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# The subordination of shareholder loans in bankruptcy

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## Abstract

Bankruptcy and corporate laws in several countries allow or require courts to subordinate loans by shareholders to corporations. Examples include the German *Eigenkapitalersatzrecht* and the equitable subordination and recharacterization doctrines in the US. I use a model to show the incentive effects of subordination when a controlling shareholder attempts to rescue a closely held corporation by extending a loan. Even though subordination has some beneficial effects, it deters some desirable rescue attempts and is an insufficient deterrent for some undesirable ones. Legal reform should thus focus on narrowing down the scope of application to undesirable shareholder loans, where more severe penalties than subordination should apply.

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*Keywords:* Close corporations; Bankruptcy; Subordination; Recharacterization; Equity substitution; Capital structure

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## 1. Introduction

In closely held corporations, the owners of a significant amount of shares (who may be managers at the same time) sometimes try to avert an impending bankruptcy by informally extending a loan, in the hope of financing a successful rescue attempt. However, for creditors,

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the continued operations of the company may result in a dissipation of even more liquidation value due to perpetuated and increased risk. Courts are therefore sometimes inclined to penalize shareholders by subordinating such loans in bankruptcy, or by treating them as equity. This paper analyzes the effects of the subordination of such loans on social welfare by using a formal economic model. Even though its motivation comes mainly from the German and Austrian discussion on the doctrine of equity substitution (*Eigenkapitalersatzrecht*), subordination is an issue also in the law several other countries, including the US, which face similar or the same policy issues.

The paper proceeds as follows: After a brief comparative overview on the law in Section 2, and a summary of previous literature in Section 3, I set up a simple model in Section 4 in order to explore the underlying incentive structure and its effects on desirable and undesirable rescue attempts under the circumstances described above. Section 5 interprets the results of the model and discusses ex ante effects on interest rates. Section 6 discusses the effects of particular risk preferences. In Section 7, I try to identify criteria for the limits of subordination and find that an alternative approach may be preferable. Section 8 concludes.

## 2. Comparative overview

In German and Austrian legal literature, there is an extensive discussion on the so-called “law of equity substitution”, which is considered an important building block of creditor protection in corporations. The development of this doctrine in Germany began in the late 1930s in a number of decisions by the then *Reichsgericht* (“imperial court”) concerning both stock corporations (*Aktiengesellschaften*) and private limited companies (*Gesellschaften mit beschränkter Haftung*)<sup>1</sup> and was continued after World War II by the *Bundesgerichtshof* (BGH; Supreme Federal Court)<sup>2</sup>, which developed the doctrine over the decades. In 1980, the doctrine, as far as it applied to limited liability companies (*GmbH*), was codified by statute.<sup>3</sup> However, the courts continued to apply the principles developed by the Supreme Federal Court parallel to the statutory rules.<sup>4</sup> A long line of case law and academic legal literature has developed since then. The Slovenian corporate law of 1993 largely copied the German provisions.<sup>5</sup> The Austrian Supreme Court (*Oberster Gerichtshof*; OGH) followed the German case law in 1991.<sup>6</sup> Only in 2003, the Austrian parliament passed an act,<sup>7</sup>

<sup>1</sup> RG 16.11.1937, JW 1938, p. 862; RG 3.12.1938, JW 1939, p. 355; RG 22.10.1938, RGZ 158, p. 302; RG 13.1.1941, RGZ 166, p. 51. Even before the cases, legal scholars and some legislative drafts had already considered the issue. For a historical overview, see Koppenteiner (1998): pp. 308–309, Schummer (1998): pp. 7 et seq.

<sup>2</sup> The earliest case is the “Lufttaxi” decision, BGH 14.12.1959, II ZR 187/57, BGHZ 31, p. 258.

<sup>3</sup> Gesetz zur Änderungen des Gesetzes betreffend die Gesellschaften mit beschränkter Haftung und anderer handelsrechtlicher Vorschriften vom 4.7. 1980, BGBl. I, pp. 836 et seq. (introducing provisions §§ 32a, 32b GmbHG).

<sup>4</sup> Most importantly, see the “Nutzfahrzeug” opinion, BGH 26.3.1984, II ZR 14/84, BGHZ 90, p. 370. cf. Koppenteiner (1998): p. 309, Hommelhoff (2002b): comment 1.2.

<sup>5</sup> Zakon o gospodarskih družbah, §§ 433, 434. See Bruckmüller (2004).

<sup>6</sup> OGH 8.5.1991, 8 Ob 9/91, SZ 64/53.

<sup>7</sup> Bundesgesetz über Eigenkapital ersetzende Gesellschafterleistungen (Eigenkapitalersatz-Gesetz–EKEG), Art. I Gesellschafts- und Insolvenzrechtsänderungsgesetz 2003–GIRÄG 2003, BGBl I 2003/92.

intending to clarify uncertainties in case law by regulating more precisely under which circumstances the doctrine should apply.

The crucial consequence of “equity substitution law” is the requalification of shareholder loans as equity. If a corporation is not deemed “creditworthy”<sup>8</sup> or considered to have been in a “crisis”<sup>9</sup> at the time when the loan is taken out, the loan may not be repaid until stated capital is fully paid up.<sup>10</sup> In insolvency, such loans are subordinated to other debt.<sup>11</sup> Thus, the shareholder giving the loan is not normally entitled to receive a quota in liquidation. Normally, subordination presupposes that the shareholder holds a significant amount of stock, namely 10% or 25% respectively under the German<sup>12</sup> and Austrian<sup>13</sup> statutes, unless he is also a manager of the company. Under German law, a loan is considered to be “substituting equity” when the company is not creditworthy, i.e. a third party would not give a loan such as the one actually given in an arm’s length transaction.<sup>14</sup>

The doctrinal basis for the subordination given by courts and legal scholars usually is a “responsibility for consequences of financing decisions” (*Finanzierungsfolgenverantwortung*)<sup>15</sup> forcing a person holding a significant proportion of the company – if she decides to allow the company to continue operations by granting a loan – also to take the ensuing risk on herself, which otherwise would be borne largely by creditors. In recent years, some criticism by legal academics has emerged,<sup>16</sup> some of whom have argued against the doctrinal basis, which was purely a construct of case law and academic discussion, but originally lacked a clear statutory basis and a sound policy rationale.<sup>17</sup> It is sometimes suggested that the doctrine prevents desirable rescue attempts.<sup>18</sup> This argument prevailed in Switzerland, where shareholder loans were also occasionally found to substitute equity and thus subordinated in bankruptcy by courts.<sup>19</sup> However, the plan to codify the

<sup>8</sup> cf. Hommelhoff (2002b): comment 1.8.

<sup>9</sup> The latter term is used by § 32a Abs 1 (German) GmbHG and § 2 (Austrian) EKEG.

<sup>10</sup> See Hommelhoff (2002b): comment 1.9. § 14 (Austrian) EKEG mandates a stay as long as the company has not been reorganized or is insolvent or overindebted.

<sup>11</sup> § 32a Abs. 1 (German) GmbHG.

<sup>12</sup> § 32a Abs. 3 Satz 2 GmbHG. Also cf. Lutter and Hommelhoff (2004), § 32a/b, comment 66, footnote 3 (pointing out that this threshold mandated by statute only in 1998 is also applicable to loans subordinated under the “BGH rules”).

<sup>13</sup> § 5 Abs. 1 EKEG. Even when the threshold is not surpassed, a dominating or controlling influence of the shareholder on the company can also result in requalification.

<sup>14</sup> cf., e.g. Lutter and Hommelhoff (2004), §§ 32a/b, comments 18 et seq. Logically, even a company where the chance of repayment of the loan is very small should be able to obtain credit on the market, but only with an appropriately adjusted interest rate. The creditworthiness criterion should thus logically be understood to mean that the firm would not have received the particular loan at the stipulated interest rate by a third party. Austrian § 2 EKEG has replaced this requirement with the concept of “crisis”, which depends on specific financial ratios set out by statute. *Infra*, Section 6.

<sup>15</sup> See, e.g. Hommelhoff (2002a): comments 2.21 et seq.

<sup>16</sup> cf. Claussen (2003): p. 494 (finding that legal scholars have become more critical towards the doctrine compared to the 70s and 80s).

<sup>17</sup> Koppensteiner (1998): p. 316 (summary), Schummer (1998), Schummer (2000): p. 246 (2000), also see Claussen (1992): p. 154, Claussen (1994): p. 9, Claussen (1996): p. 321, Grunewald (1996): p. 7.

<sup>18</sup> Claussen (1992): pp. 144 et seq., Claussen (1996): p. 320.

