BANCA D'ITALIA

Temi di discussione

del Servizio Studi

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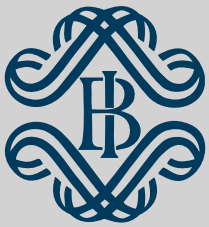
by Francesca Cornelli and Leonardo Felli



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The purpose of the "Temi di discussione" series is to promote the circulation of working papers prepared within the Bank of Italy or presented in Bank seminars by outside economists with the aim of stimulating comments and suggestions.

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EFFICIENCY OF BANKRUPTCY PROCEDURES

by Francesca Cornelli (*) and Leonardo Felli (**)

Abstract

This paper suggests a framework to analyze the efficiency properties of bankruptcy procedures, distinguishing between ex-ante and ex-post efficiency. Ex-post efficiency is mainly seen as allocative efficiency, which consists in maximizing the ex-post value of the reorganized firm, while we focus on two aspects of ex-ante efficiency: revenue efficiency, which consists in maximizing the proceeds to creditors from the reorganization of the firm and the compliance with absolute priority rule. We then use the framework described to analyze the efficiency properties of few bankruptcy procedures. We show, for example, that cash auctions although allocation-efficient may not be revenue-efficient.

Contents

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1. Introduction[1]

There is a great variety of bankruptcy laws in different countries. Both the theoretical and legal debate on bankruptcy, as well as the practitioners, seem not to be able to agree on which procedure is the best.

Indeed the problem arises from the fact that a lot is at stake when a bankruptcy procedure is initiated and a good bankruptcy law should achieve many, not always compatible, goals. First of all, a bankruptcy law has to decide what to do with the firm and how to compensate the creditors. One obvious goal is then to maximize social surplus, that is to make the best possible use of the firm. How creditors are compensated and in what amount may be seen ex-post as a simple redistribution and therefore irrelevant from a welfare point of view. However, this would not take into account another important goal of the bankruptcy law: its effect on the incentives of the involved parties before the firm goes into bankruptcy; even before any clue of financial distress is at the horizon. If the choice of what to do with the firm can be regarded as ex-post efficiency, the effect on the incentives can be regarded as ex-ante efficiency.

Two main effects on the incentives are usually highlighted. A bankruptcy procedure "punishing" managers or entrepreneurs of the insolvent firm may be seen as providing them with the right incentives to manage the firm so as to avoid ending up in financial distress, for example by undertaking too many risks. This effect has been extensively studied in the economic literature that has underlined one trade-off between ex-post and ex-ante efficiency: the fact

[1] We would like to thank Patrick Bolton, Julian Franks, Oliver Hart and especially Luigi Zingales for very helpful comments and discussions. We are solely responsible of any remaining errors.

that the value of the firm might be maximized in the hands of the managers but this may distort their incentives (Aghion and Bolton, 1992; Bolton and Scharfstein, 1993; Hart and Moore, 1994).

In this paper we focus on an alternative aspect of ex-ante efficiency, that is the protection of the creditors' claims. Trying to compensate creditors as much as possible or to respect the relative seniority of their claims is justified not only by fairness arguments. Indeed, if the creditors feel that they are not sufficiently protected by a bankruptcy law they may impose particularly difficult conditions when lending capital to the firm, such as high interest rates or other additional costs. Therefore a well functioning credit market requires a good bankruptcy law that takes into account these aspects of ex-ante efficiency.

In what follows we develop a framework to analyze the trade-off between ex-ante and ex-post efficiency, as defined above, of a general bankruptcy procedure. We then apply such framework to the analysis of the efficiency properties of the following four bankruptcy procedures. Cash auctions (Chapter 7 in US), structured bargaining (Chapter 11 in the US), administration (Administration and Receivership in the UK) and finally a recent proposal to reform bankruptcy law by Aghion, Hart and Moore (1992).

