Section 365, Mandatory Bankruptcy Rules and Inefficient Continuance

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Section 365 of the Bankruptcy Code prohibits enforcement of the once common "ipso facto clause." The clause excuses the solvent party from performance of the contract when the other party becomes insolvent. We show that the ability of insolvent firms to continue bad projects is enhanced by the absence of ipso facto clauses. Without such a clause, the firm can exploit the inability of courts always to assess expectation damages accurately to compel a solvent party to stay in a bad deal. An ipso facto clause would preclude this outcome because the clause permits the solvent party to exit costlessly. Further, an ipso facto clause improves the managers' incentive to exert effort to avoid financial distress. These results have two broader implications. First, that the important mandatory rule regulating the ability of solvent parties to exit is inefficient suggests that the justifications for the Bankruptcy Code's other mandatory rules should be rethought. Second, our analysis suggests that stakeholders such as contract partners of bankrupt firms may have important roles to play in inducing efficient bankruptcy decisions through their abilities to stop unproductive projects that bankrupt firms may otherwise continue.

1. Introduction

Section 365 of the Bankruptcy Code authorizes the trustee of a bankrupt firm (or the debtor in possession) to assume or reject the firm's executory contracts.[1] A contract is said to be executory if it is partially performed. For example, if the contract required a seller to deliver goods to the firm and the seller had

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1. When a firm enters the Chapter 11 reorganization procedure, its managers may continue to conduct operations. The firm is then referred to as the debtor in possession.

delivered them before insolvency, the contract is not executory: the seller fully performed her obligation, thereby maturing the buyer's duty to pay. If instead the contract required the seller to deliver goods and the firm became insolvent before the seller delivered or was paid, the contract is executory: the seller has still to perform and the buyer's obligation is contingent on performance.

The debtor in possession or trustee may reject an executory contract. Rejection constitutes a breach, permitting the seller in the example here to sue for damages. This suit is worth little because the buyer is insolvent. The debtor in possession or trustee also may keep the contract in force by accepting it. A solvent party is not necessarily reassured by the bankrupt firm's promise to pay or perform, though the Bankruptcy Code gives the solvent party a priority claim for damages if the bankrupt breaches after the solvent party has fully rendered its performance. A deal may be favorable under particular terms with a solvent contract partner but unfavorable under those terms with an insolvent one. Hence the trustee or bankrupt firm's power to accept under the original terms can keep contracts in force that solvent parties would otherwise cancel. This power is used. Debtors in possession will accept favorable contracts. The trustee's compensation increases with the revenue he brings into the estate. Therefore trustees also accept contracts that create gains for the insolvent firm, though the contracts may have become unprofitable for the solvent party.

Prior to the 1978 Bankruptcy Code, parties could contract out of section 365: Sales contracts commonly contained a term called an "ipso facto clause," that defined a party's insolvency as a breach of contract. In the example above, were an ipso facto clause present, the insolvent buyer would be the contract breacher; the solvent seller's obligation to perform would thereby be extinguished and it could exit the contract costlessly. Section 365(e)(1)(A) of the Bankruptcy Code, adopted in 1978, made ipso facto clauses unenforceable. Policy makers offer two reasons for this prohibition: The section enhances the bankrupt estate,[2] and aids in the debtor's rehabilitation.[3] These justifications are problematic because the state does not pursue them in related contexts. For example, the bankrupt estate would also be enhanced and rehabilitation perhaps aided were the Bankruptcy Code not to enforce mortgages against insolvent debtors, yet the code permits enforcement.

The question whether a mandatory rule such as section 365 is justified has received considerable attention recently from law reformers because the sec-

2. The National Bankruptcy Review Commission was appointed by Congress to make recommendations to it for reforming the Bankruptcy Code. The commission's report regarding section 365 states: "The trustee should elect to commit the estate to perform and receive performance . . . only if such actions are likely to yield a net benefit to the estate, i.e., the value of the nondebtor's remaining performance exceeds the estate's costs of taking over the debtor's remaining obligations." See *Report of the National Bankruptcy Review Commission,* Volume I, Chapter 2 at 464 (1997).

3. The Senate committee report explained the goal of section 365(e)(1)(A) as follows: Subsection (e) invalidates ipso facto or bankruptcy clauses. These clauses, protected under current law, . . . permit the other contracting party to terminate the contract . . . in the event of bankruptcy. This frequently hampers rehabilitation efforts. If the trustee may assume . . . the contract . . . , the contract . . . may be utilized to assist in the debtor's rehabilitation or liquidation.

tion has been litigated frequently. This litigation underscores the commercial significance of the question of how the state should regulate ongoing contracts between solvent and insolvent firms, together with the section's lack of clarity.[4] Also, the Bankruptcy Code contains a number of mandatory rules. These represent a sharp departure from the usual commercial statute and the common law of contracts, both of which largely contain defaults.[5] The current interest in market solutions has raised the question whether the code's exceptionalism is warranted.

In this article, we focus on two efficiency questions that section 365 raises. First, does the section yield ex post efficiency, in the sense that parties perform contracts only when performance would generate net gains? Second, does section 365 enhance ex ante efficiency, in the sense that contract parties have correct incentives to invest given their anticipation of the ex post results that section 365 could yield? Section 365 does restrict the ability of parties to contract, and so it cannot improve these parties' welfare. But it is not obvious that the section will make parties *strictly* worse off. Indeed, the Coase theorem suggests that section 365 will have no effect at all: The solvent party can bargain with the debtor in possession or its trustee to achieve the efficient outcome, whether or not ipso facto clauses are banned. Unless such negotiation is very costly, the seller in the example here apparently could be induced to perform only when performance created net gains, whether the seller had or lacked a legal right to exit. Similarly, the ex ante contract apparently can give the buyer correct incentives to invest.

Several features relating to the circumstances of bankrupt firms may impede efficient renegotiation, however.[6] (a) Insolvent parties sometimes obtain private benefits from pursuing projects that have little social merit. Indeed, financial distress itself may be caused by the managers' pursuit of unproductive projects

4. The commercial significance of section 365 and the current level of dissatisfaction with it are evidenced by the attention the section is receiving from law reformers. The National Bankruptcy Conference, in 1994, published a major report, "Reforming the Bankruptcy Code." (The National Bankruptcy Conference is a prestigious private law reform group whose members include bankruptcy judges and prominent members of the bankruptcy bar.) This report devoted 30 pages to section 365, only 18 pages to the nine important Bankruptcy Code sections that regulate the trustee's ability to avoid claims against the bankrupt estate, and 46 pages to the entire reorganization process. The National Bankruptcy Review Commission's report devoted 19 pages to section 365, more pages than were devoted to any other single code section. This report and the report of the National Bankruptcy Conference cite much of the legal literature on section 365.

5. As another example of the code's regulatory focus, section 365(f)(1) permits the debtor in possession or trustee to assume many types of contracts and then, in common circumstances, to assign the debtor's obligations under the contract to a third party to perform "notwithstanding a provision in an executory contract . . . that prohibits, restricts, or conditions the assignment of such contract . . . " The Bankruptcy Code thus compels the solvent party to deal with a new contract partner, despite a contract clause to the contrary. This mandatory rule also is justified on the grounds that the power to assign may be used to enhance the bankrupt estate or to aid in rehabilitation or liquidation.

6. It is customary in the contract literature to assume symmetric information ex post, and we retain that assumption in the analysis below. In fact, an important bankruptcy function is to generate information about the insolvent firm for creditors.

in order to generate private benefits. Renegotiation may fail to internalize the externality associated with the pursuit of private benefits. (b) Insolvent parties commonly are cash constrained. As a consequence, if the seller in the example above could freely exit, the buyer apparently could not buy the seller's performance when the buyer's gain would exceed the seller's loss. (c) If the solvent party breaches, the insolvent party is entitled to sue for damages, but courts may not always find damages accurately. The prospect of judicial error also may impede efficient renegotiation.

As will be shown, each of these three features alone does not generate ex post inefficiency, but the combination of pursuing private benefits [feature (a)] and the possibility of judicial error [feature (c)] will induce ex post excessive trade. The possibility of judicial error could cause the solvent party not to reject socially inefficient trade, while the buyer's pursuit of private benefits can result in inefficient trades being performed. An ipso facto clause will be shown to cure this ex post inefficiency. Finally, we make the standard assumption that investment is not contractible. This implies here that Coasian negotiations cannot in general ensure ex ante efficiency.[7] We show that an ipso facto clause can improve ex ante efficiency in this environment.