<sup>19</sup> Obergericht Zürich, II. Zivilkammer, 19.1.1993, *Schweizerische Zeitschrift für Wirtschaftsrecht*, 65, p. 299 (1993).

doctrine<sup>20</sup> was abandoned, most of all because of the argument that the doctrine prevents desirable rescues.<sup>21</sup>

The Italian approach is different from the German one, but the result is similar. On the basis of a 1980 decision by the *Corte di Cassazione*, where funds provided by shareholders were recognized in the accounts as funds put aside for a future increase in capital, a presumption was created that shareholders had the intention to treat the funds as equity.<sup>22</sup> Lower courts thus sometimes “requalified” debt finance provided by shareholders depending on its perceived functional character.<sup>23</sup> Since the corporate law reform of 2003, there is an explicit provision applicable to *società a responsabilità limitata* and *società per azioni* (the latter only when belonging to a corporate group).<sup>24</sup> It states that financial means provided by shareholders, in whatever form, can be subordinated to those given by third-party creditors and have to be returned to the company if they were repaid to shareholders within a year before the company declared bankruptcy. This applies only to finance provided to the company at a time when (also considering the type of the company’s activity) it would “result in an excessive disequilibrium with respect to the company’s net worth”, or when it would have been “reasonable to add more equity.”

US bankruptcy law also shows a parallel in one aspect of the *equitable subordination* doctrine, which was originally developed by courts<sup>25</sup> and implemented in the Bankruptcy Code of 1978.<sup>26</sup> Loans may be subordinated to third-party claims, among other things, when they are held by persons controlling an insolvent corporation, or more generally insiders.<sup>27</sup> While in some important cases, outright fraud provided a clear case for subordination,<sup>28</sup> one of the issues discussed in the case law is undercapitalization, which is inter alia assumed when, “at the time when the advances were made, the bankrupt could not have borrowed a similar amount of money from an informed outside source.”<sup>29</sup> The basis of equitable subordination cases is sometimes the fact that only nominal equity, which in view of size and operations of the business clearly does not suffice, was supplemented by debt provided

<sup>20</sup> Böckli et al. (1999): p. 24; but see the critical assessment of Trindade (2000).

<sup>21</sup> Botschaft zur Revision des Obligationenrechts (GmbH-Recht sowie Anpassungen im Aktien-, Genossenschafts-, Handelsregister- und Firmenrecht), BBl. 2001, pp. 3148, 3158.

<sup>22</sup> Cass., 3 dec. 1980, n. 6315, *Giurisprudenza Commerciale* II 8, p. 895 (1981).

<sup>23</sup> For overviews, see Parrella (2000): pp. 17 et seq.; Tantini (2004): pp. 795 et seq.; see Trib. Milano, 5 dec. 1988, *Rivista del diritto commerciale*, 88, II, p. 75 (1990); Trib. Treviso, 18 dec. 2001, *Banco, Borsa, Titoli di Credito*, 55, II, p. 723 (2002); Trib. Milano, 28 giugno 2001, *Banco, Borsa, Titoli di Credito*, 55, II, p. 723 (2002); also cf. Cass. 19 marzo 1996, n. 2314, *Società*, p. 1267 (1996).

<sup>24</sup> C. c. art. 2467, 2497 quinquies, introduced by the law of January 17, 2003, *Gazz. Uff.* n 17, *Supplemento Ordinario*.

<sup>25</sup> *Taylor v. Standard Gas and Electric Co. (Deep Rock)*, 306 U.S. 307 (1939); *Pepper v. Litton*, 308 U.S. 295 (1939).

<sup>26</sup> 11 U.S.C. § 510(c).

<sup>27</sup> cf. Clark (1986): pp. 52 et seq.

<sup>28</sup> See *Taylor v. Standard Gas and Electric Co. (Deep Rock)*, 306 U.S. 307 (1939). The fact pattern is described by Clark (1986): p. 54. Some of the acts considered fraudulent by the court here would probably be classified as concealed distributions (*verdeckte Gewinnausschüttungen*) to shareholders under German or Austrian corporate law.

<sup>29</sup> *In re Mobile Steel Corp.*, 563 F.2d 692, 703 (5th Cir. 1977).

by shareholders.<sup>30</sup> However, equitable subordination in the US usually requires an element of specific inequitable conduct going beyond mere undercapitalization,<sup>31</sup> which need not be necessarily related to the claim brought forward.<sup>32</sup>

A related, more recent development of US courts is the *recharacterization* doctrine, under which some bankruptcy courts have decided to treat debt owed to shareholders as equity.<sup>33</sup> In contrast to equitable subordination, recharacterization does not require inequitable conduct on behalf of the creditor,<sup>34</sup> but uses an eleven-factor test.<sup>35</sup> Those factors, which include the inadequacy of capitalization and the corporation's ability to obtain financing from outside lenders, are used to determine whether a debt instrument should be treated as such or should rather be considered a capital contribution.

As in the German discussion, US courts have grappled with the problem raised by subordination or recharacterization that the parties most interested in the company's continued existence should not be unnecessarily precluded from attempting to save it.<sup>36</sup> Policymakers in the countries discussed here and elsewhere<sup>37</sup> are facing a tradeoff between creditor protection and the desirability of potentially successful rescue attempts in firms on a trajectory towards insolvency.

### 3. Previous literature

In view of the extensive legal discussion on the equity substitution doctrine in German-speaking countries and its importance in practice<sup>38</sup>, economically oriented studies of shareholder debt are surprisingly rare.<sup>39</sup> While some recent legal writing has discussed

<sup>30</sup> *Pepper v. Litton*, 308 U.S. 295, 309 et seq. (1939) (where, however, commingling of assets also appears to have been a factor); cf. *Herzog and Zweibel* (1961): pp. 93 et seq. (arguing that the issue in such cases often is whether a contribution should be functionally classified as equity or debt).

<sup>31</sup> See, e.g. *In re Lifschultz Fast Freight*, 132 F.3d 339, 345 (7th Cir. 1997); *Sender v. Bronze Group, Ltd.* 380 F.3d. 1292, 1302 (10th Cir. 2004); cf. *In re Fabricators*, 926 F.2d 1458, 1469 (5th Cir. 1991) (dicta). cf. *Clark* (1986): p. 67 (noting that "inadequate capitalization by itself has rarely been a sufficient condition to lead to subordination of the controlling creditor's claim").

<sup>32</sup> *In re Kansas City Journal-Post Co.*, 144 F.2d. 791, 804 (8th Cir. 1944).

<sup>33</sup> E.g. *In re Cold Harbor*, 204 B.R. 904 (Bankr. E.D. Va. 1997); *In re Fett Roofing & Sheet Metal Co., Inc.*, 438 F.Supp. 726 (E.D.Va.1977).

<sup>34</sup> An overview and analysis is provided by *Skeel and Krause-Vilmar* (2006).

<sup>35</sup> *In re Autostyle Plastics, Inc.*, 269 F.3d 726 (6th Cir. 2001). The factors are (1) the names given to the instruments, (2) the presence or absence of a fixed maturity date and schedule of payments, (3) the presence or absence of a fixed interest rate and interest payments, (4) the source of repayments, (5) the adequacy or inadequacy of capitalization, (6) the identity of interest between the creditor and stockholder, (7) the security of the advances, (8) the corporation's ability to obtain outside financing, (9) the extent to which advances were subordinated to claims of outside creditors, (10) the extent to which advances were used to acquire capital assets, and (11) the presence or absence of a sinking fund to provide repayment. A newer case, *In re Outbound Marine Corp.*, 2003 WL 216973571 (N.D. Ill. 2003), has added (12) the ratio of shareholder loans to capital, and (13) the amount or degree of shareholder control.

<sup>36</sup> *In re Mobile Steel Corp.*, 563 F.2d 692, 701 (5th Cir. 1977).

<sup>37</sup> Cf. *Parrella* (2000): pp. 35 et seq. (finding cases of subordination in bankruptcy in Portugal and Belgium, but not in Greece, Spain and France).

<sup>38</sup> Cf. *Claussen* (1996): p. 317 (describing a massive increase in the number of cases since 1985).