A critical aspect of our analysis is the view that the value of the firm when reorganized, rather than liquidated, is not uniquely defined. In fact, many reorganization plans may be available and each plan may imply a different value of the firm, depending on who takes the decision within the new firm and what projects they have in mind. Therefore choosing what to do with the firm does not mean only whether to continue or liquidate it, but also, if continued, which reorganization plan to adopt. Taking this perspective we are able to show

that, for example, a cash auction procedure performs efficiently on the ground of allocating the firm to the individual which will maximize its ex-post value, provided that credit markets are perfect, or alternatively that the potential buyer is not cash constrained. However, even in the latter situation the cash auction does not perform as well on the ground of maximizing the proceeds from the sale of the firm as a going concern. Indeed, in the following Section 3 we show that the proceeds may be improved by auctioning off only a control stake of the firm rather then the whole ownership and retaining a minority stake. This plan of reorganization is not allowed, for example, by Chapter 7 in the US.

When considering structured bargaining (Section 4 below) we highlight the critical role played by the voting rule used in determining which proposed reorganization plan will be adopted, and the importance of the outside option for the creditors, which in US Chapter 11 is the liquidation of the firm. In particular we show that if, as in Chapter 11 all classes of creditors are asked to approve the proposed plan (unanimity across classes of creditors is required) a trade-off may arise between ex-post efficiency and ex-ante efficiency, where the violation of ex-ante efficiency here takes the form of a violation of the relative seniority of creditors (the absolute priority rule).

A trade-off between ex-ante and ex-post efficiency of a different nature arises when considering the administration procedure and in particular the Receivership procedure in the UK (Section 5). Indeed, when this procedure is adopted a small number of creditors ends up having all the bargaining power. This allocation of bargaining power may lead either to inefficient liquidations or alternatively to violation of absolute priority rule in the form of excessive compensations for these powerful creditors.

Most of the problems we highlight when considering structured bargaining and administration are solved by the proposal by Aghion, Hart and Moore (1992). In particular, such proposal guarantees that the creditors' rights to vote on the proposed reorganization plan are allocated in compliance with absolute priority rule, hence this procedure solves the trade-offs mentioned above between ex-ante and ex-post efficiency. Further, in the initial phase of the bankruptcy the claims of creditors are all transformed in shares of the new firm, changing in this way the security structure and the outside option of the negotiation between claimholders. This negotiation takes the form of an auction in this procedure. It should be noticed that soliciting any type of bids in this auction, as proposed by Aghion, Hart and Moore (1992) may still not maximize the proceeds from the sale of the firm, as already noticed for cash auctions. Hence, we propose a solution which is readily available within this proposal. This consists in allowing the creditors, now new shareholders, to restrict in any way they prefer the bids solicited in the auction. In this way creditors are allowed, for example, to auction off only the minimum majority stake of the firm if they prefer.

We develop our framework for the analysis of the efficiency properties of bankruptcy procedures in the following Section 2. We then analyze the efficiency properties of cash auctions (Section 3), of structured bargaining (Section 4) and of administration procedures (Section 5). We then conclude with the analysis of the proposal by Aghion, Hart and Moore (1992) (Section 6).

2. The framework

We shall consider a firm whose capital structure consists of common stock and straight debt which has declared

bankruptcy. The debt is owned by N creditors. Each creditor i has a claim c_i, which denotes the amount of money due to him. The total face value of the debt is therefore $F = \sum_{i=1}^{N} c_i$. Given that bankruptcy has been declared, necessarily $F > \underline{V}$, where $\underline{V}$ is the minimum value of the firm when kept working without any reorganization.[2] We shall denote with L the maximum amount of money that can be obtained by liquidating the firm's assets and with $\overline{V}$ the maximum value of the firm if kept as a going concern.[3]

We have first of all to define when a bankruptcy procedure is efficient. Two possible criteria come to mind.

Ex-ante efficiency. This refers to the ex-ante incentives of different agents involved with the bankrupt firm. For example, a bankruptcy procedure should not be too soft with the incumbent managers in order to provide them with the right incentives to run the firm before bankruptcy is declared. We focus mainly on another aspect of ex-ante efficiency, i.e. the fact that creditors should be provided with the incentives to lend to the company to start with. In particular this implies revenue efficiency that is the fact that a bankruptcy procedure should maximize the total value of the proceeds - measured in money terms - received by the existing claimants. Further, bankruptcy procedures should preserve absolute priority, in repaying creditors.[4]

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2 For simplicity, we are ruling out situations in which liquidity problems are the source of financial distress.

3 The reason for considering a maximum value rather than generically a value of the firm follows from the fact that, as we will argue later, with different reorganizations - which imply different reallocations of ownership - the firm may take different values.

