, these credit

spreads are not statistically different across sample reference and non-reference entities. Using either risk-free benchmark, the mean (median) credit spread for reference entities is about 37% (24%). Correspondingly, the mean (median) credit spread is approximately 48% (32%) for non-reference entities.[16]

As a final comparison of distress characteristics, we examine liquidation values. To proxy for liquidation value we follow Almeida and Campello (2007) and capture the assets that can be pledged (and hence liquidated) by constructing a tangibility ratio defined as:

$$(\text{Cash} + 0.715 \times \text{Receivables} + 0.547 \times \text{Inventories} + 0.535 \times \text{PP\&E})/\text{Assets}. \quad (1)$$

This proxy for liquidation value is not statistically different across reference and non-reference entities. The mean (median) tangibility ratio for sample reference entities is 37% (32%) while it is 39% (42%) for sample non-reference entities.

Table 3 presents information on the debt structure of reference and non-reference entities conducting the DEs in the sample. Panel A of the Table presents the proportion of debt that is in the form of loans and bonds. Both reference and non-reference entities have about a third of their total debt in the form of loans and two-thirds in the form of bonds. All reference entities have senior unsecured bonds given that the senior unsecured bond is the reference obligation for the CDS for our sample firms. In comparison, only 36 out of the 58 non-reference entities have senior unsecured bonds. However, when they do have senior unsecured bonds, both reference and non-reference entities have a similar proportion of their debt in the form of senior unsecured

[16] Our results are qualitatively unchanged when we randomly pick only senior unsecured bonds to compute the spread, or when we compute weighted average spreads where the weights are the bonds' issue size. A multivariate analysis (unreported) that controls for security specific characteristics further confirms that the difference in spreads between reference and non-reference entities is insignificant.

bonds. Similarly, not all firms in the sample have senior unsecured or junior bonds, but when they do, non-reference entities have a higher proportion of their debt in the form of senior secured and junior bonds.

Table 4 presents various characteristics of the DEs conducted by reference and non-reference entities in the sample. Firms often condition the exchange offer on a threshold tendering rate, attach exit consents and limited proration rights to the offer, or offer shorter maturity, higher seniority or greater security to coerce bondholders to tender in the DE. To capture the presence of such techniques, we define a Coercive Dummy variable that equals 1 if the DE involves any of the following features: an early participation deadline, an exit consent solicitation, or the offering of new debt with shorter maturity, greater seniority and/or security, and 0 otherwise. Firms also use a variety of ways to conduct the DE to address holdout problems. To capture this variety, we define the following dummy variables: an Exchange Dummy that equals 1 if the DE involves exchanging old debt with new securities and 0 otherwise; a Tender Dummy that equals 1 if the DE involves a cash tender offer and 0 otherwise; and a Repurchase Dummy that equals 1 if the DE involves an open-market repurchase of debt and 0 otherwise. And finally, to examine if firms offer a higher valued package to induce bondholder to tender in the DE, we follow industry practice and use the recovery rate for the bonds targeted in the DE as a proxy for the value of the package offered. Following Moody's convention, the recovery rate is the first available price for the targeted bond one month from the completion of the DE (obtained from Bloomberg, FINRA's TRACE database, or from Moody's DRD database) as percentage of face value.[17] To

[17] Moody's DRD uses a price subsequent to the completion of the DE as opposed to after the announcement of the DE, because post-completion prices are not contaminated by the probability of success or failure of the DE, while those prior to completion are. Targeted bond prices are used to proxy the recovery rate on the bond because they represent the transfer price between the creditors who trade the targeted debt and those who exchange their debt. For more information, see Moody's (2002) (pp. 15-16), Duffie and Singleton (2003) (pp. 123), and Gupton and Stein (2002) (pp. 6).

compute firm and debt class level recovery rates, we average the individual bond recovery rates in that particular firm or debt class.

A majority of the sample firms use coercive techniques in their DEs, but their use does not differ across reference and non-reference DEs. Similarly, a majority of the DEs are conducted as an exchange of old debt for a new package of securities, followed by cash tender offers and open market repurchases, and these patterns do not differ across reference and non-reference entity DEs. Firm level recovery rates average about 59% and are not different across reference and non-reference entities.[18] Neither are bond class level recovery rates.

5. Analyses

We begin our analysis by first examining whether empty creditors holdout from DEs. We then examine whether firms structure and execute their DE to address empty creditor holdout, and what effect, if any, this has on their ability to remedy distress. Given that empty creditors are unobservable, we utilize the difference in the cost of becoming an empty creditor across junior and senior bondholders to identify effects associated with empty creditors. It is possible that unobservable variables (such as the propensity for distress) that drive CDS trading on a firm (making it a reference entity) are also correlated with DE characteristics or outcomes. To address this endogeneity problem associated with CDS listing, we follow Subrahmanyam, Tang, and Wang (2014) and Saretto and Tookes (2013) and use the average foreign exchange hedging position (as a ratio of assets, FX/Assets) of the firm's bond underwriters to instrument for reference entities. According to these authors, institutions that actively hedge their foreign exchange risks are also likely to demand CDS contracts on the bonds that they underwrite.

[18] A recovery rate of 59% is consistent with the findings of Altman and Karlin (2009) who report an average recovery rate of 59.58% for DEs conducted between 2004 and 2009..

Consequently, FX/Assets is likely to be correlated with CDS trading on a firm. However, it is unlikely to be correlated with DE outcomes or characteristics, making it a valid instrument for empty creditors.

We construct this instrumental variable as of the DE completion date using a list of bond underwriters of the firm from Bloomberg, and their foreign exchange positions from the Y9C reports maintained by the Federal Reserve. FX/Assets is available for 66 out of 88 DEs in our sample. The average FX/Assets for the 22 reference entity DEs is higher than that for the 44 non-reference entity DEs (2.52% vs. 1.64%), and the difference is significant at the 5 percent level. We use this instrumental variable in a Heckman (1979) selection model framework. In the first stage, we use the instrumental variable to predict whether the firm is a reference entity or not. In the second stage we use the inverse Mill's ratio (lambda) to examine the influence of empty creditors on DEs. [19]

5.1. Empty Creditor Holdout

To examine whether empty creditors holdout from DEs, we compute the tendering rate in a DE, both at the firm level and the bond class level, as a proportion of the debt that is targeted in the DE. Table 5, Panel A presents tendering rates for both reference and non-reference entity DEs. The average firm-level tendering rate is 45% in reference entity DEs and 63% in non-reference entities, and the difference between these two tendering rates is statistically significant. At the bond level, the average tendering rate for senior unsecured bonds is 67% in non-reference entity DEs. In contrast, the average tendering rate for senior unsecured bonds is a significantly lower 43% in reference entity DEs. At the junior bond level, there is no difference in the tendering rates between reference and non-reference entity DEs.

[19] Using a two-stage least squares (2SLS) model does not change our results.

