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The Choice between Private and Formal Reorganizations

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%	Percentage
χ	Greek letter chi
EBITDA	Earnings before Interest, Taxes, Depreciation, and Amortization
e.g.	Latin exempli gratiā (“for example”)
Et al.	Latin et alia/aliae (“ and others”)
ff	Following pages
m	Million
P.	Page
U.S.	United States of America
Vol.	Volume

1. Introduction

"Capitalism without bankruptcy is like Christianity without hell." - Frank Borman

The run-up to the global financial crisis 2007-2009 was characterized by an ever more increasing use of leverage by all kind of economic entities. Naturally, an increase in leverage is accompanied by an increased potential for default and bankruptcy. These structures, in combination with the global financial meltdown and the following economic downturn, resulted in a sharp rise of financial distress and corporate bankruptcies worldwide.[1] Hence, the design of bankruptcy legislation and related out-of court procedures play an important role in the current economic environment.

Basically, a firm suffering from financial distress faces the decision whether to resolve the situation by means of an informal workout or under formal court supervision in order to avoid liquidation. In a perfect world with symmetric information, complete contracting and only one lender to a firm the efficient approach to resolving financial distress would be a private reorganization of distressed debt.[2] In reality, however, trade-offs between private and formal reorganization exist and the costs and benefits of each alternative must be weighed against each other.[3] In principle, both, creditors and debtors will prefer private reorganizations if it can be performed at lower cost as formal bankruptcy. However, the cost-efficient alternative will only be selected if all the claimholders of the firm reach a mutually accepted agreement on how to split the realized surplus.[4] Such a mutual agreement about the restructuring decision is often impeded by inefficient bargaining (e.g. creditor conflicts and asymmetric information) and institutional biases against informal bankruptcy.

This paper investigates the choice between informal and formal restructuring in the context of internationally differing legal frameworks. In a first step, the cost of bankruptcy, creditor conflicts and asymmetric information are theoretically outlined. The following main part of the paper provides a thorough analysis and comparison of the papers of Gilson et al. (1990) and Jostarndt and Sautner (2009) that empirically investigate private reorganizations in the U.S. and Germany respectively. The motivation for this approach is to firstly, gain a better understanding of the choice between informal and formal reorganizations and to secondly, gain insights about how this choice is affected by the underlying bankruptcy legislation.

[1] See Altman and Karlin (2009), P.1, who observe twice as many distressed exchanges in 2008 as in any single year in the last 25 years.
[2] See Coase (1960) who finds that creditor and debtor should generally renegotiate privately.
[3] See Hotchkiss et al. (2008), P. 15.
[4] See Jornstadt (2007), P. 78.

2. The determinants of the choice between formal and informal reorganization

2.1 The cost of formal bankruptcy versus private workout

The costs of financial distress are commonly classified as direct and indirect costs. While direct costs involve all out-of pocket costs like legal and administrative expenses, indirect costs are all the other costs associated with the restructuring process. These indirect costs are opportunity costs stemming from underinvestment, lost sales and profits, increased costs of doing business and so forth.[5] It intuitively makes sense to assume that direct costs are higher under formal reorganizations due to the above mentioned legal and administrative expenses. Various empirical studies have indeed found that direct costs are significantly higher under formal reorganizations than under private workouts.[6]

In contrast, indirect costs are not as readily observable as direct costs and are therefore more challenging to estimate. The major difficulty is to distinguish whether the company's poor economic performance stems from financial distress (indirect costs) or whether the same factors that initially triggered the financial distress are the cause. However, it can reasonably be argued that indirect costs are also higher for formal proceedings. For example, managers might be pre-occupied with the formal reorganization dealings and therefore forego profitable investments.[7] This line of reasoning finds support in the empirical finding that before filing for formal bankruptcy distressed firms often unsuccessfully attempt private restructurings. [8]

2.2 Creditor conflicts

As outlined above the relative cost of bankruptcy seems to be considerably lower for private workouts and therefore in the collective interest of all claimants. However, the existence of coordination problems between claimholders within a given class of debt and possible wealth transfers between different debt classes can cause private negotiations to break down.[9] The coordination problem arises from the fact that individual debtholders have incentives to hold-out when they expect that the required concessions ensuring the success of a private workout will be borne by other claimants. This free rider behavior is more pronounced in private workouts because the unanimous consent of all affected debtholders is required to put a reorganization plan into effect.[10] Furthermore, it seems plausible that the hold-out problem becomes more severe (and thus

[5] See Altman and Hotchkiss (2006), P. 93-94.
[6] See Altman and Hotchkiss (2006), P. 95-96 who provide a detailed overview of the cost estimated in the relevant literature.
[7] See Gilson et al. (1990), P. 319.
[8] See Jornstadt (2007), P. 79.
[9] See Brunner , Krahnen (2004), P. 4 and Jornstadt (2007), P. 81.
[10] See Brown (1989), P. 112 or Gertner and Scharfstein (1991), P. 1191.

the likelihood of a successful private workout decreases) with the number of creditors taking part in the restructuring plan. This applies in particular to public debt which is characterized by a large number of lenders and a legislation which prohibits any alterations of the features (principal, interest, maturity) of the contracts. [11] Hence, private reorganization of public debt mostly take place in the form of exchange offers, where bondholders abandon their claims in exchange for new securities, characterized by reduced interest or principals, lower seniorities or deferred payments or exchanging equity securities for debt.[12] Along similar lines, it can be argued that the more heterogeneous a firm's financial claims are, the lower are the chances of successful private debt reorganizations. This is due to the fact that, the more creditor claims differ in terms of seniority rights, term structure and other features, the more likely it is that these claims are treated differently under a proposed workout, which commonly causes deadlocks.[13]

Another reason why creditors might not be able to agree upon an informal reorganization plan are wealth transfers between different classes of debt, which occur when the reorganization plan stipulates transfers from one group of claimants to other groups. In this context, the restructuring choice is further complicated by the fact that the restructuring of financial claims might not be independent of the firm's investment decisions, with different classes of debt having different incentives as to the investment decisions. Given a highly leveraged firm, the value of senior claims decreases with risk, while the value of junior claims increases. In the extreme, this can lead to senior creditors opting for an inefficient liquidation and junior debtholders voting for an inefficient continuation.[14]

In sum, it becomes clear that numerous impediments can stand in the way of successful informal reorganizations and thus firms have to assess the costs and benefits of an informal reorganization against the formal proceedings under bankruptcy law.