4 Aghion, Hart and Moore (1994) provide a discussion of the latter aspect.

Ex-post efficiency. We mainly consider allocative efficiency which means that the reorganization of the firm should maximize its ex-post value.

Whenever a firm is insolvent different reorganization plans are available.[5] For example, the firm could be entirely sold for cash to another company, which will transform it in a subsidiary and the cash will be used to compensate the creditors according to the absolute priority rule. Alternatively, a consortium of banks could acquire 70 per cent of the shares, while 30 per cent of the shares may be given to some creditors as a partial compensation, other creditors may be completely compensated with the proceedings from the sale of 70 per cent of the shares and others again may have their credit renewed.[6]

A plan P then comprises two components:

a) A reorganization scheme, which implies a new value for the firm. For example, in the first case the sale to a new company that transforms the firm into a subsidiary, or in the second case, any plan the consortium of banks may have in mind.

b) A split, or a compensation (partial or complete) of the creditors' claims. For example, in the first case, this compensation corresponds to cash amounts creditors receive according to the absolute priority rule. In the second case the split specifies: which creditors should receive shares, cash or should have their credits renewed and the expected value of such compensations.

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5 For simplicity, we consider the case in which the firm is liquidated as one possible reorganization plan.

6 Note that, in principle, the absolute priority rule could have been violated.

Notice that the two aspects of a plan cannot be completely separated. For example, in the first case it may occur that the company will only be willing to buy the entire firm and therefore it would not be possible to compensate some creditors by making them shareholders. Hence, only some combinations of these two characteristics will be available and they will change with the case considered.

We shall summarize a reorganization scheme by the allocation of ownership and the value of the firm V(P), while we will take the split to be described as follows. We assume that there are only three ways in which a creditor i with a claim c_i can be compensated: with shares in the new (reorganized) firm, s_i, with cash or by renewing his credit in the new firm. Let us denote with d_i the compensation creditor i receives in cash plus the money he expects to receive from the renewed credit.[7] The expected profits of a plan P to a creditor i will then be:

(1) $E\Pi_i(P)=s_iV(P)+d_i(P)$.

Denote P_L the plan to liquidate the assets of the firm (rather than selling it as a going concern), then necessarily $s_i(P_L)=0$, for any i and $d_i=l_i$ is the amount of cash creditor i will get.

Thus a plan P is fully characterized by $\{s(P),d(P), V(P)\}$.[8]

In different situations different plans are available. Denote H the set of available plans, exogenously determined. The exogenous factors that affect the set of available plans

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7 For simplicity, we assume that creditors are risk neutral.

8 How outside parties share the ownership is not relevant for our analysis; the only thing that matters for us is the value V(P) associated with the allocation.

may be, for example, the presence of someone interested in acquiring the company, his access to an efficient credit market so as to be able to raise the necessary funds and similar factors. Among the different plans available one will be chosen. We define a bankruptcy rule as a game to choose a plan P. For example, Chapter 7 is an auction, Chapter 11 comprises bargaining among creditors over P (according to some predetermined rule), the Receivership in UK is a game in which one creditor (or the receiver he appoints) suggests and implements one plan P. Different games will have different equilibria. Therefore, the plan chosen depends on the game played.

A bankruptcy procedure is efficient if it selects always the efficient plan P* whatever is the set of available plans H. Indeed, a bankruptcy procedure has to operate in quite different circumstances. Hence, the designer of the procedure should make sure that whatever situation may prevail in the future the right plan will be chosen.

It has to be underlined that the choice of a game (i.e. of a bankruptcy procedure) not only influences which plan is chosen among the ones available, but it may also restrict the plans available, as it will be shown later. We therefore refer to the set of plans available under a given bankruptcy procedure G as $H(G)$.

But what is an efficient plan? Using the definition given above, revenue efficiency is obtained if the plan chosen P^r is such that:

$$(2) \qquad P^r = \underset{P}{\operatorname{argmax}} \sum_{i}^{N} E\Pi_i(P).$$

Allocative efficiency is obtained, instead, if the chosen plan P^a is such that

$$(3) \qquad p^a = \underset{P}{\operatorname{argmax}}\, V(P).$$

Finally, in analyzing efficiency we will highlight whether violation of absolute priority rules may occur.