This article develops a model of bankruptcy, based on the introductory example, that permits identification of the ex post and ex ante inefficiencies that can arise when ipso facto clauses are illegal, and also demonstrates when and how an ipso facto clause can improve the outcome. We first show that despite the buyer's pursuit of private benefits, if the court does not err in assessing expectation damages and the parties can renegotiate, ex post efficiency is always achieved, whether an ipso facto clause is used or not. This result arises because the expectation damages remedy, when properly applied, permits the seller (the solvent party) to reject any project whose net return does not justify its cost.

Our second and more important result arises when we relax the assumption of accurate courts [feature (c)]. When the court may err in finding expectation damages, then, absent an ipso facto clause, the seller's ability to breach a socially inefficient contract is limited. The expected damages that the seller would have to pay on breach exceed the buyer's true damages, so the seller could be forced to continue an inefficient deal. The buyer, in turn, sometimes would want to hold the seller to an inefficient contract because continuing the firm permits the buyer to obtain the private benefit. An ipso facto clause precludes this ex post inefficiency because the clause allows the seller to exit freely when anticipating a loss from the project. Further, that the buyer is liquidity constrained [feature (b)] comes to have a desirable property: The constraint prevents the buyer from inducing the seller to perform an inefficient deal.

7. There is a large literature that debates whether ex ante efficiency can be achieved in the presence of contractual incompleteness. Chung (1991), Hermalin and Katz (1993), Aghion, Dewatripont, and Rey (1994), Nöldeke and Schmidt (1995), Edlin and Reichelstein (1996), and Maskin and Tirole (forthcoming) argue that an incomplete contract can still achieve ex ante efficiency. Che and Hausch (1999), Segal (forthcoming), and Hart and Moore (forthcoming) question the value of contracting in restoring ex ante efficiency.

Our third result is that ipso facto clauses also improve the firm's ex ante incentive to invest. The buyer's liquidity constraint implies that the outside parties (the investor and the seller) cannot fully recoup their investment costs when the buyer becomes insolvent. Consequently, these parties will charge risk premia to the buyer (above their costs) in the solvency state. This prevents the buyer from internalizing the full social marginal return from avoiding insolvency. The buyer therefore will invest too little effort in preventing financial distress. When courts can err, then for the reasons just given the buyer can continue a losing project to obtain private benefits. This will lead the outside parties to charge the buyer even more in the solvency state, which aggravates the underinvestment problem. An ipso facto clause permits the seller to exit without paying any damages, and so improves the buyer's investment incentives. The buyer's inability to continue a losing project reduces the outside parties' costs and so reduces the solvency state payment these parties will require the buyer to make. This in turn shrinks the wedge between a project's marginal social return and the buyer's marginal private return from effort.

To legalize the ipso facto clause thus would improve welfare: The clause can prevent inefficient continuance and improve the buyer's incentive to invest.[8] Finally, our analysis helps to explain why parties often used ipso facto clauses before the Bankruptcy Code banned them, but sometimes did not. When the buyer's incentive to invest is improved and the buyer cannot coerce a losing performance, the buyer will obtain better ex ante terms. On the other hand, an ipso facto clause reduces the buyer's ability to consume private benefits while insolvent or to exact renegotiation rents. Buyers will offer ipso facto clauses when the ex ante gain exceeds the expected value of behaving strategically in bankruptcy.

Section 2 presents an example that illustrates the main result of the article. Section 3 sets out the general model, Section 4 analyzes the renegotiation game, and Section 5 considers the buyer's incentive to invest. Section 6 explores the model's welfare implications and asks why parties used ipso facto clauses when they were legal. Section 7 summarizes the efficiency case against a mandatory section 365 and concludes.

An ipso facto clause is only one of many possible terms in a sales agreement and section 365 is only one of many sections in the Bankruptcy Code. The extraordinary attention the section has attracted from law reformers and the careful attention we pay to the section here is easy to explain, however. The question of how the law should regulate ongoing transactions between

8. Fried (1996) suggests amending section 365 to improve ex post efficiency. If parties cannot renegotiate, the section may produce inefficient breach: The buyer receives the full benefit from contract performance, yet bankruptcy effectively shields him from being liable for the full expectation damages if he rejects. Consequently, the buyer may reject too many contracts. See also Triantis (1993). We do not disagree with Fried's policy prescriptions but we show that the problem he identifies disappears if the parties can renegotiate. Fried assumes that ex post renegotiation is impossible. In our view, this assumption is poorly motivated. For example, Fried says that some solvent parties may refuse to renegotiate but does not explain why parties would eschew possible renegotiation gains. Renegotiation after insolvency also is common.

solvent and insolvent firms is relevant to two major bankruptcy issues. The first issue arises from the large number of restrictions on free contracting in the Bankruptcy Code: Is bankruptcy sufficiently unlike other areas of commercial and business law as to justify all of these restrictions? Our results here suggest a negative answer. The second issue concerns the role of stakeholders in a firm's bankruptcy decision. The literature on corporate finance and bankruptcy often focuses on the relationships among debt and equity investors and the managers of firms, but it has paid little attention to the role of stakeholders.[9] The current article directs attention to the contracting relationship between a bankrupt firm and its contract partner and explores how the power of contract partners to withhold performance of future obligations can, under free contracting, be utilized to prevent continuance of unproductive projects. This finding suggests that current economic analyses of the insolvent firm's continuation decision are incomplete.

2. An Example

We begin with a simple example that illustrates the positive contribution an ipso facto clause can make to efficiency. Specifically, the example will show that the clause eliminates the insolvent party's ability to behave strategically in bankruptcy. This effect improves the buyer's incentive to invest, which in turn enhances the creditworthiness of the buyer's project.

Suppose that a liquidity constrained firm (hereafter referred to as "the buyer") has a project that requires an initial investment of $k > 0$ from an investor and the supply of an input from a supplier (hereafter referred to as "the seller"). The project yields a revenue of $y > 0$ ("the buyer is solvent") or $y = 0$ ("the buyer is insolvent"). If the buyer exerts a fixed effort of $e > 0$, it will be solvent with probability ϕ_H. Without the effort, the probability of solvency is $\phi_L < \phi_H$. The buyer's effort decision is private information, and so is not contractible. Whether the firm is solvent or not is known publicly after the investment of k and the buyer's effort decision, but before the input is supplied. The input would cost the seller $c > 0$ to produce, and the buyer would realize a private benefit of b if the project is pursued. In the initial analysis, the parties do not use an ipso facto clause.

We let

$$\phi_H y - e > k + c > \phi_L y. \tag{1}$$

These inequalities imply that the net expected value of the project is positive only when the buyer exerts effort; so the project is creditworthy only when the outside parties can plausibly believe that the buyer will not shirk. Assume also that $b > c$. In the example, the buyer and the seller agree on a fixed price $p \in [c, b]$ for the input, to be paid after the project is up and running. This contract can be specifically enforced, so if the buyer decides to pursue

9. See Harris and Raviv (1992) and Adler (1997) for surveys on the law and economics and the finance literature that deal with corporate finance and bankruptcy.

the project, she can compel the seller to deliver the input. (This restrictive assumption, along with others, will be relaxed in the general model.)

The project will be performed when the buyer is solvent. If the buyer turns out to be insolvent, the seller cannot receive the agreed price of p since the project yields no revenue and the buyer is liquidity constrained. Yet since the private benefit from the project exceeds the price, the buyer will compel the seller to perform. In this scenario, both the investor and the seller collect no revenue, but the buyer realizes her private benefit of b.

Now turn to the contract and effort stages. Rationally anticipating default in the insolvency state, the investor and the seller will demand risk premia that will enable them to break even. If the investor and seller assume that the buyer will make an effort, the investor will charge at least k/ϕ_H and the seller will charge a price p that is at least c/ϕ_H. Given these prices, the buyer will have no incentive to make the effort if

$$\phi_H \left[y - \frac{k}{\phi_H} - \frac{c}{\phi_H} \right] + b - e < \phi_L \left[y - \frac{k}{\phi_H} - \frac{c}{\phi_H} \right] + b,$$

or

$$(\phi_H - \phi_L) \left[y - \frac{k+c}{\phi_H} \right] < e. \tag{2}$$

This simply says that the buyer will not exert effort when the expected marginal return from effort is less than the effort cost. When inequality (2) holds, the buyer will not make the effort. Given inequality (1), the project therefore will not be financed, since the project is not creditworthy when the buyer is not expected to make the effort. [Note that inequalities (1) and (2) can both hold simultaneously.]