<sup>39</sup> Cf. *Claussen* (1992): p. 148 (criticizing that the finance literature does not discuss the issue).

economic rationales and problems of subordination,<sup>40</sup> a number of papers analyze the effects of the doctrine mostly on the basis of numerical examples.<sup>41</sup> The probably most interesting contribution so far is the one by Drukarczyk (1995), who uses a model to show potential shifts in risk from shareholders to creditors. He argues that lawyers and judges have overlooked the possibility that creditors may sometimes benefit from attempts to save companies from insolvency by means of shareholder loans.<sup>42</sup> The equity substitution doctrine makes a higher probability of success necessary to avoid the destruction of incentives to pursue them. The dampening effect on shareholders' incentives to initiate rescue attempts leads him to the conclusion that the doctrine is excessive.<sup>43</sup>

The US equitable subordination doctrine seems to have been mostly neglected in the English-language law and economics literature. The apparently only paper discussing it addresses an aspect of the doctrine outside the scope of this paper, namely the liability risk of a large creditor taking factual control.<sup>44</sup> By contrast, there is quite an extensive literature on the related issue of secured debt, which, on one hand, in some situations allows efficient projects to go forward that otherwise would not receive finance, but also enables transfers of value from original unsecured creditors to a coalition of shareholders and new, secured creditors.<sup>45</sup> While there is no consensus in the literature whether the priority of secured debt is beneficial, it is interesting to note that, while secured debt is generally permitted,<sup>46</sup> courts in several jurisdictions assert<sup>47</sup> that shareholder loans should be deterred, even though the possible benefits and risks are quite similar.

Assuming that subordination is beneficial, one could make a case for why it should be mandatory law.<sup>48</sup> However, what is missing in the literature is a formal analysis of how, why and when subordination of shareholder loans creates a desirable incentive structure and when it fails to do so. The existing literature hardly allows general conclusions on efficiency effects. Furthermore, some of the German literature seems to be focused rather on creditor protection and liquidation quotas than on the maximization of total social welfare, which is normally the objective of economic analysis.<sup>49</sup> Creditor protection cannot be an absolute imperative, but has to be weighed against other interests and possible disadvantages. For

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<sup>40</sup> Kalss and Eckert (2004): pp. 232 et seq. (discussing mostly shareholder opportunism to the detriment of creditors); Engert (2004) (generally finding that, while the law does not offer optimal incentives, it has moved to a more economically sound structure in recent years).

<sup>41</sup> Klaus (1994b), Klaus (1994a), Fischer (1996), Götz (2001).

<sup>42</sup> Drukarczyk (1995): pp. 193, 199.

<sup>43</sup> Drukarczyk (1995): p. 201 (“überzogene Rechtsregel”).

<sup>44</sup> Berlin and Mester (2001).

<sup>45</sup> See, e.g. White (1980), Stulz and Johnson (1985), Harris and Mooney (1994), LoPucki (1994), Bebchuk and Fried (1996): pp. 917 et seq., Schwarcz (1997).

<sup>46</sup> This may not necessarily be the case when shareholder loans are securitized, where shareholders both gain on the upside, while at the same time not sharing the risks of creditors on the downside. See Engert (2004): pp. 830–831.

<sup>47</sup> In all jurisdictions described in Section 2 except Slovenia, the respective subordination doctrine originally developed in case law.

<sup>48</sup> An important argument would probably be that firms are unable to legally commit to enter into subordination agreements with future creditors.

<sup>49</sup> On the Kaldor-Hicks criterion, see e.g. Posner (2003): p. 13. For a broader discussion of the aims of welfare economics see Kaplow and Shavell (2001): p. 985.

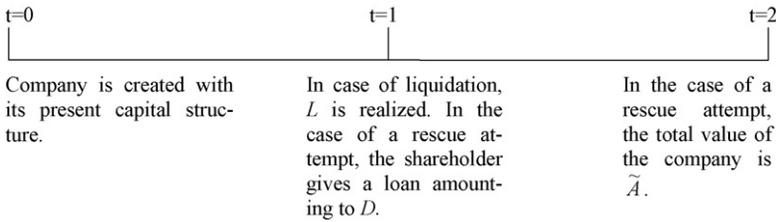


Fig. 1. Timeline of the model.

example, it is conceivable that there are cases where the incentives created by subordination may prevent rescue attempts which would, from an ex ante perspective, maximize the “total pie” to be distributed between all corporate constituencies.

#### 4. The model

##### 4.1. Intuition and structure

Assume a company having one shareholder and one creditor; the original equity and debt were paid into the company in period  $t=0$ , when the existing capital structure was put into place. The amounts of their respective contributions are not discussed here for the moment.<sup>50</sup> The company is to repay an amount of  $P$  to the creditor.

At time  $t=1$ , the company enters into an unforeseen crisis, so that bankruptcy has become nearly inevitable. The shareholder, who is in control of the company, has to decide whether to grant a loan to it. The amount required for the last-minute rescue attempt is  $D$ . Hence, the shareholder can either decide to liquidate or to give the loan and attempt the rescue of the firm.

In case of liquidation, the firm is sold piecemeal yielding proceeds of  $L$ , which are used to cover debt, while the shareholder receives the remainder (if there is any). The extension of a loan can be seen as an investment by the shareholder, which he will only make if where his personal exceed his cost, i.e. the expected value he receives after the rescue attempt (considering the possibilities of success and failure) needs to be greater than the shareholder loan.

If the shareholder gives the loan and the corporation thus continues its operations, an amount of  $\tilde{A}$  will ultimately be realized in period  $t=2$ .  $\tilde{A}$  is a random variable, the value of which is unknown at time  $t=1$ , as it is only realized later. It can take all possible the company’s total assets can take after the rescue attempt. The variable is meant to represent the expected value of the company and to include all future contingencies, including payments from liquidation realized at a later stage, each weighted by their probabilities.

Fig. 1 shows the chronological structure.

<sup>50</sup> Infra Section 5.3.

For simplicity, interest and discount rates are assumed to be zero. Both parties are assumed to be risk neutral.<sup>51</sup> The model in the following sections discusses the incentive effects of subordinating shareholder loans in bankruptcy under the assumption that the doctrine, if it exists, is applicable to the loan  $D$ . Possible criteria to delineate the doctrine's sphere of application will be discussed in Section 6. If there is no subordination, loan  $D$  shares the liquidation proceeds with the remaining debt on a *pari passu* level; neither the shareholder loan nor any of the other debt is protected by a collateral, nor are there any covenants protecting any of the creditors.

As the model will show, the shareholder's private incentives are sometimes at odds with the social optimum, as he does not internalize all social costs and benefits. In order to discuss the desirability of subordination, one needs to analyze the degree of alignment between private and social objectives.

#### 4.2. The desirable outcome and actual incentives

If a benevolent social planner aiming at the maximization of the firm's "total pie" decided whether the shareholder should give the loan to attempt a rescue, he would only do so if the total expected value minus the investment  $D$  exceeds liquidation value  $L$ . Thus, the socially optimal decision in period  $t = 1$  would be that a rescue attempt should only be initiated if

$$E(\tilde{A}) - D > L \quad (1)$$

In reality, the shareholder is in control, and will maximize his own stake when deciding on whether to attempt a rescue. In case of liquidation, he will receive the liquidation value  $L$  minus the amount of debt  $P$ . His minimum outcome is zero, i.e. it is assumed that he is not required to put in more funds following bankruptcy, i.e. there is no veil piercing. In the case of a rescue attempt he receives the actually realized value of total assets  $A$  minus the amount of debt  $P$ . Naturally, the shareholder loan  $D$  he has to give will affect his incentives. If, following a failed rescue attempt, the company will be unable to cover debt, his payoff depends on whether his loan is subordinated. If it is not, he receives an insolvency quota of  $(D/(P+D))A$ , i.e. he will receive this amount if it is smaller than  $A-P$ . If a subordination doctrine applies, the shareholder's claim to any quota will be rejected in bankruptcy. In that case, he will receive  $A-P$  in a successful attempt and 0 in an unsuccessful one.

Thus, if no subordination is to be expected at  $t = 1$ , the shareholder will give the loan and initiate the rescue attempt if:

$$E \left[ \text{Max} \left( \tilde{A} - P, \frac{D}{P+D} \tilde{A} \right) \right] - D > \text{Max}(L - P, 0) \quad (2)$$

The expected value of his shareholder's payoff needs to exceed his liquidation payoff.

By contrast, if subordination applies, he will receive no quota for the loan, and thus attempt the rescue only if

$$E[\text{Max}(\tilde{A} - P, 0)] - D > \text{Max}(L - P, 0) \quad (3)$$

<sup>51</sup> This assumption and its consequences are discussed in Section 6.

The efficiency effects of subordination will be addressed in view of these incentives. As a matter of theory, there are two large groups of cases, which will be discussed in the following two subsections, namely those where the liquidation value still covers debt when the rescue decision is made ( $L > P$ ), and those cases where it does not ( $L < P$ ).<sup>52</sup>

With respect to the effects of subordination, two issues are of primary interest, namely

- (1) whether subordination prevents undesirable rescue attempts; and
- (2) whether it prevents socially desirable attempts.