One important reason why efficiency of some type may not be reached is that when one plan is chosen, for example by the creditors through a voting scheme, they are voting at the same time on the allocation of the ownership of the firm and on the split of the proceeds (Aghion, Hart and Moore, 1992).

Notice that, although in this paper we shall consider merely a perfect information setting, this framework can easily handle situations of incomplete information, where only the individual proposing a plan P actually knows the value the firm will take under such plan.

In the reminder of the paper we analyze the efficiency properties of four bankruptcy procedures under alternative exogenous conditions.

3. Cash auctions

A bankruptcy procedure often observed in various countries prescribes a cash auction of the firm either in piecemeal or as a going concern to the highest bidder. Chapter 7 procedure in the US is a striking example of this procedure. The German bankruptcy code has also the same basic structure, in fact piecemeal liquidation may be avoided only if at least 35 per cent of the bankrupt firm creditors may be repaid in cash. The liquidation procedure in the UK and the fallimento con vendita all'incanto in Italy have also the same basic structure. For simplicity, in what follow we will mainly focus

on the working of the US procedure.

Under Chapter 7, a court appoints a trustee to sell the firm's assets, either piecemeal or as a going concern, to outside buyers. Therefore this bankruptcy procedure may be described as an auction where anybody (or any group of people) can make a bid, which will correspond to a plan P. An important constraint, however, is imposed on H(G), since only cash bids are allowed. If credit markets are not perfect, hence potential bidders may be cash constrained, then although the trustee is supposed to choose the bid that maximizes the revenues from the sale, it is not clear that even revenue efficiency will be achieved. Indeed, there may be potential buyers who are cash constrained. If they could, for example, renew some of the credits or offer share participation in the new firm, then their plan would be revenue efficient, however such plan is not in H(G). Clearly, in this case also allocative efficiency may not be reached.

However, we want to show that if the creditors are <u>not</u> cash constrained, then allocative efficiency is guaranteed by the use of Chapter 7, but revenue efficiency may not be reached. Allocative efficiency will be achieved because the individuals obtaining the benefits from plan P^a will make the highest offer and win the auction (Maskin, 1992). That is why it has been argued (see Baird, 1986) that under Chapter 7 the firm can be sold as a going concern. Hence, Chapter 7 is an example of an efficient bankruptcy procedure.

In the remainder of this section we shall argue that revenue efficiency is the problem of the Chapter 7 procedure. Consider, in fact, the following example. Assume that only two potential bidders (none of them a creditor) are interested in acquiring the firm. Bidder 1 has a plan P_1 which yields a value of the firm $V(P_1)$, while bidder 2 has an alternative plan P_2 which yields a strictly higher value of the firm:

$V(P_1)<V(P_2)$. If both these bidders participate in the cash auction, clearly bidder 2 will get the firm paying an amount $V(P_1)$(or any small amount above it). Hence, allocative efficiency will be achieved and the total revenue from the cash auction to the creditors will be $V(P_1)$. However, there exists an alternative plan P' prescribing also non cash returns that yields strictly higher returns to the creditors. Consider, in fact, a situation - which is not possible under Chapter 7 - in which the creditors auction off only the majority stake of the firm (we shall assume is 50 per cent plus one share) and retain the remaining shares as their own. Clearly the highest bidder will still be bidder 2 and the price paid per share will still be the same. However, the total compensation to the creditors between share value and cash revenues from the auction will then amount to $\frac{1}{2}V(P_2) + \frac{1}{2}V(P_1)$. This revenue is strictly bigger than what the creditors were able to obtain under Chapter 7. Therefore revenue efficiency is not obtained.

The critical restrictions imposed by Chapter 7 which do not allow even in a world with no cash constraints to achieve revenue efficiency is the fact that necessarily the creditors have to auction off for cash the <u>whole</u> firm. Indeed, even if you allow the bidders to bid only for lower stakes of the company they will have no incentives to propose the above plan P' since by purchasing the entire firm at the price $V(P_1)$ they will be able to appropriate all the gains from trade of the transaction which amount to $V(P_2)-V(P_1)$. Notice that even if Chapter 7 did not constrained creditor to auction the whole firm still there will be a problem. Indeed, Chapter 7 does not define explicitly the creditors' ownership rights on the non-majority stake of the firm that they may decide to retain for themselves.