Table 5, Panel B presents the results of a regression analysis of tendering rates. The dependent variable in the first three baseline regressions (regressions I, II and III) is the tendering rate, either at the firm level or the bond-class level. The variable of interest is the CDS dummy that indicates if the DE is by a reference entity or not. All three regressions include controls for differences in firm, debt and DE characteristics across reference and non-reference entities, and are estimated using OLS with White's (1980) correction employed to account for heteroskedasticity. Regression I, where the dependent variable is the firm level tendering rate, shows that tendering rates are lower when the firm is less profitable (EBITDA/Sales), has more junior debt (Junior Debt/Total Debt) and when the DE is conducted as an open market repurchase. It also shows that the coefficient on the CDS dummy is -0.15 and statistically significant, indicating that tendering rates are 15% lower in reference entity DEs when compared to non-reference entities. Regressions II and III examine bond class level tendering rates to determine if the lower tendering rates observed in reference entity DEs is due to empty creditor holdout. If empty creditors holdout, we expect tendering rates to be lower for senior unsecured bonds relative to junior bonds in reference entity DEs when compared to non-reference entity DEs. In regression II, where the dependent variable is the tendering rate for junior bonds, the coefficient on CDS dummy is insignificant, indicating no difference in the tendering rates for junior bonds across reference and non-reference entity DEs. In contrast, in regression III, where the dependent variable is the tendering rate for senior unsecured bonds, the coefficient on the CDS dummy is -0.18, and statistically significant, indicating that tendering rates for senior unsecured bonds are lower in reference entity DEs compared to non-reference entity DEs. These results from regressions II and III indicate that empty creditors holdout from DEs.

Table 5, Panel B also presents the results of a regression analysis of tendering rates where reference entities are instrumented for using the average foreign exchange hedging position of the firm's bond underwriters. Regression IV reports the marginal effects from the first stage probit regression where the dependent variable is a dummy that indicates whether the firm is a reference entity or not, and the independent variables include firm, debt and DE characteristics. The probit model has a relatively high explanatory power as the pseudo R-squared is 0.35 and Wald Chi-Square is 29.99 with a p-value of zero. The coefficient estimate on log(1+FX/Assets) is 0.33 and significant, indicating that, when all independent variables are at their mean values, a 10% increase in FX/Assets results in a 3% increase in the probability of being a reference entity.[20] The incremental pseudo R-squared associated with the inclusion of log(1+FX/Assets) is 7.07 percent with an F-value of 6 that is significant at the conventional levels. These results suggest that, despite the small sample size, FX/Assets variable is not a weak instrument. Regressions V and VI report the results from the second stage selection regression and correspond to regressions II and III. Regression V, where the dependent variable is the tendering rate for junior bonds, shows that the coefficient on the (instrumented) CDS dummy is statistically insignificant. In contrast, in regression VI, where the dependent variable is the tendering rate for senior unsecured bonds, shows that the coefficient on the (instrumented) CDS dummy is -0.26 and statistically significant. The results from regressions V and VI confirm that our results are robust to endogeneity concerns associated with the non-random assignment of firms to reference entities and that empty creditors holdout from DEs.

[20] We use log(1+FX/Assets) because FX/Assets is heavily skewed to the right. The results remain the same using FX/Assets in the regressions.

5.2. Response to Empty Creditor Holdout

Firms typically address holdout problems in a DE by targeting bondholders who are more likely to tender in the DE relative to others. For instance, firms target junior/unsecured bondholders, because relative to senior/unsecured bondholders, junior/unsecured bondholders stand to lose more in bankruptcy and hence are more likely to tender in the DE. If, as argued earlier, it is more expensive for junior bondholders to become empty creditors relative to senior unsecured bondholders, we should expect reference entities to target junior bondholders more so in their DEs when compared to similar non-reference entities. To examine whether reference entities structure and execute their DEs differently relative to non-reference entities to address empty creditor holdout, we examine the debt targeted in the DE.

Table 6, Panel A presents the proportion of outstanding senior unsecured and junior debt targeted in reference and non-reference DEs. Reference entities target a lower proportion of their outstanding senior unsecured debt in the DE compared to non-reference entities (45% vs. 60%), but the difference is not statistically significant. In contrast, reference entities target a similar proportion of their junior debt when compared to non-reference entities.

Table 6, Panel B, presents the results of a regression analysis of the debt targeted in the DE that controls for differences in the amount of debt in each debt class, and for other firm and DE characteristics. The dependent variable in the regressions is either the proportion of outstanding senior unsecured or junior debt that is targeted in the DE. All regressions control for the amount of senior unsecured debt and junior debt (as a proportion of total debt) in the capital structure. In addition, they also control for DE characteristics (Coercive Dummy, Repurchase Dummy) and firm characteristics (leverage, profitability, liquidity, and asset tangibility). The variable of interest in the regressions the CDS dummy that indicates whether reference and non-reference

entities target debt differently in their DEs. All regressions are estimated using OLS with White's (1980) correction employed to account for heteroskedasticity.

In regression I, the dependent variable is the proportion of outstanding junior debt targeted in the DE. This regression shows that firms target more junior debt in the DE when they have more junior debt in their capital structure, and when they use coercive techniques. It also shows that they target less junior debt when they have more senior unsecured debt in their capital structure. More importantly, the coefficient on the CDS dummy is 0.49 and statistically significant, indicating that reference entities target more of their outstanding junior debt in the DE when compared to similar non-reference entities. In regression II, the dependent variable is the proportion of outstanding senior unsecured debt targeted in the DE. Similar to regression I, this regression shows that firms target more senior unsecured debt when they use coercive techniques, and less senior unsecured debt when they have more junior debt in their capital structure. The coefficient on the CDS dummy is insignificant in this regression, indicating that there is no difference in the senior unsecured debt targeted in reference and non-reference entity DEs.

Regressions III and IV, which are similar to regressions I and II, are run on the multiple class subsample. In regression III, where the dependent variable is the proportion of outstanding junior debt targeted by multiple class firms, the coefficient on the CDS dummy is 0.54 and statistically significant. In regression IV, where the dependent variable is the proportion of outstanding senior unsecured debt targeted by multiple class firms, the coefficient on the CDS dummy is statistically insignificant. These two regressions indicate that when junior bonds are available in the capital structure besides senior unsecured bonds, reference entities target a larger fraction of their junior debt, but a similar proportion of their senior unsecured debt when compared to

similar non-reference entities. These results provide evidence that firms address empty creditor holdout by disproportionately targeting junior debt in their DEs.

5.3. Empty Creditor Holdout and the Resolution of Distress

The goals of a DE are to reduce outstanding debt and avoid bankruptcy. We conduct two tests to examine whether disproportionally targeting junior debt helps reference entities mitigate the effects of empty creditor holdout on their ability to reduce debt and avoid bankruptcy. To do so, we restrict our attention to the subsample of firms with senior unsecured bonds that additionally either have junior debt (multiple class firms) or do not (single class firms).[21] Multiple class reference entities have the ability to target junior debt while single class ones do not.

We first examine the debt reduced through the DE. We compute the amount of debt reduced through the DE both on a book value and a market value basis. We compute the Book Value of Debt Reduction (B.V. Debt Reduction) as the difference between the face value of the new debt offered and the face value of the debt restructured. We compute a market value based measure of debt reduction (M.V. Debt Reduction) that accounts for the features of the new debt offered in DEs (e.g. seniority, security, and maturity) using the recovery rate on the targeted bond as follows:

$$\text{M.V. Debt Reduction} = \sum_i \text{Amount Restructured}_i \times (1\text{-Recovery}_i) \quad (3)$$

where *i* references the bond restructured in the DE. When a particular bond's recovery rate is not available, we use the average recovery rate for the corresponding bond class as an estimate of that particular bond's recovery rate.

[21] Appendix A, B and C provide descriptive statistics on multiple and single class firms, their debt structure and their DEs respectively.