From the perspective of time  $t = 1$ , it is clear that subordination will only prevent rescue attempts and does not enable any, the reason being that the controlling shareholder has a lower payoff, all other things being equal. Primarily, subordination is supposed to destroy the incentives leading to “Type I errors”, where inefficient firms continue to operate. In the following section it will be shown that subordination will prevent some of those, but not all. Furthermore, it will be seen that subordination may sometimes result in “Type II errors”, where efficient firms are liquidated, which would otherwise not occur.<sup>53</sup>

#### 4.3. *Company is not overindebted*

First, I analyze the situation where  $L > P$ , i.e. the proceeds from an immediate liquidation would be enough to cover original debt completely when the shareholder loan is given. Given that liquidation quotas in insolvency are typically very low, this is probably the empirically less relevant case.

It follows from (2) that, if shareholder loans are not subordinated, the shareholder will initiate a rescue attempt only if

$$L - P < E \left[ \text{Max} \left( \tilde{A} - P, \frac{D}{P + D} \tilde{A} \right) \right] - D$$

By adding  $D$  and  $P$  on both sides we get

$$L + D < E \left[ \text{Max} \left( \tilde{A}, P + \frac{D}{P + D} \tilde{A} \right) \right] \quad (4)$$

Following from (3), subordination will prevent a rescue attempt where

$$L - P > E[\text{Max}(\tilde{A} - P, 0)] - D$$

which can be rewritten as

$$L + D > E[\text{Max}(\tilde{A}, P)] \quad (5)$$

Following from (1), a rescue attempt is efficient if

$$E(\tilde{A}) > L + D \quad (6)$$

<sup>52</sup> The distinction between these two cases is made merely for analytical purposes and is not meant to correspond to any particular legal definition of overindebtedness [such as that of § 19 (German) *Insolvenzordnung*].

<sup>53</sup> I adopt this terminology from White (1994).

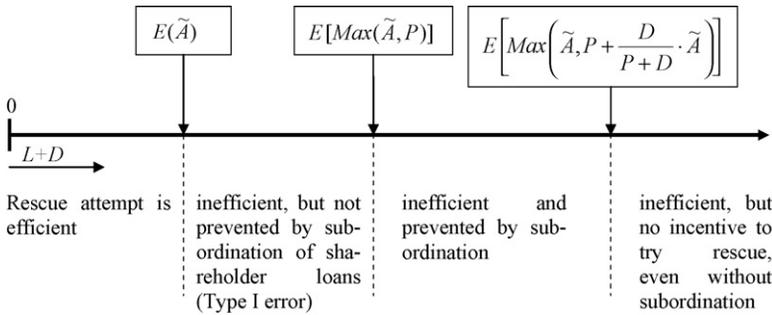


Fig. 2. Possible incentive effects when company is not overindebted.

Both (5) and (6) would have to be true for subordination to deter desirable rescue attempts. However, it is obvious that  $E[\text{Max}(\tilde{A}, P)]$  must always be larger or as large as  $E(\tilde{A})$  (both values can at most be equal, namely where  $P$  is smaller than the lowest possible realization of  $\tilde{A}$ ). This means that

$$L + D < E(\tilde{A}) \leq E[\text{Max}(\tilde{A}, P)] \tag{7}$$

which contradicts (5). It follows that subordination will not create a disincentive against efficient rescue attempts where a loan is given when liquidation value still covers debt.

Conversely, one needs to ask whether subordination can also prevent undesirable rescue attempts. Following from (1), a rescue attempt is inefficient where

$$E(\tilde{A}) < L + D$$

applies. Other than in the previous case, this condition contradicts neither of the incentive conditions (4) and (5). Since  $E(\tilde{A})$  is smaller than  $E[\text{Max}(\tilde{A}, P)]$ , it follows from (4) and (5) that

$$E(\tilde{A}) < E[\text{Max}(\tilde{A}, P)] < L + D < E \left[ \text{Max} \left( \tilde{A}, P + \frac{D}{P + D} \tilde{A} \right) \right]$$

This shows that subordination of shareholder loans raises the threshold above which the shareholder has an incentive to initiate inefficient rescue attempts. Such attempts are prevented when  $L + D$  lies between  $E[\text{Max}(\tilde{A}, P)]$  and  $E[\text{Max}[\tilde{A}, P + (D/(P + D))\tilde{A}]]$  (see Fig. 2). If  $L + D$  is larger, shareholders would not have an incentive to try the rescue even without subordination (which would also be inefficient). If  $L + D$  is between  $E(\tilde{A})$  and  $E[\text{Max}(\tilde{A}, P)]$ , the rescue attempt is inefficient, but it will still take place. It is only efficient where  $L + D$  is smaller than  $E(\tilde{A})$ .

Subordination will thus reduce the number of inefficient rescue attempts by reducing the shareholder’s incentives. As a provisional result, it can be stated that in this group of cases, subordination of shareholder loans has only positive consequences, since at least some inefficient rescue attempts will be prevented, while there are no negative consequences. However, some undesirable rescue attempts (Type I errors) will still occur.<sup>54</sup>

<sup>54</sup> This results rests on assumptions of the model which is discussed in Section 5.1. The analysis also may need to be qualified if the interest of other stakeholders are to be taken into consideration, which is addressed in Section 6.

Table 1  
Maximum costs and benefits when the firm is not overindebted

	Shareholder	Social	Not internalized
Benefits	$\bar{A} - L$	$\bar{A} - L$	0
Investment Costs	$(D)$	$(D)$	0
Costs from liquidation value	$(L - P)$	$(L)$	$(P)$
Possible cost savings (liquidation quota) without subordination	$\frac{D}{P+D}A$	0	$\left(\frac{D}{P+D}A\right)$

Intuitively, this result is not surprising: The creditor would receive full value in an immediate liquidation, whereas the rescue attempt increases his risk. Since he has a fixed claim, he can only lose from risk enhancement in bad states of the world, but he cannot win in good states, since all social benefits are captured by the shareholder.

To explain the results more intuitively, consider Table 1, where the actual maximum individual costs and benefits (to shareholders) and maximum social costs and benefits from rescue attempts are shown, where  $\bar{A}$  is the maximum value  $\tilde{A}$  can reach.

As can be seen, there is no difference between individual and social gains on the benefits side. Starting from a liquidation value of  $L$ , a maximum benefit of  $\bar{A} - L$  can be obtained, all of which is captured by the shareholder. However, on the cost side, while the basic investment costs  $D$  are borne by the shareholder, the maximum capital loss he can incur is the difference between assets and debt before he starts the rescue attempt  $(L - P)$ , while socially, all of  $L$  is at risk. Thus, social costs of up to  $P$  are not internalized. (The actual difference, of course, depends on the distribution of the possible outcomes of  $\tilde{A}$  and their weighted probabilities.)

Furthermore, subordination takes away a burden of up to  $[D/(P + D)]A$  from the shareholder, which is only a shift of wealth from the creditor to her.

Thus, if there is no subordination, the amount of social cost the shareholder does not internalize at most is  $P + [D/(P + D)]A$ . Subordination reduces this amount to  $P$ . Since the shareholder internalizes all social benefits, the result shown above – that subordination will only prevent socially detrimental rescue attempts – is corroborated. However, since internalization of costs is by no means complete, subordination is not a sufficient deterrent against some undesirable attempts, which will still take place (Type I errors).

4.4. Company is already overindebted

Other than in the previous section,  $L < P$  applies here, meaning that liquidation value would not suffice to cover debt at time  $t = 1$ , when the shareholder decides about the rescue attempt; the latter will receive nothing in a liquidation. As we shall see, this considerably changes the outcome reached in the previous section with respect to the prevention of socially desirable and undesirable rescue attempts.

Following from (2), if there is no subordination, the shareholder will have an incentive to attempt a rescue when

$$D < E \left[ \text{Max} \left( \tilde{A} - P, \frac{D}{P + D} \tilde{A} \right) \right] \tag{8}$$

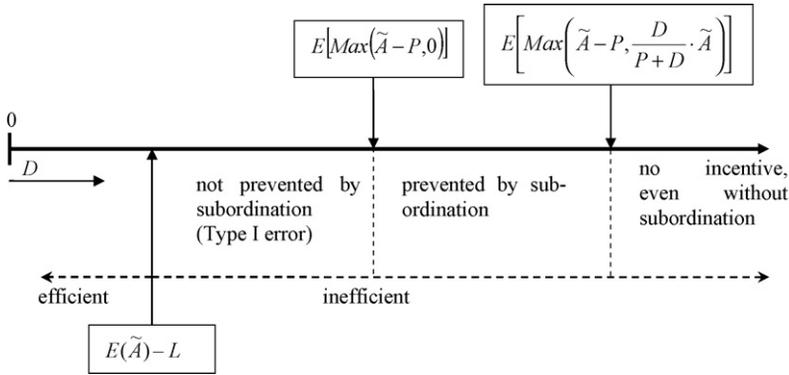


Fig. 3. Possible incentive effects when company is overindebted (first group of cases).

applies. Subordination destroys this incentive if

$$D > E[\text{Max}(\tilde{A} - P, 0)] \tag{9}$$

is fulfilled. As before, the rescue attempt is efficient if  $D < E(\tilde{A}) - L$  and inefficient if  $D > E(\tilde{A}) - L$ , which follows from (1).