The phenomenon we analyze here has the same nature of the phenomenon analyzed by Zingales (1993) in the case of an

IPO. The main difference consists in the pricing rule used by the market in the case of a public offering as opposed to the pricing rule used in the auction of a bankrupted firm. Indeed, the market for bankrupted firms is thin hence buyers enjoy some monopsony power: this amounts to the gains from trade $V(P_2)-V(P_1)$ in the example mentioned above. It is this monopsony power which is reduced when only a control stake of the firm is auctioned off.

4. Structured bargaining

We shall now consider an alternative bankruptcy procedure based on the idea of a structured bargaining. Leading examples of this procedure are Chapter 11 procedure in US and the Concordato preventivo in Italy. In the remainder of the section we shall focus for simplicity on Chapter 11 procedure, however the analysis developed easily extends to similar procedures adopted by the legislations of other countries.

Under Chapter 11, the firm remains in operation while a reorganization plan is worked out with its creditors. Any interested party, for example the debtor or a creditor, may propose its own plan of reorganization to the court and other creditors. A plan of reorganization separates creditors into classes, usually based on the seniority of claims. Approval of a plan of reorganization requires a majority of each class of creditors by number and two-thirds by face value of the claims.

For simplicity, let us assume that there is only one creditor per class. Then, unanimity is required to approve a plan. Chapter 11 can then be modeled as a bargaining game in which any of the creditors may propose one plan and all of them have to agree to it for the plan to be accepted. If the

creditors cannot agree on any reorganization the firm is liquidated and each creditor receives l_i. Finally the agreement of a creditor is not required when his initial credit is fully repaid (Wruck, 1990).

The first question we ask is: if a creditor proposes a plan P^a that is allocatively efficient will it be accepted? In principle, one would expect yes, since we know that bargaining models with perfect information always achieve ex-post efficiency (this result is just an application of Coase Theorem). Indeed, it is in the interest of the creditors to maximize their joint surplus. Hence, the main issue is whether the ex-post efficient allocation obtained is also ex-ante efficient. Indeed, under Chapter 11 the creditors are bargaining at the same time over the allocation (and therefore the value of the firm V) and the split (that is on the $E\Pi_i$). Therefore, if the rules of the bargaining game - i.e. the rules of Chapter 11 - do not allow enough leeway, in the form of the compensations creditors may receive, it is not guaranteed that ex-ante efficiency will be obtained. In particular, we show in the next example that absolute priority rule may conflict with allocative efficiency.

Consider, in fact, a simplified case in which there are only two creditors, creditor J, which is the junior creditor, and creditor S, which is the senior creditor. Further, we shall assume that all creditors have the same discount factor δ. Finally, for sake of simplicity, we assume that the maximum value of the firm - the one implemented by the allocative efficient plan P^a - is strictly lower than the amount owed to the most senior creditor: $V(P^a)<c_S$. This assumption implies that according to absolute priority rule the junior creditor should not receive any compensation.

The rules of Chapter 11 require the approval of any proposed plan by both creditors with two exceptions: the

liquidation plan P_L and any plan that compensates the junior creditor in the amount of his original credit c_J. These exceptions define bounds on the compensation both creditors (in particular the junior creditor) may receive in the Chapter 11 bargaining game. Consider, in fact, the liquidation plan P_L. This plan defines the compensations both creditors receive in the event of disagreement. Given our assumption these compensations are $l_S=V(P_L)$ and $l_J=0$. They represent the lower bounds of the compensations both creditors may obtain out of the bargaining game. Further, since any plan that compensates the junior creditor in the amount c_J does not require his approval such amount is the highest possible compensation the junior creditor may hope to obtain in the bargaining game.[9]

We therefore conclude that the junior creditor share of the firm's value under the allocative efficient plan - the plan that will be chosen during the Chapter 11 bargaining game - will be bound above and below in the following manner:

(4) $\quad 0 \leq E\Pi_J(P^a) \leq c_J.$

However, the actual share that the junior creditor will obtain out of the bargaining game will depend on the extensive form of such game. In contrast with other bankruptcy procedures (such as the Receivership in the UK) Chapter 11 has little to say on such extensive form. Any party to the bankruptcy can propose a plan provided that the final plan is approved in the way discussed above. To keep the treatment simple we shall restrict attention to the case in which only the two creditors may make proposals and they do not make them simultaneously.[10] Hence, either the senior or the junior

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9 Symmetrically, c_S is the upper bound of the compensation the senior creditor may achieve in the bargaining game. This upper bound is not feasible in the example considered in this section.

