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REORGANIZATION DECISION: NEW
EVIDENCE FROM CANADIAN DATA**

Timothy C.G. Fisher, Jocelyn Martel

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The Creditors' Financial Reorganization Decision: New Evidence from Canadian Data*

*Timothy C.G. Fisher[†]
Jocelyn Martel[‡]*

Abstract / Résumé

The paper examines a data set of 338 randomly selected financial reorganization plans filed in Canada during the period 1978-87. Creditors reject roughly 25% of reorganization plans, while about 20% of the plans creditors accept fail before completion, providing evidence of filtering failure in the reorganization process. A logit model of the creditors' reorganization decision produces two interesting results. Plans offering a high proportion of cash payments are more likely to be accepted by creditors, which we interpret as evidence that cash is a signal of financial viability. Plans with high ratios of secured debt are more likely to be accepted, which we interpret as evidence that secured creditors with insider knowledge signal information about the financial viability of firms to unsecured creditors.

Ce document a pour but d'étudier le processus de réorganisation financière au Canada sur la base d'un échantillon de 338 propositions de réorganisations commerciales au cours de la période 1978-1987. Les données démontrent que 25 % des propositions sont rejetées par les créanciers non-garantis et qu'environ 20 % des propositions acceptées résultent éventuellement en un échec. Une analyse du comportement des créanciers lors du vote sur une proposition génère deux résultats intéressants. Premièrement, la probabilité d'acceptation d'une proposition augmente avec la proportion des paiements comptants fait aux créanciers. L'utilisation de paiements comptants est interprétée comme un signal quand à la viabilité d'une firme. Deuxièmement, la probabilité d'acceptation d'une proposition augmente avec la proportion des créances garanties à l'intérieur de la firme. Ce résultat supporte la thèse à l'effet que les banques possèdent de l'information privilégiée sur la viabilité des entreprises et fournit une nouvelle évidence quant au rôle des banques dans la transmission de cette information vers les créanciers non-garantis.

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[†] Wilfrid Laurier University.

[‡] CIRANO and Université de Montréal.

1 Introduction

Bankruptcy laws in most countries, including the U.S., give creditors an important role in the bankruptcy decision of an insolvent firm. Several recent papers focus on conflicts arising in reorganization and on the importance of bargaining on the outcome of financial distress. Brown (1989), Giammarino (1989), Bebchuk and Chang (1992), Gilson, John, and Lang (1990), Gertner and Scharfstein (1991), White (1994), and Asquith, Gertner, and Scharfstein (1994) examine how conflicts between the firm and its creditors and between groups of creditors are resolved through bargaining. Data support the notion that creditors play a key role in bankruptcy: roughly 90 percent of reorganization plans are not confirmed in the U.S. (Flynn, 1989) and, in Canada, about 25 percent of reorganization plans are rejected by creditors (Fisher and Martel, 1994b; Martel, 1994).

This article presents empirical evidence on the role of creditors in financial reorganization. There are few empirical studies on court-supervised bankruptcy and financial reorganization. Excepting Flynn (1989), the studies have two common features: a small number of observations and nonrandom samples. Casey, McGee, and Stickney (1986) and Franks and Torous (1989) examine only successful Chapter 11 cases, which is clearly not representative of all firms attempting reorganization. The White (1981, 1984) and the LoPucki (1983) studies are confined to isolated geographical areas and, as such, their data may not be representative of all U.S. firms going through Ch. 11.

This study differs from previous ones in two important ways. First, this article focuses on the behavior of creditors rather than firms. Reorganization is a two-stage process. At stage 1, the firm chooses between liquidation and reorganization. At stage 2, unsecured creditors vote whether to allow reorganizing firms to proceed. In our data, stage 1 has already happened; we examine the determinants of the creditors' stage 2 decision. Second, this study employs a unique and rich data set not previously available to researchers. Our sample includes 338 reorganization plans covering the years 1978 to 1987 provided by the Bankruptcy Branch of the Canadian Department of Industry and Science (ISC), the federal government department responsible for the administration of Canadian bankruptcy law. Major advantages of the data are: (i) they are randomly selected from the population of commercial reorganization plans filed in Canada, (ii) they are representative of accepted and rejected reorganization plans, and (iii) there is a relatively large number of events to be analyzed.