Table 7, Panel A reports the debt reduced through the DE for the full sample of DEs and for the single and multiple class firm subsamples. The amount of debt reduced is lower in reference entity DEs when compared to non-reference entity DEs, irrespective of whether the debt reduction is measured in book value or market value terms. On average, reference entities reduce their debt by 12% in book value terms and 7% in market value terms. In comparison, non-reference entities reduce their debt by 20% and 12% in book value and market value terms respectively. Both the book value and market value measures of debt reduction are statistically different across reference and non-reference entity DEs. If the ability to target junior debt helps mitigate the effects of empty creditor holdout on debt reduction, we should observe the effects of empty creditor holdout only with single class reference entities and not with multiple class ones. Table 7, Panel A, shows that among multiple class firms, the reduction in debt is similar across reference and non-reference entity DEs. In contrast, among single class firms, the reduction in debt is lower in reference entity DEs when compared to non-reference entity DEs.

Table 7, Panel B reports the results of a regression analysis of the amount of debt reduced in the DE. The baseline regression models I, II and III are identical to those in Table 5, except that the dependent variable is the market-based measure of debt reduction. Regression I is run using the full sample of DEs while regressions II and III are run using the multiple class and single class firm subsamples respectively. In regression I, the coefficient on the CDS dummy is statistically insignificant, indicating that the amount of debt reduction in reference entity DEs is no different from that in similar non-reference entity DEs. In regression II, where multiple class firms are considered, the coefficient on the CDS dummy is insignificant, while in regression III, the coefficient on the CDS dummy is negative and statistically significant. These results indicate that when the firm has the ability to address empty creditor holdout by targeting junior debt in

the DE (a multiple class firm), empty creditors do not restrict the ability of firms to reduce debt through the DE. Regressions IV and V which are similar to the baseline regressions except that they instrument for reference entities (the CDS dummy) confirm that the ability to target junior debt allows firms to mitigate the effects empty creditor holdout has on their ability to reduce debt through the DE.

We also examine whether targeting junior debt to mitigate empty creditor holdout helps firms avoid bankruptcy. To do so, we use Bloomberg to identify 64 junk-rated firms with senior unsecured debt that filed for bankruptcy during the sample period (bankruptcy sample) to compare with the 59 firms with senior unsecured debt in our DE sample. Together, these 123 firms consist of 38 reference entities (23 in the DE sample and 15 in the bankruptcy sample), and 85 non-reference entities (36 in the DE sample and 49 in the bankruptcy sample).

If the ability to target junior debt helps mitigate reference entities successfully complete DEs and avoid bankruptcy, we should observe the incidence of bankruptcy to be higher with single class reference entities when compared to single class non-reference entities. Table 8, Panel A presents the proportion of single class reference and non-reference entities in both the bankruptcy and DE samples. The Panel shows that the proportion of single class reference entities is higher in the bankruptcy sample (93%) than in the DE sample (43%). In comparison, the proportion of single class non-reference entities is similar across the bankruptcy and DE samples. Similarly, within the bankruptcy sample, the proportion of single class reference entities (93%) is higher than the proportion of single class non-reference entities. In contrast, within the DE sample, there is no such difference.

Table 8, Panel B presents the results of a probit analysis of the choice to restructure debt through a DE or in bankruptcy using the combined sample of 123 firms. The dependent is 1 if

the firm files for bankruptcy or 0 if it engages in a DE. The independent variables include controls for size (Log Assets), profitability (EBITDA/Sales), asset tangibility (Tangibility), leverage (Total Debt/Assets), short-term debt (Short-term Debt/Total Debt) and bank debt (Bank Debt/Total Debt). The coefficient of interest is the one on the "No Junior Debt Dummy" (that takes on a value of 1 if the firm has no junior debt and 0 otherwise), which captures any difference in the probability of bankruptcy relative to a DE across firms with and without junior debt. Regression I is run on the sample of reference entities while regression II is run on the sample of non-reference entities. The coefficient on the dummy is positive and statistically significant in regression I (1.60) indicating that reference entities without junior debt have a higher probability of filing for bankruptcy, while it is insignificant in regression II indicating no such difference for non-reference entities. These results show that the ability to target junior debt helps mitigate empty creditor holdout and avoid bankruptcy. Taken together, the results from this section provide evidence that targeting junior debt helps firms mitigate the effect empty creditor holdout has on their ability to remedy distress through the DE.

5.4. Additional Issues

In this section, we discuss additional issues related our analysis. We report, but do not tabulate the results of the tests discussed in this section.

5.4.1. Credit Event Trigger

The incentive for empty creditors to holdout from DEs arises because holding out increases the probability that the firm would experience a credit event triggering payoffs on their CDS contracts. If the DE itself were to trigger a credit event, there would be no need for empty creditors to holdout from it. Whether DEs constitute a credit event is therefore critical to identifying empty creditor holdout.

As mentioned earlier in section 2, under ISDA's 2003 Modified Restructuring (Mod-R) clause, a debt restructuring is defined as one where a firm in financial distress engages in one or a combination of the following actions to improve its creditworthiness: principal reduction, coupon reduction, maturity extension, or a change in subordination. Furthermore, the restructuring is considered a credit event only if the terms on an *existing* bond or loan (same CUSIP identifier) are changed and the changes are voluntary and binding on all holders of the obligation. Under Mod-R, DEs would not qualify as a credit event because the firm issues *new* claims to tendering bondholders even if non-tendering claims are subordinated to the tendered claims.

In 2009, ISDA eliminated the Mod-R clause altogether as part of its Big Bang Protocol and formally recognized that DEs do not constitute a credit event. However, even prior to its implementation, North American high yield CDS contracts followed the convention of "No Restructuring" that did not consider DEs as a credit event.[22] Therefore, we do not expect DEs to trigger a credit event during the entire analysis period. Furthermore, Altman and Karlin (2009) confirm that DEs did not trigger a credit event during that time period. Thus, over our entire sample period, DEs would not have triggered a credit event and empty creditors would have faced incentives to holdout from DEs to try and push firms to experience a credit event. To the extent that there was any uncertainty over a DE triggering a credit event, our results should be sensitive to the resolution of this uncertainty with the introduction of the Big Bang protocol.

To check whether our results are sensitive to the introduction of the Big Bang protocol, we introduce a Big Bang dummy (that takes on the value of 1 for DEs that occurred after April 8,

[22] The CDS Big Bang: Understanding the Changes to the Global CDS Contract and North American Conventions, March 13, 2009, Markit.

2009 and 0 otherwise) and interact it with our CDS dummy in our tendering rate regressions II, and III of Table 5. We find that the coefficients on the Big Bang dummy and the interaction dummy are statistically insignificant indicating that uncertainty over the credit event trigger did not have any material effect on our results.

5.4.2. Financial Crisis

The majority of the DEs in our sample – 74% of DEs by reference entities and 66% of DEs by the non-reference entities – are conducted during the 2008-09 period. This period coincides with the financial crisis of 2008 where concerns over the ability of major financial institutions to fulfill their contractual obligations increased counterparty risk. Therefore, it is conceivable that empty creditors, worried about the ability of their counterparties to pay out on their CDS contracts in the event the debtor defaults, would be more likely to participate in, and less likely to holdout from DEs. To investigate this possibility, we introduce LIBOR-OIS spread as a proxy for counterparty risk and interact it with the CDS dummy in all of the regressions in Table 5.[23] We find that our tendering rate results remain qualitatively unchanged.