2.3 Information asymmetry

Another reason why informal reorganizations might break down is the existence of information asymmetries, which can make fair bargaining between stakeholders impossible and lead to coordination failure. For example, a debtor who possesses superior information has incentives to claim that the firm's prospects are more favorable than they actually are in order to avoid liquidation

[11] See Bolton and Scharfstein (1996); In the U.S. the relevant legislation is the U.S. Trust Indenture Act of 1939, in Germany the German Debenture Law (Schuldverschreibungsgesetz) of 1899.
[12] See Jostarndt (2007), P. 81- 82.
[13] See Gilson et al. (1990), P. 322.
[14] Hotchkiss et al. (2008), P.17-18

and achieve better terms in the renegotiation process.[15] In contrast, the formal reorganization process can mitigate these misaligned incentives by means of disclosure rules.

Another major issue is, that in situations of financial distress debtholders always have incentives to withdraw their stakes in the company, even if they judge the company's prospects as viable. This "run on the debtor" is the essence of the common pool problem: Lenders maximize private welfare rather than public welfare.[16] Put differently, even though private renegotiation is in the collective interest of all debtholders, their individual welfare maximization may lead to foreclosure of their outstanding loans. Formal bankruptcy offers a solution to this dilemma by imposing an automatic stay provision and thus avoiding liquidation of the firm.[17]

3. The bankruptcy choice under internationally differing bankruptcy legislation

3.1 Non-interventionist versus interventionist setting

As illustrated by the existence of creditor conflicts and asymmetric information, the decision on how to restructure a financially distressed firm is not clear without ambiguity. An important influencing factor that has been left out in the analysis up to this point is the design of the underlying bankruptcy legislation. The probability of firms restructuring distressed debt successfully in private might be reduced by the existence of institutional biases against private workouts. Depending on the institutional framework such biases can be due to an environment of legal uncertainty in private restructurings or an imposed automatic stay, a preferential treatment of secured creditors or non-unanimity rules in decisions under formal bankruptcy proceedings.[18]

Based on the degree of intervention bankruptcy legislation can generally be classified as interventionist or non-interventionist. In a non-interventionist setting the decisions made by a company's stakeholders with regards to the restructuring procedures are ideal-typically not distorted by the influence of the regulatory framework and thus remain a matter of choice.[19] In Germany firms usually first attempt to renegotiate debt contracts privately and only if a private workout fails does the German bankruptcy code demand court interference. Hence, the legal framework can be classified as non-interventionist. In contrast, U.S. bankruptcy legislation is interventionist in the sense that legal intervention and supervision take place at a relatively early stage of the bankruptcy

[15] See Giammarino (1989), P. 41.
[16] See Chatterji and Hedges (2001) and Jackson (1986), P. 11ff. who exemplarily illustrates the common pool problem as the decision on how much fish to harvest from a pound and how it changes if more than one person has fishing rights.
[17] See Longhofer and Peters (1999), P. 1.
[18] See Jostarndt and Sautner (2009), P. 2.
[19] See Jostarndt and Sautner (2009), P. 3.

process. As will be outlined in the next section, Chapter 11 also provides incentives to file for bankruptcy voluntarily. The following analysis purses two aims. Firstly, a detailed investigation of the empirical study of Gilson et. al (1990), representing interventionist U.S. legislation, and the empirical study of Jostarndt and Sautner (2009), exemplary for the non-interventionist German setting, is undertaken to gain a better understanding of the choice between formal and informal reorganization. Secondly, contrasting the results of the two studies might provide insights on how this choice is affected by the underlying bankruptcy setting.

3.2 Interventionist setting: Gilson (1990)

3.2.1 Rules and procedures of the U.S. bankruptcy code

In U.S. bankruptcy legislation Chapter 11 governs the reorganization process for distressed and insolvent firms.[20] The main feature of Chapter 11 is that the debtor remains in possession and control rights are not transferred to the firms' creditors.[21] By means of imposing an automatic stay that prevents creditors from foreclosure, set-offs, lawsuits and the like, Chapter 11 allows a firm to uphold its operations.[22] This also requires that the firm remains liquid and can still obtain financing after entering the formal reorganization process. Chapter 11 accounts for this necessity by the debtor-in-.possession provision, that allows the firm to raise new debt, senior to all existing debt and paid ahead of all pre-bankruptcy obligations (supra priority financing).[23]

In Chapter 11 a formal reorganization plan assigns all claims to various classes, so that each class consists of claims with substantially similar features. An exchange of securities is then proposed to each class separately. In principle, such plans are guided by the absolute priority rule which requires seniority claims to be paid in full before subordinated claims receive any payment. However, deviations from absolute priority can commonly be observed. The reason for this is that senior classes have incentives to voluntarily cede part of their claims in order to gain approval for a plan from subordinated classes, which would not receive any payments under absolute priority.[24]

