

The Changing Nature of Chapter 11¹

Sreedhar T. Bharath

Venky Panchapegesan

University of Michigan

GSAM

Ingrid Werner

Ohio State University

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¹Sreedhar T. Bharath: Ross School of Business, University of Michigan, Department of Finance, D7706, Executive Residence, Ann Arbor, MI - 48109, U.S.A. Phone: (734) 763-0485. e-mail: sbharath@umich.edu. Venky Panchapegesan: Goldman Sachs Asset Management. Ingrid Werner: Fisher College of Business, Ohio State University, Department of Finance, 818 Fisher Hall, Columbus , OH 43210. Phone: (614) 292-2418. e-mail: werner47@fisher.osu.edu

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Abstract

The U.S. Chapter 11 bankruptcy system has long been viewed as debtor friendly, with frequency of absolute priority deviations (APD) in favor of equity holders commonplace, as high as 75%, before 1990. In the 1991-2005 period, we find a secular decline in the frequency of APD to 22%, with the frequency as low as 9% for the period 2000-2005. We identify the increasing importance of debtor-in-possession (DIP) financing and key employee retention plans (KERP) in bankruptcy as the key drivers of this secular decline. We also find management turnover in Chapter 11 has increased by 65% since 1990 and that APD are more likely when management has substantial share holdings in the firm. The time spent in bankruptcy has also declined from about 23 months before 1990 to 16 months after 2000. Collectively, these results are consistent with the thesis that Chapter 11 has increasingly become creditor friendly over the years. We discuss the implications of our results for models that assume that equity has a valuable dilatory option in the bankruptcy process.

Keywords: Bankruptcy, APR violations, Chapter 11.

J.E.L. Classification Code: G33, G34, G12.

1 Introduction

Chapter 11 of the the 1978 Bankruptcy Act of the United States affords equity holders and company management substantial protection against creditors, by an automatic stay. Through this process, creditors will not obtain payments until a reorganization plan is adopted by the company. This proviso of the act vests considerable power with the incumbent management - not only can it exclusively file the reorganization plan in the first 120 days following the bankruptcy petition, it also has the additional benefit of information asymmetry on its side.

To the extent that management favors equity, by virtue of these powers under the Act, considerable costs on creditors can be imposed by protracting the reorganization process. Creditors anticipating the loss in value of their claims due to the delay and in the interest of reaching an agreement, often waive their right to be fully satisfied before distributions are made to equity holders - absolute priority deviations (APD) - a violation of the absolute priority rule (APR). APR denies any claim holder a stake in the securities of the reorganized firm, until the more senior claims have been fully satisfied. The Chapter 11 law does not require APR be followed.

Empirically, APD in Chapter 11 reorganizations in the 1980s have been documented to be commonplace by Franks and Torous (1989,1994), Eberhart, Moore and Roenfeldt (1990), Weiss (1990), and Betker(1995). Their results indicate that APR is violated 75% of the time and equity on average receives 7.6% of the reorganized firm's value. These results, among others have led observers to characterize the United States Bankruptcy system as equity friendly.

In this paper, we examine the frequency and magnitude of APR violations in bankruptcy reorganizations from 1991 to 2005 and contrast it with the results obtained with the 1980s data. Surprisingly, we find a dramatic difference and a secular change. APR violations occur only 22% of the time, with the period from 2000-2005 witnessing violations only 9% of the

time. The average magnitude of the violations have also dramatically declined to about 0.44% of the reorganized firm value. The median firm in reorganization in the 1990s and later does not have any APR violation. This secular declining trend in the frequency and magnitude of APR violations is readily discernable in Figure 1A. The frequency of violations have declined from 100% to about 20% and the magnitude of APD has declined from 10% of firm value to less than 2% of firm value. Our sample of 626 reorganizations and APR investigations is the most comprehensive in the literature till date and has 9 to 24 times more data than the previously reported studies.

While we find significant differences between the means, and medians of APD in the 1980s, 1990s and the 2000s period, we also find that the entire distribution of APD is significantly different between the three periods. Our results suggest that the frequency of APR violations declines with firm size in a nearly monotonic manner. A multivariate probit regression model controlling for other determinants of an APD indicates that the predicted probability of a violation was 59.49% in the 1980s. Compared to this effect, the marginal effect of an APR violation in the 1990s was -18.62% and in the 2000s it was -41.63%. These effects are economically large and strongly statistically significant at the 0.1% level of significance and lower, rigorously confirming the results in Figure 1. Recognizing the fact that APD as a percent of reorganized firm value is a fractional dependent variable, we also employ the quasi-likelihood estimation method for generalized linear models, developed by Papke and Woolridge (1996) and confirm these earlier results.

We then turn to some explanations for the dramatic change over this time period. Skeel (2003) notes the increasing nature of creditor control on decision making in Chapter 11 by the following practices during our sample period: (a) the development of the DIP financing market and (b) approval of performance bonuses termed 'Key Employee Retention Plans' (KERP) to managers for faster reorganization. To obtain finances to operate in Chapter 11, companies arrange for 'debtor in possession' financing. DIP financing as a market for funds to troubled companies evolved in the 1990s as noted by Dahiya et. al. (2003). DIP lenders (many of whom are existing creditors), by virtue of stringent restrictions for financing

determine the direction and outcome of reorganization to a large extent. This acts as an effective deterrent to APD. At the same time, creditor and court approved KERP's promise key executives a large bonus if the reorganizations proceeds quickly and increasingly smaller bonuses the longer the time spent in Chapter 11 thus countering the tendency for managers to drag out Chapter 11 reorganizations which produce APD. Figure 1B shows the dramatic secular increase in percentage of Chapter 11 cases each year that use DIP and KERP. This suggestive evidence is consistent with the view that the rise of DIP and KERP might be related to the declining APD outcomes.

To provide more systematic evidence at the aggregate level, we regress the proportion of firms that have APD each year against the proportion of firms that use DIP and KERP in that year. We find that these variables are economically and statistically negative and very significant and are able to explain 83% of the time series variation in APD. Employing the DIP and KERP variables in our earlier probit and GLM models of APD at the firm level, we further confirm the aggregate level evidence. These results hold even after controlling for the endogeneity of the DIP financing decision.

The growing power of creditors is also consistent with the increased management turnover rates in the post-1990 period. We find that management turnover observed in 22.9% of the reorganizations before 1990, increased by 65%, to 37.7% of the reorganizations after 2000. Given the increased pressure of keeping their jobs, management jettisons old shareholders and aligns with the creditors (who become the new shareholders), resulting in fewer APD. Further, the conditional probability of a turnover of management with significant share holdings (defined as greater than 5%) was only 12% in the 1980s (compared to 47% for management with low share holdings), it increased to 38% in the post-1990 period (compared to 36% for management with low share holdings). These results again attest to the increasing power of reorganization participants including creditors to replace the incumbent management in the Chapter 11 process, even if management is entrenched. Consistent with this view, post 1990, the conditional probability of an APD, given significant management share holdings was 30% compared to only 19% probability when management share holdings were low. In

the pre-1991 period, no such difference is observed. Thus, management appears to bargain more aggressively for APD violations in situations when their own financial stakes are high, while otherwise abandoning such efforts in a bid to keep their jobs.

Further, KERPs plan promise key executives a large bonus if the reorganizations proceeds quickly and increasingly smaller bonuses the longer the time spent in Chapter 11. Consistent with this incentive, we find that the mean time spent in a Chapter 11 reorganization declined by about 30% from 22.5 months in the 1980s to 16.2 months in the 2000s.

Overall, these developments lead us to conclude that Chapter 11 has increasingly moved from being an equity friendly system to a creditor friendly system over the years. The passage of the Bankruptcy Abuse Prevention and Consumer Protection Act of 2005, passed on October 17, 2005 (towards the end of our sample period) formalizes our interpretation of the changes by explicitly incorporating "creditor-friendly" provisions, eliminating some of the discretionary aspects of the bankruptcy process.

We then turn to some implications of our results. Existing research suggests that ex post deviations of APR can have beneficial ex-ante effects. Benefits include desirable ex-ante investments in firm-specific human capital [Zender (1997), Berkovitch and Israel (1998)], facilitation of information transfer to creditors for reorganization [Berkovitch and Israel (1998)], and discouraging excessive risk-taking by financially distressed firms [Gertner and Scharfstein (1991)]. Our results indicate that such benefits might have eroded through time. Further our results suggest that the strategic debt service literature's notion that equity's dilatory tactics in bankruptcy can help explain the level of credit spreads for bonds would need a rethink in light of these results.

The remainder of the paper is structured as follows. Section 2 discusses the data. Section 3 describes the trends in chapter 11 cases over time and the determinants of APD violations identified by existing research. Section 4 presents our methodology and results and discusses the the implications of our results. Section 5 concludes.

2 Data and Sample Selection

We attempt to construct the most comprehensive sample of Chapter 11 cases for studying APR violations in bankruptcy in the literature till date. Towards this end, we obtain the cases in 1980s (1979-1990) from three published papers in the literature: (a) Franks and Torous (1989) sample of firms that emerged from bankruptcy¹ (b) Eberhardt, Moore and Roenfeldt (1990) sample of Chapter 11 cases between 1979-1986 and (c) Betker (1995) sample of firms that filed for Chapter 11 between 1982-1990.² After rationalizing the three sources we obtain 95 distinct Chapter 11 cases in the 1980s.