The paper is organized as follows. Section 2 compares Canadian with American bankruptcy law. Although there are differences in bankruptcy law between the two countries, there are enough similarities—in particular the role of unsecured creditors—such that Canadian data can yield important insights into the bankruptcy process in general. Section 3 describes the data. Section 4 presents key facts from the data. We find evidence that creditors vote according to whether their expected return is higher in liquidation or reorganization.

In addition, we find that the proportion of cash payments offered to creditors is significantly higher for firms which successfully reorganize compared to those which fail. Section 5 discusses results from logit estimation of the incidence of acceptance of reorganization plans by unsecured creditors. Two interesting results emerge from the analysis. First, reorganization plans offering relatively more cash are more likely to be approved by creditors, which we interpret as evidence that cash is a signal of financial viability. Second, plans with higher ratios of secured debt are more likely to be accepted, which we interpret as evidence that secured creditors with insider knowledge signal information about the financial viability of firms to unsecured creditors. Section 6 contains some concluding remarks.

2 Background to Canadian Bankruptcy Law

Before discussing the data, methodology, and results, it is worthwhile to compare the Canadian Bankruptcy Act with the American Bankruptcy Code.¹ The basics of bankruptcy are very similar in the two countries. An insolvent firm seeking the protection of bankruptcy law in Canada has two options: liquidation (Chapter 7 in the U.S.) or reorganization (Chapter 11 in the U.S.). A firm choosing reorganization submits a plan to its creditors. The fate of the plan is decided at a meeting of the creditors. Provided that (i) a majority of unsecured creditors present at the meeting vote in favor of the plan, and (ii) the claims of unsecured creditors voting in favor of the plan represent at least 75 percent of the total claims of the unsecured creditors at the meeting, the plan is deemed to be accepted.

There are two key differences between the bankruptcy laws in the two countries. First, unlike U.S. bankruptcy law, secured creditors are not bound by the Bankruptcy Act in Canada. A secured creditor in Canada is not subject to a stay and has the option of liquidating the assets of a debtor (in arrears) at any time during reorganization. Given that secured creditors are not constrained by the Bankruptcy Act, one would expect any negative influence on the reorganization process by secured creditors, if it exists, to show up clearly in Canadian data. Second, Canadian law has nothing similar to the ‘cramdown’ procedure that exists in the U.S. Bankruptcy Code. The cramdown procedure typically results in prolonged court proceedings involving competing testimony by expert witnesses, valuation of a firm’s assets by outside appraisers, etc. The courts are much less likely to become involved in bankruptcy proceedings in Canada, raising the hope that economic fundamentals, rather than legal maneuvering, ultimately determine the outcome of the bankruptcy process.

¹A revised Bankruptcy Act came into effect in December 1992. The data set covers the period 1978–87, i.e., prior to the revisions, so the discussion in this section pertains to the old Act. For a discussion of the new Act and its implications for bankruptcy see Fisher and Martel (1994a).

3 Data

Each reorganization plan made under the Bankruptcy Act is filed with one of the 15 regional bankruptcy offices of ISC. The data used in the present study are taken from these files.² We limit attention to the approximately 1,985 commercial reorganization plans filed at the largest offices in each of five regions of the country (Halifax, Montreal, Toronto, Calgary, and Vancouver) during the period 1978–87.³ Using a master-list of file-numbers kept by ISC, a random sample of 499 plans is selected from the 1,985.⁴ The sample is chosen to be ‘balanced’, i.e., the sample is representative of the regional distribution of plans filed each year over the sample period. Because the study focuses on commercial reorganization plans, consumer plans are omitted from the sample, reducing the sample by 55 plans to 444.⁵ Owing to insufficient data and missing or incomplete files a further 106 files are deleted from the sample. The final sample has 338 files, of which 241 were officially closed and 97 were still active when the data were collected.

4 Preliminary Analysis

In view of the scarcity of representative data on firms going through financial reorganization, we believe there is some value added in presenting stylized facts from the data. It is worth stressing that these facts originate from the data and not from casual observation or discussion with bankruptcy practitioners, which is the approach used by many other studies of bankruptcy.

Table 1 gives some descriptive statistics for the data. Firms attempting reorganization under the Bankruptcy Act are fairly small, with average assets of \$2.4 million and average liabilities of \$4.0 million.⁶ Only 13 of the firms in the sample have publicly traded shares; the remaining 325 firms are privately owned. As might be expected with financial data, the variables are highly skewed. For example, while the mean value of assets is \$2.4 million, over 74 percent of the firms in the sample have total assets of less than \$1 million.