Other than in the previous section, a general statement about whether effects will be beneficial or detrimental is impossible, as there is no theoretical relation between the liquidation amount  $L$  and the amount  $P$  owed to the creditor. The “efficiency cutoff” point can be below both “incentive cutoffs”, above both of them or between them.

In the *first case*, which is shown in Fig. 3,  $E(\tilde{A}) - L$  is relatively small. Only those rescue attempts to the left of it are efficient, as  $D$  is smaller than  $E(\tilde{A}) - L$ . Among inefficient rescue attempts to the right of the efficiency cutoff, only those are prevented where  $D$  also exceeds  $E[\text{Max}(\tilde{A} - P, 0)]$ . Inefficient attempts in between, where  $E(\tilde{A}) - L < D < E[\text{Max}(\tilde{A} - P, 0)]$  applies, will still occur. As in the previous section, subordination here has only the positive consequence of preventing some inefficient attempts, without destroying the incentives for efficient attempts. But some inefficient “Type I error” rescue attempts will not be deterred.

However, this is different in the *second case*, shown in Fig. 4. Here,  $E[\text{Max}(\tilde{A} - P, 0)] < E(\tilde{A}) - L < E[\text{Max}[\tilde{A} - P, (D/(P + D))\tilde{A}]]$  applies. The efficiency cutoff is just between the two incentive cutoffs (with and without subordination). The set of efficient rescue attempts thus overlaps with the set of attempts where subordination destroys the shareholder’s incentives.

We have a group of cases on the left side the figure, where  $D < E[\text{Max}(\tilde{A} - P, 0)]$  applies. Those rescue attempts are efficient and will always occur, with or without subordination. Adjacent to the right, there is a group of cases where  $D$  is slightly higher, so that  $E[\text{Max}(\tilde{A} - P, 0)] < D < E(\tilde{A}) - L$  applies. Desirable rescue attempts are prevented by subordination. The next groups of cases to the right covers inefficient rescue attempts prevented by subordination, as  $E(\tilde{A}) - L < D < E[\text{Max}[\tilde{A} - P, (D/(P + D))\tilde{A}]]$  applies. The efficiency cutoff here is in the middle of the range of cases where subordination destroys incentives to try a rescue. In part, this is beneficial, but in part, it is detrimental. Finally, in

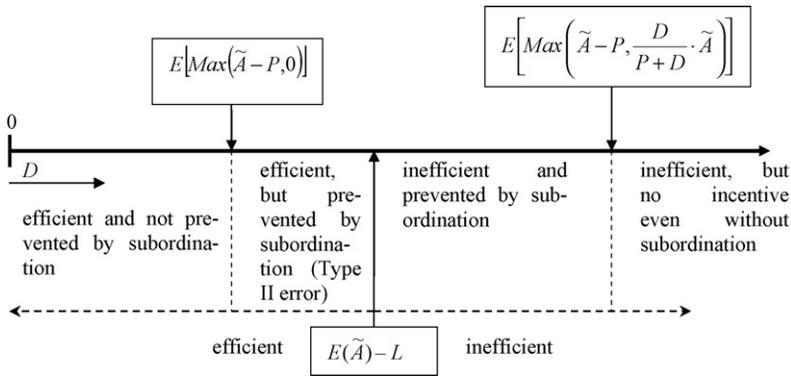


Fig. 4. Possible incentive effects when company is overindebted (second group of cases).

the group of cases shown on the utmost right of Fig. 4,  $D$  is too high for the shareholder to have any incentive, with or without subordination.  $D > E[\text{Max}\{\tilde{A} - P, (D/(P + D))\tilde{A}\}]$  applies. In summary, subordination will prevent some socially undesirable, but also some desirable rescue attempts (Type II error).

In the *third case*, shown in Fig. 5,  $E(\tilde{A}) - L > E[\text{Max}\{\tilde{A} - P, (D/(P + D))\tilde{A}\}]$  applies, meaning that the efficiency cutoff is higher than both incentive cutoffs:

Here, there are even efficient rescue attempts for which there is no incentive to initiate them (with or without subordination) namely where  $E[\text{Max}\{\tilde{A} - P, (D/(P + D))\tilde{A}\}] < D < E(\tilde{A}) - L$  applies (second group from the right). Subordination disincentivizes the shareholder against even more desirable rescue attempts, namely where  $E[\text{Max}\{\tilde{A} - P, 0\}] < D < E[\text{Max}\{\tilde{A} - P, (D/(P + D))\tilde{A}\}]$  applies. Thus, in the cases shown in Fig. 5, subordination has only negative incentive effects, as it will cause more Type II errors without preventing any Type I ones.

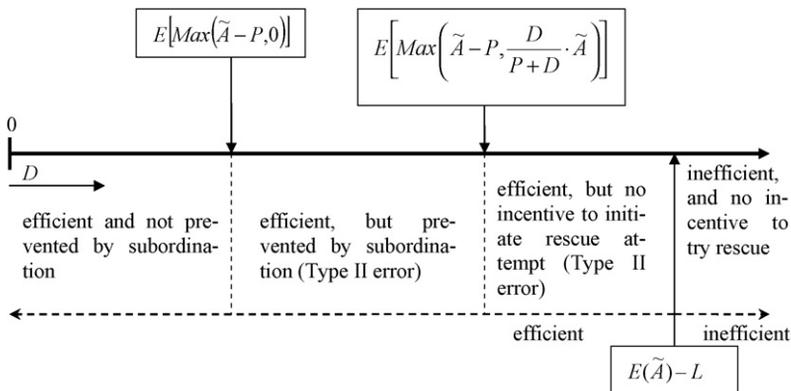


Fig. 5. Possible incentive effects when company is overindebted (third group of cases).

Table 2  
Maximum costs and benefits when the firm is overindebted

	Shareholder	Social	Not internalized
Benefits	$\bar{A} - P$	$\bar{A} - L$	$P - L$
Investment Costs	$D$	$D$	0
Costs from liquidation value	0	$(L)$	$(L)$
Cost savings without subordination (liquidation quota)	$\frac{D}{P+D}A$	0	$\left(\frac{D}{P+D}A\right)$

Overall, the effects of subordination are ambiguous in the cases discussed in this subsection. Again, to make results more intuitive, consider Table 2, where maximum private and social costs and benefits are shown.

As can be seen, the crucial difference to the case where the company is not yet overindebted is that benefits from rescue attempts are shared between shareholders and creditors: Since the creditor would not obtain his full entitlement  $P$  in an immediate liquidation (yielding only  $L$ ), he could gain from the rescue attempt if it is successful. Thus, there is a potential social gain of  $P - L$  which the shareholder does not internalize. (Again, what amount is realized depends on the possible values of  $\bar{A}$ , which will ex ante be considered with their weighted probabilities).

As before, there are social costs the shareholder does not internalize: First, there is a potential loss of the liquidation value  $L$ , which creditors would expect to capture. As in the previous section, there is a possible cost saving for the shareholder (i.e. social costs he does not internalize) when there is no subordination, namely his share in bankruptcy.

Other than in the case described in the previous section, the misalignment of the shareholder's with the social interest depends on two factors, one of which lies on the cost, the other on the benefits side. The two effects work into opposite directions, and there are no theoretical grounds to say that either of the two effects is more important.

Subordination takes away a third misaligning factor from the shareholder, but it is theoretically indeterminate whether this is beneficial or detrimental. On the one hand, if the misalignment is greater on cost side (meaning that the shareholder insufficiently considers social cost), burdening him with the subordination will be beneficial. On the other hand, if the misalignment is greater on the benefits side (meaning that the shareholder does not consider social benefits strongly enough), taking away the benefit of participation in bankruptcy increases that gap.

## 5. Interpretation

### 5.1. Benefits of subordination before overindebtedness

At first, it seems remarkable that subordination shows no negative consequences where liquidation (at the time when the shareholder loan is made) would result in a complete coverage of outstanding third-party debt. This result is intuitively appealing: If his claim is covered at time  $t = 1$ , the creditor can only lose because of the rescue attempt, as it generates additional risk for her. This corresponds to the well-known issue of risk-enhancement by

shareholders to the detriment of creditors, which may generally result in inefficiencies.<sup>55</sup> While only the shareholder can benefit from a positive development, creditors bear part of the risk of a negative result. Subordination partly internalizes this risk with the shareholder, which sometimes may prevent inefficient rescue attempts (Type I errors). The difference in the case where company's debt already exceeds the liquidation value at time  $t = 1$  is the fact that here, creditors may also sometimes benefit from rescue attempts. A successful rescue in such cases may allow the creditor to obtain the full claim or a larger share than liquidation.<sup>56</sup>

This strong result rests on the assumption of the formal analysis that liquidation is the only alternative to a shareholder loan:  $L$  is certain and known ex ante. By this, the model tries to capture the intuition that liquidation typically involves a lot less risk than continued operations. However, if  $L$  is stochastic (because liquidation value is not certain or because a risky rescue attempt without additional funds is possible), subordination may also yield detrimental results in some cases, particularly when the continued operation of a company financed by a shareholder loan reduces risk instead of increasing it (which seems much more likely). Hence, we cannot say with certainty that subordination is always exclusively beneficial even when the company is not yet overindebted.