Chapter 11 does not require an objective test or proof of a bankruptcy trigger for a voluntary filing to be valid. After filing for bankruptcy the debtor is granted the exclusive right to propose a plan within 120 days. If creditors do not approve of the plan within another 60 days any class of claimholders can

[20] The other main bankruptcy procedure of the U.S. bankruptcy code is the liquidation provision of Chapter 7. The described Chapter 11 proceedings are the ones in place before the bankruptcy act of 2005.
[21] See Gilson (1989) who finds that in 50% of the cases previous managers stay in control.
[22] See Berkovitch and Israel (1998), P. 10.
[23] See Gertner and Scharfstein (1991), P. 1210.
[24] See Franks and Torous (1989), Eberhardt et al. (1990), Weiss (1990) who empirically show these deviations.

file their own plan for approval. If a consensus cannot be reached the court can cram down a plan if it is fair and equitable and thereby force dissenting debt classes to accept.[25]

In sum, U.S. insolvency law is very debtor friendly and therefore most responsive for preservation of equity value.[26] From a theoretical perspective, this legal framework provides incentives to enter formal reorganization voluntarily and prematurely. Such incentives are protection for the management from being ousted or protection from large uncertain liabilities.[27]

3.2.2 Sample characteristics

Gilson et al. (1990) identify 169 firms undergoing debt restructurings in the U.S. during the observation period from 1978-1987. Debt restructurings are defined as transactions in which a firm modifies the structure of its debt with one of the following consequences: (1) interest payment or principal are reduced, (2) the maturity is extended, or (3) creditors are given equity securities. The sample is about evenly divided between restructuring attempts that end in bankruptcy (89 firms) and successful informal restructurings (80 firms).[28]

Table 1: Gilson (1990) – Selected mean and median attributes for successful and unsuccessful debt restructurings[29]

	80 successful restructurings		89 unsuccessful restructurings	
Characteristics	Mean	Median	Mean	Median
Market value/replacement cost ratio	0.83	0.65	0.61	0.56
Debt ÷ total liabilities (book values)				
(i) Bank debt	0.40	0.36	0.25	0.20
(ii) Public debt	0.13	0.02	0.08	0.00
(i) Secured debt	0.14	0.00	0.12	0.00
(i) Convertible debt	0.07	0.00	0.06	0.00
Number of debt contracts outstanding	7.0	5.0	6.0	5.0
Number of total assets ($mio)	633	101	317	49
Number of shareholders (1,000s)	14	4	5	3
Number of employees (1,000s)	5	1	3	2
Total liabilities ÷ book value of assets	0.94	0.83	1.01	0.86
Long-term debt ÷ book value of assets	0.64	0.55	0.58	0.45
Prior 3-year common stock return (%)				
(i) Unadjusted	-36.40	-50.30	-48.60	-60.70
(ii) Less market return	-134.0	-142.0	-147.7	-160.4
Length of restructuring attempt (months)	15.40	11.00	8.10	3.00

Firms that successfully renegotiate their debt in private are characterized by a higher market value/replacement cost ratio and a relatively higher share of bank debt. These results corroborate

[25] See Altman (2006), P. 33-38; A consensus requires a simple majority in number and a two-thirds majority in equity for each debt class.

[26] However, after the Bankruptcy Act of 2005 Chapter 11 proceedings became less debtor-friendly. The nature of Chapter 11 has not been changed by this reform, though. See Altman (2006), P. 47 ff.

[27] See Jostarndt and Sautner (2009) P. 2.

[28] See Gilson (1990), P. 328-329.

[29] See Gilson et al. (1990), P. 335.

with the theoretical reasoning in section 2. Firms with a higher market value/replacement cost ratio are less likely to encounter hold-out problems by junior claimants and renegotiations of outstanding bank debt are easier because banks are more sophisticated and less numerous lenders and thus holdouts are further mitigated. Firms that restructure privately are considerably larger than firms conducting a formal reorganization.[30] Leverage, as measured by the ratio of total liabilities/long-term debt to the book value of assets does not differ significantly between the two groups.

Mean/median unadjusted and net-of-market stock returns of the past three years prior to restructuring are higher for firms that successfully restructure out-of court.[31] A possible explanation for this is that the relative outperformance implies a lower reduction in going concern value, which in turn means a relatively higher market value/replacement cost ratio and thus provides incentives to settle privately.[32]

The length of the restructuring process is significantly higher under Chapter 11 for both median and mean numbers. This finding gives support to the theoretical argument that direct as well as indirect costs are higher under formal proceedings.

3.2.2 Prediction of successful private renegotiation

A logit regression analysis is performed that relates the outcome of debt restructurings to the firm characteristics "market value/replacement cost ratio" and "bank-debt ratio", which serve as proxies for relative bankruptcy costs, and the "number of debt contracts outstanding", which approximates the extent of the hold problem.[33] The dependent variable equals 1 if debt is successfully restructured informally and 0 if the firm files for Chapter 11. Therefore, the higher a positive coefficient of an explanatory variable in the regression, the higher is the probability for the event to take place.[34] The results are shown in Table 2 which includes the combined regression and the univariate regression models.

The estimated coefficient on the market value/replacement cost ratio is positive and significant at the 1% level for the combined and univariate regression. This outcome is in line with the theoretical argument that incentives to settle privately exist when the going concern value is vastly higher than

[30] As measured by the number of employees and shareholders and the book value.

[31] However, only for the mean values the difference was found to be statistically significant at the 5% level.

[32] See Gilson et al. (1990), who argue that the comparison of medians is appropriate since the sample is extremely non-normal because the returns of financially distressed companies are highly likely to be drawn from the far left tail of the return distribution.