Furthermore, if increased counterparty risk caused empty creditors not to holdout from DEs, we should not find a difference in the way reference entities structure and execute their DEs depending on whether they have or do not have junior debt. Our finding that reference entities disproportionately target junior debt suggests that concerns over counterparty risk were not adequate enough to cause them to ignore the potential for empty creditors to holdout from DEs, perhaps because they could not ascertain whether empty creditors will or will not holdout from the DE.

[23] Evidence that the LIBOR-OIS spread proxies for counterparty risk during the financial crisis of 2008 is provided in Taylor and Williams (2009).

5.4.3. Counterparty Intervention

It is conceivable that counterparties (CDS protection sellers) purchase debt claims from empty creditors to preempt having to pay out on the CDS contract. Such a scenario would arise if the purchase price were to be lower than the CDS payout in the event of default. If protection sellers were to purchase empty creditor debt, there would not be any empty creditor holdout. Although this is a theoretical possibility, there is no evidence that protection sellers settle in this manner (see Bolton and Oehmke, 2011 pp. 33). Furthermore, it is unclear whether, under the current disclosure regime, firms would know of such a settlement between the creditor and the CDS protection seller. Given this uncertainty over whether empty creditors have settled with their counterparties, firms still face the possibility of empty creditor holdout in their DEs.

5.4.4. Debt Maturity

It is conceivable that reference entities may be targeting more junior debt in their DEs because junior debt is due sooner than senior unsecured debt, and not because they are responding to empty creditor holdout. To ensure that differences in debt maturity are not driving our results, we examine the maturity of both junior and senior unsecured debt in our multiple-class sample. The average maturity of junior debt is significantly higher (9.75 years) for reference entities when compared to non-reference entities (3.70 years).[24] The average maturity of senior unsecured debt is similar across both reference and non-reference entities (6.03 and 5.15 years, respectively). This indicates that reference entities are not disproportionately targeting junior debt when compared to non-reference entities because their junior debt comes due sooner. We confirm that this is indeed the case by introducing a maturity control variable in all the targeting regressions in Table 6. Our analysis, taken together with these maturity

[24] This is consistent with Sarretto and Tookes (2013) who document that reference entity debt has a higher average maturity than non-reference entity debt.

differences, shows that that reference entities target relatively more of their junior debt to address empty creditor holdout despite its later maturity both relative to their own senior unsecured debt and non-reference entities' junior debt.

6. Summary

In contrast to a firm's traditional creditors, empty creditors – joint holders of a firm's bonds and CDS – face incentives to holdout from distressed exchanges of debt that aim to avoid bankruptcy. Empty creditors face such incentives because a bankruptcy filing by the distressed firm, which would trigger payments on their CDS contracts, would yield a higher payoff for than a DE. In this paper we provide evidence that empty creditors act on such incentives and holdout from DEs. Furthermore, we show that firms structure their DEs to address empty creditor holdout, and by doing so, mitigate the effects empty creditor holdout has on their ability to reduce debt through the DE and avoid bankruptcy.

These findings add to the literature on empty creditors and distress resolution, not just by providing evidence that empty creditors holdout, but more importantly, by showing that firms respond to their holdout, and that accounting for the firm's response to empty creditor holdout is critical to understanding the effect empty creditor holdout has on distress resolution. Our findings help explain why in equilibrium, we can observe both empty creditor holdout and successful DEs that help firms avoid bankruptcy.

References

Acharya, V. V., Bharath, S. T., Srinivasan, A., 2007. Does industry-wide distress affect defaulted firms? Evidence from creditor recoveries. Journal of Financial Economics 85, 787-821.

Almeida, H., Campello, M., 2007. Financial constraints, asset tangibility, and corporate investment. Review of Financial Studies 20, 1429-1460.

Altman, E., Karlin, B., 2009. The re-emergence of distressed exchanges in corporate restructurings. Journal of Credit Risk 5, Summer.

Asquith, P., Gertner, R., Scharfstein, D., 1994. Anatomy of financial distress: An examination of junk bond issuers. Quarterly Journal of Economics, 109, 625-658.

Bedendo, M., Cathcart, L., El-Jahel, L., 2014. Distressed debt restructuring in the presence of credit default swaps. Journal of Money, Credit and Banking, Forthcoming.

Betker, B. L., 1995. Management's incentives, equity's bargaining power, and deviations from absolute priority in Chapter 11 bankruptcies. The Journal of Business 68, 161-183.

Bolton, P., Oehmke, M., 2011. Credit default swaps and the empty creditor problem. Review of Financial Studies 24, 2617-2655.

Brown, D. T., James, C., Mooradian, R. M., 1993. The information content of distressed restructurings involving public and private debt claims. Journal of Financial Economics 33, 93-118.

Chatterjee, S., Dhillon, U. S., Ramirez, G. G., 1995. Coercive tender and exchange offers in distressed high-yield debt restructurings: An empirical analysis. Journal of Financial Economics 38, 333-360.

Chatterjee, S., Dhillon, U. S., Ramirez, G. G., 1996. Resolution of financial distress: Debt restructurings via Chapter 11, prepackaged bankruptcies, and workouts. Financial Management 25, 5-18.

Danis, A., 2013. Do empty creditors matter? Evidence from distressed exchange offers. Unpublished working paper. Georgia Tech University.

Duffie, D., Singleton, K. J., 2003. Credit risk: Pricing, measurement, and management. Princeton University Press.

Franks, J. R., Torous, W. N., 1994. A comparison of financial recontracting in distressed exchanges and Chapter 11 reorganizations. Journal of Financial Economics 35, 349-370.

Gertner, R., Scharfstein, D., 1991. A theory of workouts and the effects of reorganization law. Journal of Finance 46, 1189-122.

Gilson, S., John, K., Lang, L., 1990. Troubled debt restructuring: An empirical study of private reorganization of firms in default. Journal of Financial Economics 27, 315-353.

Gupton, M. G., Stein, M. R., 2002. Losscalc^{TM}: Model for predicting loss given default (LGD). Moody's KMV, Research Report.

Heckman, J., 1979. Sample selection bias as a specification error. Econometrica 47, 153-161.

Hu, H. T. C., Black, B., 2008a. Debt, equity and hybrid decoupling: Governance and systemic risk implications. European Financial Management 14, 663-709.

Hu, H. T. C., Black, B., 2008b. Equity and debt decoupling and empty voting II: Importance and extensions. University of Pennsylvania Law Review 156, 625-739.

James, C., 1996. Bank debt restructuring and the composition of exchange offers in financial distress. Journal of Finance 51, 711-727.

Lubben, S. J., 2007. Credit derivatives & the future of Chapter 11. American Law & Economics Association Annual Meetings 07, Paper 24.

Mengle, D., 2009. The empty creditor hypothesis. ISDA Research Notes, 3.

Moody's, 2002. Default and recovery rates of corporate bond issuers – A statistical review of Moody's ratings performance 1970–2001. Moody's Investor Service, Global Credit Research.

Saretto, A., Tookes, H. E., 2013. Corporate leverage, debt maturity, and credit supply: The role of credit default swaps. Review of Financial Studies 26, 1190-1247.

Schneider, P., Sögner, L., Veža, T., 2010. The economic role of jumps and recovery rates in the market for corporate default risk. Journal of Financial and Quantitative Analysis 45, 1517-1547

Subrahmanyam, M., Tang, D. Y., Wang, S. Q., 2014. Does the tail wag the dog? The effect of credit default swaps on credit risk. Review of Financial Studies 27, 2927-2960.