10 We rule out the case in which creditors make proposals simultaneously only in order to avoid discussing the issue

creditor propose an alternative plan. While the other party has the right to accept or reject the proposal.

The question is then what extensive form will lead to an equilibrium in which the junior creditor receives the lowest possible share of the firm $E\Pi_J(P^a)=0$. Indeed, if this is not the case Chapter 11 bargaining game will necessarily lead to a violation of absolute priority rule.

Clearly, the only extensive form that may lead to such a low share for the junior creditor is a situation in which the senior creditor makes all the proposals and the junior creditor is left with the right to accept or reject each proposal. If instead the junior creditor has the right to make even only one proposal, say the n-th one, the share he will receive is strictly positive. His compensation, in fact, will be:[11]

$$(5) \quad E\Pi_J(P^a) = \left\{ \begin{array}{ll} \delta^n(1-\delta)\ V(P^a) > 0 \text{ if } \left[1-\delta^n(1-\delta)\right] V(P^a) \geq V(P_L) \\ V(P^a) - V(P_L) > 0 \qquad \text{otherwise} \end{array} \right\}.$$

Consider, now the bargaining game in the case the senior creditor makes all the offers. In this case the unique subgame perfect equilibrium is the one in which the junior creditor obtains the lowest possible compensation: $E\Pi_J(P^a)=0$. However, notice that nothing guarantees in the Chapter 11 bargaining game that such a specific extensive form will be respected by the two creditors. In particular nothing prevents the junior

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of multiplicity of equilibria. However, the result about the creditors' final payoffs would still hold true.

11 These shares characterize the unique subgame perfect equilibrium of the bargaining game with outside options in which the junior creditor makes the n-th proposal, which may or may not be accepted by the senior creditor and the latter individual makes all the other proposals, which conversely may or may not be accepted by the junior creditor. Cf. Osborne and Rubinstein (1990, Ch. 3).

creditor from making a proposal at any future stage, yielding in such case a strictly positive compensation for the junior creditor and hence a violation of absolute priority rule.

In this situation the particular voting structure prescribed by the Chapter 11 creates claims in the returns of the firms by creditors and in general claimholders, which will receive no compensation at all in the event of liquidation. This clearly suggests a trade-off between allocative efficiency and absolute priority rule, hence this may explain why under Chapter 11 violations of absolute priority rules are frequently observed (Franks and Torous, 1989).[12]

In a different context, Franks and Nyborg (1994) also look at the inefficiencies arising from the bargaining among creditors and show how this may lead to the violation of the absolute priority rule. However, they focus on a situation in which creditors have private benefits from controlling the firm. They show that the probability of inefficient liquidations critically depends on the distribution of control rights and seniority of claims. As seen above we abstract from creditors' private benefits and focus on the fact that the extensive form of the bargaining game may lead to violations of absolute priority rule.

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12 Frank and Torous (1989) also observe that deviations from absolute priority are larger in workouts than in formal bankruptcy. Although not analyzed explicitly here, this is consistent with our approach: the less structured the bargaining is the higher is the trade-off between allocative efficiency and absolute priority rule.

5. Administration

We shall now consider the efficiency properties of probably the most common form of corporate reorganization of a firm in distress in a number of countries. This is known as the administration procedure in the UK, the amministrazione controllata in Italy and consists in appointing an administrator whose role is to propose a reorganization plan that has to be approved by the claimholders of the firm.

This procedure has in common with the structured bargaining analyzed in Section 4 above, the fact that a reorganization plan must be approved by a majority of the claimholders in order to be implemented. The rules for majority voting differ from country to country and as we saw in the example mentioned above the choice of a majority voting rule may improve the allocative efficiency of a bankruptcy procedure.