Summary statistics for reorganization plans are listed under ‘Contract variables’. Reorganizing firms offer an average of 44 cents on the dollar to ordinary

²For a detailed description of the data set, see Fisher and Martel (1994b).

³Strictly speaking, 1,985 plans is an upper limit on the number of commercial plans because the population may include consumer plans or bankruptcies.

⁴Random sampling is carried out using the Systematic Random Sampling Procedure.

⁵Commercial plans are those with more than 50 percent of total debts represented by business debts, which is the definition used by ISC.

⁶All dollar figures in the text are December 1993 Canadian dollars, deflated by the CPI deflator (Cansim Series Number P484000). To convert these figures to U.S. dollars, the average noon spot exchange rate in December 1993 was US\$1.00=C\$1.33 (Cansim Series Number B3400).

creditors and have a liquidation value of 29 cents on the dollar.⁷ Given the payment to creditors in the plan, on average, 14 percent is paid in cash up-front, 82 percent in cash installments, and 3 percent in equity.⁸

On average, the representative firm has 2.6 secured creditors, 80.4 ordinary (unsecured) creditors, and 13.6 preferred (unsecured) creditors.⁹ About 40 percent of the plans had at least one amendment but no plan has more than three amendments. The average amount of time between submission of the plan and the creditors' vote is 52.5 days; 90 percent of the plans were voted on within 3 months of submission.

For the sample as a whole, unsecured creditors accept 259 of the 338 reorganization plans, representing an acceptance rate of 77 percent. Acceptance of a plan is no guarantee that the firm will complete reorganization: of the 182 closed files that are accepted by creditors, 34 enter bankruptcy before the terms of the plan are completed, representing a default rate of 19 percent. In fact, for the 241 closed files, the 59 rejected plans and the 34 defaulted plans imply that 148 plans successfully complete the reorganization process. Therefore, the *ex ante* probability that a firm entering the reorganization process will emerge as an ongoing enterprise is about 61 percent. Two features of reorganization are thus apparent. First, the rejection rate of 23 percent implies unsecured creditors do not automatically approve the reorganization of insolvent firms. Second, the default rate of 19 percent indicates there is significant uncertainty whether reorganizing firms will actually pay off their creditors.

If the firm is a viable enterprise, then creditors make the correct decision if they vote to accept a plan from the firm and a Type I error if they vote to reject the plan. If the firm is not viable, then creditors make the correct decision if they vote to reject a plan from the firm and a Type II error if they vote to accept the plan. Of the 182 firms with accepted plans, 34 subsequently enter liquidation, implying that creditors commit a Type II error in 34 cases. It is not possible to determine the number of cases where a Type I error is committed, because it cannot be determined from the data which of the rejected plans were made by viable firms. However, the possible incidence of Type I errors can be determined given different levels of the incidence of Type II errors together with the fact that 59 plans are rejected. Table 2 presents possible scenarios for the incidence of Type I and Type II errors.¹⁰ Table 2 shows that the incidence of

⁷Gross liquidation value is defined as total assets minus secured and preferred claims. The liquidation value is the gross liquidation value divided by ordinary claims.

⁸Up-front payments are defined as cash paid within one month of the date the bankruptcy court approves the plan. Installments are defined as cash payments more than one month after the court approval date.

⁹Preferred creditors have roughly the same status as 'priority' creditors under the American Bankruptcy Code. Examples of preferred creditors are federal and provincial governments, employees, and landlords.

¹⁰Table 2 is determined as follows. If all 59 rejected plans are from nonviable firms, i.e., creditors always make the correct rejection decision, then the incidence of Type I errors is zero and the incidence of Type II errors is $34/(34 + 59) \approx .366$, giving the first row. If 57 of

Type II errors is no less than 36 percent, and is at least four times the incidence of Type I errors at confidence levels of 5 percent or 10 percent for the creditors' decision. According to White (1994) 'filtering failure' occurs in the bankruptcy process when Type I and II errors are committed by creditors. The overall incidence of filtering failure in the data is between 14.0 percent (34/241) and 38.6 percent (93/241).