Now suppose that the buyer offers an ipso facto clause to the seller. Again, the project is completed in the solvency state. In the insolvency state, the seller who produces the input could not collect the agreed price. Rationally anticipating this, the seller would invoke the ipso facto clause, not produce and exit the contract in that state. Because the clause permits exit, the seller cannot be specifically compelled to perform. The buyer has no liquidity when insolvent, and thus cannot renegotiate to reverse the seller's exit decision, although her private benefit from pursuit of the project would exceed the contract price. Thus the project is not performed and each party earns a zero payoff.

We now turn to the ex ante consequences that the ipso facto clause produces. As before, the revenue of y is generated only in the solvency state. Hence the investor charges the (gross) risk premium of k/ϕ_H to break even (if he assumes that the buyer makes the effort). Since the seller produces only in the solvency state, he can charge the contract price of c (i.e., he does not charge a risk premium). The ipso facto clause prevents the buyer from realizing a private benefit in the insolvency state. It follows that the buyer will exert effort if

$$\phi_H \left[b + y - \frac{k}{\phi_H} - c \right] - e \geq \phi_L \left[b + y - \frac{k}{\phi_H} - c \right],$$

or

$$(\phi_H - \phi_L)\left[b + y - \frac{k}{\phi_H} - c\right] \geq e. \tag{3}$$

The left-hand side of inequality (3) is now greater than the left-hand side of inequality (2) because the seller does not charge a risk premium and because the buyer is denied a private benefit if she becomes insolvent. Because of these two effects, the buyer has a greater incentive to exert effort with an ipso facto clause than without one. Thus the clause in effect functions as a commitment device by which the buyer can credibly promise the outside parties that she will make an optimal effort.

The buyer's ability to commit has dramatic consequences when both inequalities (3) and (2) hold, which can occur for certain parameter values. When these values would be realized, the buyer has an incentive to exert effort only if an ipso facto clause is used. Given inequality (1), this implies that some projects cannot be financed unless an ipso facto clause is present. Ipso facto clauses thus can be socially desirable.

This example is special in many ways. Not only is the model very simple, but the result rests on the restrictive assumptions that the contract price is less than the private benefit b but greater than c and that the contract can be enforced with specific performance. In what follows, we relax these assumptions and develop the result in a more general model.

3. The Model

A liquidity-constrained buyer agrees to purchase a product from a seller to use in a project. The project initially requires capital of k, which the buyer obtains from an investor. The three parties are risk neutral. There are two states: the solvency and insolvency states. The solvency state occurs with probability $\phi(e) \in [0, 1]$, which is increasing in the buyer's effort e (measured in monetary units). This effort can be interpreted as time and attention that the buyer devotes to managing the project successfully. The buyer's effort choice is not verifiable to a court, so the parties cannot contract to require a particular effort level. This feature will be seen to generate underinvestment in general. To ensure an interior condition, we assume that $\phi(e)$ is differentiable and strictly concave in e, and that $\lim_{e\to 0} \phi'(e) = \infty$. We also assume that $\phi(\infty) < 1$, which means that bankruptcy occurs with positive probability no matter how much effort the buyer exerts.

Let y denote the gross surplus the project yields to the buyer. In the solvency state, y is drawn from a positive, compact support $Y_s \subset \Re_+$ by a distribution function $G_s(y)$. Let $\hat{y}_s \equiv \int_{Y_s} y dG_s(y)$ denote the project's expected value. In the insolvency state, the buyer's gross surplus y is drawn from $[0, \overline{y}]$ according to a continuously differentiable cumulative distribution function $G(y)$. The seller's cost of production is a random variable c, drawn from $[0, \overline{c}]$ by a continuously differentiable cumulative distribution function $F(c)$.[10] Both the

10. Our results are robust to the possible cost differences between the solvency and insolvency states.

seller's cost c and the buyer's return y are observable. We make the following assumptions.

Assumption 1. $y - \overline{c} > k$, for all $y \in Y_s$

Assumption 2. $k > \overline{y} > \hat{c} \equiv E[c]$.

Assumption 1 holds that, in the solvency state, the project will earn enough to pay off the seller and investor. Assumption 2 holds that, in the insolvency state, the highest possible gross surplus from the project does not pay off the investor (first inequality), but this surplus exceeds the seller's expected cost of performance (second inequality). The second inequality in Assumption 2 can hold even when the project loses money on average in the insolvency state, and it implies that performance of the contract may be efficient in some bad states of the world.

The buyer derives private benefits b from pursuing the project. These can be the nonpecuniary utility from operating the firm, the opportunity to develop human capital from the firm's assets, or the opportunity to signal that the buyer is a good manager. In the usual case, the monetary cost of a firm's major project will exceed the pecuniary equivalent of the owner's private benefit, so we assume that the private benefit b is less than the investment cost k.[11]

We consider the pair of simple contracts that the buyer offers to the investor and the seller. The contract with the investor simply specifies the fixed payment R and the contract with the seller specifies a fixed price p that the buyer pays in exchange for the latter's performance. The specific timing of events is as follows:

- Date 1: The buyer offers a contract to an investor to borrow k, and a contract to a seller to purchase one unit of a product to be delivered at a price of p at date 8. (The seller's contract may include an ipso facto clause.)
- Date 2: After observing the terms of both contracts, the seller and the investor accept or reject their respective contracts.
- Date 3: The buyer exerts effort e in pursuing the project.
- Date 4: The state of nature (the buyer's solvency, the gross surplus from the project and the seller's cost of performance) is realized.
- Date 5: The seller decides whether to perform or breach.
- Date 6: The buyer decides whether to accept the contract or reject it.
- Date 7: The parties may renegotiate to reverse the decisions made at earlier times.
- Date 8: The court enforces the outcome reached at date 7; that is, it enforces the original contract terms if there is no renegotiation and it enforces the revised terms if there is renegotiation.[12]

11. As will become clear, this assumption is only sufficient for the results we obtain in Section 4. These results also hold even if the assumption fails, as long as b is not too big relative to k.

12. Breach can be by either party and is anticipatory: a party announces that it will not pay or perform.

Remark 1. The order of the breach decisions (dates 5 and 6) can affect the division of surplus but not the qualitative results obtained below. Assuming that neither party is entitled to damages if both parties breach, a party will not breach if the other party has breached or is expected to breach. Thus it suffices to study whether a party will breach if his partner does not. For this reason, the order of breach decision has no material effect on the analysis.

The time line suggests that the buyer has the entire bargaining power when offering contracts to the other parties, which would be the case if the seller and investor function in competitive markets. Consequently, the buyer will offer terms that make each outside party indifferent to dealing or not.[13] Without loss of generality, we focus on the subgame in which both parties accept the contracts. To be consistent with the ex ante bargaining power assumption, we also assume that the buyer has all the bargaining power in the date 7 renegotiation. The last assumption adds tractability but also has some descriptive accuracy: insolvent firms commonly have considerable bargaining power ex post because their creditors have high coalition costs. Although the investor has a weak bargaining position, the settlement still requires his approval. We add this feature because the trustee represents all creditors except the seller, and under bankruptcy law the trustee must agree to any ex post deal. Throughout we focus on subgame perfect equilibria. This means that each party will make the breach decision with rational expectations about how the decision will affect the outcome of renegotiation.[14]

A court will award expectation damages for breach of a contract, based on the court's (possibly imperfect) assessment. Expectation damages put the promisee in the same position as performance would have done. In the model here, if the seller breaches, the buyer thus is entitled to the expected project return less the price, whenever it is positive, and the seller is entitled on buyer breach to the price less performance cost. It is often difficult for courts to find unrealized profits accurately. To reflect this possibility, we permit the court to err in assessing the buyer's expectation damages. This feature of the model is captured by defining a general expression for these damages. For any y and p, we assume that the buyer's *expected* damage is given by

$$\theta(y - p) \equiv \alpha \max\{y - p, 0\} + \beta E_\epsilon[\max\{y - p + \epsilon, 0\}],$$

where $\alpha \geq 0$, $\beta \geq 0$, and $E_\epsilon[\epsilon] = 0$.[15]

13. We solve for a privately optimal contract between the buyer and seller, and also between the buyer and investor. Our approach selects a point on the Pareto frontier for these parties in which the buyer captures all the surplus. Because the buyer is liquidity constrained, the Pareto frontier is not linear. For this reason, a distribution-free privately optimal contract is not well defined.

14. The parties are allowed to renegotiate after a breach decision is made because trials are costly; also, settlements are very common. This feature has been adopted in other articles such as Edlin and Reichelstein (1996), Che and Chung (forthcoming), Che and Hausch (1999), and Segal (forthcoming), but not in Rogerson (1984) which precludes such renegotiation after a breach decision.