Taylor, J., Williams, J., 2009. A black swan in the money markets. American Economic Journal: Macroeconomics 1(1), 58-83.

White, H. 1980. A heteroskedasticity-consistent covariance matrix estimator and a direct test for heteroskedasticity. Econometrica 48, 817-830.

Yavorsky, A., Bayer, G., Gates, D., Marshella, T., 2009. Analyzing the potential impact of credit default swaps in workout situations. Special Comment, Moody's Investor Services.

Appendix A: Firm Characteristics for Multiple and Single Class Subsamples

The table presents firm characteristics for subsamples of multiple and single class firms. Multiple class firms are firms with senior unsecured and junior debt (Panel A), while single class firms are firms with senior unsecured debt but without junior debt (Panel B). The original sample consists of 81 distressed exchanges (DEs) completed between January 2004 and December 2011. A firm is classified as a *Reference Entity* if it has an outstanding single name CDS contract with spread quotes available in the 6 months preceding the DE completion date. All variables are defined in Table 2. The "Test of Differences" column reports t-values from a t-test assuming unequal variances and z-values from the Wilcoxon rank-sum test.

	Reference Entity			Non-reference Entity			Test of Differences	
Variables	**N**	**Mean**	**Median**	**N**	**Mean**	**Median**	**t-value**	**z-value**
Panel A: Multiple Class Firms (Firms with Senior Unsecured and Junior Debt)								
Firm Size and Profitability								
Log Assets	13	9.07	9.02	15	6.82	6.57	5.70***	4.01***
ROA	13	-0.19	-0.09	15	-0.13	-0.10	-0.56	-0.14
EBITDA/Sales	13	0.13	0.18	15	0.07	0.08	0.86	1.47
Liquidity and Solvency								
Cash/Total Debt	13	0.15	0.12	15	0.10	0.04	1.17	1.47
Total Debt/Assets	13	0.77	0.68	15	0.92	0.78	-1.25	-1.47
Short-term Debt/Total Debt	13	0.02	0.02	15	0.04	0.03	-0.99	-0.41
Tangibility	13	0.42	0.45	15	0.37	0.35	1.00	1.24
Market Measure of Credit Risk								
Credit Spread - Swap Curve	13	33.72	29.55	13	41.35	27.04	-0.58	-0.05
Credit Spread - Treasury Curve	13	34.32	29.88	13	41.94	27.44	-0.58	-0.10
Panel B: Single Class Firms (Firms with Senior Unsecured but without Junior Debt)								
Firm Size and Profitability								
Log Assets	10	9.37	9.74	21	6.52	6.60	5.95***	4.20***
ROA	10	-0.10	-0.07	21	-0.18	-0.12	1.61	0.87
EBITDA/Sales	10	0.28	0.26	21	0.04	0.07	2.48**	2.13**
Liquidity and Solvency								
Cash/Total Debt	10	0.11	0.03	21	0.10	0.03	0.05	-0.19
Total Debt/Assets	10	0.72	0.74	21	0.76	0.65	-0.32	-0.11
Short-term Debt/Total Debt	10	0.11	0.01	21	0.18	0.02	-0.74	-0.53
Tangibility	10	0.31	0.22	21	0.41	0.49	-1.51	-1.42
Market Measure of Credit Risk								
Credit Spread - Swap Curve	10	40.90	20.97	15	40.08	33.71	0.06	-0.19
Credit Spread - Treasury Curve	10	41.33	21.40	15	40.66	33.97	0.05	-0.19

*, **, *** denote significance at the 10, 5, and 1 percent levels, respectively, for a two-tailed test.

Appendix B: Debt Structure for Multiple and Single Class Subsamples

The table presents debt characteristics for subsamples of multiple and single class firms. Multiple class firms are firms with senior unsecured and junior debt (Panel A), while single class firms are firms with senior unsecured debt but without junior debt (Panel B). The original sample consists of 81 distressed exchanges (DEs) completed between January 2004 and December 2011. A firm is classified as a *Reference Entity* if it has an outstanding single name CDS contract with spread quotes available in the 6 months preceding the DE completion date. Debt is first categorized into two classes: loans and notes/bonds. Bonds are further categorized into three classes: Secured, Senior Unsecured and Junior. Mean (median) values reported are for the ratio of the debt in a particular class to total debt. "Test of Differences" column reports t-values from a t-test assuming unequal variances and z-values from the Wilcoxon rank-sum test.

	Reference Entity		**Non-Reference Entity**		**Test of Differences**
Variables	**N**	**Mean (Median)**	**N**	**Mean (Median)**	**t-value (z-value)**
Panel A: DEs by Multiple Class Firms (Firms with Senior Unsecured and Junior Debt)					
Loans	13	0.29	15	0.32	-0.49
		(0.22)		(0.24)	(-0.60)
Notes/Bonds	13	0.71	15	0.66	0.66
		(0.77)		(0.70)	(0.78)
Senior Secured	5	0.19	3	0.18	0.12
		(0.14)		(0.17)	(0.00)
Senior Unsecured	13	0.52	15	0.43	1.04
		(0.44)		(0.43)	(0.92)
Junior	13	0.11	15	0.19	-1.75*
		(0.08)		(0.21)	(-1.70*)
Panel B: DEs by Single Class Firms (Firms with Senior Unsecured but without Junior Debt)					
Loans	9	0.34	19	0.35	-0.14
		(0.29)		(0.29)	(0.00)
Notes/Bonds	10	0.69	21	0.68	0.08
		(0.71)		(0.72)	(-0.11)
Senior Secured	4	0.16	2	0.12	0.30
		(0.14)		(0.12)	(0.00)
Senior Unsecured	10	0.62	21	0.67	-0.48
		(0.58)		(0.72)	(-0.53)

*, **, *** denote significance at the 10, 5, and 1 percent levels, respectively, for a two-tailed test.

Appendix C: Distressed Exchange Characteristics for Multiple and Single Class Subsamples

The table presents the characteristics of the distressed exchange (DE) for subsamples of multiple and single class firms. Multiple class firms are firms with senior unsecured and junior debt (Panel A), while single class firms are firms with senior unsecured debt but without junior debt (Panel B). The original sample consists of 81 distressed exchanges (DEs) completed between January 2004 and December 2011. A firm is classified as a *Reference Entity* if it has an outstanding single name CDS contract with spread quotes available in the 6 months preceding the DE completion date. *Coercive Dummy* equals 1 if the DE involves any of the following features and 0 otherwise: an early participation deadline, a consent solicitation, offering of new debt with shorter maturity, greater seniority and/or security, relative to the restructured debt. *Exchange Dummy* equals 1 if the DE involves exchanging old debt with new securities and 0 otherwise. *Tender Dummy* equals 1 if the DE involves a cash tender offer and 0 otherwise. *Repurchase Dummy* equals 1if the DE involves open-market repurchase of debt and 0 otherwise. *Recovery Rates* are the percentage recovery rates from Moody's Default and Recovery Database. Firm and debt class level recovery rates are the averages of the individual bond recovery rates in that firm and particular debt class, respectively. The "Test of Differences" column reports t-values from a t-test assuming unequal variances.