Another important set of stylized facts about the reorganization process concerns the type of contract offered by firms to their creditors. According to White (1994), firms use the reorganization payoff rate to signal financial viability to creditors. Martel (1994) assumes that the probability of successful reorganization depends positively on the amount of cash available at the time of reorganization. Because reorganizing firms are typically cash constrained and face credit rationing from the bank, less viable firms will have more difficulty raising cash to compensate creditors. Assuming there is asymmetric information with respect to the firm's financial viability, firms can use cash payments to signal their type to uninformed creditors. In equilibrium, cash payments are used by viable firms to separate themselves from non-viable firms. Martel (1994) also shows that the expected liquidation return, which represents the opportunity cost of reorganization to creditors, affects the creditors' decision. Table 3 sheds some light on the role of the reorganization return, cash payments, and the liquidation return.

Table 3 displays three potentially important facts. First, the liquidation payoff rate exceeds the reorganization payoff rate for rejected plans and vice versa for accepted plans.¹¹ Second, accepted plans have higher reorganization payoff rates than rejected plans.¹² These facts are consistent with creditors voting according to whether the (expected) payoff rate is greater under reorganization or liquidation. Third, looking only at accepted plans, cash payments for successful, i.e., completed, plans are more than seven times higher than cash payments for plans that defaulted.¹³ This is consistent with high cash payments signalling firms that are more likely to reorganize successfully. Signalling is also supported by the fact that the reorganization payoff rate for accepted-completed plans is lower than the payoff rate for accepted-defaulted plans. Creditors were willing to accept a lower payoff rate from accepted-completed plans because the higher cash payments signalled a higher probability that these plans would actually

the 59 rejected plans were from nonviable firms, then 2 rejected plans were made by viable firms, the incidence of Type I errors is $2/(2 + 148) \approx .013$ and the incidence of Type II errors is $34/(34 + 57) \approx .374$, giving the second row. The rest of the table is determined the same way.

¹¹A *t*-test of the hypothesis that the mean liquidation payoff rate is greater (less) than the mean reorganization payoff rate has critical value of 0.16 (4.74) and a *p*-value of 0.44 (2.27×10^{-6}) for rejected (accepted) plans.

¹²A *t*-test of the hypothesis that the mean reorganization payoff rate is greater for accepted plans than it is for rejected plans has critical value of 1.11 and a *p*-value of 0.14.

¹³A *t*-test of the hypothesis that the mean cash payoff rate is greater for completed plans than for defaulted plans has critical value of 5.24 and a *p*-value of 3.16×10^{-6} .

succeed.

To summarize, First, the existence of filtering failure indicates that creditors face significant uncertainty when deciding whether to allow firms to proceed with reorganization. Second, the data suggest that reorganization depends on the payoff rate creditors expect to receive in reorganization versus liquidation. Third, the nature of the reorganization contract, in particular the amount of cash payments made to creditors, also seems to play a role in the process.

5 Parametric Analysis of Creditor Voting

By voting to reject roughly one-quarter of reorganization plans, unsecured creditors clearly play a critical role in bankruptcy reorganization. But what factors influence how creditors vote? Preliminary analysis suggests that reorganization and liquidation payoff rates to unsecured creditors are probably important determinants of the creditors' decision. To investigate whether this is the case, we estimate the impact of payoff rates on the outcome of the unsecured creditors vote whether to approve a reorganization plan. Other questions about reorganization can also be analyzed within this framework. For example, we may investigate the impact of secured creditors, the impact of legal restrictions, and the impact of bargaining between debtor and creditors.

5.1 Model specification

The dependent variable takes only the discrete values of unity (if the plan is accepted by the creditors) and zero (otherwise). Given the dichotomous nature of the dependent variable, the acceptance incidence equation is estimated by logit analysis.¹⁴ Strictly speaking, the vote represents the joint effect of many individual decisions. For tractability, we assume that creditors act as a coalition.

Following the preliminary analysis, assume that creditors compare the expected payoff rate from the reorganization plan to the expected payoff rate from liquidation and vote for the option with the higher payoff rate. Preliminary analysis also suggested that the amount of cash the firm offers as part of the plan may be an important element of the creditors' decision. Thus, the contract variables—the reorganization payoff rate, the liquidation payoff rate, and the ratio of cash payments to total payments—model the impact of the plan on the outcome of the unsecured creditors vote.

Theoretical models of bankruptcy (Bulow and Shoven, 1978; White, 1981, 1989) assume that secured creditors favor liquidation over reorganization. Furthermore, in Canada, secured creditors have the power to terminate reorganization because they are not constrained by bankruptcy law. Clearly, an important

¹⁴See Maddala (1983). Estimation is performed using Version 7.0 of SHAZAM (White, 1988).

issue facing unsecured creditors is whether secured creditors will choose to exercise their power over a firm attempting reorganization. One possibility is that firms with relatively high levels of secured debt may be more at risk from liquidation by secured creditors. To determine the influence of secured creditors on the vote by unsecured creditors, the ratio of secured claims to total liabilities is added to the logit model.