For the period from 1991-2005, we begin with a list of all large public company bankruptcy cases filed in the United States Bankruptcy courts from Lynn Lopucki's Bankruptcy research database. Eliminating 60 finance, insurance and real estate bankruptcy cases from a total of 602 leaves us with a starting sample of 542 cases. We then crosscheck our sample with the list of firms in the Bankruptcy Data Source database maintained by New Generation Research. The database includes all firms with at least one public security and at least \$50 million in assets that filed for Chapter 11. We then search and eliminate eleven cases for which reorganization plans and market value of new stock issued to claim holders in unavailable. These screens leave us with a sample of 531 cases in 1991-2005, thus bringing the total sample size to 626 cases as outlined in Table 1, Panel A.³ It is noteworthy that this sample has about 9 to 24 times more data than the reported studies in the literature and will help us discern robust trends and changes over a period of 26 years, since the enactment of the Chapter 11 Bankruptcy Code in 1979.⁴

¹We only include those firms that emerged after the enactment of 1979 Bankruptcy Code on October 1,1979.

²We thank Brian Betker for graciously sharing his data with us and helping us with answers on the process of calculating APR violations in Ch.11 cases.

³We have a few Ch.11 cases in our sample caused by asbestos and silicon implant litigations which are non-financial distress and reorganization involves negotiations with tort claimants. Removing them in our analysis in the paper does not materially alter our conclusions.

⁴It should be noted that Bankruptcy Data Source lists 1903 public company bankruptcy cases, a lot more

Details on the firm's reorganization plans which includes the type and amount of new securities received by each class of claimants, were obtained from the Firm's disclosure statements. According to Section 1125(a) of the bankruptcy code, these statements must contain adequate information that would enable a hypothetical reasonable investor to make an informed judgment about the plan. We first verify that the reorganization plan was the last plan approved by the bankruptcy court before emergence, since firms often file multiple amended plans during the Chapter 11 process. We obtain this information from an 8K filing or from plans summarized in the Bankruptcy data source. Additional information such as dates of Chapter 11 filing, plan confirmations, outcomes of Chapter 11 cases were obtained from Bankruptcy data source. If data was unavailable we used Lexis-Nexis and Factiva to search all SEC filings and newspaper articles to ascertain the information. If data was still not available from these news sources, we searched the Dow Jones news retrieval system for information.

Calculation of APR violations in bankruptcy: Following Betker (1995), the value obtained by each claimant class is calculated using security prices that most closely postdate the firm's emergence from bankruptcy. The market value of the new securities is obtained from CRSP tapes, Bankruptcy Datasource and Bloomberg. Only market values are used for preferred stock, common stock and warrants. Market values are used for debt securities where available; else the face value of debt is used. APR violations are calculated following the method in Betker (1995), Eberhart et al. (1990), and Franks and Torous (1994). Equity's APD (absolute priority deviation) is defined as the value of new securities received in the reorganization, minus what would have been received if APR was followed. This value is normalized by the value of all securities distributed in the reorganization to obtain a percent figure. As an example, consider the March 2002 reorganization plan of Chiquita International Inc. The allowed claims in the plan for debt and of various classes and preferred stock

than the 542 cases in our starting sample for the period 1991-2005. All of these cases are small firms that do not have any reorganization plans, or financial information on securities of the firm, publicly available, a requirement for this study.

was \$1002.6 million. Debt and preferred stock holders received a new package of \$250 million of debt (face value), \$267 million of cash and \$559.75 million of new equity and warrants (market value). The total value received by these claim holders was \$836.45 million. The old equity shareholders received \$17.13 million even though under APR they should have received nothing, since the creditor shortfall was \$166.15 million [$\1002.60 (amount owed) - $\$836.45$ (amount received)]. Thus APR is violated in this reorganization, and the magnitude of APD is estimated at 2.01% [$\$17.13$ million / ($\$17.13$ million + $\$836.45$ million), amount paid to equity holders divided by the total value of all securities distributed under the reorganization plan.]. Chapter 7 liquidations follow the APR rule.

Firms that obtained DIP financing in Chapter 11: In order to examine the impact of the development of the DIP financing market on Chapter 11 reorganizations, we need data on the firms that obtained DIP financing. Following Dahiya et. al. (2003), we employ a three step process. We first use the Dealscan database from Loan Pricing Corporation which contains corporate loans in the U.S. from 1986, and search for loans whose purpose is "Debtor-in-Possession". Second, since the Dealscan database is not a comprehensive source of all such loans, we supplement our list by searching the Dow Jones News Retrieval system and the Lexis-Nexis business news section for the keywords "Debtor-in-Possession financing", "DIP financing" and "post-petition" financing. Third, we then search the SEC filings and reorganization plans at Bankruptcy Datasource for DIP financing cases, partly to confirm the information from the first two steps and find additional cases of DIP financing that are not included in the other databases. In all cases, we verify that the bankruptcy court had approved the DIP financing plan.⁵

KERP plans in Chapter 11: In order to obtain details on KERP plans approved in Chapter 11, we search the SEC filings in Lexis-Nexis using the following keywords:

⁵We found a few post-petition financing arrangements for firms, but could not find any indication of confirmation by the bankruptcy court and hence excluded them from the sample.

"KERP", "Retention Plan", "bonus plan", "pay-to-stay", "bankruptcy pay", "bankruptcy bonuses", "retention bonus", "management incentive plan", "MIP", "key employee compensation plan", "KECP", "supplemental incentive plan", and "SIP". We then search for the term "bankruptcy court" in all these hits and read them to confirm that the KERP plan was approved by the court. As a final cross check, we confirm that all cases that were covered by this procedure are also found in the Lexis-Nexis and Factiva business news section stories.

3 Trends in Chapter 11 cases over time and determinants of Absolute Priority Deviations

3.1 Development of the Debtor-in-Possession Financing (DIP) market

The Chapter 11 of the 1978 U.S. Bankruptcy code, refers to companies that file for bankruptcy protection as debtor-in-possession (DIP). Section 364 of the Act titled 'Obtaining Credit' is the source of authority for all post-petition credit that constitute DIP financing under Chapter 11. Under Section 364, the courts can treat a DIP loan as an administrative expense, below existing secured lenders in hierarchy. Courts can also provide DIP lenders security interest in debtor's unencumbered assets or even a primary lien - a superpriority status over existing security interests on the same collateral.⁶

In one of the first studies of DIP financing in Chapter 11, Dahiya et al(2003) note that even though DIP financing was available under the law since 1978, it did not become prominent until the 1990s. The percentage of bankrupt debtors that obtained DIP financing rose from 10.42% in 1989, to 48.21% in 1996, in their sample. Daniels and Ramirez (2005)

⁶Skeel (2004) notes the origins of DIP financing in the 19th century equity receiverships of U.S. railroads. Courts promised preferential priority to lenders by the use of receiver's certificates and obtain financing to keep the railroads in operation during the reorganization.

document that the size of the DIP market increased 140-fold from \$0.067 billion in 1989 to \$9.85 billion in 2002. With the increasing importance of DIP financing in Chapter 11, Skeel (2003) notes DIP lenders have actively used the terms of the loan to assume control and shape the outcome of reorganizations.

The following examples illustrate the importance and power of DIP financiers in shaping reorganizations.

(a) In the U.S. Air bankruptcy reorganization, retirement systems of Alabama, a pension fund, acted as the DIP lender. The lender agreed to provide \$240 million up front, \$300 million during Chapter 11, and \$300 million on emergence. In return, the lender obtained seven out of thirteen board seats, together with 36% of the stock of the reorganized company (Maynard (2002)).

(b) In TWA's last bankruptcy, DIP financing by American Airlines was conditional on the latter's prompt acquisition of TWA's assets (Carey (2001)).

(c) In the FAO Schwarz bankruptcy in 2002, DIP financing covenants explicitly called for a liquidation of debtor's assets unless a plan of reorganization was confirmed by April 4, 2003 (N.Y. Times Feb 1, 2003 article).

(d) In the United Airlines bankruptcy, the DIP lender required that the debtor meet strict cash flow targets to qualify for future financing. Adams (2003) notes that even though the lending agreement did not require United to lay off workers, cutting labor costs was the only way the company could meet its targets.

(e) DIP lenders also dictate the course and outcomes of Chapter 11 cases by their influence over managerial personnel. Baird (2004) describes the influence of banks on the choice of WorldCom's restructuring officer.

The above discussion suggests that the influence of debtor and its managers over the course of Chapter 11 reorganizations in the 1980s might be systematically eroded with the development of DIP financing in the 1990s. This would also lead to a lower incidence of

Absolute Priority Deviations in favor of equity holders, wherever DIP financing is involved. We investigate the importance of DIP financing in explaining APR violation in two ways. First, we include a dummy variable for the presence of DIP financing in a Chapter 11 reorganization in estimating models of APR violation. Second, and important, we explicitly recognize the possibility that information revealed in the DIP financing decision might be related to APR violation outcomes. Using Maximum likelihood methods (Maddala (1983)), we address this issue econometrically. We estimate the DIP financing decision and the APR violations jointly using a bi variate probit model, using the covariates identified by Dahiya et al (2003) as the vector of observables considered important in the DIP decision. For a detailed justification of these variables see Dahiya et. al. (2003). This technique estimates the effect of DIP financing by purging the effect of observable characteristics that lead to higher probability of APR violations and that contribute to the endogenous decision of the firm to obtain DIP financing in the first place.⁷

3.2 Development of Key Employee Retention Plans (KERP) in Chapter 11

A KERP is a plan filed by the debtor with the bankruptcy court to provide bonuses to key, high level employees to induce them to stay employed with the bankrupt company, during the reorganization. Skeel (2003) observes that creditors in the 1990s bankruptcies warmed up to this idea after suffering through executive flight in retail and electronics chains Chapter 11 cases. Creditors concluded that providing incentives to existing managers who know the business to stay through Chapter 11 was preferable to the time consuming and disruptive process of getting new managers up to speed, during the reorganization. More often than not, management turnover, if any, occurred towards the end of the Chapter 11 reorganization

⁷We use the exact MLE estimator and not the Heckman (1979) two step procedure, since our APR violation variable is binary rather than continuous and hence the two step procedure produces inconsistent estimates.

plan.