	Reference Entity		Non-Reference Entity		Test of Differences
Variables	**N**	**Mean**	**N**	**Mean**	**t-test**
Panel A: DEs by Multiple Class Firms (Firms with Senior Unsecured and Junior Debt)					
DE Terms					
Coercive Dummy	13	0.54	15	0.67	-0.67
Exchange Dummy	13	0.92	15	0.73	1.35
Tender Dummy	13	0.23	15	0.27	-0.21
Repurchase Dummy	13	0.23	15	0.20	0.19
Recovery Rates					
Firm Level Recovery	13	61.21	15	63.37	-0.23
Senior Unsecured Bond Recovery	12	55.03	9	67.32	-1.25
Junior Bond Recovery	7	59.28	7	55.63	0.22
Panel B: DEs by Single Class Firms (Firms with Senior Unsecured but without Junior Debt)					
DE Terms					
Coercive Dummy	10	0.60	21	0.67	-0.34
Exchange Dummy	10	0.90	21	0.90	-0.04
Tender Dummy	10	0.40	21	0.29	0.60
Repurchase Dummy	10	0.00	21	0.14	-1.83*
Recovery Rates					
Firm Level Recovery	10	60.00	17	50.17	1.07
Senior Unsecured Bond Recovery	10	59.94	17	49.01	1.17

*, **, *** denote significance at the 10, 5, and 1 percent levels, respectively, for a two-tailed test.

Table 1: Time and Industry Distributions, and Industry Characteristics

The table presents the time and industry distributions, and industry characteristics for a sample of 81 distressed exchanges (DEs) completed between January 2004 and December 2011. A firm is classified as a *Reference Entity* if it has an outstanding single name CDS contract with spread quotes available in the 6 months preceding the DE completion date. *Public* variable indicates whether a firm is publicly traded at the DE announcement date. *Industry Distress* is a dummy variable that takes the value one if the median firm in a 2-digit SIC industry experienced a one-year stock return prior to the DE of less than -30%, and zero otherwise. *Industry Q* is the median Tobin's Q in a 2-digit SIC industry in the year prior to the DE.

Panel A: Time Distribution

Year	Reference Entity	Non-Reference Entity	Total
2004	1	6	7
2005	1	2	3
2006	1	1	2
2007	1	3	4
2008	6	7	13
2009	11	31	42
2010	1	4	5
2011	1	4	5
Total	23	58	81

Panel B: Industry Distribution (Fama-French 5-Industry Classification)

Industry	Reference Entity	Non-Reference Entity	Total
Consumer	2	19	21
Manufacturing	3	20	23
High-Tech	11	9	20
Health	0	1	1
Other	7	9	16
Total	23	58	81
Public	14	17	31

Panel C: Industry Characteristics

Variables	Reference Entity		Non-reference Entity	
	N	Mean (Median)	N	Mean (Median)
Industry Distress Dummy	23	0.52	58	0.38
		(1.00)		(0.00)
Median Industry Q	23	1.28	58	1.31
		(1.23)		(1.23)

Table 2: Firm Characteristics

The table presents characteristics of firms conducting the 81 distressed exchanges (DEs) completed between January 2004 and December 2011. A firm is classified as a *Reference Entity* if it has an outstanding single name CDS contract with spread quotes available in the 6 months preceding the DE completion date. Financial ratios are based on the most recent annual report prior to the DE completion date. *Log Assets* is the natural logarithm of total assets in millions. *ROA* is the ratio of net income to total assets. *Tangibility* is calculated as {(Cash + 0.715 x Receivables + 0.547 x Inventories + 0.535 x PP&E)/Assets}. *Cash* includes cash and cash equivalents. *Total Debt* is the sum of short-term debt and long-term debt. *Credit spread* is the difference between the yield-to-maturity of a randomly selected bond and the maturity matched risk-free rate – linearly interpolated rates from the interest swap and treasury curves. Credit spread values are reported for the 68 DEs in our sample that have bond prices available one month prior to the announcement of the DE. "Test of Differences" column reports t-values from a t-test assuming unequal variances and z-values from the Wilcoxon rank-sum test.

	Reference Entity		**Non-reference Entity**		**Test of Differences**
Variables	**N**	**Mean (Median)**	**N**	**Mean (Median)**	**t-value (z-value)**
Firm Size and Profitability					
Log Assets	23	9.20	58	6.59	8.96***
		(9.17)		(6.44)	(6.30***)
ROA	23	-0.15	58	-0.12	-0.41
		(-0.07)		(-0.10)	(0.51)
EBITDA/Sales	23	0.20	58	0.07	2.29**
		(0.22)		(0.08)	(2.82***)
Liquidity and Solvency					
Cash/Total Debt	23	0.13	58	0.10	0.93
		(0.11)		(0.04)	(1.14)
Total Debt/Assets	23	0.75	58	0.82	-0.99
		(0.71)		(0.73)	(-0.64)
Short-term Debt/Total Debt	23	0.06	58	0.11	-1.19
		(0.02)		(0.02)	(-0.05)
EBITDA/Interest Expense	23	1.07	58	1.41	-0.62
		(1.26)		(1.24)	(0.26)
Tangibility	23	0.37	58	0.39	-0.44
		(0.32)		(0.42)	(-0.35)
Market Measure of Credit Risk					
Credit Spread - Swap Curve	23	36.84	45	48.18	-1.14
		(23.52)		(31.64)	(-0.84)
Credit Spread - Treasury Curve	23	37.37	45	48.76	-1.15
		(24.56)		(32.19)	(-0.82)

*, **, *** denote significance at the 10, 5, and 1 percent levels, respectively, for a two-tailed test.

Table 3: Debt Characteristics

The table presents debt characteristics of firms conducting the 81 distressed exchanges (DEs) completed between January 2004 and December 2011. A firm is classified as a *Reference Entity* if it has an outstanding single name CDS contract with spread quotes available in the 6 months preceding the DE completion date. Debt is first categorized into two classes: loans and notes/bonds. Bonds are further categorized into three classes: Secured, Senior Unsecured and Junior. Mean (median) values reported are for the ratio of the debt in a particular class to total debt. "Test of Differences" column reports t-values from a t-test assuming unequal variances and z-values from the Wilcoxon rank-sum test.

	Reference Entity		**Non-Reference Entity**		**Test of Differences**
Variables	**N**	**Mean (Median)**	**N**	**Mean (Median)**	**t-value (z-value)**
Loans	22	0.31	56	0.37	-1.08
		(0.29)		(0.36)	(-0.83)
Notes/Bonds	23	0.70	57	0.65	0.95
		(0.72)		(0.69)	(0.70)
Senior Secured	9	0.18	17	0.44	-2.60**
		(0.14)		(0.40)	(-1.89*)
Senior Unsecured	23	0.57	36	0.57	-0.05
		(0.54)		(0.60)	(-0.18)
Junior	13	0.11	29	0.30	-3.72***
		(0.08)		(0.28)	(-3.02***)

*, **, *** denote significance at the 10, 5, and 1 percent levels, respectively, for a two-tailed test.