According to White (1981) insolvent firms with large numbers of ordinary creditors are much more likely to reorganize than insolvent firms with a small number of ordinary creditors. The existence of extreme values in the sample makes it problematic to implement empirically a variable capturing this effect. To mitigate the impact of extreme values we use the ratio of ordinary creditors to the total number of creditors as an explanatory variable.

Full repayment of preferred claims is mandatory for the approval of financial reorganization in Canada. The mandatory repayment of preferred claims may impose a burden on the cash-flow of reorganizing firms. In addition, federal and provincial government, or Crown, claims, which are almost always the largest component of preferred claims,¹⁵ are viewed by many bankruptcy practitioners to be a significant impediment to reorganization. To control for this effect, the ratio of Crown claims to total liabilities is added to the model.

An efficiency concern about the bankruptcy process is it allows unprofitable firms to ‘buy time’ and extend their lives at the expense of their creditors. To examine the effect of delays, the time between filing and voting is added to the list of explanatory variables. As a proxy for willingness to negotiate on the part of the debtor, we add a variable measuring the number of amendments to the plan. To control for the influence of the business cycle, the change in unemployment rate over the quarter before the date of the creditors’ vote is also added to the model. We also control for the following fixed effects: a dummy variable for corporations—to control for differences between corporate plans and those made by individuals—4 regional dummy variables (Toronto is the excluded region), 10 year dummy variables, and 4 industry dummy variables.

Owing to incomplete information, 55 so-called holding plans are deleted from the sample reducing the sample size to 283 plans for the logit analysis. Holding plans are submitted by firms requiring more time to prepare complete proposals. Because they are essentially interim documents, important data for the logit analysis—such as the distribution of claims against the firm and information about payoff rates to creditors—are frequently missing from holding plans.¹⁶

The data set is generated by firms that have chosen reorganization over liquidation, raising the possibility that estimates are subject to self-selection bias.¹⁷

¹⁵Crown claims account for the majority of preferred claims in 82 percent of the plans with preferred claims.

¹⁶In cases where the payoff rate and the proportion of cash payments are unknown they have been set to zero on the grounds that creditors assume the worst in the absence of information to the contrary.

¹⁷Of course, preceding the bankruptcy decision, there is another type of self-selection when

In principle, it is possible to correct for the selectivity bias given data on the variables that determine firms' choice between liquidation and reorganization. However, given the absence of an accepted theoretical model of the bankruptcy decision and, in any case, the likelihood that our data do not cover all the relevant variables, we do not control for self-selection bias in the estimates below.

5.2 Estimation results

Table 4 contains the results from logit estimation. The three key variables modeling the creditors decision are individually significant at the .05 level. A higher liquidation payoff rate implies a lower acceptance rate, a higher reorganization payoff rate implies a higher acceptance rate, and a higher proportion of cash payments implies a higher acceptance rate, *ceteris paribus*. These results confirm the story in Table 3. As expected, the reorganization payoff rate is important. The type of contract offered to creditors also plays a key role in reorganization, supporting the hypothesis that asymmetric information induces firms to use cash payments to signal their viability to uninformed creditors. With symmetric information, the firm's investment decision is independent of its choice of financing (Modigliani and Miller, 1958), implying that an insolvent firm is indifferent between cash and deferred payments. The cash payments result indicates that the firm's reorganization decision is not independent of its financing decision. This is consistent with Myers and Majluf (1984) where asymmetric information affects the type of financing used by firms and induces a 'pecking order' in the sources of financing such that firms resort first to internal financing, then to low-risk debt, and finally to equity.¹⁸

Plans made by firms with a relatively large amount of secured claims are significantly more likely to be accepted. This apparently contradicts the view that secured creditors hinder reorganization. According to Gilson, John, and Lang (1990), private reorganization is more likely to succeed in firms owing relatively more debt to banks because the holdout problem is mitigated. Our result also indicates that reorganization is more likely to succeed in firms with relatively more bank debt but it probably is related to the veto power that secured creditors enjoy under Canadian bankruptcy law. It is well known in common value auctions that bidders can update their valuations by observing the actions of other bidders. In the context of reorganization, unsecured creditors may watch the behavior of secured creditors when evaluating the prospects of a reorganizing firm. A decision by a secured creditor to support a plan, by not liquidating its assets in the firm, may thus be interpreted by unsecured creditors as a signal to support the plan. This effect will only be reinforced if it is known

insolvent firms choose to resolve their financial difficulties under the protection of bankruptcy law rather than trying an informal arrangement.