A KERP may include many of the following types of payments, each predicated by events in the reorganization process (1) retention payments to employees of the debtor to stay until a certain date e.g. the filing of a reorganization plan. (2) success bonuses based on events such as confirmation of a reorganization or sale of the business (3) severance payments; and (4) golden parachutes to eligible employees. Debtors relied on the courts' powers under Section 105(a) to enter orders consistent with their equitable powers as one of the statutory basis for their plan. The other statutory basis was under Section 363(b)(1) that governs the use, sale or lease of property (including cash) outside of the ordinary course of business. Bankruptcy courts typically established a two-pronged test for approving KERPs requiring (a) a sound business purpose to justify the KERP and (b) the KERP be 'fair and reasonable'. Due to the discretionary nature of this test, the courts' decision to approve a KERP is dependent on the particular circumstances of each case. Dickerson (2003) notes that almost half of all debtors in Chapter 11 in the 1990s and later offered some variant of a KERP plan to their employees.⁸

The following examples outline the role of KERPs in shaping reorganization plans.

(a) WorldCom obtained court approval to use up to \$25 million for bonuses to 329 key employees. The KERP also included plan progress bonuses at 10% of the initial retention bonus. Key employees were entitled to 100% of the progress bonus, if a reorganization plan was confirmed in December 2003, 150% for November 2003, 200% for October 2003 and 250% for a September 2003 confirmation; clearly incentivizing management for faster resolution of

⁸It is interesting to note that there is an enactment of the Bankruptcy Abuse Prevention and Consumer Protection Act of 2005 (BAPCA) by Congress applicable to Chapter 11 cases filed after October 17, 2005 (the end of our sample period). BAPCA section 503(c) imposes explicit and stringent restrictions on the adoption of KERPs for the benefit of insiders of the bankrupt company. The oversight hearings on April 17, 2007 by the Subcommittee on Commercial and Administrative Law (of the U.S. House of Representatives) also examines the issue of executive compensation in Chapter 11 cases, presumably as a response to complaints of routine approval of KERPs in bankruptcy cases.

Chapter 11. [Blumenstein (2002) and court motion dated Oct 18, 2002].

(b) Kmart used over \$3 million in inducement payments and incentives to top executives [Schwartz et al (2002)]. Kmart also filed for a \$4 million bonus for its new CEO, if Chapter 11 reorganization was completed by July 2003 with a penalty of \$7,299 per extra day delay thereafter, with the bonus set to zero if Kmart did not emerge by April 30, 2004. (Yue (2002))

The discussion indicates that the practice of the bankruptcy process provides explicit incentives to management for speedy resolution of Chapter 11 cases in the 1990s. This would work to counter the agenda of management to drag out Chapter 11 cases to extract concessions from the creditors. Other things being equal, the presence of court approved KERP plans would serve to expedite Chapter 11 reorganizations. Equity holders dilatory option whose value is measured by the magnitude of APR violations would be eroded and we would expect to see fewer incidence of APR violation in Chapter 11 cases with KERP plans. We include a dummy variable for the presence of KERP plans in estimating models of APR violation frequency and magnitude.

3.3 Additional determinants of Absolute Priority Deviations to equity in Chapter 11

In addition to the development of the DIP financing market and the KERP programs as possible drivers of lower APR violations, we review the determinants of APR violations identified by the prior literature and include them as additional control variables in our tests.

Complexity of bargaining in Chapter 11: According to Weiss (1990), APR violations are larger for bigger firms. Equity's bargaining position is stronger with multiple creditor classes making it difficult to form workable coalitions. We proxy for the complexity of the Chapter 11 case by firm size (measured as $\log(\text{assets})$). As a robustness check,

we also use the number of creditor classes in the reorganization plan following Betker (1995).

Equity committee: Equity holders can affect Chapter 11 reorganizations by forming an equity committee, under section 1102 of the bankruptcy code. The bankruptcy judge has the right (but not the obligation) to appoint such a committee, which suggests a cohesive group of equity holders can band together and extract APR violations (Lopucki and Whitford (1990)). We use a dummy variable that equals one if an equity committee was approved by the bankruptcy judge in chapter 11, and zero otherwise.

Venue of the Bankruptcy case: Weiss (1990) observes that judges in the southern district of New York are viewed as pro shareholder and APR is violated more often in that court district. We control for venue of the case in our empirical model of APR violations following Betker(1995), using a dummy variable for southern district of New York cases.

Management Incentives in Bankruptcy: Section 1107 of the bankruptcy code provides that a debtor in possession shall perform all duties of a trustee serving under this chapter. This indicates that management owes a fiduciary duty to both shareholders and creditors. Further formation of equity committees under Chapter 11 also indicates that management and shareholders may not always have aligned interests. The management team has to further worry about keeping its jobs, as Gilson (1989) shows that they are sometimes replaced at the behest of creditors. By siding with creditors and jettisoning shareholders, management can hope to preserve their jobs, if creditors call the shots.

However, if the management holds substantial equity stakes in the bankrupt firm at the onset of Chapter 11, they have a strong incentive to bargain for a distribution to equity. Thus equity holders strong bargaining position is a byproduct of management incentives. One indication of an increasingly creditor friendly Chapter 11 regime is the presence of APR violations when management has substantial share holdings but not otherwise. In the case of

an equity friendly Chapter 11 regime, one would expect to observe APR violation, regardless of the level of management share holdings in the bankrupt firm.

Management's exclusivity to propose a reorganization plan: The debtor-in-possession and its management have the exclusive right to propose a plan of reorganization within 120 days of entering Chapter 11, though extensions are frequently granted. This right confers on the management the ability to delay reorganizations and enhance the probability of APR violations. Thus a loss of exclusivity suggests a strong bargaining position of creditor groups, as noted by Betker (1995).

Management Turnover: According to Gilson (1989), management changes in Chapter 11 are often initiated by creditors, mainly banks. Creditor initiated management changes are likely to lead to new management that is creditor friendly, thus diminishing equity holders' bargaining power, producing smaller APR violations. Hotchkiss (1995) suggests that Chapter 11 produces bids toward continuation of unprofitable firms, especially with the old management in place, supporting the above arguments. Jensen (1991) further states that priority violations are virtually guaranteed when the courts allow the current management team to remain in place. We examine the impact of management turnover in our tests since increasing creditor control in the Chapter 11 process should manifest in greater management turnover rates over time.

The option to delay: According to Franks and Torous (1989), payment to equity holders in excess of what they would receive under APR, reflect the purchase by creditors of the shareholders' option to delay reorganization, in Chapter 11. The option to delay reorganization is an American style call option created by the Chapter 11 code. The time value of this option forfeited by shareholders, in addition to a premium reflecting the future legal and administrative costs saved by creditors is captured by the magnitude of APR violations, due to creditors writing down their claims.

Franks and Torous (1994), observe that the time value of the option to delay is larger the closer the face value of creditors' claims (D) is to the value of the firm at reorganization (V). Hence creditors are expected to offer equity holders more when the option to delay is closer to or at the money. We measure the moneyness of the equity holders option by $\ln(D/V)$ and $(\ln(D/V))^2$ following Franks and Torous (1994).⁹

4 Methodology and Results

We begin by examining the characteristics of Chapter 11 filings from 1979 to 2005 and establish the result of declining APR violations and APD using regression analysis. In the second part of the analysis we examine the development of DIP and KERP in Chapter 11 and its impact on APR violations to assess if the evidence is consistent with the thesis that Chapter 11 has become increasingly creditor friendly over the years.

4.1 Descriptive Statistics

Table 1 Panel B, compares the incidence of APR violations in the 1991 to 2005 to existing results in the literature. Franks and Torous (1989), Weiss (1990), Eberhart, Moore, Roenfeldt (1990) and Betker (1995) find APR violation frequencies between 72% AND 77.8% on the sample of firms before 1990. In sharp contrast, using a much larger sample of firms in the 1991 to 2005 period, we find the violation frequency to be just 22.0% or only in 117 out of 531 cases. The yearly distribution of Chapter 11 filing dates in Table 1 Panel C suggests a relatively even distribution of firms till 1998, which increases markedly in 1999 to 2003, a period marked by the high profile bankruptcies of Enron and WorldCom.