[33] A logit model is a binary response model, which means that the dependent variable can only take the value 0 or 1. See Wooldridge (2002), P. 529ff. See Appendix (Table A1) for definitions of the explanatory variables.

[34] More precisely, if an estimated explanatory variable is 0 the probability is 50%. If an explanatory variable approaches infinity the probability approaches 100% and respectively 0% for an infinite negative outcome. Also, note that the reported coefficients cannot be interpreted as marginal effects because the model is non-linear.

the replacement value and thus potential losses are relatively high. Firstly, junior claimants' expected losses are higher in such a situation and thus their willingness to settle out of court is increased. Secondly, it can be argued that for high going concern values formal reorganizations are more costly since manager diversion is higher.[35]

Table 2: Gilson (1990) – Logit regression models relating firm characteristics to outcome of debt restructurings.[36]

Explanatory variables	(1)	(2)	(3)	(4)
Intercept	-1.40***	-1.16***	-0.82***	0.21
Market value/replacement cost ratio	1.51***	1.49***	-	-
Bank-debt ratio	1.59**	-	2.20***	-
Number of debt contracts outstanding	-2.60	-		-2.91**
Sample size	112	119	159	157
Adjusted R^2	0.051	0.026	0.026	0.013

*,**, and *** denote that the parameters are statistically significant at the 10%, 5% and 1% level, respectively.

R^2 reports the percentage of the total variation of the dependent variable that can be explained by the model

The estimation coefficient on the bank debt ratio is also positive and significant at the 5% and 1% level respectively. In combination with the negative estimated coefficient on the number of outstanding debt contracts this implies that the likelihood of a successful private workout is higher if there are fewer creditors and a relatively higher portion of debt is owed to banks. This result also corroborates with the theoretical reasoning of section 2 that holdout problems are reduced by fewer creditors and relatively more debt owed to banks. As to the R^2 measure, which is below 5% percent for all models, it can be argued that this is due to the small sample size and the use of cross-sectional data as well as the omission of factors that are unsystematic or impossible to quantify.[37]

3.2.3 Evidence from stock returns

Stock returns reflect the impact of the reorganization process on firm value and thus may provide insights on the incentives that influence the choice between formal and informal reorganization. The previous section has shown that certain firm characteristics can be used to predict successful private workouts. By examining abnormal stock returns around the initial announcement of a workout attempt it is assessed whether the market uses similar information to predict the likelihood of successful private workouts.

[35] See Jensen (1989), P. 43.
[36] See Gilson et al. (1990), P. 339
[37] See Gilson et al. (1990), P. 340.

The sample is partitioned by whether or not firms ultimately succeed in informal reorganizations. If the market is able to predict this outcome, stock price reactions should differ between the two subsamples. Gilson et al. (1990) also report average abnormal stock returns upon the outcome of the restructuring attempt. Moreover, cumulative stock returns over the entire restructuring period are analyzed, which essentially allows for a comparison of costs incurred by private and formal reorganization without having to measure these costs directly.

Panel A of Table 3 shows abnormal common stock returns around the initial announcement of a workout attempt. The returns are two-day (announcement day and the preceding day) mean market model residuals of the total sample, estimated using daily returns from 250 days to 50 days before the announcement day.[38]

Table 3: Gilson (1990) - Stock price reactions associated with debt restructurings.[39]

Event window	(1) Successful workout	(2) Formal bankruptcy	t-statistic of (2) - (1)
***Panel A**: Cumulative average abnormal returns upon onset of restructuring attempt*			
[-1;0]	-0.016	-0.063***	-2.50**
***Panel B**: Cumulative average abnormal returns upon outcome of restructuring attempt*			
[-1;0]	0.007	-0.167***	-6.37***
***Panel C**: Cumulative average abnormal returns over entire restructuring interval*			
[-1;outcome]	0.414**	-0.399***	-4.17***

*,**, and *** denote that the parameters are statistically significant at the 10%, 5% and 1% level, respectively.

Gilson et al. (1990) also report separate results for a subsample of debt restructurings that begin with the announcement of default or for which the actual commencement date of negotiations with lenders is known. This sub-division is made because this subsample might contain a higher level of surprise and thus provide a better indication of the markets' ability to predict successful private reorganizations. However, the results of this surprise sample are largely in line with the results of the total sample and provide no further insights.[40]

[38] Since infrequent trading and low volume can commonly be observed for firms in financial distress abnormal returns are based on Scholes and Williams (1977) estimates of the market model parameters. Also see Graham et al. (1996) for a detailed discussion of different approaches to measuring abnormal returns.

[39] See Gilson et al. (1990), P. 343-344.

[40] See Gilson et al. (1989), P. 343-344.

Negative two-day abnormal returns for the initial announcement are -1.6 % for firms that restructure successfully in private and – 6.3 % for firms that file for bankruptcy. This difference in returns is statistically different at the 5% level. Thus, it can be argued that the market is able to identify firms in advance, which are more likely to successfully complete informal reorganizations. However, these results provide no information about the specific information used to identify these firms.

Panel B of Table 3 shows two-day abnormal stock returns upon the announcement of the outcome of the restructuring attempt. Abnormal returns are statistically insignificant for successful informal restructurings whereas they are significantly negative at the 1% level upon the announcement of a Chapter 11 filing (-16.7%).