¹⁸See Harris and Raviv (1991) for a survey of the literature on how asymmetric information affects the financing decisions of firms.

that secured creditors have inside information about the firm.¹⁹ In fact, Fama (1985) argues that banks play an important role as transmitters of information in capital markets because of their access to private information about firms arising from ongoing business relationships. In support of Fama (1985), James (1987) finds that banks provide a service with their lending activity that is not available from other types of lenders and Lummer and McConnell (1989) find that favorable loan revisions by banks result in significantly positive excess stock returns for borrowers around the loan announcement.

Plans made by firms with a relatively large number of ordinary creditors are significantly more likely to be accepted. This result seems paradoxical since one would expect that higher numbers of ordinary creditors make agreement on a plan more difficult, everything else being equal. Below, we investigate the possibility that the signalling effect of the size of secured claims is related to the relative number of ordinary creditors.

Plans with relatively large Crown claims are less likely to be accepted, which is consistent with the view that the statutory nature of Crown claims hinders successful reorganization by raising the burden on the firm's cash flow. The effect is statistically significant at the .10 level.

The more time between filing and voting, the lower the probability that unsecured creditors vote in favor of the plan. The time spent in reorganization is costly because it disrupts the firm's normal activities. Clearly, the opportunity cost of time is higher to viable firms. Thus, delays may convey information to creditors about the firm's viability. This suggests that firms attempting to 'buy time' will be unsuccessful. Another explanation is that in some cases agreement is hard to reach, leading to delays and eventually rejection. Note, however, that the logit regression controls for the presence of bargaining through the number of amendments variable. The more amendments to the plan, the more likely the plan is accepted. Thus, firms that take a long time to reorganize and do not bargain with their creditors, as represented by the amendments variable, are much less likely to have plans accepted, which is consistent with the 'buy time' argument.

Because the unemployment rate variable has a negative and insignificant coefficient, there is weak evidence that acceptance probabilities are procyclical.²⁰ Corporate plans are not estimated to have significantly different acceptance probabilities than non-corporate plans.

To give an idea of the robustness of the results, Table 5 presents results from alternative specifications of the model. Column (1) reproduces the results from Table 4 for comparison. A likelihood ratio test to determine the

¹⁹Unsecured creditors have an incentive to vote in favour of plans with high ratios of secured claims even if there is no signalling effect because high secured claims imply low liquidation values. This effect has been taken into account as liquidation value (net of secured claims—see footnote 7) is an independent variable in the logit regression.

²⁰Replacing the national unemployment rate with regional unemployment rates produced an even less significant impact.

joint significance of the contract variables clearly rejects the hypothesis that the characteristics of the reorganization plan have no effect on the probability that the plan is accepted by creditors. The column (2) estimates replace the Crown claims variable with the ratio of preferred claims to total liabilities. The other coefficients hardly change and the coefficient on the preferred claims variable is not statistically significant. Thus, there is weak evidence that it is Crown claims and not preferred claims, of which Crown claims are a subset, that have a negative impact on the acceptance rate.

Column (3) investigates the secured claims signalling story. Small creditors have little incentive to gather information on the future viability of the firm. Thus, firms with large numbers of ordinary creditors will probably have relatively low numbers of informed creditors, implying that the signalling effect of secured claims will be that much more pronounced. To investigate this possibility, the ordinary creditor and secured claims variables are replaced by an interaction term, which is simply the product of the two variables.²¹ The higher the value of the interaction term, the greater the potential for secured claims to act as signal because it represents cases where secured claims are relatively high and ordinary creditors are a relatively large group. The coefficient on the interaction term is statistically significant at the .10 level and positive, which is consistent with the signalling story. Note also that the coefficients on the contract variables are largely unaffected by the change in specification.

Column (4) shows the estimates when the control variables for year, region, and industry are deleted from the list of explanatory variables. The pseudo- R^2 falls by almost 30 percent from the base model, indicating that a fair degree of the ‘fit’ in the model is due to the control variables. Nonetheless, the significance of the other variables in the model is not appreciably altered. In particular, joint insignificance of the contract variables is easily rejected at conventional levels of significance, echoing other results in the table.