Table 4: Distressed Exchange Characteristics

The table presents the characteristics of the distressed exchange (DE) for a sample of 81 DEs completed between January 2004 and December 2011. A firm is classified as a *Reference Entity* if it has an outstanding single name CDS contract with spread quotes available in the 6 months preceding the DE completion date. *Coercive Dummy* equals 1 if the DE involves any of the following features and 0 otherwise: an early participation deadline, a consent solicitation, offering of new debt with shorter maturity, greater seniority and/or security, relative to the restructured debt. *Exchange Dummy* equals 1 if the DE involves exchanging old debt with new securities and 0 otherwise. *Tender Dummy* equals 1 if the DE involves a cash tender offer and 0 otherwise. *Repurchase Dummy* equals 1if the DE involves open-market repurchase of debt and 0 otherwise. *Recovery Rates* are the percentage recovery rates from Moody's Default and Recovery Database. Firm and debt class level recovery rates are the averages of the individual bond recovery rates in that firm and particular debt class, respectively. The "Test of Differences" column reports t-values from a t-test assuming unequal variances.

	Reference Entity		**Non-Reference Entity**		**Test of Differences**
Variables	**N**	**Mean**	**N**	**Mean**	**t-test**
DE Terms					
Coercive Dummy	23	0.57	58	0.60	-0.31
Exchange Dummy	23	0.91	58	0.79	1.49
Tender Dummy	23	0.30	58	0.29	0.10
Repurchase Dummy	23	0.13	58	0.17	-0.48
Recovery Rates					
Firm Level Recovery	23	59.25	52	59.22	0.01
Senior Unsecured Bond Recovery	22	56.43	26	56.33	0.01
Junior Bond Recovery	7	59.73	17	55.99	0.25

*, **, *** denote significance at the 10, 5, and 1 percent levels, respectively, for a two-tailed test.

Table 5: Tendering Rates in Distressed Exchanges

The table presents the analysis of tendering rates for a sample of 81 distressed exchanges (DEs) completed between January 2004 and December 2011. The tendering rate is the ratio of the amount of debt tendered to the face value of the debt targeted in the DE. A firm is classified as a *Reference Entity* if it has an outstanding single name CDS contract with spread quotes available in the 6 months preceding the DE completion date. Panel A presents mean values of tendering rates both at the firm level and at the bond class level. The "Test of Differences" column reports t-values from a t-test assuming unequal variances. Panel B reports the results from baseline OLS regressions and selection regressions that account for endogeneity of CDS listing. The instrumental variable is FX/Assets, which equals the average foreign exchange hedging positions divided by assets of institutions that serve as a lead bond underwriter for the firm. FX/Assets variable is from the Federal Reserve's Y9C reports collected from the quarter closest to the DE date and it is available for 66 DEs. Regression IV is a probit model predicting CDS listing and reports the marginal effects for each variable evaluated at the mean values. Lambda is the inverse Mill's ratio computed using the coefficient estimates from the probit regression. All other variable are defined in Tables 2, 3, and 4. The t-statistics (z-statistics in regression IV) in parenthesis reflect White (1980) robust standard errors.

Pane A: Univariate Analysis

	Reference Entity		Non-Reference Entity		Test of Differences
Variables	**N**	**Mean**	**N**	**Mean**	**t-test**
Firm Level	23	0.45	58	0.63	-2.64**
Senior Unsecured	22	0.43	30	0.67	-3.04***
Junior	7	0.53	20	0.61	-0.62

Panel B: Regression Analysis

	Baseline OLS Regressions			Selection Regressions		
	Firm Level	**Junior**	**Sen. Unsec.**	**Probit**	**Junior**	**Sen. Unsec.**
Explanatory Variables	**I**	**II**	**III**	**IV**	**V**	**VI**
Intercept	0.49***	0.53**	0.53***	.	0.31	0.43***
	(3.32)	(2.13)	(2.94)	.	(0.76)	(2.95)
Coercive Dummy	0.14*	0.15	0.18*	0.00	0.08	0.13
	(1.72)	(1.18)	(1.89)	(0.01)	(0.72)	(1.51)
Repurchase Dummy	-0.36***	-0.33**	-0.32***	0.14	-0.23	-0.29***
	(-4.38)	(-2.15)	(-3.31)	(0.73)	(-1.22)	(-3.10)
EBITDA/Sales	-0.27*	-1.24**	-0.09	1.38**	-1.14	0.12
	(-1.80)	(-2.14)	(-0.57)	(2.43)	(-1.77)	(0.77)
Total Debt/Assets	0.11	0.25	-0.11	-0.38*	0.36**	-0.35**
	(1.06)	(1.65)	(-0.88)	(-1.73)	(2.20)	(-2.45)
Cash/Total Debt	0.31	0.40	0.14	-0.58	0.19	-0.53
	(0.80)	(0.39)	(0.32)	(-0.89)	(0.15)	(-1.17)
Tangibility	-0.23	-0.50	0.00	1.29**	-0.35	0.70**
	(-0.81)	(-1.07)	(0.01)	(2.27)	(-0.51)	(2.30)
Sen. Unsec. Debt/Total Debt	0.12	-0.09	0.14	0.86	0.29	0.36*
	(0.95)	(-0.24)	(0.80)	(3.52)	(0.66)	(1.97)
Junior Debt/Total Debt	0.45**	0.45*	0.39	0.14	0.65*	0.16
	(2.57)	(1.93)	(0.91)	(0.36)	(2.06)	(0.35)
CDS Dummy	-0.15**	0.07	-0.18**	.	-0.09	-0.26***
	(-2.12)	(0.32)	(-2.36)	.	(-0.36)	(-3.20)
FX/Assets	.	.	.	0.33**	.	.
	.	.	.	(2.46)	.	.
Lambda	.	.	.	.	0.04	0.06
	.	.	.	.	(0.17)	(0.67)
Number of Observations	81	27	52	66	24	42
R^2 (Pseudo R^2)	0.40	0.60	0.46	0.35	0.60	0.56
Wald Chi^2	.	.	.	29.90***	.	.

*, **, *** denote significance at the 10, 5, and 1 percent levels, respectively, for a two-tailed test.

Table 6: Debt Targeted in Distressed Exchanges

The table presents statistics on the debt targeted in a sample of 81 distressed exchanges (DEs) completed between January 2004 and December 2011, as well as the results of a regression analysis of the debt targeted. A firm is classified as a *Reference Entity* if it has an outstanding single name CDS contract with spread quotes available in the 6 months preceding the DE completion date. Panel A presents mean values of the ratio of debt targeted in a particular debt class in the DE to the debt outstanding in that class. The "Test of Differences" column reports t-values from a t-test assuming unequal variances. Panel B reports the results of a regression analysis of senior unsecured and junior debt targeted in DEs. Lambda is the inverse Mill's ratio computed using the coefficient estimates from the probit regression in Table 5. All other variable are defined in Tables 2, 3, and 4. The t-statistics reported in parenthesis reflect White (1980) robust standard errors.