This decrease in stock prices can be viewed as reaction to the failure to settle privately and therefore having to bear the higher costs of the formal proceedings. However, an alternative interpretation is that both the filing for bankruptcy and the stock price decrease are due to the fact that firms are simply economically unviable and might face liquidation. In conjunction with the reported returns at the initiation of the debt restructuring it can generally be argued that shareholders are better off when their firm manages to settle privately. This impression is confirmed by the evidence in Panel C of Table 3, which reports average cumulative returns from the initiation to the resolution of restructurings for successful and unsuccessful debt restructurings respectively. Average abnormal returns are 41.4% for successful restructurings and -39.9 % for unsuccessful restructurings with statistical significance at the 5% level.

In sum, the evidence from stock returns suggest that firms do significantly better when Chapter 11 is avoided. However, it could also be argued that the large negative returns are not due to the restructuring process itself but stem from a selection bias because firms that file for bankruptcy are characterized by a worse operating performance and are inherently less profitable.[41]

In a last step, Gilson et al. (1990) attempt to relate the estimated market model residuals to the explanatory variables used in the logit regression models. However, this cross sectional regression analysis yields no significant results, which suggests that the market uses more information to predict the outcome of private renegotiations than captured by these explanatory variables.

3.3 Non-interventionist setting: Jostarndt (2009)

3.3.1 Rules and procedures of the German bankruptcy code

In addition to bargaining efficiencies due to asymmetric information and creditor conflicts various institutional biases against workouts exist under German bankruptcy legislation. German bankruptcy

[41] See Gilson et al. (1990), P. 345.

legislation automatically triggers bankruptcy if a firm faces insolvency, overindebtedness or imminent insolvency.[42] If one of these triggers is in place, management is required to file for bankruptcy within a narrow time frame, or else become personally liable. This provides strong incentives to abort private renegotiations at an early stage and thus a bias towards formal bankruptcy. If bankruptcy is triggered, a court-appointed administrator acting on behalf of the firms creditors assumes control. This is in sharp contrast to Chapter 11 where a debtor-in-possession provision ensures that control remains with the debtor and managers have incentives to file for bankruptcy to protect themselves.[43] This loss of control under bankruptcy provides strong incentives for the managers of highly leveraged firms facing economic distress to restructure swiftly in order to avoid the bankruptcy trigger overindebtedness.[44]

Private workouts are further complicated by the fact that, unlike in Chapter 11, supra priority financing is notably hindered under German legislation because new creditors might become liable towards other creditors of the firm and are therefore likely to refrain from providing funds in the first place.[45] Another example for the difficulties associated with private workouts in Germany is the environment of legal uncertainty surrounding voluntary winding-ups. If a firm decides to sell certain assets in the course of a private workout, the buyer of these assets faces extreme uncertainty because the purchase contract might be challenged by the court-administrator if the workout attempt ultimately fails. Hence, third parties will probably only buy assets of the firm in formal bankruptcy.

Moreover, secured creditors are very well protected under formal bankruptcy and have strong incentives to trigger a formal bankruptcy when they expect wealth transfers to other claimants. Other institutional biases towards private reorganizations arise from the fact that the German government provides funds to pay for a firm's salaries under formal bankruptcy, an imposed automatic stay provision and restrictions on informal debt-equity swaps.[46]

This design of the German bankruptcy code indicates that the cost difference between formal and informal reorganizations is likely to be even higher than in Chapter 11. Firstly, the German banking system is dominated by house-banking relationships and informal renegotiations with these private lenders are likely to incur lower direct costs than exchange offers with bondholders. Secondly, losses

[42] See Jostarndt (2009), P. 12 for a definition of insolvency, overindebtedness and imminent insolvency.
[43] See Jostarndt (2007), P. 75-77.
[44] See Jensen (1989), P. 43 who gives support to this argument by stating that potential losses of going concern value are considerably higher for highly leveraged firms and thus incentives exist to avoid formal bankruptcy. This is in particular true for German legislation where bankruptcy filings commonly result in firm liquidation and accordingly a total loss in going concern value.
[45] See Jostarndt (2009), P. 14.
[46] See Jostarndt and Sautner (2009), P. 14-16.

from underinvestment under formal bankruptcy are likely to be higher because the court-appointed administrator often lacks firm-specific management skills.[47]

3.3.2 Sample characteristics

Jostarndt and Sautner (2009) investigate debt restructurings in Germany for a sample of 116 debt restructurings undertaken by 98 listed firms facing financial distress in the observation period from 1997-2004. The definition of a debt restructuring is consistent with Gilson et al. (1990). Restructurings are classified as a workout if bankruptcy is avoided and information about the successful completion becomes publicly available. Accordingly, restructurings are classified as formal bankruptcy when workouts fail and a firm files for bankruptcy. Out of the 116 restructurings 57 are classified as workouts and 59 are classified as formal bankruptcies.[48]

The study by and large follows the methodology adopted by Gilson et al. (1990). To identify the characteristics of debt restructurings, various firm and performance characteristics are contrasted by whether private renegotiations are ultimately successful (see Table 4).

Table 4: Jostarndt and Sautner (2009) - Selected mean and median attributes for successful and unsuccessful restructurings[49]

	57 successful workouts		59 formal bankruptcies		Difference	
	Mean	Median	Mean	Median	t-test	Wilcoxon
Firm characterisitcs						
Assets (EUR m)	724.07	149.11	304.82	56.13	-1.58	-3.29***
Age (years)	42.05	18.00	36.87	16.00	-1.35	-0.76
Performance characteristics						
Return on assets	-0.03	-0.01	-0.28	-0.07	-3.03***	-2.55**
Tobin's Q	1.00	0.79	1.22	0.78	0.66	1.15
Stock return	-0.22	-0.38	-0.49	-0.68	-2.54**	-2.78***
Volatility	0.06	0.05	0.07	0.07	3.26***	3.75***
Distress duration	2.59	3.00	3.25	3.00	2.22**	1.78*
Capital structure characteristics						
Leverage	0.72	0.79	0.52	0.54	-3.72***	-2.85***
Fraction of bank-debt	0.68	0.72	0.47	0.46	-4.07***	-3.72***
Fraction of public debt	0.14	0.00	0.08	0.00	-0.91	-0.91
Fraction of secured debt	0.41	0.27	0.56	0.74	1.98**	1.41
Fraction of tangible collateral	0.25	0.01	0.47	0.27	2.75***	1.98**
Bank-pool	0.85	1.00	0.36	0.00	-6.41***	-5.52***

*,**, and *** denote that the parameters are statistically significant at the 10%, 5% and 1% level, respectively.