6 Conclusion

The paper has presented a unique data set on firms undergoing financial reorganization in Canada over the period 1978–87. We have presented ample evidence in this paper showing that there is indeed negotiation between the firm and its creditors after the firm has decided to proceed with reorganization.

What do the results suggest about bankruptcy theory? First, the reorganization process is more complex than the recent model of White (1994) suggests. To be sure, the rate of return offered to unsecured creditors in a firm’s reorganization plan is an important inducement for creditors to favor the plan. But the data also indicate that the liquidation return to unsecured creditors, i.e., the opportunity cost of financial reorganization to the creditors, is also an important variable in the reorganization process. Moreover, the rate of up-front cash

²¹The product is multiplied by .01 to give the interaction term a range of zero to 100.

payments by the firm also has a significant on the process, supporting the Martel (1994) claim that signalling is an important element of the process. That the nature of the contract itself is an important factor in the reorganization process is a genuinely new empirical finding and warrants further theoretical investigation.

Second, secured creditors seem to play an additional role to that suggested in Bulow and Shoven (1978) and White (1981, 1989). In these models, secured creditors prefer liquidation over reorganization. In our data, however, we find that unsecured creditors are more likely to favor reorganization in firms which have relatively higher rates of secured debt. One interpretation is that secured creditors play a role in screening viable firms from nonviable firms. Of course, this is not necessarily inconsistent with the Bulow-Shoven-White view. It is quite possible that secured creditors have a negative effect on the number of firms choosing reorganization while strongly backing a few firms that they would like to see restructured. In other words, to completely understand the affect of secured creditors on reorganization, one would need to determine the impact of secured creditors on the number of firms choosing reorganization over liquidation.

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TABLE 1 — DESCRIPTIVE STATISTICS FOR REORGANIZATION PLANS, CANADA, 1978–87.

Variable	Mean	Median	Standard deviation	Minimum	Maximum
<i>Financial variables:^a</i>					
Total assets	2,372.1	299.6	10,955.0	0.0	122,100.0
Total liabilities	3,971.7	791.6	18,228.0	16.0	247,620.0
Secured claims	1,890.5	222.3	11,920.0	0.0	189,460.0
Ordinary claims	1,324.7	342.8	6,185.5	0.0	92,852.0
Preferred claims	96.1	17.9	337.3	0.0	4,415.2
<i>Contract variables:^b</i>					
Liquidation payoff rate	28.7	10.3	35.3	0.0	100.0
Reorganization payoff rate ^c	43.6	32.3	33.5	0.0	101.0
Proportion of payments in cash ^d	14.3	0.0	31.7	0.0	100.0
Proportion of payments by installment	82.2	100.0	35.4	0.0	100.0
Proportion of payments in equity	3.4	0.0	17.8	0.0	100.0
<i>Other variables:</i>					
Number of secured creditors	2.6	2.0	3.7	0.0	42.0
Number of ordinary creditors	80.4	41.0	173.0	0.0	2,487.0
Number of preferred creditors	13.6	2.0	55.8	0.0	827.0
Number of amendments	0.4	0.0	0.6	0.0	3.0
Number of days between filing and voting	52.5	24.0	113.6	11.0	1,682.0

Notes: The sample size is 338 plans. The acceptance rate is 76.6 percent (259 of 338).

^a Reported in thousands of December 1993 Canadian dollars, deflated by the CPI.

^b Reported in percent.

^c Based on the 284 plans for which the information is available.

^d The proportion of payments variables are based on the 279 plans for which information is available.

TABLE 2 — POSSIBLE INCIDENCE OF TYPE I AND TYPE II ERRORS
IN THE CREDITORS' DECISION.

Number of rejected plans		Incidence of Type I errors (percent)	Incidence of Type II errors (percent)
from viable firms	from nonviable firms		
0	59	0.0	36.6
2	57	1.3	37.4
8	51	5.1	40.0
16	43	9.8	44.2
37	22	20.0	60.7
59	0	28.5	100.0

TABLE 3 — PAYOFF RATES AND CASH PAYMENTS UNDER
LIQUIDATION AND REORGANIZATION.

	Accepted plans		Rejected plans
	Completed	Defaulted	
Liquidation payoff rate	24.5	30.2	38.3
Reorganization payoff rate	39.9	52.9	37.2
Proportion of payments in cash	19.0	2.5	12.1
Number of plans	129	39	52

Note: Based on 220 completed plans where the information is available. Payoff rates and proportions are reported in percent.