15. Note that this expression describes the expected damages a breaching seller would have to

This damage expression is sufficiently general to capture the policy relevant cases. If $\alpha = 1$ and $\beta = 0$, then the court can accurately assess the buyer's loss from breach, which will be $\max\{y - p, 0\}$, that is, the buyer's net return from performance when it is positive. The expression also permits the court to err in computing damages. If $\alpha < 1$ and $\beta = 1 - \alpha$, the expression describes the case in which the court assesses damages accurately with probability α, but the court's assessment of damages is based on a noisy but unbiased estimate of $y - p$ with probability $1 - \alpha$. By Jensen's inequality,

$$E_\epsilon[\max\{y - p + \epsilon, 0\}] > \max\{y - p, 0\},$$

since the function, $\max\{y - p + \epsilon, 0\}$, is convex in ϵ and $E_\epsilon[\epsilon] = 0$. It now follows that

$$\begin{aligned} \theta(y - p) &\equiv \alpha \max\{y - p, 0\} + (1 - \alpha) E_\epsilon [\max\{y - p + \epsilon, 0\}] \\ &> \max\{y - p, 0\}, \end{aligned} \tag{4}$$

for any $\alpha < 1$. That is, the expected damages the seller faces exceed the true damages. This is because the noisy damage signal is truncated at the lower tail: the seller does not benefit from the court's highly negative errors (because the buyer pays no damages when the seller breaches), but the seller is harmed by the court's positive errors (because the buyer's damages are not bounded from above). Finally, the general expression can represent the ipso facto clause case: If $\alpha = \beta = 0$, then $\theta(y - p) = 0$; the seller can exit without paying damages.

If the buyer breaches when solvent, we assume that the buyer has sufficient liquidity to pay damages. If the buyer breaches the contract when insolvent, the seller will collect no damages. This could result from one of two circumstances, both of which are realistic in the bankruptcy setting. First, the buyer could have too few unrelated assets to pay off the outside parties. For simplicity, the liquidation value of the buyer's assets is assumed to be zero. Second, the investor has priority over the seller's claim for damages if the buyer breaches while the contract remains executory.[16] Either of these two assumptions, when combined with Assumption 2 set out above, implies that the seller collects no damages when the buyer rejects the contract in bankruptcy (when the insolvency return is less than the investment cost k, the senior investor who supplies k is entitled to the entire estate). The priority assumption is meant to capture the asymmetry of payoffs remarked in footnote 8 above: the seller would pay full

pay when the seller is deciding whether or not to perform (i.e., at date 5). At date 8, if the seller does breach, the court will award the buyer damages equal to $\alpha \max\{y - p, 0\} + \beta(\max\{y - p + \epsilon, 0\})$, that is, without the expectation operator in the second term.

16. If the buyer's total assets have zero liquidation value, then the seller will collect no damages regardless of her priority status. If the liquidation value were positive but the investor has priority over the seller's claim, then, as long as the assets fall short of the senior debt, the investor will be entitled to the entire liquidation value, so the assets could not be used to pay the seller's damage claim. Our subsequent results will remain qualitatively valid even if neither assumption holds, as long as the total liquidation value is sufficiently small.

damages to the buyer on breach while the buyer would pay low (here zero) damages on rejection.

Before analyzing the game, it is useful to establish the first-best outcome. This outcome would produce efficient trade and an efficient effort choice. Efficient trade occurs if and only if the parties trade when the benefits from trade exceed the costs. In characterizing this latter condition, an issue arises as to whether the buyer's private benefit b should be treated as part of the social benefit. Throughout, we assume that b does not constitute a social benefit. We postpone justification of this assumption to Part 6 (which deals with welfare implications), except to note here that excluding private benefits from a welfare analysis of sections of the Bankruptcy Code is consistent with the goal of business bankruptcy law, which is to maximize the monetary value of the insolvent firm's assets. Given this treatment of the private benefit b, ex post efficiency requires that trade should always occur in the solvency state because the project return then exceeds the seller's performance cost by Assumption 1. In the insolvency state, trade should occur if and only if the insolvency return also would exceed the seller's cost; that is, $y \geq c$. We postpone a characterization of the efficient effort decision to Section 5, which considers the effect on investment of the ipso facto clause ban. Finally, the project should be initiated if and only if $W^*(e^*) \geq k$; that is, whenever the net expected return exceeds the start-up cost of k.

4. Renegotiation Equilibria

Section 4 presents the outcomes of the renegotiation game in the event the buyer becomes insolvent. Since the analysis is complex, we relegate its details to Appendix A. Here we summarize the results and discuss their normative implications.

To begin, the return from the insolvent buyer's project could exceed the seller's cost of performance (see Assumption 2). Trade would be efficient in this case and will occur. The buyer can pay the seller its performance cost ($y > c$), and will do this in order to obtain its private benefit. We denote this renegotiation possibility case A.

In the second relevant case (denoted case B), the seller's cost would exceed the project return, but that return will exceed the contract price ($c > y \geq p$). The buyer can require performance in this case because it will have the resources to pay. Trade would be ex post inefficient, however, but trade nevertheless occurs with positive probability. To see why, recall that when courts can err, the seller's expected damages were it to breach exceed the buyer's true damages. As a consequence, states of the world can exist in which the expected damages the seller would pay on breach would exceed the loss the seller would incur from performance. The seller thus would offer to perform. (Excessive expected damages play the role in the formal model that specific performance played in the introductory example.) In one policy-relevant subcase (denoted case B.1), the buyer will permit performance. The private benefit the buyer would realize from pursuing its project would here exceed the renegotiation rent the buyer could compel the seller to pay for permission to exit. In the second policy-

Table 1. Equilibrium outcomes in the insolvency state

Cases	Configurations	Outcomes	Payoffs for B, S, and I
A	$y \geq c$	Trade	$(b + y - c, 0, 0)$
B.1	$\theta(y - p) + p \geq c \geq y \geq \max\{c - b, p\}$	Trade	$(b, p - c, y - p)$
B.2	$\theta(y - p) + p \geq c \geq y + b \geq p + b$	No trade	$(c - y, p - c, y - p)$
B.3	$c > \max\{\theta(y - p) + p, y\}$ and $y \geq p$	No trade	$(0, -\theta(y - p), \theta(y - p))$
C	$y < \min\{c, p\}$	No trade	$(0, 0, 0)$

relevant subcase (denoted case B.2), the renegotiation rent would exceed the private benefit, so the buyer would permit the seller to exit for a fee. In the last subcase in which the project return would be below the seller's cost but above the contract price (denoted case B.3), the buyer could neither compel performance nor exact a renegotiation rent. Here the seller would breach because the loss from performance would exceed the expected damages the seller would face. The buyer could not reverse the seller's consequent decision to exit, upon payment of damages, because the project return is too low ($y < c$).

In the last possible renegotiation outcome (denoted case C), the project return would be below both the seller's cost and the contract price. Trade would be inefficient in this case and could not occur because the buyer cannot pay for it. All of these renegotiation cases, together with the buyer, seller, and investor payoffs are summarized in Table 1.

When the parties renegotiate without an ipso facto clause and with inaccurate courts, one ex post inefficient outcome (case B.1) occurs with positive probablity. In it, the buyer uses the threat of an excessive damage award to induce the seller to perform, though the seller's cost exceeds the project return. Renegotiation in this legal regime also may permit the insolvent buyer to earn a renegotiation rent with positive probability (case B.2). This is only a transfer ex post, but Section 5 will show that the outside parties' anticipation that the buyer may receive a rent will cause these parties to offer contract terms that reduce the buyer's incentive to invest.

Neither of these pathological cases could arise if courts always assessed expectation damages accurately. In this circumstance, the seller would perform only if its loss from performance ($c - p$) would be lower than the accurate expectation damages it would pay on breach ($y - p$ or 0): that is, the seller performs only when $y > c$, which is ex post efficient. Also, because damages are found accurately, the buyer cannot use the threat of an excessive damage award to exact a renegotiation rent.

Ipso facto clauses therefore substitute for accurate courts. When the contract contains an ipso facto clause, the seller can exit the deal without paying any damages. As a result, again an insolvent buyer could not compel an inefficient performance. Further, the buyer could not use the threat of excessive damages to exact a renegotiation rent (because no damages would be due at all). If the realistic assumption is made that courts can err when computing damages, the ipso facto clause ban thus has real consequences.