Firms that succeed in private restructurings are significantly larger and experience relatively higher stock returns prior to financial distress.[50] In contrast to Gilson et al. (1990), leverage is found to be significantly higher for firms that restructure privately than for bankrupt firms.

[47] See Jostarndt (2007), P. 79.
[48] See Jostarndt and Sautner (2009), P. 18-20.
[49] See Jostarndt and Sautner (2009), P. 50. See Appendix (Table A1) for definitions of the variables.
[50] In line with the analysis conducted by Gilson et al. (1990) a comparison of medians is probably more appropriate because of the non-normality of the sample.

Whereas Tobin's Q, which can be interpreted as proxy for a firm's going concern value, does not differ significantly, the alternative proxy "distress duration" for going concern significantly differs between the two subsamples. On average, firms that restructure privately spend 2.59 years suffering from insufficient interest coverage, whereas firms which file for bankruptcy are in this state for 3.25 years. It is argued that the longer a firm is burdened with financial distress prior to defaulting, the lower is the going concern value. Also, it can be argued that the higher the fraction of debt owed to banks, the easier are informal renegotiations and thus the likelihood of success. The significantly higher volatility for formal bankruptcies disappears when controlling for other variables, which means that no causality seems to exist between the outcome of the restructuring process and return volatility.

Firms that go bankrupt have a significantly higher fraction of secured debt and tangible collateral than firms that settle in private. This intuitively makes sense, since creditors whose claims are secured have fewer incentives to reach a consensus in informal renegotiations. On average, for firms that restructure in a workout bank-pools are in place in 85% of the cases, whereas for bankrupt firms this is only given in 36% of the cases. No statistical difference was found for the fraction of public debt outstanding, which plays a minor role in the capital structure of the sample firms.

3.3.3 Prediction of successful private renegotiation

A probit regression is performed to identify the impact of various empirical proxies on the likelihood of successful private renegotiation.[51] The dependent variable equals 1 if debt is restructured in a workout and 0 if the firm files for bankruptcy. Table 5 reports the regression results of a multivariate regression model that simultaneously relates the outcome of a debt restructuring to a vector of independent variables.[52]

The two characteristics "volatility" and "age", which are meant to reflect informational asymmetries among stakeholders, have no explanatory power when it comes to predicting the likelihood of a private workout. However, this might be due to the fact that these proxies are very crude or simply not suitable to represent informational asymmetries. The estimated coefficient for the fraction of debt is positive and statistically significant at the 1% level. As suggested before, a high fraction of debt owed to banks makes negotiations easier and thus increases the likelihood of a workout.

[51] The main difference between the logit model applied by Gilson et al. (1990) and the probit model is the underlying distribution function (logistic has flatter tails). Besides, the methodology equals the one of the logit model. Qualitatively, probit and logit models give similar results.

[52] In contrast to Gilson et al. (1990) the estimated coefficients are reported as marginal effects in terms of probabilities.

Table 5: Jostarndt and Sautner (2009) – Probit regression relating firm and capital structure characteristics to outcome of restructuring. [53]

Explanatory variables	dF/dx
Log (assets)	0.013
Leverage	0.536*
Fraction of bank-debt	1.122***
Return on assets	0.078
Distress duration	-0.135***
Fraction of tangible collateral	-0.733***
Bank-pool	0.561***
Age	-0.097
Volatility	-1.598
Back-to-back restructuring	-0.272**
N	116
Adjusted-R^2	0.344
χ	32.74***

*,**, and *** denote that the parameters are statistically significant at the 10%, 5% and 1% level, respectively.
The R^2 reports the fit of the model.
The Wald statistic χ tests the hypothesis that all coefficients in the model are simultaneously equal to zero.

The coefficient "fraction of tangible collateral" is also highly statistically significant which is consistent with the hypothesis that secured debt reduces incentives to succeed in a private workout. The proxy for the going concern value of a firm "distress duration" is negative and significant at the 1% level and the estimated coefficient for leverage is significant at the 10% level. These findings are in line with the argument that for firms that are highly levered and exhibit a relatively high going concern value junior claimants have incentives to avoid hold-outs and settle privately since potential losses under bankruptcy would be high. Furthermore, it is found that firms that attempt a restructuring more than once in the sample period are less likely to succeed in a workout, as indicated by the negative coefficient of the dummy variable "back-to-back restructuring variable" with statistical significance at the 5% level.

However, the robustness of the above findings might be undermined if the coefficients in the regression models are endogenous, that is, they are mutually dependent with the outcome of the restructuring. For example, this would be the case if creditor's expectations about a firm's restructuring prospects in case of a future default were incorporated ex ante in the design of borrowing arrangements. To test for endogeneity a Durbin-Wu-Hausman test is performed, which finds no evidence that the used regressors are correlated with the error term and thus no evidence for endogeneity is found.[54]

[53] See Jostarndt and Sautner (2009), P. 51.
[54] A detailed explanation of the Durbin-Wu-Hausman and an interpretation of the results are beyond the scope of this paper. See Hausman (1978) for the methodology and Jostarndt (2009), P. 28-30 for the results of the test.