TABLE 4 — LOGIT ESTIMATES OF THE PROBABILITY OF ACCEPTANCE.

Explanatory variable ^a	Mean	Logit coefficient	Change in probability ^b	Asymptotic <i>t</i> -statistic ^c
<i>Contract variables:</i>				
Liquidation payoff rate	27.179	-.0161	-.27	2.46**
Reorganization payoff rate	39.452	.0154	.25	2.21**
Ratio of cash payments to total payments	12.933	.0190	.31	2.30**
<i>Plan-specific variables:</i>				
Ratio of ordinary creditors to total creditors	80.878	.0235	.39	2.04**
Ratio of secured claims to total liabilities	33.558	.0166	.27	1.96**
Ratio of Crown claims to total liabilities	4.030	-.0418	-.69	1.90*
Number of days between filing and voting	38.700	-.0102	-.17	3.34**
Number of amendments	.385	2.6522	43.77	4.25**
<i>Other variables:</i>				
Unemployment rate change over previous quarter	.009	-.9363	-15.45	1.41
Corporations ^d	64.311	.6532	8.79	1.32

Notes: The sample size is 283 plans. The acceptance rate is 79.2 percent (224 of 283). The estimated model includes a constant term and controls for year (10), industry (4), and region (4).

^a The payoff rates and all ratio variables are measured in percent.

^b Change in the percentage probability of acceptance in response to a unit change in the corresponding explanatory variable evaluated at the mean acceptance probability of 79.2 percent.

^c Absolute values of *t*-statistics are reported.

^d Mean is the percentage of plans submitted by incorporated firms.

** Statistically significant at the .05 level. * Statistically significant at the .10 level.

TABLE 5 — ALTERNATIVE LOGIT ESTIMATES OF THE PROBABILITY OF ACCEPTANCE.

Explanatory variable	(1)	(2)	(3)	(4)
<i>Contract variables:</i>				
Liquidation payoff rate	-0.0161** (0.0065)	-0.0162** (0.0065)	-0.0170** (0.0065)	-0.0164** (0.0055)
Reorganization payoff rate	0.0154** (0.0070)	0.0149** (0.0070)	0.0172** (0.0069)	0.0115* (0.0061)
Ratio of cash payments to total payments	0.0190** (0.0082)	0.0195** (0.0083)	0.0172** (0.0078)	0.0094 (0.0063)
<i>Plan-specific variables:</i>				
Ratio of ordinary creditors to total creditors	0.0235** (0.0115)	0.0242** (0.0116)	-	0.0260** (0.0099)
Ratio of secured claims to total liabilities	0.0166** (0.0085)	0.0175** (0.0085)	-	0.0168** (0.0073)
Ordinary creditors-secured claims interaction term	-	-	0.0178* (0.0107)	-
Ratio of Crown claims to total liabilities	-0.0418* (0.0220)	-	-0.0466** (0.0219)	-0.0204 (0.0193)
Ratio of preferred claims to total liabilities	-	-0.0221 (0.0184)	-	-
Number of days between filing and voting	-0.0102** (0.0030)	-0.0101** (0.0030)	-0.0105** (0.0030)	-0.0067** (0.0027)
Number of amendments	2.6522** (0.6236)	2.5904** (0.6107)	2.6999** (0.6250)	2.1965** (0.5327)
<i>Other variables:</i>				
Unemployment rate change over previous quarter	-0.9363 (0.6637)	-0.9356 (0.6614)	-0.8279 (0.6508)	-0.3396 (0.3172)
Corporations	0.6532 (0.4954)	0.6662 (0.4927)	0.7510 (0.4843)	0.2745 (0.3721)
<i>Controls (number of variables):</i>				
Year (10), Industry (4), Region (4)	yes	yes	yes	no
Likelihood ratio test for contract variables ^a	13.82 [0.00317]	14.02 [0.00288]	14.81 [0.00199]	11.93 [0.00763]
Pseudo R^2 , ^b	.26	.25	.25	.18
Log likelihood	-102.89	-104.09	-104.80	-115.99

Notes: Sample size is 283. Standard errors are reported in parentheses. All estimated equations include a constant term.

^a Likelihood ratio test for the joint significance of the contract variables. Probability values are reported in brackets.

^b Maddala (1983), eq.(2.44), p.39.

** Statistically significant at the .05 level. * Statistically significant at the .10 level.