Since the 1990s also saw the emergence and fall of the new economy and Internet firms,

⁹For many Chapter 11 cases that eventually lead to liquidations, we are unable to calculate (D/V) due to lack of plan information, even though we know that APR is preserved and equity receives nothing.

we ask if the industry composition of Chapter 11 firms changed over time. Table 1 Panel D, shows the industry-wide distribution of sample firms in the pre-1990, 1991-1999 and 2000-2005 time periods. The composition is fairly similar across time with two notable exceptions: (a) Telecom bankruptcies formed 18.4% of the sample in 2000-2005, up from 0% before 1990. Oil and gas bankruptcies declined from 12.8% of the sample before 1990, to 1.3% in 2000-2005. A Kolmogorov-Smirnov tests of equality of distributions cannot reject the null hypothesis that the industry composition in the 1980's is no different from the 1990's and 2000's time periods. Figure 2 plots the proportion of firms that violate APR in each industry over the three time periods. We find the pattern of declining APR violations to be robust and present in virtually every industry in our sample. These results suggest that industry composition trends are unlikely to be the explanation for the overall decline in APR over time.

In Table 1 Panel E, we assign sample firms to four categories based on the outcome of Chapter 11. A firm is reorganized if it emerged from Chapter 11 as an independent entity, liquidated if the filing was converted to Chapter 7 or if the firm's assets were sold to multiple buyers, acquired by or merged with another firm or undetermined if we are unable to obtain information. Panel E, shows that about 60% of the firms reorganized, 19% liquidated and 11% are acquired/merged and 10% have undetermined outcomes. Panel E also presents statistics on the time spent in Chapter 11, measured as the number of months between the filing date and confirmation date of the plan. The average (median) number of months spent in Chapter 11 is 18.02 (14.88) months. Average time spent in bankruptcy for different outcomes range from a low of 15.86 months for reorganization to a high of 23.25 months for liquidation.

4.1.1 Magnitude of Absolute Priority Deviations (APD) over time

Table 2 Panel A, presents the distribution of APD as a percentage of firm value, where firm value is measured at emergence from bankruptcy for the three time period. We find equity's

deviation was zero in 35.9% of the cases before 1990. It is striking that this number increases to 73.6% in 1991-1999 and a remarkable 91.3% in 2000-2005. Fully 9 out of 10 cases post-2000 did not violate the APR rule, signalling a major shift in Chapter 11 processes over the years. We also find from the table that firms with sizeable equity deviations also declined dramatically in the latter years. Panel B, shows that mean deviation was 3.55% of firm value (\$59.78 million) before 1990, declining to 0.63% (\$2.89 million) in 1991-1999 and further to 0.44% (\$3.28 million) in 2000-2005. Each time period witnessed spectacular deviations (in \$ amounts): Texaco (1987, \$6100 million), Columbia Gas Systems (1991, \$226.7 million) and Amerco (2003, \$476.67 million).

We formally examine for differences across the 3 periods by a Kolmogrov-Smirnov test for equality of APD distributions. In each of the 3 comparisons ('80s versus '90s, '80s versus '00s and '90s versus '00s) we are able to reject the null of equality of distributions of APD with p values less than 0.1%. The Wilcoxon test of the equality of the medians across the three subperiods is also rejected at significance levels less than 1%.¹⁰

Table 2 Panel C presents the proportion of firms with APD as a function of firm size measured as assets in year 2000 constant millions of dollars. The data shows that while APD was common across all size classes before 1990, a large proportion of the violations post-2000 happen in the 0.5 billion to 2 billion dollar and the 10 billion dollar and above bankruptcies.

4.1.2 Univariate Analysis of frequency and magnitude of APD violations over time.

Table 3 presents the data corresponding to Figure 1, discussed earlier in the paper. We find a steady decline in both the frequency and magnitude of APD over the twenty six years. Table 4 reports summary statistics for the variables identified by prior literature to explain priority deviation. Following Franks and Torous (1994), we measure solvency by the ratio of

¹⁰The t-test for the means is also significant at 1%, in two of the three comparisons of the subperiods, with the '90s not different from the '00s period.

face value of debt (D) to firm value (V). If D/V exceeds 1.0, there is not enough value to pay creditors in full and equity is out of the money. We find a dramatic increase in insolvency of firms filing for Chapter 11. The mean solvency ratio increased from 2.714 before 1990 to 5.377 in 1990-1999 to 9.333 in 2000-2005. Using insights from option pricing, equity, so far out of the money in later years can explain why the value of the option which equals APD is declining over time. Two other points stand out in the summary statistics of Table 4: (a) The rate of formation of equity committee declined by about 200% (from 29.17% before 1990 to 9.25% in 2000-2005) (b) Management turnover in bankruptcy increased by about 65% (from 22.92% before 1990 to 37.67% in 200-2005). All these results collectively indicate the declining influence of shareholders and management in Chapter 11 reorganizations over time.

4.1.3 Multivariate analysis of APR violations over time

We estimate a probit model for the probability of APR violations, where the dependent variable takes the value one for a violation in a Chapter 11 case and zero otherwise. Controlling for the known determinants of APR violation reported in the literature, we include two dummy variables, one each for the cases in 1991-1999 and 2000-2005 periods. Our goal is to assess if there is a robust secular decline in APR violations (by the statistical significance of these dummy variables) that is not subsumed by the known determinants.

We also wish to estimate an econometric model for the percentage APD (as a proportion of firm value) to assess the time series impact on the magnitude. However percentage APD is a fractional response variable bounded between zero and one. Further, a large mass of the data assumes extreme values (zero percent APD in our application). Thus assuming a distribution such as a beta distribution for y given x to estimate $E(y|x)$, our object of interest would not work since there is a distributional failure as the beta distribution implies each value in $[0,1]$ is taken on with probability zero. Papke and Woolridge (1996) solve this econometric problem by specifying a logistic functional form for $E(y|x)$ and estimate the

parameters using Bernoulli quasi-likelihood methods. Note that a logistic regression would model the log odds ratio as a linear function (i.e.) $E(\log(\frac{y}{1-y}|x) = x\beta$ and not model $E(y|x)$. The above equation cannot be true if y takes the value zero with positive probability as in our case. The Papke and Woolridge(1996) method is briefly described below.

Consider an independent sequence of observations $[(x_i, y_i) : i = 1, 2, \dots, N]$ where $0 \leq y_i \leq 1$ and N is the sample size. The assumption is that for all i , $E(y_i|x_i) = G(x_i\beta)$, where $G(z)$ is a known function satisfying $0 < G(z) < 1$ for all $z \in \mathfrak{R}$ (In estimation, the logistic function, $\frac{\exp(z)}{\exp(z)+1}$ is used). Papke and Woolridge (1996) propose a quasi maximum likelihood to maximize the Bernoulli log-likelihood function given by

$$l_i(b) \equiv y_i \log(G(x_i\beta)) + (1 - y_i) \log(1 - G(x_i\beta))$$

Gourieroux, Monfort and Trognon (1984) show that the QMLE of β obtaining from the maximization problem $\max \sum_{i=1}^N l_i(b)$ is consistent for β , provided the conditional expectation assumption holds. Papke and Woolridge (1996) apply this Generalized Linear Model (GLM) estimation technique for 401(k) plan participation rates, where the dependent variable is a proportion between zero and one.

4.1.4 Results of the multivariate analysis

Table 5 Panel A, presents the presents the results of the probit estimation. Specification 1, with just the time dummy variables is able to have a pseudo-R squared of 15% with both the 1991-1999 and 2000-2005 dummies strongly negative and significant at the 1% level. The economic effects are rather large. The probability of APR violations declined by 21.59% in the 1991-1999 period from a level of 64.10% in the 1980s. The decline of 46.76% is even more dramatic for the 2000-2005 period. Specification 2 confirms these results even in the presence of other covariates from the existing literature. Specification 2 also shows that prepacks, sizeable management share holdings and equity committees lead to higher likelihood of APR

violations as expected. Specifications 3 through 6 add additional covariates for which the data is not available for all firms (loss of exclusivity, creditor classes, management turnover and solvency) to the specification 2, and find the time dummies continue to be negative and significant. We also recover the Franks and Torous (1994) result that deeply insolvent firms have a lower likelihood of APR violations.

Table 5 Panel B, repeats the specifications from Table 5 Panel A but with the dependent variable being the magnitude of APD, following the GLM methodology of Papke and Woolridge (1996).¹¹ We find similar results on the time dummies. Overall we conclude that both the frequency and the magnitude of APD have declined over time based on these estimations in Panel A and Panel B.

4.1.5 Increasing importance of DIP financing and KERP plans in Chapter 11

Having established the declining frequency and magnitude of APD over time in Chapter 11 we turn to some explanations of the results. We suggest that existing or new creditors of the firm now have the ability to shape reorganizations actively by the twin mechanisms of DIP and KERP. We assess the evidence both at the macro (marketwide) and the micro (firmwide) levels on the importance of these mechanisms in curbing APD, thus making the Chapter 11 process more creditor friendly over the years.

Market wide evidence

Table 6 Panel A, documents the number and proportion of Chapter 11 cases each year that had a DIP financing or KERP approved by the bankruptcy court, the data corresponding to Figure 1, Panel B. DIP and KERP virtually non-existent in cases before 1990 have steadily increased over the years with about 2/3rds of the cases having these mechanisms by the end of the sample period.

In Table 6, Panel B, we assess the importance of these mechanisms on the outcome of

¹¹Since additional covariates such as loss of exclusivity, creditor classes and management turnover were not significant in Panel A, we did not estimate those specifications in Panel B.