The main difference with Chapter 11 analyzed in the previous section, however, is that an externally selected individual - the administrator -, with no personal interest in the firm, has to choose a plan P and propose it for approval to the claimholders. This can be seen as a bargaining model where one individual proposes plan P and the others may only accept or reject. Furthermore, the administrator is selected because of his independence from the other parties, hence for having a different objective function, which might be to achieve both ex-ante and ex-post efficiency. If the authority in charge of selecting the administrator succeeds in choosing a "benevolent central planner", both efficiency objectives may be achieved in the proposed plan P. However, notice that it is still possible that a trade off between ex-ante and ex-post efficiency may arise in the voting phase of the procedure. We know from the bargaining theory that if a party can only reject or accept proposals without the possibility to make

counteroffers his bargaining position is considerably weaker. Nonetheless, he may still be able to hold up the others in order to obtain a larger stake. This is particularly true if the participation of such party is needed to implement the proposed plan P. Notice in fact that the administrator determines the set of feasible plans H(G) relevant for this procedure.

By the same token, when the position of the claimholders is weakened the bargaining position of the administrator who makes the proposals is a very powerful one. Therefore if the administrator colludes with one of the bargaining parties, he will be able to propose only plans which are favorable to such party.[13] Given this possibility, it may therefore be valuable to have a bankruptcy procedure where the stage of plan proposals is more decentralized.

One way to decentralize the selection of the administrator is to give one of the claimholders full power to choose it. This is exactly what happens in the UK Receivership procedure, which, in this respect, may be considered a special case of administration. According to the Receivership procedure the creditors secured by the floating charge have the right to appoint a receiver which takes the necessary decisions concerning the allocation of the firm.[14]

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13 Notice that this possibility of collusion becomes even more likely in the presence of incomplete information of the parties on the set of available plans. In fact, in such case the claimholders may not be aware of the existence of a more appealing plan which is however less attractive to the colluding claimholder.

14 According to the UK insolvency law the floating charge is a form of security granted by a company over its assets in favor of a creditor in such a manner that the company remains free to deal with those assets unless a bankruptcy procedure is initiated. An additional type of security a company can grant a creditor goes under the name of fixed charge. This is a security over a specific asset which prevents the debtor from disposing of the asset without

Clearly, the bargaining power of the appointing claimholder is magnified. It is however interesting to highlight that the effect on the ex-ante efficiency of such procedure are not necessarily negative. In a way, such procedure chooses from the start who is the most senior creditor so that he is unlikely to have his priority changed at the bankruptcy stage. As opposed to what we have seen in the previous section, the Receivership procedure does provide the bargaining game among creditors with a specific extensive form.

In the example analyzed in Section 4 above the Receivership procedure will imply that if the senior creditor is secured by the floating charge he will dispose of the firm without requiring the approval of the junior creditor. This will imply that the allocative efficient plan P^a will be implemented in compliance with absolute priority rule. Indeed, the junior creditor will not receive any compensation.

It has been argued (Webb, 1991; Franks and Torous, 1992), however, that when compared with the Chapter 11 procedure the Receivership creates a extremely high power in the hands of the creditors secured by the floating charge. In fact, assume that the value of the firm when liquidated is high enough to guarantee the possibility of full compensation of the senior creditor original credit: $V(P_L)>c_S$. If only the senior creditor is secured by the floating charge nothing will prevent the receiver from liquidating the firm rather that choosing the allocative efficient plan. Clearly, Coase theorem still applies; hence, the junior creditor may find optimal to offer a compensation higher that the amount c_S to the senior creditor so as to convince the receiver not to liquidate the firm and to achieve ex-post efficiency. However, this will

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the creditor consent. Fixed charges are senior to floating charges.

result in a violation of absolute priority rule creating once again a conflict between ex-ante and ex-post efficiency.

6. The Aghion, Hart and Moore proposal

Last, we shall analyze the efficiency properties of a recent proposal to reform bankruptcy procedures by Aghion, Hart and Moore (1992). Such proposal has been formulated as a reform of the Chapter 11 procedure in the US (Aghion, Hart and Moore, 1992) and more recently as a reform of the administration procedure in the UK (Aghion, Hart and Moore, 1993).

According to such procedure, when a firm is put in bankruptcy a stay is put on the creditors' claims, then a trustee, for example an insolvency practitioner, is appointed by the judge in charge to supervise the procedure. This trustee has two distinct tasks. He has to convert the firm into an all equity firm, and allocate rights to this equity among the former claimholders so as to comply with absolute priority rule. The rule followed to achieve the latter goal is the one proposed by Bebchuk (1988). According to such rule senior creditors are allocated equity directly while both junior creditors and incumbent managers are given the option to buy the equities in the new firm at the value of the former claim by senior creditors. Further, cash and noncash bids for all or part of the new, all equity, firm are solicited by the trustee. Noncash bids may include proposals to reorganize the firm as a going concern, with former creditors receiving securities in this reorganized firm. Finally, these new shareholders vote on the bid to select. When this plan is implemented the firm exits from bankruptcy.