Panel A: Univariate Analysis

	Reference Entity		Non-Reference Entity		Test of Diff.
Variables	**N**	**Mean**	**N**	**Mean**	**t-value**
Sen. Unsec. Targeted/Sen. Unsec. Debt	23	0.45	36	0.60	-1.45
Junior Targeted/Junior Debt	13	0.45	29	0.49	0.22

Panel B: Regression Analysis

	Baseline OLS Regressions		Selection Regressions	
	Jun.	**Sen. Unsec.**	**Jun.**	**Sen. Unsec.**
Explanatory Variables	**I**	**II**	**III**	**IV**
Intercept	0.85**	0.55**	0.68	0.50*
	(2.56)	(2.32)	(1.52)	(1.98)
Coercive Dummy	0.27*	0.44***	0.25	0.34***
	(1.75)	(4.51)	(1.56)	(2.80)
Repurchase Dummy	-0.32**	0.04	-0.28*	-0.03
	(-2.24)	(0.36)	(-1.76)	(-0.23)
EBITDA/Sales	-1.29**	-0.11	-1.17**	-0.14
	(-2.48)	(-0.71)	(-2.27)	(-0.77)
Total Debt/Assets	-0.09	-0.21	-0.09	-0.35*
	(-0.50)	(-1.25)	(-0.38)	(-1.75)
Cash/Total Debt	-1.03	0.14	-1.32	-0.03
	(-1.01)	(0.35)	(-0.95)	(-0.05)
Tangibility	-0.58	-0.18	-0.34	0.00
	(-1.12)	(-0.55)	(-0.56)	(0.01)
Sen. Unsec. Debt/Total Debt	-0.75*	0.08	-0.60	0.15
	(-2.02)	(0.45)	(-1.24)	(0.59)
Junior Debt/Total Debt	0.77*	-0.68*	0.93	-0.60
	(1.83)	(-1.81)	(1.48)	(-1.45)
CDS Dummy	0.49**	-0.12	0.40*	-0.17*
	(2.28)	(-1.34)	(1.89)	(-1.69)
Lambda	.	.	0.12	0.27***
	.	.	(0.51)	(2.80)
Number of Observations	42	59	38	48
R^2	0.49	0.50	0.46	0.55

*, **, *** denote significance at the 10, 5, and 1 percent levels, respectively, for a two-tailed test.

Table 7: Debt Reduction in Distressed Exchanges

The table presents an analysis of debt reduction in distressed exchanges (DEs) for a sample of 81 DEs completed between January 2004 and December 2011. A firm is classified as a *Reference Entity* if it has an outstanding single name CDS contract with spread quotes available in the 6 months preceding the DE completion date. Panel A reports mean values of the reduction in the market value (M.V) and book value (B.V) of debt associated with the DE. Panel B reports the regression results where the dependent variable is *M.V. Debt Reduction/Total Debt*. Lambda is the inverse Mill's ratio computed using the coefficient estimates from the probit regression in Table 5. All other variable are defined in Tables 2, 3, and 4. The t-statistics in parenthesis reflect White (1980) robust standard errors.

Panel A: Univariate Analysis

	Reference Entity		Non-Reference Entity		Test of Differences
Variables	**N**	**Mean**	**N**	**Mean**	**t-test**
DEs by All Firms					
M.V. Debt Reduction/Total Debt	23	0.07	52	0.12	-2.00**
B.V. Debt Reduction/Total Debt	23	0.12	52	0.20	-1.77*
DEs by Multiple Class Firms (Firms with Senior Unsecured and Junior Debt)					
M.V. Debt Reduction/Total Debt	13	0.08	15	0.08	0.03
B.V. Debt Reduction/Total Debt	13	0.16	15	0.13	0.43
DEs by Single Class Firms (Firms with Senior Unsecured but without Junior Debt)					
M.V. Debt Reduction/Total Debt	10	0.06	17	0.16	-2.75**
B.V. Debt Reduction/Total Debt	10	0.08	21	0.19	-1.91*

Panel B: Regression Analysis of M.V. Debt Reduction/Total Debt

	Baseline OLS Regressions			Selection Regressions	
	All	**Multiple Class**	**Single Class**	**Multiple Class**	**Single Class**
Explanatory Variables	**I**	**II**	**III**	**IV**	**V**
Intercept	0.11*	0.09	0.13	0.10	-0.02
	(1.69)	(0.72)	(1.32)	(0.73)	(-0.15)
Coercive Dummy	0.05	0.10	0.07*	0.00	0.03
	(1.47)	(1.65)	(1.78)	(0.07)	(0.61)
Repurchase Dummy	-0.01	0.04	-0.05	0.04	-0.09
	(-0.17)	(0.75)	(-1.02)	(0.82)	(-1.72)
EBITDA/Sales	-0.03	-0.27	0.01	-0.16	0.10
	(-0.40)	(-1.54)	(0.16)	(-1.28)	(0.95)
Total Debt/Assets	-0.03	-0.01	0.00	0.01	-0.06
	(-0.57)	(-0.10)	(0.06)	(0.10)	(-0.78)
Cash/Total Debt	0.03	-0.39	0.33	-0.34	0.15
	(0.19)	(-1.07)	(0.98)	(-0.69)	(0.71)
Tangibility	-0.02	-0.15	-0.03	0.05	0.26
	(-0.27)	(-0.92)	(-0.19)	(0.27)	(1.47)
CDS Dummy	-0.05	0.06	-0.11**	0.00	-0.18***
	(-1.29)	(1.38)	(-2.13)	(0.03)	(-3.50)
Sen. Unsec. Debt/Total Debt	0.01	0.03	-0.05	-0.05	0.15
	(0.16)	(0.23)	(-0.85)	(-0.42)	(1.20)
Junior Debt/Total Debt	0.05	0.10	.	-0.26	.
	(0.55)	(0.31)	.	(-1.07)	.
Lambda	.	.	.	0.09	0.08
	.	.	.	(1.23)	(1.40)
Number of Observations	75	28	27	25	21
R^2	0.10	0.26	0.40	0.40	0.73

*, **, *** denote significance at the 10, 5, and 1 percent levels, respectively, for a two-tailed test.

Table 8: Distressed Exchange vs. Bankruptcy

The table presents statistics associated with distress resolution outcomes (DE or Bankruptcy) for a sample of 123 distressed firms with senior unsecured debt, as well as a probit analysis of these outcomes. The sample of 123 firms consists of 59 firms with senior unsecured debt from the original sample of 74 firms (DE sample) and an additional 64 non-financial firms with junk-rated senior unsecured debt that filed for bankruptcy between 2004 and 2011. A firm is classified as a *Reference Entity* if it has an outstanding single name CDS contract with spread quotes available in the 6 months preceding the event date. Panel A reports the proportion of firms without junior debt. The "Test of Differences" column reports the t-values assuming unequal variances. Panel B reports the coefficient estimates from a probit regression where the dependent variable equals 1 if the firm files for bankruptcy and 0 if t engages in a DE. *Dummy-No Junior Debt* equals 1 if the firm has no junior debt, and 0 if the firm has junior debt. *Bank Debt/Total Debt* is a ratio of bank debt to total debt. All other variable definitions are provided in Tables 2 and 3. Regression I is run on reference entities, and regression II on non-reference entities. The t-statistics in parenthesis reflect White (1980) robust standard errors.

Panel A: Univariate Analysis

	DE	**Bankruptcy**	**Test of Differences**
Reference Entities	23	15	
Without Junior Debt (%)	43.48%	93.33%	-3.99***
Non-Reference Entities	36	49	
Without Junior Debt (%)	58.33%	67.35%	-0.84
Test of Differences	-1.10	2.74***	

Panel B: Probit Regression Analysis

	Reference Entity	**Non-Reference Entity**
Explanatory Variables	**I**	**II**
Intercept	-2.97	-0.16
Log Assets	0.00	0.03
EBITDA/Sales	-1.87	0.48
Tangibility	0.49	0.72
Total Debt/Assets	0.88	-0.33
Short-term Debt/Total Debt	3.19*	0.99**
Bank Debt/Total Debt	1.14	-0.30
Dummy-No Junior Debt	1.60**	0.04
Number of Observations	38	85
Pseudo R^2	0.50	0.06

*, **, *** denote significance at the 10, 5, and 1 percent levels, respectively, for a two-tailed test.