## 5.2. Debt, liquidation value and the efficiency of subordination

We have seen that subordination of shareholder loans can prevent either socially undesirable or desirable rescue attempts. One could conclude that costs and benefits from subordination of shareholder loans should be summed up in order to conclude whether it is generally beneficial or detrimental.<sup>57</sup> However, as actual effects depend largely on idiosyncratic variables within the particular firm, one should focus on identifying criteria under what circumstances a rescue attempt should be rewarded or penalized. This depends on the values of the exogenous variables of the model, most of all the two variables which probably can be most easily verified by a court, namely the outstanding debt ( $P$ ) and the potential ex ante liquidation value ( $L$ ), but also the distribution of  $\tilde{A}$ , which is harder to assess.

First, consider the case where the firm is not overindebted ( $P < L$ ; above Section 4.3). As we have seen in Table 1, an amount of up to  $P$  is not internalized, i.e. the portion of liquidation value going to creditors. Only its absolute value is relevant, but not what proportion of liquidation proceeds  $L$ , as long as  $L$  still exceeds  $P$ . As stated above, beneficial rescue attempts will happen in any case, along with some detrimental ones, some of the latter being prevented by subordination. There will still be some Type I errors, since internalization is incomplete.

The situation is more complicated when the shareholder loan is the firm's debt is already under water ( $P > L$ ; above Section 4.4). As shown in Table 2, shareholders do not capture benefits used to cover debt, i.e. when the outcome is between  $P$  and  $L$ . A larger debt of  $P$  (relative to  $L$ ) thus aggravates the problem of non-internalization of benefits: When more of

<sup>55</sup> cf. Smith and Warner (1979): p. 118, Brealey and Myers (2003): p. 503.

<sup>56</sup> This is also pointed out by Drukarczyk (1995): p. 193.

<sup>57</sup> For such an approach see e.g. Bebchuk (1994) (discussing whether parties acquiring control of a listed company should be required to make a mandatory bid to minority shareholders).

the rescue benefits go to creditors, the risk of the shareholder foregoing beneficial rescues increases. This may result in Type II errors, where beneficial rescue attempts do not take place.

On the cost side, the shareholder does not internalize the risk of dissipation of the liquidation value  $L$ , since he would normally not receive any of it. A change of  $L$  relative to  $P$  is not directly relevant here, but a larger  $L$  generally increases the problem of the shareholder not internalizing cost. Again, this may result in detrimental rescue attempts taking place (i.e. Type I errors).

Thus, the effect of an increase or decrease in  $L$ , or the specific ratio to  $P$ , actually tells us little about the benefits of subordination in the second group of cases. Effects are indeterminate: Although changes in  $L$  work in opposite directions on the benefit and cost sides, their actual impact depends on the distribution of  $\tilde{A}$ , which determines which amount of  $L$  may be lost at what probability.

### 5.3. *Ex ante effects on interest*

One issue that has been avoided so far is how subordination of shareholder loans affects the interest rate demanded by external creditors at  $t = 0$ , and what effects it has on efficiency. The model describes the incentives of shareholders to attempt a rescue under the assumption of an exogenous amount of debt  $P$ , i.e. only the situation ex post in period  $t = 1$ . However, creditors may anticipate the lower probability of being harmed by risk enhancement (which may include both ex post efficient and inefficient rescue attempts). Subordination of shareholder loans to some degree prevents an increase in risk and thus reduces agency costs of debt.<sup>58</sup>

Hence, one would expect the creditor to reduce his risk premium and content herself with a lower interest rate if there is subordination. The formal analysis in Section 4 would be affected by a lower repayment amount  $P$ . While this does not affect the ex-post efficiency calculus analyzed above, which does not depend on  $P$  (see (1)), a lower  $P$  (because of subordination) will affect the shareholder's incentives to engage in risk-enhanced rescue attempts, which will, however, again depend on whether the firm is already overindebted or not: If it is not, there will be a reduced incentive (compared to a situation where subordination does not affect the interest rate) to engage in inefficient rescue attempts, as (5) shows. As can be seen in Table 1, the reason for this is that the shareholder does not internalize social costs of a maximum of  $P$  (depending on the distribution of outcomes). In those cases, the interest effect enhances the deterrent effect for rescue attempts and reduces the number of Type I errors.<sup>59</sup>

However, if the firm is already overindebted, the interest effect goes in the opposite direction: As shown by (9), a lower  $P$  (because of a lower interest rate) will increase the incentive to attempt a rescue. The reason here can be seen in Table 2: As the shareholder does not internalize a benefit of up to  $P - L$ , a decrease in the interest rate will reduce non-internalized benefits: Thus, the incentive to engage in rescue attempts will be higher. The interest effect will counter the deterrent effect of subordination to some degree. In the

<sup>58</sup> See generally Jensen and Meckling (1976): pp. 333 et seq.

<sup>59</sup> Also, the shareholder's loss of insolvency quote will be a bit greater.

cases shown in Figs. 3–5, the incentive threshold would be a bit farther to the right than if interest rates were unchanged.

As a general matter, it seems safe to assume that the effects on interest will typically be relatively small. First, some groups of creditors will not adjust their interest rates, such as tort creditors, the government, creditors with small claims (where the cost of investigating the risk structure will exceed benefits), and even others, if they fail to foresee the potential risk.<sup>60</sup> From an *ex ante* perspective, rescue attempts financed by shareholder loans are likely to be a rather small issue, about which it may be individually beneficial to remain rationally ignorant. One rationale sometimes brought forward for the German equity substitution doctrine is the information asymmetry between controlling shareholders and creditors.<sup>61</sup> If subordination or other instruments of creditor protection are needed to protect outsiders risks imposed on them by insiders, this must rest on the assumption that these groups do not fully adjust to changes in risk.

Assuming that such a situation as described in the model for time  $t = 1$  occurs only with probability  $q$  (where  $0 < q < 1$ ) – in all other cases the development of the company is good enough not to require additional contributions in the first place – the marginal change in interest will be reduced from  $-P'$  (which would be expected if  $t = 1$  would be reached with certainty) to  $-P' \times q$ . This will suffice to compensate the creditor for her risk; good states of the world will cross-subsidize bad ones, but the value of  $P$  will be identical in all of them in the *ex post* calculus. Generally, one cannot presume that this adjustment would lead to an *ex ante* efficient solution in either case: the general underinvestment problem in the presence of risky debt<sup>62</sup> persists.

## 6. Risk preferences and the interests of other stakeholders

So far, risk preferences of shareholders and creditors have not been addressed. One would expect the shareholder of a closed corporation to be more risk-averse than, e.g. a bank giving a loan, since his share will often make up a large proportion of his wealth. This might indicate that a shareholder will frequently act too cautiously when deciding whether to continue operations by granting a shareholder loan. However, if shareholders are subject to loss aversion – meaning that they seek risk when making choices to avoid losses<sup>63</sup> – this effect would be balanced or even reversed. By contrast, this will be different if the shareholder making a loan, other than in the model here, holds only a small minority or is the firm's bank which also owns some shares. It suffices to say, that, ideally one should want courts to have the latitude and capability to consider these effects.

Conceivably, constituencies other than shareholders and creditors could have an impact on the analysis, e.g. employees who made human capital investments,<sup>64</sup> which they stand to

<sup>60</sup> cf. Bebhuk and Fried (1996): pp. 882 et seq.

<sup>61</sup> E.g. Hommelhoff (2002b): comment 1.1.; but see *In re Lifschultz Fast Freight*, 132 F.3d 339, 346 (7th Cir. 1997) (US subordination case assuming that third-party creditors will, except in cases of outright fraud, be able to inform themselves by inspecting the company's records).

<sup>62</sup> See generally Myers (1977).

<sup>63</sup> See generally Kahneman and Tversky (1979).