Two features are critical in this procedure. The initial swap between former debt and equities in the new firm, and the

allocation rule of equities which makes sure that no violations of the absolute priority rule occurs. The latter rule in particular guarantees that only parties that are entitled to a compensation in the bankruptcy procedure, or whose willingness to pay is enough to guarantee that they will buy out more senior claimholders, have a say in the future destiny of the firm.

The key feature of the procedure in question that allows allocative efficiency to be reached not at the expenses of ex-ante efficiency comes from the different voting rule imposed in order to accept a proposed plan. Assume in fact that when bids are solicited any of the reorganization plans P^a maximizing allocative efficiency is proposed at least in the form of a noncash bid. In other words, assume that the number of bidders is not restricted by outside reasons. Then, if the allocative efficient plan is proposed, the rule for voting whether to accept or reject respects the absolute priority rule. In particular, notice that the conflict of interests between the junior and the senior creditor, highlighted in the example discussed in Section 4 above, disappears once, as it is done in this procedure, the absolute priority rule is complied with using the scheme suggested by Bebchuk (1988). Indeed, according to the procedure in question the junior creditor has a say on the future destiny of the firm only if the value of the firm is high enough or he has bought out a senior creditor for the amount of the original credit. In contrast with what happened under Chapter 11, the claimholders' right to vote for the plan to be implemented will itself be allocated in compliance with absolute priority rule. This clearly solves the trade-off between allocative efficiency and absolute priority rule mentioned in Section 4 above. Notice that when the vote is cast on the solicited bids the fact that the former claimholders have been transformed in shareholders guarantees that one of the possible alternatives is to preserve the security structure of the new firm as it

is: an all equity firm. This alternative replaces the outside option of the Chapter 11 negotiation which is liquidation.

In addition, the initial swap between debt and equity may be used to achieve a further improvement in the final allocation: revenue efficiency. As it stands, the proposal in question leaves the potential bidders free to choose whether they want to bid, in cash or noncash form, for the entire, or only parts, of the firm. This feature of the proposal may contrast with revenue efficiency. Consider, in fact, the example described in Section 3 above. Clearly, bidder 2 has no incentive at all to propose, in the form of a noncash bid, a plan which prescribes that the majority stake of the reorganized firm is auctioned off to the highest bidder while the remaining minority stake stays in the hands of the former creditors. In doing so, in fact, bidder 2 is giving up part of the gains from trade that otherwise he may capture.

We propose a solution to this problem which is consistent with the main features of the procedure in question. This solution consists in allowing the former creditors, now shareholders of the reorganized firm to restrict in any way they prefer the stake of the firm for which they solicit cash and noncash bids. Alternatively, the same outcome may be achieved by inviting bids per share and leaving to the new shareholders the right to sell or not their shares. In this way the full power of the initial swap between debt and equity is exploited by the creditors to maximize their revenue. Indeed, the ownership rights of former creditors on the share of the firm they decide to retain are well defined.

Conversely, if the choice is left to the bidders although they may compete proposing both cash and noncash bids the thin nature of the auction will not necessarily yield the same level of revenue for the former creditors. Indeed, in the

example discussed in Section 3 bidders have a clear incentive to bid directly for the entire firm. They may in this way capture the entire amount of gains from trade from the transaction. Hence, if revenue efficiency is one of the goals of a bankruptcy procedure an additional revenue increasing tool for the new shareholders of the firm is to allow them to restrict - before the auction itself takes place - the type of bids which are solicited.

7. Concluding remarks

In this paper we have presented a framework for the analysis of the efficiency properties of a bankruptcy procedure. Such framework focuses on the distinction between ex-ante and ex-post efficiency and concentrates on two aspects: revenue efficiency and allocative efficiency as defined above. We have then analyzed using such framework four bankruptcy procedures. These are cash auctions, in particular US Chapter 7, structured bargaining, US Chapter 11, administration, UK receivership, and finally the proposal advanced by Aghion Hart and Moore (1992).

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