APD in Chapter 11 as follows. In specification 1, we regress the proportion of firms with APD each year against a time trend - as expected, the trend variable is negative and significant at 1% level, explaining 88% of the time series variation. In Specification 2, we replace the trend variable with the proportion of firms each year that had DIP or KERP. We note that spurious correlation due to the fact our LHS and RHS variables have significant time trends is not an issue in our case. There are strong economic reasons to believe that the upward trend in creditor friendly mechanisms (such as DIP and KERP) results in the downward trend of equity friendly outcomes in Chapter 11 (i.e. APD in favor of equity). The results show that both DIP and KERP are negative and statistically significant as hypothesized and are able to explain 83% of the variation in APD violations. Specifications 3 and 4 explicitly recognize the fact that our dependent variable is a proportion between 0 and 1 and apply the GLM fractional response methodology of Papke and Woolridge (1996). Our inferences are qualitatively unchanged.

Firm wide evidence

In Table 7 Panel A, we re-estimate the probit and GLM models of probability and magnitude of APD adding dummy variables for DIP and KERP for each case. We remove the time dummy variables, since we wish to assess the economic significance of DIP and KERP (which have a strong time trend) in explaining APD outcomes. All other covariates correspond to the full specification (specification 2 in Table 5 Panel A). We find the coefficients on DIP and KERP are negative and strongly statistically significant in the probit regression suggesting the probability of APD is strongly influenced by the presence of DIP and KERP. The economic significance is also large: the presence of DIP lowers the likelihood of APD by 15% to 19%; the presence of a KERP lowers the likelihood of APD by 10% to 13%. The GLM regressions on the magnitude of APD indicates that only KERP is reliably negatively related. The presence of DIP seems to lower the likelihood of APD, but conditional on an APD, does not affect its magnitude.

In Table 7 Panel B, we explicitly recognize the endogeneity of DIP financing and using

the covariates suggested as important for the DIP decision by Dahiya et al (2003), estimate a bivariate probit model with the probability of obtaining DIP financing and the probability of APD being the two outcome variables. We find that both the coefficient estimate (economic significance) and the statistical significance of the DIP variable has increased controlling for endogeneity issues. Collectively the firm level evidence indicates the importance of creditor friendly mechanisms such as DIP and KERP in shaping Chapter 11 APD outcomes.

4.1.6 Additional evidence on the increasing creditor friendly nature of Chapter 11.

In this section, we develop additional evidence on the changes in Chapter 11 APD outcomes, while each piece of evidence by itself is not the definitive one, collectively these results paint a Chapter 11 system that has become increasingly creditor friendly over time.

In Table 8 Panel A, we conduct 2-way chi-squared test of independence between managerial shareholdings and managerial turnover. We hypothesize that significant managerial shareholdings in the bankrupt firm (defined as $\geq 5\%$) entrench management making them difficult to dislodge. In the pre-1991 period, the conditional probability of management turnover for entrenched managers was only 12% compared to the non-entrenched manager's turnover rate of 47%, the difference being statistically significant at a p-value of 0.008. In sharp contrast, in the post-1991 period the conditional probability of management turnover for entrenched and non-entrenched managers were 38% and 36% respectively, the differences not being statistically significant. These results indicate that the ability of entrenched managers to hold on to their jobs were considerably weakened. Post 1991, consistent with their decreasing influence on Chapter 11 proceedings accompanied by the increasing influence of creditors.

We also conduct a second chi-squared test of entrenched managers' ability to extract equity deviations (in line with their self interest). In the pre-1991 period, there was no significant difference between the ability of entrenched and non-entrenched managers to ex-

tract APD for equity. The corresponding conditional probabilities of an APD were 40% and 33% respectively, with the difference not statistically significant. This suggests that Chapter 11 afforded enough latitude even for non-entrenched management to extract concessions for equity holders. However, in the post-1991 period the conditional probabilities of APD for entrenched and non-entrenched managers were 26% and 17% respectively. The reduced magnitudes are consistent with the declining frequency of APD; the difference between the 2 groups is statistically significant at a p-value of 0.014. This result indicates that management bargains more actively for APD when their personal share holdings are significant but otherwise aligns with interest (presumably creditors) that do not favor APD, in a bid to keep their jobs (since our earlier results indicate the increased threat of management turnover in Chapter 11 in the post-1991 period).

According to the bankruptcy code, debtors' managers are the only ones who could propose a reorganization plan for at least the first 120 days of the case and they also controlled the operation of the company and had the right to propose extraordinary transactions such as asset sales. Thus managers could use this leeway to drag out the case and/or to extract concessions from creditors. Thus decreasing times to resolution of Chapter 11 cases could be one more indication of increased creditor control or at the least the waning influence of management's dilatory tactics on the process.

Table 8 Panel B shows the distribution of time spent in Chapter 11 for our sample of firms in the three time periods. The mean time spent in Chapter 11 has declined by about 30% from 22.5 months pre-1991 to 16.2 months in the 2000-2005 period. The median time has also declined by about 30% from 19.5 to 13.5 months. In table 8 Panel C, we regress the log of the number of months spent in Chapter 11 on a set of covariates. From specification 1, as expected, we find that larger bankruptcies take longer to resolve, and prepacks are considerably shorter. Controlling for observables we still find that Chapter 11 cases resolve faster, both in the 1991-99 and 2000-05 periods, consistent with the univariate evidence. In specification 2, we examine the impact of DIP and KERP on the time spent in Chapter 11. Ex-ante the effects are unclear : On the one hand, increased creditor control and incentives

of these mechanisms serve to expedite Chapter 11. At the same time, one needs consensus among creditors and the approval of the bankruptcy court for installing these mechanisms which would delay the Chapter 11 process. Specification 2 suggests that the net effect of the presence of DIP and KERP is to increase the time spent in Chapter 11, but the coefficients are statistically insignificant and not different from zero. We conclude that at the very least, DIP & KERP do not seem to lengthen the negotiation process in Chapter 11.

Perhaps, the most convincing of the evidence is to plot equity's deviations (representing the value of the dilatory option in Chapter 11) against $\ln(D/V)$, which represents its moneyness, following Franks and Torous (1994). Fig 3 shows that the option was deep out-of-the-money for many more firms filing after 1990 compared to firms filing before 1990. Consequently, APD violations representing the value of this option is close to zero. This indicates that management might rationally anticipate increased creditor control in Chapter 11 and hence delay filing as long as possible, thus eroding the value of the option, consistent with the observations of Adler et. al.(2006).

4.2 Implications of the Results

Bulow and Shoven (1978) and White (1983) were the first papers to show that APR generally leads to inefficient investment and liquidation/continuation decisions. In particular APR leads to an under investment problem in the sense of Myers (1977) where the benefits of investments accrue only to debt holders. Berkovitch and Israel (1998) analyze this problem in more detail and show that APR violations allow the firm to efficiently renegotiate its debt, eliminating perverse ex-post investment incentives. Along a similar vein, there exists a body of research that argues that ex-post deviations of APR are beneficial for ex-ante effects. These include desirable ex-ante investments in firm specific human capital (Berkovitch, Israel and Zender, 1997) and discourage excessive risk taking by financially distressed firms (Gertner and Scharfstein (1991) and Eberhart and Senbet (1993)). Our results on declining APR violations suggests that these ex-ante beneficial effects of chapter 11 have eroded through

time.

At the same time, costs of APR violations include negative ex-ante effects identified by Bebchuk (2002) which is aggravation of the moral hazard problem with respect to the project choice of equity holders favoring risky projects, distribution of dividends and taking of extra debt. Weiss and Wruck (1998) show that a judge's biases about the distressed firm's prospects by favoring equity holders at the expense of creditors can be extremely costly by analyzing the case of Eastern airlines. Our results show that these costs of APR violations have also eroded over time. Thus any analysis of the current state of costs versus benefits of chapter 11, will be affected by our results.

Chang and Schoar (2007) further analyze the effect of judicial bias (pro equity or pro creditor) on chapter 11 outcomes for a sample of small firms. Establishing the fact that cases are assigned randomly to judges, they document systematic differences across them in granting or denying certain motions. If such a pattern of random assignments of cases to judges holds for the large firms that form our sample, it would be interesting to examine the effect of changes in judicial bias and link it to the increasingly creditor friendly outcomes that we observe over time in our sample.

A recent set of papers in the asset pricing literature (Garlappi, Shu and Yan (2007) and Garlappi and Yan (2007)), take as its starting point the violation of APR in bankruptcy outcomes as a fact in order to explain cross sectional variation in stock returns using a long time period of data (1969 till date). Given that the new Chapter 11 bankruptcy law has been in existence only from 1978, such inferences must be cautiously interpreted. Even ignoring this issue, our results indicate that such inferences might be complicated by the changing nature of bankruptcy law in practice. The fact that APR violations have declined dramatically over the last 25 years, makes it unlikely to be a candidate explanation that explains cross section of equity returns, since models in these papers rely crucially on the magnitude of the APR violations as a key parameter to generate their cross sectional empirical predictions.

5 Conclusion

The U.S. Chapter 11 bankruptcy system has long been viewed as debtor friendly, with frequency of absolute priority deviations (APD) in favor of equity holders commonplace, as high as 75%, before 1990. In the 1991-2005 period, we find a secular decline in the frequency of APD to 22%, with the frequency as low as 9% for the period 2000-2005. We identify the increasing importance of debtor-in-possession (DIP) financing and key employee retention plans (KERP) in bankruptcy as the key drivers of this secular decline. We also find management turnover in Chapter 11 has increased by 65% since 1990 and that APD are more likely when management has substantial share holdings in the firm. The time spent in bankruptcy has also declined from about 23 months before 1990 to 16 months after 2000. Collectively, these results are consistent with the thesis that Chapter 11 has increasingly become creditor friendly over the years. We discuss the implications of our results for models that assume that equity has a valuable dilatory option in the bankruptcy process.