<sup>64</sup> See generally Williamson (1985): p. 242.

lose if the company is wound up. Similar arguments can be made for other stakeholders.<sup>65</sup> If those factors are incorporated in the analysis, an inefficiently low number of rescue attempts will ensue, because shareholders will not internalize other constituencies' (quasi-) rents. Formally, one could modify the efficiency criterion set out in (1) by adding  $E(\tilde{S})$ , the expected value of stakeholder rents. Hence, a rescue attempt will be efficient if

$$E(\tilde{A}) + E(\tilde{S}) > L + D$$

It is apparent that (7) no longer holds, meaning that the result of Section 4.3, according to which subordination has no detrimental effects if the liquidation value still covers the amount of third-party debt when the loan is taken out ( $L > P$ ), does not apply.

This is another factor making the creditworthiness criterion, which is discussed in more detail below, problematic. The presence of quasi-rents of stakeholders suggests that a relatively more tolerant approach to rescue attempts is desirable.

## 7. Delineating the optimal scope of subordination

### 7.1. Does a “creditworthiness” criterion provide efficient boundaries?

Since subordination cannot generally be described as beneficial or detrimental, one possible approach would be to subordinate shareholder loans only, in order to destroy incentives, where a rescue attempt would be economically inefficient. As the model shows, subordination cannot prevent all undesirable attempts, and they are even efficient attempts which the shareholder will not initiate, even without any risk of subordination. Some desirable rescue attempts can at least be encouraged by limiting the scope of application, which would be one possibility for legal reform.

Following from Fig. 4, a subordination doctrine should thus only apply in cases to the right of the efficiency threshold of  $E(\tilde{A}) - L$  to create the right incentives. According to (6), a rescue attempt is efficient where  $E(\tilde{A}) > L + D$  applies. The resulting solution is trivial from a theoretical perspective: A court deciding *ex post* in a case of insolvency should make subordination dependent on whether the rescue attempt, from the perspective of the time when the shareholder loan was given, resulted in an expected value of the company's total assets  $E(\tilde{A})$  which was higher than liquidation value  $L$  plus the necessary investment of  $D$ .

By contrast, German courts profess to use a “creditworthiness” criterion in order to delineate the boundaries of the subordination doctrine. According to the Supreme Federal Court (BGH), this test requires an assessment whether a third party would have given the loan required to avoid liquidation to the firm under market conditions.<sup>66</sup> Two leading legal scholars have described this approach as requiring a judgment of whether “a different, economically rational creditor who is not a shareholder and does not intend to become one

<sup>65</sup> On specific investments in corporations made by other constituencies see e.g. Williamson (1985): pp. 307 et seq.

<sup>66</sup> BGH 13.7.1992, II ZR 269/91, BGHZ 119, 201, 206. Similarly, US courts applying the recharacterization doctrine, among other things, ask whether the company was able to obtain outside finance as part of the eleven-factor test. In re Autostyle Plastics, Inc., 269 F.3d 726, 752 (6th Cir. 2001).

would have given the loan under the same circumstances and under the same terms.”<sup>67</sup> Needless to say, courts are hardly in a good position to make such an ex post assessment about the ex ante situation of the firm.<sup>68</sup> Although they are in theory required to evaluate the firm’s objective creditworthiness, individual decisions of actual creditors are in practice often needed as evidence for the analysis.<sup>69</sup> Even if the “creditworthiness” criterion is therefore not really as relevant in practice as courts and legal scholars believe it to be,<sup>70</sup> it is important to show how it compares to an efficiency-oriented approach as a matter of theory. The following analysis attempts to approximate both the “theoretical” test and ex ante decisions of actual creditors by asking what interest rate a rational creditor would require.

Assume that the court observes a stipulated amount of repayment of  $D$ , a portion of which is interest  $i$ ; originally the shareholder gave an amount of  $D-i$  to the corporation. To compensate, a hypothetical creditor would have expected to receive either a liquidation quota or a repayment of  $D$ . He would have given that amount only if his expected repayment (left side of the condition below) exceeded the amount originally given (right side):

$$E \left[ \text{Min} \left( D, \tilde{A} \frac{D}{P+D} \right) \right] > D - i$$

This can be rewritten as

$$D < E \left[ \text{Min} \left( D, \tilde{A} \frac{D}{P+D} \right) \right] + i \quad (10)$$

However, under (6) a rescue attempt is efficient if

$$D < E(\tilde{A}) - L \quad (11)$$

By subtracting the right side of (10) from the right side of (11), we can see by which amount the creditworthiness criterion is too restrictive:

$$E(\tilde{A} - D | \tilde{A} \geq P + D) \times \text{prob}(\tilde{A} \geq P + D) + E \left( \frac{P}{P+D} \tilde{A} | A < P + D \right) \\ \times \text{prob}(\tilde{A} < P + D) - L - i \quad (12)$$

The differences are summarized in Table 3.

Obviously, there are a number of divergences. First, it can be seen that in the most positive states of the world, where the realized amount  $\tilde{A}$  exceeds debt (including the new loan), social gains of  $\tilde{A} - D$  (weighed by their probability) are ignored. While a hypothetical third-party creditor would base her analysis on her own repayment amount  $D$ ,  $\tilde{A}$  is crucial for the efficiency threshold. A creditor is only interested in her own risk resulting from the rescue attempt, but socially, advantages accruing to the shareholder should also be taken

<sup>67</sup> Lutter and Hommelhoff (2004), § 32a/b, comment 19 [own translation].

<sup>68</sup> Cf. Drukarczyk (1995): p. 184 (criticizing that Supreme Court judges are neither qualified to make such a decision nor do they bear its consequences).

<sup>69</sup> Lutter and Hommelhoff (2004), § 32a/b, comments 19 and 20.

<sup>70</sup> Cf. Drukarczyk (1995): p. 185 (considering the criterion superfluous).

Table 3

Comparison of the “creditworthiness” criterion to an “efficiency” criterion

Criterion	“Creditworthiness” <sup>a</sup>	“Efficiency”	Difference
Upside (weighed by probability)	$D$	$\tilde{A}$	$\tilde{A} - D$
Downside (weighed by probability)	$\tilde{A} \frac{D}{P+D}$	$\tilde{A}$	$\tilde{A} \frac{P}{P+D}$
Liquidation value	0	$L$	$(L)$
Interest	$i$	0	$(i)$

into consideration.<sup>71</sup> Under the creditworthiness criterion, positive states of the world are thus inadequately considered, as a third-party creditor would not share in the gains.

Second, as shown by the difference of  $\tilde{A}[P/(P+D)]$ , even on the downside (or, for the matter, “lower upside” states where something is gained for creditors, but not enough to leave a profit for shareholders), the criterion considers only the bankruptcy quota assigned to the hypothetical third-party creditor, but not the amount accruing to old creditors, even though it will also be determined by the success of the rescue attempt.

Third, the creditworthiness analysis completely fails to assess what a rescue attempt has to compare to, namely the liquidation value  $L$ , which determines its desirability. In that respect, the test is not too restrictive, but too liberal. This comes to bear most strongly when  $L$  is high in relation to the potential advantages: In such cases, the creditworthiness criterion will cause the subordination doctrine to be applied too rarely, even though the danger of the destruction of value to the detriment of creditors is highest. Fourth, the creditworthiness criterion looks at the interest rate actually charged, which does not bear a relation to efficiency.

Overall, a creditworthiness analysis, even if properly conducted, misses efficiency on multiple counts. However, whether it will generate rather “Type I” or “Type II” errors is indeterminate, as the factors point in different directions. Also, as has been pointed out above, quasi-rents of other constituencies are also ignored.

## 7.2. Financial ratios

The criteria set out in the Austrian Equity Substitution Act of 2003 also seem to be problematic. Shareholder loans will be subordinated where the corporation is either insolvent or overindebted under insolvency law,<sup>72</sup> or, alternatively, where the equity ratio is less than 8%, and the time it would hypothetically take to repay all debt exceeds 15 years.<sup>73</sup> Usually, that criterion will be fulfilled even before a company becomes insolvent. Even though the presumption of a crisis can be rebutted where those ratios are met,<sup>74</sup> schematic criteria

<sup>71</sup> On this classical conflict of interest resulting from risky debt, see Myers (1977): p. 62.

<sup>72</sup> § 66 and § 67 of the Austrian Insolvency Act (*Konkursordnung*).

<sup>73</sup> (§ 2 Abs 1 EKEG). Those ratios are precisely set out in §§ 23, 24 of the Business Reorganization Act (*Unternehmensreorganisationsgesetz*, öBGBI I 1997/114), which refers to the balance sheet layout under the Commercial Code (§ 224 öHGB, corresponding to § 266 dHGB). In the latter case, the shareholder giving the loan must, in addition to this, know that the criteria are fulfilled, or it must be obvious to him (§ 2 Abs 2 Z 3 EKEG).