3.3.4 Evidence from stock returns

Again, the methodology applied is largely congruent with Gilson et al. (1990) and will thus not be explained in detail. However, mean market model residuals are estimated using daily returns from 230 trading days to 31 trading days before the announcement day and the analysis is not only conducted for two-day average abnormal returns, but for several event windows associated with the restructuring process. Panel A of Table 6 reports the results. For successful workouts, cumulative average abnormal returns upon the onset of the debt restructuring attempt are all negative and range from -2.3% for the 1 day interval to -11.7% for the 20 day interval. For formal bankruptcies, negative returns range from -4.5% to -40.6% for the same intervals. For the 3 day interval and the 20 day interval the difference in means is significant at the 1% level. These results give support to the argument that the market is able to identify firms in advance which are more likely to successfully complete informal reorganizations.

Panel B of Table 6 depicts cumulative average abnormal returns upon the announcement of the restructuring attempt. Firms announcing a successful completion of a workout experience positive abnormal returns ranging from 6.0% to 11.7%. In sharp contrast, firms announcing bankruptcy exhibit negative abnormal returns ranging from -25.9% to -51.5%. The difference in means between these two groups is statistically significant at the 1% level.[55]

Panel C of Table 6 reports cumulative average abnormal returns for the entire restructuring interval for successful workouts and formal bankruptcies. Firms that ultimately file for bankruptcy exhibit negative abnormal returns of -55.2% whereas firms that successfully complete a private workout realize positive abnormal returns of 14.5%. This difference in returns is statistically significant at the 1% level.[56] This outcome confirms the impression that shareholders are considerably better off if a private workout is successful.

Furthermore, cross-sectional regressions are conducted that relate the estimated market model residuals to the explanatory variables used in the probit regressions.[57] It is found, that around the onset of the restructuring attempt most of the valuation effects are already incorporated in the stock price reactions. For the entire restructuring interval and a significant negative effect of the fraction of collateral and a positive effect of leverage can be highlighted. Somewhat surprisingly no positive

[55] The explanation for this tremendous decrease in stock prices upon the outcome of the restructuring attempt is consistent with the one given in Section 3.2.3 for the study of Gilson et al. (1990).

[56] For robustness buy-and-hold abnormal returns are also calculated over the entire restructuring interval which virtually produces identical results. See Jostarndt (2009), P. 56.

[57] See Jostarndt (2009), P. 57.

effect of bank-pools and a negative effect of Tobin's Q are found.[58] Regardless of the effects of these individual variables, strong support is found for the assumption that the market is able to anticipate the benefits associated with a successful workout before it is formally accomplished. This is suggested by the positive and statistically significant coefficient of a dummy variable that equals 1 if the workout is successful.

Table 6: Jostarndt and Sautner (2009) - Stock price reactions associated with debt restructurings. [59]

Event window	(1) Successful workout	(2) Formal bankruptcy	t-statistic of (2) - (1)
***Panel A**: Cumulative average abnormal returns upon onset of restructuring attempt*			
[0]	-0.023**	-0.045*	-0.82
[-1;0]	-0.04**	-0.092***	-1.382
[-1;1]	-0.058***	-0.178***	-2.575***
[-10;10]	-0.117**	-0.406***	-3.118***
***Panel B**: Cumulative average abnormal returns upon outcome of restructuring attempt*			
[0]	0.060**	-0.259***	-7.980***
[-1;0]	0.097**	-0.298***	-8.251***
[-1;1]	0.078**	-0.402***	-9.034***
[-10;10]	0.117**	-0.515***	-7.285***
***Panel C**: Cumulative average abnormal returns over entire restructuring interval*			
[onset;outcome]	0.145	-0.552***	-4.155***

*,**, and *** denote that the parameters are statistically significant at the 10%, 5% and 1% level, respectively.

3.4 Comparison

For both studies the sample is about evenly divided between informal and formal reorganizations. This result is somewhat surprising since the numerous institutional biases against workouts that exist under German legislation pointed towards a relatively higher fraction of formal bankruptcies in Germany. However, this might be due to the fact that actual bankruptcies are overstated in the study of Gilson et al. (1990) since pre-filed bankruptcies are a common feature in the U.S.[60]

Both studies provide evidence that a higher fraction of debt owed to banks increases the chances of successful private workouts. In addition Jostarndt and Sautner (2009) find that the formation of bank

[58] It is argues that the negative impact of Tobin's Q is plausible if it is used to assess what is at risk if the restructuring fails. The statistical insignificance might be due to the fact that the existence of bank pools is only disclosed to the public ex post. See Jostarndt (2009), P. 34-35.

[59] See Jostarndt and Sautner (2009), P.55-56.

[60] In 'prepacked' bankruptcy, bankruptcy petition and reorganization plan are filed together.

pools significantly improves lender coordination and reduces hold-out problems and thus makes the success of workouts more likely.[61] In the capital market oriented U.S. system banks only play a minor role in firm financing and therefore bank pools only play a negligible role and have no impact on the restructuring outcome. Furthermore, both studies find that financially distressed firms with relatively high going concern values are likely to restructure their debt informally in order to avoid the large potential losses associated with the formal proceedings. This argument particularly applies to German legislation under which liquidation rates are considerably higher than under U.S. legislation for companies entering formal bankruptcy.[62] Because of this, potential losses in going concern are more likely under German legislation and incentives to settle out-of-court are higher. Whereas Jostarndt and Sautner (2009) find that high leverage increases the likelihood of a workout, no such relationship is found by Gilson et al. (1990). The reason for this might be that, highly leveraged firms facing economic distress need to act swiftly in order to avoid the bankruptcy trigger overindebtedness. This in turn implicates, that going concern value is likely to be relatively high and has not been eroded by a lengthy period of financial distress. Thus, all kind of stakeholders have strong incentives to overcome creditor conflicts and settle in a workout.