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Table 1 Panel A: Sample Construction. This table documents the sources used in the construction of the sample. The sample from 1991-2005 used data from bankruptcydata.com and Lynn Lopucki's web bankruptcy research database.

Source	Time Period	Number	Percent
Eberhart, Moore, Roenfeldt (1990) study	1979-1986	20	3.2%
Betker (1995) study	1982-1990	75	12.0%
Public bankruptcy filings	1991-2005	531	84.8%
Total		626	100.0%

Note: Firms in Firms in Franks and Torous (1989) study are covered in Betker (1995). Betker (1995) also includes 10 firms from Eberhart et. al. (1990) study.

Table 1 Panel B : Comparison with existing studies of APR violations in Bankruptcy. This table documents the results of the studies that have analyzed the frequency of APR (Absolute Priority Rule) violations in distributions to equity holders in bankruptcy. The sample size in each study and the number of firms that violated APR are presented.

Study	Sample Period	Sample size (A)	APR violations (B)	Violation Frequency (B/A)
Franks and Torous (1989)	1970-1984	27	21	77.8%
Weiss (1990)	1980-1986	37	27	73.0%
Eberhart, Moore, Roenfeldt (1990)	1979-1986	30	23	76.7%
Betker (1995)	1982-1990	75	54	72.0%
This paper	1991-2005	531	117	22.0%

Table 1 Panel C : Distribution of filing dates of sample firms.

Year	Number of firms	%	Year	Number of firms	%
1979	1	0.2%	1993	22	3.5%
1980	4	0.6%	1994	10	1.6%
1981	2	0.3%	1995	16	2.6%
1982	15	2.4%	1996	14	2.2%
1983	8	1.3%	1997	16	2.6%
1984	7	1.1%	1998	21	3.4%
1985	6	1.0%	1999	39	6.2%
1986	10	1.6%	2000	74	11.8%
1987	10	1.6%	2001	88	14.1%
1988	14	2.2%	2002	69	11.0%
1989	13	2.1%	2003	46	7.3%
1990	27	4.3%	2004	23	3.7%
1991	32	5.1%	2005	9	1.4%
1992	30	4.8%			
Total	626	100.0%			

Table 1 Panel D : Industry wide distribution of Sample Firms. Industry classifications follow Fama and French (1997).

Industry Classification	Till 1990		1991-1999		2000-2005	
	firms	%	firms	%	firms	%
Non Durables & Durables	4	4.3%	22	11.0%	20	6.5%
Manufacturing	18	19.1%	22	11.0%	59	19.1%
Oil & Gas	12	12.8%	9	4.5%	4	1.3%
Business Equipment	13	13.8%	19	9.5%	51	16.5%
Telecom	0	0.0%	10	5.0%	57	18.4%
Wholesale,Retail	20	21.3%	63	31.5%	48	15.5%
Healthcare	3	3.2%	6	3.0%	17	5.5%
Utilities	1	1.1%	10	5.0%	10	3.2%
Other	23	24.5%	39	19.5%	43	13.9%
Total	94	100.0%	200	100.0%	309	100.0%

Kolmogorov Smirnov Test for equality of distributions)

	D-Value	p - value
1980s vs 1990s	0.1400	0.163
1980s vs 2000s	0.1181	0.267
1990s vs 2000s	0.2081	0.000

Table 1 Panel E : Outcome of Chapter 11. The table documents the outcome of Chapter 11 process for sample firms and the mean and median time spent(in months) in the process.

Outcome	Number of firms	%	Time Spent (months)	
			Mean	Median
Reorganized	371	59.3%	15.86	12.00
Liquidated	118	18.8%	23.25	17.75
Acquired/Merged	71	11.3%	20.07	18.88
Undetermined	66	10.5%	18.82	16.80
Total	626	100.0%	18.02	14.88

Table 2 Panel A: Absolute Priority Deviations (APD) as a percentage of firm value and number of firms. Firm value is measured at emergence from bankruptcy, as the value of all new securities distributed by the reorganized firm. Market values are used for preferred stock, common stock and warrants and for debt when available. Book values of debt are used otherwise. APD is defined as the value received by the equity holders minus what would have been received under absolute priority rules. It is expressed as a percentage of firm value at emergence from bankruptcy. The data is presented for three time periods - Till 1990, 1991-1999 and 2000-2005.

APD/Firm value (%)	Till 1990		1991-1999		2000-2005	
	firms	%	firms	%	firms	%
0	42	35.9%	142	73.6%	272	91.3%
0-0.1	1	0.9%	18	9.3%	5	1.7%
0.1-0.5	10	8.5%	12	6.2%	6	2.0%
0.5-1	14	12.0%	3	1.6%	3	1.0%
1-2	9	7.7%	7	3.6%	2	0.7%
2-5	17	14.5%	3	1.6%	5	1.7%
5-10	10	8.5%	5	2.6%	2	0.7%
>10	14	12.0%	3	1.6%	3	1.0%
Total	117	100.0%	193	100.0%	298	100.0%

Table 2 Panel B: Absolute Priority Deviations (APD) received by equity holders. Note that the number of firms in the pre 1991 period is different for APD violations in percent and dollar values since some earlier studies report only the former. ***, **, * represent significance levels at 1%, 5%, and 10% respectively.

	N	Mean	Median	Maximum	Std.Dev
Till 1990					
APD/Firm value (%)	117	3.55%	0.76%	35.71%	6.63%
APD (in millions of dollars)	111	59.78	0.39	6100.00	578.71
1991-1999					
APD/Firm value (%)	193	0.63%	0.00%	22.64%	2.63%
APD (in millions of dollars)	193	2.89	0.00	226.70	19.35
2000-2005					
APD/Firm value (%)	298	0.44%	0.00%	46.79%	3.70%
APD (in millions of dollars)	298	3.28	0.00	476.67	31.75

Kolmogorov Smirnov Test for equality of distributions

	D-Value	p - value
1980s vs 1990s	0.4685	0.000
1980s vs 2000s	0.5654	0.000
1990s vs 2000s	0.1770	0.001

Tests of Significance of differences between Means and Medians

	Mean difference	t-Stat	Z-stat (median)
1980s vs 1990s	2.92%	5.45***	7.60***
1980s vs 2000s	3.11%	6.05***	12.02***
1990s vs 2000s	0.19%	0.63	5.13***

Table 2 Panel C : Absolute priority deviations by firm size. The table reports the number of firms with APD. The percent column reports the firms with APD as a percent of total number of firms in that size class. Firm size is measured as assets in year 2000 constant millions of dollars.

Firm Size	Till 1990		1990-1999		2000-2005	
	APD	%	APD	%	APD	%
< 200	26	66.7%	n.a	n.a	n.a	n.a
200-500	6	54.5%	26	32.5%	11	8.9%
500-1000	14	66.7%	19	32.2%	13	15.7%
1000-2000	9	64.3%	18	54.5%	9	20.9%
2000-5000	10	52.6%	8	33.3%	3	7.9%
5000-10000	4	66.7%	0	0.0%	0	0.0%
>10000	4	80.0%	1	n.a	3	33.3%
Unknown	2	100.0%	n.a	n.a	n.a	n.a

Table 3 : Absolute priority deviations over time. The table reports the number of firms with APD, the number of firms that filed for bankruptcy each year, the mean value of APD each year. The percent APD column reports the firms with APD as a percent of total number of firms each year.

Year	Firms	Firms with APD	% APD	Mean APD
1979	1	1	100%	8.23%
1980	4	4	100%	10.93%
1981	2	2	100%	11.66%
1982	15	9	60%	4.92%
1983	8	7	88%	7.31%
1984	7	5	71%	7.31%
1985	6	3	50%	1.34%
1986	10	9	90%	3.56%
1987	10	7	70%	4.77%
1988	14	10	71%	1.71%
1989	13	7	54%	0.98%
1990	27	11	41%	1.05%
1991	32	16	50%	0.47%
1992	30	17	57%	1.12%
1993	22	11	50%	1.99%
1994	10	3	30%	0.06%
1995	16	4	25%	0.16%
1996	14	4	29%	0.10%
1997	16	3	19%	0.04%
1998	21	4	19%	0.20%
1999	39	10	26%	0.61%
2000	74	7	9%	0.64%
2001	88	11	13%	0.11%
2002	69	11	16%	0.36%
2003	46	6	13%	1.07%
2004	23	4	17%	0.15%
2005	9	0	0%	0.00%
Total	626	186		

Table 4 - Characteristics of sample firms

Solvency equals the face value of debt claim divided by the value of the firm at emergence from bankruptcy. Total assets in constant dollars and number of employees are at the time of Chapter 11 filing. The second panel lists the total number of sample firms and the percentage of firms exhibiting each characteristic.