<sup>74</sup> Shareholder loans are not subordinated when the company did not require “reorganization” within the meaning of the Business Reorganization Act (URG).

such as this can only provide a very crude approximation to reality, although they have the argument of legal certainty on their side. In any case, the problems of this approach mitigated under Austrian law by the fact that the accounting ratios only create a rebuttable presumption.

Of course, accounting ratios can provide important insights on a company's financial status, but as legal thresholds, they are too inflexible to be able to take account of what would create efficient incentives in particular firms. There are also arguments in favor of schematic criteria, such as the problem of a lack of knowledge about case law among owners and managers – which could distort economic incentives –<sup>75</sup>, and the danger of judicial mistakes in assessment in the case of an abstract standard ex post.<sup>76</sup>

However, even if financial ratios could, as a general matter, tell us something about the incentives created for shareholders under the circumstances of the model described here, there would be the additional complication that the actual ratios would be influenced by what proportion of the company the shareholder owns. The reason for this is the fact that a small shareholder giving a loan overproportionally shares in the costs of the rescue attempt (*D*), but not in the potential gains. While loans given by small shareholders are therefore more likely to be efficient than others,<sup>77</sup> financial ratios could only tell us something about the shareholder's incentives if made dependent also on the firm's ownership structure.

### 7.3. Subordination of inefficient shareholder loans only?

Given this assessment, new criteria seem desirable. A rather radical approach would be to potentially subject every shareholder loan to subordination and require courts to examine them under the ex ante efficiency criterion proposed here. Most likely, one would have to make subordination dependent on two cumulative criteria: First, in spite of the finding that subordination is beneficial for loans given when liquidation value still covers debt, there is probably some necessity for restriction, also in view of the fact that it rests on the assumption that the only alternative to a rescue attempts is a certain liquidation value. Hence, we would have to limit subordination to loans given in circumstances where the firm would have been legally required to file for bankruptcy. This is also linked to the observation that courts are often reluctant to ex post second-guess managerial business judgment.<sup>78</sup> That problem is somewhat mitigated when there are few alternatives left, as in the case of a nearly insolvent firm.

<sup>75</sup> cf. Kaplow (1992): p. 572 (pointing out that informing oneself about abstract standards is more expensive than about bright-line rules). With respect to subordination of shareholder loans, this issue is discussed by Claussen (1992): pp. 152 et seq.; Schummer (2000): p. 3 (both pointing out that businessmen frequently are unaware of the possibility of subordination of shareholder loans).

<sup>76</sup> cf. Hommelhoff (2002b): comment 1.1 (stating that even many German lawyers find the case law on *Eigenkapitalersatz* hard to comprehend).

<sup>77</sup> Engert (2004): p. 836.

<sup>78</sup> cf. the US business judgment rule. See e.g. *Gagliardi v Trifoods International Inc.*, 682 A.2d 1049 (Del. Ch. 1996) (stating that excessive second guessing would cause overcautious behavior among risk-averse managers). The German Supreme Federal Court has shown sympathy for this approach in the ARAG/Garmenbeck decision, BGH 21.4.1997, II ZR 175/95, BGHZ 135, 244, and a provision modelled on the American business judgment rule has recently been added to § 93(1) of the German Aktiengesetz. See Gesetz zur Unternehmensintegrität und Modernisierung des Anfechtungsrechts (UMAG), September 22, 2005, BGBl 2005 I, Nr. 60.

Second, and more importantly, a loan given under such circumstances should be subject to an “ex ante efficiency test.” A shareholder loan would fail the test when the expected value of total assets after a rescue attempt results in a reduction vis-à-vis the hypothetical liquidation value at the time when the loan was made. If an increase in the going concern value after the rescue was to be expected, the shareholder-creditor should be treated like a third-party creditor in bankruptcy. Otherwise, if the creditor is punished in bad states of the world, even where the rescue attempt was desirable, an inefficient disincentive is the result.

Effectively, this would mean that rescues financed by shareholder loans should not be penalized where benefits to shareholders exceed costs to creditors. Such an approach might equally apply to loans given by shareholders before the onset of a crisis and not withdrawn in time (which are also subject to *Eigenkapitalersatz* under German law).<sup>79</sup> If shareholders can withdraw loans at time  $t = 1$  (which is assumed by the law), the formal analysis would be identical to the one in this paper.

#### 7.4. Penalties for inefficient rescue attempts

One is left to ask whether subordination of loans as such is really a sound strategy to prevent socially undesirable rescue attempts. The approach described in the previous section would eliminate the problem of “Type II errors”, i.e. the deterrence of desirable rescue attempts, while preserving the deterrence of some, but not all “Type I errors”. As the formal discussion has shown, some undesirable rescue attempts will still take place, because shareholders, whether there is subordination or not, will not internalize all social costs, the deterrent effect of subordination being too small.

The obvious solution is that, assuming that courts can identify rescue attempts that were inefficient ex ante, there is no reason why one should not employ stiffer penalties to deter inefficient risk-enhancing conduct. As a matter of theory, it seems preferable to implement more severe shareholder liability going beyond the mere loss of an insolvency quota for the loan.

In terms of legal doctrine, there are various ways in which such a liability could be (and probably is already) framed. A promising approach that comes to mind would be to employ duties which normally need to be met by directors in the vicinity of insolvency by extending them to shareholders giving loans to the company. For example, courts in several common law jurisdictions have begun to recognize fiduciary duties of directors towards creditors when a company is approaching bankruptcy.<sup>80</sup> Other doctrines that come to mind are the UK *wrongful trading* remedy, the French *action en comblement du passif*, or the German *Insolvenzverschleppungshaftung*,<sup>81</sup> all of which result in liability of directors to creditors if they allowed the firm to continue operations although liquidation was inevitable or (as

<sup>79</sup> cf. Lutter and Hommelhoff (2004), § 32a/b, comments 45 et seq. By contrast, § 3 Abs 1 Z 3 of the Austrian EKEG explicitly excludes loans from subordination when they were given to the firm before the onset of crisis.

<sup>80</sup> Walker v. Wimborne, (1976) 50 A.L.J.R. 446 (Australia); Nicholson v. Permakraft (NZ) Ltd., [1985] 1 N.Z.L.R. 242 (New Zealand); West Mercia Safetywear Ltd v Dodd and Another, [1988] B.C.L.C. 250; Brady v. Brady, (1987) 3 BCC 535 (both England); Credit Lyonnais Bank Netherlands, N.V. v. Pathe Communications Corporation, 1991 Del. Ch. LEXIS 215 at n. 55 (Dec. 30, 1991) (Delaware).

<sup>81</sup> On these instruments see e.g. Davies (2006).

in the German example) if they would have been legally required to file for bankruptcy. While such doctrines typically apply to de facto directors (who are usually shareholders) already,<sup>82</sup> they could be modified to include all shareholders who extended credit to the firm if the firm otherwise would have had to be liquidated. Those shareholders then would be subject to a damages claim amounting to the loss to creditors due to late liquidation. Shareholders would then fully internalize the downside risk. In the framework of this paper, this claim corresponds to the non-internalized social cost  $P$  in Table 1 and  $L$  in Table 2. It is important to note that an optimal legal solution would also have to ensure that shareholders also capture the potential upside of a rescue attempt ( $P - L$  in Table 2), or that shareholders are not penalized at all for ex ante efficient rescue attempts. The most viable solution would therefore probably be to implement liability only if the loan is given at a relatively late stage of the firm's trajectory towards insolvency (as described in the previous section), or to grant shareholders broad discretion under the business judgment rule.

The decisive practical question is whether courts can verify efficiency. At least, there are good reasons to believe that it would not be more difficult to ascertain than a creditworthiness criterion resting on an analysis of creditor risk, since both types of analysis requires knowledge about the possible future payoffs to the company. Creditworthiness may have the advantage that courts can partly allow their analysis to rest on decision of actual creditors observed in the real world.

## 8. Conclusion

The analysis of the incentive effects of subordination or recharacterization of shareholder loans shows that there is a potential danger of preventing either efficient or inefficient rescue attempts. In order to prevent "Type II errors", i.e. to avoid deterring desirable rescues, the doctrine should ideally not apply to ex ante efficient attempts, which would require an assessment whether a rescue attempt resulted in an ex ante expected total value of the company larger than its liquidation value at that time. A "creditworthiness" criterion includes too many cases under this analysis, because creditors do not consider benefits of a successful rescue attempt accruing to shareholders and to other stakeholders of the firm. The analysis of this paper therefore suggests that the skepticism of some scholars towards subordination is well-founded.

On the other hand, in some cases subordination creates insufficient deterrence against "Type I errors", meaning that undesirable rescue attempts will not be deterred. Policymakers should consider stiffer penalties in such instances. This paper suggests that those should rather be framed as liability to creditors than as subordination.

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<sup>82</sup> Davies (2006): p. 312.

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