Jostarndt and Sautner (2009) also find that firms with higher fractions of secured debt are more likely to restructure under formal bankruptcy. It can be argued that in contrast to the debtor friendly U.S. legislation where no significant effect of secured debt was found, under German legislation stronger incentives exist for secured creditors to trigger formal bankruptcy especially since they only have to bear very little or none of the costs associated with formal bankruptcy. What is more, these incentives are supported by the fact that the court-administrator appointed under formal bankruptcy acts on behalf of the firm's creditors.

Both studies find that the stock market is able to predict whether informal reorganizations will ultimately be successful, prior to the outcome of the restructuring attempt. This insight is derived from the comparison of abnormal stock returns between firms which successfully complete private workouts and firms that ultimately fail in private renegotiations and file for bankruptcy. In both studies firms that ultimately succeed in private workouts perform significantly better. However, abnormal negative returns reported by Jostarndt and Sautner (2009) are considerably higher as the ones reported by Gilson et al. (1990). Two day negative average abnormal returns around the onset and the outcome (event windows [-1;0]) as well as the negative average abnormal returns over the

[61] This is consistent with the results of Brunner and Kahnen (2008), who provide a detailed analysis of bank pools.

[62] See Jostarndt and Sautner (2009), P. 35-36 who find that more than 84% of the firms that file for bankruptcy in Germany are eventually liquidated. In contrast to that, see Wruck (1990) who reports that 60-95% survive Chapter 11 as a going concern.

entire restructuring interval are considerably higher in Jostarndt and Sautner (2009). This implies that shareholder losses under formal bankruptcy are more pronounced under German legislation. An explanation for the lower price decreases in the U.S is that, in contrast to Germany, U.S. firms enter formal bankruptcy at an earlier stage of financial distress and have higher survival rates.

Finally, some critical remarks with regards to the comparability of the two studies should be made. One might be inclined to argue that comparability is largely limited because the two data samples observe completely different observation periods. However, this argument can be challenged because the two samples are similar in nature, in the sense that both cluster in a period of economic decline. Therefore, it can reasonably be argued that comparability of the two studies makes sense and the above outlines have an informative value.

4. Conclusion

In general, the evidence presented in this paper shows that for both legal frameworks analyzed in this paper formal bankruptcy costs considerably more than informal reorganization, as indicated by the evidence from stock returns. As hypothesized earlier, the reported negative abnormal returns indicate that the cost difference between formal and informal bankruptcy is higher under German legislation than under Chapter 11. In general, it can be argued that under both legal settings firms will always prefer a workout if creditor conflicts and information asymmetries can be overcome. Both studies find that workouts are more likely when coordination problems among lenders are less pronounced, that is a high fraction of debt is owed to banks which are highly sophisticated lenders. Also, both studies find that prior to the outcome of the restructuring process the stock market is able to predict workouts.

Furthermore, the comparison of the two studies shows that the design of the bankruptcy setting largely determines the outcome of the restructuring process. The features of the underlying bankruptcy code interact with the debt characteristics and ultimately govern the incentives that exist for each group of shareholders in the reorganization process. For example, the strong position of secured lenders under German legislation results in a higher likelihood of formal bankruptcy when relatively more debt is owed to secured lenders.

A final assessment with regards to the efficiency of the two bankruptcy systems is difficult. For instance, it is not clear without ambiguity that the high liquidation rates for firms that enter formal bankruptcy in Germany actually mean that economically viable firms are liquidated. In fact, these firms might be inherently unprofitable and are thus liquidated for good reason under formal proceedings, in which case no inefficiency compared to U.S legislation could be stated.

Appendix

Table A1: Definition of variables

Gilson et al. (1990)	
Market value/replacement cost value	Three-year average ratio of the market value of assets to their replacement value
Bank-debt ratio	Book value of debt owed to banks and insurance companies, divided by the book value of total liabilities
Number of debt contracts outstanding	Number of distinct descriptive headings under the long-term debt section of the Moody's manuals, divided by the book value of total liabilities. Quoted coefficient is divided by 1000 to facilitate reporting
Jostarndt and Sautner (2009)	
Log(Assets)	Natural logarithm of total assets of a firm
Leverage	Book value of total liabilities over market value of common equity plus book value of total liabilities (in the year prior to distress)
Fraction of bank-debt	Total bank debt over total liabilities
Tobin's Q	Total market value of equity plus book value of total debt divided by book value of total equity plus book value of total debt
Return on assets	Ebitda over total assets
Distress duration	Number of years a firm spent in financial distress until the onset of a restructuring
Fraction of secured debt	Fraction of total debt secured by tangible (e.g., mortgages or assignments over tangible assets) and intangible assets (e.g., patents or pledged equity stakes in subsidiaries)
Fraction of tangible collateral	Fraction of total debt secured by mortgages or assignments over tangible assets (e.g., plants, real estate, machines, equipment)
Bank-pool	Dummy variable that equals one if the firm borrows from a pool of concerted lenders, and zero otherwise
Age	Dummy variable that takes the value one if a firm is older than the median firm, and zero otherwise
Volatility	Standard deviation of a firm's stock return during the 250 days preceding the onset of the restructuring
Back-to-back restructuring	Dummy variable that takes the value one if a firm pursues a restructuring more than once within the sample period, and zero if the attempt is the first of its kind within the sampling period

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