	Till 1990			1990-1999			2000-2005		
	N	Mean	Median	N	Mean	Median	N	Mean	Median
Solvency (D/V)	94	2.714	1.883	160	5.377	1.849	174	9.333	2.420
Total Assets (yr 2000 mn dollars)	115	3342	681	200	1110	593	309	2139	614
Number of Employees	99	7492	2688	198	8282	3525	308	7378	3215

	Till 1990		1990-1999		2000-2005	
	N	%	N	%	N	%
Equity Committee Formed	96	29.17%	191	8.38%	292	9.25%
Bankruptcy in Southern District of NY	98	24.49%	200	15.50%	308	16.88%
Management Turnover in Bankruptcy	48	22.92%	191	36.65%	292	37.67%
Firm lost exclusive right to propose reorganisation plan	48	4.17%	191	5.76%	292	2.05%

Management Share holdings at the time of filing for Ch.11

	N	Mean	Median	Std.Dev
Till 1990	94	17.29%	6.54%	23.46%
1991-1999	172	25.21%	12.70%	29.72%
2000-2005	292	15.87%	4.95%	22.63%

Table 5 Panel A - Probit regression analysis of the determinants of the likelihood of APD. The dependent variable is one if there is APD and zero otherwise.

	(1)	(2)	(3)	(4)	(5)	(6)
Const.	0.36*** (0.12)	-0.43 (0.38)	-0.43 (0.40)	-0.16 (0.50)	-0.41 (0.40)	0.29 (0.43)
Period 1991-1999	-0.72*** (0.15)	-0.62*** (0.17)	-0.37* (0.22)	-0.76*** (0.27)	-0.38* (0.22)	-0.56*** (0.18)
Period 2000-2005	-1.51*** (0.15)	-1.33*** (0.17)	-1.07*** (0.22)	-1.23*** (0.26)	-1.08*** (0.22)	-1.18*** (0.19)
Log(Size)		0.06 (0.05)	0.02 (0.06)	0.03 (0.07)	0.01 (0.06)	0.004 (0.06)
Equity Committee		0.54*** (0.18)	0.41** (0.21)	0.53** (0.22)	0.41* (0.21)	0.41** (0.20)
New York - Southern District		0.07 (0.16)	0.05 (0.17)	-0.09 (0.23)	0.05 (0.17)	-0.06 (0.18)
Management holding > 5%		0.32** (0.12)	0.33*** (0.13)	0.26* (0.16)	0.33*** (0.13)	0.24* (0.14)
Prepack		0.57*** (0.20)	0.55*** (0.20)	0.51** (0.24)	0.56*** (0.20)	0.54** (0.22)
Loss of Exclusivity			0.17 (0.32)			
No. Creditor Classes				-0.003 (0.008)		
Management Turnover					0.06 (0.14)	
Log(D/V)						-0.34** (0.15)
$(\text{Log}(D/V))^2$						0.03 (0.04)
Obs.	626	573	529	342	529	416
Pseudo R ²	0.15	0.16	0.11	0.11	0.11	0.15

Economic Significance	Model 1		Model 2	
Prob of APD				
1980 - 1990	64.10%		59.49%	
Marginal Effects	Effect	Z-stat	Effect	Z-stat
1991-1999	-21.59%	-5.29	-18.62%	-3.90
2000-2005	-46.76%	-11.41	-41.63%	-8.60

Table 5 Panel B - GLM regression analysis of the magnitude of APD in percent. The regression accounts for the dependent variable being a proportion following the method of Papke and Woolridge(1996). Heteroscedasticity consistent robust t-statistics are reported.

	(1)	(2)	(3)
Const.	-3.30*** (0.18)	-5.93*** (1.21)	-4.56*** (1.08)
Period 1991-1999	-1.76*** (0.35)	-1.16*** (0.37)	-1.42*** (0.46)
Period 2000-2005	-2.13*** (0.52)	-1.41** (0.59)	-1.10** (0.52)
Log(Size)		0.22 (0.14)	0.16 (0.12)
Equity Committee		1.08** (0.47)	0.62 (0.41)
New York - Southern District		-0.31 (0.37)	-0.74* (0.44)
Management holding > 5%		0.61 (0.42)	0.60 (0.44)
Prepack		0.59 (0.48)	0.40 (0.50)
Log(D/V)			-1.47*** (0.35)
$(\text{Log}(D/V))^2$			0.21** (0.09)
Obs.	608	555	409
<i>Pseudo LogL</i>	-28.3	-21.4	-18.8

Table 6, Panel A : Debtor-in-possession financing (DIP) and Key employee retention plan (KERP) over time. The table reports the number of firms with DIP & KERP and the number of firms that filed for bankruptcy each year. The percent DIP & KERP columns report the firms with DIP & KERP as a percent of total number of firms each year.

Year	No. firms	DIP	% DIP	KERP	% KERP
1979	1	0	0%	0	0%
1980	4	0	0%	0	0%
1981	2	0	0%	0	0%
1982	15	0	0%	0	0%
1983	8	0	0%	0	0%
1984	7	0	0%	0	0%
1985	6	0	0%	0	0%
1986	10	0	0%	0	0%
1987	10	0	0%	0	0%
1988	14	0	0%	1	7%
1989	13	0	0%	0	0%
1990	27	10	37%	4	15%
1991	32	11	34%	2	6%
1992	30	12	40%	0	0%
1993	22	6	27%	1	5%
1994	10	5	50%	2	20%
1995	16	11	69%	1	6%
1996	14	9	64%	3	21%
1997	16	10	63%	1	6%
1998	21	15	71%	4	19%
1999	39	26	67%	9	23%
2000	74	51	69%	18	24%
2001	88	47	53%	35	40%
2002	69	40	58%	29	42%
2003	46	31	67%	24	52%
2004	23	14	61%	16	70%
2005	9	6	67%	7	78%
Total	626	304		157	

Table 6, Panel B - OLS and GLM regression analysis of the determinants of the incidence of APD, examining the effects of DIP financing and KERP plans over time. The dependent variable is the percent of firms that have APD each year. The independent variables are the percentage of firms that have DIP, KERP each year among firms that filed for Ch.11 that year. Trend is a variable that captures time by setting the value one, for year 1979 and incremented by one each year. The GLM regression accounts for the dependent variable being a proportion following the method of Papke and Woolridge(1996). Heteroscedasticity consistent robust t-statistics are reported.

	OLS (1)	OLS (2)	GLM (3)	GLM (4)
Const.	0.98*** (.04)	0.78*** (.04)	2.47*** (.40)	1.25*** (.29)
Trend	-0.04*** (0.003)		-0.19*** (0.02)	
% DIP		-0.77*** (0.12)		-3.26*** (0.59)
% KERP		-0.32** (0.16)		-2.33*** (0.77)
Obs.	27	27	27	27
$R^2/Psuedo\ LogL$	88%	83%	-9.6	-10.0

Table 7 Panel A - Probit and GLM regression analysis of the effect of DIP financing and KERP plans on the likelihood of APD. The dependent variable is one if there is APD and zero otherwise for the first two specifications and the percentage of APD for the last two specifications.

	Probit (1)	Probit (2)	GLM (3)	GLM (4)
Const.	-0.20*** (0.07)	-1.00*** (0.35)	-3.90*** (0.17)	-6.82*** (1.21)
DIP	-0.57*** (.11)	-0.44*** (0.12)	-1.20** (0.48)	-0.68 (0.51)
KERP	-0.39*** (0.14)	-0.32** (0.15)	-2.17*** (0.46)	-2.00*** (0.50)
Log(Size)		0.06 (0.05)		0.30** (0.14)
Equity Committee		0.70*** (0.17)		1.20*** (0.42)
New York - Southern District		0.10 (0.15)		-0.20 (0.35)
Management holding > 5%		0.32*** (0.12)		0.48 (0.38)
Prepack		0.53*** (0.19)		0.15 (0.49)
Obs.	626	573	608	555
<i>Pseudo R²/Psuedo LogL</i>	0.06	0.09	-29.2	-21.1

Economic Significance	Model 1		Model 2	
Prob of APD				
DIP = 0	38.5%		35.0%	
DIP = 1	19.5%		20.4%	
KERP = 0	31.9%		30.2%	
KERP = 1	19.5%		20.1%	
Marginal Effects	Effect	Z-stat	Effect	Z-stat
DIP	-19.0%	-5.21	-14.6%	-3.74
KERP	-12.4%	-3.05	-10.1%	-2.32

Table 7 Panel B - Bi variate probit analysis of the effect of DIP financing and KERP plans on the likelihood of APD, accounting for the endogeneity of DIP financing.

DIP financing Equation			APD equation		
Variable	Coefficient	z-stat	Variable	Coefficient	z-stat
Intercept	-1.25	-3.67	Intercept	-0.07	-0.22
Log(Size)	0.13	2.72	DIP	-1.61	-7.82
Leverage	0.25	4.24	KERP	-0.27	-1.96
Retail	0.41	2.74	Log(Size)	0.06	1.33
Prepack	-0.04	-0.20	Equity Committee	0.41	2.55
Number of Observations	416		NY - Southern	-0.05	-0.35
Log Pseudo Likelihood	-519.6		Mgmt Holding > 5%	0.18	1.54
Chi-Sq(11)	230.06		Prepack	0.38	2.03

Table 8 Panel A - Two way Chi Squared tests of independence between Management Shareholdings and Management Turnover, APD in Chapter 11

Numbers in percent are conditional probabilities of Turnover given management shareholdings

Turnover	1991 and later			Before 1991		
	Holdings \geq 5%	< 5%	Total	Holdings \geq 5%	< 5%	Total
Yes	92 38%	88 36%	180	4 12%	7 47%	11
No	147 62%	156 64%	303	29 88%	8 53%	37
Total	239	244	483	33	15	48
		p-value			p-value	
Pearson Chi Squared(1)	0.305	0.581		6.967	0.008	
Degree of association Phi	0.025			-0.381		

Conclusion : Conditional probability of turnover is lower given higher management share holdings pre 1991 but not in post 1991 period.