The positive and normative implications of renegotiation are summarized in

Proposition 1. (a) If courts can assess expectation damages accurately, then ex post efficiency is achieved: Trade occurs if and only if project returns exceed the seller's performance cost ($y \geq c$), whether ipso facto clauses are legal or not; (b) If courts assess expectation damages inaccurately and ipso facto clauses are illegal, then inefficient trade occurs and the insolvent party gets renegotiation rents, each with positive probability; (c) The equilibrium trade decision under ipso facto clauses is the same as under accurate expectation damages.

Proof. The statements in (a) and (c) are proven in Appendix A, and the intuition is set out in the preceding paragraphs. The statement in (b) will be true if case B arises with positive probability because cases B.1 and B.2 occur with positive probability whenever case B occurs with positive probability. First, note that insolvency arises with positive probability since $\phi(\infty) < 1$. Showing that case B can arise is not trivial because case B can exist only when $y > p$, and thus case B's occurence depends on the value of p, which is determined endogenously. Recall that p is set so that the seller breaks even, given the seller's belief regarding e, the buyer's effort level (the seller's belief equals the actual effort level in equilibrium). We proceed by establishing a contradiction. Suppose, contrary to Proposition 1, that case B never arises with positive probability. Then, either case A or C can arise with positive probability. As shown in Table 1, the seller's net payoff is zero in both cases. That the seller breaks even in the insolvency case implies that the seller also must break even in the solvency case: that is, price equals expected cost ($p = \hat{c}$). It now follows from Assumption 2 that $p = \hat{c} < \overline{y}$: The contract price is below the project's highest possible insolvency state realization. Therefore case B ($c > y > p$) arises with positive probability. Thus we have obtained a contradiction. ■

Remark 2. Ex post efficiency can be achieved even in the presence of judicial errors (and without ipso facto clauses) if the contract specifies a price $p \geq \min\{\overline{y}, \overline{c}\}$, since then case B never arises. Note, however, that such a price would require the seller to pay a positive upfront fee to the buyer. Therefore Proposition 1 depends on the assumption that upfront fees are not allowed. In practice, an upfront fee that the seller pays to the buyer is very uncommon. Remark 8 in Section 4 offers a plausible reason for the apparent absence of these upfront fees.

Remark 3. Proposition 1 shows an important role that stakeholders can play in bankruptcy. When continuance of a bad project would depend on performance by the insolvent party's contract partners, the ability of these partners to withold performance, either because courts can calculate damages accurately or because of an ipso facto clause, can yield ex post efficiency.

5. Ipso Facto Clauses and Investment

This section shows that banning ipso facto clauses when courts can err worsens the buyer's incentive to exert effort. To this end, we first show that the

buyer's choice of effort is suboptimal whether the court errs or not and whether an ipso facto clause is used or not. We then show that an ipso facto clause would reduce the underinvestment effect in a regime of inaccurate expectation damages.

Before beginning the analysis, it will be helpful initially to establish the first-best benchmark for the buyer's investment decision. Let $\Omega^* \equiv \{(y, c) \mid y \geq c\}$ denote the set of (y, c) for which trade occurs, under the first-best trade decision. Given that the trade decision is efficient, an efficient effort decision requires the buyer to choose the effort level e that maximizes the net monetary return from the project:

$$W^*(e) \equiv \phi(e)(\hat{y}_s - \hat{c}) + (1 - \phi(e)) \int_{\Omega^*} (y - c) dF(c) dG(y) - e, \tag{5}$$

where $\hat{y}_s$ and $\hat{c}$, respectively, represent the average gross surplus and the average cost of performance in the solvency state. The first term on the right-hand side of Equation (5) is the expected return in the solvency state and the second term is the expected return in the insolvency state when it is efficient to trade. Given our assumption on $\phi(\cdot)$, the first-best effort level e^* is unique and strictly positive, and it is characterized by a first-order condition:

$$\phi'(e^*) \left[(\hat{y}_s - \hat{c}) - \int_{\Omega^*} (y - c) dF(c) dG(y) \right] - 1 = 0. \tag{6}$$

5.1 Preliminary Analysis

We first consider the buyer's incentive to invest in the three relevant legal regimes. We denote the regime in which ipso facto clauses can be used as $r = IF$; the regime in which ipso facto clauses are banned but courts can find expectation damages accurately, $r = ED$; and the regime in which ipso facto clauses are banned and courts are inaccurate, $r = ED'$. Let Ω_r denote the set of the values of y and c under which trade occurs in legal regime r. Let i_N^r and i_B^r denote the investor's expected payoff in the solvency and insolvency states, respectively, in that regime. Likewise, s_N^r and s_B^r denote the seller's solvency and insolvency state payoffs, respectively. To analyze the buyer's incentive to invest, it is necessary to understand how these payoffs are determined in the two states. In any given regime r, the expected insolvency payoffs i_B^r and s_B^r are completely determined by our analysis in Section 4 (as presented in Table 1 and amplified in Appendix A). The expected payoffs in the solvency state are, however, determined endogenously by the condition that the investor and the seller just break even, given their beliefs about the buyer's effort. Let $\tilde{e}_r \geq 0$ denote the level of effort these two parties, at the time of contracting, believe that the buyer will exert at date 3. Then the expected solvency payoff for the investor, $i_N^r(\tilde{e}_r)$, must satisfy

$$k = \phi(\tilde{e}_r) i_N^r(\tilde{e}_r) + (1 - \phi(\tilde{e}_r)) i_B^r. \tag{7}$$

Similarly, the seller's expected solvency payoff, $s_N^r(\tilde{e}_r)$, satisfies

$$0 = \phi(\tilde{e}_r) s_N^r(\tilde{e}_r) + (1 - \phi(\tilde{e}_r)) s_B^r. \tag{8}$$

Remark 4. We assume that the contract does not involve an upfront fee by the seller. If the seller pays an upfront fee of F, then the left-hand side of Equation (8) should equal F instead. See Remark 8.

Remark 5. Note that the payoffs represent net returns. If the initial financing contract specifies a gross return of R for the investor, then $i_N^r = R$. Likewise, if the seller's contract price is p, then $s_N^r = p - \hat{c}$.

Summing Equations (7) and (8), we obtain:

$$k = \phi(\tilde{e}_r)\Delta^r(\tilde{e}_r) + i_B^r + s_B^r, \tag{9}$$

where $\Delta^r(\tilde{e}_r) \equiv i_N^r(\tilde{e}_r) + s_N^r(\tilde{e}_r) - (i_B^r + s_B^r)$ represents the difference in total expected payoffs for the investor and the seller between solvency and insolvency, given the belief of $\tilde{e}_r$. More intuitively, $\Delta^r(\tilde{e}_r)$ represents the total risk premia that these outside parties charge to the buyer to protect themselves against the low return realized by the buyer in the insolvency state. Since $i_B^r + s_B^r$ is determined by Table 1, Equation (9) uniquely determines $\Delta^r(\tilde{e}_r)$.

We are now in a position to analyze the buyer's effort decision. The buyer will choose effort to maximize its net expected payoff in regime r. That is, the buyer solves

$$\max_{e \geq 0} \phi(e)(b + \hat{y}_s - \hat{c} - i_N^r(\tilde{e}_r) - s_N^r(\tilde{e}_r)) + (1 - \phi(e))\left[\int_{\Omega_r} (b + y - c)dF(c)dG(y) - i_B^r - s_B^r\right] - e. \tag{10}$$

Because of the assumptions on $\phi(\cdot)$, the solution to the above problem exists and is unique for any given $\tilde{e}_r \geq 0$. Let $e^r(\tilde{e}_r)$ denote that solution. In equilibrium, the parties' beliefs must be consistent. Thus an equilibrium effort level e_r must satisfy $e^r(e_r) = e_r$. Hence e_r must satisfy the following first-order condition:

$$\phi'(e_r)\left[\hat{y}_s - \hat{c} - \int_{\Omega_r} (y - c)dF(c)dG(y) + [1 - prob\{\Omega_r\}]b - \Delta^r(e_r)\right] - 1 = (\leq)\, 0 \quad \text{if} \quad e_r > (=)\, 0. \tag{11}$$

We first establish the existence result.

Proposition 2. In any legal regime, $r = IF, ED, ED'$, there exists an equilibrium. The equilibrium effort e_r is characterized by the first-order condition of Equation (11).

Proof. See Appendix B.

Remark 6. In general, we cannot rule out the possibility of multiple equilibria, based on the assumptions made so far. Remark 7 explains how the multiplicity issue affects the comparative static analysis.