Numbers in percent are conditional probabilities of APD given management shareholdings

Management Shareholdings	1991 and later			Before 1991		
	APD =Yes	APD = No	Total	APD =Yes	APD = No	Total
Above 5%	67 26%	188 74%	255	30 60%	20 40%	50
Below 5%	44 17%	210 83%	254	45 67%	22 33%	67
Total	111	398	509	75	42	117
		p-value			p-value	
Pearson Chi Squared(1)	5.980	0.014		0.639	0.424	
Degree of association Phi	0.108			-0.074		

Conclusion : Conditional probability of APD is higher given higher management share holdings post 1991 but not in pre 1991 period.

Table 8, Panel B - Distribution of time spent in Chapter 11.

Year in Chapter 11	Till 1990		1991-1999		2000-2005	
	firms	%	firms	%	firms	%
<1	28	23.9%	91	45.5%	135	43.7%
1-2	44	37.6%	57	28.5%	111	35.9%
2-3	22	18.8%	26	13.0%	38	12.3%
3-4	14	12.0%	8	4.0%	12	3.9%
>4	6	5.1%	17	8.5%	11	3.6%
Unknown	3	2.6%	1	0.5%	2	0.6%
Total	117	100.0%	200	100.0%	309	100.0%
Mean Time in Ch. 11 (months)	22.5		18.3		16.2	
Median Time in Ch.11 (months)	19.5		14.3		13.5	

Table 8, Panel C - OLS regression analysis of the time to resolution in Chapter 11. The dependent variable is log of the number of months spent by the firm in Chapter 11. Heteroskedasticity consistent standard errors are reported.

	(1)	(2)
Const.	2.37*** (0.20)	2.11*** (0.20)
Log(Size)	0.09*** (.03)	0.07** (0.03)
Retail	0.07 (.08)	0.09 (0.08)
Equity Committee	0.10 (.10)	0.24** (0.10)
New York - Southern District	0.07 (.08)	0.08 (0.08)
Management holding > 5%	-0.06 (.06)	-0.01 (0.06)
Prepack	-2.10*** (.11)	-2.05*** (0.11)
Period 1991-1999	-.25** (.10)	
Period 2000-2005	-.44*** (0.09)	
DIP		0.09 (0.07)
KERP		0.07 (0.07)
Obs.	568	568
R^2	0.45	0.43

Fig. 1. The Changing Nature of Chapter 11

This figure displays the evolution of APD, DIP financing and KERP in chapter 11 over the last twenty six years. The data correspond to that presented in Table 3 and Table 6, Panel A.

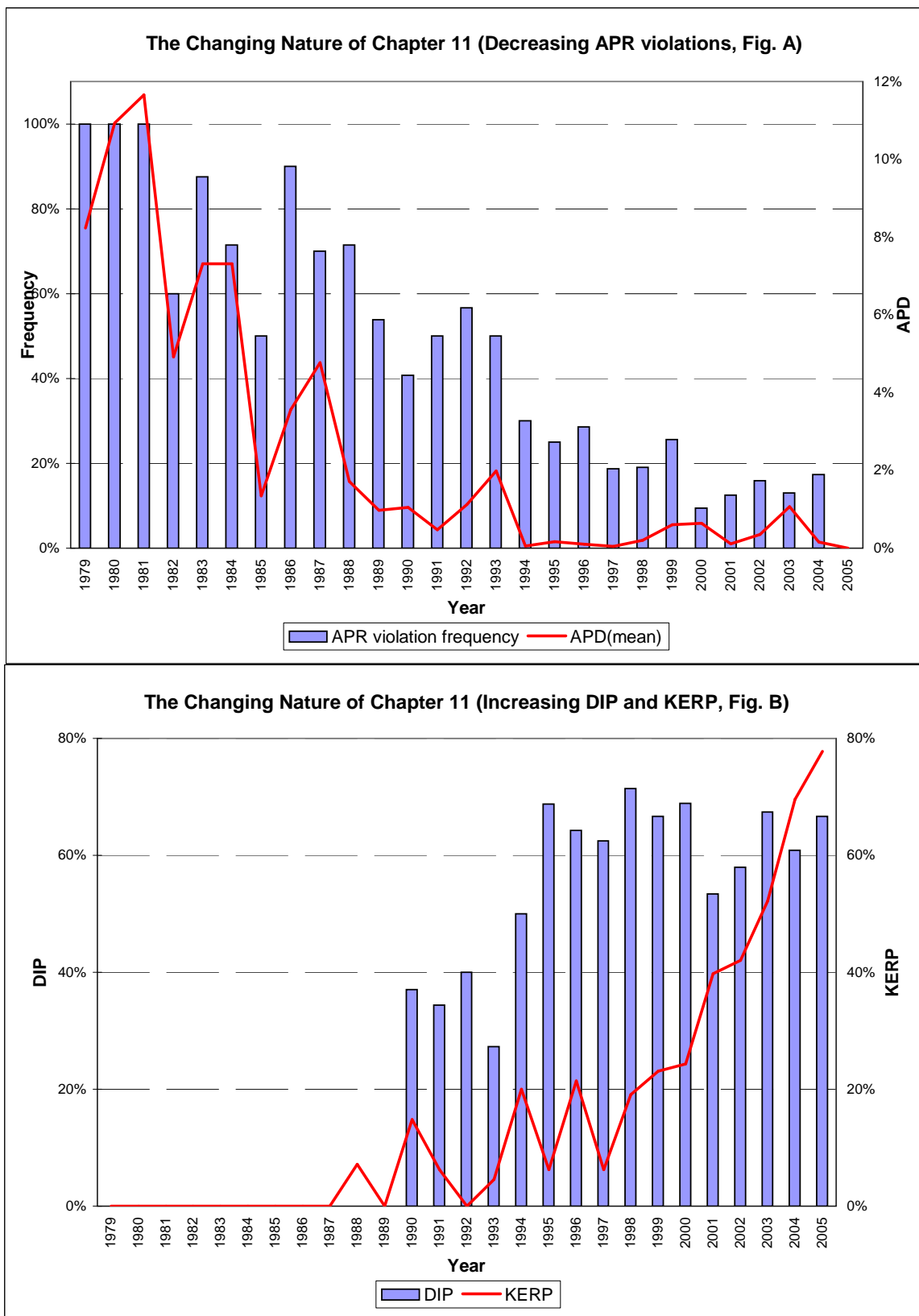


Fig. 2. Industry Trends

This figure displays the percentage of firms out of total filings industry wise that had an APD, over the last twenty five years. The data show that the pattern of declining APD is present in all industries.

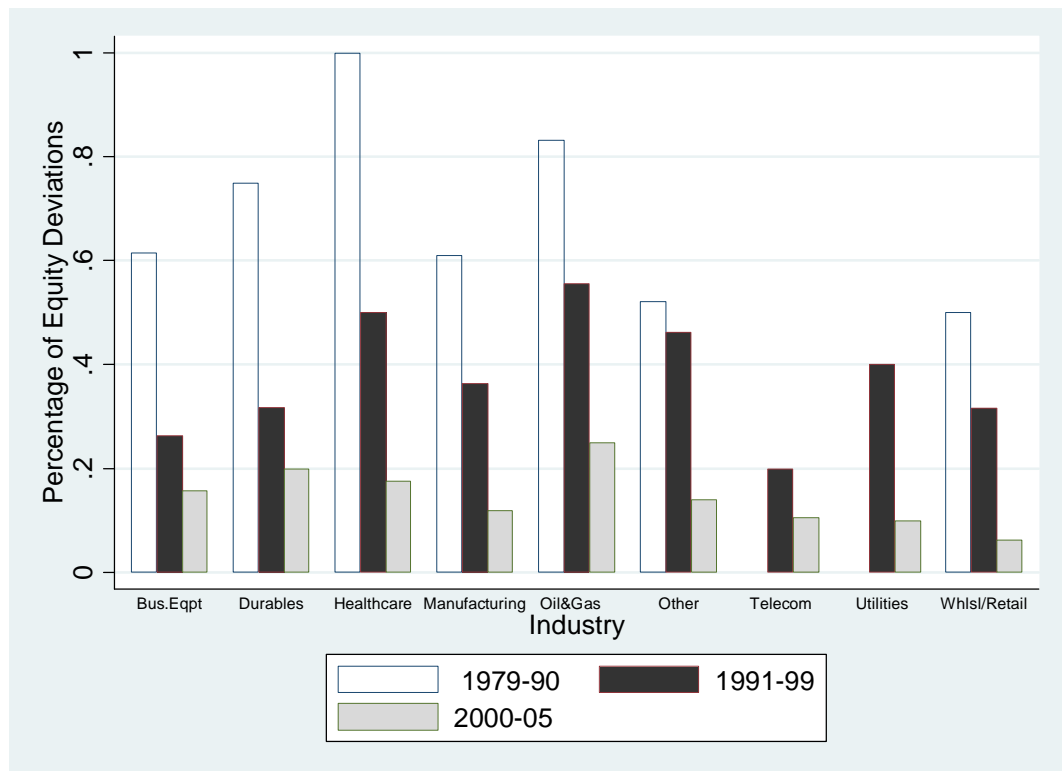


Fig. 3. Deeply Insolvent

This figure displays the percentage equity deviations against the solvency of the firm at the time of Ch.11 filing.