5.2 Investment Without Judicial Errors or With Ipso Facto Clauses

We now examine the buyer's incentive for investment in each regime. We first consider the ipso facto clause regime ($r = IF$) and the regime where ipso facto clauses are banned but the courts assess expectation damages accurately ($r = ED$). These two regimes will turn out to generate the same incentives for the buyer's effort. First, observe that, in either regime, our analysis of the ex post renegotiation game shows that the trade decision is efficient; that is, $\Omega_r = \Omega^*$, $r = IF, ED$. To gain intuition about investment incentives, write the buyer's marginal benefit from raising his effort in equilibrium:

$$\phi'(e)\left[\hat{y}_S - \hat{c} - \int_{\Omega^*}(y-c)dF(c)dG(y) + [1 - prob\{\Omega^*\}]b - \Delta^r(e)\right] - 1. \quad (12)$$

Comparing expression (12) with the left-hand side of Equation (6), expression (12) has two additional terms inside the brackets. The first term, $[1 - prob\{\Omega^*\}]b$, reflects the difference in the probability that the buyer obtains the private benefit b between the solvency and insolvency states. The buyer realizes his private benefit with probability one in the solvency state but obtains b with probability less than one in the insolvency state. Since the private benefit does not enter the social welfare calculus, this difference induces the buyer to invest more than the social optimum, all else equal.

The second term, $\Delta^r(e)$, represents the risk premia that outside parties charge to the buyer in the solvency state. Since the project does not generate a high enough return to pay off the investment cost in the insolvency state (Assumption 2), the outside parties must charge more in the solvency state to break even. In regime r, the risk premia the outside parties charge in the solvency state are precisely equal to $\Delta^r(e)$. This implies, however, that the buyer internalizes less than the social marginal return (by exactly $\Delta^r(e)$) from preventing bankruptcy. All else equal, therefore, this effect leads the buyer to underinvest.

Whether the buyer underinvests depends on whether the latter "sharing the upside return" effect dominates the former "capturing private benefits" effect. To analyze this trade-off, first recall from Section 4 that cases B.1 and B.2 do not arise in either regime ($r = IF$ or ED). Hence it follows from Table 1 that $i_B^r + s_B^r = 0$, $r = IF, ED$; that is, the expected payoffs of the investor and the seller sum to zero in the insolvency state.[17] Then, Equation (9) implies that, for $r = IF, ED$,

$$k = \phi(\tilde{e}_r)\Delta^r(\tilde{e}_r), \quad (13)$$

which in turn implies that

$$\Delta^{IF}(e) = \Delta^{ED}(e) > k, \quad (14)$$

for any $e \geq 0$.

17. As Table 1 shows, in case B.3 the seller breaches and pays $\theta(y - p)$ as damages, which goes to the investor; hence the outside parties' payoffs sum to zero.

Given inequality (14) and the fact that $\Omega_{IF} = \Omega_{ED} = \Omega^*$, the equilibrium condition of inequality (11) is precisely the same for $r = IF$ and $r = ED$. We thus conclude that the set of equilibrium effort levels is exactly the same in both regimes. Further, since $b < k$, inequality (14) implies that, for any e,

$$\left[1 - prob\{\Omega^*\}\right] b < b < k < \Delta^r(e),$$

that is, the equilibrium *private* marginal benefit for effort captured by expression (12) falls short of the *social* marginal benefit described in the left-hand side of Equation (6). We thus obtain the following result.

Proposition 3. When courts can calculate expectation damages accurately, the buyer exerts the same suboptimal level of effort whether ipso facto clauses are permitted or banned. Specifically, the buyer exerts too little effort in these regimes.

Proof. See Appendix B.

The buyer underinvests because he must promise the investor and seller a return in the solvency state that exceeds the amount of capital that the outside parties supply in order to make up for these parties' low insolvency state return. The buyer thus cannot keep the full marginal return from his effort in the solvency state, and so will exert too little effort. The accurate expectation damages and legal ipso facto clause regimes yield the same amount of investment because they generate the same ex post payoffs for the outside parties, and permit trade in the same cases. Hence their effect on ex ante incentives is identical.

5.3 Investment with Judicial Error and Without Ipso Facto Clauses

We now turn to the legal regime in which the court cannot observe ex post returns perfectly and ipso facto clauses are banned (i.e., $r = ED'$). Recall that, in this regime, the renegotiation outcomes corresponding to cases B.1 and B.2 of Table 1 occur with positive probability (see Proposition 1(b)). That is, the possibility of judicial mistake can yield trade even when the project return cannot itself support trade ($c > y$) (see case B.1), or will permit the buyer to earn renegotiation rents (see case B.2). These two events lower the buyer's incentive to invest, relative to the cases considered in the earlier subsection, for three reasons.

First, case B.1 implies that inefficient trade occurs in the insolvency state, so the buyer captures the private benefit more often under $r = ED'$ than he would had the trade decision been first best in that state. When the buyer's insolvency return is increased (since he can capture the private benefit b in more cases), he will exert less effort to prevent bankruptcy.

Second, the trade inefficiency in case B.1 also means that a trade loss occurs, and when it does, the outside parties bear the loss. Again, the outside parties must make up for this loss by charging more in the solvency state. This latter effect discourages the buyer's incentive for investment, as argued earlier.

Third, in case B.2, the project cost is so high that trade is canceled through renegotiation (case B.2 in Table 1). Yet the buyer captures the renegotiation rent of $c - y > 0$ (see Appendix A) at the expense of the outside parties. Again, this extra loss means that the outside parties charge more in the solvency state, which has an investment discouraging effect.

To better understand the latter two effects, notice that the sum of payoffs for the investor and the seller is $y - c < 0$ in cases B.1 and B.2. Because of these, $i_B^{ED'} + s_B^{ED'} < 0$; that is, the expected payoffs for the outside parties are negative in these cases. It then follows from Equations (9) and (13) that

$$\Delta^{ED'}(e) > \Delta^{ED}(e) = \Delta^{IF}(e),$$

for any $e \geq 0$. This increased wedge between the payoffs in the two states lowers the buyer's marginal return from preventing bankruptcy.

Because of these three effects, we obtain the following result.

Proposition 4. If courts can err, banning ipso facto clauses worsens the underinvestment effect in the sense that for any equilibrium effort $e_{ED'} > 0$ without an ipso facto clause, a strictly higher equilibrium effort level can be sustained if the clause is adopted.

Proof. See Appendix B.

Remark 7. The equilibrium effort levels may not be completely rankable between the two regimes if both regimes have multiple equilibria. In this case, the proposition claims that a strict ranking exists between the highest equilibrium effort levels in the two regimes. If there is a unique equilibrium in either regime, the strict ranking holds.

Remark 8. As we noted earlier, the parties can eliminate trade inefficiencies by raising the contract price p above $\min\{\overline{c}, \overline{y}\}$, which requires the seller to pay an upfront fee. Aside from the uncommon use of the upfront fee in practice, this approach does not solve the underinvestment problem. The seller would agree to such an upfront fee only when it could recoup the fee in expectation. Since the seller's payment in the insolvency state cannot be raised, the upfront fee must be recouped entirely from the solvency payment. This reduces the buyer's incentive to invest. To see this more formally, observe that an upfront fee of $F > 0$ adds F to the left-hand side of Equation (9), which clearly raises $\Delta^{ED'}(\cdot)$. The latter worsens the underinvestment problem. This shows that an upfront fee can reduce or eliminate ex post inefficiencies but cannot solve the ex ante inefficiency problem; that is, the combination of a high price and an upfront fee is an inferior substitute for an ipso facto clause. The latter can eliminate ex post inefficiency without worsening investment incentives.

Remark 9. A standard result in contract theory is that protecting the expectation interest generates overinvestment. This result is not obtained in our model for two reasons. First, here the buyer does not invest to increase the value of performance to her, but rather to increase the likelihood of solvency. Since trade is assumed always to be efficient in the solvency state, the buyer cannot

overinvest. Second, as a consequence of the liquidity constraint, the buyer in our model does not pay the agreed upon price in the insolvency state, whereas it pays the price in the solvency state (i.e., it must share upside gains with the solvent parties), and this generates much of the underinvestment result. In the standard analysis, all parties are solvent, so the investing party always pays the fixed price. This party also internalizes more than the optimal return because its expectation damages increase with the level of its investment. These effects are not present here.

6. Welfare Implications and Private Motives for Using Ipso Facto Clauses

Our analysis suggests that, in the presence of judicial error, ipso facto clauses can improve both ex post and ex ante efficiency. For this reason, one would expect the ipso facto clause to improve overall welfare. We first establish this result. Let

$$W(e, \Omega_r) \equiv \phi(e)(\hat{y}_s - \hat{c}) + (1 - \phi(e)) \int_{\Omega_r} (y - c) dF(c) dG(y) - e$$

denote the social welfare level (gross of the initial investment cost of k) that is achievable under the legal regime of $r = IF, ED, ED'$ when the buyer chooses e. The first term on the right-hand side is welfare in the solvency state and the second term is welfare in the insolvency state. Note that $W^*(e) = W(e, \Omega^*)$. The following result shows that this welfare level can increase when an ipso facto clause is used.

Proposition 5. An ipso facto clause improves welfare in the presence of judicial error, in the sense that for any equilibrium $e_{ED'}$ under regime $r = ED'$, there is an equilibrium effort level e_{IF} under the ipso facto regime that generates higher total welfare.

Proof. Fix an equilibrium effort level $e_{ED'}$ under $r = ED'$. Then Proposition 4 shows that there exists an equilibrium effort level $e_{IF} > e_{ED'}$ under $r = IF$. It then immediately follows that

$$W(e_{ED'}, \Omega_{ED'}) < W(e_{ED'}, \Omega^*) < W(e_{IF}, \Omega^*) = W(e_{IF}, \Omega_{IF}),$$

where the second inequality follows since $W^*(\cdot)$ is strictly concave and $e_{ED'} < e_{IF} < e^*$. ∎

Proposition 5 shows that legalizing ipso facto clauses would be socially desirable. Part of this proposition rests on the assumption that the buyer's private benefit should not count in a welfare analysis. This assumption can be justified as follows.[18] First, the benefit is to some extent a transfer: the seller's product would generate private benefits in other uses. The latter benefits are unlikely to be recovered in the sale price of the buyer's assets after insolvency.

18. Like the current article, Dewatripont and Tirole (1994) exclude private benefits from an ex post efficiency analysis of financial distress but do not justify the assumption. We attempt to do this but the issue deserves further thought.

As a formal matter, we assume that the liquidation value of the buyer's assets is zero so there will be no sale. If this asumption is relaxed, then the buyer's benefit can be disaggregated into ordinary consumer surplus and a control rent. While some of the former may be recovered, the latter will be lost in a piecemeal liquidation, which is the common consequence of bankruptcy (if the firm is reorganized, many of the managers will stay on so the benefit cannot be realized monetarily through a sale). Second, a part of the buyer's private benefit results from sending a signal that he is a good manager, but the private benefit should count as a social benefit only when the project the buyer manages generates gains in excess of costs. This is because the benefit will be offset by the social cost of sending an erroneous signal when the project would generate losses (then the manager probably is not good). Third, as mentioned earlier, this assumption is consistent with the goal of a business bankruptcy law, which is to maximize the monetary value of insolvent estates because this minimizes the cost of capital (Schwartz, 1998). This macro goal would be subverted if bankruptcy law encouraged a firm's managers and owners to consume private benefits ex post at the expense of the estate's monetary value. Therefore a discussion of the question whether the Bankruptcy Code should ban ipso facto clauses should consider only the monetary consequences of the ban. We note also that if the buyer's private gain was to be a part of the social welfare calculus, then an ipso facto clause ban would not cause ex post inefficiency but would be ex ante inefficient because of the ban's investment dampening effect.

It is not immediately clear, however, that the social desirability of an ipso facto clause necessarily translates into a private incentive to adopt the clause. This is because an ipso facto clause reduces the buyer's ability to consume private benefits or exact a renegotiation rent. Despite these drawbacks, the clauses were widely used when they were legal. We offer the following two explanations for their use.

First, offering an ipso facto clause eliminates the buyer's power to exact a renegotiation rent in case B.2 and to enjoy the private benefit in case B.1, but in both cases the clause reduces the outside parties' loss of $c - y > 0$, which means that the clause can be used to get a better deal in the solvency state. This compensates the buyer's loss in case B.2 completely but only compensates for part of the loss in case B.1 because $b > c - y$ in that state. Thus this first effect alone cannot motivate the buyer to offer the clause.

The second benefit of offering the clause is the credible manner in which it allows the buyer to commit to exerting a higher effort. In our model, the noncontractibility of the buyer's effort results in underinvestment. Therefore if the buyer could credibly convince the outside parties of its intention to raise effort, these parties would be willing to lower the payments the buyer must make in the solvency state—sufficiently so that the buyer would find it profitable to commit. An ipso facto clause allows the buyer to make such a credible commitment: By giving up the possibility of obtaining a rent and a private benefit in the insolvency state, the buyer necessarily internalizes a higher marginal return from preventing bankruptcy, and this credibly conveys the buyer's intention to invest more than if the clause were not offered. As a consequence, the buyer

can obtain better deals from the outside parties. One can imagine this latter benefit to be substantial enough to outweigh the buyer's potential loss. This possibility would be realized with certainty when

$$W(e_{ED'}, \Omega_{D'}) < k < W(e_{IF}, \Omega_{IF}).$$

In this situation the project cost is sufficiently high that the project could be undertaken profitably with an ipso facto clause but could not be financed without one. Consequently any buyer would offer an ipso facto clause if this were permissable, for refusal would cause the buyer to lose the opportunity to receive both a positive profit and a private benefit in both states.

7. Conclusion

We have argued that banning ipso facto clauses exacerbates both ex post and ex ante inefficiencies in the presence of judicial errors in assessing expectation damages. Judicial errors hamper the solvent party's ability to stop unproductive projects that insolvent parties have incentives to pursue, and ipso facto clauses can restore such a socially desirable function by the solvent parties by enabling their costless exit from contractual obligations. To the extent that courts are unlikely to be completely accurate, our results suggest that the current ban on ipso facto clauses is socially undesirable.

Our analysis also casts doubt on the alleged goals of the ban—that is to (a) enhance the bankrupt estate and (b) aid in the debtor's rehabilitation. Our ex post efficiency result shows that section 365 simply allows the debtor in possession to obtain a private benefit at the expense of lowering the monetary return of continuing projects or simply transfering resources away from contract partners or creditors. In this sense, banning ipso facto clauses reduces the monetary value of the estate. To the extent the ban encourages continuation of inefficient projects, it also reduces the chance of rehabilitation of the debtor rather than increases it. Moreover, by increasing the insolvent party's bankruptcy payoff, banning ipso facto clauses worsens that party's ex ante incentive for preventing the onset of bankrupcy, which clearly reduces the ex ante value of the estate. When considering additional adminstration costs,[19] there seems little rationale for section 365 especially as a mandatory rule. At best, section 365 should be a default.[20]

19. The cost and uncertainty of administering a mandatory section 365 are responsible for the high place the section now occupies on the agendas of law reformers. See authorities cited in footnote 4, *supra*.

20. The Uniform Commercial Code (UCC) makes costless exit the default. Section 2-609 of the Code provides that a party that has reasonable grounds to believe its contract partner will not perform may demand credible assurances of performance, and cancel the contract if those assurances are not forthcoming. Insolvency has been the paradigm example of a reasonable ground for being insecure about a contracting party's ability to perform (see Comment 3 to UCC section 2-609), and insolvent firms seldom can give credible assurances. Parties probably used ipso facto clauses before 1978 rather than rely on the UCC in order to make the grounds for the solvent party's exit explicit.

The analysis here has two broader implications. First, other mandatory rules in the Bankruptcy Code, such as the ban on antiassignment clauses in contracts, are justified in the same or a similar fashion as is the mandatory section 365. We suspect that an analysis such as the one done here would yield similar conclusions regarding those rules. Mandatory bankruptcy rules may be wealth reducing on net. The accuracy of this conjecture should be tested in further research. Second, we show, in one important context, that the ability of an insolvent firm to continue bad projects can be checked by the refusal of the firm's contract partners to perform ongoing contracts. This suggests that more general analyses of the inefficient continuance problem should add contract partners to the game between the firm and its creditors.

Appendix A

The ex post bargaining game is straightforward when the buyer is solvent. In this case, both parties will be solvent, so the ipso facto clause plays no role. Given that trade is always efficient and expected damages exceed true damages, neither party breaches.[21]

Turning to the insolvency case, there are five possible renegotiation outcomes, in two of which the seller performs. In the remaining three outcomes, the parties do not trade. These renegotiation outcomes can be put into three categories (cases A, B, C).

Case A. $y \geq c$.

In this case, the project's return exceeds the seller's cost of performance. First, suppose that the seller offers to perform the contract at date 5. The buyer's best response is to reject the contract and then renegotiate. If the buyer rejects, the seller and investor receive payoffs of zero (the buyer has no money unless it performs the project). The buyer thus could renegotiate to reinstate trade by paying the seller its performance cost c (so the seller would earn a net return of the payment c less the performance cost c, or zero), and by paying the investor zero.[22] The buyer would renegotiate to permit trade because it could keep the entire surplus—its private benefit b plus the net monetary return of $y - c$.

The seller would offer to perform given the buyer's response. If the seller breaches, it is liable for damages, receiving $-\theta(y - p)$, whereas, as described above, the seller would receive $0 \geq -\theta(y - p)$ if it offers to perform. Therefore

21. To see this, consider the possibility of seller breach. When the seller breaches, it pays on average damages of $\theta(y - p)$ and the buyer will renegotiate to reinstate trade. Since the buyer has the entire bargaining power, for any $y \in Y_s$ and $c \in [0, \overline{c}]$, the seller will receive from breaching

$$0 - \theta(y - p) \leq -\max\{y - p, 0\} < p - c,$$

where the last inequality follows from Assumption 1 set out above. Since the right-most term represents the payoff that the seller will receive by assuming the contract, it will never breach. A similar analysis would show that the buyer also will not breach.

22. Recall that the buyer has the entire bargaining power in renegotiation.

the seller cannot strictly gain from breaching the contract (we assume that parties agree to perform if they are indifferent between performance or breach). Because $y \geq c$, there is efficient trade in this renegotiation outcome.

Case B. $c > y \geq p$.

In this case, the buyer's project generates a monetary return that is less than the seller's cost of performance but greater than the contract price. If either party were to breach, the buyer could not renegotiate to obtain trade because the buyer could not compensate the seller for its cost. If the seller offers to perform the contract in this circumstance, the buyer's best response is to accept: If the buyer rejects, the seller can exit freely and the buyer would receive a zero payoff. Acceptance continues the contract in force, and the buyer then can choose whether to permit performance or renegotiate to cancel the deal. If the buyer permits trade, it realizes the private benefit b and earns the difference between the project's return and the price, $y - p$, which the buyer must pay to the investor. The seller would incur a loss from performance of $c - p$, its cost less the price. The buyer could obtain the outside parties' consent to cancel trade by paying the parties these status quo payoffs. This requires the buyer to pay $y - p$ to the investor. In the seller's case, this actually requires the seller to pay the buyer the loss the seller would have realized from performance—$c - p$ (recall again that the buyer has the entire bargaining power). Therefore if the buyer does renegotiate to cancel trade, it earns zero less the payments to the outside parties, or $0 - (y - p + p - c) = c - y > 0$. If the buyer permits performance, it pays the resultant cash to the investor but earns its private benefit. In consequence, the buyer will renegotiate to cancel trade when the private benefit is less than the renegotiation rent; that is, when $b < c - y$. The buyer will permit trade when the inequality goes the other way. Given the buyer's strategy when $c > y \geq p$, the seller will offer to perform the contract when the expected damages it faces would exceed its cost of performance; that is, when $\theta(y - p) > c - p$. The seller will breach when this inequality goes the other way. This analysis yields three possible subcases:

Subcase B.1. $b \geq c - y$ and $\theta(y - p) > c - p$.

In this subcase, the parties trade. The buyer's private benefit from pursuing the project would exceed the renegotiation rent so the buyer will permit trade if the seller offers to perform. The seller will make this offer because the expected damages it would pay on breach would exceed the seller's loss from performance. The parties' payoffs are b for the buyer, $c - p < 0$ for the seller, and $y - p$ for the investor.

Subcase B.2. $b < c - y$ and $\theta(y - p) > c - p$.

There is no trade in this subcase. The seller again prefers performance because its expected damages would exceed the loss but the buyer prefers to renegotiate to cancel trade because its renegotiation rent exceeds the private

benefit it would gain from performance. The buyer thus receives $c - y$, the seller again incurs the loss of $c - p$, which is paid to the buyer, and the investor receives $y - p$.

Subcase B.3. $\theta(y - p) < c - p$.

There is no trade in this subcase regardless of the buyer's preference. The seller's loss from performance exceeds the expected damages it faces; hence the seller will breach. The buyer cannot renegotiate to reinstate trade because the buyer has only the project return with which to bribe the seller; the return is assumed to be less than the seller's cost. Because there is breach, the project is not done and the buyer's payoff is zero. The seller pays $\theta(y - p)$ as damages, which goes to the investor.

Case C. $y < p < c$.

The parties do not trade. The project return not only is below the seller's cost, but also is below the price. Therefore, the buyer could not accept performance. Knowing this, the seller avoids its own breach by offering to perform, and the buyer must breach by rejecting the offer. Every party's payoff is zero in consequence.

Appendix B

Proof of Proposition 2. Condition (11) is clearly necessary for the equilibrium, as argued in the text. The condition is also sufficient. To see this, suppose that the condition is satisfied at $e_r \geq 0$. Then, since $\phi(\cdot)$ is increasing and strictly concave,

$$\phi'(e')\left[\hat{y}_s - \hat{c} - \int_{\Omega_r}(y-c)dF(c)dG(y) + [1 - prob\{\Omega_r\}]b - \Delta^r(e_r)\right] - 1$$
$$\leq (>)0 \quad \text{if} \quad e' \geq (<)e_r.$$

Thus condition (11) is sufficient. We now show that there exists e_r that satisfies condition (11). Suppose first that

$$\phi'(0)\left[\hat{y}_s - \hat{c} - \int_{\Omega_r}(y-c)dF(c)dG(y) + [1 - prob\{\Omega_r\}]b - \Delta^r(0)\right] - 1 \leq 0.$$

Then $e_r = 0$ immediately satisfies condition (11), so it is an equilibrium. Hence assume that the above inequality is reversed. Then $e^r(0) > 0$. Since the gross social benefit is bounded above, $e^r(\infty) < M$ for some $M < \infty$. Furthermore, $e^r(\cdot)$ is continuous by the Berge's theorem of maxima. Hence there exists $e' > 0$ such that $e^r(e') = e'$, thus satisfying condition (11). ■

Proof of Proposition 3. We already showed in the text that the set of equilibrium efforts is the same for both regimes. We here show that the buyer underinvests in either regime. Suppose, to the contrary, that there is an equi-

librium effort level e_r in either regime, that is weakly greater than e^*. Then, by condition (11),

$$\begin{aligned}
0 &= \phi'(e_r)\left[\hat{y}_s - \hat{c} - \int_{\Omega^*}(y-c)dF(c)dG(y)\right. \\
&\qquad \left. + [1 - prob\{\Omega^*\}]b - \Delta^r(e_r)\right] - 1 \\
&< \phi'(e_r)\left[\hat{y}_s - \hat{c} - \int_{\Omega^*}(y-c)dF(c)dG(y)\right] - 1 \\
&\leq \phi'(e^*)\left[\hat{y}_s - \hat{c} - \int_{\Omega^*}(y-c)dF(c)dG(y)\right] - 1,
\end{aligned}$$

which contradicts Equation (6). ■

Proof of Proposition 4. First note that $\Omega_{ED'} \supset \Omega_{IF} = \Omega^*$ and that $b+y-c \geq 0$ in $\Omega_{ED'}$ (see Table 1). Let $e' > 0$ be an equilibrium effort under regime $r = ED'$. Then, the first-order condition for e' implies that

$$\begin{aligned}
0 &= \phi'(e')\left[b + \hat{y}_s - \hat{c} - \int_{\Omega_{ED'}}(b+y-c)dF(c)dG(y) - \Delta^{ED'}(e')\right] - 1 \\
&= \phi'(e')\left[\hat{y}_s - \hat{c} - \int_{\Omega^*}(y-c)dF(c)dG(y) + [1 - prob\{\Omega^*\}]b - \Delta^{ED'}(e')\right. \\
&\qquad \left. - \int_{\Omega_{ED'}/\Omega^*}(b+y-c)dF(c)dG(y)\right] - 1 \\
&< \phi'(e')\left[\hat{y}_s - \hat{c} - \int_{\Omega^*}(y-c)dF(c)dG(y)\right. \\
&\qquad \left. + [1 - prob\{\Omega^*\}]b - \Delta^{IF}(e')\right] - 1,
\end{aligned}$$

where the inequality holds since $\int_{\Omega_{ED'}/\Omega^*}(b+y-c)dF(c)dG(y) > 0$ and $\Delta^{IF}(e') < \Delta^{ED'}(e')$.

The above inequality, together with the continuity of the last expression in e', implies that there exists $e'' > e'$ that satisfies condition (11) under $r = IF$. ■

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